

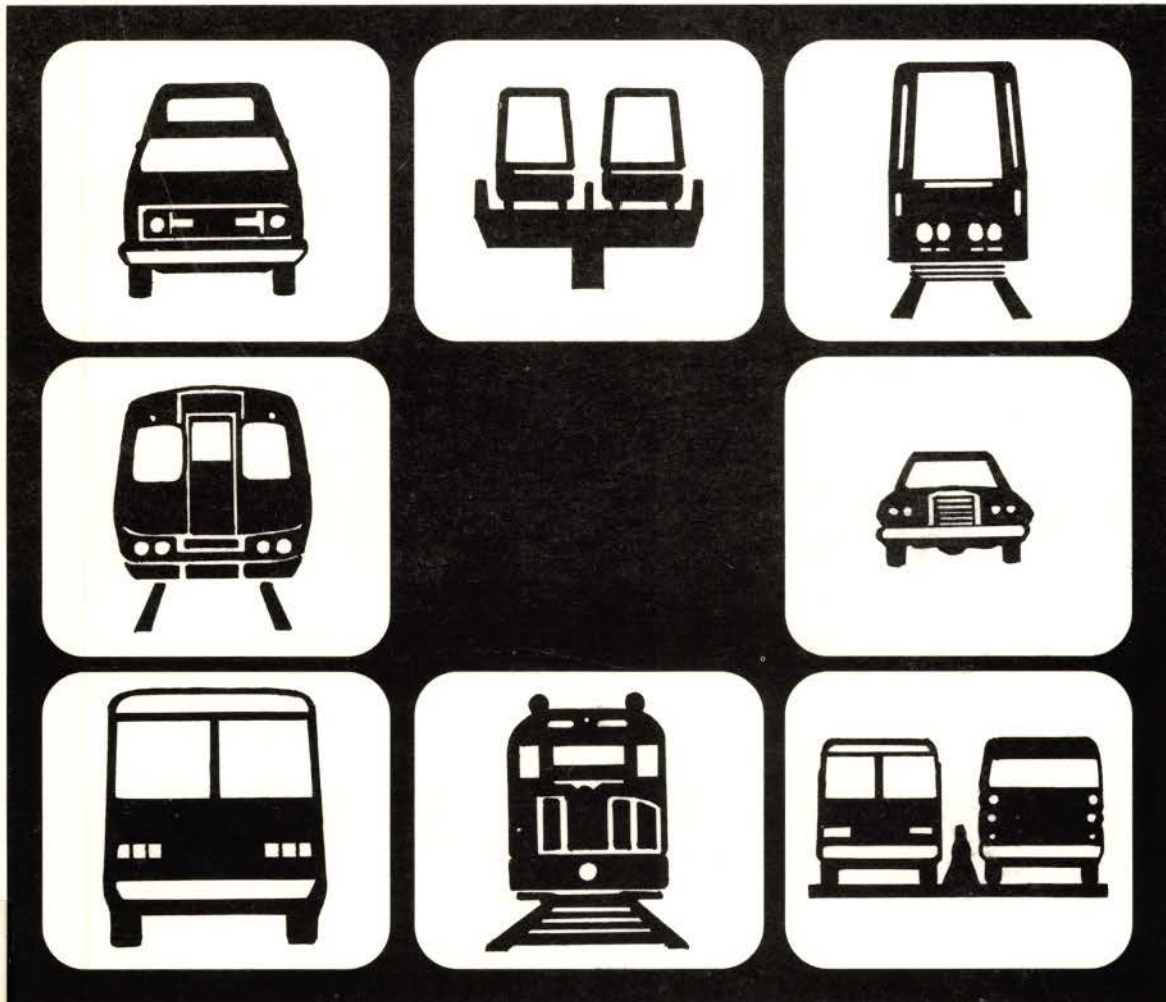


U.S. Department
of Transportation

**Urban Mass
Transportation
Administration**

ASSET MANAGEMENT IN THE TRANSIT INDUSTRY

March 1991



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**ASSET MANAGEMENT
IN THE
TRANSIT INDUSTRY**

MARCH 1991

**Prepared By:
KPMG Peat Marwick**

**In Conjunction with:
Public Financial Management, Inc.**

The contents of this report are based on consultants' research and do not necessarily reflect the views of the US Department of Transportation or the Urban Mass Transportation Administration.

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TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	INTRODUCTION	1.1
1.1	Reasons for Considering Asset Management	1.1
1.2	Classes of Transit Assets	1.2
1.3	Organization of the Materials	1.5
2	FUNDING INVENTORY AND ANALYSIS	2.1
2.1	Federal Capital Assistance	2.1
2.2	State Capital Assistance	2.1
2.3	Local Capital Assistance	2.5
2.4	Sources and Uses of Funds	2.5
2.5	Future Capital Requirements	2.5
3	TRANSIT CAPITAL COST EXPERIENCES	3.1
3.1	Asset Base of the Transit Industry	3.1
3.2	Equipment	3.3
3.3	Property	3.8
3.4	Facilities	3.8
3.5	Inflationary Impact	3.10
3.6	Hidden Values in the Balance Sheet	3.12
4	HISTORICAL ANALYSIS OF TRANSIT OPERATIONS	4.1
4.1	Operating and Maintenance Cost Trends	4.1
4.2	Revenue Trends	4.3
4.3	Operating Ratios	4.7
4.4	Operating and Financial Leverage	4.13
4.5	Summary of Trends	4.15
5	FINANCIAL LEVERAGE IN THE TRANSIT INDUSTRY	5.1
5.1	Introduction	5.1
5.2	Tax-Exempt Market Trends	5.1
5.3	Debt Instruments	5.5
5.4	Credit Issues	5.12
6	UTILIZATION AND MANAGEMENT OF TRANSIT ASSETS	6.1
6.1	Property Assets	6.1
6.2	Equipment	6.2
6.3	Facilities	6.5
6.4	Access	6.7
6.5	Financial Assets	6.8

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Page</u>
7 BEST PROFESSIONAL PRACTICE IN ASSET MANAGEMENT	7.1
7.1 Introduction	7.1
7.2 Cash Management	7.2
7.3 Land and Property Management	7.7
7.4 Plant and Equipment Management	7.10
<u>Appendix</u>	
A VALUATION OF TRANSIT ASSETS	A.1
B ASSET DEFINITIONS	B.1
C SUPPLEMENTARY EXHIBITS	C.1

LIST OF EXHIBITS

<u>Exhibit</u>		<u>Page</u>
1-1	List of Asset Object Classes	1.3
2-1	Federal Capital Assistance	2.2
2-2	Sources of Federal Capital Assistance	2.3
2-3	State Capital Assistance	2.4
2-4	Local Capital Assistance	2.6
2-5	Summary: Sources and Uses of Funds for Transit Capital	2.7
2-6	New Start Projects	2.9
3-1	Balance Sheet Summary Schedule - All Systems	3.2
3-2	Rail Car Buys	3.5
3-3	New Transit Passenger Vehicles Delivered	3.6
3-4	Estimates of Investment in Buses Based on Unit Costs	3.7
3-5	Tracks and Stations	3.9
3-6	Light Maintenance Facilities	3.11
4-1	Fixed and Variable Operating Cost - All Modes	4.2
4-2	Fixed and Variable Operating Cost - Constant Dollar Equivalents - All Modes	4.4
4-3	Farebox Revenue	4.5
4-4	Non-Farebox Operating Revenue	4.6
4-5	Sources of Non-Operating Revenue	4.8
4-6	Non-Operating Revenues	4.9
4-7	Revenue Trends (Adjusted by CPI)	4.10
4-8	Farebox Recovery Ratios	4.11
4-9	Farebox Recovery Ratio (All Systems)	4.12
4-10	Summary: Passenger Revenue, Operating Expenses, Operating Ratio	4.14
5-1	Municipal Debt Volume	5.2
5-2	Transportation Long-Term Debt Volume	5.3

LIST OF EXHIBITS (continued)

<u>Exhibit</u>	<u>Page</u>
5-3 Transit Debt Volume	5.4
5-4 Large Issuers	5.6
5-5 Number of Transit Issues	5.7
5-6 Debt Instruments	5.8
6-1 PRTC Bus Lease Transaction	6.4
6-2 Typical Offshore Lease Transaction (Defeased)	6.6
6-3 Offers for Sale of Portfolio Securities	6.12
7-1 Cash Management	7.3
7-2 Land and Property Management	7.4
7-3 Plant and Equipment Management	7.5
C-1 Balance Sheet Summary Schedule - Systems with Over 1,000 Vehicles	C.1
C-2 Balance Sheet Summary Schedule - Systems with 500-999 Vehicles	C.2
C-3 Balance Sheet Summary Schedule - Systems with 250-499 Vehicles	C.3
C-4 Light Maintenance Facilities - Motor Bus	C.4
C-5 Light Maintenance Facilities - Rail Rapid	C.5
C-6 Fixed and Variable Operating Costs - Motor Bus	C.6
C-7 Fixed and Variable Operating Cost - Constant Dollar Equivalentents - Motor Bus	C.7
C-8 Fixed and Variable Operating Cost - Annual Actual Vehicle Revenue Miles - Motor Bus	C.8
C-9 Fixed and Variable Operating Cost - Annual Actual Vehicle Revenue Miles in Constant Dollars - Motor Bus	C.9
C-10 Fixed and Variable Operating Cost - Rail Rapid	C.10
C-11 Fixed and Variable Operating Cost - Constant Dollar Equivalentents - Rail Rapid	C.11
C-12 Fixed and Variable Operating Cost - Annual Actual Vehicle Revenue Miles - Rail Rapid	C.12
C-13 Fixed and Variable Operating Cost - Annual Actual Vehicle Revenue Miles in Constant Dollars - Rail Rapid	C.13

1. INTRODUCTION

1.1 REASONS FOR CONSIDERING ASSET MANAGEMENT

Moving America - New Directions, New Opportunities provides the strategies and actions for a national transportation policy. Policy themes related to asset management include the following:

- Preserve the transportation infrastructure
- Make the best use of transportation assets
- Foster a sound financial base for transportation
- Improve transportation data and planning

Pursuing these policy themes in the context of financing transportation improvements requires an understanding of the asset base. For transit, this relates to an understanding of what the transit agency has to work with to deliver service.

This report is intended to get transit agencies to examine their balance sheets to uncover hidden assets and adopt financial practices to generate increased non-operating revenues.

The necessary first step in planning any service expansion and attendant procurement is to assess what the transit agency already owns. This assessment should lead to an internal evaluation of financial condition and financial capability.

This assessment should focus on the financial issues involved with service expansion. Principal considerations include a candid appraisal of the financial capability to expand and an assessment of resources available internally to assist any expansion. All parties concerned with a transit agency are interested in its financial position, which is portrayed by the balance sheet, or statement of financial position (the names are used interchangeably). The balance sheet indicates the assets owned by the transit agency and the claims against those assets, and purports to give a picture of the position of the transit agency at one particular time. The statement complements the statements of changes--the income statement and the statement of changes in financial

position--which portray the agency's progress over a period of time. The balance sheet is like a still picture that freezes motion at a point in time, while the statements of changes are like motion pictures that show action over a period of time.

Understanding the asset portion of the balance sheet presents the opportunity to transit agencies to engage in a variety of asset management practices.

Asset management can cover a multiplicity of functions, controls, and procedures and concerns, including:

- Systems of planning, budgeting, and controlling operating expenditures, revenues, and capital expenditures
- Arrangements for the proper management of all the assets of an entity--land, property (including the adequacy of arrangements for acquisition, maintenance, development, and disposal of land and buildings), equipment, and finance
- Arrangements designed to take advantage of economies of scale, particularly in procurement of goods and services
- Specific initiatives that have been taken to improve economy, efficiency, and effectiveness
- Proper codification of responsibilities, authority, and accountability
- Monitoring results against predetermined performance objectives and standards to ensure that outstanding performance is encouraged and unacceptable performance corrected

The importance of asset management is not restricted to the private sector. Not-for-profit transit agencies are in many ways similar to profit-seeking enterprises. For example:

- They are integral parts of the same economic system and utilize similar resources in accomplishing their purposes.

- Both must acquire and convert scarce resources into their respective goods or services.
- Financial management processes are essentially similar in both and each must have a viable information system--of which the accounting system is an integral component--if its managers and other interested persons or groups are to receive relevant and timely data for planning, directing, controlling, and evaluating the use of its scarce resources.
- Inasmuch as their resources are relatively scarce--whether donated, received from customers or consumers, acquired from investors or creditors, or secured through taxation--least-cost analysis and other control and evaluation techniques are essential to ensuring that resources are utilized economically, effectively, and efficiently.
- In some cases, both produce similar products, e.g., both governments and private enterprise may own and operate transportation systems.

The primary purpose of this report is directed to both top-of-line and bottom-line financial results for transit agencies. The historical trend has witnessed a somewhat stable but insufficient performance regarding farebox revenues to fund transit operations. This has caused a reliance on non-operating revenue sources such as grants, appropriations, and broad-based taxes.

A worthwhile objective for transit agencies is to grow non-farebox operating revenues, which is a major focus of asset management. By achieving this objective, transit agencies will then have the ability to allocate more non-operating revenues to capital projects.

The materials that immediately follow discuss financial issues in asset utilization. This discussion defines classes of assets in a balance sheet context. Appendix A contains technical materials which cover the valuation of transit assets from an accounting perspective.

1.2 CLASSES OF TRANSIT ASSETS

The classification of transit assets was codified in 1977 by the *Urban Mass Transportation Industry Uniform System of Accounts and Records and Reporting System*. This document presents the requirements for classifying transit system assets in a uniform system of accounts for reporting transit agency financial and operating data under Section 15 of the Urban Mass Transportation Act of 1964, as amended. Assets are grouped into object classes; the object classes and the assets within these object classes are outlined in Exhibit 1-1.

Transit assets as detailed in Exhibit 1-1 may be grouped into the following commonly used balance sheet classifications:

- Current assets
- Investments
- Property, plant, and equipment
- Intangible assets
- Other assets

Current assets are defined as cash and other assets that are reasonably expected to be realized in cash or consumed during the normal operating cycle of the business, which is generally one year. Object classes regarded as current assets would include cash and cash items, receivables expected to be collected within the year, materials and supplies expected to be used within the year, and other current assets such as prepaid expenses.

Investments of a transit agency generally consist of cash placed in interest-bearing securities. Investment funds may be unrestricted or restricted for a specific future purpose. Property, plant, and equipment are tangible or physical long-lived assets that are used in transit activities. Object classes regarded as property, plant, and equipment include: work in process which applies to capital projects not yet completed or placed in service, tangible transit operating property which consists of all property and equipment used to provide urban mass transit services, and tangible property

EXHIBIT 1-1

LIST OF ASSET OBJECT CLASSES

<u>ACCOUNT NUMBER</u>	<u>OBJECT CLASS</u>	<u>ASSET</u>
101	CASH AND CASH ITEMS	01. Cash 02. Working (Imprest) Funds 03. Special Deposits, Interest 04. Special Deposits, Dividends 05. Special Deposits, Other 06. Temporary Cash Investments
102	RECEIVABLES	01. Accounts Receivable 02. Notes Receivable 03. Interest and Dividends Receivable 04. Receivables from Associated Companies 05. Receivable Subscriptions to Capital Stock 06. Receivables for Capital Grants 07. Receivables for Operating Assistance 08. Other Receivables 09. Reserve for Uncollectible Accounts
103	MATERIALS AND SUPPLIES INVENTORY	
104	OTHER CURRENT ASSETS	
105	WORK IN PROCESS	01. Unbilled Work for Others 02. Capital Projects
111	TANGIBLE TRANSIT OPERATING PROPERTY	01. Property Cost 02. Leased-Out Property Cost 03. Accumulated Depreciation
112	TANGIBLE PROPERTY OTHER THAN FOR TRANSIT OPERATIONS	01. Property Cost 02. Accumulated Depreciation

EXHIBIT 1-1 (Continued)

LIST OF ASSET OBJECT CLASSES

<u>ACCOUNT NUMBER</u>	<u>OBJECT CLASS</u>	<u>ASSET</u>
121	INTANGIBLE ASSETS	<ul style="list-style-type: none">01. Organization Costs02. Franchises03. Patents04. Goodwill05. Other Intangible Assets06. Accumulated Amortization
131	INVESTMENTS	<ul style="list-style-type: none">01. Investments and Advances, Associated Companies02. Other Investments and Advances03. Reserve for Revaluation of Investments
141	SPECIAL FUNDS	<ul style="list-style-type: none">01. Sinking Funds02. Capital Asset Funds03. Insurance Reserve Funds04. Pension Funds05. Other Special Funds
151	OTHER ASSETS	<ul style="list-style-type: none">01. Prepayments02. Miscellaneous Other Assets

SOURCE: "Urban Mass Transportation Industry Uniform System of Accounts and Records and Reporting System," Volume II - Uniform System of Accounts and Records, Urban Mass Transportation Administration, January 10, 1977.

other than for transit operations which consists of tangible property owned by the transit system but not used in transit operations.

Intangible assets are relatively long-lived assets that have no physical existence. Their value is dependent on the rights and benefits that the transit agency derives from them. Other assets is a balance sheet item used for items that do not fit conveniently into the other balance sheet classifications. Special funds may be regarded as a type of other assets, since their use is restricted to satisfying a specific class of transit agency long-term obligations. A complete listing of assets and their definitions is contained in Appendix B.

The assets owned by the transit agency are one major element in constructing a balance sheet for the entity. Combined with liabilities, the resulting balance sheet provides a statement of the financial position of the transit agency at one particular time.

1.3 ORGANIZATION OF THE MATERIALS

The remainder of this report addresses the following topics:

- Funding Inventory and Analysis
- Transit Capital Cost Experiences
- Historical Analysis of Transit Operations
- Financial Leverage in the Transit Industry
- Utilization and Management of Transit Assets
- Best Professional Practice in Asset Management

The funding inventory and analysis provides data on federal, state, and local funding of transit agencies for the 1979 through 1988 time period. This material provides a perspective on the extent of and capability for state and local financial assistance for local public transportation. This is important given decreased federal operating assistance and the federal objective of leveraging substantial matching funds for transit capital investments.

The analysis of transit capital cost experiences covers larger transit agencies for the period 1979 to 1987-88. The analysis addresses capital cost experiences, which are regarded as transit investments by object class.

This analysis provides a perspective on the enormous size of the asset base of the industry and how this asset base has grown. This is useful in placing the issue of asset utilization in its proper perspective.

The historical analysis of transit operations provides a trend analysis from 1979 through 1988 on transit operating and maintenance cost experiences, operating revenue trends, and the resultant operating ratios for transit agencies by transit system size and for all transit agencies operating in urban areas with over 50,000 inhabitants. This analysis provides measures of transit financial performance. The analysis shows the magnitude of transit's operating dilemma from a financial perspective, which makes the issue of asset utilization of prime importance.

Funding inventory, transit capital costs and historical analyses of transit operations and maintenance costs utilized data reported under Section 15 of the Urban Mass Transportation Act of 1964, as amended, from 1979 to 1988. All public transit agencies in urban areas with populations of 50,000 or more are required to report under Section 15 of the Act as a condition for receiving Section 9 operating assistance. These analyses do not include data for rural or intercity public transit operations.

The section on financial leverage in the transit industry discusses the variety of financing options that have been used in financing mass transit projects.

Utilization and management of transit assets provides some examples of how transit agencies can better utilize their existing assets and thus enhance their revenues and service delivery. These include the following:

- Joint development
- Use of rail right-of-way
- Pooled purchase programs
- Cross-border leasing

Some of the major federal requirements which need to be adhered to in utilizing transit assets include:

- The grantee must maintain continuing control of federal project assets
- The federal project must be available to the general public for mass transportation purposes

- The facility must remain in mass transportation service over the asset life. If the facility is removed from mass transportation service during its asset life, the pro-rated depreciated federal contribution must be rebated to the federal government.

The scope of this study does not permit an examination of federal requirements.

The discussion of best professional practice in transit asset management provides guidance on procedures and techniques to develop asset management practices among transit agencies to achieve the objectives of economy, efficiency, and effectiveness. Viewed in this light, transit assets become more than the property, plant, and equipment to provide transit service.

2. FUNDING INVENTORY AND ANALYSIS

This section presents an analysis of intergovernmental grants for capital assistance to transit agencies during the period from 1979 through 1988. The analysis considers the capital assistance provided by three levels of government--federal, state, and local. This analysis is based on data reported under Section 15 for 1979 to 1988.

2.1 FEDERAL CAPITAL ASSISTANCE

While federal capital assistance increased by 114 percent from 1979 to 1988, the 1988 allocation of slightly over \$2.2 billion was less than the grants provided in 1984, 1985, 1986, and 1987. Further, the federal share as a percent of total capital provided decreased for all systems from 80.8 percent in 1979 to 66.6 percent in 1988, as shown in Exhibit 2-1. The sources of federal funding for capital are shown in Exhibit 2-2.

Federal capital assistance trends varied by size of transit system. Transit agencies with 250 to 499 vehicles experienced a very significant (489 percent) increase in capital assistance from 1979 to 1988. Nevertheless, even with this major increase, the federal share as a percent of total capital decreased from 76.4 to 63 percent from 1979 to 1988.

Transit agencies with 500 to 999 vehicles experienced a 10 percent decrease in federal capital assistance from 1979 to 1988. The federal share as a percentage of total capital decreased 17 percent, from 82.5 percent in 1979 to 68.6 percent in 1988.

Transit agencies with over 1,000 vehicles experienced a 122 percent increase in federal capital assistance. The federal share as a percent of total capital, however, showed a decline from 82.7 percent in 1979 to 68.6 percent in 1988.

2.2 STATE CAPITAL ASSISTANCE

State capital assistance to transit agencies derives from various sources such as legislative appropriations, vehicle registration fees, and lottery proceeds. As indicated by Exhibit 2-3, state capital assistance showed a major increase from \$126.9 million in 1979 to a high of \$621 million in 1986, with a decrease to \$446.8 million in 1988.

Historically, states have shown a tendency to control capital assistance to transit through the appropriations process with allocations of general fund and general obligation bond revenues.

The use of dedicated state taxes to provide capital assistance to transit is, however, on the rise. For all systems, total dedicated state taxes to provide capital assistance increased from \$10.2 million in 1979 to \$123.7 million in 1988. Details on the amounts of dedicated taxes used, by type of tax, are shown below for 1979 and 1988.

<u>Type of State Dedicated Tax</u>	Amounts Allocated to Transit Capital (\$ Millions)	
	<u>1979</u>	<u>1988</u>
Income Taxes	0.0	0.1
Sales Taxes	1.4	16.1
Property Taxes	0.0	26.2
Commuter Taxes	0.0	0.1
Gasoline Taxes	7.9	15.1
Other Taxes (e.g., recordation fees, vehicle registration fees)	<u>0.9</u>	<u>66.1</u>
Total	10.2	123.7

While the above data indicate increased application of state dedicated taxes to assist transit capital needs, dedicated taxes were only 28 percent of total state capital assistance in 1988. Thus, it may be concluded that the major portion of state capital assistance has and will continue to come through the legislative appropriations process.

Transit agencies with 250 to 499 vehicles received a sizable increase in state capital assistance--\$55.1 million in 1988 compared with \$3.5 million in 1979. While receiving a sixfold boost, transit agencies with 500 to 999 vehicles received only \$22 million of the \$446.8 million provided to all transit systems in 1988. The largest agencies, those with more than 1,000 vehicles, captured a 137 percent increase in state capital funds from 1979 to 1988. Funding levels have actually declined, however, from a high point in 1983 when they peaked at \$341.9 million, decreasing to \$243.5 million by 1988.

EXHIBIT 2.1

FEDERAL CAPITAL ASSISTANCE								
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*								
YEAR	250 - 499		500 - 999		1000 & Over		All Systems	
	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance
1979	45.0	76.4	279.5	82.5	611.8	82.7	1067.9	80.8
1980	56.9	66.9	183.1	71.4	613.1	83.7	990.5	78.7
1981	79.3	69.3	136.9	63.9	1156.8	82.4	1530.6	78.4
1982	65.2	69.5	341.9	71.4	918.7	79.9	1518.8	76.5
1983	60.4	58.7	223.0	74.4	1394.3	67.7	1900.6	68.2
1984	197.3	69.9	665.1	58.6	1258.5	60.9	2373.0	61.3
1985	167.7	68.8	454.0	72.8	1465.5	79.0	2433.1	71.6
1986	604.3	72.4	345.4	69.0	1299.7	72.9	2698.7	70.4
1987	351.1	65.3	246.4	60.8	1369.5	74.1	2359.9	69.6
1988	264.9	63.0	251.6	68.6	1358.2	68.6	2288.9	66.6

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

**EXHIBIT 2.2
SOURCES OF
FEDERAL CAPITAL ASSISTANCE
ALL SYSTEMS
(\$ Millions)**

SOURCES OF FEDERAL FUNDS

<u>YEAR</u>	<u>Section 3</u>	<u>Section 5, 9a, and/or 9</u>	<u>Other UMTA</u>	<u>Other DOT</u>	<u>Other Federal</u>	<u>Total Federal</u>
1979	912.0	42.3	107.1	1.3	5.3	1067.9
1980	748.9	221.5	7.6	2.5	10.1	990.5
1981	1122.6	230.4	130.8	44.9	2.0	1530.6
1982	1032.4	220.4	202.5	59.6	4.0	1518.8
1983	1254.1	245.2	376.2	5.6	19.5	1900.6
1984	1370.4	375.5	530.4	73.6	23.2	2373.0
1985	1220.0	506.3	401.0	271.9	34.0	2433.1
1986	1280.4	904.7	429.3	34.5	49.8	2698.7
1987	844.3	1054.5	406.9	23.7	30.5	2359.9
1988	831.7	1048.2	319.6	10.3	79.0	2288.9

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT 2.3

STATE CAPITAL ASSISTANCE								
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*								
YEAR	250 - 499		500 - 999		1000 & Over		All Systems	
	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance
1979	3.5	6.0	3.4	1.1	102.8	13.9	126.9	9.6
1980	6.0	7.0	6.9	2.7	82.0	11.2	113.3	9.0
1981	6.7	5.9	15.6	7.3	148.8	10.6	197.2	10.1
1982	4.9	5.2	85.2	17.8	118.4	10.3	240.2	12.1
1983	17.8	17.3	45.6	15.2	341.9	16.6	465.4	16.7
1984	44.6	15.8	170.3	15.0	305.8	14.8	615.5	15.9
1985	28.8	11.8	47.4	7.6	317.2	17.1	550.5	16.2
1986	151.1	18.1	55.1	11.0	255.0	14.3	621.0	16.2
1987	73.1	13.6	38.9	9.6	195.9	10.6	406.9	12.0
1988	55.1	13.1	22.0	6.0	243.5	12.3	446.8	13.0

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

2.3 LOCAL CAPITAL ASSISTANCE

Local capital assistance to transit agencies derives principally from general fund appropriations and broad-based local option taxes. Local capital assistance for all systems showed a fivefold increase from 1979 to 1988, increasing from \$127 million to \$698 million.

Capital assistance to transit provided by local governments follows the pattern of funding efforts by the states. As with the states, local funding has increased dramatically. The use of dedicated local taxes to provide capital assistance is also on the rise. For all systems, total local dedicated taxes to provide capital assistance increased from \$80.3 million in 1979 to \$196.6 million in 1988. Details on the amounts of dedicated taxes used, by type of tax, are shown below for 1979 and 1988.

Type of Local Dedicated Tax	Amounts Allocated to Transit Capital (\$ Millions)	
	1979	1988
Income Taxes	0.0	0.2
Sales Taxes	60.7	113.6
Property Taxes	12.4	60.0
Payroll Taxes	0.6	0.4
Utility Taxes	0.0	0.2
Gasoline Taxes	0.0	0.2
Other Taxes	<u>6.6</u>	<u>22.0</u>
Total	80.3	196.6

The tax amounts shown above do not include taxes levied by independent transit authorities. While the capital assistance provided from local dedicated taxes increased substantially from 1979 to 1988, the percentage of local capital assistance coming from dedicated sources decreased in relative terms. In 1979 the \$80.3 million from dedicated local taxes was 63 percent of the total local capital assistance. While the amount from dedicated local taxes increased to \$197 million by 1988, this represented only 28 percent of the total local capital assistance. Thus, while local sources have become a more significant funding source, assuming 20.3 percent of total capital assistance to transit in 1988, up from 9.6 percent in 1979, the use of dedicated taxes to provide local funding has diminished in relative importance.

As shown in Exhibit 2-4, a growing reliance on local capital assistance occurred among transit agencies of different sizes. Systems with from 250 to 499 vehicles had a dramatic increase of 866 percent, rising

from \$10.4 million in 1979 to \$100.5 million by 1988. For transit agencies with 500 to 999 vehicles, the amounts of local capital assistance almost doubled, increasing to \$93.5 million in 1988 when this funding source accounted for about 25 percent of total capital. The largest agencies in terms of number of vehicles had a fifteenfold increase in local capital assistance. Further, for these larger transit agencies local capital assistance as a percent of total capital increased from 3.4 percent in 1979 to 19.1 percent in 1988.

2.4 SOURCES AND USES OF FUNDS

The investment experience of transit agencies may be summarized for the period 1979 to 1987, as shown in Exhibit 2-5.

The Section 15 balance sheet data described in Section 3 indicates investments in Tangible Transit Operating Property (plant and equipment) of \$30.3 billion from 1979 to 1987. Exhibit 2-5 details the sources of these capital funds by amount and as a percentage of the total.

Federal capital assistance provided for 55 percent of transit capital needs over this period. A strong contribution came from non-public sources, principally in the form of up front payments to secure safe harbor leases.

The uses of funds disaggregated into categories of plant and equipment were developed from Section 15 data on inventories of fixed assets converted to dollar terms through application of unit-cost estimates. The reconciling entry for uses is the all other tangible property category, which would include equipment rehabilitation and replacements.

As the data in Exhibit 2-5 show, the 1979 to 1987 period may be characterized as one of system expansion. Investments were targeted in the project category, 52 percent of the total, which corresponds to sustained expansion of rail rapid and light rail networks.

2.5 FUTURE CAPITAL REQUIREMENTS

Estimates of future capital requirements arise from three sources:

- New start projects with full funding contracts between UMTA and local agencies

EXHIBIT 2.4

LOCAL CAPITAL ASSISTANCE								
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*								
YEAR	250 - 499		500 - 999		1000 & Over		All Systems	
	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance	\$ Millions	% of Total Capital Assistance
1979	10.4	17.6	55.6	16.4	25.2	3.4	126.9	9.6
1980	22.1	26.0	66.4	25.9	37.4	5.1	154.8	12.3
1981	28.4	24.8	61.7	28.8	96.9	6.9	224.5	11.5
1982	23.6	25.2	52.2	10.9	112.7	9.8	226.3	11.4
1983	24.6	23.9	31.2	10.4	323.3	15.7	420.8	15.1
1984	40.4	14.3	299.6	26.4	502.2	24.3	878.8	22.7
1985	47.3	19.4	121.6	19.5	72.3	3.9	414.6	12.2
1986	79.3	9.5	100.1	20.0	228.2	12.8	517.5	13.5
1987	113.5	21.1	120.0	29.6	282.8	15.3	623.9	18.4
1988	100.5	23.9	93.5	25.5	378.2	19.1	697.7	20.3

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT 2.5

SUMMARY: SOURCES AND USES OF FUNDS FOR TRANSIT CAPITAL

(1979-1987 expressed in year-of-expenditure \$, except where noted)

<u>SOURCES 1/</u>	<u>AMOUNT</u> <u>(\$ Billions)</u>	<u>% OF TOTAL</u>
FEDERAL ASSISTANCE	\$16.8	55.40%
STATE ASSISTANCE	3.3	10.90%
LOCAL ASSISTANCE	3.5	11.60%
NON-PUBLIC ASSISTANCE	6.7	22.10%
TOTAL: PER SECTION 15 BALANCE SHEET: ALL SYSTEMS	<u>\$30.3</u>	100.00%
<u>USES</u>		
BUSES 2/	\$ 5.3	17.50%
RAIL CARS 3/	4.3	14.20%
PROPERTY 4/	15.8 *	52.10%
FACILITIES 5/	3.5 **	11.60%
ALL OTHER (INCLUDING REHAB) 6/	1.4	4.60%
TOTAL	<u>\$30.3</u>	100.00%

Notes:

- 1/ Estimates of sources of capital funds developed from Section 15 reports.
- 2/ Estimates of bus purchases from Exhibit 3.4
- 3/ Estimates of rail car purchases from Railway Age, January, 1990.
- 4/ Estimates of property developed from Characteristics of Urban Transportation Systems, U.S. DOT/UMTA, October 1985.
- 5/ Estimates of facilities developed from Section 15 reports, and Characteristics of Urban Transportation Systems, U.S. DOT/UMTA, October 1985.
- 6/ Estimates of all other (including rehab) derived from Section 15 balance sheet data.

* Estimation in 1980 constant dollars

** Estimation in 1983 constant dollars

- New start projects in various stages of the implementation phase
- Rail modernization capital plans

For FY 1991 an overall budget level for Section 3 of \$985 million is being proposed. Of this amount, \$398 million would be allocated to new starts which are supported with full funding contracts. The recommended allocations reported in the Section 304 Report to Congress follow below:

<u>Project</u>	<u>\$ Allocation</u>
St. Louis (Airport LRT)	\$71.2M
Miami (DPM Extension)	22.6
Denver (I-25 Busway)	17.5
Los Angeles (MOS-2)	<u>286.7</u>
Total	\$398.0M

This \$390 million allocation is for one year (FY 1991) and does not reflect the non-federal investments in the projects.

The most ambitious estimate of future capital investments in transit relate to new start projects in various stages of the implementation process. These include 40 new start projects in the various phases with the total cost (federal and non-federal) shown below:

<u>Phases</u>	<u>Total Cost (\$ Millions)</u>
Under Construction	\$ 3,734
Final Design	2,411
Preliminary Engineering	4,528
Alternative Analysis	<u>8,693</u>
Total: Four Phases	\$19,366

Added to this \$19 billion are 28 other projects in the systems planning phase which do not carry any estimated costs since investment alternatives have not as yet been specified. The complete listing of the 40 new start projects under construction, in final design, in preliminary engineering, or undergoing alternatives analysis is provided in Exhibit 2-6.

Another indicator of estimated future investments in transit comes from rail modernization capital plans. Recent capital planning budget data has been compiled for five of the transit agencies classified as rail modernization properties.¹

The following summarizes the capital plans for the five properties:

<u>Transit Agency</u>	<u>Rail Mod Capital Plan</u>	<u>Length of Plan</u>
Port Authority of Allegheny County	\$ 548M	1990-93 (4 years)
Bay Area Rapid Transit Authority	328M	1990-93 (4 years)
Massachusetts Bay Transportation Authority	3,628M	1990-94 (5 years)
Chicago Regional Transportation Authority	2,063M	1990-94 (5 years)
New York Metropolitan Transportation Authority	3,274M	1990-91 (2 years)

These five agencies have rail related capital plans totaling \$9.8 billion. On an annualized basis these planned capital investments total almost \$3 billion when the different lengths of the plans are taken into consideration.

¹ "Review of Transit Agency Five-Year Plans," Public Financial Management, Inc., January 1, 1990.

