

TCRP

REPORT 89

TRANSIT
COOPERATIVE
RESEARCH
PROGRAM

Financing Capital Investment: A Primer for the Transit Practitioner

Sponsored by
the Federal
Transit Administration

TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

**TCRP OVERSIGHT AND PROJECT
SELECTION COMMITTEE**
(as of October 2002)

CHAIR

J. BARRY BARKER
Transit Authority of River City

MEMBERS

DANNY ALVAREZ
Miami-Dade Transit Agency
KAREN ANTION
Karen Antion Consulting
GORDON AOYAGI
Montgomery County Government
JEAN PAUL BAILLY
Union Internationale des Transports Publics
RONALD L. BARNES
Central Ohio Transit Authority
LINDA J. BOHLINGER
HNTB Corp.
ANDREW BONDS, JR.
Parsons Transportation Group, Inc.
JENNIFER L. DORN
FTA
NATHANIEL P. FORD, SR.
Metropolitan Atlanta RTA
CONSTANCE GARBER
York County Community Action Corp.
FRED M. GILLIAM
Capital Metropolitan Transportation Authority
KIM R. GREEN
GFI GENFARE
SHARON GREENE
Sharon Greene & Associates
KATHERINE M. HUNTER-ZAWORSKI
Oregon State University
ROBERT H. IRWIN
British Columbia Transit
CELIA G. KUPERSMITH
*Golden Gate Bridge, Highway and
Transportation District*
PAUL J. LARROUSSE
National Transit Institute
DAVID A. LEE
Connecticut Transit
CLARENCE W. MARSELLA
Denver Regional Transportation District
FAYE L. M. MOORE
*Southeastern Pennsylvania Transportation
Authority*
STEPHANIE L. PINSON
Gilbert Tweed Associates, Inc.
ROBERT H. PRINCE, JR.
DMJM+HARRIS
JEFFERY M. ROSENBERG
Amalgamated Transit Union
RICHARD J. SIMONETTA
pbConsult
PAUL P. SKOUTELAS
Port Authority of Allegheny County
LINDA S. WATSON
Corpus Christi RTA

EX OFFICIO MEMBERS

WILLIAM W. MILLAR
APTA
MARY E. PETERS
FHWA
JOHN C. HORSLEY
AASHTO
ROBERT E. SKINNER, JR.
TRB

TDC EXECUTIVE DIRECTOR

LOUIS F. SANDERS
APTA

SECRETARY

ROBERT J. REILLY
TRB

TRANSPORTATION RESEARCH BOARD EXECUTIVE COMMITTEE 2003 (Membership as of March 2003)

OFFICERS

Chair: Genevieve Giuliano, *Director and Prof., School of Policy, Planning, and Development, USC, Los Angeles*
Vice Chair: Michael S. Townes, *Exec. Dir., Transportation District Commission of Hampton Roads, Hampton, VA*
Executive Director: Robert E. Skinner, Jr., *Transportation Research Board*

MEMBERS

MICHAEL W. BEHRENS, *Executive Director, Texas DOT*
JOSEPH H. BOARDMAN, *Commissioner, New York State DOT*
SARAH C. CAMPBELL, *President, TransManagement, Inc., Washington, DC*
E. DEAN CARLSON, *Secretary of Transportation, Kansas DOT*
JOANNE F. CASEY, *President, Intermodal Association of North America*
JAMES C. CODELL III, *Secretary, Kentucky Transportation Cabinet*
JOHN L. CRAIG, *Director, Nebraska Department of Roads*
BERNARD S. GROSECLOSE, JR., *President and CEO, South Carolina State Ports Authority*
SUSAN HANSON, *Landry University Prof. of Geography, Graduate School of Geography, Clark University*
LESTER A. HOEL, *L. A. Lacy Distinguished Professor, Depart. of Civil Engineering, University of Virginia*
HENRY L. HUNGERBEELER, *Director, Missouri DOT*
ADIB K. KANAFANI, *Cahill Prof. and Chair, Dept. of Civil and Environmental Engineering, University of
California at Berkeley*
RONALD F. KIRBY, *Director of Transportation Planning, Metropolitan Washington Council of Governments*
HERBERT S. LEVINSON, *Principal, Herbert S. Levinson Transportation Consultant, New Haven, CT*
MICHAEL D. MEYER, *Professor, School of Civil and Environmental Engineering, Georgia Institute of
Technology*
JEFF P. MORALES, *Director of Transportation, California DOT*
KAM MOVASSAGHI, *Secretary of Transportation, Louisiana Department of Transportation and Development*
CAROL A. MURRAY, *Commissioner, New Hampshire DOT*
DAVID PLAVIN, *President, Airports Council International, Washington, DC*
JOHN REBENDSOLF, *Vice Pres., Network and Service Planning, Union Pacific Railroad Co., Omaha, NE*
CATHERINE L. ROSS, *Executive Director, Georgia Regional Transportation Agency*
JOHN M. SAMUELS, *Sr. Vice Pres.-Operations Planning & Support, Norfolk Southern Corporation, Norfolk, VA*
PAUL P. SKOUTELAS, *CEO, Port Authority of Allegheny County, Pittsburgh, PA*
MARTIN WACHS, *Director, Institute of Transportation Studies, University of California at Berkeley*
MICHAEL W. WICKHAM, *Chairman and CEO, Roadway Express, Inc., Akron, OH*