EXHIBIT 2.6

NEW START PROJECTS
(in millions of dollars)

		TOTAL COST (FEDERAL & LOCAL)	TOTAL FEDERAL COMMITMENTS		STATE/ LOCAL SHARE
			UMTA SEC 3 * (Through 1991)	OTHER FEDERAL	
UNDER CONSTRUCTION	1 ATLANTA-EAST	\$192	\$135	\$0	\$57
	2 ATLANTA-NORTHEAST	126	81	17	28
	3 BALTIMORE-HOPKINS	326	0	276	50
	4 CHICAGO-SOUTHWEST	410	0	349	61
	5 HOUSTON-NORTH I-45	78	47	0	31
	6 HOUSTON-NORTHWEST	105	40	27	38
	7 HOUSTON-SOUTHWEST	102	62	0	40
	8 JACKSONVILLE-ASE(0.7)	36	20	7	9
	9 LOS ANGELES - MOS-1	1,350	605	91	654
	10 SAN DIEGO-EAST URBAN	105	20	43	42
	11 SANTA CLARA-GUADALUPE	510	206	52	252
	12 SEATTLE-BUS TUNNEL	394	197	0	197
		SUBTOTAL	\$3,734	\$1,413	\$862
FINAL DESIGN	1 DENVER-NORTH I-25	\$200	\$70	\$64	\$66
	2 JACKSONVILLE EXT (1.8)	133	0	0	33
	3 LOS ANGELES - MOS-2	1,446	614	0	779
	4 MIAMI-DPM EXTENSIONS	248	186	0	62
	5 ST. LOUIS-AIRPORT LRT	384	288	2	94
		SUBTOTAL	\$2,411	\$1,158	\$66
PRELIMINARY ENGINEERING	1 LOS ANGELES - MOS-3	\$1,087	\$0	\$0	
	2 PORTLAND-WESTSIDE	640	0	0	
	3 SAN FRANCISCO-COLMA	101	0	4	
	4 WASHINGTON-LAST 14 MILES	2,700	0	0	
		SUBTOTAL	\$4,528	\$0	\$4

(Continued)

EXHIBIT 2.6

NEW START PROJECTS (in millions of dollars)

		TOTAL COST (FEDERAL & LOCAL)	TOTAL FEDERAL COMMITMENTS		STATE/ LOCAL SHARE
			UMTA SEC 3 * (Through 1991)	OTHER FEDERAL	
ALTERNATIVES ANALYSIS	1	ATLANTA-NORTH	\$528	\$0	\$0
	2	AUSTIN-NORTH CENTRAL	300	0	0
	3	BALTIMORE-CENTRAL EXT.	60	0	0
	4	BUFFALO-AMHERST	400	0	0
	5	CLEVELAND-DUAL HUB	550	0	0
	6	DALLAS-SOUTH OAK CLIFF	250	0	0
	7	HONOLULU	1,300	0	0
	8	HOUSTON-CONNECTOR	1,000	0	0
	9	MINNEAPOLIS-CENTRAL(HEN)	100	0	0
	10	MINNEAPOLIS-CENTRAL(RAM)	250	0	0
	11	NEW JERSEY-WATERFRONT	950	0	0
	12	NEW YORK-QUEENS	450	0	0
	13	ORANGE CO.(CA)-CENTRAL	120	0	0
	14	PITTSBURGH-SPINE LINE	500	0	0
	15	SALT LAKE CITY-SOUTH I-15	200	0	0
	16	SAN DIEGO-MID COAST	500	0	0
	17	SAN FRANCISCO-AIRPORT	560	0	0
	18	SAN JOSE-TASMAN	350	0	0
	19	CHICAGO-CENTRAL CONNECTOR	325	0	0
		SUBTOTAL	\$8,693	\$0	\$0
		TOTAL: FOUR PHASES	\$19,366	\$2,571	\$932
OTHER EARMARKED PROJECTS	1	NEWARK-AIRPORT	\$400	\$0	\$0
	2	PORTLAND-BREAKEVEN	19	0	0
		SUBTOTAL	\$419	\$0	\$0

PLUS 28 OTHER PROJECTS IN SYSTEMS PLANNING

* Section 3 Funding Commitments Represented by Full Funding Contracts

Total Cost is the total cost to construct the project.

Other Federal refers to the non-Section 3 Federal funds made available through 1991 including Interstate Transfer and Section 9.

State/Local Share is the total state and local funding proposed to complete projects which are at least at the final design stage. Up to this stage, the state/local share may be subject to change.

3. TRANSIT CAPITAL COST EXPERIENCES

While data on capital grants and total transit capital assets are available from the Section 15 data, a source showing transit dollar investments in equipment, property, and facilities was not located. However, it is possible to describe the investment in these types of capital items in physical terms. Estimates of the dollar value of investments for each type of capital asset were developed using a variety of unit cost measures.

3.1 ASSET BASE OF THE TRANSIT INDUSTRY

The asset base of the transit industry may be examined through the balance sheet compiled from Section 15 reports. Exhibit 3-1 contains data on the asset base that shows the magnitude of the transit industry in dollar terms.

In 1987 the transit industry had \$2.6 billion in cash for operations and another \$2.36 billion and \$4.4 billion in investments and special funds, respectively. Tangible transit operating property totaled \$27.9 billion after depreciation adjustments, with an additional \$4.2 billion recorded as work-in-progress. The total asset base in 1987 was reported as \$45.5 billion.

The growth of the asset base may be highlighted by contrasting 1979 to 1987. The analysis in Exhibit 3-1 provides an asset base comparison of 1979 to 1987 in year of expenditure dollars and restated in 1979 constant dollars.

Viewing the asset base growth in year of expenditure dollars, total assets have more than tripled since 1979, with an increase of 350.8 percent by 1987. Huge increases have been posted in investments and special funds which have increased fourteenfold and twenty-onefold, respectively. Tangible transit operating property is the major asset in terms of dollar values, climbing from \$6.2 billion in 1979 to \$27.9 billion in 1987 after accounting from depreciation adjustments. This represents a 352.1 percent increase. On an annualized basis, this represents a sustained growth of the transit industry's physical plant of 44 percent per year from 1979 to 1987.

The growth trend in the total transit industry asset base shows a 188 percent increase from 1979 to 1987

when asset values are restated in constant 1979 dollars. As shown in Exhibit 3-1, total assets have almost tripled from 1979 to 1987.

While the asset base of the transit industry has witnessed impressive gains, the ratio of farebox revenue to assets, with both measures expressed in year-of-expenditure dollars, has fallen from .197 in 1979 to .109 in 1987. If farebox revenues are regarded as sales the decrease in the asset turnover ratio is an indication that assets were used less efficiently in 1987 than 1979.

The asset base also may be linked to performance measures to form ratios which depict the utilization of assets. While total passenger miles increased by 870 million from 39,646 million miles in 1979 to 40,516 million miles in 1987, the passenger miles to asset ratio, with assets expressed in constant 1979 dollars, fell from 3.93 to 1.39. A similar result is obtained when vehicle miles operated are related to transit assets. While total vehicle miles operated increased 2,236.3 million in 1979 to 2,961.8 million in 1987, the ratio of total vehicle miles to transit assets expressed in constant 1979 dollars declined from 0.22 in 1979 to 0.10 by 1987.

The investment pattern in the transit industry asset base was largely driven by federal grant approvals for mass transportation, which totaled \$24.5 billion for the period 1979 through 1987.

The magnitude of and growth in the asset base of the transit industry is concentrated in the largest agencies, as measured by number of vehicles. In 1987, transit agencies with over 250 vehicles accounted for about \$34 billion or 75 percent of the total asset base of the industry.

As shown in Exhibit 3-1, Tangible Transit Operating Property and Work in Progress account for about 70 percent of total assets. These categories of assets include rolling stock, maintenance facilities, buildings, and equipment, and the labor, material, and overhead amounts applied to projects not yet completed or placed in service. These assets represent the capital investments in transit.

Two categories of assets have shown enormous growth from 1979 to 1987, investments and special

EXHIBIT 3.1

BALANCE SHEET SUMMARY SCHEDULE ALL SYSTEMS (In \$ Millions)

ASSETS	YEAR OF EXPENDITURE DOLLARS			CONSTANT 1979 DOLLARS		
	1979	1987	% INCREASE 1979 - 1987	1979	1987	% INCREASE 1979 - 1987
Cash and Cash Items	\$593.5	\$2,612.7	340.2%	\$593.5	\$1,669.5	181.3%
Receivables	928.7	2007.6	116.2%	928.7	1282.9	38.1%
Materials and Supplies Inventory	171.7	781.3	355.0%	171.7	499.3	190.8%
Other Current Assets	31.1	85.6	175.2%	31.1	54.7	75.9%
Work in Progress	1429.8	4179.3	192.3%	1429.8	2670.6	86.8%
Tangible Transit Operating Property	7631.2	35227.7	361.6%	7631.2	22510.5	195.0%
Less Accumulated Depreciation	-1448.7	-7279.2	402.5%	-1448.7	-4651.4	221.1%
Total	6182.5	27948.5	352.1%	6182.5	17859.1	188.9%
Tangible Property Other Than for Transit Operations	45.6	184.0	303.5%	45.6	117.6	157.8%
Less Accumulated Depreciation	-7.5	-42.1	461.3%	-7.5	-26.9	258.7%
Total	38.1	141.9	272.4%	38.1	90.7	138.0%
Intangible Assets	247.3	684.9	177.0%	247.3	437.7	77.0%
Less Accumulated Amortization	-23.5	-126.3	437.4%	-23.5	-80.7	243.4%
Total	223.8	558.6	149.6%	223.8	356.9	59.5%
Investments	167.0	2321.2	1289.9%	167.0	1483.2	788.2%
Special Funds	208.0	4433.8	2031.6%	208.0	2833.2	1262.1%
Other Assets	112.8	398.1	252.9%	112.8	254.4	125.5%
TOTAL ASSETS	\$10,087.0	\$45,468.6	350.8%	\$10,087.0	\$29,054.4	188.0%

funds. Investments increased fourteenfold from \$167 million in 1979 to \$2.3 billion by 1987. The increase in investments is a direct result of the local funding mechanisms used for transit. The increased use of broad based local option taxes has provided a continuous inflow of cash to selected transit agencies. This cash may be needed in the near future to finance the non-federal portion of capital programs. In the interim, the cash is held by the transit agencies in interest bearing securities and accounts.

Special funds showed the largest percentage increase, with a twenty-onefold gain, from \$208 million in 1979 to \$4.4 billion by 1987. Special funds consists of cash and near cash items, the use of which is restricted to satisfying a specific class of transit system long-term obligations. Examples of these restricted funds include: sinking funds to meet obligations maturing in the future, insurance reserve funds, and pension funds.

In contrast, the quick assets represented by cash and receivables to meet current liabilities increased only threefold between 1979 and 1987. The cash and near cash position was weak in 1979 so the relatively small percentage increase to 1987 provides cause for further concern regarding the transit industry's financial condition. This inability to build cash balances hinders agencies' abilities to meet liabilities while maintaining levels of service.

Exhibits C-1, C-2, and C-3 which are contained in Appendix C show the growth trends in the asset bases for transit agencies with more than 1,000 vehicles, 500 to 999 vehicles, and 250 to 499 vehicles, respectively. Most of the dollar investments in assets are concentrated in the largest transit agencies, with the agencies having more than 1,000 vehicles showing an asset base of \$21.5 billion in 1987 as measured in year of expenditure dollars.

Transit agencies with 500 to 999 vehicles set the pace in terms of growth posting a 385 percent increase in the asset base between 1979 and 1987, as measured in year of expenditure dollars. This growth was explosive in the tangible transit operating property (physical plant) asset category which posted a fifteenfold increase, which when annualized equates to more than 160 percent per year.

Transit agencies with 250 to 499 vehicles posted the smallest dollar and percentage gains among these groups, as might be expected. Nevertheless, the

increase in investments by this group increased from next to nothing to almost \$85 million between 1979 and 1987. Total assets showed a 184 percent increase for the same period.

The transit industry has posted significant gains to the asset base from 1979 to 1987, however, ratios of working capital accounts indicate that the industry is operating on the edge. The most widely used test of financial health represented by liquidity is the current ratio. This ratio is calculated by dividing current assets (i.e., cash and cash items, receivables, materials and supplies inventory, other current assets) by current liabilities (i.e., trade payables, accrued payroll liabilities, accrued tax liabilities, short-term debt, other current liabilities). For the transit industry this ratio has slipped from 1.44 in 1979 to 1.09 in 1987. As a rule of thumb, the current ratio should be at least two to one, that is the current assets should be at least twice the current liabilities. A ratio of 1.09 in 1987 implies that, in order to meet current liabilities from assets, the transit industry would have to sell off the materials and supply inventory.

This is an indication of an industry in poor financial condition. It implies that immediate and continuous injections of cash are necessary to sustain operations.

The quick ratio or acid test is a direct measure of the industry's ability to pay current liabilities. This ratio is calculated by dividing cash and near cash assets (i.e., quick assets represented by cash and receivables) by current liabilities. For the transit industry this ratio has declined from 1.27 in 1979 to 0.92 in 1987. The interpretation of this result mirrors the concern registered from the value of the current ratio. With a quick ratio value below 1.0, (0.92 in 1987) the transit industry cannot be regarded as a self-sustaining industry. Cash inflows from external sources are necessary not only to sustain operations but to satisfy claims stemming from current liabilities.

The Section 15 balance sheet data relating to plant and equipment is reported as Tangible Transit Operating Property, which does not distinguish among equipment, property, and facilities. These categories of fixed assets are discussed below in both physical terms and estimated dollar values.

3.2 EQUIPMENT

The data and estimates on rail cars indicate delivery of 4,979 cars from 1982 to 1987 with a investment

value of \$4.3 billion, expressed in year-of-expenditure dollars. This estimate includes rail car deliveries to Amtrak and Canadian systems, principally Toronto (TTC and GO Transit) and Montreal.

Preliminary data indicate investment in rail cars has abated in 1988 and 1989, falling from about \$1 billion in both 1986 and 1987 to the \$500-\$600 million range. However, a backlog of orders exists, with an estimated aggregate value of some \$600 million.¹

Investments in rail cars have been brisk as evidenced by the data shown for selected transit agencies in Exhibit 3-2. These data indicate that heavy rail cars require an investment of about \$1M per unit with light rail cars coming in at \$600K to \$750K.

A brisk rebuild market sheds further light on transit investments in equipment. The New York City Transit Authority late in 1989 awarded a \$100 million contract to Morrison-Knudsen for the remanufacture of 140 subway cars and the procurement of components for rebuilding another 140 cars. This is part of a massive, multi-year rebuilding program involving 2,000 New York cars and budgeted at nearly \$2 billion. Now in its final stages, the program calls for a total of 652 rebuilds in 1990 and 534 in 1991. NJ Transit will spend \$178.5 million to overhaul 230 Arrow III commuter cars and convert them to a.c. propulsion; an initial contract has been awarded to ABB Traction. Chicago Transit Authority has contracted with New York Rail Car Corporation to rebuild 132 cars at a cost of \$32 million.¹

Data on new transit passenger vehicles delivered between 1979 and 1988 is presented in Exhibit 3-3. Deliveries of heavy rail cars have increased significantly since 1984. During the period from 1979 to 1988, 3,599 heavy rail cars were delivered; of this total, 2,885 (80 percent) were acquired in the latest five-year period.

In terms of number of units delivered, motor bus deliveries dominate the statistics. Over the ten-year period from 1979 to 1988, yearly bus acquisitions have ranged from 2,962 in 1982 to 4,572 in 1980, with a ten-year total of 37,088.

Estimates of the value of bus purchases were developed from 1983 base year source data of \$147,000 for a 40-foot bus, \$140,000 for a 35-foot bus, and \$25,300 for a light bus. The unit cost figures were converted to 1979 through 1988 unit

costs through application of the Producer Price Index that covers motor vehicles.

Exhibit 3-4 shows the number of buses delivered and the estimated equipment value for the three categories of buses cited above for the period 1979 to 1988. From 1979 to 1988, almost 30,000 40-foot buses were delivered, representing an estimated investment value of \$4.4 billion in year-of-expenditure dollars. During the same period, investment in about 2,500 35-foot buses was some \$360 million, with investment in light buses at \$108 million.

The impressive growth of the transit industry's asset base will require recapitalization to maintain existing levels of service. Data for 1988 indicate a transit fleet with the following characteristics:

<u>Vehicle Type</u>	<u>Vehicles In Active Service</u>	<u>Service Life (Years)</u>
Motor Bus	60,383	12
Heavy Rail	10,539	30
Light Rail	831	30
Trolley Bus	710	20
Commuter Rail	4,639	30

Investment levels to replace this transit fleet are estimated based on a policy of uniform yearly replacements. For example, 1/12 of the bus fleet is assumed to be replaced yearly, 1/20 of the trolley bus fleet and 1/30 of all rail cars. The estimates of yearly replacement requirements and costs follows:

<u>Vehicle Type</u>	<u>Yearly Replacements¹</u>	<u>Cost Per Unit²</u>	<u>Yearly Replacement Cost(000)</u>
Motor Bus	5,032	154	777,202
Heavy Rail	351	1,000,000	351,000
Light Rail	28	1,000,000	28,000
Trolley Bus	36	250,000	9,000
Commuter Rail	155	750,000	116,250
			<u>\$1,281,452</u>

¹ "Passenger Railcars: Good Times Get Better," *Railway Age*, January 1990.

EXHIBIT 3.2

RAIL CAR BUYS

<u>AGENCY</u>	<u>DATE OF BUY</u>	<u>EQUIPMENT</u>	<u>TOTAL COST</u>	<u>NUMBER OF UNITS</u>	<u>COST PER UNIT</u>
CTA	Dec-87	R.T. Cars	\$29,337,470	48	\$611,197
MTA	Dec-81	Rail Cars	\$11,929,300	10	\$1,192,930
MTA	Jan-84	Subway Cars	\$9,679,450	11	\$879,950
MTA	Dec-84	Rail Cars	\$128,898,652	130	\$991,528
MTA	Dec-84	Subway Cars	\$197,186,852	220	\$896,304
MTA	Dec-85	Rail Cars	\$88,426,974	84	\$1,052,702
MTA	Dec-85	Subway Cars	\$84,098,508	94	\$894,665
MTA	Dec-85	Rail Cars	\$20,926,826	22	\$951,219
MTA	Dec-86	Subway Cars	\$29,683,449	36	\$824,540
MTA	Dec-86	Subway Cars	\$29,202,127	26	\$1,123,159
MTA	Dec-86	Subway Cars	\$20,718,697	23	\$900,813
MTA	Dec-86	Subway Cars	\$337,741,664	380	\$888,794
MTA	Dec-86	Subway Cars	\$127,184,337	113	\$1,125,525
MTA	Dec-86	Subway Cars	\$26,860,771	30	\$895,359
MTA	Dec-86	Rail Cars	\$105,544,464	102	\$1,034,750
MTA	Dec-87	Subway Cars	\$125,098,965	142	\$880,979
MTA	Dec-87	Rail Cars	\$10,911,092	13	\$839,315
MTA	Dec-87	Subway Cars	\$2,675,805	3	\$891,935
MTA	Dec-87	Rail Cars	\$18,138,834	20	\$906,942
MTA	Dec-87	Subway Cars	\$10,434,747	9	\$1,159,416
MTA	Dec-87	Subway Cars	\$96,127,938	85	\$1,130,917
MTA	Dec-87	Subway Cars	\$36,019,787	31	\$1,161,929
MTA	Dec-87	Subway Cars	\$52,229,250	59	\$885,242
MTA	Dec-87	Subway Cars	\$68,212,009	77	\$885,870
MTA	Dec-87	Subway Cars	\$75,257,727	65	\$1,157,811
MTA	Dec-87	Subway Cars	\$1,137,000	1	\$1,137,000
MTA	Dec-87	Rail Cars	\$84,691,068	77	\$1,099,884
MTA	Dec-87	Rail Cars	\$17,539,489	21	\$835,214
MTA	Dec-87	Subway Cars	\$66,152,094	75	\$882,028
MUNI	Dec-83	L.R. Cars	\$4,597,845	6	\$766,308
MUNI	Dec-84	L.R. Cars	\$6,818,900	10	\$681,890
PATH	Dec-86	Rail Cars	\$25,600,000	25	\$1,024,000
PATH	Jun-87	Rail Cars	\$5,100,000	5	\$1,020,000
PATH	Sep-87	Rail Cars	\$47,300,000	44	\$1,075,000
PATH	Dec-87	Rail Cars	\$21,500,000	21	\$1,023,810
SEPTA	Dec-81	L.R. Cars	\$36,836,420	65	\$566,714
SEPTA	Oct-84	Subway Cars	\$82,883,625	125	\$663,069

Source: Economic Analysis of Safe Harbor Leasing by Transit Agencies, KPMG Peat Marwick, January 1989.

EXHIBIT 3.3

NEW TRANSIT PASSENGER VEHICLES DELIVERED									
CALENDAR YEAR	RAILWAY CARS (c)			TROLLEY BUSES	MOTOR BUSES (a)				TOTAL PASSENGER VEHICLES (b)
	LIGHT RAIL	HEAVY RAIL	COMMUTER RAIL		20 SEATS OR FEWER	30-39 SEATS	40 SEATS OR MORE	TOTAL BUSES	
1979	70	94	-	141	408	130	2,902	3,440	3,745
1980	32	130	-	98	287	143	4,142	4,572	4,832
1981	188	276	-	0	153	171	3,735	4,059	4,523
1982	10	126	-	0	67	138	2,757	2,962	3,098
1983	30	88	-	0	151	74	3,856	4,081	4,199
1984	59	521	128	0	393	509	2,992	3,894	4,602
1985	63	441	179	0	353	220	2,794	3,367	4,050
1986	149	854	140	0	739	240	2,400	3,379	4,522
1987	51	758	198	47	1,115	438	2,763	4,316	5,370
1988	24	311	74	0	474	415	2,129	3,018	3,427

(a) Buses or bus-type only, excludes vans and passenger automobiles. Excludes most rural and smaller systems prior to 1984. Series not c

(b) Excludes vans, ferry boats, and other modes not listed.

(c) Source for railway modes after 1983; Railway Age, January issue.

P - preliminary

Source: 1989 Transit Fact Book, American Public Transit Association, August 1989, Table 34.

EXHIBIT 3.4

ESTIMATES OF INVESTMENT IN BUSES BASED ON UNIT COSTS

YEAR (*)	40 FOOT BUS			35 FOOT BUS			SMALL BUS		
	UNIT COST INFLATOR	NUMBER DELIVERED	EQUIPMENT VALUE	UNIT COST INFLATOR	NUMBER DELIVERED	EQUIPMENT VALUE	UNIT COST INFLATOR	NUMBER DELIVERED	EQUIPMENT VALUE
1979	\$114,844	2,902	\$333,276,563	\$109,375	130	\$14,218,750	\$19,766	408	\$8,064,375
1980	\$125,036	4,142	\$517,899,662	\$119,082	143	\$17,028,730	\$21,520	287	\$6,176,190
1981	\$136,951	3,735	\$511,512,627	\$130,430	171	\$22,303,477	\$23,571	153	\$3,606,288
1982	\$143,555	2,757	\$395,780,273	\$136,719	138	\$18,867,188	\$24,707	67	\$1,655,371
1983	\$147,000	3,856	\$566,832,000	\$140,000	74	\$10,360,000	\$25,300	151	\$3,820,300
1984	\$150,302	2,992	\$449,702,859	\$143,145	509	\$72,860,566	\$25,868	393	\$10,166,227
1985	\$154,752	2,794	\$432,376,957	\$147,383	220	\$32,424,219	\$26,634	353	\$9,401,865
1986	\$159,920	2,400	\$383,807,813	\$152,305	240	\$36,553,125	\$27,524	739	\$20,339,965
1987	\$163,365	2,763	\$451,378,143	\$155,586	438	\$68,146,641	\$28,117	1,115	\$31,350,011
1988	\$170,553	2,129	\$363,107,986	\$162,432	415	\$67,409,163	\$29,354	474	\$13,913,669

NOTE: The base for unit cost estimates is 1983 from Characteristics of Urban Transportation Systems, U.S. DOT / UMTA , October 1985.

Notes:

- 1 Yearly replacements are based on the service life for each vehicle type, e.g., motor bus with a 12-year service life is assumed to require that 1/12 of the vehicles in active service be replaced yearly.
- 2 Motor bus cost per unit is based on a composite vehicle type factoring in the deliveries from 1979 to 1988, with dollar value based on 1988 estimated cost. Trolley bus cost per unit is based on an articulated vehicle. Commuter rail cost per unit is based on a non-powered coach car.

Based on the above estimates of yearly replacement requirements and unit costs, it is estimated that approximately \$1.3 billion will be needed yearly to maintain the existing transit fleet. This is almost exactly the amount approved by the UTMA in 1988 (\$1,380.6 million) under the Section 9A, Section 9, and Section 18 programs of the Urban Mass Transportation Act of 1964, as amended.

3.3 PROPERTY

One of transit's major investments has been in the property categories of track and stations for fixed guideway, rail rapid, and streetcar operations. Miles of tracks for all types for rail rapid have increased 30 percent from 1979 to 1988. As shown in Exhibit 3-5, a net of 407 miles of track has been added by transit systems over the nine-year period. During the same period, rail rapid systems added a net of 721 stations. Streetcar (or light rail) trackage increased a net of 298 miles or 103 percent from 1979 to 1988.

Conclusions regarding major investments in commuter rail are not warranted because many commuter rail properties did not report data before 1984.

Investment in property can be estimated for rail rapid and light rail systems. The unit cost parameter is miles of track (for a two-track configuration), which is differentiated to account for the enormous cost differences between at-grade and underground (subway) installations. The estimating parameters, expressed in 1980 dollars, are shown below.

Estimated Rail Rapid and Light Rail Property Investment

		<u>Cost/Mile</u> (1980 \$, in millions)
<u>Rail Rapid</u>	At Grade	\$16.02
	Underground	150.02
<u>Light Rail</u>	At Grade	5.70
	Underground	75.70

Source: *Characteristics of Urban Transportation Systems*, U.S. DOT/UMTA, October 1985, Tables B-15, B-17.

Investment in new rail rapid systems totaled about \$17.4 billion between 1979 and 1988. This estimate is expressed in constant 1980 dollars and includes investments in land, guideway, station, power, track, signal, yards and shops, and project design and management. It is impossible to place an investment value on rail rapid installations as of 1988 since this would require using unit cost estimates from one point, for investments that took place 60 years ago and more. However, if the estimating procedure is viewed as one rough measure of replacement cost, rail rapid systems represent an infrastructure investment of about \$118 billion.

The investment estimates for light rail show an investment of about \$3.3 billion from 1979 to 1988. The aggregate investment as of 1988, which corresponds to a rough estimate of replacement value, is approximately \$6.1 billion. As with rail rapid, these estimates are expressed in constant 1980 dollars and include investments in land, guideway, stations, power, track, signal, yards and shops, and project design and management.

3.4 FACILITIES

Maintenance facilities for buses are the major facilities capital item required by transit agencies. The number of light maintenance facilities for all systems increased from 407 in 1979 to 525 in 1988. The increase centered on facilities serving transit agencies with less than 200 vehicles, which rose from 342 in 1979 to 438 in 1988. The growth in investment in maintenance facilities has occurred in the category of transit agencies operating with between 250 and 499 vehicles. These agencies

EXHIBIT 3.5

TRACKS AND STATIONS

TRANSIT WAY MILEAGE: NATIONAL SUMMARY

	Miles of Track			Number of Stations		
	Rail Rapid	Streetcar	Commuter	Rail Rapid	Streetcar	Commuter
1979						
At Grade Exclusive Row	247.3	37.1				
At Grade with Cross Traffic	11.4	30.3				
At Grade Mixed and Cross Traffic	N/A	203				
Elevated on Structure	361.5	1.1				
Elevated on Fill	55	0				
Open Cut	61.3	0				
Subway	592.9	16.4				
Total	1329.5	287.9	4886.3*	217	0	1127*
1988						
At Grade Exclusive Row	509.6	151				
At Grade with Cross Traffic	11.5	158.3				
At Grade Mixed and Cross Traffic	N/A	212.3				
Elevated on Structure	439.4	7.5				
Elevated on Fill	64.0	1.7				
Open Cut	38.1	15.6				
Subway	674.2	39.6				
Total	1736.8	586.0	5895.4	938	280	1008

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports.

* For 1979-1984 Commuter rail systems did not meet full reporting requirement of Section 15.

increased maintenance facilities from 27 in 1979 to 74 by 1988.

The number of maintenance facilities for the rail rapid mode increased by 88 percent from 1979 to 1988, from 26 maintenance facilities in 1979 to 49 by 1988. Exhibit 3-6 shows the yearly trend in maintenance facilities for motor bus and rail systems from 1979 to 1988. Exhibits C-4 and C-5 in Appendix C provide details on maintenance facilities by size of transit system, characterized by number of vehicles operated in maximum service.

Light maintenance facilities are used for inspection and servicing revenue vehicles and for performing light maintenance on those vehicles. Light maintenance does not include unit rebuild, engine overhaul, significant body repairs, and other major repairs.

Generally, systems operating 500 or more buses will have at least one separate heavy maintenance facility for buses. For rail rapid systems, there are approximately six heavy maintenance facilities operated (New York 2; Philadelphia 1; Chicago 1; Washington, D.C., 1; San Francisco 1). For commuter rail systems, there are approximately 7 heavy maintenance facilities operated (LIRR, SEPTA, NJ Transit, Metro North, Chicago North Western, Illinois Central, and Milwaukee Road).

Estimates of the value of maintenance facility construction may be developed based on the number of vehicle spots or bays.² For the period from 1979 to 1988, the transit industry had a net increase of about 10,000 vehicle spots in bus maintenance facilities. At \$70,000 per spot, this approximates a net investment of \$700 million. The \$70,000 per spot construction cost is based on the experience of New Jersey Transit.²

During the same time period, the transit industry added an estimated 4,300 vehicle spots in rail rapid maintenance facilities. The investment value of these rail rapid maintenance facilities is in the range of \$1.5 to \$4 billion depending on the mix of maintenance facilities among commuter rail, rail rapid (heavy rail), and light rail.²

3.5 INFLATIONARY IMPACT

The impact of inflation on transit capital investments was highest in the period 1979 to 1982. From 1982 through 1987, inflation has slowed significantly. Inflation can wreak havoc on capital projects, especially those that have a multi-year planning and implementation schedule.

Unanticipated rates of inflation cause financial projections to go amiss and make it necessary to revise funding plans. This all occurs in an environment characterized by uncertainty which erodes confidence in the capital planning process.

To capture the impact of inflation on transit capital investments requires trend analysis for the Producer Price Indexes for Transportation Equipment-Motor Vehicles, Transportation Equipment-Railroad Equipment, and Capital Equipment. These categories of indexes correspond to investments in buses, railcars and rail equipment, and transit facilities.

The trends in these three specialized Producer Price Indexes show similar results. Between 1979 and 1987, these indices of price inflation increased 42 percent, 31 percent, and 44 percent for Motor Vehicles, Railroad Equipment, and Capital Equipment, respectively. The Producer Price Index for all commodities registered a 31 percent jump during the same period. Hence, it would appear that the inflation in transit equipment has generally been even more rapid than the inflation in the Producer Price Index.

These rates of price increases have implications for transit finances. Capital unit cost increases require increased funding capacity. This requires transit systems to maintain a stable ratio of operating revenues to operating costs while at the same time securing non-operating revenue sources with elastic funding capability. The requirement for an elastic funding capability is critical, since non-operating revenues must be applied to operating deficits and to finance capital investments which are continuously increasing on a unit cost basis as evidenced by these multiple measures of producer prices.

² Per vehicle spot construction cost estimates derived from *Characteristics of Urban Mass Transportation Systems*, U.S. DOT/UMTA, October 1985, Table 3-15.

EXHIBIT 3.6
LIGHT MAINTENANCE FACILITIES *
MOTOR BUS AND RAIL RAPID SYSTEMS

YEAR	MOTOR BUS			RAIL RAPID		
	All Systems			All Systems		
	Vehicles Serviced			Vehicles Serviced		
	<200	200-300	>300	<200	200-300	>300
1979	342	48	17	23	1	2
1980	374	61	20	23	1	17
1981	389	63	17	25	1	17
1982	390	66	17	26	1	16
1983	404	69	14	27	1	14
1984	393	78	14	30	3	11
1985	419	81	11	29	3	12
1986	440	77	13	27	1	14
1987	457	69	10	28	5	12
1988	438	81	6	31	5	13

* Does not include heavy maintenance facilities

Source: National Urban Mass Transportation Statistics,
1979-1988 Section 15 Annual Reports

3.6 HIDDEN VALUES IN THE BALANCE SHEET

The transit industry has hidden values in its balance sheet in the form of property assets and access and proximity. These hidden values may be uncovered to generate revenue and/or reduce costs. Examples include the following:

- Joint development activities
- Adaptive use of commuter rail stations
- Generating revenue from offshore leasing of rail vehicles
- Redeveloping existing assets
- Generating revenue through the use of density bonuses
- Sale leaseback of offices and facilities

The use of land and air-rights for joint development activities have been a prominent feature in WMATA's development of its fixed guideway system. Joint development at station sites continues to generate revenues for WMATA in the form of leasehold payments and profit participation from the commercial aspects of the joint development projects.

SEPTA has successfully implemented a program which encourages the private sector to rehabilitate aging commuter rail stations in exchange for attractive leaseholds for space within the stations. While little revenue has been generated to date from these leaseholds, costs have been shifted to the private sector to both rehabilitate the transit asset and maintain the assets. The leases are structured so that revenue will accrue to the transit agency after a negotiated rent-free term.

Offshore or cross-border leasing of rail vehicles allows a transit agency to transfer tax benefits to foreign nationals. By unlocking these tax benefits the transit agency can acquire rail cars at savings ranging from 5 percent to 8 percent. This concept is similar to the safe harbor leasing which transit engaged in the U.S. corporations to transfer depreciation deductions for tax purposes. To date, LACTC and MTA have successfully negotiated cross-border leases.

Amtrak has shown the lead in redeveloping existing assets. Washington, D.C.'s Union Station, recently a condemned building, has been renovated by La Salle

Partners into a festive retail marketplace that plays a dual role as a key transportation station in the heavily traveled Northeast corridor.

The New York MTA has generated substantial revenues with its density bonus program. Developers of commercial space are granted increased floor-to-area ratios (F.A.R.) which allow denser, more profitable real estate development in exchange for proffers which are used as a source of funds for station improvements in proximity to the commercial space.

AC Transit executed a sale and leaseback transaction of its administration building and facilities. The transaction was possible and financially feasible under a tax code which allowed the transfer of unused depreciation deductions from the public to the private sector. Existing federal tax code requires such transactions be structured as a true lease.

A final hidden value in the balance sheet is a transit agency's land assets. Accounting convention stipulates that land be carried on the balance sheet at historical cost. In many instances this land is located in prime urban location and could be sold (or let) for redevelopment purposes at prices far above historical cost.

4. HISTORICAL ANALYSIS OF TRANSIT OPERATIONS

The historical analysis of transit operations presented below provides a trend analysis of the following financial measures for the transit industry:

- Operating and maintenance cost trends
 - Fixed and variable cost trends
 - Inflationary impact
- Revenue trends
 - Farebox revenue
 - Non-farebox operating revenue
 - Non-operating revenue
 - Inflationary impact
- Operating ratios
- Operating and financial leverage

4.1 OPERATING AND MAINTENANCE COST TRENDS

The following materials describe the cost trends experienced by the transit industry as reported under Section 15 of the Urban Mass Transportation Act of 1964, as amended, for the years 1979 to 1988 and contained in National Urban Mass Transportation Statistics, 1979-88, Section 15 Annual Reports. These cost trends are analyzed separately for the motorbus and rail rapid modes to show inflationary impacts.

Fixed and Variable Cost Trends

Transit agencies have experienced substantial increases in both fixed and variable costs. Variable costs are those costs associated with the quantity of service provided, such as operator wages, fuel, and maintenance. Fixed costs include administration expense items, which do not vary with the amount of service provided.

For this analysis, data reported under the Section 15 functions Vehicle Operations, Vehicle Maintenance, and Non-Vehicle Maintenance were considered *variable*; data reported under the Section 15 General Administration function were considered *fixed*. Service measures must be considered to place the cost

experience of transit agencies in context. Between 1979 and 1988, total vehicle miles operated by all Section 15 reporters in the United States increased by 784.1 million from 2,236.3 million miles in 1979 to 3,020.4 million miles by 1988. Total passenger miles showed an increase of 1,716 million miles from 39,646 million passenger miles in 1979 to 41,362 million passenger miles by 1988.