EX OFFICIO MEMBERS

MIKE ACOTT, *President, National Asphalt Pavement Association*
MARION C. BLAKEY, *Federal Aviation Administrator, U.S.DOT*
REBECCA M. BREWSTER, *President and CEO, American Transportation Research Institute, Atlanta, GA*
THOMAS H. COLLINS (Adm., U.S. Coast Guard), *Commandant, U.S. Coast Guard*
JENNIFER L. DORN, *Federal Transit Administrator, U.S.DOT*
ELLEN G. ENGLEMAN, *Research and Special Programs Administrator, U.S.DOT*
ROBERT B. FLOWERS (Lt. Gen., U.S. Army), *Chief of Engineers and Commander, U.S. Army Corps of
Engineers*
HAROLD K. FORSEN, *Foreign Secretary, National Academy of Engineering*
EDWARD R. HAMBERGER, *President and CEO, Association of American Railroads*
JOHN C. HORSLEY, *Exec. Dir., American Association of State Highway and Transportation Officials*
MICHAEL P. JACKSON, *Deputy Secretary of Transportation, U.S.DOT*
ROGER L. KING, *Chief Applications Technologist, National Aeronautics and Space Administration*
ROBERT S. KIRK, *Director, Office of Advanced Automotive Technologies, U.S. DOE*
RICK KOWALEWSKI, *Acting Director, Bureau of Transportation Statistics, U.S.DOT*
WILLIAM W. MILLAR, *President, American Public Transportation Association*
MARY E. PETERS, *Federal Highway Administrator, U.S.DOT*
SUZANNE RUDZINSKI, *Director, Office of Transportation and Air Quality, U.S. EPA*
JEFFREY W. RUNGE, *National Highway Traffic Safety Administrator, U.S.DOT*
ALLAN RUTTER, *Federal Railroad Administrator, U.S.DOT*
ANNETTE M. SANDBERG, *Deputy Administrator, Federal Motor Carrier Safety Administration, U.S.DOT*
WILLIAM G. SCHUBERT, *Maritime Administrator, U.S.DOT*

TRANSIT COOPERATIVE RESEARCH PROGRAM

Transportation Research Board Executive Committee Subcommittee for TCRP
GENEVIEVE GIULIANO, *University of Southern California, Los Angeles (Chair)*
E. DEAN CARLSON, *Kansas DOT*
JENNIFER L. DORN, *Federal Transit Administration, U.S.DOT*
LESTER A. HOEL, *University of Virginia*
WILLIAM W. MILLAR, *American Public Transportation Association*
ROBERT E. SKINNER, JR., *Transportation Research Board*
PAUL P. SKOUTELAS, *Port Authority of Allegheny County, Pittsburgh, PA*
MICHAEL S. TOWNES, *Transportation District Commission of Hampton Roads, Hampton, VA*

TRANSIT COOPERATIVE RESEARCH PROGRAM

TCRP REPORT 89

**Financing Capital Investment:
A Primer for the
Transit Practitioner**

TRANSTECH MANAGEMENT, INC.

Washington, DC

in association with

PA CONSULTING, INC.