Exhibit 4-1 summarizes the cost data expressed in year of expenditure dollars for all modes by size of transit system. These cost data include the following modes:

- Motor bus
- Rail Rapid
- Street car
- Trolley bus
- Ferry
- Demand response
- Other

For the public transit industry as a whole--all systems, all modes--annual fixed costs more than doubled between 1979 and 1988, increasing from \$902 million to over \$2.5 billion. Variable costs, for all systems, all modes, almost tripled, rising from about \$3.5 billion in 1979 to \$10.4 billion in 1988.

Motor bus and rail rapid are by far the dominant modes in terms of extent of operations and therefore the magnitudes of fixed and variable costs. Exhibits C-6 through C-13, which contain cost data for motor bus and rail system transit operations, are in Appendix C. The exhibits show fixed and variable cost data for 1979 to 1988 by size of transit system, characterized by number of vehicles operated in maximum service. Cost trends for all motor bus systems expressed in year of expenditure dollars show an increase of 159 percent and 136 percent from 1979 to 1988 in fixed and variable costs, respectively. Details by transit system size find the largest agencies, those having 1,000 or more vehicles, with the smallest percentage cost increases.

EXHIBIT 4.1

FIXED AND VARIABLE OPERATING COST*

ALL MODES

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	14.7	40.9	19.6	82.6	27.1	119.6	62.6	308.1	74.8	304.7	61.8	295.6	641.5	2314.5	902.2	3465.9
1980	18.5	46.3	19.3	88.1	39.6	165.6	52.6	258.4	111.0	446.9	79.6	385.7	821.3	2928.9	1141.8	4320.0
1981	18.7	53.6	23.1	104.8	45.7	182.7	73.5	351.4	104.2	424.6	111.2	490.1	997.1	3454.2	1373.5	5061.4
1982	52.6	52.1	28.5	117.8	59.5	225.1	68.5	359.9	127.2	512.2	167.6	743.2	963.0	3644.8	1467.0	5655.0
1983	20.4	155.7	25.9	130.9	56.3	256.7	83.1	481.9	125.6	608.8	147.5	676.8	1153.4	4445.5	1612.2	6756.3
1984	32.9	243.9	28.8	167.0	59.5	345.3	106.6	682.7	161.7	930.7	236.4	1130.1	1153.8	4066.9	1779.6	7566.7
1985	28.8	262.6	34.9	194.4	60.9	339.7	157.4	826.4	113.2	1091.5	247.4	1061.7	1311.6	4466.4	1954.3	8242.6
1986	30.9	261.0	42.8	176.6	77.6	365.8	174.2	888.2	145.7	1203.8	375.0	1578.1	1903.8	4527.8	2750.0	9001.3
1987	25.6	241.0	51.2	274.6	77.1	330.6	186.0	895.4	218.8	1311.1	345.1	1500.4	1572.1	5146.4	2475.8	9699.6
1988	24.2	286.0	48.8	287.7	79.2	360.7	151.7	887.6	211.5	1627.4	327.8	1503.6	1686.5	5490.3	2529.7	10,443.3
% Change 1979-1988	64.2%	599.9%	148.7%	248.4%	191.8%	201.7%	142.2%	188.1%	182.9%	434.0%	430.2%	408.7%	162.9%	137.2%	180.4%	201.3%

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

Agencies with 250 to 499 vehicles exhibited the largest relative increases, with costs growing approximately fourfold.

When relating costs to vehicle revenue miles, rail rapid operators show results similar to motor bus. Costs per vehicle revenue mile roughly doubled from 1979 to 1988 for all systems.

One performance measure relates fixed and variable operating costs to annual actual vehicle revenue miles. For all motor bus systems, costs per mile roughly doubled from 1979 to 1988 when measured in year of expenditure dollars.

Costs have roughly tripled for rail rapid systems from 1979 to 1988, expressed in year of expenditure dollars.

Inflationary Impact

The data were adjusted to account for inflation pressures on transit agency costs. Exhibit 4-2 places the cost trend data in constant dollars. Fixed costs show an inflation-adjusted increase of about 30 percent for the ten-year period while variable costs increased by 18 percent.

Inflation-adjusted cost trends reveal a real rate of cost increase of about 50 percent for all motor bus agencies from 1979 to 1988. The largest agencies had almost no real increase in variable costs; in fact, if the base year was shifted to 1980, variable and total costs would show a decrease.

For all rail rapid agencies, inflation-adjusted fixed and variable costs rose 76 and 59 percent, respectively, between 1979 and 1988. Agencies with 1,000 vehicles and over, which incur the majority of absolute costs, showed relative cost increases below the industry figures, at 47 and 32 percent for fixed and variable costs, respectively.

When costs are adjusted for inflation, the increase in fixed costs per vehicle revenue mile was 25 percent for 1979 to 1988. During the same period, real increases in variable costs per mile were slightly over 12 percent.

4.2 REVENUE TRENDS

Revenues to sustain transit agency operations are generated from fares, non-farebox activities, and

external sources. Historical trends in revenue from each of these sources are presented in this subsection of the report.

Farebox Revenue Trends

Transit management has demonstrated the ability to substantially increase farebox revenues from 1979 to 1988, as shown in Exhibit 4-3. For the public transit industry as a whole, all systems, revenues increased by 149 percent between 1979 and 1988, rising from about \$2 billion to almost \$5 billion.

This increase in farebox revenues was exhibited by all sizes of transit agencies. Larger systems, those with 250 to 499 vehicles, had a 264 percent increase in farebox revenues. Transit agencies with 500 to 999 vehicles had the largest relative increase in farebox revenues, a 116 percent increase. The largest systems with over 1,000 vehicles posted a 149 percent increase and in absolute dollars had the largest increases in farebox revenues, from 1979 to 1988.

Non-Farebox Operating Revenues

Historical data on non-farebox operating revenues are shown in Exhibit 4-4. Revenues generated from transit activities other than farebox collections increased by \$598 million, or 362 percent, from 1979 to 1988. Non-farebox operating revenues derive from varied activities such as parking lot revenues, selling advertising space on vehicles, station concessions, joint development projects, leasing transit property, and disposing of obsolete and/or under utilized assets.

Substantial percentage gains were registered by transit agencies of all sizes, with systems with 250 to 499 vehicles showing a significant 742 percent increase. Substantial increases were posted by systems with 500 to 999 vehicles, 399 percent, and systems with over 1,000 vehicles, 290 percent. In dollar terms the largest systems, over 1,000 vehicles, generated a \$235 million increase from 1979 to 1988.

These results attest to the increased entrepreneurship of transit management. In effect, this new view of revenue opportunities has resulted in a continuously growing infusion of funds for operations, topping \$763 million by 1988.

Non-Operating Revenues

The trends in farebox revenue generated by transit agencies has direct implications regarding the needs

EXHIBIT 4.2

FIXED AND VARIABLE OPERATING COST*
CONSTANT DOLLAR EQUIVALENTS
ALL MODES

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	14.7	40.9	19.6	82.6	27.1	119.6	62.6	308.1	74.8	304.7	61.8	295.6	641.5	2314.5	902.2	3465.9
1980	16.3	40.8	17.0	77.6	34.9	145.9	46.3	227.7	97.8	393.7	70.1	339.8	723.6	2580.4	1006.0	3805.9
1981	14.9	42.9	18.5	83.7	36.5	146.0	58.7	280.8	83.2	339.3	88.9	391.6	796.7	2759.9	1097.4	4044.1
1982	39.5	39.2	21.5	88.6	44.7	169.3	51.5	270.6	95.7	385.1	126.0	558.9	724.2	2740.9	1103.2	4252.6
1983	14.9	113.5	18.9	95.4	41.1	187.1	60.5	351.3	91.5	443.8	107.6	493.4	840.8	3240.8	1175.3	4925.3
1984	23.0	170.5	20.1	116.7	41.6	241.4	74.5	477.2	113.0	650.6	165.2	789.9	806.5	2842.8	1244.0	5289.1
1985	19.5	177.2	23.5	131.3	41.1	229.3	106.3	557.8	76.4	736.7	167.0	716.6	885.3	3014.8	1319.1	5563.8
1986	20.5	172.8	28.3	116.9	51.4	242.2	115.3	588.0	96.5	796.9	248.2	1044.7	1260.3	2997.4	1820.5	5958.8
1987	16.4	154.0	32.7	175.5	49.2	211.3	118.9	572.2	139.8	837.8	220.5	958.8	1004.6	3288.5	1582.0	6198.0
1988	14.9	175.6	30.0	176.7	48.6	221.5	93.2	545.0	129.8	999.2	201.3	923.2	1035.5	3371.0	1553.3	6412.2
% Change 1979-1988	0.8%	329.7%	52.7%	113.9%	79.1%	85.2%	48.7%	76.9%	73.7%	227.9%	225.5%	212.3%	61.4%	45.6%	72.2%	85.0%

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT 4.3

FAREBOX REVENUE									
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*									
YEAR	250 - 499		500 - 999		1000 & Over		All Systems		
	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	
1979	153.6	36.0	120.9	26.3	1458.8	40.9	1988.5	40.9	
1980	189.2	31.2	143.0	23.7	1551.6	40.5	2152.6	37.3	
1981	195.3	35.6	177.6	29.5	1903.9	41.5	2582.1	38.9	
1982	235.9	34.6	288.9	27.8	2124.1	44.0	2975.6	39.4	
1983	289.0	35.7	238.8	24.4	2270.1	40.1	3182.0	36.4	
1984	365.3	31.7	428.1	27.4	2358.9	42.3	3724.3	37.1	
1985	352.3	29.1	387.1	26.2	2489.8	41.3	3882.5	36.6	
1986	460.5	30.9	438.0	24.9	2760.8	43.4	4296.1	35.5	
1987	495.4	30.0	587.8	34.0	3079.7	43.2	4858.2	36.3	
1988	559.1	30.7	602.0	32.9	3148.7	42.8	4953.9	35.7	

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1987 Section 15 Annual Reports

EXHIBIT 4.4

NON-FAREBOX OPERATING REVENUES*								
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**								
YEAR	250 - 499		500 - 999		1000 & Over		All Systems	
	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue
1979	13.2	3.1	30.8	6.7	81.2	2.5	165.3	3.4
1980	31.5	5.2	39.8	6.6	149.4	3.9	259.7	4.5
1981	21.9	4.0	49.4	8.2	201.9	4.4	318.6	4.8
1982	31.4	4.6	66.5	6.4	183.4	3.8	324.7	4.3
1983	36.4	4.5	63.6	6.5	181.2	3.2	384.6	4.4
1984	59.9	5.2	153.1	9.8	211.9	3.8	532.0	5.3
1985	78.7	6.5	106.4	7.2	271.3	4.5	594.0	5.6
1986	98.4	6.6	107.3	6.1	292.6	4.6	629.3	5.2
1987	125.5	7.6	115.8	6.7	285.2	4.0	682.6	5.1
1988	111.1	6.1	153.7	8.4	316.3	4.3	763.2	5.5

* Non-farebox operating revenues include other transportation revenues and non transportation revenues.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1987 Section 15 Annual Reports

for non-operating revenues. Revenues not raised by the farebox must be derived from other sources to sustain operations.

Non-operating revenue to supplement farebox revenues derives from the following major sources:

- Federal cash grants and reimbursements
- State cash grants and reimbursements
- Local cash grants and reimbursements
- Taxes levied directly by transit system

Exhibit 4-5 shows the total non-operating revenue derived by object class for 1979 and 1988 by size of transit system.

The most striking finding from Exhibit 4-5 is the decline in federal operating support. For all systems, federal operating support declined from 33 percent of total non-operating revenue in 1979 to 12 percent in 1988. The decline in federal operating support affected transit systems of all sizes. Systems with 250 to 499 vehicles experienced a decline from 41 percent to 14 percent, systems with 500 to 999 vehicles showed a decrease from 32 percent to 13 percent, and systems with 1,000 vehicles and over saw federal operating support dwindle from 29 percent of total non-operating revenue in 1979 to 9 percent in 1988.

Transit systems have relied on local and state sources of non-operating revenue to fill the gap created by declining federal revenue. Local source grants and reimbursements for all systems increased from 39 to 52 percent of total non-operating revenue from 1979 to 1988. Local sources were the second largest revenue source after the farebox for transit systems of all sizes in 1988, at 51 percent, 65 percent and 50 percent of total non-operating revenue for systems with 250-499, 500-990, and 1,000 and over vehicles, respectively.

State sources of revenues have replaced federal assistance as the third largest source of non-operating revenue. State sources of revenues for all systems increased from 28 to 36 percent of total non-operating revenue from 1979 to 1988.

State operating assistance to transit systems with 250 to 499 vehicles increased from 20 percent of total non-operating revenue in 1979 to 35 percent in 1988.

For transit systems with 500 to 999 vehicles, state operating support declined in relative terms, from 24 percent of total non-operating revenue in 1979 to 21 percent in 1988. Systems with 1,000 or more vehicles experienced a relative increase in state operating assistance from 34 percent of total non-operating revenue in 1979 to 41 percent in 1988.

The data on total non-operating revenues by year are contained in Exhibit 4-6. For all systems, non-operating revenues increased \$5.4 billion, a 199 percent increase during the period analyzed. Transit agencies with 250 to 499 vehicles had the largest increase, 344 percent from 1979 to 1988. Transit agencies with 500 to 999 vehicles followed with a 231 percent increase. The largest transit agencies, those with over 1,000 vehicles, posted the smallest percentage gains, 128 percent, but again lead in terms of absolute dollar gains.

Future reliance on local broad-based taxes will be necessary if non-operating revenues are to continue increasing.

Inflationary Impact

While transit revenue gains have been impressive, a portion of the gains are attributable to inflation. Using 1982-84 as the base-year dollar period for the CPI, 1979 dollars had a CPI value of \$1.38 while 1988 dollars had a comparative value of \$0.84. To state 1988 revenues in comparative 1979 terms requires a devaluation to 61 cents on the dollar.

The transit revenue trends adjusted according to the CPI, depicted in Exhibit 4-7, show the real gains in financial terms from 1979 to 1988 (1979 dollars = 1.00, 1988 dollars = 0.61).

For all systems, the inflation-adjusted revenue gains for the eight-year period were 53 percent for farebox revenue, 184 percent for non-farebox operating revenue, and 84 percent for non-operating revenue. This result indicates a successful effort by the transit industry to expand its financial base.

4.3 OPERATING RATIOS

Transit agencies are being forced to address the reality of diminishing federal operating financial support. While farebox recovery ratios declined for all systems from 1979 to 1988, as shown in Exhibit 4-8, the trend shows stability between 1980 and 1988, as illustrated in Exhibit 4-9.

EXHIBIT 4.5

SOURCES OF NON-OPERATING REVENUE								
(\$ in millions)								
SIZE OF TRANSIT SYSTEM:								
NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE								
	250-499		500-999		1000 & Over		All Systems	
SOURCES OF PUBLIC OPERATING ASSISTANCE	Total Revenue		Total Revenue		Total Revenue		Total Revenue	
	<u>1979</u>	<u>1988</u>	<u>1979</u>	<u>1988</u>	<u>1979</u>	<u>1988</u>	<u>1979</u>	<u>1988</u>
FEDERAL GOVERNMENT								
SECTION 5 AND/OR 9	79.7	124.6	61.2	81.6	378.0	280.9	692.3	781.5
OTHER FEDERAL	1.6	7.4	2.2	1.9	22.2	54.7	32.9	71.0
TOTAL FEDERAL	81.3	132.0	63.4	83.5	400.2	335.6	725.2	852.5
STATE GOVERNMENT								
GENERAL REVENUES	18.7	108.9	29.6	10.8	326.8	1,353.6	427.2	1,740.6
DEDICATED SOURCES								
TAXES	19.3	213.2	18.8	66.3	38.8	58.4	87.6	660.7
BRIDGE, TUNNEL & HIGHWAY TOLLS	0.2			0.6	69.2		70.1	7.1
OTHER	1.0	1.8	0.2	58.6	29.1	73.0	32.9	156.3
TOTAL STATE	39.2	323.9	48.6	136.3	463.9	1,485.0	617.8	2,564.7
LOCAL GOVERNMENT								
GENERAL REVENUES	40.5	210.4	17.2	126.2	246.5	1,295.2	381.2	2,060.3
DEDICATED SOURCES				66.6				
TAXES	36.0	208.6		277.2	272.8	529.0	444.7	1,356.9
BRIDGE, TUNNEL & HIGHWAY TOLLS								149.2
OTHER	1.8	48.0	4.2	14.0	1.4	3.6	21.9	120.8
TOTAL LOCAL	78.3	467.0	88.0	417.4	520.7	1,827.8	847.8	3,687.2
TOTAL PUBLIC ASSISTANCE \$ MILLIONS	198.8	922.9	200.0	637.3	1,384.8	3,648.4	2,190.8	7,104.4

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports.

Note: Data contained in Exhibit 4.5 may differ from other data reported as sources of non-operating revenue because of the differences in the transit systems reporting these data, and items reported, i.e. taxes levied by transit systems.

EXHIBIT 4.6

NON-OPERATING REVENUES*								
SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**								
YEAR	250 - 499		500 - 999		1000 & Over		All Systems	
	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue	\$ Millions	% of Total Revenue
1979	259.0	60.7	307.9	67.0	1705.7	52.5	2708.1	55.7
1980	385.6	63.6	421.0	69.8	2126.3	55.5	3347.2	58.0
1981	331.4	60.4	375.6	62.4	2482.0	54.1	3743.7	56.4
1982	413.9	60.7	685.8	66.0	2524.8	52.3	4244.3	56.2
1983	496.2	61.3	676.1	69.1	3243.9	57.3	5218.8	59.7
1984	727.1	63.1	981.2	62.8	3011.4	54.0	5762.1	57.4
1985	779.6	64.4	983.9	66.6	3249.4	53.9	6078.4	57.3
1986	926.9	62.2	1213.8	69.0	3307.8	52.0	7176.2	59.3
1987	1028.8	62.3	1025.1	59.3	3756.9	52.7	7842.7	58.6
1988	1151.0	63.2	1021.0	55.8	3891.7	52.9	8103.9	58.4

* Non-operating revenues include federal, state, and local subsidies, taxes levied directly by the transit system, and subsidies from other sectors of operations.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT 4.7

REVENUE TRENDS DETAILS BY TRANSIT SYSTEM SIZE (Revenues Adjusted by CPI)

SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*

YEAR	250-499			500-999			1000 & over			All Systems		
	Farebox Revenue	Non-Farebox Operating Revenue (\$ Millions)	Non Operating Revenues	Farebox Revenue	Non-Farebox Operating Revenue (\$ Millions)	Non Operating Revenues	Farebox Revenue	Non-Farebox Operating Revenue (\$ Millions)	Non Operating Revenues	Farebox Revenue	Non-Farebox Operating Revenue (\$ Millions)	Non Operating Revenues
	1979	153.6	13.2	259.0	120.9	30.8	307.9	1458.8	81.2	1705.7	1988.5	165.3
1988	343.3	68.2	706.7	369.6	94.4	626.9	1933.3	194.2	2389.5	3041.7	468.6	4975.8
% Change 1979-1988	123.5%	416.8%	172.9%	205.7%	206.4%	103.6%	32.5%	139.2%	40.1%	53.0%	183.5%	83.7%

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports. U.S. Bureau of Labor Statistics.

EXHIBIT 4.8

FAREBOX RECOVERY RATIOS				
<u>SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*</u>				
YEAR	250-499	500-999	1000 & Over	All Systems
1979	24.62%	25.55%	57.51%	45.48%
1980	20.08%	27.32%	47.79%	38.90%
1981	21.98%	22.38%	50.92%	40.08%
1982	23.93%	30.69%	52.65%	41.78%
1983	39.36%	28.96%	40.56%	38.09%
1984	33.44%	31.28%	45.18%	39.84%
1985	29.22%	29.60%	43.10%	38.08%
1986	34.12%	22.43%	42.92%	36.56%
1987	32.38%	31.85%	45.84%	39.90%
1988	30.40%	32.87%	43.87%	38.19%

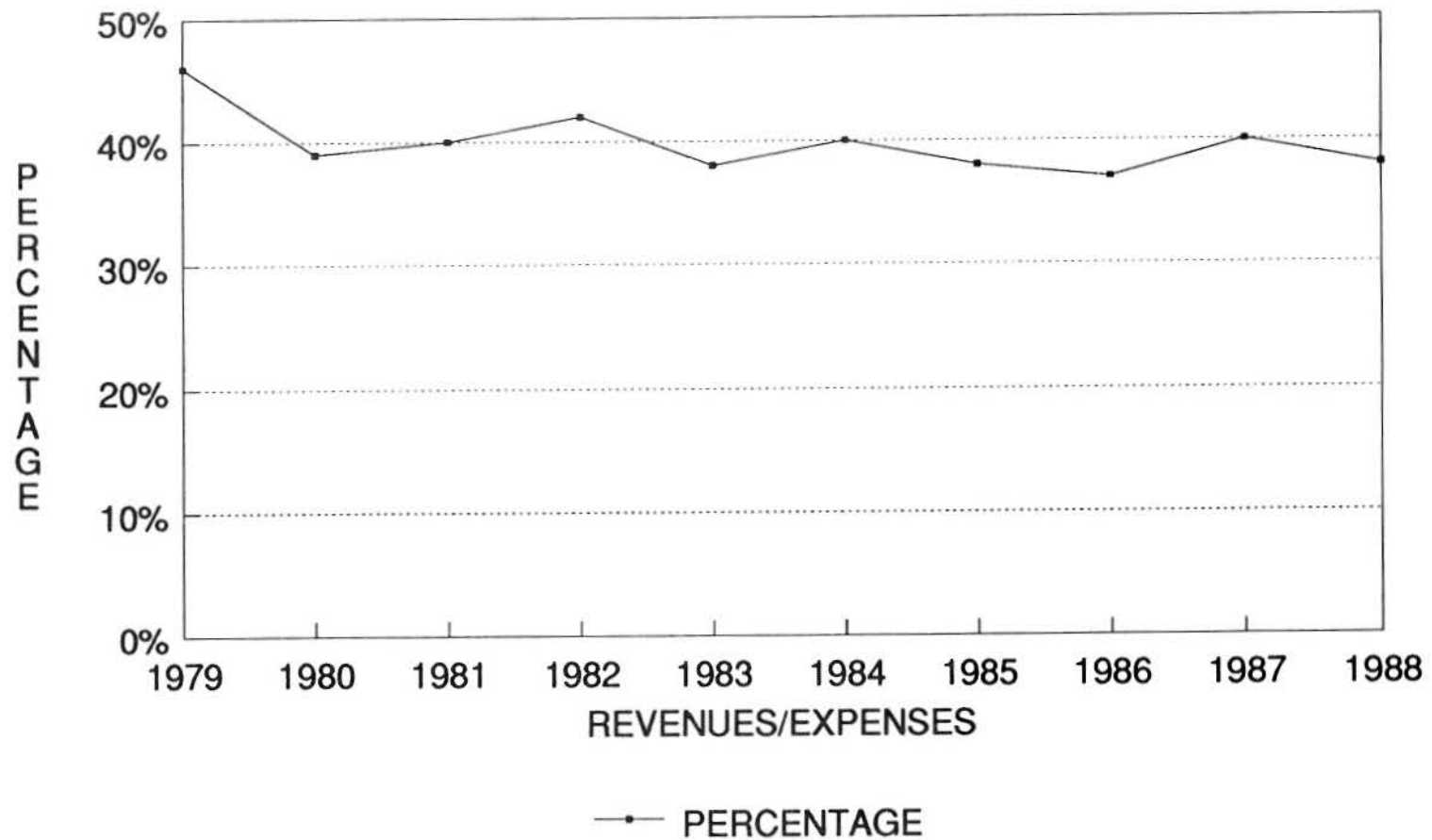
4.11

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT 4.9

FAREBOX RECOVERY RATIO (ALL SYSTEMS)



Farebox recovery ratios were especially strong in 1979 at 45 percent, while from 1980 to 1988 the farebox recovery ratios hovered near the 40 percent mark.

The trends in farebox recovery ratios differ according to the size of the transit system. Systems in the size classes of 250 to 499 vehicles and 500 to 999 vehicles have experienced an upward trend in farebox recovery ratios, with fluctuation around the trend on a year-to-year basis. Systems with 250 to 499 vehicles increased from 24.62 percent farebox recovery ratio in 1979 to 30.4 percent in 1988 with a high of 39.36 percent in 1983 and a low of 20.08 percent in 1980. Systems with 500 to 999 vehicles increased from 25.55 percent farebox recovery ratio in 1979 to a high of 32.87 percent in 1988, which followed the low of 22.43 percent in 1986. The overall trend for the largest transit agencies with 1,000 and over vehicles was a decrease in the operating ratio from just over 50 percent in the early 1980's to the mid-40 percent range in the late 1980's.

A summary of passenger revenue, operating expenses, and operating ratios is contained in Exhibit 4-10. While operating ratios have been relatively stable, at a little less than 40 percent, the spread between operating expenses and passenger revenues has increased from \$2.4 billion in 1979 to \$8 billion in 1988. This necessitates increased reliance on sources of non-operating revenue to leverage farebox and other operating revenues to continue service.

4.4 OPERATING AND FINANCIAL LEVERAGE

A transit agency faced with the prospect of insufficient cash flow to cover capital as well as operating and maintenance expenses must typically incur debt, in some form, if its recapitalization and capital programs are to proceed on a reasonable schedule.

An assessment of financial capability, or cash flow analysis, compares current and projected estimates of pledged revenues to operating and maintenance and capital costs. There are five cash flow "streams" that must be considered and combined to determine the extent of operating and financial leverage that must be secured:

- Farebox revenue
- Operating and maintenance costs

- Capital costs
- Sources of funds for operating deficits
- Sources of funds for capital requirements

The cash flow analysis provides an assessment of the transit agency's ability to cover both (1) capital and operating requirements associated with continuation of the "baseline" system, and (2) cost increases associated with major capital investments or system restructuring. The analysis reveals the extent of the revenue shortfall in either case; of course, if insufficient revenues are indicated in the baseline analysis, it is unlikely that major capital projects would be considered.

The magnitude of the shortfall will dictate to a large extent the financing strategy that should be considered: "pay-as-you-go," borrow, or lease. Whenever possible, the system should attempt to meet expenses with revenues received in the current year. This is the pay-as-you-go strategy. Pay-as-you-go may be possible for smaller, less capital-intensive bus systems. Unfortunately, the capital costs of modern bus, and, even more so, rail systems are so great and concentrated in so short a period of time that, during construction and other such capital intensive periods, systems must generally develop a financing strategy involving the issuance of debt. The issuance of debt spreads the cost of the capital components of the transit system over the useful life of those components.

The large rail systems currently under construction and/or renovation all face immediate capital requirements far in excess of their current funding capabilities. In addition to applying to UMTA and other state and local governmental organizations for assistance in the financing of their capital budgets, transit agencies have entered the municipal, and, lately, the corporate bond markets, in search of additional capital. The issuance of debt serves to spread the cost of capital improvement over a longer period of time, bringing the cost of such capital within the financial capacity of the issuing authority. If the financial projections show operating deficits only in the years of intensive construction, with the annual results of operations once again becoming positive upon completion of construction, the bond market may offer that system the solution it needs. If, however, projections show continuing operating deficits, the transit agency's debt will not be well received by a market skeptical of the agency's ability

EXHIBIT 4-10

SUMMARY: PASSENGER REVENUE, OPERATING EXPENSES, OPERATING RATIO

SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE*

YEAR	250-499			500 - 999			1000 & Over			All Systems		
	Passenger Revenue	Operating Expenses (Millions)	Operating Ratio	Passenger Revenue	Operating Expenses (Millions)	Operating Ratio	Passenger Revenue	Operating Expenses (Millions)	Operating Ratio	Passenger Revenue	Operating Expenses (Millions)	Operating Ratio
1979	153.6	623.8	24.63%	120.9	473.2	25.54%	1458.8	2536.6	57.51%	1988.5	4372.1	45.48%
1980	189.2	942.1	20.08%	143.0	523.2	27.32%	1551.6	3246.9	47.79%	2152.6	5534.0	38.90%
1981	195.3	888.4	21.98%	177.6	793.5	22.38%	1903.9	3738.8	50.92%	2582.1	6442.3	40.08%
1982	235.9	985.9	23.93%	288.9	941.2	30.69%	2124.1	4034.8	52.65%	2975.6	7122.0	41.78%
1983	289.0	734.3	39.36%	238.8	824.3	28.96%	2270.1	5596.5	40.56%	3182.0	8354.2	38.09%
1984	365.3	1092.4	33.44%	428.1	1368.6	31.28%	2358.9	5220.7	45.18%	3724.3	9348.4	39.84%
1985	352.3	1205.5	29.22%	387.1	1307.6	29.60%	2489.8	5776.9	43.10%	3882.5	10196.5	38.08%
1986	460.5	1349.5	34.12%	438.0	1953.0	22.43%	2760.8	6431.6	42.92%	4296.1	11751.2	36.56%
1987	495.4	1529.9	32.38%	587.8	1845.6	31.85%	3079.7	6718.5	45.84%	4858.2	12175.4	39.90%
1988	559.1	1839.0	30.40%	602.0	1831.4	32.87%	3148.7	7176.8	43.87%	4953.9	12973.2	38.19%

* Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

to meet the required repayment schedule. Such a system must therefore raise revenues from other stable sources, such as broad-based taxes, before it can consider entering the bond market.

When issuing debt, an agency must pledge a stream of revenues to the repayment of the bonds. These pledged revenues represent the collateral that provides the bondholder with a reasonable degree of certainty that bonds will indeed be repaid in accordance with the debt service schedule announced upon their issuance. Whatever revenue source is used, it should be a stable, guaranteed source of funds extending over the life of the bonds. So, while any type of tax or source of revenue could theoretically be used, the bond markets generally view the revenues generated by any source except a sales, income, property, or motor fuel tax (or the guarantee of a state, local, or the federal government, as is used by New York City, Boston, and Washington, D.C.) as too uncertain and will not accept those other sources as security for a bond issuance. There are exceptions, of course. Bonds backed by such sources as tax increment financing (in San Francisco), utility service tax revenues (in Miami), farebox receipts (in New York), and mortgage recording tax (in New York) have been successfully issued for transit purposes.

Debt issuance limitations may further prevent agencies from issuing the debt necessary to meet capital needs, which, in turn, undermines the agency's financial capability. Frequently, the legislation that authorizes the creation of a transit agency defines its responsibilities and grants it much of the same legal authority enjoyed by other public entities, while also limiting the extent to which it can exercise those powers. Of particular concern in the consideration of financial capability are the limits placed on the issuance of debt. Typically, the amount of debt outstanding is constrained to a particular amount of outstanding indebtedness. For instance, borrowing may be limited such that total debt in any year may not exceed a certain defined percentage--perhaps 15 percent--of assessed property values. In some agencies, such a limitation may be overturned by their governing boards. Others face greater legislative difficulties which may prove quite intractable. Where these limits on outstanding indebtedness are too low, the financial capability suffers due to the agency's inability to make the necessary capital investment due to current deficits and its further inability to spread its capital costs out through the issuance of debt. So, while the debt markets may be quite receptive to further issuances of debt by such an agency and quite

confident of its financial capability otherwise, limits on the amount of allowable outstanding indebtedness may impair an agency's financial capability.

4.5 SUMMARY OF TRENDS

The transit industry has experienced an almost threefold increase in costs from 1979 to 1988. Total costs increased from \$4.4 billion in 1979 to \$13.0 billion by 1988 measured in year-of-expenditure dollars. During this time period total vehicle miles increased by 35 percent and passenger miles increased by 4 percent.

Part of the cost increase was due to inflation. Expressed in constant dollars the cost increase for all modes industry wide was 82 percent from 1979 to 1988, compared to the tripling in costs when expressed in year-of-expenditure dollars. Levels of service also account for some of the cost increase. Although passenger miles showed only a nominal increase, total vehicle miles increased 35 percent from 1979 to 1988 indicating more service was being offered.

Ultimately the chief reason for the cost increase relates to the increase in employee wages and salaries. Wages, salaries, and fringe benefits accounted for almost 80 percent of operating costs in 1979 through 1988. These labor related costs increased over 100 percent from 1979 to 1988 when measured in year-of-expenditure dollars.

The transit industry's financial planning is driven by costs, with a variety of revenue sources used to counter the shortfalls resulting from operations. While farebox revenues increased by 150 percent from 1979 to 1988, expressed in year-of-expenditure dollars, farebox recovery ratios were at best flat, averaging 38 percent in 1988. This meant that the major portion of costs and cost increases had to be met from other sources.

Non-farebox operating revenues--e.g., concessions, advertising, and joint development--showed a healthy contribution to fund operations of over \$750 million in 1988. As a percent of total revenue, non-farebox operating revenues climbed from 3.4 percent in 1979 to 5.5 percent in 1988.

Non-operating revenues which include federal, state, and local subsidies, taxes levied by the transit system and subsidies from other sectors of operations, e.g.,

bridge and tunnel tolls administered by a transportation authority, tripled between 1979 and 1988. This occurred even as federal support increased only slightly in absolute terms and declined in relative terms. Transit systems have relied on local and state sources of non-operating revenue to fill the gap created by declining federal revenue.

If anything, these trends lead to two general conclusions. First transit agencies need to make a thorough assessment of labor related costs. These costs represent about 80 percent of total operating costs and have been increasing far beyond what may be accounted for with respect to increases in levels of service.

Second, transit agencies need to continuously develop sources of non-farebox revenues. Farebox recovery ratios for the period 1979 to 1988 indicate a trend that is at best flat. Therefore, in an industry driven by costs, other revenues must be generated to sustain service levels. The encouraging percentage increases in non-farebox operating revenues from 1979 to 1988 are a signal of increased entrepreneurship among transit management. Perhaps these results can be both improved and used as leverage to secure needed non-operating revenues.

5. FINANCIAL LEVERAGE IN THE TRANSIT INDUSTRY

5.1 INTRODUCTION

The tax-exempt bond market has grown in the past decade to become a major component of the domestic securities business. State and local governments are turning more and more to the capital markets, particularly as federal capital infrastructure grants have been reduced under federal budget deficit cutbacks, at the same time that the cost of automobile travel in the form of higher toll and parking cost has substantially increased. Moreover, the introduction of new and expanded financing devices has contributed to this growth. New issue long-term municipal financing has grown at startling rates over the past decade, from \$46 million in 1982 to over \$200 million in 1985, backing off to \$123 million in 1989. Beyond the increase in the amount of debt issued, the willingness of many public agencies to access the credit markets for the first time is evidenced by the fact that the annual number of transactions in the tax-exempt market has more than doubled throughout the decade, from 4,200 in 1981 to 8,900 in 1989. Mirroring the overall rise in tax-exempt financing for public needs, transportation financing has dramatically increased throughout the 1980s. From just over \$2 billion in 1980, the tax-exempt market saw over \$10 billion of debt issued for transportation purposes in 1989.

As noted earlier, in response to decreasing federal subsidies for mass transit capital needs together with ever increasing operating deficits, states, municipalities, and their agencies have stepped to the forefront in providing funding for both capital and operating costs. Debt financing for rolling stock, stations, and fixed guideway is now commonplace particularly in light of the U.S. Department of Transportation's new overmatch initiatives. The entire spectrum of financing options has been utilized in financing mass transit projects including general obligation bonds, revenue bonds, certificates of participation, equipment trust certificates, leases, vendor financing and short term financing. Furthermore, every conceivable revenue stream (including some that were formerly considered impossible to tap) has been used to provide security for the bonds including general property taxes, sales taxes, gas taxes, farebox revenues, and developer fees. These revenue sources are detailed in Section 4. The type of security pledge, i.e., a dedicated tax vs. user fees, political commitment to the project, and historic

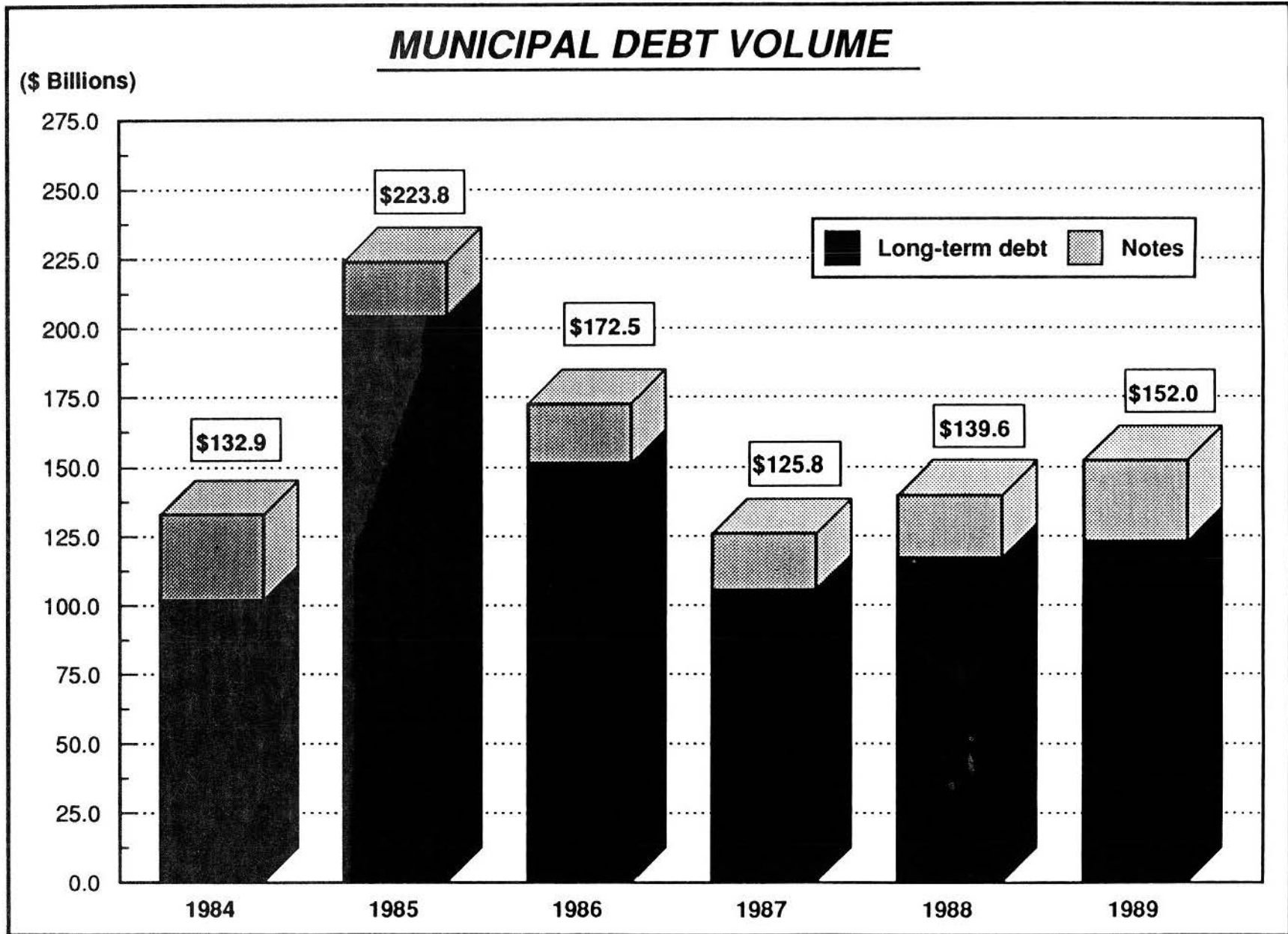
and projected demand for the facility will all be determining factors in how the respective rating agencies view the credit strength of the project.

5.2 TAX-EXEMPT MARKET TRENDS

Over the past six years, the municipal marketplace has undergone dramatic changes spurred by regulatory changes at the federal level. Curbs placed on arbitrage earnings, restrictions imposed on tax-exempt debt issued for private purposes, and tightened regulations on tax-exempt holdings of banks and insurance companies drove the levels of debt issued throughout this period. As shown in Exhibit 5-1, municipal debt volume jumped 68 percent from \$133 million in 1984 to \$224 million in 1985 as issuers raced to beat the passage of the 1986 Tax Reform Act. Market volume remained high in 1986 as again many issuers rushed to meet the tax bill's deadline of August 31st. Once the tax bill was passed, the market returned to previous levels. In 1987, market volume stood at \$125 million and increased at a rate of approximately 10 percent for each of the succeeding two years.

Generally, transportation financing--financing for roads, bridges, highways, airports, mass transit, parking facilities, bridges, and ports--mirrored overall municipal market debt levels. Debt for transportation peaked in 1985 at \$14.7 billion, 7.2 percent of total municipal debt issued (see Exhibit 5-2). Debt for transit, however, did not follow the usual pattern as the individual properties' financing plans, not the regulatory environment, drove the timing of debt. Exhibit 5-2 displays transit debt as a percentage of total transportation debt issued. Transit debt accounted for 39 percent of total transportation debt in 1986 as volume peaked at \$5.6 billion, shown in Exhibit 5-3. Throughout the period, short term financing, or notes, constituted a significant portion of debt financing for mass transit, more so than for other purposes. Notes are issued to provide temporary working capital to fund seasonal operating cash flow shortfalls or to provide advance funding in anticipation of receiving federal, state, or local grants. Long-term debt, on the other hand, is issued to finance capital projects or to refund previously issued long-term debt to produce lower interest rates or decrease restrictive bond covenants.

EXHIBIT 5-1



TRANSPORTATION LONG-TERM DEBT VOLUME

(\$ Billions)

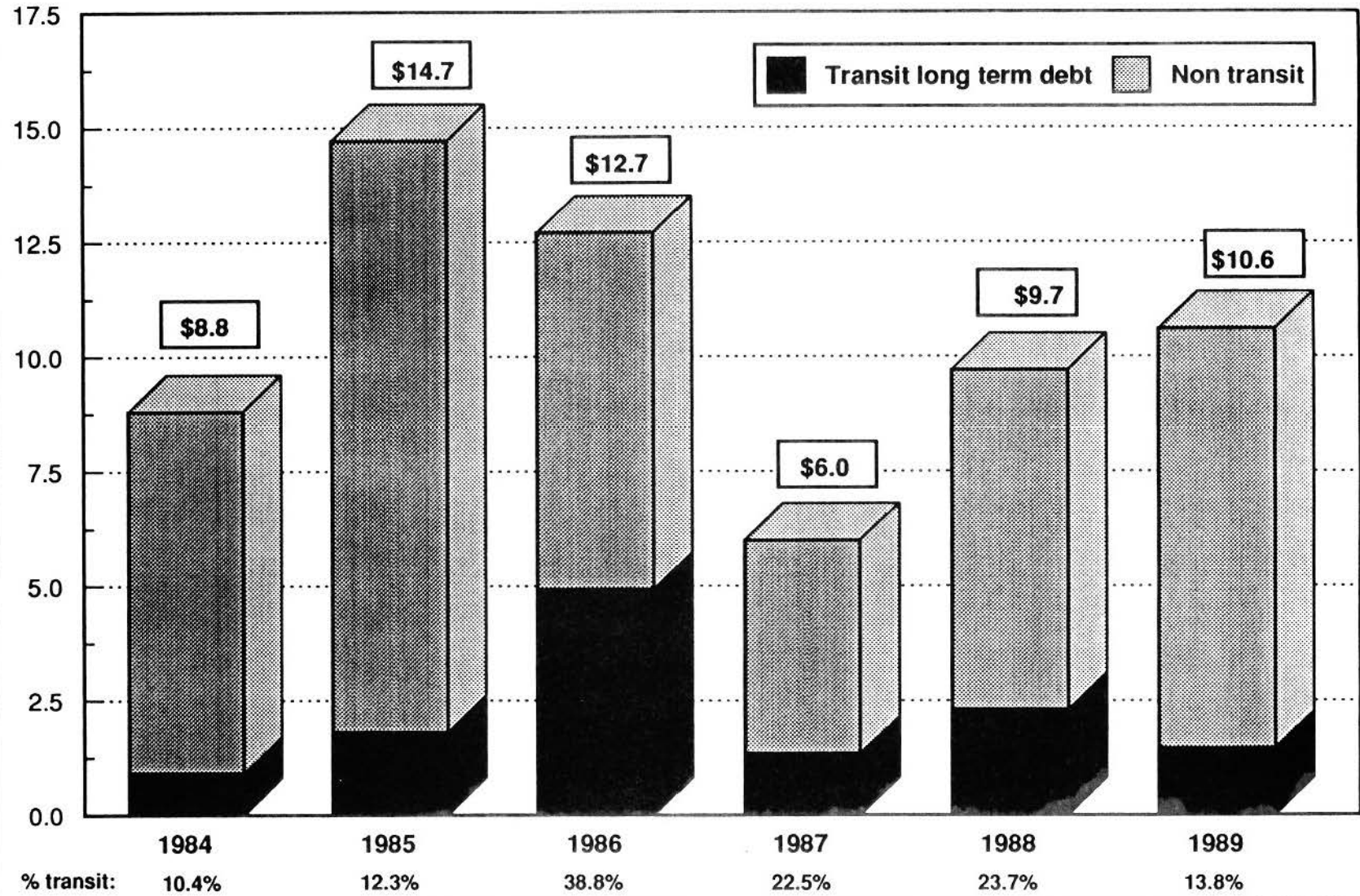
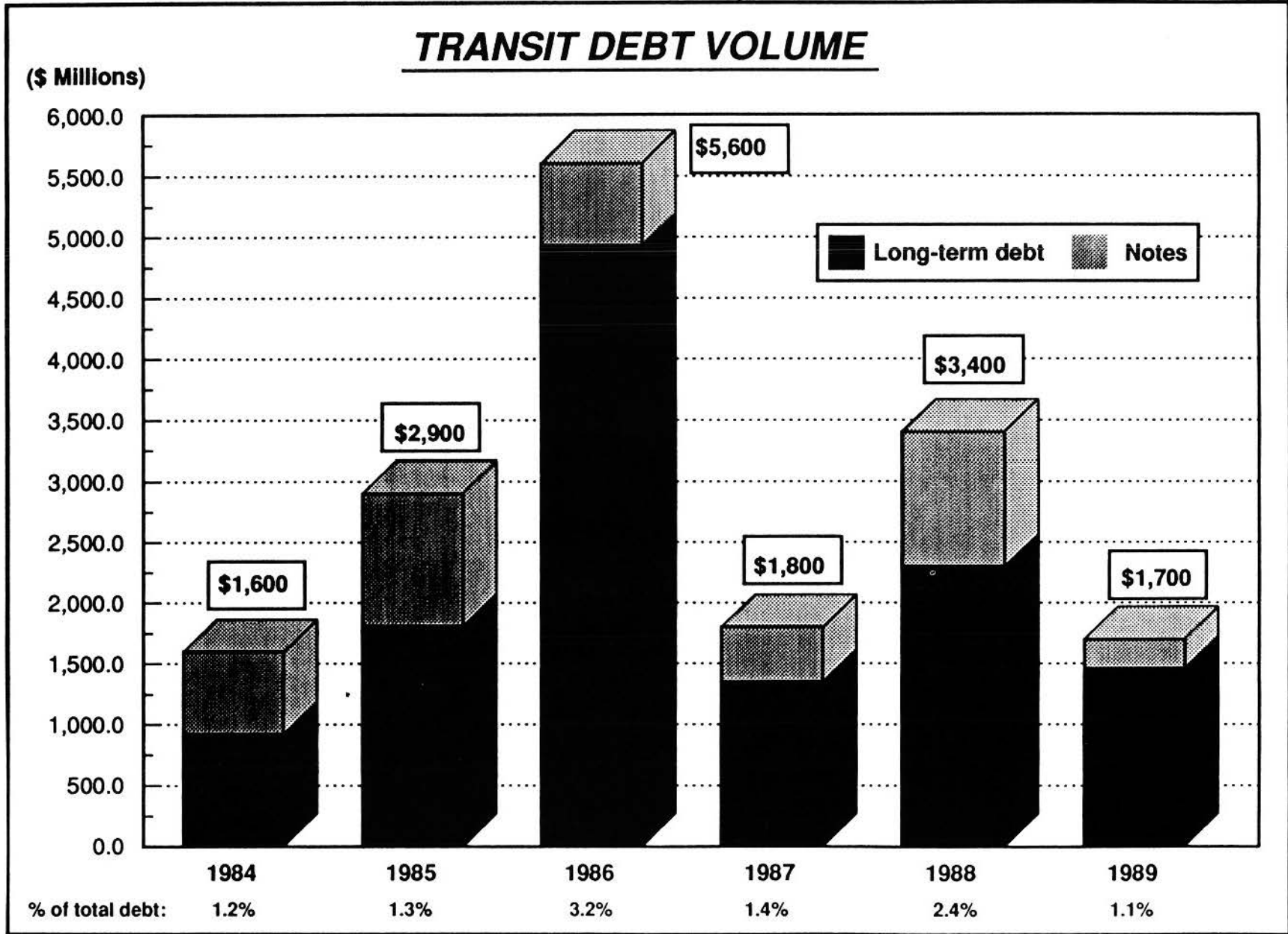


EXHIBIT 5-3



It is instructive to look beyond the gross numbers to examine who is issuing debt and the relative roles of debt for both small and large operators. An examination of debt trends can also indicate what effect, if any, the general decline in federal operating subsidies has had on transit industry debt. Based on a preliminary analysis of funding by transit property, it is difficult to reach any significant conclusions. Roughly 75 percent of all transit debt throughout the period was concentrated in four areas of the country--New York, Atlanta, Boston, and Los Angeles--indicated in Exhibit 5-4. Moreover, New York City, using proceeds from bonds issued by the Metropolitan Transportation Authority, the Triborough Bridge and Tunnel Authority, and the Port Authority of New York and New Jersey, alone accounted for almost half of all transit debt issued. However, Exhibit 5-5 illustrates that while the number of annual issues may not be increasing, the number of different issuers as a percentage of total issues is increasing. Taken another way, this means that over the past few years on average each issuer is involved in fewer deals as a percentage of the total completed. While additional analysis of individual system's financing plans is required to determine whether or not a real pattern of transit debt financing is emerging, preliminary analysis indicates that perhaps while the number of issuers is becoming more broad, the larger, long-term transactions are still reserved for the "big players." There does not appear to be any correlation between available federal operating assistance and debt issuance.

5.3 DEBT INSTRUMENTS

In taking a larger role in financing transit projects, the transit industry has developed innovative funding mechanisms. Generally, the financing option is predicated on the project financed (rolling stock versus fixed guideway), the implementation of a dedicated funding source, the decision to lease versus purchase, and the political consensus for the project. The following discussion describes the wide array of financing alternatives. Exhibit 5-6 presents the financing alternatives and links each to the appropriate transit system.

Transit Facilities Revenue Bonds

Transit Facilities Revenue Bonds (farebox revenue bonds) were created by New York's Metropolitan Transit Authority (MTA) and have since been copied to a lesser degree in Denver. Farebox revenue bonds are payable solely from the gross operating revenues

of the transit system or user revenues and all state and local operating subsidies. Additional security is provided by a variety of sources including (1) income from concessions and advertising, (2) special taxes including sales tax, franchise tax, oil company tax, and real estate gains tax, (3) investment income, and (4) operating surpluses from related entities (in the case of MTA, Triborough Bridge and Tunnel Authority operating surpluses provide security). Usually, a rate covenant is required which requires the issuer to fix fares, rates, and rentals to produce revenues together with other available funds sufficiently to pay debt service, maintain a reserve fund, and pay operating and maintenance expenses. The Bond Resolution may require the bond trustee to take actions to raise fares sufficiently to meet these expenses. Because fare increases are such a politically unwelcome event, sensitivity to these increases and thus the essentialness of service is a key credit feature of these bonds.

State Service Contract Bonds

Several transit systems, most notably the MTA and the Massachusetts Bay Transportation Authority (MBTA) issue debt secured by a contract between the issuer and the state. The contract language determines the ultimate obligation of the state. The MTA's Transit Facilities Service Contract Bonds are secured by the state's absolute and unconditional obligation to make payments under the contract subject to annual appropriations made by the state legislature. This type of credit is generally viewed as a "moral obligation" of the state as opposed to pledging the state's full faith and credit. A key variable in the contract is how bondholders are affected by non-appropriation or default. Again, essentiality of service is of utmost importance. Under the MBTA's General Transportation System Bonds, on the other hand, the state's payment obligation is a general obligation secured by the state's full faith and credit. The MBTA has also entered into a "contract of assistance" with the state whereby the state agrees to pay a portion of the debt service on the bonds.

Toll Facility Bonds

In certain instances, issuers have access to operating revenue streams in addition to transit fares. One example is the Triborough Bridge and Tunnel Authority (TBTA). The state broadened TBTA's traditional role of constructing and operating bridges, tunnels, and highways in New York City by authorizing up to \$1.1 billion for acquiring subway

EXHIBIT 5-4

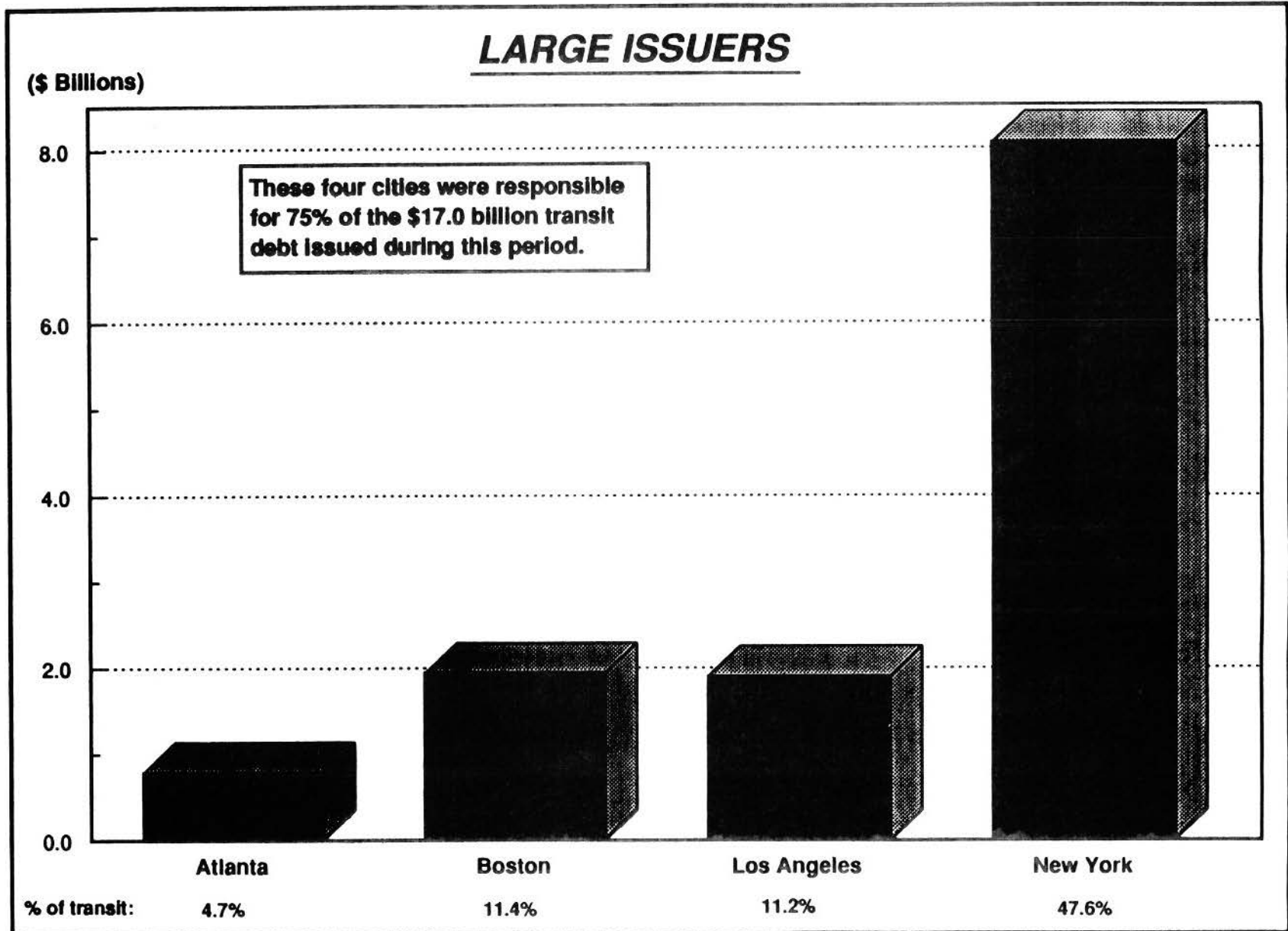
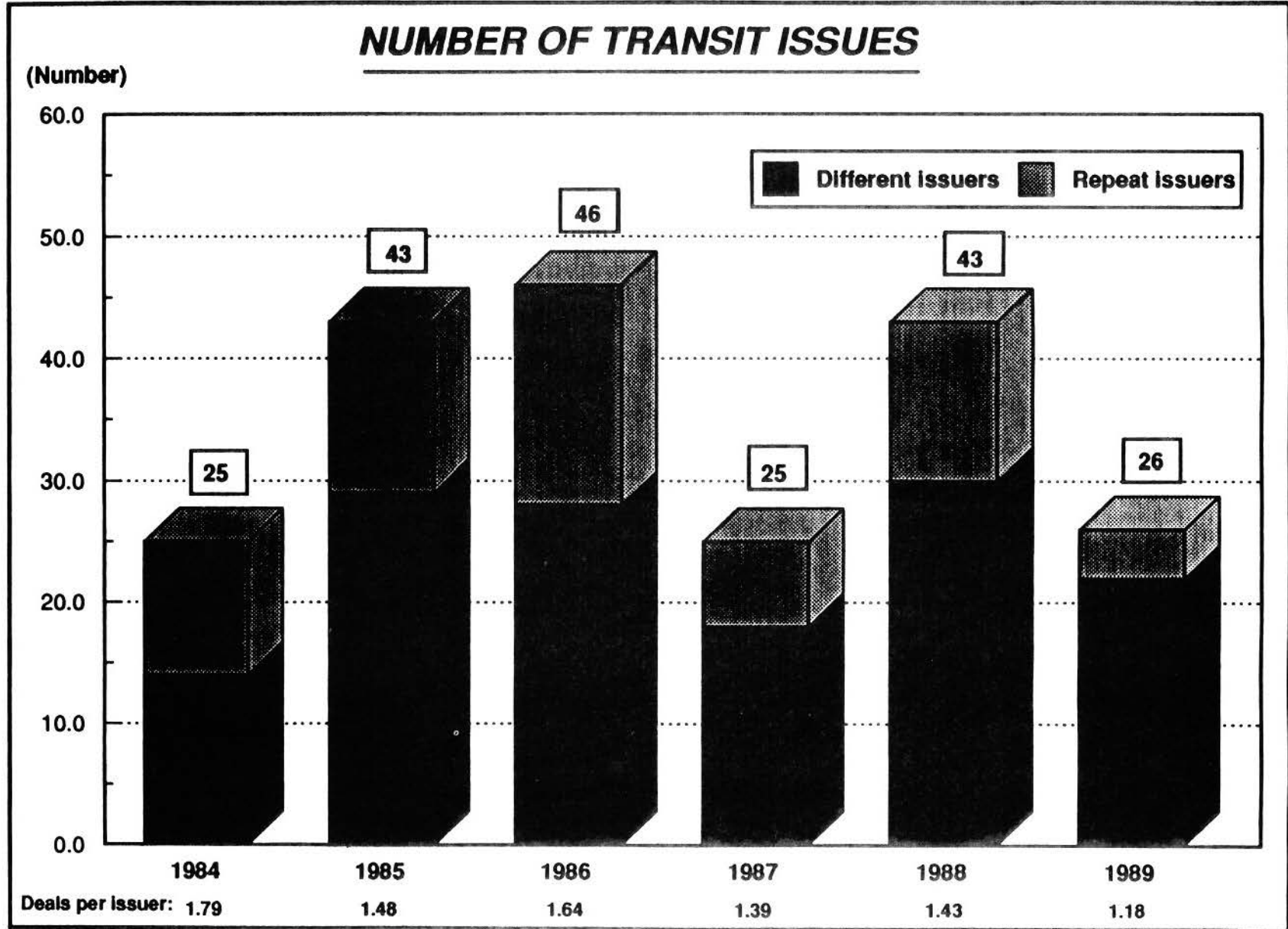


EXHIBIT 5-5



5.7

EXHIBIT 5-6

DEBT INSTRUMENTS

	NEW YORK METROPOLITAN TRANSPORTATION AUTHORITY	TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY	SANTA CLARA COUNTY TRANSIT DISTRICT	METROPOLITAN ATLANTA RAPID TRANSIT AUTHORITY	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY	SOUTHERN CALIFORNIA RAPID TRANSIT DISTRICT
Transit Facilities Revenue Bonds	X					
State Service Contract Bonds	X				X	
Toll Facility Bonds		X				
Sales Tax Revenue Bonds				X		
General Obligation Bonds						
Benefit Assessment District Bonds						X
Certificates of Participation						
Notes	X		X		X	X
Vendor Financing	X			X		
Equipment Trust Certificates			X			X
Sale Leaseback	X				X	
Cross Border Leasing	X				X	
Taxable Bonds (backed by full faith and credit of U.S. Government)						

Source: Securities Data Corporation

EXHIBIT 5-6 (Continued)

DEBT INSTRUMENTS

	LOS ANGELES COUNTY TRANSPORTATION COMMISSION	BAY AREA RAPID TRANSIT DISTRICT	SACRAMENTO REGIONAL TRANSIT DISTRICT	DENVER REGIONAL TRANSPORTATION DISTRICT	NORTHEAST ILLINOIS REGIONAL TRANSPORTATION AUTHORITY	ORANGE COUNTY FLORIDA	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
Transit Facilities Revenue Bonds				X			
State Service Contract Bonds							
Toll Facility Bonds							
Sales Tax Revenue Bonds	X	X		X			
General Obligation Bonds		X			X		
Benefit Assessment District Bonds							
Certificates of Participation			X	X			X
Notes		X			X		
Vendor Financing						X	
Equipment Trust Certificates							
Sale Leaseback	X	X					
Cross Border Leasing	X	X					
Taxable Bonds (backed by full faith and credit of U.S. Government)							X

Source: Securities Data Corporation

cars, commuter rail cars, and transit yard improvements. The TBTA has pledged the revenue derived from its successful operations of various toll facilities to these bonds. Although not used to secure debt, toll revenue from the Golden Gate Bridge subsidizes the Golden Gate Transit District. Revenues from the other San Francisco Bay Bridges are available for BART.

Sales Tax Revenue Bonds

A more common form of debt financing is the issuance of revenue bonds secured by the agencies' dedicated funding source. In an increasing number of major metropolitan areas, that funding source is a sales tax. Transit is currently supported by sales taxes in Los Angeles, San Francisco, San Diego, Chicago, Houston, Dallas, San Antonio, New Orleans, and Denver, among others. Sales tax revenues can either flow to the transit agency directly, as is the case with BART, DART, and Houston Metro, or to a regional agency responsible for the administration of transit revenues as is done in Los Angeles, San Diego, Santa Clara County, and Chicago. Debt secured by the sales tax is issued by the designated administering agency, either the transit operator or the regional agency. Sales tax debt is secured only by a first lien on the tax revenues themselves and no additional promise to pay is made by the transit agency or the underlying political jurisdictions. In considering the soundness of financing programs built on a pledge of sales tax revenues, bond rating agencies have traditionally examined the potential of the underlying economy, growth trends in taxable sales, recession resiliency, economic diversification, and the ratio of revenues to the amount of debt issued, also known as the coverage ratio. Generally, a coverage ratio of two times revenue to debt service is desirable by rating agencies.

General Obligation Bonds

Traditional general obligation bonds are secured by ad valorem taxes on real property and by other general revenues from the issuing jurisdiction. Because most transit operators have limited funding sources, general obligation debt for transit is often issued by a state or local government on behalf of a transit project. This is usually the case when the transit agency is a department or integrated unit of the local government such as San Francisco Muni or Honolulu, rather than an independent agency. Some major transit agencies, however, including BART and the Regional Transportation Authority of Northeastern Illinois, have issued their own general obligation bonds.

Assuming a healthy underlying economy, general obligation bonds generally receive higher bond ratings due to the breadth of the underlying revenue pledge.

Benefit Assessment District Bonds

As a means to have those who benefit from mass transit pay for the service, special benefit assessment districts are beginning to play a larger role in financing transit projects. Benefit assessments are special fees imposed on properties in a specified area, the proceeds of which pay a portion of the costs of certain capital improvements which benefit property owners in the area. Benefit assessments have been used extensively throughout the country to finance street improvements, sewer systems, and parking structures, among other projects. Assessment districts are established around transit stations when it is determined that such improvements would provide a tangible benefit indirectly through increased property values or directly through improved service to the area (improve labor pool, increase retail activity, and increase development). A key provision of assessment districts is whether to include residential as well as commercial property. Often, it is politically prudent to exclude residences, although this philosophy complicates the assessment district boundaries and may in fact result in the creation of a special business tax. Dade County, Florida, and LACTC have utilized benefit assessment districts to fund transit equipment. Assessments collected for the Miami Metromover were used for the local match but were not pledged to the bonds. They were absorbed into the county's general fund which provided security for the bonds. This structure avoided a pledge of a revenue source with no collection history. Assessments collected for LACTC were, however, pledged directly to the bonds.

Certificates of Participation

Certificates of Participation (COPs) are used throughout the municipal financing industry as a means of financing projects without undertaking debt. COPs were originated in California to help local governments arrange needed capital financing after the imposition of Proposition 13, which sharply curtailed local government's capacity to increase ad valorem tax revenues. Each certificate represents a proportionate undivided interest in the right to receive base rental payments made by the lessor pursuant to a lease. A trustee bank receives the rental payments from the lessee--the transit property--for the benefit of certificate holders. The transit property is required to make semi-annual rental payments in amounts

sufficient to pay debt service on the COPs. Thus, the transit property covenants to take the necessary actions to include the rental payment in its annual budget and make the necessary appropriations. However, such obligation to appropriate does not constitute debt nor is the agency obligated to levy any form of taxation.

Short-Term Financing

As described earlier, short term financing is used to provide temporary working capital to fund seasonal operating cash flow shortfalls arising from the uneven timing of revenue receipts and cash disbursements or to provide advance funding in anticipation of receiving federal, state, or local grants.

Vendor Financing

Vendor financing has been utilized in the procurement of rolling stock, most notably by the MTA in 1982 in conjunction with its order of 825 heavy rail subway cars. Vendor finance procurement is often completed in two steps: (1) submittal of technical qualifications, and (2) negotiation of the financed price. Beyond pure financing by the vendor, supplier equity, whereby the supplier contributes some percentage of the capital cost up front, is sometimes utilized. The supplier is usually required to provide an amount equivalent to the potential profit which the vendors/developers expect to receive. This contribution represents in effect deferred profits or a subordinated loan. Under the terms of the supplier equity agreements, the vendors do not receive their equity until all debt is repaid and operating and lease payments are made. When analyzing vendor financing proposals, vehicle price is but one criterion in awarding the contract. Financing cost, delivery schedules, and quality of design, engineering, and performance play a large role in determining which firm, if any, will provide financing. Because of the inclusion of overseas players, export and other government credits often come into play.

Equipment Trust Certificates

Equipment trust financing is a capital formation technique utilized by many railroad companies (and in a related form to finance cargo ships) over the years. It first surfaced as a capital financing approach for modern urban transit systems when the Southern California Rapid Transit District (SCRTD) utilized this method to finance its acquisition of buses in 1980.

Under equipment trust financing, there are four principal parties:

- A trustee who holds title to the equipment, receives payments from the end user, and pays interest and principal on the certificates
- The lessee or end user, which gets the use of the equipment, makes periodic lease payments to the trustee and--upon final payment of the certificate--takes back title to the equipment
- The vehicle or equipment manufacturer who designs and builds the equipment according to the lessee's specifications, delivers the equipment, and is paid periodic progress payments by the trustee
- The purchasers of the certificates who pay cash for the securities and receive regular interest and principal payments

In addition to security provided by the lease payments, the trustee is granted a security interest in the equipment acquired. In addition to SCRTD, Santa Clara County Transit District has issued over \$50 million of equipment trust certificates to fund the Guadeloupe Corridor Transportation System. These certificates are secured by a county sales tax and essentially enabled the district to avoid a referendum.

Cross Border Leveraged Leasing

In recent months, several United States transit operators have considered entering into an "offshore" or "cross-border" lease of rail transit vehicles in an effort to leverage assets into working capital. Leases have been considered involving both light and heavy rail equipment. In addition, both new and previously delivered rail vehicles have been considered for offshore leasing. Offshore leases involve the purchase and leaseback of U.S. public transit vehicles by foreign investors for the purposes of achieving beneficial tax consequences in their nation of domicile. In nearly all examples, the nature of ownership transfer is only a legal mechanism for the purposes of satisfying tax requirements and no actual possession of transit vehicles is contemplated or desired. The issue of ownership and continued control of the rail vehicle in transit usage raises significant issues for UMTA when federally funded vehicles are considered for offshore leasing. To date, only non-federally funded rail vehicles have been included in offshore leases. UMTA is presently

considering appropriate procedures and safeguards that may provide flexibility to transit operators considering leases with federally funded vehicles. In May 1990, UMTA announced its support for this type of financing.

The form of offshore lease most often utilized is known as a "Defeased Leveraged Lease." Under this type of structure, the U.S. transit operator enters into a purchase agreement with a vehicle manufacturer. The manufacturer is paid invoice price for the vehicles. The transit operator effects a sale of the vehicles to the offshore lessor and a simultaneous agreement to lease-back the vehicles from the lessor at a specified lease rate with a defined purchase option at the end of the lease term. At lease inception, the transit operator commits to exercise its purchase option. The offshore lessor then obtains a loan with which to pay for the transit vehicles. The loan is generally in the area of 80 percent or more of the value of the vehicles, thus providing the leveraging aspect to the lessor. For reasons pertaining to foreign tax law, the lending bank is usually a branch of a bank headquartered in a third country. Defeasance is accomplished in the following manner. Following the preceding steps, the lessee (transit agency) contracts with a third party obligor (another branch or affiliate of the lending bank) to assume the lease payments and the purchase option in return for payment of the present value of those obligations. Once this is accomplished, the lessor will release the transit agency from its lease payment and purchase option requirements. The transit agency thus retains the difference between the purchase price paid by the lessor and the amount it has paid to the obligor to defease the lease. Accordingly, in a defeased leveraged lease, the transit agency receives all of the financial benefit up front. The transit agency retains liability to the lessor for early termination or unwind payments in the event of casualty loss of the vehicles or other tax and general indemnities.

Industry estimates place the potential present value savings from an offshore leveraged lease at between 3 to 5 percent for used vehicles that are eligible for leasing and from 4 to 6 percent for new vehicles. Under certain circumstances and in specific jurisdictions (Sweden being the most generous), 8 to 10 percent may be achievable. Savings are based on the value of the underlying rail vehicles. Estimates on the minimum size of transaction necessary to be economically structured as an offshore lease vary between country and between firms involved in this business. Twenty million dollars appears to be the smallest economic size for an offshore lease with \$50

million being a generally accepted industry standard. Leases smaller than this size are rendered uneconomic by the relatively large transaction fees required to structure the lease.

Offshore leasing is not without risks to the transit operator and is not a desirable revenue generating vehicle for all transit properties. The following are the most significant risks transit operators should consider:

- Size of the transaction
- Currency risk
- Lessor risk of bankruptcy
- Early unwind due to vehicle damage or change in foreign tax laws

To date, LACTC and MTA have successfully negotiated cross-border leveraged lease contracts, saving upwards of 5.0 to 7.0 percent of the cost of the vehicles.