Washington, DC

SUBJECT AREAS

Public Transit • Planning and Administration

Research Sponsored by the Federal Transit Administration in Cooperation with the Transit Development Corporation

TRANSPORTATION RESEARCH BOARD

WASHINGTON, D.C.

2003

www.TRB.org

TRANSIT COOPERATIVE RESEARCH PROGRAM

The nation's growth and the need to meet mobility, environmental, and energy objectives place demands on public transit systems. Current systems, some of which are old and in need of upgrading, must expand service area, increase service frequency, and improve efficiency to serve these demands. Research is necessary to solve operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the transit industry. The Transit Cooperative Research Program (TCRP) serves as one of the principal means by which the transit industry can develop innovative near-term solutions to meet demands placed on it.

The need for TCRP was originally identified in *TRB Special Report 213—Research for Public Transit: New Directions*, published in 1987 and based on a study sponsored by the Urban Mass Transportation Administration—now the Federal Transit Administration (FTA). A report by the American Public Transportation Association (APTA), *Transportation 2000*, also recognized the need for local, problem-solving research. TCRP, modeled after the longstanding and successful National Cooperative Highway Research Program, undertakes research and other technical activities in response to the needs of transit service providers. The scope of TCRP includes a variety of transit research fields including planning, service configuration, equipment, facilities, operations, human resources, maintenance, policy, and administrative practices.

TCRP was established under FTA sponsorship in July 1992. Proposed by the U.S. Department of Transportation, TCRP was authorized as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). On May 13, 1992, a memorandum agreement outlining TCRP operating procedures was executed by the three cooperating organizations: FTA; the National Academies, acting through the Transportation Research Board (TRB); and the Transit Development Corporation, Inc. (TDC), a nonprofit educational and research organization established by APTA. TDC is responsible for forming the independent governing board, designated as the TCRP Oversight and Project Selection (TOPS) Committee.

Research problem statements for TCRP are solicited periodically but may be submitted to TRB by anyone at any time. It is the responsibility of the TOPS Committee to formulate the research program by identifying the highest priority projects. As part of the evaluation, the TOPS Committee defines funding levels and expected products.

Once selected, each project is assigned to an expert panel, appointed by the Transportation Research Board. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, TCRP project panels serve voluntarily without compensation.

Because research cannot have the desired impact if products fail to reach the intended audience, special emphasis is placed on disseminating TCRP results to the intended end users of the research: transit agencies, service providers, and suppliers. TRB provides a series of research reports, syntheses of transit practice, and other supporting material developed by TCRP research. APTA will arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by urban and rural transit industry practitioners.

The TCRP provides a forum where transit agencies can cooperatively address common operational problems. The TCRP results support and complement other ongoing transit research and training programs.

TCRP REPORT 89

Project J-6, Task 29 FY'99
ISSN 1073-4872
ISBN 0-309-06806-1
Library of Congress Control Number 2003102199

© 2003 Transportation Research Board

Price \$25.00

NOTICE

The project that is the subject of this report was a part of the Transit Cooperative Research Program conducted by the Transportation Research Board with the approval of the Governing Board of the National Research Council. Such approval reflects the Governing Board's judgment that the project concerned is appropriate with respect to both the purposes and resources of the National Research Council.

The members of the technical advisory panel selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and while they have been accepted as appropriate by the technical panel, they are not necessarily those of the Transportation Research Board, the National Research Council, the Transit Development Corporation, or the Federal Transit Administration of the U.S. Department of Transportation.

Each report is reviewed and accepted for publication by the technical panel according to procedures established and monitored by the Transportation Research Board Executive Committee and the Governing Board of the National Research Council.

Special Notice

The Transportation Research Board, the National Research Council, the Transit Development Corporation, and the Federal Transit Administration (sponsor of the Transit Cooperative Research Program) do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the clarity and completeness of the project reporting.