5.4 CREDIT ISSUES

The increased reliance on debt for financing public transportation systems, both operating and capital costs, necessarily increases the importance of analyzing the credit worthiness of these projects. Thus, the criteria which the rating agencies and credit enhancers use take on added significance. The importance of achieving a higher rating can best be illustrated by way of example: an issuer of 30-year debt for a \$100 million project rated 'BBB' would pay annual debt service of \$370,000 more than would the same issuer given an A rating. The higher rating would result in a \$3.68 million savings over the life of the bonds on a present value basis.

Since government subsidies may be withdrawn if public support for the project declines, an evaluation of the political commitment and financial stability of this support is vital. Also, the rating agencies will evaluate alternative modes of transportation available, total capital requirements of the transit authority, quality of relations between management and labor, and the legal provisions of the bond resolution.

Political commitment for the project can be ascertained by analyzing the level and quality of taxes, if any, dedicated to mass transit or, if no dedicated funding basis currently exists, the stated

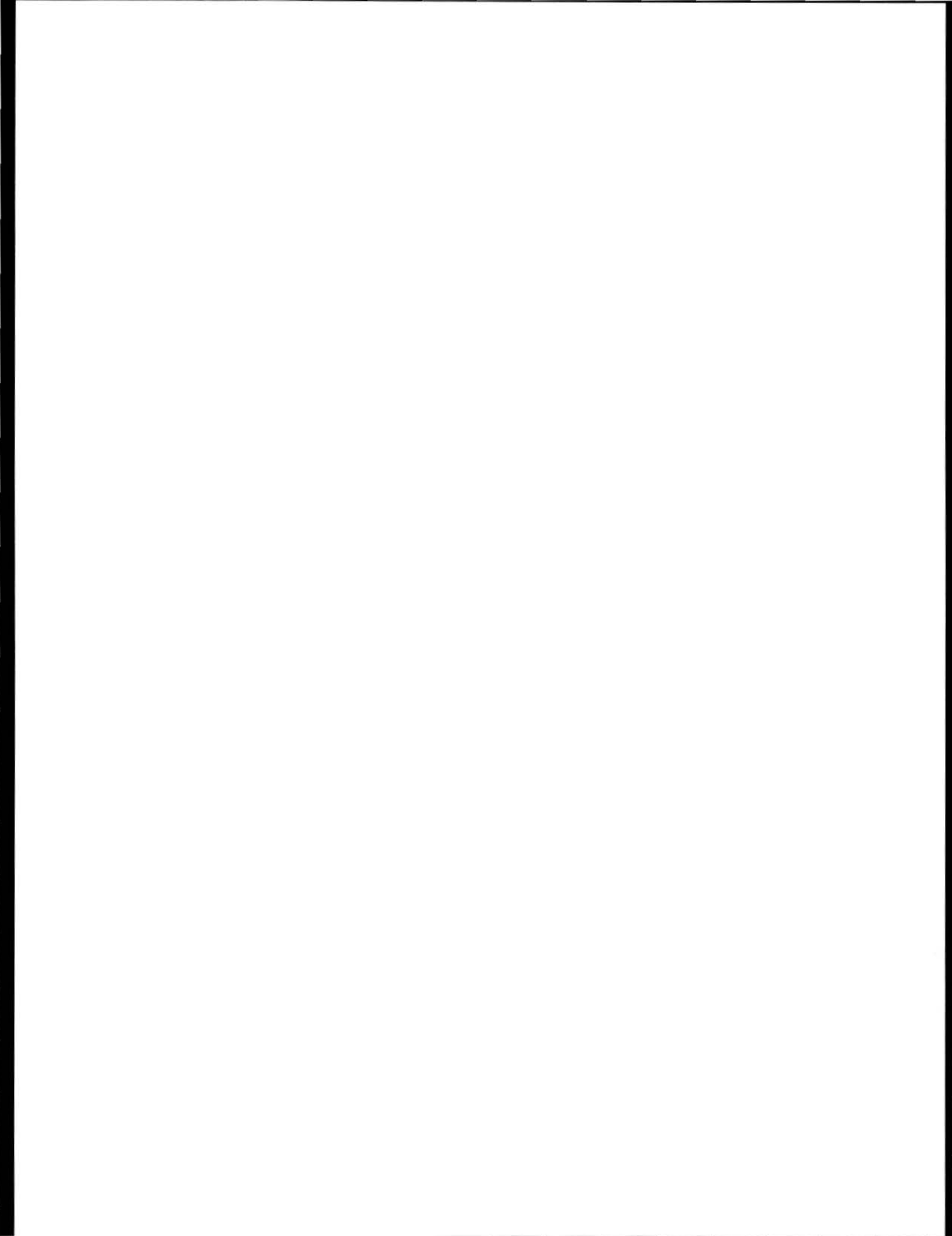
support of establishing one. In the case where dedicated taxes require voter approval, the rating agencies will evaluate the voter enthusiasm for the project; a wide voting margin is preferable since, as time goes on and voters are asked to support additional taxes or a fare increase, support usually deteriorates. In addition, political commitment will be judged on the demonstrated need for and feasibility of the project, the cost-efficiency of the currently suggested methods, and the economic health of the region.

Beyond political and financial commitment to the project, credit analysts will study the demand of the proposed project. For a start-up with no operating history, focus will be placed on reasonableness of ridership forecasts and farebox revenue projections. For established systems, historic demand will provide the basis for analysis. This analysis will include evaluating the relative competitiveness of alternative travel modes especially in the context of past sensitivity to fare increases.

Because fare increases generally evoke strong criticism, a strong management team can play a large role in keeping the system on the right track. Labor productivity is an especially critical area because wages and benefits make up well over half of all operating costs. To the extent labor concessions produce real savings, they are viewed as a strength. Credit analysts will also focus on management's maintenance program since deteriorating rolling stock and other equipment can seriously affect levels of service.

As with all debt financing, one of the key credit concerns is the requirement of strong legal provisions. Coverage levels will be evaluated. Coverage requirements vary depending on the existence of a dedicated funding source but are generally in the range of 1.2-1.5 times debt service. A rate covenant is usually required; however, in the case of a dedicated funding source this could be problematic. Issuers in this situation will often pledge to raise fares as needed to meet debt service requirements. However, such a pledge must be analyzed in the face of a highly charged political atmosphere. Relative interest rate levels will have a significant impact on the rate covenant. Debt issued during periods of high interest rates (10 percent for example) will require an annual debt service payment premium of roughly 30 percent over periods of low interest rates (7 percent). Depending on the proportion of long-term debt to total assets, interest rate risk could be substantial. Interest rates on revenue bonds have

in fact fluctuated greatly over the past decade, from lows of 6.5 percent to highs of 12 percent. Some agencies compensate for what is perceived to be a weakness in the rate covenant by supplying an exceptionally high multiple in the additional bonds test including only historical revenues. Finally, a fully funded reserve fund is usually required as is a renewal and replacement fund to guard against deteriorating assets.



6. UTILIZATION AND MANAGEMENT OF TRANSIT ASSETS

The financial and operational constraints now facing transit managers and policy board members clearly dictate that greater attention be placed on the utilization and management of transit assets to achieve a higher level of service efficiency and financial return. Burgeoning replacement costs and additional regulatory costs have made it essential that transit assets achieve an enhanced level of utilization. In some cases, this means not only more efficient use of the asset to address its transit service objective but the leveraging of the asset to achieve a secondary financial objective.

Transit buses themselves, the basic capital element of every transit system, provide an example of how costs can escalate rapidly during a short period of time. The recent passage of the federal Americans with Disabilities Act (ADA) requires that every transit bus be equipped with wheelchair lifts. Lifts can increase the cost of transit buses by \$15,000.

The pending Clean Air Act also contains major cost impacts for transit. To meet the new emissions standards established in the act, transit agencies must consider using an alternative fuel. The two most likely candidates are Methanol and Compressed Natural Gas (CNG). Methanol buses are expected to cost \$40,000 more than traditional buses. In addition, fueling facilities are expected to cost \$1.2 million each. Methanol also achieves lower miles per gallon and has a shorter range. Buses must therefore fill up more often, increasing operating costs.

CNG buses can cost \$80,000-\$100,000 more per vehicle. In addition, CNG buses must carry 1,500-3,000 pounds in extra weight for tanks and can take twice as long to fill as diesel buses.

Even if clean diesel technology is allowed, a particulate trap is likely to be required to capture the emissions generated by lube oil. The traps can increase the cost of new buses \$5,000-\$18,000.

When these costs are multiplied over the total vehicle replacement and expansion requirements of the nation's transit operators, the costs can be staggering. It is thus even more important that every transit operator use their assets at the highest level.

The following are some examples of how transit agencies can better utilize their existing assets and thus enhance revenues and service delivery.

6.1 PROPERTY ASSETS

For the purposes of this discussion, property assets can be defined to include real property and right-of-way owned or controlled by the transit operator.

Transit rights-of-way have long been considered valuable resources. In recent years, the consolidation of the U.S. rail freight industry has allowed the acquisition of hundreds of miles of abandoned right-of-way by transit properties. Los Angeles County is perhaps the nation's leading example of a massive abandoned rail right-of-way acquisition. Significant right-of-way acquisitions have also been made in Dallas-Ft. Worth, Marin County (California), Florida, and other localities. Because of the intrinsic value of obtaining existing right-of-way and existing grade separations, most states allow for the protective acquisition of right-of-way several years prior to the actual implementation of rail transit service. While this frequently results in substantial cost savings for the acquisition, it creates a drain on the resources of the transit agency that must carry the right-of-way prior to system implementation. This situation offers an opportunity for cash-generating interim use. Even after system implementation, the linear configuration of rail rights-of-way provide some interesting opportunities for revenue generation.

The use of rail rights-of-way for fiber optic cable has occurred on a limited scale in both the Washington, D.C., Metro system and the Bay Area Rapid Transit (BART) system in San Francisco. Los Angeles is exploring the use of fiber optics as an initial use of the right-of-way it is currently negotiating to acquire. The exploding demand for fiber optic communications capability makes this an exciting opportunity for rail transit operators; however, it is not a permanent opportunity. Fiber optic networks in urban areas are usually designed with excess capacity to allow for expansion. Once a network has been established, the market for new system capacity, and thus the value of rights-of-way to contain that capacity, diminish.

Other potential uses of linear rights-of-way (prior to system construction) include warehousing, parking, pneumatic tube delivery systems, and nursery or plant-related businesses. BART is currently exploring the use of its right-of-way for the purpose of locating a superconducting magnetic energy storage (SMES) system adjacent to the rail line.

Air rights development is the most commonly used form of enhancing the utilization of rights-of-way. The Pennsylvania Station development and the Pan Am Building above Grand Central Station's approach tracks in New York City are widely known examples of using the space above a rail station for commercial development. Air rights development is an especially attractive option to private developers in areas with limited parking, high land values, and extensive traffic congestion. Air rights developments can range from a simple parking deck placed over a depressed track segment to major office and commercial facilities at station sites.

In any consideration of joint or interim use of transit rights-of-way, serious attention must be paid to issues of liability, neighborhood compatibility, lease revenue potential, and the need not to impede the primary mobility mission of the transit operator.

Real property assets also provide opportunities for transit operators to generate additional revenue. For transit properties with a priority to generate immediate, upfront cash to meet current needs, the sale and leaseback of administrative or maintenance facilities will allow the agency to take out its equity in existing structures. The Alameda-Contra Costa Transit District, for example, executed the sale and leaseback of its administrative office facility.

In the case of new facilities, Certificates of Participation (COPs) allow public agencies to obtain tax-exempt financing to acquire real estate or construct facilities. The agency obligation is to make semiannual principal and interest (P&I) payments which constitute lease obligations. When the final P&I payment is made in accordance with the terms of the COP indenture, the ownership of the asset being financed passes over to the transit agency. COP financing has the advantages of providing flexible tax-exempt financing for a period determined by the issuer (not to exceed the useful life of the asset). Because COPs are lease obligations subject to annual appropriations, they usually do not require an authorizing vote of the political jurisdiction. COP financing relieves the agency of the need to generate

purchase capital up front and, because tax-exempt borrowing rates are lower than taxable investment opportunities, lease financing can often be more financially advantageous than pay-as-you-go. For example, a transit agency with a locally dedicated funding source and sufficient funds available to pay cash for the acquisition of a piece of property could instead invest its cash at a taxable earnings rate of 8.5 percent and issue COPs at 7.25 percent and realize a savings of \$12,500 annually for each \$1 million in project costs.

Transit agencies, like other property owners, have seen the value of certain of their property holdings appreciate substantially in recent years. While it is possible to tap this increase in equity through a sale-leaseback mechanism, in some cases it would be more advantageous for the transit property to consider relocating its facility to a less costly site and financing such a move through the sale or redevelopment of the current site. The San Francisco Municipal Railway (MUNI) is currently considering the relocation of a bus yard from the Fisherman's Wharf area. The underlying property in this case would command a substantially higher value if it could be redeveloped as a hotel or for tourism/recreational uses. Transit agencies should routinely review the underlying changes in property value to assess the advisability of relocation for profit.

In considering strategies to improve the utilization of property assets, transit agencies must first review the covenants and restrictions on the options available to them as a result of grant contracts, intergovernmental agreements, or municipal restrictions associated with the initial funding of the asset. In many cases, the nature of project funding may either preclude the transfer of title to the property or require the transit agency to share the financial benefit with UMTA or another public agency.

6.2 EQUIPMENT

Rolling stock, both buses and rail vehicles, provide opportunities for transit managers to engage in creative asset utilization. Historically, transit agencies have relied on UMTA funding at a ratio of 75 to 80 percent for the purchase of vehicles. Vehicles were then operated until the end of their useful lives, in most cases not exceeding 12 years for motor buses. As the nature of fixed route transit service changes, requiring more specialized service, seasonal service, and more passenger amenities, new financing

strategies that allow greater flexibility will become more prevalent.

In areas with several transit agencies, it is not uncommon for transit operators to join together in pooled purchase programs to reduce the acquisition costs of equipment assets. In Pennsylvania for example, small rural operators make a joint Section 3 application for transit buses. In the San Francisco Bay Area, transit operators acting as the Regional Transit Association purchase tires and other major equipment jointly to receive price discounts.

Even insurance costs can be reduced by acting jointly. Several joint powers insurance authorities (JPIAs) have been formed to allow participants to pool together and receive the benefits otherwise available to only large agencies.

Recently, UMTA guidelines were changed to allow Section 3 grant funds to be used for vehicle leasing. Although initial response to this expanded authority has been light, it is expected that an increasing number of transit agencies will be utilizing bus leasing and lease-purchase financing in the future. Leasing has some specific advantages for transit operators. A larger number of vehicles can be introduced into service than would otherwise be possible under a capital purchase grant. For those agencies with constrained local cash flow, the amount of funding needed for local match is reduced and spread over several fiscal years. Leasing allows transit districts to introduce service on an interim test basis without making a permanent commitment to the equipment necessary for new service.

In a recent example, the Potomac and Rappahannock Transportation Commission (PRTC) needed vehicles for a three-year interim bus service prior to the expected introduction of passenger rail service. The PRTC obtained an UMTA Section 3 grant for the three-year lease of the vehicles. In response to the PRTC request that the bus vendors propose innovative financing, Eagle Bus Manufacturing proposed a financing structure under which PRTC would issue tax-exempt obligations to pay for the vehicles. The principal and interest payments for the three years would be paid by the UMTA grant and the local match. At the end of the three years, Eagle agreed to accept the returned vehicles and pay an amount to PRTC sufficient to retire the outstanding debt obligations. Should PRTC desire, however, to keep the vehicles in service, they have the option of raising the outstanding amount due on the bonds from local

or other federal sources, retiring the bonds and keeping the vehicles. In this example, 15 buses and 2 service vehicles were introduced into service for a cost equivalent to the purchase of 7 1/2 buses. The agency preserved the option to discontinue service when rail service is introduced or to keep the vehicles for other bus services. Exhibit 6-1 details the PRTC transaction.

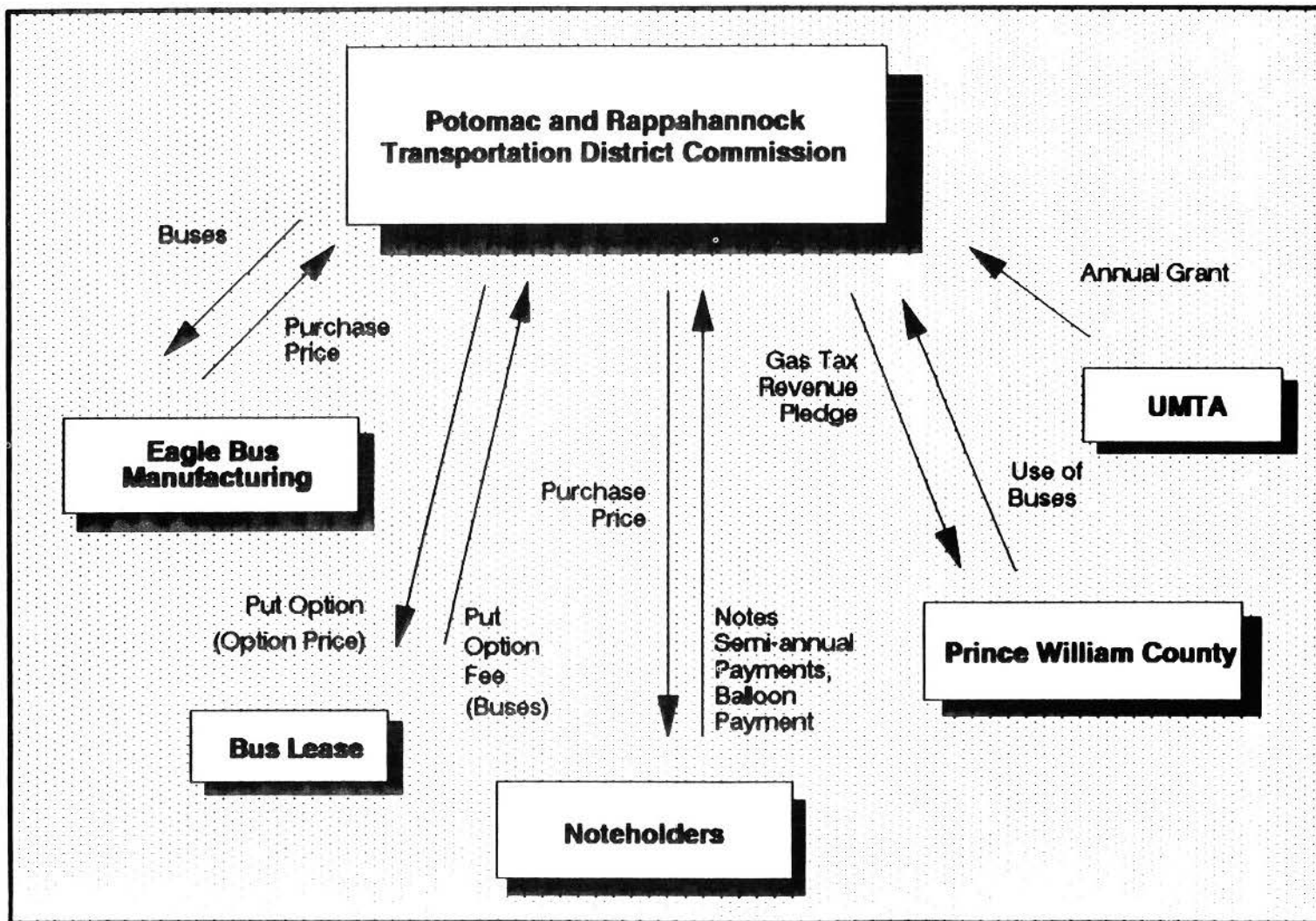
Leasing is particularly effective for vehicles and equipment with a long useful life and strong residual value. Accordingly, "over-the-road" transit commuter coaches are much stronger candidates for lease financing than standard transit coaches.

Vehicle leasing also has a place in the provision of specialized transportation services such as handicapped service, commuter "club bus" service, and special events (such as the Olympics or World's Fair). In these situations, leasing avoids the need for a transit district to make a permanent commitment of funds and acquire equipment with a potentially limited useful application.

Transit districts may utilize tax-exempt financing for lease-purchase payments through the use of COPs, Equipment Trust Certificates, bonds, or notes secured in part by an UMTA grant. It is important to note that tax-exempt financing cannot be secured wholly by a federal grant; some local funds must also be pledged and there must be a reasonable expectation that the transit agency will ultimately acquire the vehicles.

Consistent with the UMTA Private Enterprise Participation Policy, contracting with a private transit operator for the provision of vehicles and maintenance on equipment, along with the private provision of the service itself, is an eligible cost under the UMTA Capital Cost of Contracting guidelines. This strategy avoids the issue of bus procurement and ownership altogether. This is a particularly effective strategy when the contracted service is "peak only." Contracted service allows the private operator to utilize the buses during non-peak and weekend periods for charter purposes. Under this approach, the transit agency pays only for the portion of the vehicle time actually used in transit service. The agency costs are reduced because the service agreement gives the vendor additional revenue possibilities. UMTA studies have demonstrated cost savings from the use of competitively procured, contracted service.

**Exhibit 6-1
PRTC Bus Lease Transaction**



In addition to the financing options discussed above, rail vehicles offer some unique financing strategies. Most notable of these is the ability to enter into an offshore or cross-border lease. Cross-border leasing involves the paper transfer of rail vehicles to the ownership of a foreign equity partner, usually a consortia of corporations. The offshore lessor pays a purchase amount to the transit agency and acquires title to the vehicles. The transit agency agrees to lease back the vehicle for a specified period. Upon receipt of the purchase proceeds, the transit agency immediately deposits with an obligor bank an amount sufficient to make all of the lease payments, thus defeasing the lease obligations. At the end of the lease (approximately 15 to 16 years), ownership of the rail vehicles reverts to the transit agency. The offshore lessor receives a tax deferral in his nation providing the economic incentive to enter into these transactions. The transit agency receives an upfront savings ranging from 5 to 8 percent of the cost of the vehicles. In most cases a minimum size transaction should exceed \$25-\$40 million, depending on the country of the lessor, to be cost-effective.

Cross-border leasing involves specific risks and transit operators considering such a transaction should obtain the services of legal counsel and a financial advisor. Tax laws and regulations in nations allowing cross-border leasing are constantly changing, with some nations prohibiting the practice and others allowing such transactions. In many cases, a country of origin requirement limits the ability to execute a lease transaction to the country where the vehicles were manufactured.

Because the rail car manufacturing sector has become dominated by foreign firms, U.S. transit properties may be able to structure rail vehicle procurements to receive the benefits of foreign below-market financing, export credit assistance, or other offshore financing advantages. These techniques are employed by vehicle vendors, when available, as a method of adjusting to price and product competition.

The basic structure of an offshore lease is shown in Exhibit 6-2.

6.3 FACILITIES

Managing facility assets to achieve a higher economic return is an increasingly important opportunity available to transit agencies. For the purposes of this

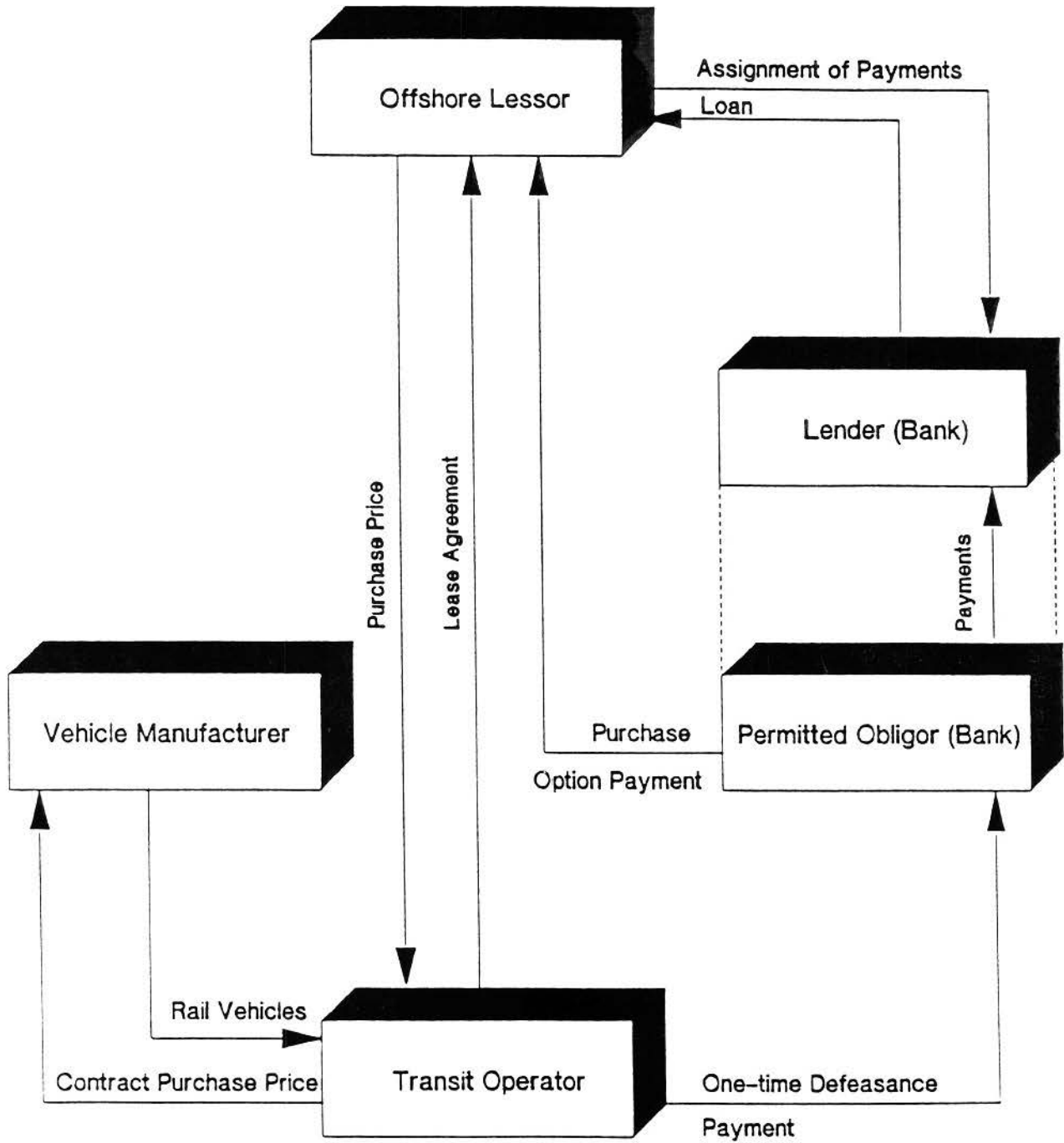
discussion, facilities are defined to include parking facilities, transit centers, rail stations, and other fixed facilities.

In addition to the COP and sale leaseback financing options previously discussed, facility assets provide additional cost-saving options in their procurement. The UMTA Advanced Construction funding policy implemented under the last UMTA reauthorization allows UMTA to fund project costs incurred prior to the receipt of UMTA funds. This policy allows transit agencies to streamline procurement practices and reduces "late pay" risk to facility contractors and vendors. Because interest is an eligible expense, transit agencies can issue debt to fund project costs and be reimbursed by UMTA in later fiscal years. This approach reduces the effect of inflation on project costs and allows contractors to reduce costs by reducing the cost of funds and cushion for late payment. This approach helps UMTA by spreading its obligation over more fiscal years. The Chicago RTA, in a recent rail car procurement, estimates that it saved approximately \$20 million on a \$250 million procurement, primarily due to improved flexibility obtained through negotiations over the advanced construction full funding agreement accompanying its UMTA grant. It is important to note UMTA's willingness in the Chicago example to allow the savings achieved through this process to remain in the Chicago region for other eligible projects.

Parking facilities provide significant opportunities for asset management. Depending on the local congestion and parking availability level, parking can provide a significant revenue source to transit agencies. Some transit agencies have continued to provide free parking as a tradition long after demand has exceeded supply, although there has been an increasing trend for transit agencies to charge an additional fee (i.e., in addition to the transit fare) for use of parking facilities, particularly in connection with rail transit projects. Paid parking should be considered whenever free spaces show an early and consistent pattern of filling each business day. Pricing should be below market to compensate for the additional cost of riding the transit system and to continue to allow the total transit experience to be price competitive with private auto use. In addition, use of parking facilities should be enforced to ensure that non-transit users, such as commercial parking or casual carpools, either compensate the agency for the parking time or are limited to provide needed spaces for transit riders.

EXHIBIT 6-2

Typical Offshore Lease Transaction (Defeased)



At paid parking locations with a record of strong parking demand, parking revenue bonds can be used to finance new facilities or to expand existing capacity. These bonds may require a "backstop" of other transit revenues to be pledged depending on the economic viability of the parking facility. Parking bonds are most effectively used when system wide parking revenues are pledged.

UMTA has recently expressed interest in a concept known as "parking condominiums." This approach involved the sale of premium parking spaces at high-activity transit stations on a permanent or long-term basis. Revenues from the sale of these spaces is used to fund construction of the parking facility and/or subsidize the provision of nonreserved spaces. The ability to issue debt to finance the construction of such a facility remains an open question and a demand study should carefully consider the market for such facilities prior to proceeding.

Concessions and advertising, particularly at rail station locations, provide significant additional incremental income. The New York MTA has extensively exploited the high traffic at its primary station sites (one-half million per day at Grand Central Station) into concession revenue. Demand for commercial space at some station locations has now reached a level where the New York agency actively seeks to identify retailers and invite them into the station in order to develop a mix of retail establishments not unlike the strategy used by commercial mall developers. Chicago has also utilized station sites for concession opportunities.

Smaller transit systems can also generate meaningful concession revenue. A small, 100 to 200 square-foot stand selling newspapers, magazines, cigarettes, candy, and gum can generate revenue equivalent to 50 cents per passenger per day. With a standard gross receipts tax of 8 percent, a rail station or bus transfer facility with a ridership of 25,000 per day could generate \$1,000 per day in revenues to the transit agency.

Additional revenue is not the only reason to consider the provision of concession services. Both the Houston and Buffalo transit agencies have explored passenger convenience services at stations and park and ride lots as a way of increasing passenger service. In Houston, limited automobile repair, primarily oil changes and lubes, was made available to patrons of a park and ride lot. Transit riders could leave their

keys at a kiosk in the morning and pick up the vehicles in the evening. Dry cleaning was also considered as a service for transit riders. Buffalo is planning off-site auto service and bank teller machines along with an intermodal taxi connection as part of the new La Salle Street park and ride lot. While these ancillary services generate a small amount of revenue, their primary purpose is to enhance passenger service and promote ridership.

6.4 ACCESS

Access assets refer to the value of proximity to transit enjoyed by businesses and commercial enterprises. Often overlooked in the past, higher utilization of access assets became a primary component of the UMTA private sector efforts in the past few years and was manifested by joint development, benefit assessments, and value capture strategies.

The utilization of access assets involves mechanisms whereby the beneficiaries of transit support the system financially. Properties adjacent to transit benefit in two primary ways. First, they enjoy enhanced access to their property by transit users. Second, they enjoy an increase in property values directly attributable to the transit improvement.

In the first case, the value of enhanced access can be shared through joint development, whereby a private developer provides the capital funding to construct and/or operate a station near the developer's property. Joint development can also involve the payment of a fee in order to develop adjacent to transit. In some cases, notably Washington, D.C., and New York, private developers not only pay a "connection charge," but also pay to construct subway entrances directly from the transit to their property.

Access improvements can include entire transit distribution systems. In the Las Colinas planned community outside Dallas, private developers installed a people mover system to facilitate movement between major sections of the development. The people mover will connect with the regional DART bus system. In Tampa, a developer installed a people mover to connect his development, across water, with downtown Tampa. The system was built and operated by the developer and will eventually be deeded to the transit agency.

Utilizing transit access as an asset need not involve capital projects. Employer subsidies or bulk sales of

transit passes to business on the transit line, or to retail shops for distribution to shoppers, is also a way to capture the value of transit access.

Capturing the increase in value to property resulting from its access to transit can be accomplished in a variety of ways:

- Tax increment financing involves the freezing of assessed value at a base level. As the property increases in value beyond the base year, the accompanying increase in property tax revenue is diverted to a dedicated account. Tax increment financing has long been used to fund redevelopment districts and is increasingly being considered as a funding source for transit.
- Benefit assessment financing is a technique that assigns to property owners, usually in relationship to their proximity to transit stations, a fee for the enhanced access the transit system provides. The underlying premise of benefit assessment financing is that the benefit to the property owner is measurable and in excess of the fee exacted. Benefit assessment financing is being used for new systems in Los Angeles and Miami, and in Denver to finance the operation of the transit mall. It is also being considered along with tax increment financing as a source of operations funding for the proposed Honolulu transit system.
- Transit access can also enhance property values by obviating certain building code requirements, most notably, increasing the buildable floor areas ratio allowed in return for building or funding a transit improvement and the reduction in the amount of parking required by virtue of funded transit improvements. In these cases the value of the building code variance is negotiated with the developer and either paid in a lump sum or overtime to the transit operator.
- Variations of joint development and benefit assessment access funding sources include transit dedicated building fees, transit impact district assessments, parking surcharges, bridge and highway tolls, and parcel taxes.

6.5 FINANCIAL ASSETS

Given the cost of major transit capital projects, transit agencies have increasingly turned to the capital markets as a way of leveraging revenue sources. In addition, the large sums of funds generated by dedicated transit taxes, daily farebox revenues, and the interim balances of bond proceeds have provided transit agencies with investment opportunities to further enhance revenue.

Transit agencies with a sales tax funding base have generally found it desirable to issue sales tax revenue bonds. Issuing bonds allows the agency to advance the construction on major capital projects and thus reduce the impact of inflation on construction costs. In addition, because bonds are issued at a tax-exempt interest rate, and the transit agency can invest sales tax proceeds at a taxable rate, there is an economic incentive to spend bond proceeds and invest tax proceeds. It should be noted that 1986 changes in the tax codes require that there be a reasonable expectation of expending bond proceeds prior to issuance and that transactions designed simply as an arbitrage earnings play are, in most cases, not allowed.

Not all sales tax supported agencies have chosen to establish a debt financing program. Both Dallas and Houston, for example, have adopted policies requiring essentially a pay-as-you-go policy for major system improvements. These policies reflect voter sentiment that funding should be in-hand prior to beginning major system expansions.

Particularly in California, sales taxes are being increasingly enacted for specified periods (10 to 20 years) in order to fund a designated list of projects submitted to the voters. In these cases revenues are limited to those designated projects and debt cannot be secured with the sales tax beyond its sunset date.

Transit agencies can alleviate cash flow problems through the issuance of short-term debt in the form of Tax and Revenue Anticipation Notes (TANS), Grant Anticipation Notes (GANS), or Bond Anticipation Notes (BANS). These notes are secured by anticipated revenue from a designated source. They are often used by public agencies when tax collections are made in annual or semiannual payments (such as income or property taxes) to even out revenue flow.

Because of the short-term nature of these financing vehicles, in some applications an arbitrage earnings opportunity can be structured as part of the transaction. TRANS, GANS, and BANS often require credit support in the form of a bank Letter of Credit (LOC) as support for the revenue pledge. Transit agencies should always perform a cost/benefit analysis to determine whether an LOC or bond insurance is justified by the increased rating (and decreased interest rate) on the notes issued.

It is impossible to secure tax-exempt debt solely with the proceeds of a federal grant. However, it is possible to combine the proceeds of a federal grant with other local revenues for the purposes of a credit pledge. With the determination that interest is an eligible cost under the UMTA capital cost of contracting policy, we would expect to see more projects including UMTA revenues as part of a debt pledge both in capital projects undertaken under advanced construction authority and for vehicle and facility leasing projects.

Before considering any debt financing program, transit agencies should consider carefully the timing of capital projects, the availability of revenues to meet normal operating requirements, the stability and reliability of the revenue source to act as a pledge, and the market conditions prevailing at the time of issuance.

As with many public agencies, transit operators often forfeit opportunities to leverage increased earnings through effective cash management. By definition, cash management is the practice of maximizing the income on an agency's liquid resources. This is accomplished by maximizing cash availability through the acceleration of cash receipts and the disciplined control of cash disbursements. Cash managers seek to obtain safe, market rates of return for their short-term investments. The three primary objectives of effective cash management are to:

- Maintain liquidity to meet required payment schedules
- Generate earnings as an important source of non-tax and farebox revenue
- Maintain a system of control over cash resources to ensure funds are secure, accounted for, and available.

Improved financial return from cash management

results from a range of actions beginning with proper cash forecasting. Cash forecasting ensures that adequate funds are available to pay bills and minimizes or eliminates the need for cash flow borrowing. Proper cash forecasting can also allow a transit agency to take advantage of timely payment discounts or avoid slow payment penalties in some cases. Finally, overall cash forecasting allows an agency to optimize the maturity structure of its investments. Without a good forecast, a cash manager may be forced to maintain extra funds in highly liquid investments with relatively lower interest rates, or to redeem fixed-term investments early, with a possibility of incurring redemption penalties or market losses.

The next level of action is funds movement and collection. A transit agency that collects \$100,000 per day in fare revenue forfeits \$8,000 annually if funds are delayed only one day prior to deposit in a market rate sweep account. By advancing the collection of receivables and managing disbursements, a transit agency can take advantage of "float" to increase earnings. Cash is a source of revenue for whoever holds it, be it the transit agency, local government, creditors, or the bank. This situation suggests that transit agencies should act to have all intergovernmental transfer payments, tax allocations, rental payments, and other recurring receivables made by electronic funds transfer (EFT). EFT deposits ensure that funds will be in hand without the delays of mail and check clearing procedures. Disbursements, on the other hand, should be made by check so that the agency receives the time investment benefit prior to check clearing. In the case of payroll, the advantages of this float may be offset by cost and administrative savings through EFT deposits of payroll checks.

Investment of funds is the next level and is where the greatest potential of increasing earnings exists. Transit agencies should develop a written investment policy that indicates the authorized investments, the maximum term of investments, credit quality standards, security purchase procedures, and reporting and record keeping requirements. The investment policy should also contain any social/political policies such as in-state investing, limitations on South African investment, and so on.

In most states, eligible investments include the following types of securities:

- U.S. Treasury Bills

- U.S. Treasury Notes and Bonds
- U.S. Agency Securities
- Bankers Acceptances
- Certificates of Deposit
- Commercial Paper
- Bank Repurchase Agreements

U.S. Treasury Bills

Treasury bills are U.S. government obligations with an initial maturity of one year or less. T-bills are issued with maturities of 91 days, 182 days, and 52 weeks. They are sold at a discount from par, with the minimum denomination of \$10,000 increasing in \$5,000 increments above \$ 10,000. T-bills are backed by the full faith and credit of the U.S. government and are generally the most liquid investment available.

U.S. Treasury Notes and Bonds

U.S. Treasury Notes are issued in denominations of \$10,000 with maturities of one to ten years. Interest is paid semiannually. Treasury Bonds usually are issued in the 10 to 30 year maturity range. Typically, Bonds are offered in denominations of \$1,000. Both Treasury Notes and Bonds are backed by the full faith and credit of the U.S. government.

Federal Agency Securities

Several federal agencies have been authorized to issue debt instruments to finance specific policy programs. These agencies include the Federal Home Loan Banks (FHLB), Federal Home Loan Mortgage Corporation (FHLMC), Federal National Mortgage Association (FNMA), Federal Farm Credit Banks (FFCB), and the Government National Mortgage Association (GNMA). With the exception of GNMA, these agency obligations are not full faith and credit obligations of the U.S. government, but they are considered safe investments and appropriate for public investment.

Commercial Paper

Commercial paper is an unsecured promissory note with a fixed maturity, issued by a private firm, usually a bank or corporation. The holder of the commercial paper bears a risk of default by the issuer

and the obligation is not backed by any assets other than the liquidity and established earning power of the issuer. Some commercial paper is also backed by a bank letter of credit. Commercial paper is issued in maturities of 270 days or less to take advantage of the exemption from registration requirements under the Securities Act of 1933. Commercial paper receives a rating like bonds. Only paper rated A1/PI should be considered appropriate for the investment of public funds. Commercial paper may be bought directly from the issuer or from a dealer or broker.

Bankers' Acceptances

Bankers' Acceptances (Bas) closely resemble commercial paper in form. They are short-term (270 days or less) notes sold at a discount and redeemed by the accepting bank at maturity for full face value. The major difference between Bas and commercial paper is that payment on Bas is guaranteed by the accepting bank as well as the underlying issuing corporation, and many BAs are eligible for presentation at the Federal Reserve System discount window in return for cash advances equal to their face value. Thus, BAs carry slightly less credit risk than commercial paper.

Certificates of Deposit

Certificates of Deposit (CDs) are short-term money market instruments. A CD is a receipt from a bank for a deposit of money at a specific rate of interest for a specified period. Principal and interest is paid back at maturity which is generally one to twelve months. CDs from federally insured banks and savings and loans are insured up to \$100,000. CDs issued to public agencies may also be collateralized.

Repurchase Agreements

A Repurchase Agreement is a contract entered into between a buyer (investor) and seller (securities dealer or bank) under which the seller agrees to sell certain securities to the buyer and to buy them back at a later date (which could be as soon as the next day). The difference between sale price and purchase price represents interest earnings to the investor.

After a transit agency investment officer has determined the cash flow requirements of the organization, investments should be selected to match the cash requirements and thus optimize maturity scheduling. For operating funds, it is unlikely that the average maturity of a portfolio will exceed six

months, and it is usually not prudent to invest for fixed terms of more than one to two years. Construction funds may have a longer time horizon and a sophisticated investment program will have as an objective matching the investments of capital project funds with likely construction payout schedules which might span three to five years. At the basic level, transit agencies can utilize interest bearing "sweep" accounts for ready cash and insured CDs in denominations up to \$100,000 for longer investments. In some states such as California, state or county investment pools are also available for local agency cash. At a more sophisticated level, investors place funds in U.S. Treasury securities, agency BAs, repos, and commercial paper.

Simply selecting an initial portfolio, however, does not ensure optimal management because the value of differing investment vehicles changes with the market, creating investment opportunities resulting from market volatility. For example, from November 1986 through November 1987, the differences in yields between Treasury and agency obligations of the same maturity ranged from nearly 100 basis points (1.00 percent) to -5 basis points (.5 percent). An active manager can take advantage of this volatility by moving the funds from one security to another. Such an investor might purchase Treasury securities when the difference between the two types of securities is low. While Treasury and agency securities are both highly secure, Treasury securities are deemed more secure by the markets because they are a direct obligation of the federal government. Therefore, if the agencies offer little or no interest rate advantage, the prudent investor will choose Treasury securities over agency securities. However, if the rates on agency obligations become significantly higher than the rates on the Treasury's, the investor might swap into agency obligations, thereby picking up significantly higher yield while maintaining high security. To fully take advantage of market volatility and the changes in the relationships of different securities, a transit agency should either seek professional management assistance or provide a dedicated treasury staff with the ability to move funds quickly as opportunities become apparent.

Taking advantage of market volatility is only one way in which yields can be improved. Public agencies that invest with only one broker/dealer often forfeit the advantages of competitive shopping for securities. On any given day, securities of the same type will trade at different prices among several broker/dealers. Competitive bids should be sought on all securities

purchases. Exhibit 6-3 demonstrates the range of prices available when this portfolio was purchased on behalf of the commonwealth of Virginia. The savings to the commonwealth on the \$33.8 million transaction was \$54,800 by choosing the lowest priced bids over the highest. It is important to note that no one dealer provided the best offer on all securities.

Those transit agencies that manage pension funds or other long-term investments have significantly different investment objectives. In these cases, appropriate investments can include real estate and corporate stock equities. For most transit agencies, however, short term investment management strategies, limited to the vehicles discussed above, are sufficient.

In summary, effective management of financial assets should include a debt financing policy that compares the cost/benefit of debt versus pay-as-you-go and a detailed approach to cash forecasting and funds handling. Transit agencies should have an investment policy that properly matches assets with liabilities, takes advantage of market volatility, minimizes credit risk, and includes the competitive bidding of securities purchases.

EXHIBIT 6-3

Offers for Sale of Portfolio Securities

<u>Security</u>	<u>Broker A</u>	<u>Broker B</u>	<u>Broker C</u>	<u>Broker D</u>	<u>Broker E</u>	<u>Broker F</u>	<u>Broker G</u>
1) \$4,625,000 U.S.T. Note Rate: 6.25% 11/30/88	99.2475	99.2300	99.1950	99.2400	99.2550	99.2350	<u>99.1700</u>
2) \$5,115,000 U.S.T. Note Rate: 6.25% 12/31/88	99.1700	99.1650	<u>99.1200</u>	99.1700	99.1800	99.1650	99.1600
3) \$5,385,000 U.S.T. Note Rate: 6.25% 1/31/89	99.1300	99.1200	<u>99.0750</u>	99.1300	99.1300	99.1200	99.1000
4) \$3,680,000 U.S.T. Note Rate: 7.125% 4/30/89	99.1150	99.1150	<u>99.0750</u>	99.1050	99.1100	99.1100	99.0950
5) \$4,865,000 U.S.T. Note Rate: 9.625% 6/30/89	100.2750	100.3000	100.3050	100.2800	100.3000	100.3050	<u>100.2650</u>
6) \$6,505,000 U.S.T. Note Rate: 9.375% 9/30/89	100.2475	100.2650	100.2650	100.2600	-----	<u>100.2250</u>	100.2400
7) \$2,100,000 U.S.T. Note Rate: 8.375% 7/31/90	<u>99.1300</u>	99.1600	99.1350	99.1500	99.1500	99.1450	99.1300
8) \$1,200,000 U.S.T. Note Rate: 11.50% 10/15/90	105.0500	105.0400	105.0600	105.0700	105.0150	105.0300	<u>105.0100</u>
9) \$365,000 U.S.T. Note Rate: 11.75% 1/15/91	106.0300	106.0600	106.0700	106.0500	<u>106.0050</u>	106.0600	-----

TOTAL: \$33,840,000

Impact of Offer Differences High Bids vs. Low Bids

	<u>High Bid</u>	<u>Low Bid</u>	<u>Difference</u>
Security 1	99.2550	99.1700	\$12,285.16
Security 2	99.1800	99.1200	9,560.63
Security 3	99.1300	99.0750	9,255.46
Security 4	99.1150	99.0750	4,600.00
Security 5	100.3050	100.2650	6,081.25
Security 6	100.2650	100.2250	8,131.25
Security 7	99.1600	99.1300	1,968.75
Security 8	105.0700	105.0100	2,250.00
Security 9	106.0700	106.0050	<u>741.41</u>
Total			<u>\$54,873.91</u>

7. BEST PROFESSIONAL PRACTICE IN ASSET MANAGEMENT

This section of the report addresses asset management in terms of best professional practices. It includes an introduction that places asset management in a context toward achieving the non-mutually exclusive financial objectives of economy, efficiency, and effectiveness. This is followed by discussions of best professional practices regarding cash management, land and property management, and equipment management.

7.1 INTRODUCTION

Asset management considers the concept that the achievement of economy, efficiency, and effectiveness depends upon the existence of sound arrangements for the planning, appraisal, authorization, and control of the use of resources.

Arrangements designed to promote best professional practice in asset management can cover a multiplicity of functions, controls, and procedures and would be concerned with the following:

- Systems of planning, budgeting, and controlling operating expenditures, revenues, and capital expenditures
- Arrangements concerned with the proper management of all the assets of an entity--land, property (including the adequacy of arrangements for acquisition, maintenance, development, and disposal of land and buildings), equipment, and finance
- Arrangements designed to take advantage of economies of scale, particularly in procurement of goods and services
- Specific initiatives that have been taken to improve economy, efficiency, and effectiveness
- Proper codification of responsibilities, authority, and accountability
- Monitoring of results against predetermined performance objectives and standards, to ensure that outstanding performance is encouraged and unacceptable performance corrected

Asset management involves a number of key functions that should typically exist within an entity to secure economy, efficiency, and effectiveness in its use of resources. These key functions are concerned with the following management of physical resources, and corporate processes and controls:

- Management of physical resources
 - Cash management
 - Land and property management
 - Plant and equipment management
- Corporate processes and controls
 - Corporate planning
 - Capital appraisal procedures
 - Budgeting and resource allocation
 - Revenue estimation
 - Capital expenditure control
 - Pricing

Asset management is ultimately concerned with the following three primary aspects of a transit agency's performance:

- Economy may be defined as the terms and conditions under which a transit agency obtains resources (including personnel, materials, and equipment). An economical operation acquires these resources in appropriate quality and quantity at the lowest cost.
- Efficiency may be defined as the relationship between transportation services produced and resources used to produce them. An efficient operation produces the maximum output for any given set of resources input; or, it has minimum inputs for any given quantity and quality of service provided.
- Effectiveness may be defined as how well a program or activity is achieving its stated objectives, its defined goals (e.g., targets/market share) or other intended effects.

An overview of the procedures required for effective asset management are illustrated in the following

exhibits. Exhibit 7-1 highlights the procedures for cash management. Exhibits 7-2 and 7-3 provide similar illustrative highlights of procedures for land and property management and plant and equipment management respectively.

7.2 CASH MANAGEMENT

The management of cash within a transit agency is concerned with the following:

- The timing and amount of cash inflows and outflows, because this determines the cash requirement of the transit agency at different times
- The extent to which this cash requirement can be generated from within the transit agency because this determines the requirement for external financing
- The investment opportunities available for cash surplus to the transit agency's immediate requirements, because this ensures full utilization of the resource

The management of cash within a particular agency will reflect the nature of the agency's activities; for example, the extent to which cash flows are made up of large numbers of low-value items or small numbers of high-value items, and whether flows are affected by seasonal factors.

The primary objective of the management of cash is to maximize the availability of cash, to meet daily cash needs and provide surplus cash for investment, or to minimize external borrowing. This will involve the forecasting of future cash flow, monitoring of actual cash flow, and comparison between forecasts and actuals.

The primary objective should give rise to the following subsidiary objectives:

- Maximizing entitlement to cash inflows (sales/utilization of services, interest, grants)
- Maximizing collectability of amounts due

- Minimizing time elapsing between entitlement and receipt of cash
- Maximizing profitable investment of surplus cash
- Minimizing borrowing and hence interest cost
- Maximizing time elapsing between liability and payment of cash
- Minimizing cost of systems used to manage cash effectively

Procedures

Standard procedures should provide information for use by the transit agency in deciding whether:

- Additional funding is required, and if so, the timing, duration, security and means of repayment for the funding
- Restructuring of debt maturities is required to avoid maturities in excess of forecast cash resources
- The resources available within the entity necessitate reductions or rephasing of the capital expenditure program, or permits acceleration of the programs.

Best practices in cash management involve the following activities:

- Forecasting, planning, and budgeting future cash flows
- Controlling, monitoring, and reviewing actual cash flows
- Ensuring that surplus cash is profitably invested on a timely basis
- Reviewing the systems used to handle cash flows (e.g., banking arrangements)

There also should be procedures to ensure that the entity keeps abreast of, and makes use of, good practice and new developments in the management of cash, for example, computer applications for reporting, analyzing, and transmitting data.

Exhibit 7-1 Cash Management

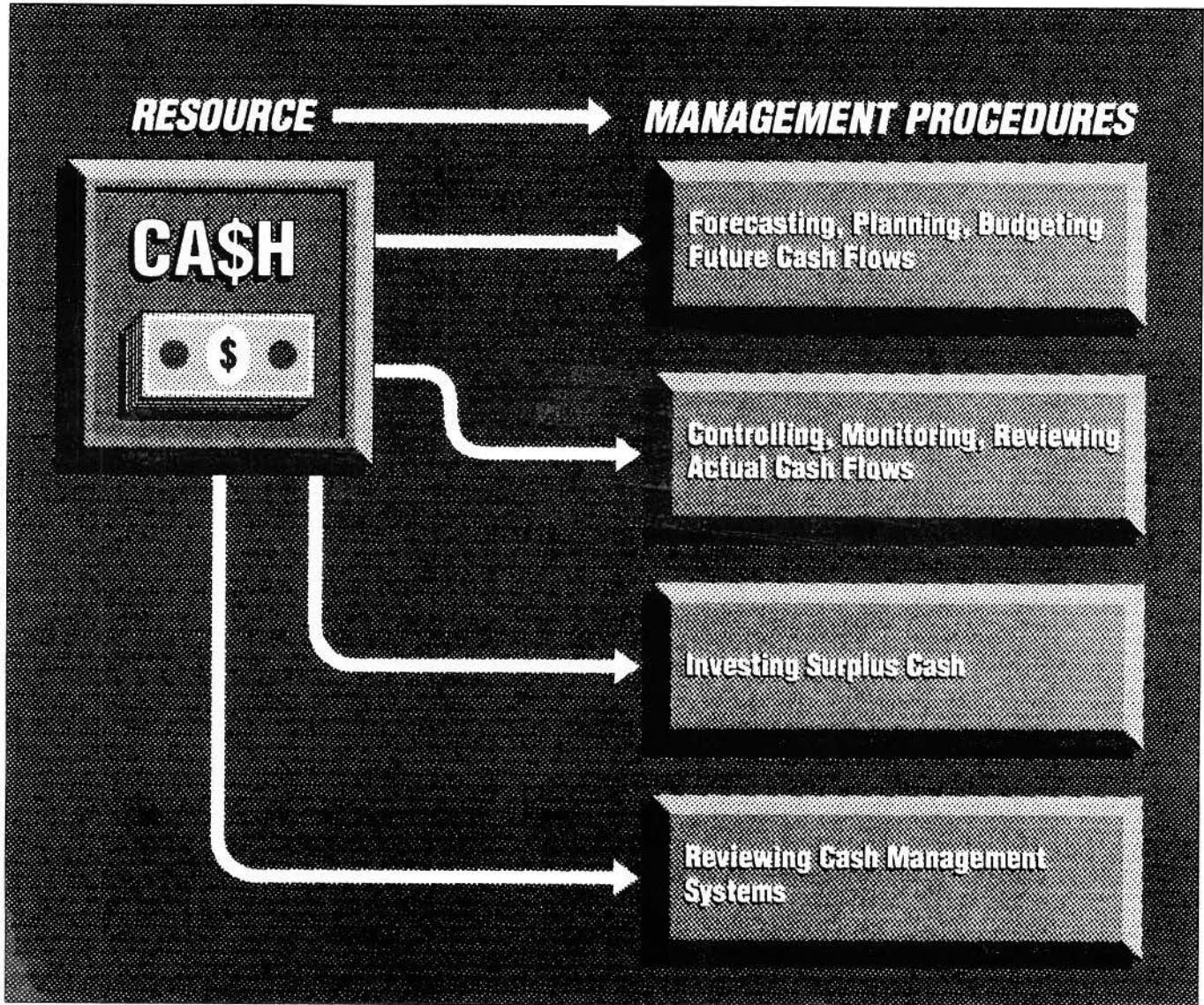


Exhibit 7-2

Land & Property Management

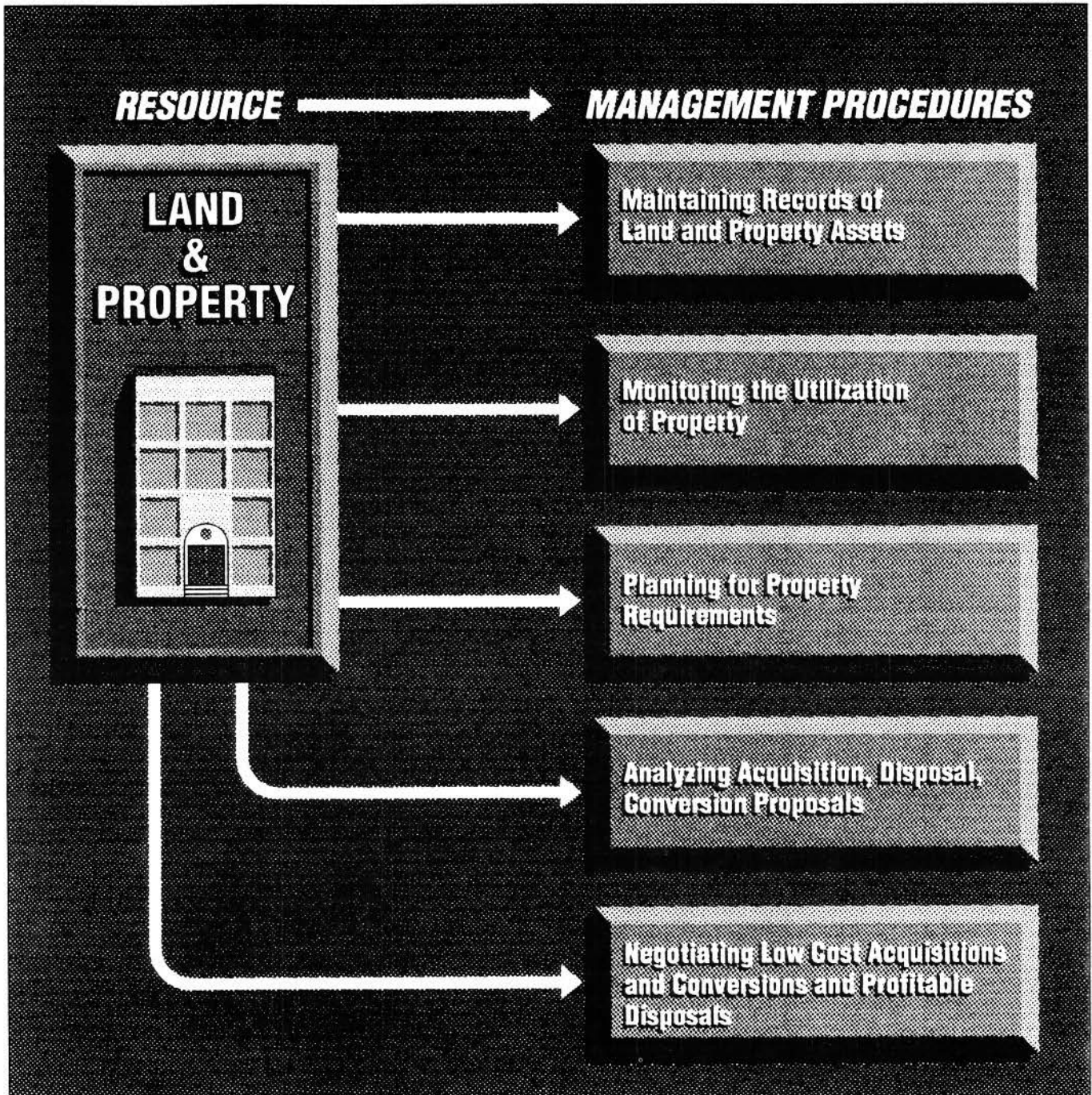
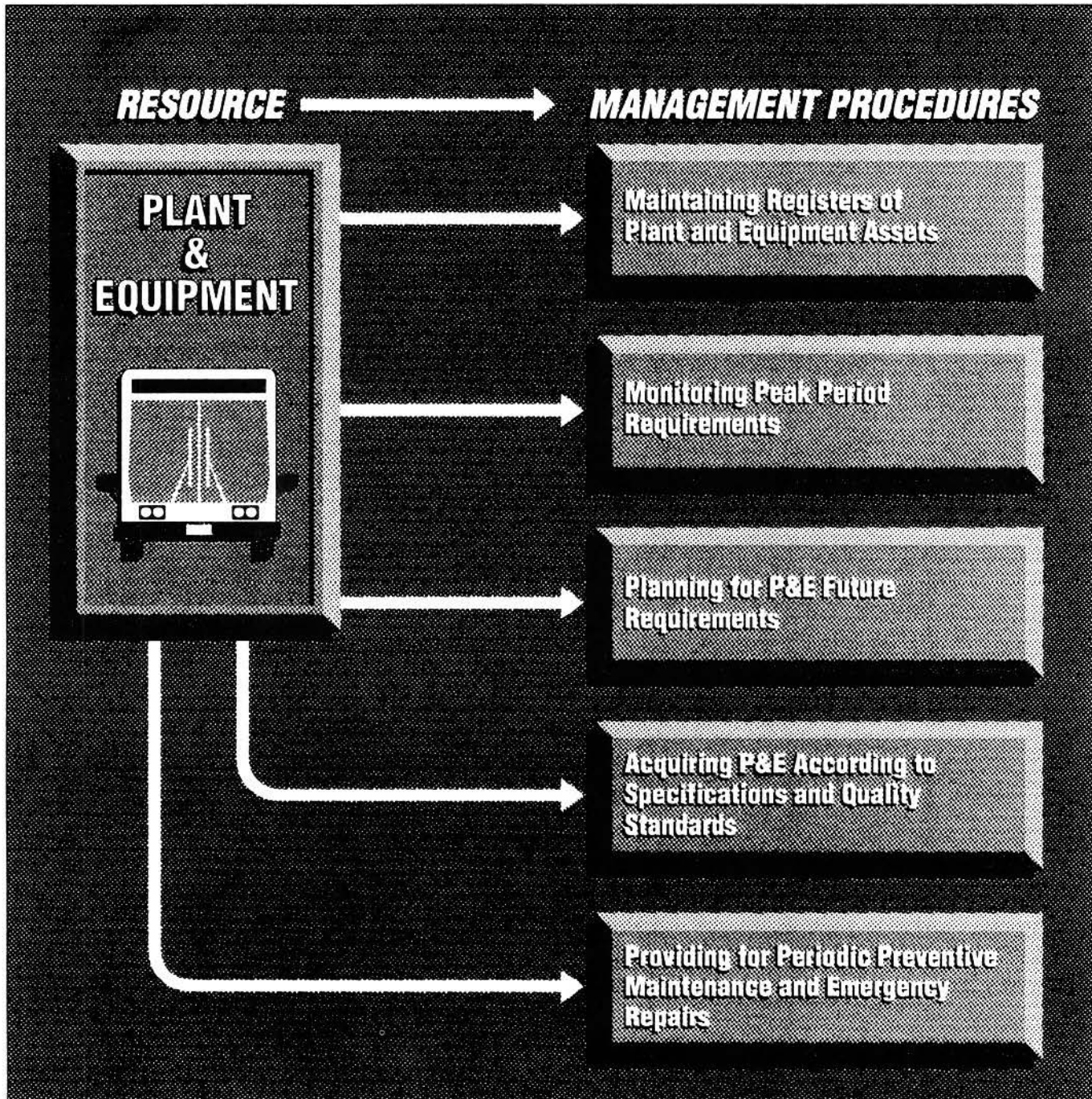


Exhibit 7-3

Plant & Equipment Management



Forecasting, Planning, and Budgeting

Procedures for forecasting, planning, and budgeting future cash flows should ensure that:

- Annual cash flow forecasts form an integral part of the overall planning process and reflect overall planning objectives
- The assumptions used in preparing cash flow forecasts are clearly stated, consistent with other planning objectives, and realistic
- Responsibility for coordinating and preparing cash flow forecasts is allocated to an appropriate executive in the finance department
- Annual cash flow forecasts are approved at the highest level within the transit agency

The cash flow forecast should cover the same period as the income and revenue expenditure budgets which would normally be for a year and be reconciled to such budgets by source and application of funds statements. The annual cash flow forecast then should be phased on a monthly basis.

In many situations a cash flow forecast will be for over a year, particularly when considering the impact of, for example, long-term contracts, projects, capital expenditure plans, or debt maturities. A long-term cash flow forecast should be revised annually.

When there is pressure upon borrowings, it may be necessary to produce short-term cash flow forecasts, i.e., for a month phased on a weekly basis. In these cases the cash flow forecast should be prepared from the latest information regarding income and known commitments, and explanations of significant variations from the original annual forecast should be detailed. Approval of short-term cash flow forecasts should be at the appropriate level within the transit agency.

The preparation of a phased cash flow will be based on a series of assumptions that should be clearly set out and accompany the phased forecast at the time of approval. Such assumptions should include:

- Achievement of relevant income and revenue expenditure forecasts

- Capital expenditures incurred in accordance with the approved program
- Length of credit granted to customers
- Length of credit granted by suppliers, such information being supplied by the purchasing officer
- Rate of interest on bank or other borrowings, together with the normal month(s) of payment
- Payments of taxes on the normal due dates
- The effect of inflation during the year

The phased cash flow forecast should include an explanation of any new source of revenue required with respect to the period under review.

Cash flow forecast reviews and revisions should be carried out regularly upon either a revision of the income or expenditure budgets or when the assumptions used in the preparation of the forecast are no longer valid. Circumstances will determine how frequently revisions will be required, although clearly the actual performance against the phased budget will be an important factor.

Controls, Monitoring, and Review

Procedures for controlling, monitoring, and reviewing actual cash flows should ensure that:

- There are adequate internal controls
- All transactions are accurately and speedily input to the accounting system
- Responsibility for day-to-day cash management is clearly allocated to staff with appropriate training and skills
- The effectiveness of day-to-day management is monitored
- Actual cash flows are regularly monitored and reviewed against forecasts/budgets

- There is adequate liaison between those responsible for management of cash flows and other sections of the transit agency that receive cash or influence timing of payments (e.g., a capital programs department)

The accurate and timely recording of transactions and related accounting information reflecting the business activities should ensure that:

- Goods and services are invoiced promptly and statements are prepared regularly and sent to customers without delay (this may include cycle billing two or more times a month and priority should be given to high-value invoices)
- Goods and services are supplied on credit only to approved customers who are within their credit limits
- Regular comparison is made between the actual amounts of debtors and creditors with the forecast/plan

Investment of Surplus Cash

Investment procedures should ensure that all cash available for investment is immediately identified as such, that investment policies are clearly stated and reflect legal or other constraints, and that investments are placed competitively within parameters of acceptable risk, duration, and liquidity.

Management Information

Transit agency management should receive the following information:

- A cash flow forecast, prepared in advance of the financial period to which it relates and as an integral part of the overall planning and budgeting process. The forecast should be reviewed and revised as necessary during the period.
- Monthly reports of actual cash flow results for the month and cumulatively, with comparisons against a phased budget and the comparable period in the previous year. Variances against budgets should be identified and analyzed, so that management can initiate corrective action and any appropriate revision of the forecasts.

Performance Indicators

Performance indicators used by the transit agency to evaluate its management of cash may include the following:

- Average time delay between the transaction creating a debt and submission of an invoice
- Ratio of aged debts to total debts
- Ratio of bad debt write-offs to total debts
- Days purchases outstanding
- Total cash available for investment
- Percentage of available cash actually invested
- Return on investment compared to plan and previous period
- Return on investment compared to external standards (e.g., market interest rates, money market rates, Treasury bill yield)
- Unit cost per bank account, where costs comprise charges plus interest foregone on non-interest bearing balances

Indicators should, where appropriate, include comparisons with previous monthly/yearly actuals and budgets.

7.3 LAND AND PROPERTY MANAGEMENT

Land and property management covers the following activities:

- Purchases and sales of property
- Design and development of property
- Maintenance and repairs of improvements
- Commercial management of land and property, i.e., joint development

Responsibility for managing the transit agency's property may lie with a real estate department or may be shared with the user departments. Responsibility for providing property-related services may be with a single property management department or by two or

more departments, such as an architects' department and a building and stations services department.

The objectives of the land and property management function are to manage the transit agency's land and property assets so that:

- The transit agency has, at any time, only the holdings necessary to achieve its overall objectives
- Optimum use is made of its holdings
- Holdings are maintained in a condition appropriate to their use and the preservation of their value as an asset

These main objectives should envelope subsidiary objectives, including:

- To identify the need for land and authorize development and building sufficiently far in advance to secure completion when required
- To develop standards for design that will minimize maintenance and energy consumption
- To procure the most effective planning of maintenance and the replacement of obsolete plant and fittings
- To plan any disposals of property to secure the greatest advantage

Procedures

To ensure that the transit agency's holdings of land and property are maintained at the appropriate level, there should be procedures that address:

- Maintaining records of the transit agency's land and property assets
- Monitoring the utilization of property against internal or external objectives or standards
- Ensuring that users make forward plans for their property requirements

- Analyzing the transit agency's existing and planned requirements, and making appropriate proposals for acquisition, disposal, conversion or rationalization
- Ensuring that the costs of acquisitions and conversions are as low as possible and that the maximum possible proceeds are obtained for disposals.

There should be procedures for monitoring the recurrent costs of using the entity's property.

There also should be procedures for ensuring that the transit agency keeps abreast of, and makes use of, good practice in the industry. Current examples would include energy conservation measures, and the use of specialized computer packages for applications such as compiling schedules of materials.

The transit agency should have access to the latest information on grants and sources of finance which may influence the siting of a particular property or operation.

The procedures for the maintenance of land and buildings should include:

- A formalized program of preventive maintenance
- Regular inspection of all properties
- A system of work orders for maintenance
- Building maintenance histories for all properties, showing preventive maintenance separately
- Determination and investigation of deviations from schedules and variance from estimates
- Properly analyzed work requirements scheduled according to priorities

All major maintenance work should be subject to proper procurement and project control procedures. Capital equipment purchased for maintenance should be similarly controlled. Whenever possible central purchasing facilities should be used to obtain

maximum discount on items of recurrent expenditure such as oil and fuel.

Where leasehold premises are occupied or are to be occupied by a transit agency, procedures should be in place to ensure that:

- Leases contain a clause to ensure that tenant improvements by the transit agency are not reflected in assessing future rent reviews
- Leases contain a clause that allows the transit agency priority rights to let additional space
- Lease terms are not unduly onerous upon the transit agency's finances

There should be procedures for encouraging suggestions from throughout the transit agency for reducing the recurrent expenditure associated with land and buildings.

For joint development activities, measures should be taken to ensure that commercial lettings of land and property are on the most favorable terms and procedures should ensure appropriate liaison with legal advisers. There should be procedures for ensuring that all rents and charges are billed on a timely basis and that overdue amounts are followed up.

Development projects should be undertaken only after there has been a full needs assessment and feasibility study.

Project control procedures should be operational once the decision to proceed with a development project has been made.

Management Information

Management should receive regular information on the following:

- Analysis of property owned and/or leased by the transit agency
- Summary of ground areas, floor areas and building characteristics of properties
- Current and planned use
- Analysis of operating costs for all properties

- Analysis of usage (e.g., floor space per employee)
- Changes in the demand for space which are foreseen and details of alternatives to the existing pattern of use

It is probable that a set of computerized records, together with appropriate site and building plans, would be the best means of managing this information.

If there is a building services department employing architects, surveyors, or engineers, management information should include:

- Analysis of the existing and projected work load on the department compared with capacity
- Status of all projects compared to schedule, and if not on schedule, details of action being taken
- Operating costs for the department compared to budget
- Comparison of costs of similar services obtained from outside consultants

Management information for repairs and maintenance should cover:

- The results of the regular inspection procedures, and the impact on present plans
- Progress of plans against budgets
- Progress of planned work against schedules
- Unit costs for similar properties, and comments on significant variances

Management information with respect to acquisitions, disposals, and commercially managed properties should cover:

- Departmental performance against budget
- Summary analysis of acquisitions and disposals, and average time to complete
- Financial performance of commercially managed properties

Performance Indicators

Among the performance indicators that should be considered in assessing whether a transit agency is obtaining the best value for money from its land and property are:

- Comparison of usage (e.g., floor area per employee) of properties with other buildings both within and outside the entity
- Comparison of operating costs (e.g., heat, light, janitorial services) of properties with those for other buildings in the entity and similar buildings outside the entity
- Comparison of maintenance costs per square foot of floor space of properties with those for other buildings in the entity and similar buildings outside the entity
- Average time to complete sales or purchases

7.4 PLANT AND EQUIPMENT MANAGEMENT

The resources that a transit agency deploys to manage its plant and equipment will naturally depend on the relationship of that department to the rest of its operations. The variables may be considered a result of:

- The nature of the transit agency's main business, i.e., bus/rail
- The size of the transit agency and service area
- The size, location, and mobility of plant
- The operating environment
- The consequences of failure

Irrespective of the wide interpretation of the term "plant and equipment management," the objectives can be summarized as:

- To provide sufficient and suitable plant and equipment to assist the transit agency to achieve its overall objectives

- To maintain plant and equipment in a condition appropriate for its use, with least disruption, and at an economic cost
- To minimize operating costs, including fuel consumption

These main objectives should envelope subsidiary objectives, including:

- To identify changes within the transit agency's operations, thereby enabling forward plans to provide the most appropriate plant and equipment
- To develop specifications and standards for plant and equipment that account for capital cost, running costs, utilization, and plant and equipment life
- To select appropriate financing arrangements for the acquisition of plant and equipment
- To develop planned maintenance procedures appropriate to utilization and cost of the plant and equipment
- To make adequate provision for standby, backup, or other emergency cover in the event of breakdowns

Procedures

To ensure that the transit agency's plant and equipment holdings are appropriate for its needs, there should be procedures for:

- Maintaining registers of plant and equipment assets
- Monitoring utilization of plant and equipment and consideration given to securing additional plant and equipment to cope with peaks
- Analyzing the transit agency's existing and planned requirements and making proposals for acquisitions and disposals
- Ensuring that acquisitions are made in accordance with appropriate specifications and quality standards

There also should be procedures for ensuring that the transit agency keeps abreast of, and makes use of, good practice in the industry or service concerned. For instance, the use of specialized computer packages to maintain registers and to assist in the planning and recording of maintenance should be considered.