Published reports of the

TRANSIT COOPERATIVE RESEARCH PROGRAM

are available from:

Transportation Research Board
Business Office
500 Fifth Street, NW
Washington, DC 20001

and can be ordered through the Internet at
<http://www.national-academies.org/trb/bookstore>

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. On the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, on its own initiative, to identify issues of medical care, research, and education. Dr. Harvey V. Fineberg is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. William A. Wulf are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is a division of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation by stimulating and conducting research, facilitating the dissemination of information, and encouraging the implementation of research results. The Board's varied activities annually engage more than 4,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. **www.TRB.org**

www.national-academies.org

COOPERATIVE RESEARCH PROGRAMS STAFF

ROBERT J. REILLY, *Director, Cooperative Research Programs*
CHRISTOPHER W. JENKS, *TCRP Manager*
DIANNE S. SCHWAGER, *Senior Program Officer*
EILEEN P. DELANEY, *Managing Editor*
ANDREA BRIERE, *Associate Editor*

PROJECT PANEL J-6, TASK 29 **Field of Special Projects**

PETER BENJAMIN, *Washington Metropolitan Area Transit Authority (Chair)*
THOMAS BRADSHAW, JR., *Salomon Smith Barney Inc., New York, NY*
SHARON GREENE, *Sharon Greene & Associates, Tustin, CA*
CHEE MEE HU, *Moody's Investors Service, New York, NY*
CLAUDIA HUSSEIN, *Port Authority of Allegheny County, Allegheny, PA*
MURPHY MCCALLEY, *McCalley Consulting, Castro Valley, CA*
BOB PESKIN, *AECOM Consulting Transportation Group Inc., Fairfax, VA*
DAVID SELTZER, *Mercator Advisors LLC, Philadelphia, PA*
MICHAEL SMITH, *Los Angeles County Metropolitan Transportation Authority*
PAUL A. TOLIVER, *Computer Intelligence Squared, Seattle, WA*
STEPHEN WOOD, *Paine Webber Inc., New York, NY*
PAUL MARX, *FTA Liaison Representative*

AUTHOR ACKNOWLEDGMENTS

The research reported herein was performed under TCRP Project J-06, Task 29, by Hagler Bailly Services, Inc. (now PA Consulting, Inc.), and TransTech Management, Inc. (under subcontract to Hagler Bailly Services, Inc., and PA Consulting, Inc.). Also contributing to the report was Marion C. Pulsifer Consulting, LLC, under subcontract to Hagler Bailly Services, Inc.

Tamar Henkin, Director of TransTech Management's Washington, D.C., office served as the Principal Investigator. Other primary contributors include Marion Pulsifer, principal of Marion C. Pulsifer Consulting, LLC; Joe Crossett, Manager at TransTech Management, Inc.; and Mark Pascaris, formerly at Hagler Bailly Services, Inc., and now at New York City Transit.

FOREWORD

*By Dianne S. Schwager
Staff Officer
Transportation Research
Board*

TCRP Report 89: Financing Capital Investment: A Primer for the Transit Practitioner provides a valuable resource for people who are responsible for financing public transportation capital projects. The primary objective of this primer is to identify and evaluate financing options for public transportation capital projects. Although the emphasis of the primer is on approaches that take advantage of access to the public capital markets, the document also addresses the tradeoffs of pay-as-you-go approaches versus approaches that borrow against future resources. The research results will be of particular interest to transportation agencies that plan and finance public transportation infrastructure, vehicles, and other capital projects. Other audiences for this report include policymakers, transit board members, and other transportation professionals.

This primer is organized to provide a wide-ranging audience with easy access to the information they need most regarding capital financing for public transportation. The primer includes descriptive sections that outline the basic financing approaches and structures available to transit systems, as well as sections that help system managers and public officials decide when it is most appropriate to apply alternative financing techniques.

Following the introductory Chapter 1, Chapter 2 discusses the financing opportunities created by federal legislation and programs, emphasizing the current federal transportation program. Chapter 3 offers an introduction to the world of municipal debt finance and offers those readers with less background in public finance a framework for making the choice between pay-as-you-go funding and financing alternatives. Chapters 4, 5, and 6 introduce the three components of finance—capital sources, financing mechanisms, and repayment streams. Together, these chapters provide an inventory of available funding and finance methods and offer real-life examples of many of the approaches. Chapter 7 addresses how—once the options are understood—a transit system and its managers go about formulating a comprehensive capital financing plan and carrying it out for individual projects or programs of projects. Chapter 8 offers insights and observations based on the research that contributed to development of the primer, including a collection of interviews with transit system managers, state and local officials, and members of the public finance community. Following the last chapter are five technical annexes (or appendixes), which provide supporting material or additional technical detail for readers who are interested in learning more about a particular subject.