The procedures for acquiring plant and equipment should include:

- Capital expenditure control
- Comparison and evaluation
- Purchasing
- Inspection and processing to ensure timely delivery of the equipment to the required standards
- Testing equipment before it is put to use

The procedures for repairs and maintenance of equipment may be carried out by the transit agency's own facilities, by contractors as and when required, or under contract maintenance arrangements. The following procedures should be considered:

- Provision for routine daily checks such as oil, grease, water, fluid levels, etc.
- A program of preventive maintenance
- Routines for statutory and insurance inspections of certain items of plant, such as lifting machinery and pressure vessels
- Provision for emergency repairs
- A system of works orders for repairs and maintenance, and the means of recording all work done on individual items of equipment to create a history file
- Evaluation of the estimated cost of major repairs against replacement

It is likely that the transit agency will hold its own stocks of spares and consumables although the size of the holding will vary considerably. The stock levels should be adequately controlled, with procedures for issuing and reordering, taking into account rates of

consumption, delivery periods, and the effects of down-time.

All major maintenance work should be subject to proper procurement and project control procedures. Capital equipment purchased for maintenance should be similarly controlled.

Where equipment is mobile or hired to third parties, it is essential to maintain records of the location of each item and make local arrangements for maintenance.

Disposal procedures will vary according to the type of plant and equipment, and the range of alternatives will include:

- Offering the equipment to other operating divisions within a group of transit agencies whose parent is a regional authority
- Part-exchanging
- Selling by fixed price, bid, or auction
- Scrapping

Management Information

Where the department is of a significant size in relation to the whole organization, it is generally appropriate to group plant and equipment into various categories or cost centers. Regular management information should be provided, for each category or cost center, on the following items:

- Availability of plant and equipment, expressed in percentage terms, and the reasons for non-availability in the three categories of planned work, breakdown, and accidental damage
- Utilization of plant and equipment when available
- Loss of output due to non-availability of plant and equipment
- Running costs of equipment
- Repair and maintenance costs of equipment
- Expenditure on internal and external hire, i.e., contracting-out

- Income from internal or external hire, i.e., pooled maintenance facilities

Repair and maintenance costs should be subdivided into labor, materials, and contract work for the three categories of planned work, breakdown work, and accidental damage repair.

The following information should be maintained for each item of plant and equipment:

- Location
- Historical record giving details of all breakdowns, damages, and replacement parts fitted
- Age and estimated residual life
- Equipment running time
- Fuel and power consumption
- Historical purchase price plus cost of capital additions or modifications
- Maintenance costs

Procedures should exist for the regular analysis of the information to allow any trends to be identified and for corrective action to be taken where necessary. Comparisons should be made between similar items and between items performing similar functions to identify areas for further examination.

Fuel and power consumption rates should be monitored regularly for each item to discover adverse trends which may indicate inadequate servicing or general deterioration of an item necessitating a major overhaul or replacement.

Records should be maintained of all statutory and insurance inspections scheduled and carried out. In addition, similar records should be kept for any inspection and tests laid down in internal safety regulations.

Performance Indicators

The criteria by which the performance of the plant and equipment management will be judged depends on the relationship of the department to the entity as a whole. Transit agencies expend a substantial portion of total budget on plant and equipment, and

the management of the plant and equipment is possibly the most significant element in its financial performance.

The following indicators should be considered in assessing the overall performance of the plant and equipment management:

- Availability of plant and equipment or groups of plant and equipment within a specific time period
- Non-availability resulting from breakdowns
- Non-availability resulting from the shortage of spare parts
- Expenditure on hire plant to replace non-available plant
- Loss of service resulting from non-availability of plant and equipment
- Costs of maintenance, inspection and repair per year, per mile, or other convenient unit
- Fuel and power consumption trends and extremes
- Labor, direct materials, indirect materials, and departmental overheads as proportions of total maintenance costs

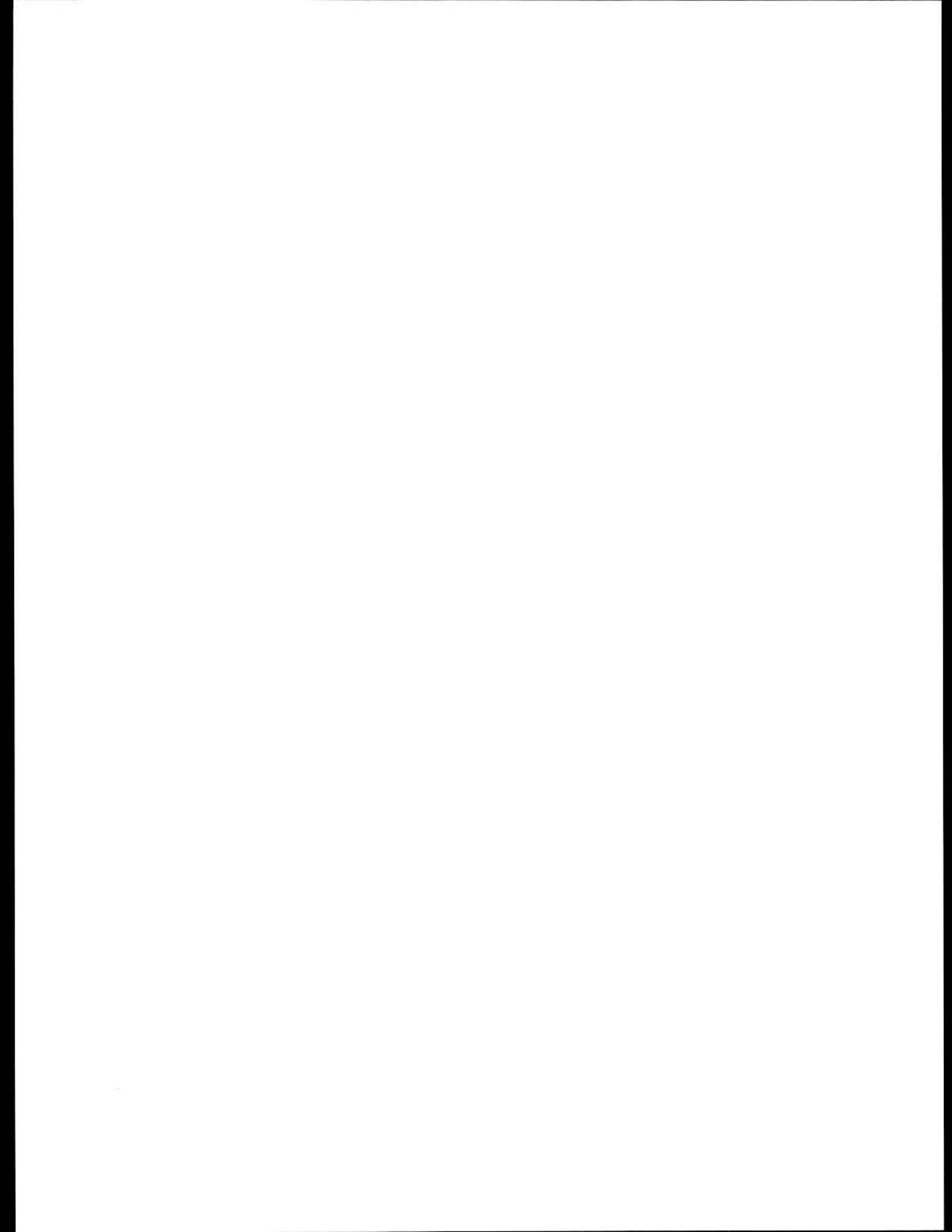
Broader comparisons should be made on industry standards where sufficient information is available. For example, maintenance, fuel and operator costs for a specific size of bus per mile should be compared with industry averages.

Summary

Installation and adherence to best professional practice in asset management will enhance a transit agency's performance with respect to the criteria identified as economy, efficiency and effectiveness. This is intended to produce above-the-line results reflected in reduced costs and bottom-line results reflected in improved financial performance.

APPENDIX A

VALUATION OF TRANSIT ASSETS



VALUATION OF TRANSIT ASSETS

Asset valuation is vitally important in accounting. If assets are valued poorly, the balance sheet is not useful. The transit agency income statement also suffers, because the amounts of revenues and expenses are related to the valuation placed on assets.

Assets are those economic resources of a transit agency that can be measured in dollars, are expected to have future benefits, and are recognized in accordance with accounting principles. The basis for recognition is generally a transaction of the transit agency together with the expectation of some future economic benefit or service potential to the transit agency.

Once an economic resource has been recognized as an asset of the transit agency, the question of valuation becomes important. When assets are initially recognized in a transaction, the transaction price is the basis for initial measurement, or valuation, of the asset. This is relatively straightforward and, in fact, initial valuation is not usually a problem. In some cases, however, there is a question about whether a transaction has taken place; for example, when the item involved in the transaction can be returned within a period of time without any penalty. In other cases there is a question about the transaction price; for example, when a building is sold in exchange for a piece of land or when future services are sold for a note that does not bear the usual market rate of interest.

In general, the original price should be used to value the asset. But asset valuations should always be examined when statements are prepared at subsequent dates to ascertain whether the valuations still have validity. In particular, a determination should be made as to whether the asset has declined in value, whether some of the asset has been used up, or, indeed, whether an asset still exists. If any of these things have happened, the asset valuation should be reduced or eliminated.

TYPES OF ASSETS

Transit agency assets can be conveniently divided into two main groups: monetary assets and unexpired costs. Monetary assets are assets of an enterprise held for their general usefulness. This group of assets consists primarily of cash and claims that will be converted directly into cash (accounts receivable and

notes receivable, for example). These assets are held because they are useful in acquiring other assets for service provision, because they are useful in meeting obligations of the transit agency as the obligations come due, or because they are a convenient place to invest idle funds.

Monetary assets should be valued at the amount of purchasing power they represent. For cash, which is purchasing power in a pure form, valuation is not difficult; in the case of most other monetary assets, valuation can present a problem. The valuation problem of each asset is solved in a different way, but in each case the valuation approach can be understood if the general objective is kept in mind: to value the asset at the amount of purchasing power it represents.

Monetary assets arise from many sources. During normal operations, there is a daily inflow of cash from operations and receivables into the transit agency. This inflow is the primary source of monetary assets. A transit agency also may obtain cash and other monetary assets through activities such as borrowing or from broad-based taxes. Monetary assets are used to finance operations, pay liabilities, and acquire other assets.

Unexpired costs are those assets that will become expenses in future accounting periods. They are assets acquired because of their usefulness to the transit agency. Unexpired costs are shown as assets until the time comes to transfer them to the expense category. These assets are generally long-lived and subject to depreciation to reflect book value.

Current Assets - Cash

Cash is the most liquid resource of a transit agency; that is, it is readily usable in transactions. It consists of coin and currency on hand, amounts on deposit in banks, and checks and money orders received from transit patrons. The checks and money orders are included because they generally will be deposited or cashed in the near future.

Cash is generally divided into two categories: cash on hand and cash in banks. All transit agencies deposit their receipts in a bank and make their disbursements by check; therefore, the amount of cash on hand is nominal, generally being limited to undeposited fare revenues from the previous day's service.

Current Assets - Accounts Receivable

Accounts receivable to a transit agency reflect the amounts due from others for material and supplies furnished and services rendered, including transportation and storage charges, property use charges, other rents, amounts owing by public authorities, amounts of collectible judgments, current accounts with officers and employees and other accounts and claims upon which responsibility is acknowledged by solvent concerns or individuals.

Accounts receivable are valuable assets to a transit agency although they are not useful in themselves. Their value lies in the general purchasing power they provide to the transit agency when they are collected. Receivables are valued on the basis of the purchasing power that they represent. Unlike cash, of which the entire amount on hand or in the bank is itself purchasing power, the receivables on the records might not all become available as purchasing power. The receivables might be collected in full, but there also might be bad debts, sales allowances, and discounts. If any of these items are of significant size, and if there is a reasonably accurate way of estimating them, appropriate provision should be made in the accounts.

A provision for estimated bad debts is needed to state the receivables at their purchasing power and also to match expenses and revenues for the period properly.

A note receivable is a written promise to pay a definite sum of money on demand or at some fixed or determinable future date. A note differs from an open account in that a note is a more formal debtor-creditor arrangement. A note is a negotiable legal instrument and can be transferred between parties more easily than an account can.

Investments

A transit agency may invest in securities and other assets not used in operations for various reasons. Temporary investments in marketable securities are made primarily to earn income on otherwise idle cash within the year. Long-term investments in securities may be made to earn income over a longer term, because they are an attractive speculation or because the investment furthers a socially responsible purpose. Occasionally, a transit agency invests in tangible assets such as land that will not be used in operations for several years.

If the securities are to be converted within the year, they are referred to as temporary investments and are classified as current assets on the balance sheet. If management intends to hold the securities for a longer period of time, they are long-term investments and should not be listed among current assets, since the purchasing power will not be available for current use. Note that it is management's intention that makes the difference in classification. Identical securities held by two different transit agencies might be classified as a current asset in one case and as a long-term investment in the other, because the intentions of management differ in the two agencies.

The general rule is that temporary investments are valued at the "lower of cost or market." Cost is used if the market value exceeds cost; market is used if the market value is below cost.

The valuation method of lower of cost or market is not particularly logical, since market fluctuations are recognized in only one direction. It is justified primarily on the basis of conservatism in accounting. Assets cannot be overstated, although they can be stated at a low figure.

Long-term investments, like other assets, are recorded initially at cost and are often maintained at this amount. This procedure is followed because current accounting principles emphasize historical cost valuation, not necessarily because the current market value is irrelevant.

Property, Plant, and Equipment

Property, plant, and equipment includes all land used or planned for use as building sites and all buildings, machinery, equipment, vehicles, and other tangible, long-lived assets used by a transit agency in its operations. These assets are also referred to as simply "plant and equipment" or "fixed assets." These assets (excluding land) have limited useful lives and hence are subject to depreciation.

Fixed assets are valued at cost; the book value of fixed assets is determined by adjusting for depreciation.

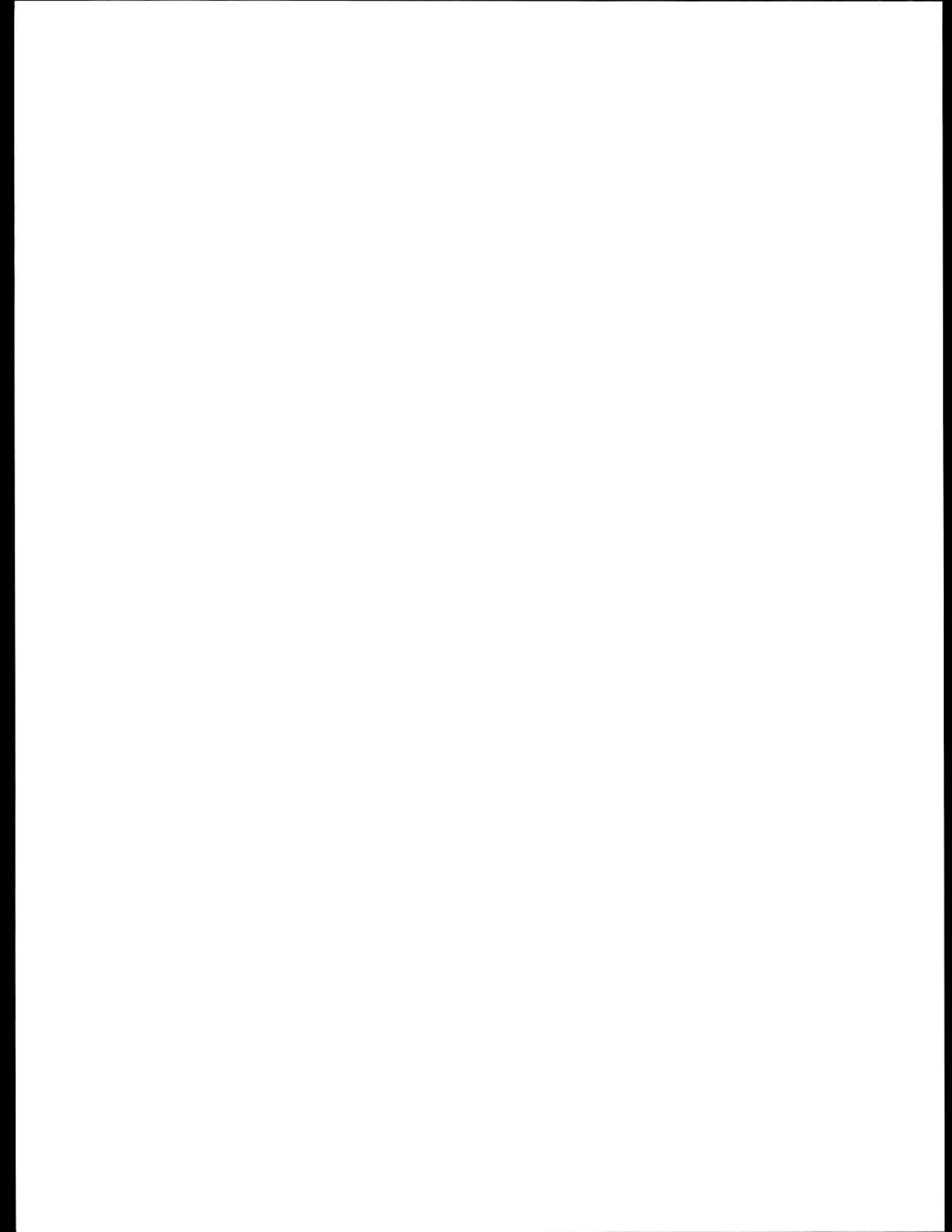
Depreciation accounting is the process of allocating the cost of an asset over its service life. Depreciation accounting is used most often for tangible, inanimate objects such as buildings and vehicles. The method of depreciation is chosen on the basis of the pattern of benefits that is associated with the asset under consideration since public agencies have no tax

consequences. If benefits flow evenly over the life of the asset, one method is chosen (straight-line); if the benefits are higher in the early years, a method that provides diminishing charges would be appropriate (sum-of-the-years'-digits or declining-balance).

An important tangible asset in the property, plant and equipment category is land used as a building site. Land used for this purpose does not depreciate.

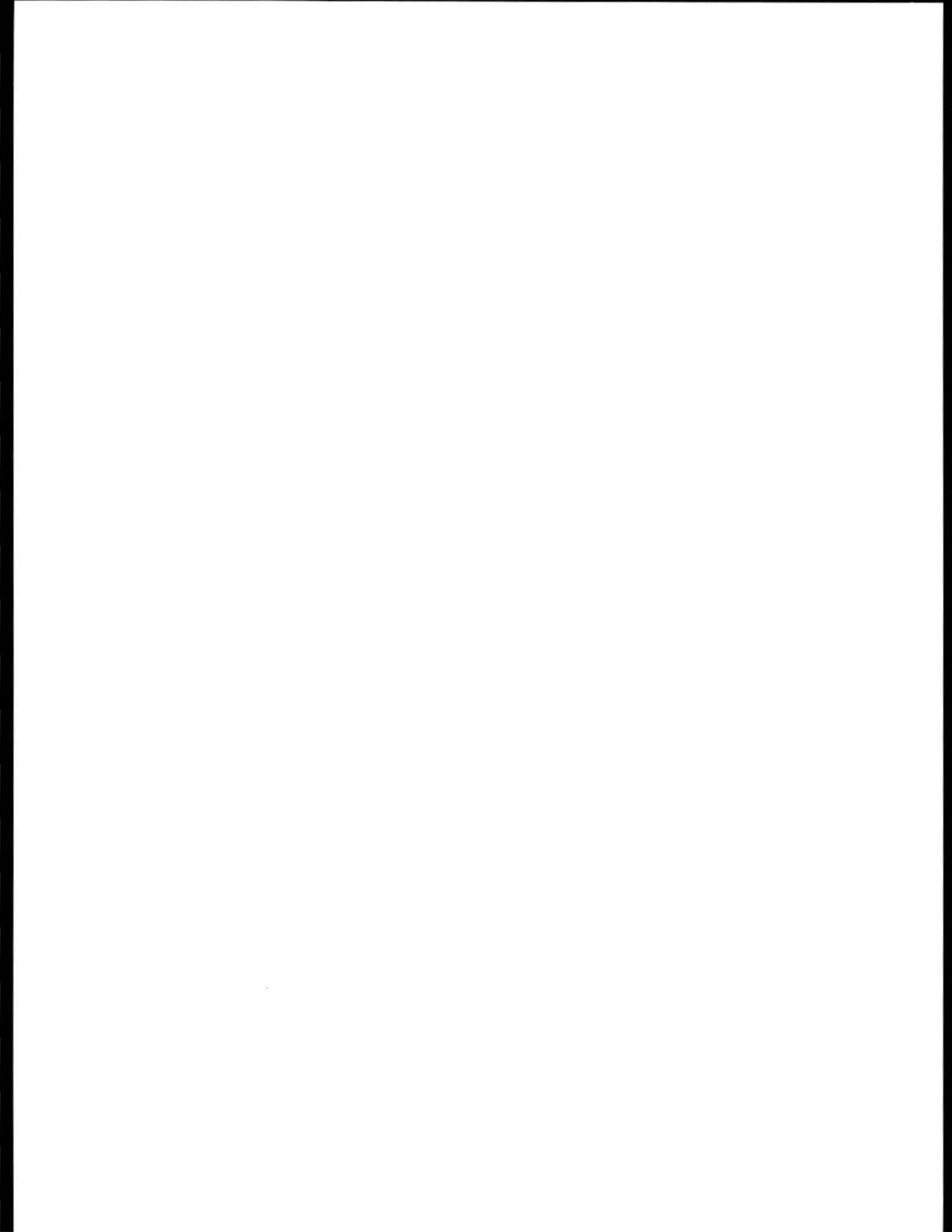
Intangibles

Some long-lived assets do not have physical characteristics. Instead, they involve ideas, rights, and relationships, all of which are intangible factors. When a transit agency has an exclusive right to these intangible factors, they may be recorded as assets. These intangibles can be divided into two groups: those with an unlimited term of existence and those with a limited useful life. The first group includes such items as perpetual franchises, trade names, goodwill (generally), and secret processes. The second group includes such items as patents, copyrights, leases, and franchises for a limited term. Theoretically, the first group should be retained on a transit agency's records as long as the individual items have value. Items in the second group, on the other hand, should be recorded as expenses over their useful lives. The process of allocating the cost of intangibles over their useful lives as an expense is known as amortization accounting.



APPENDIX B

ASSET DEFINITIONS



ASSET DEFINITIONS

Definition of Asset Object Classes as documented in Urban Mass Transportation Industry Uniform System of Accounts and Records and Reporting System.

101. Cash and Cash Items

These categories cover cash on hand and in banks available for the liquidation of transit system liabilities, including special deposits for which a current liability exists.

101.01 Cash and Cash Items - Cash

The amount of current funds available for use on demand. They may be in the hands of financial officers or on deposit in banks and trust companies.

101.02 Cash and Cash Items - Working (Imprest) Funds

The amounts advanced to officers, agents, employees, masters, pursers and others as petty cash or working funds from which certain expenditures are to be made and accounted for.

101.03 Cash and Cash Items - Special Deposits, Interest

The monies and bank credits specially deposited in the hands of fiscal agents or others for the payment of interest on behalf of the transit system. When interest is paid from such deposits, this account shall be credited and the appropriate accrued or matured interest liability account shall be debited.

101.04 Cash and Cash Items - Special Deposits, Dividends

The monies and bank credits in the hands of fiscal agents or others for the payment of dividends on behalf of the transit system. When dividends are paid from such deposits, this account shall be credited and the appropriate dividend account shall be debited.

101.05 Cash and Cash Items - Special Deposits, Other

The monies and bank credits in the hands of fiscal agents or others for special purposes other than the payment of interest or dividends. This includes cash or securities deposited with federal, state or municipal authorities, public utilities or others as a guarantee for the fulfillment of obligations. When the purposes for which the deposit exists have been satisfied, this account shall be credited with the amount of the deposit disbursed or released.

101.06 Cash and Cash Items - Temporary Cash Investments

The book cost of investments such as time drafts receivable and time loans, bankers' acceptances, United States Treasury certificates, marketable securities and other similar investments acquired for the purpose of temporarily investing cash. Any securities included herein must be of such a nature as to be readily convertible into cash at substantially the book value.

102. Receivables

These categories cover amounts owed to the transit system by other parties.

102.01 Receivables - Accounts Receivable

The amounts due from others (except associated companies) for material and supplies furnished and services rendered, including transportation and storage charges, property use charges, other matured rents, amounts owing by public authorities, amounts of collectible judgments, current accounts with officers and employees and other accounts and claims upon which responsibility is acknowledged by solvent concerns or individuals.

102.02 Receivables - Notes Receivable

The book cost of all collectible obligations in the form of notes receivable, contracts receivable and similar evidences of money receivable on demand or within a time not exceeding one year from date of issue.

102.03 Receivables - Interest and Dividends Receivable

The amount of current interest accrued to the date of the balance sheet on bonds, mortgages, notes and other commercial paper owned; on loans made; and on open accounts, bank deposits, etc.

The amount of dividends receivable on stocks owned.

NOTE: Such receivables from affiliated companies are to be included in object class 102.04.

102.04 Receivables - Receivables from Associated Companies

The total of amounts receivable from associated companies which are subject to current settlement, such as balances in open accounts for services rendered, material furnished, traffic accounts, claims, rent for use of property and similar items.

Interest and dividends receivable from associated companies.

Loans, notes and drafts for which associated companies are liable.

102.05 Receivables - Receivable Subscriptions to Capital Stock

The balance due from subscribers upon legally enforceable subscriptions to capital stock.

102.06 Receivables - Receivables for Capital Grants

Grant amounts receivable from federal, state and local governments or other parties, for capital projects and acquisitions.

102.07 Receivables - Receivables for Operating Assistance

Amounts receivable from federal, state and local governments or other parties, for general operating assistance, special fare subsidies, demonstration project assistance, and purchase-of-service payments.

102.08 Receivables - Other Receivables

Amounts receivable from solvent debtors based on debtor-creditor relationships other than those specified in categories 102.01 through 102.07.

102.09 Receivables - Reserve for Uncollectible Accounts

Amounts reserved for receivables which may become uncollectible.

103. Materials and Supplies Inventory

This category covers the cost of all unapplied materials and supplies including tools, repair parts, fuel, etc. The cost shall include all specifically assignable transportation charges incurred in obtaining the delivery of such materials and supplies upon the premises of the carrier, including loading and unloading. The cost shall also include sales and excise taxes, except for such taxes on fuel and lubricants, on the materials and supplies included in the account. If the "inventory method" of accounting for repairable items is used, this category will also include the value at which the repaired items are to be held and eventually reissued for use.

104. Other Current Assets

This category covers the amount of all assets of a current nature not includable in any of the foregoing current asset accounts, 101 through 103. The nature of current assets is such that they are convertible to cash within one year of the balance sheet date.

105. Work in Process

These categories cover labor, material and overhead amounts applied to projects not yet completed or placed in service.

105.01 Work in Process - Unbilled Work for Others

Labor, material and overhead costs applied to work for others and for which the system will be reimbursed.

105.02 Work in Process - Capital Projects

Labor, material and overhead costs applied to capital projects not yet completed or placed in service.

111. Tangible Transit Operating Property

These categories cover transit operating property owned by the transit system and having an expected life in service of more than one year at the time of its installation and a unit cost greater than the transit system's capitalization cutoff. Transit operating property is that property used in providing urban mass transit services. It includes the rolling stock, maintenance facilities, general administration buildings and equipment, etc. that are used to support the provision of transit services.

NOTE: Under the Section 15 reporting system, the gross historical cost of tangible transit operating property is to be reported in this object class (i.e., the sum of object classes 111.01 and 1.11.02).

111.01 Tangible Transit Operating Property - Property Cost

The cost to the transit system of acquiring the tangible property it owns and uses in its own transit operations. The cost includes the transportation charges, sales and excise taxes, installation costs, etc. necessary to place the property in an operating condition.

111.02 Tangible Transit Operating Property - Leased-Out Property Cost

The cost to the transit system of acquiring tangible transit operating property which it owns but leases to another party for the latter's transit operations.

111.03 Tangible Transit Operating Property - Accumulated Depreciation

The cumulative depreciation charges since time of acquisition for all of the tangible transit operating property items owned by the transit system.

112. Tangible Property Other Than for Transit Operations

These categories cover tangible property owned by the transit system but not used in transit operations. This property has an expected life in service of more than one year at the time of installation and a unit cost greater than the transit system's capitalization cutoff. It includes property being used in some operation other than transit service and property not being used in any operations.

NOTE: Under the Section 15 reporting system, the gross historical cost of tangible property other than for transit operations is to be reported in this object class.

112.01 Tangible Property Other Than for Transit Operations - Property Cost

The cost to the transit system of acquiring the tangible property it owns but does not use in transit operations. The cost includes the transportation charges, sales and excise taxes, installation costs, etc., pertaining to the property units covered.

112.02 Tangible Property Other Than for Transit Operations - Accumulated Depreciation

The cumulative depreciation charges since time of acquisition for all of the tangible property items covered in category 112.01.

121. Intangible Assets

These categories cover the intangible rights and benefits accruing to the transit system with a value enduring through a period of time longer than one year.

NOTE: Under the Section 15 reporting system, the total value of intangible assets excluding amortization is to be reported in this object class (i.e., the sum of object classes 121.01 through 121.05).

121.01 Intangible Assets - Organization Costs

The fees paid to a state or other governmental authority for the privilege of incorporation and expenditures incident to organizing the transit system and putting it into readiness to do business.

121.02 Intangible Assets - Franchises

The amounts paid to a state, a political subdivision thereof or to some other governmental authority in consideration of franchises, permits, consents or certificates running in perpetuity or for a specified term of more than one year, together with the necessary reasonable expenses incident to procuring such franchises, consents or certificates of convenience and necessity.

121.03 Intangible Assets - Patents

The cost of patents, rights, licenses and privileges necessary or valuable to the economical conduct of transit operations.

121.04 Intangible Assets - Goodwill

At acquisition, the difference between the total value of the transit system and the aggregate value of its separable resources and property rights, less liabilities.

121.05 Intangible Assets - Other Intangible Assets

The cost of any intangible assets not includable in categories 121.01 through 121.04.

121.06 Intangible Assets - Accumulated Amortization

The cumulative amortization charges since the time of acquisition for all of the intangible assets recorded in categories 121.01 through 121.03.

131. Investments

These categories cover investments of transit system funds in the operation of other entities for purposes other than the temporary investment of surplus cash.

131.01 Investments - Investments and Advances, Associated Companies

The book cost of the transit system's investments in securities issued or assumed by associated companies.

The notes of associated companies maturing more than one year from date of issue.

The amount of advances to associated companies not subject to current settlement including accrued interest on such advances when not subject to current settlement.

131.02 Investments - Other Investments and Advances

The book cost of the transit system's investments in securities issued or assumed by nonassociated companies.

The notes of nonassociated companies and persons maturing more than one year from date of issue.

The cash surrender values of insurance policies carried on the lives of officers and employees when the transit system is beneficiary of such policies.

The amount of advances to nonassociated companies and individuals not subject to current settlement including accrued interest on such advances when not subject to current settlement.

131.03 Investments - Reserve for Revaluation of Investments

Reserves to reflect the decline or loss in book value of securities or like assets held for investment where there appears to be a permanent impairment in value.

141. Special Funds

These categories cover cash and near cash items whose use is restricted to satisfying a specific class of transit system long-term obligations.

141.01 Special Funds - Sinking Funds

The cash, cost of securities of other companies and cost of other assets placed on deposit or in the hands of trustees or segregated from the transit system's other assets as a sinking fund to meet obligations maturing in the future or to carry out such operations as the retirement of preferred stock or the procurement of serial bonds.

141.02 Special Funds - Capital Asset Funds

The cash, cost of securities of other companies and cost of other assets which have been specifically set aside for the purpose of providing a fund for the acquisition of units of depreciable property.

141.03 Special Funds - Insurance Reserve Funds

The cash, cost of securities of other companies and cost of other assets placed on deposit or in the hands of trustees to guarantee the satisfaction of obligations for losses that related to the current or a prior accounting period in instances where the transit system is a "self-insurer" in whole or in part.

141.04 Special Funds - Pension Funds

The cash, cost of securities of other companies and cost of other assets which have been specifically set aside, placed on deposit or in the hands of trustees to provide for employees pensions, relief, savings, and hospital benefits accruing to employees for performance of their labor services.

141.05 Special Funds - Other Special Funds

The cash, cost of securities of other companies and cost of other assets that have been specifically set aside for special purposes not provided for in categories 141.01 through 141.04.

151. Other Assets

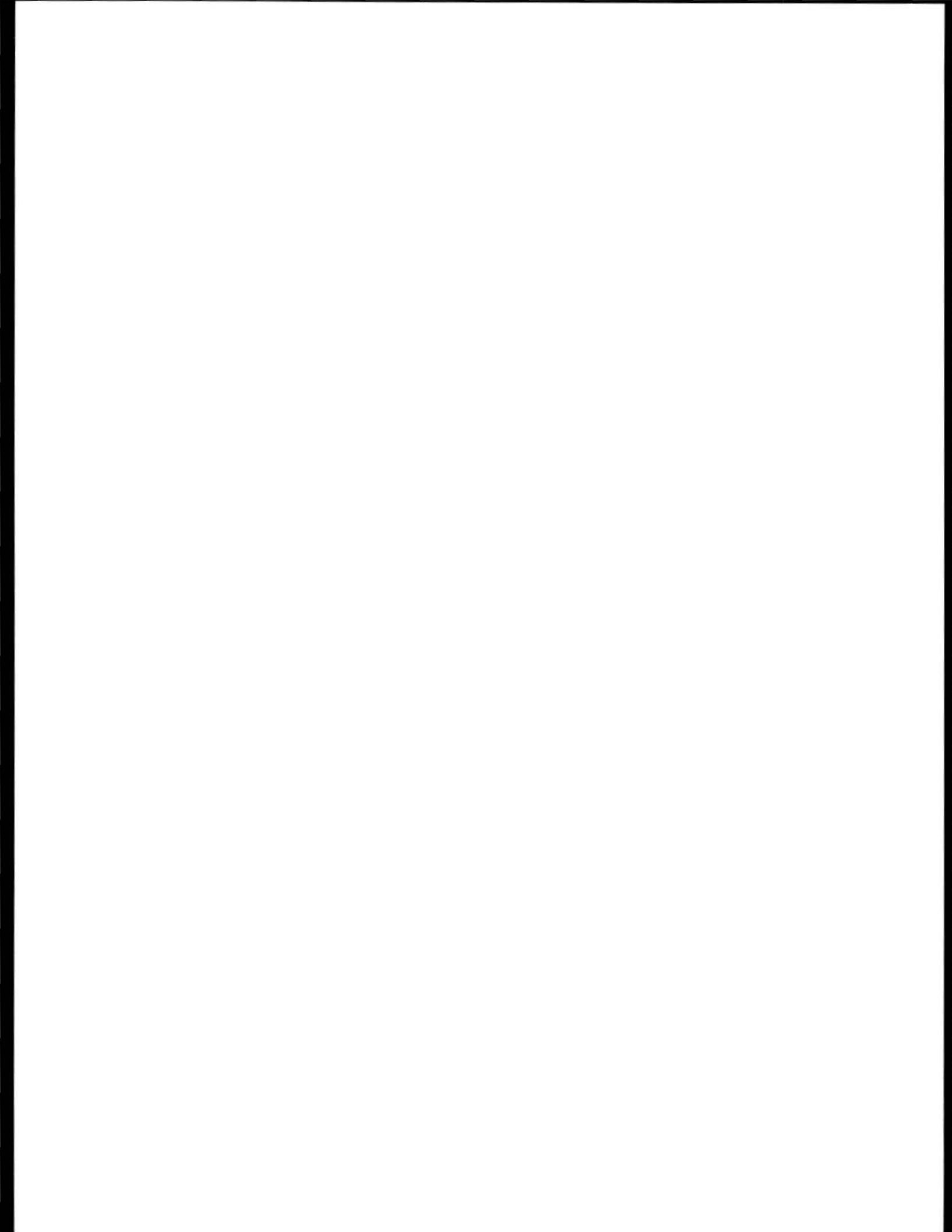
These categories cover the assets not properly includable in major categories 101 through 141 above.