CONTENTS

1	CHAPTER 1 Introduction and Primer Overview
1.1	Introduction, 1
1.2	Primer Objectives, 1
1.3	Intended Audience, 2
1.4	The Capital Funding Challenge, 2
1.5	Transit Agencies and Capital Markets Today, 5
1.6	Document Structure and Content Overview, 11
13	CHAPTER 2 Financing Opportunities Created by Federal Legislation and Programs
2.1	Introduction, 13
2.2	Continuum of Progress: ISTEA and TEA-21, 13
2.3	Looking to the Future: The Next Authorization and Beyond, 19
21	CHAPTER 3 Introduction to Public Finance for Transit Investments
3.1	Introduction, 21
3.2	Finance 101: Pay-as-You-Go versus Debt Financing, 21
3.3	Overview of Municipal Bond Market, 27
3.4	Transit Experience in the Municipal Bond Market, 37
38	CHAPTER 4 Sources of Capital
4.1	Introduction, 38
4.2	Tax-Exempt Bond Market Investors, 38
4.3	Taxable Bond Market Investors, 40
4.4	Equity Investors, 40
4.5	Vendors and Lessors, 41
4.6	Commercial Banks, 42
4.7	Governmental Capital Sources, 42
48	CHAPTER 5 Financing Mechanisms
5.1	Introduction, 48
5.2	Long-Term Debt Mechanisms (Bonds and Direct Loans), 48
5.3	Short-Term Debt Mechanisms, 60
5.4	Lease Financing Mechanisms and Certificates of Participation, 62
5.5	Equity and Partnership Mechanisms, 70
5.6	Credit-Enhancement Mechanisms, 75
77	CHAPTER 6 Repayment Sources and PAYGO Capital
6.1	Introduction, 77
6.2	Repayment Sources for Limited Recourse Obligations Secured by Revenues Other Than System Operating Revenues, 77
6.3	Repayment Sources for System Pledges, 85
99	CHAPTER 7 Putting It All Together—Developing and Implementing a Capital Financing Plan
7.1	Introduction, 99
7.2	Developing a Capital Budget and Debt Management Plan, 99
7.3	Decision to Finance an Individual Investment or Program of Investments, 101
7.4	Debt-Issuance Process, 102
112	CHAPTER 8 Concluding Observations
114	TECHNICAL ANNEX 1 Evaluating Alternative Approaches
118	TECHNICAL ANNEX 2 Rating Criteria for Transit
140	TECHNICAL ANNEX 3 Interview Summaries
144	TECHNICAL ANNEX 4 Glossary
169	TECHNICAL ANNEX 5 Literature and Resources

1. INTRODUCTION AND PRIMER OVERVIEW

1.1 INTRODUCTION

The nation's transit systems are blessed today with record ridership, increased public recognition of the economic and environmental benefits they provide, and a higher level of federal funding support than at any time in the past. This good news is accompanied, however, by the continuing challenge of capital demands that far exceed available financial resources.

Although the Transportation Equity Act for the 21st Century (TEA-21) provided a significant increase in federal funds, the long-term imbalance between capital needs and available resources is almost certain to continue. Existing transit systems need major maintenance, rehabilitation, and continuous rolling stock upgrades and replacement. Meanwhile, many communities in areas experiencing rapid population growth have extensive plans to develop new systems, bring new lines into service, and expand system capabilities to serve their expanding populations. At the same time, transit authorities face growing financial pressures to fund operations of these new services.

Enactment of TEA-21 helped address the growing needs of transit through record federal funding levels—\$41 billion in authorized funding, \$36 billion of which is guaranteed—and new provisions that broaden available financing options. Estimates of future needs, however, far exceed even this level of funding. The Federal Transit Administration (FTA) estimates future funding needs to be \$14.8 billion per year (in 2000 dollars) over the 20-year period from 2001 to 2021 to maintain the nation's current transit systems and an additional \$20.6 billion per year (in 2000 dollars) to improve the infrastructure.¹ The American Public Transportation Association (APTA) estimates total transit industry needs from Fiscal Year 2004 through Fiscal Year 2009 to be \$253 billion, or \$42 billion per year (in 2003 dollars), and just over the total authorized funding in six years of TEA-21.²

To meet mounting capital demands, transit managers must be able to evaluate their options for stretching available financial resources and to take full advantage of the most appropriate financing approaches. These same managers, however, are busy running complex operating entities with tight operating budgets. They do not have the time or, in many cases, the expertise needed to evaluate and implement the financing options available to them.

1.2 PRIMER OBJECTIVES

The main objective of this primer is to help transit managers identify and evaluate financing options for public transportation capital projects. While the emphasis of the primer is on approaches that take advantage of access to the public capital markets, it also addresses the tradeoffs of pay-as-you-go approaches versus approaches that borrow against future resources. The primer includes descriptive sections that lay out the basic financing approaches and structures available to transit

¹ U.S. DOT, FTA, *Statement of the Honorable Jennifer L. Dorn, FTA Administrator, Before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, October 8, 2002.*

² APTA, *Testimony of the American Public Transportation Association Before the Senate Banking, Housing, and Urban Affairs Committee On Reauthorization of the Transportation Equity Act for the 21st Century, March 13, 2002.*

systems, as well as sections that help system managers and public officials decide when it is most appropriate to apply different financing techniques.

1.3 INTENDED AUDIENCE

This primer is intended for both transit system managers and state and local officials involved in the oversight and management of transit operations. Its primary target audience is managers of systems with less experience in accessing the capital markets, but it also has relevance for those who have had more exposure. It is intended to be of value to managers of transit systems of all sizes, although it is expected to be of somewhat greater value to small- and mid-sized systems based on their more limited financing experience and unique financing challenges.

The most technical portions of the primer are offered as technical annexes for those seeking additional information.

1.4 THE CAPITAL FUNDING CHALLENGE

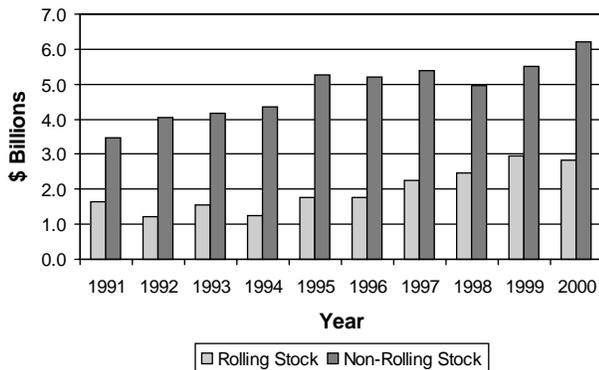
Transit systems face a myriad of funding challenges, stemming from the basic fact that transit fares cover only a limited proportion of the costs of operating the systems—averaging less than 40 percent over the last 10 years. This leaves nothing—less than nothing, really—for capital investments required to keep existing systems running and to develop new systems, to bring new lines into service, and to expand system capabilities. As background, this section defines capital investment for the purpose of this primer, provides an overview of historical and current funding resources, and discusses key components of future needs.

Defining Capital Investments

In general, capital costs include the purchase or rehabilitation of major fixed assets. For transit systems, capital items include construction of rail lines, purchase of buses and other rolling stock, purchase of technologies to support intelligent transportation systems (ITS), and other one-time expenditures for long-lived assets (see Figure 1-1 for a breakdown of rolling stock versus non-rolling stock expenditures). TEA-21 defines eligible capital investments as follows³:

- Planning, engineering design and evaluation of transit projects, and other technical transportation-related studies;
- Capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment, and construction of maintenance and passenger facilities;
- Capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, right-of-way, and computer hardware and software; and

³ U.S. DOT, FTA, www.fta.dot.gov/library/policy/prgms/uafg.htm.

Figure 1-1. Composition of Capital Investment—Rolling Stock vs. Non-Rolling Stock

- All preventive maintenance and some Americans with Disabilities Act (ADA) paratransit service costs. This is a new category of eligible capital expenditures. TEA-21 continues to phase out federal support for operating costs begun under prior legislation, but broadens the definition of capital expenses to include preventive maintenance.