151.01 Other Assets - Prepayments

The payments for items whose benefit is to be realized subsequent to the time of the payment, e.g., prepaid rent, prepaid insurance, etc. As the benefit is realized, the prepayment will be reduced and the appropriate expense category charged.

151.02 Other Assets - Miscellaneous Other Assets

The cost of all assets not provided for in any other asset object class.



APPENDIX C

SUPPLEMENTARY EXHIBITS

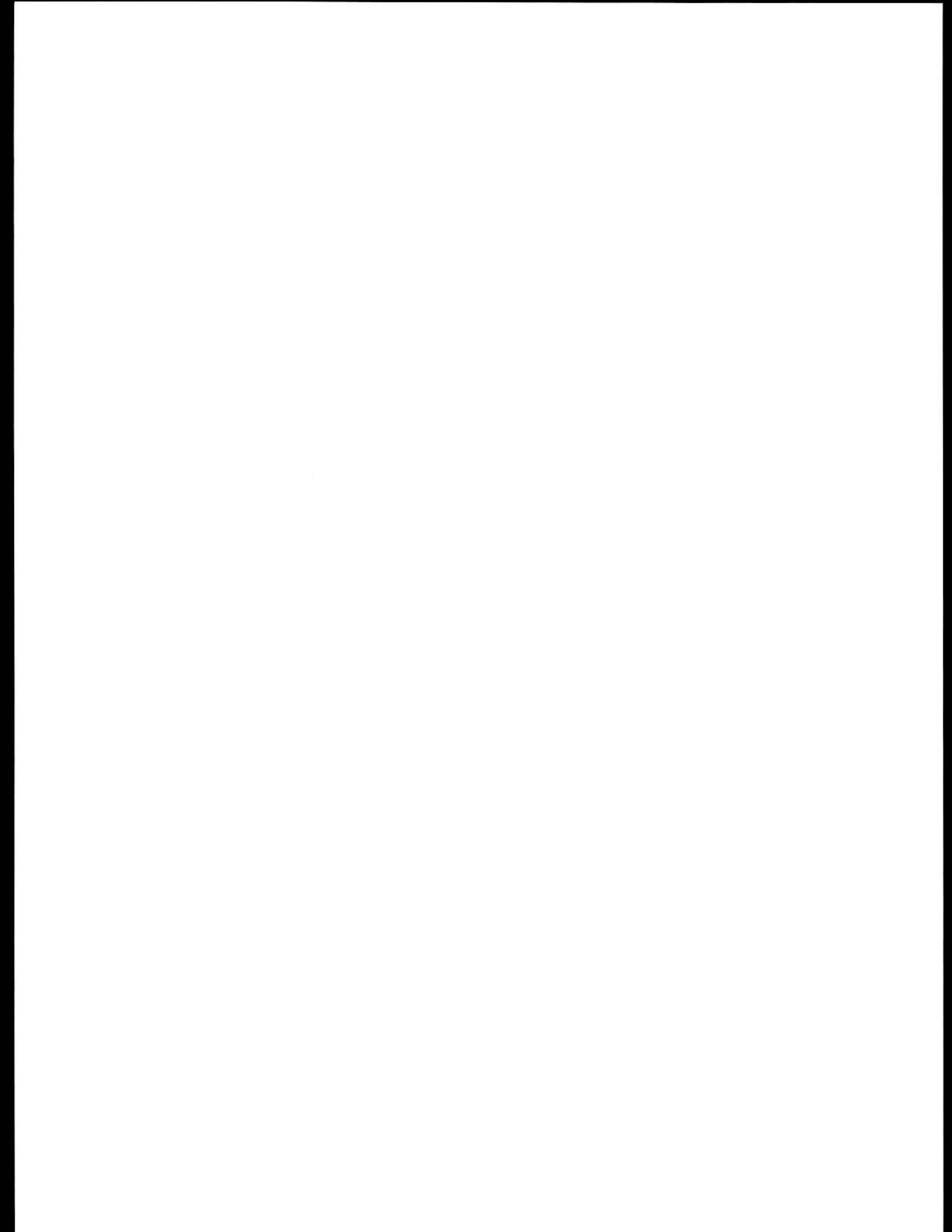


EXHIBIT C-1

**BALANCE SHEET SUMMARY SCHEDULE
SYSTEMS WITH OVER 1000 VEHICLES
(In \$ Millions)**

ASSETS	YEAR OF EXPENDITURE DOLLARS			CONSTANT 1979 DOLLARS		
	1979	1987	% INCREASE 1979 - 1987	1979	1987	% INCREASE 1979 - 1987
Cash and Cash Items	\$217.8	\$969.0	344.9%	\$217.8	\$619.2	184.3%
Receivables	594.4	886.6	49.2%	594.4	566.5	-4.7%
Materials and Supplies Inventory	123.5	501.8	306.3%	123.5	320.7	159.6%
Other Current Assets	17.8	31.2	75.3%	17.8	19.9	12.0%
Work in Progress	507.4	1683.4	231.8%	507.4	1075.7	112.0%
Tangible Transit Operating Property	4673.1	18592.7	297.9%	4673.1	11880.7	154.2%
Less Accumulated Depreciation	-866.8	-3286.7	279.2%	-866.8	-2100.2	142.3%
Total	3806.3	15306.0	302.1%	3806.3	9780.5	157.0%
Tangible Property Other Than for Transit Operations	26.0	22.0	-15.4%	26.0	14.1	-45.9%
Less Accumulated Depreciation	-3.0	-0.8	-73.3%	-3.0	-0.5	-83.0%
Total	23.0	21.2	-7.8%	23.0	13.5	-41.1%
Intangible Assets	241.9	662.6	173.9%	241.9	423.4	75.0%
Less Accumulated Amortization	-21.6	-118.0	446.3%	-21.6	-75.4	249.1%
Total	220.3	544.6	147.2%	220.3	348.0	58.0%
Investments	53.8	2.3	-95.7%	53.8	1.5	-97.3%
Special Funds	91.0	1331.7	1363.4%	91.0	851.0	835.1%
Other Assets	45.4	214.0	371.4%	45.4	136.7	201.2%
TOTAL ASSETS	\$5,700.7	\$21,491.8	277.0%	\$5,700.7	\$13,733.3	140.9%

C-1

EXHIBIT C-2

**BALANCE SHEET SUMMARY SCHEDULE
SYSTEMS WITH 500-999 VEHICLES
(In \$ Millions)**

C-2

ASSETS	YEAR OF EXPENDITURE DOLLARS			CONSTANT 1979 DOLLARS		
	1979	1987	% INCREASE 1979 - 1987	1979	1987	% INCREASE 1979 - 1987
Cash and Cash Items	\$81.8	\$261.5	219.7%	\$81.8	\$167.1	104.3%
Receivables	99.0	262.3	164.9%	99.0	167.6	69.3%
Materials and Supplies Inventory	10.2	100.9	889.2%	10.2	64.5	532.1%
Other Current Assets	5.3	15.1	184.9%	5.3	9.6	82.1%
Work in Progress	849.0	1070.2	26.1%	849.0	683.9	-19.5%
Tangible Transit Operating Property	472.9	6668.6	1310.2%	472.9	4261.2	801.1%
Less Accumulated Depreciation	-124.1	-1389.9	1020.0%	-124.1	-888.1	615.7%
Total	348.8	5278.7	1413.4%	348.8	3373.1	867.1%
Tangible Property Other Than for Transit Operations	4.9	16.4	234.7%	4.9	10.5	113.9%
Less Accumulated Depreciation	-0.7	-5.0	614.3%	-0.7	-3.2	356.4%
Total	4.2	11.4	171.4%	4.2	7.3	73.4%
Intangible Assets	1.4	4.8	242.9%	1.4	3.1	119.1%
Less Accumulated Amortization	-0.3	-2.7	800.0%	-0.3	-1.7	475.1%
Total	1.1	2.1	90.9%	1.1	1.3	22.0%
Investments	105.5	279.6	165.0%	105.5	178.7	69.4%
Special Funds	62.3	525.5	743.5%	62.3	335.8	439.0%
Other Assets	54.5	72.1	32.3%	54.5	46.1	-15.5%
TOTAL ASSETS	\$1,621.7	\$7,879.4	385.9%	\$1,621.7	\$5,034.9	210.5%

EXHIBIT C-3

**BALANCE SHEET SUMMARY SCHEDULE
SYSTEMS WITH 250-499 VEHICLES
(In \$ Millions)**

ASSETS	YEAR OF EXPENDITURE DOLLARS			CONSTANT 1979 DOLLARS		
	1979	1987	% INCREASE 1979 - 1987	1979	1987	% INCREASE 1979 - 1987
Cash and Cash Items	\$165.7	\$911.0	449.8%	\$165.7	\$582.1	251.3%
Receivables	77.9	214.2	175.0%	77.9	136.9	75.7%
Materials and Supplies Inventory	18.8	59.7	217.6%	18.8	38.1	102.9%
Other Current Assets	1.9	11.1	484.2%	1.9	7.1	273.3%
Work in Progress	45.1	444.5	885.6%	45.1	284.0	529.8%
Tangible Transit Operating Property	1803.3	4482.0	148.5%	1803.3	2864.0	58.8%
Less Accumulated Depreciation	-242.6	-1104.7	355.4%	-242.6	-705.9	191.0%
Total	1560.7	3377.3	116.4%	1560.7	2158.1	38.3%
Tangible Property Other Than for Transit Operations	0.0	0.0	N/A	0.0	0.0	N/A
Less Accumulated Depreciation	0.0	0.0	N/A	0.0	0.0	N/A
Total	0.0	0.0	N/A	0.0	0.0	N/A
Intangible Assets	0.3	12.2	3966.7%	0.3	7.8	2498.6%
Less Accumulated Amortization	-0.1	-2.4	2300.0%	-0.1	-1.5	1433.6%
Total	0.2	9.8	4800.0%	0.2	6.3	3031.1%
Investments	0.5	84.6	16820.0%	0.5	54.1	10711.9%
Special Funds	18.4	249.2	1254.3%	18.4	159.2	765.4%
Other Assets	5.1	15.2	198.0%	5.1	9.7	90.4%
TOTAL ASSETS	\$1,894.3	\$5,376.6	183.8%	\$1,894.3	\$3,435.6	81.4%

EXHIBIT C-4

LIGHT MAINTENANCE FACILITIES*

MOTOR BUS

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**																							
	Under 25			25-49			50-99			100-249			250-499			500-999			1000 & Over			All Systems		
	Vehicles			Vehicles			Vehicles			Vehicles			Vehicles			Vehicles			Vehicles					
	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300
1979	99	0	0	68	0	0	49	0	0	35	9	0	19	4	4	20	16	5	52	20	8	342	48	17
1980	101	1	0	66	0	0	58	0	0	33	10	0	27	7	6	13	13	5	76	30	9	374	61	20
1981	94	1	0	67	0	0	69	0	0	37	11	0	19	7	5	24	16	6	78	28	6	389	63	17
1982	84	0	0	72	0	0	86	0	0	33	8	0	15	10	5	25	16	6	75	32	6	390	66	17
1983	99	0	0	76	0	0	71	0	0	45	8	0	17	9	6	25	19	4	71	33	4	404	69	14
1984	145	0	0	64	0	0	54	0	0	30	13	2	22	14	5	28	27	2	50	24	5	393	78	14
1985	137	0	0	72	0	0	53	1	0	42	15	1	34	10	4	33	27	2	48	28	4	419	81	11
1986	125	0	0	65	0	0	50	0	0	41	18	0	81	10	4	29	25	5	48	24	4	440	77	13
1987	139	0	1	72	0	0	44	0	0	50	15	0	72	9	3	29	24	2	52	21	4	457	69	10
1988	141	0	0	66	0	0	49	0	2	45	18	0	62	10	2	27	28	0	48	25	2	438	81	6

* Does not include heavy maintenance facilities

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

CA

EXHIBIT C-5

LIGHT MAINTENANCE FACILITIES*

RAIL RAPID

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**																							
	Under 25			25-49			50-99			100-249			250-499			500-999			1000 & Over			All Systems		
	Vehicles Serviced			Vehicles Serviced			Vehicles Serviced			Vehicles Serviced			Vehicles Serviced			Vehicles Serviced			Vehicles Serviced			Vehicles Serviced		
	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300	< 200	200-300	> 300
1979	1	0	0	0	0	0	0	0	0	1	0	0	10	1	0	0	0	0	11	0	2	23	1	2
1980	0	0	0	0	0	0	2	0	0	2	0	0	8	1	2	0	0	0	11	0	15	23	1	17
1981	0	0	0	0	0	0	1	0	0	3	0	0	10	1	2	0	0	0	11	0	15	25	1	17
1982	0	0	0	0	0	0	0	0	0	4	0	0	11	1	1	0	0	0	11	0	15	26	1	16
1983	0	0	0	0	0	0	2	0	0	2	0	0	7	1	1	5	0	0	11	0	13	27	1	14
1984	0	0	0	5	0	0	2	0	0	0	0	0	12	2	1	11	0	0	0	1	10	30	3	11
1985	0	0	0	2	0	0	2	0	0	1	1	0	12	1	1	11	0	0	1	1	11	29	3	12
1986	0	0	0	2	0	0	2	0	0	1	0	2	10	0	1	11	0	0	1	1	11	27	1	14
1987	0	0	0	2	0	0	2	0	0	0	3	0	12	1	1	11	0	0	1	1	11	28	5	12
1988	0	0	0	1	0	0	3	0	0	2	0	0	9	3	2	16	0	0	0	2	11	31	5	13

* Does not include heavy maintenance facilities.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-6

FIXED AND VARIABLE OPERATING COST*

MOTOR BUS

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	12.6	38.4	19.9	84.5	25.0	117.6	60.9	301.4	44.9	227.0	91.2	396.5	197.7	1277.6	452.1	2443.1
1980	14.0	44.2	20.0	92.1	33.4	153.2	53.9	268.7	79.7	409.5	77.8	427.4	307.2	1727.5	586.0	3122.6
1981	16.5	49.8	23.7	110.9	43.3	182.1	67.4	341.2	77.3	391.2	130.7	681.3	427.1	1907.0	786.1	3663.4
1982	17.5	47.2	27.0	120.0	53.8	231.0	67.7	361.0	84.2	422.8	157.9	810.8	406.8	2043.8	814.9	4036.6
1983	15.6	78.1	29.3	139.8	40.4	245.8	76.3	460.7	81.1	445.5	179.1	874.6	381.3	2195.0	802.9	4439.7
1984	30.2	150.6	32.4	175.0	60.8	303.2	104.0	638.8	134.5	685.6	204.8	1021.3	323.0	1788.3	889.6	4762.9
1985	23.8	158.2	37.6	206.7	48.6	284.0	131.6	757.7	132.8	662.2	241.1	1121.0	347.3	1864.6	962.8	5054.4
1986	21.8	164.1	44.9	210.1	48.4	318.2	139.7	722.4	168.1	856.8	263.8	1095.8	372.2	1939.6	1058.7	5307.2
1987	24.9	205.8	55.7	247.2	56.4	251.6	164.7	776.5	177.5	997.8	240.7	1006.2	417.8	1983.5	1137.7	5468.6
1988	28.5	224.1	45.1	257.4	60.8	314.7	164.5	797.6	184.9	992.7	229.5	1097.0	459.2	2092.1	1174.2	5773.9
% Change 1979-1988	126.6%	483.4%	126.0%	204.8%	143.8%	167.5%	170.3%	164.6%	312.1%	337.2%	151.6%	176.7%	132.3%	63.7%	159.7%	136.3%

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicles maintenance , and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-7

**FIXED AND VARIABLE OPERATING COST*
CONSTANT DOLLAR EQUIVALENT**

MOTOR BUS

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	12.6	38.4	19.9	84.5	25.0	117.6	60.9	301.4	44.9	227.0	91.2	396.5	197.7	1277.6	452.1	2443.1
1980	12.3	39.0	17.6	81.2	29.4	135.0	47.5	236.7	70.3	360.7	68.5	376.5	270.7	1521.9	516.2	2751.0
1981	13.2	39.8	18.9	88.6	34.6	145.5	53.9	272.6	61.8	312.6	104.5	544.3	341.3	1523.7	628.1	2927.1
1982	13.1	35.5	20.3	90.2	40.5	173.7	50.9	271.4	63.3	318.0	118.7	609.7	305.9	1536.9	612.8	3035.5
1983	11.3	57.0	21.3	101.9	29.4	179.2	55.6	335.9	59.1	324.8	130.6	637.6	278.0	1600.2	585.3	3236.5
1984	21.1	105.3	22.6	122.4	42.5	211.9	72.7	446.5	94.0	479.2	143.1	713.9	225.8	1250.0	621.8	3329.3
1985	16.1	106.8	25.4	139.5	32.8	191.7	88.8	511.4	89.6	447.0	162.7	756.7	234.4	1258.6	649.9	3411.7
1986	14.4	108.7	29.7	139.1	32.0	210.7	92.5	478.3	111.3	567.2	174.6	725.4	246.4	1284.0	700.9	3513.3
1987	15.9	131.5	35.6	157.9	36.0	160.8	105.2	496.2	113.4	637.6	153.8	643.0	267.0	1267.4	727.0	3494.5
1988	17.5	137.6	27.7	158.1	37.4	193.2	101.0	489.7	113.5	609.5	140.9	673.6	282.0	1284.5	721.0	3545.2
% Change 1979-1988	39.1%	258.2%	38.8%	87.1%	49.7%	64.2%	66.0%	62.5%	153.0%	168.5%	54.5%	69.9%	42.6%	0.5%	59.5%	45.1%

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicles maintenance , and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-8

**FIXED AND VARIABLE OPERATING COST*
ANNUAL ACTUAL VEHICLE REVENUE MILES*****

MOTOR BUS

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	\$0.39	\$1.20	\$0.33	\$1.42	\$0.33	\$1.57	\$0.34	\$1.66	\$0.31	\$1.59	\$0.35	\$1.54	\$0.43	\$2.77	\$0.37	\$2.02
1980	\$0.36	\$1.15	\$0.30	\$1.39	\$0.33	\$1.53	\$0.35	\$1.76	\$0.38	\$1.95	\$0.44	\$2.43	\$0.53	\$2.98	\$0.44	\$2.36
1981	\$0.43	\$1.29	\$0.34	\$1.59	\$0.39	\$1.63	\$0.40	\$2.04	\$0.45	\$2.28	\$0.50	\$2.59	\$0.74	\$3.28	\$0.56	\$2.61
1982	\$0.50	\$1.36	\$0.40	\$1.76	\$0.45	\$1.95	\$0.43	\$2.30	\$0.51	\$2.55	\$0.57	\$2.92	\$0.72	\$3.64	\$0.59	\$2.92
1983	\$0.35	\$1.73	\$0.41	\$1.94	\$0.36	\$2.18	\$0.41	\$2.47	\$0.49	\$2.69	\$0.66	\$3.24	\$0.66	\$3.78	\$0.56	\$3.10
1984	\$0.35	\$1.77	\$0.40	\$2.15	\$0.49	\$2.44	\$0.49	\$3.01	\$0.62	\$3.18	\$0.67	\$3.36	\$0.81	\$4.50	\$0.63	\$3.35
1985	\$0.28	\$1.88	\$0.41	\$2.27	\$0.41	\$2.38	\$0.54	\$3.14	\$0.63	\$3.12	\$0.76	\$3.54	\$0.87	\$4.68	\$0.66	\$3.45
1986	\$0.27	\$2.05	\$0.51	\$2.38	\$0.43	\$2.82	\$0.58	\$3.00	\$0.70	\$3.59	\$0.84	\$3.51	\$0.92	\$4.81	\$0.72	\$3.60
1987	\$0.31	\$2.58	\$0.55	\$2.45	\$0.56	\$2.49	\$0.65	\$3.07	\$0.67	\$3.77	\$0.85	\$3.56	\$1.04	\$4.93	\$0.77	\$3.68
1988	\$0.33	\$2.62	\$0.46	\$2.61	\$0.52	\$2.70	\$0.68	\$3.29	\$0.70	\$3.78	\$0.82	\$3.94	\$1.14	\$5.19	\$0.79	\$3.88
% Change 1979-1988	-14.9%	119.5%	37.2%	84.4%	56.4%	72.1%	101.9%	97.8%	123.7%	137.5%	132.5%	155.6%	166.2%	87.7%	111.3%	92.2%

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicles maintenance , and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** Prior to 1983, there was inconsistent reporters of purchased transportation services, since specific reporting requirements had not been established.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-9

**FIXED AND VARIABLE OPERATING COST*
ANNUAL ACTUAL VEHICLE REVENUE MILES IN CONSTANT DOLLARS*****

MOTOR BUS

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	\$0.39	\$1.20	\$0.33	\$1.42	\$0.33	\$1.57	\$0.34	\$1.66	\$0.31	\$1.59	\$0.35	\$1.54	\$0.43	\$2.77	\$0.37	\$2.02
1980	\$0.32	\$1.01	\$0.27	\$1.22	\$0.29	\$1.35	\$0.31	\$1.55	\$0.34	\$1.72	\$0.39	\$2.14	\$0.47	\$2.62	\$0.39	\$2.08
1981	\$0.34	\$1.03	\$0.27	\$1.27	\$0.31	\$1.30	\$0.32	\$1.63	\$0.36	\$1.82	\$0.40	\$2.07	\$0.59	\$2.62	\$0.45	\$2.09
1982	\$0.38	\$1.02	\$0.30	\$1.32	\$0.34	\$1.46	\$0.32	\$1.73	\$0.38	\$1.92	\$0.43	\$2.19	\$0.54	\$2.74	\$0.44	\$2.19
1983	\$0.25	\$1.26	\$0.29	\$1.41	\$0.26	\$1.59	\$0.30	\$1.80	\$0.36	\$1.96	\$0.48	\$2.36	\$0.48	\$2.75	\$0.41	\$2.26
1984	\$0.25	\$1.24	\$0.28	\$1.50	\$0.34	\$1.71	\$0.34	\$2.11	\$0.44	\$2.22	\$0.47	\$2.35	\$0.57	\$3.15	\$0.44	\$2.35
1985	\$0.19	\$1.27	\$0.28	\$1.53	\$0.27	\$1.61	\$0.37	\$2.12	\$0.42	\$2.11	\$0.51	\$2.39	\$0.59	\$3.16	\$0.44	\$2.33
1986	\$0.18	\$1.36	\$0.34	\$1.58	\$0.28	\$1.87	\$0.38	\$1.99	\$0.47	\$2.38	\$0.56	\$2.32	\$0.61	\$3.18	\$0.47	\$2.38
1987	\$0.20	\$1.65	\$0.35	\$1.57	\$0.36	\$1.59	\$0.42	\$1.96	\$0.43	\$2.41	\$0.54	\$2.28	\$0.66	\$3.15	\$0.49	\$2.35
1988	\$0.20	\$1.61	\$0.28	\$1.61	\$0.32	\$1.66	\$0.42	\$2.02	\$0.43	\$2.32	\$0.51	\$2.42	\$0.70	\$3.19	\$0.48	\$2.38
% Change																
1979-1988	-47.8%	34.8%	-15.7%	13.3%	-3.8%	5.6%	24.0%	21.5%	37.3%	45.8%	42.7%	56.9%	63.5%	15.2%	29.7%	18.0%

C-9

* Fixed costs include general administration function.

Variable costs include vehicle operations, vehicles maintenance , and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories are based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** Prior to 1983, there was inconsistent reporters of purchased transportation services, since specific reporting requirements had not been established.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-10

FIXED AND VARIABLE OPERATING COST*
RAIL RAPID

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	1.7	0.0 ***	0.0	0.0	0.0	0.0	1.5	6.7	78.2	203.0	0.0	0.0	314.5	713.3	395.9	923.0
1980	0.0	0.0	0.0	0.0	8.2	14.1	1.9	8.0	110.6	221.5	0.0	0.0	337.9	803.7	458.6	1047.3
1981	0.0	0.0	0.0	0.0	5.8	8.9	5.5	18.9	115.3	261.6	0.0	0.0	404.9	940.2	531.4	1229.7
1982	0.0	0.0	0.0	0.0	0.0	0.0	10.4	32.5	124.3	300.1	0.0	0.0	413.4	1073.7	548.2	1406.2
1983	0.0	0.0	0.0	0.0	1.3	10.7	12.7	24.0	108.1	231.9	27.8	103.2	494.3	1227.9	644.2	1597.7
1984	0.0	0.0	12.5	22.2	14.4	26.2	0.0	0.0	169.5	395.4	46.0	157.7	544.3	1206.0	786.7	1807.5
1985	0.0	0.0	7.9	25.5	18.4	29.8	40.9	81.8	160.2	386.7	52.2	175.8	629.6	1238.7	909.3	1938.2
1986	0.0	0.0	7.7	26.8	20.8	32.7	46.7	94.0	193.6	432.9	56.3	176.5	698.8	1314.9	1023.9	2077.8
1987	0.0	0.0	10.8	26.8	18.9	37.1	50.0	97.8	207.0	469.4	58.3	184.6	687.8	1383.9	1032.7	2199.7
1988	0.0	0.0	4.4	14.3	33.4	53.7	19.9	29.5	177.6	404.6	149.9	348.2	752.2	1534.1	1137.5	2384.2
% Change 1979-1988	N/A	N/A	-65.0%	-35.5%	307.6%	280.7%	1205.3%	341.3%	127.1%	99.3%	439.9%	237.3%	139.2%	115.1%	187.3%	158.3%

* Fixed costs include general administration functions.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** MARTA began rail service at the end of their Fiscal Year 1979; the first full year of operation was 1980.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-11

FIXED AND VARIABLE OPERATING COST*
CONSTANT DOLLAR EQUIVALENTS
RAIL RAPID

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)		Costs (\$ in Millions)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	1.7	0.0 ***	0.0	0.0	0.0	0.0	1.5	6.7	78.2	203.0	0.0	0.0	314.5	713.3	395.9	923.0
1980	0.0	0.0	0.0	0.0	7.2	12.4	1.7	7.0	97.4	195.2	0.0	0.0	297.7	708.0	404.0	922.7
1981	0.0	0.0	0.0	0.0	4.6	7.1	4.4	15.1	92.1	209.0	0.0	0.0	323.5	751.2	424.6	982.5
1982	0.0	0.0	0.0	0.0	0.0	0.0	7.8	24.4	93.5	225.6	0.0	0.0	310.9	807.4	404.4	1033.1
1983	0.0	0.0	0.0	0.0	1.0	7.8	9.2	17.5	78.8	169.0	20.2	75.3	360.3	895.2	469.6	1164.7
1984	0.0	0.0	8.7	15.5	10.0	18.3	0.0	0.0	118.5	276.4	32.2	110.2	380.5	843.0	549.9	1263.4
1985	0.0	0.0	5.4	17.2	12.4	20.1	27.6	55.2	108.2	261.0	35.2	118.7	425.0	836.1	613.8	1308.3
1986	0.0	0.0	5.1	17.8	13.8	21.6	30.9	62.2	128.2	286.6	37.3	116.8	462.6	870.5	677.8	1375.5
1987	0.0	0.0	6.9	17.1	12.1	23.7	31.9	62.5	132.3	300.0	37.3	118.0	439.5	884.3	659.9	1405.6
1988	0.0	0.0	2.7	8.8	20.5	32.9	12.2	18.1	109.0	248.4	92.1	213.8	461.8	941.9	698.4	1463.9
% Change 1979-1988	N/A	N/A	-69.2%	-43.3%	184.0%	165.3%	701.4%	171.0%	39.5%	22.4%	354.7%	184.1%	46.8%	32.1%	76.4%	58.6%

C-11

* Fixed costs include general administration functions.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** MARTA began rail service at the end of their Fiscal Year 1979; the first full year of operation was 1980.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-12

**FIXED AND VARIABLE OPERATING COST*
ANNUAL ACTUAL VEHICLE REVENUE MILES******

RAIL RAPID

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)		Costs/Mile (\$)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	\$0.07	\$0.00 ***	\$0.00	\$0.00	\$0.00	\$0.00	\$0.95	\$4.22	\$9.63	\$24.99	\$0.00	\$0.00	\$6.55	\$14.86	\$6.86	\$15.99
1980	\$0.00	\$0.00	\$0.00	\$0.00	\$3.53	\$6.07	\$1.21	\$5.11	\$6.61	\$13.25	\$0.00	\$0.00	\$7.26	\$17.27	\$6.83	\$15.60
1981	\$0.00	\$0.00	\$0.00	\$0.00	\$6.31	\$9.68	\$1.71	\$5.88	\$6.53	\$14.81	\$0.00	\$0.00	\$8.80	\$20.43	\$7.84	\$18.13
1982	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.53	\$7.91	\$7.33	\$17.69	\$0.00	\$0.00	\$8.92	\$23.17	\$8.13	\$20.86
1983	\$0.00	\$0.00	\$0.00	\$0.00	\$1.20	\$9.91	\$4.70	\$8.88	\$7.00	\$15.01	\$3.76	\$13.98	\$10.76	\$26.72	\$8.88	\$22.02
1984	\$0.00	\$0.00	\$8.44	\$14.99	\$4.86	\$8.83	\$0.00	\$0.00	\$7.20	\$16.79	\$3.91	\$13.40	\$13.70	\$30.36	\$9.90	\$22.74
1985	\$0.00	\$0.00	\$4.86	\$15.70	\$7.68	\$12.45	\$10.09	\$20.18	\$6.85	\$16.54	\$4.30	\$14.48	\$16.01	\$31.50	\$10.96	\$23.37
1986	\$0.00	\$0.00	\$4.55	\$15.83	\$8.73	\$13.73	\$10.39	\$20.91	\$8.83	\$19.74	\$4.77	\$14.96	\$20.92	\$39.36	\$13.52	\$27.44
1987	\$0.00	\$0.00	\$6.37	\$15.81	\$8.06	\$15.81	\$10.97	\$21.45	\$8.54	\$19.37	\$4.88	\$15.44	\$20.35	\$40.95	\$13.14	\$27.99
1988	\$0.00	\$0.00	\$3.59	\$11.67	\$9.88	\$15.88	\$6.48	\$9.60	\$9.07	\$20.66	\$7.68	\$17.84	\$21.80	\$44.46	\$13.99	\$29.33
% Change 1979-1988	N/A	N/A	-57.4%	-22.1%	179.8%	161.6%	585.2%	127.4%	-5.8%	-17.3%	104.0%	27.6%	232.7%	199.2%	104.1%	83.5%

C-12

* Fixed costs include general administration functions.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** MARTA began rail service at the end of their Fiscal Year 1979; the first full year of operation was 1980.

**** Prior to 1983, there was inconsistent reporters of purchased transportation services, since specific reporting requirements had not been established.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

EXHIBIT C-13

**FIXED AND VARIABLE OPERATING COST*
ANNUAL ACTUAL VEHICLE REVENUE MILES**** IN CONSTANT DOLLARS
RAIL RAPID**

YEAR	SIZE OF TRANSIT SYSTEM: NUMBER OF VEHICLES OPERATED IN MAXIMUM SERVICE**															
	Under 25		25-49		50-99		100 - 249		250 - 499		500 - 999		1000 & Over		All Systems	
	Costs/Mile		Costs/Mile		Costs/Mile		Costs/Mile		Costs/Mile		Costs/Mile		Costs/Mile		Costs/Mile	
	(\$)		(\$)		(\$)		(\$)		(\$)		(\$)		(\$)		(\$)	
	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable	Fixed	Variable
1979	\$0.07	\$0.00 ***	\$0.00	\$0.00	\$0.00	\$0.00	\$0.95	\$4.22	\$9.63	\$24.99	\$0.00	\$0.00	\$6.55	\$14.86	\$6.86	\$15.99
1980	\$0.00	\$0.00	\$0.00	\$0.00	\$3.10	\$5.34	\$1.09	\$4.47	\$5.83	\$11.67	\$0.00	\$0.00	\$6.40	\$15.22	\$6.02	\$13.74
1981	\$0.00	\$0.00	\$0.00	\$0.00	\$5.00	\$7.72	\$1.37	\$4.70	\$5.21	\$11.83	\$0.00	\$0.00	\$7.03	\$16.32	\$6.26	\$14.49
1982	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.90	\$5.94	\$5.51	\$13.30	\$0.00	\$0.00	\$6.71	\$17.42	\$6.00	\$15.32
1983	\$0.00	\$0.00	\$0.00	\$0.00	\$0.93	\$7.22	\$3.40	\$6.47	\$5.10	\$10.94	\$2.74	\$10.20	\$7.84	\$19.48	\$6.47	\$16.05
1984	\$0.00	\$0.00	\$5.87	\$10.46	\$3.37	\$6.17	\$0.00	\$0.00	\$5.03	\$11.73	\$2.74	\$9.36	\$9.58	\$21.22	\$6.92	\$15.89
1985	\$0.00	\$0.00	\$3.32	\$10.59	\$5.18	\$8.39	\$6.81	\$13.62	\$4.63	\$11.16	\$2.90	\$9.78	\$10.81	\$21.26	\$7.40	\$15.78
1986	\$0.00	\$0.00	\$3.01	\$10.51	\$5.79	\$9.07	\$6.87	\$13.84	\$5.85	\$13.07	\$3.16	\$9.90	\$13.85	\$26.06	\$8.95	\$18.17
1987	\$0.00	\$0.00	\$4.07	\$10.09	\$5.16	\$10.10	\$7.00	\$13.71	\$5.46	\$12.38	\$3.12	\$9.87	\$13.00	\$26.16	\$8.40	\$17.88
1988	\$0.00	\$0.00	\$2.20	\$7.18	\$6.06	\$9.73	\$3.97	\$5.89	\$5.57	\$12.69	\$4.72	\$10.95	\$13.38	\$27.30	\$8.59	\$18.01
% Change 1979-1988	N/A	N/A	-62.5%	-31.4%	95.6%	82.2%	320.1%	39.5%	-42.2%	-49.2%	72.5%	7.4%	104.3%	83.7%	25.3%	12.7%

* Fixed costs include general administration functions.

Variable costs include vehicle operations, vehicle maintenance, and non-vehicle maintenance functions.

** Prior to 1984 transit system size categories based on number of revenue vehicles. Beginning in 1984, size categories are based on number of vehicles operated in maximum service.

*** MARTA began rail service at the end of their Fiscal Year 1979; the first full year of operation was 1980.

**** Prior to 1983, there was inconsistent reporters of purchased transportation services, since specific reporting requirements had not been established.

Source: National Urban Mass Transportation Statistics, 1979-1988 Section 15 Annual Reports