TEA-21 also distinguishes between major and minor capital expenses. Major capital items include⁴

- Construction of a new fixed guideway or extension of an existing fixed guideway;
- Rehabilitation or modernization of an existing fixed guideway with a total project cost in excess of \$100 million;
- Major capital projects determined by the Administrator to benefit specifically the agency or the recipient. Typically, this means a project that
 - Costs in excess of \$100 million or more to construct;
 - Is not exclusively for routine acquisition, maintenance, or rehabilitation of vehicles or other rolling stock;
 - Involves new technology;
 - Is of unique nature for the recipient; or
 - Involves a recipient whose past experience indicates to the agency the appropriateness of the extension of this program.

Sources of Funding for Capital Investments

Total capital funding has increased markedly from the period prior to passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) through the end of the 20th century (see Table 1-1 and Figure 1-2 for details). Between 1990 and 2000, total capital funding for transit increased nearly 95 percent, from \$4.9 billion in 1990 to \$9.6 billion in 2000. Directly generated funds (funds generated by transit operations, including directly levied taxes and tolls) were

⁴ U.S. DOT, FTA, www.fta.dot.gov/office/program/gmw/O3techn.html.

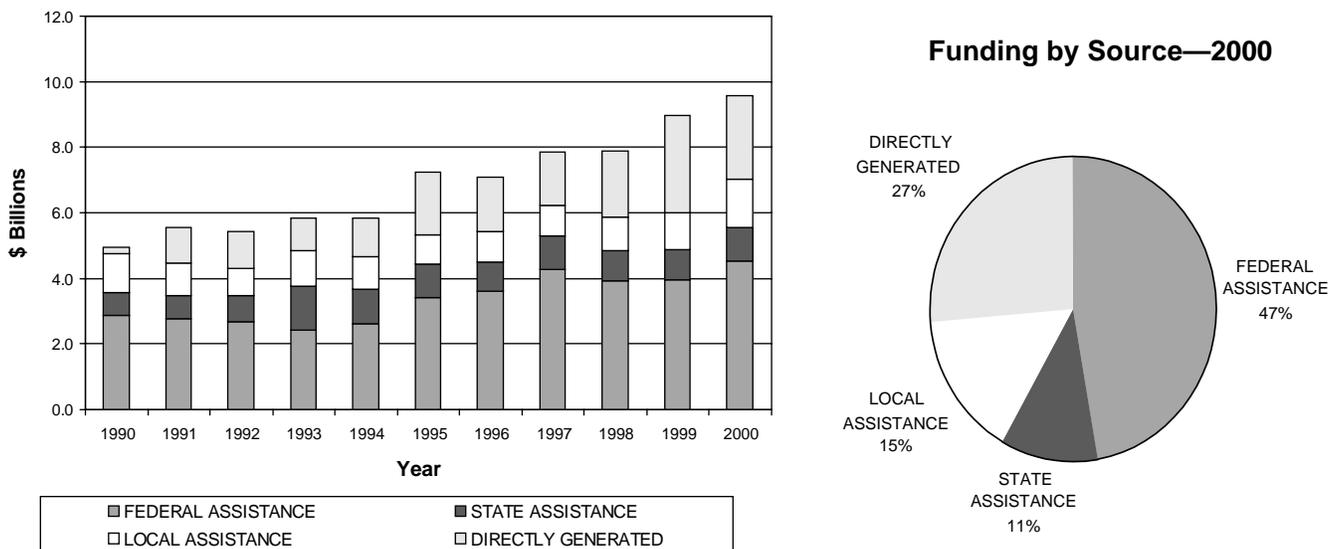
Table 1-1. Sources of Transit Capital Funding, 1990–2000 (Billions of Dollars)⁵

Funding Source	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000**	Percent Change (1990-2000)
Federal	\$2.9	\$2.8	\$2.7	\$2.4	\$2.6	\$3.4	\$3.6	\$4.3	\$3.9	\$4.0	\$4.5	57%
State	0.7	0.7	0.8	1.3	1.0	1.0	0.9	1.0	0.9	0.9	1.0	48%
Local	1.2	1.0	0.8	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.5	25%
Directly Generated*	0.2	1.1	1.1	1.0	1.2	1.9	1.6	1.6	2.0	3.0	2.6	1253%
Total	\$4.9	\$5.6	\$5.4	\$5.8	\$5.8	\$7.2	\$7.1	\$7.8	\$7.9	\$9.0	\$9.6	94%

* Includes non-governmental funding, subsidies from nontransit sectors of a transit agency's operations, and, beginning in 1991, taxes levied directly by a transit agency and bridge and tunnel tolls.

** 2000 figures are preliminary.

Figure 1-2. Transit Capital Funding by Source, 1990–2000 (Billions of Dollars)⁶



responsible for a significant portion of this increase, themselves increasing from \$200 million in 1990 to \$2.6 billion in 2000, according to information available from FTA and APTA.

Federal investment in transit grew steadily over the last decade. In 1990, the federal government provided \$2.9 billion in capital assistance, nearly 60 percent of the total. By 2000, this figure increased by 57 percent to \$4.5 billion but now only representing 47 percent of total capital funding.

State assistance for transit rose from nearly \$0.7 billion in 1990 to \$1.0 billion by 2000, a 48 percent increase. Meanwhile, local assistance (not including directly generated funds) rose modestly until 2000 when, based on preliminary data, there appears to have been a more substantial increase in local assistance.

⁵ APTA, *Capital Funding Sources. Table 7*, <http://www.apta.com/stats/fundcap/index.htm>.

⁶ APTA, *Capital Funding Sources. Table 7*, <http://www.apta.com/stats/fundcap/index.htm>.

The composition of capital funding varies across transit systems in relation to the size of the system. Measured by population, smaller systems depend more heavily on federal and state financial support while larger systems are able to generate a greater percentage of their capital funding from system operations or directly-generated taxes (see Figure 1-3).

Components of Future Capital Funding Needs

Despite the significant increase in federal and state funding for transit capital projects, transit agencies continue to face a significant gap between needed investments and available resources. Existing systems in major cities are in need of major repair and replacement of existing rolling stock and other assets. Rapidly growing communities need to expand services and bring new services online.

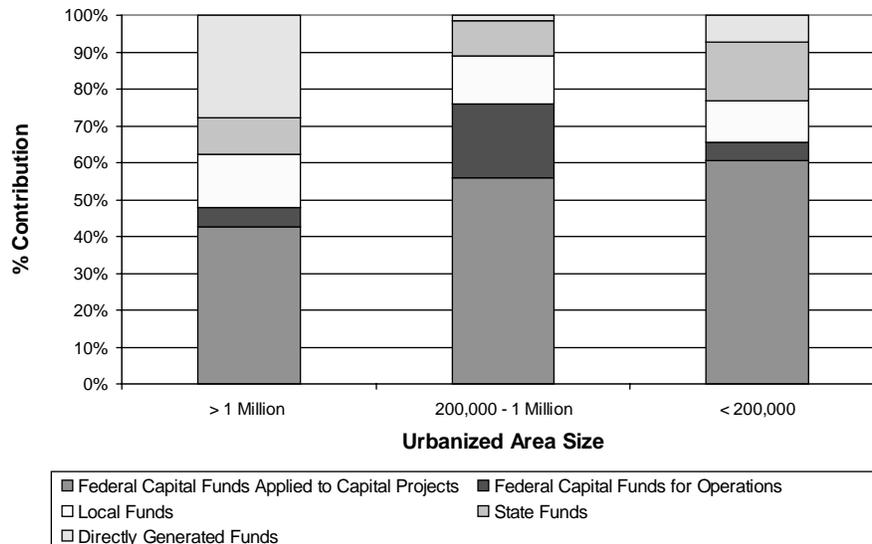
In addition, compliance with several federal programs requires additional expenditures. For instance, compliance with ADA requires rolling stock and station upgrades to accommodate customers with disabilities, and the Clean Air Act Amendments of 1990 and the Energy Policy Act of 1992 require agencies to replace existing fleets with less polluting vehicles.

To meet these challenges, transit agencies will need to take full advantage of all existing and new financing approaches available to them.

1.5 TRANSIT AGENCIES AND CAPITAL MARKETS TODAY

Transit agencies vary in their level of experience and comfort with financing approaches that go beyond simple pay-as-you-go approaches. A relatively small—but growing—cadre of systems has had significant financing experience and manages capital market financing programs as integral components of the systems’ financial management frameworks. It was found that most systems,

Figure 1-3. Transit Capital Funding by Source and by Population Size—2000



however, rely exclusively on grant assistance and other pay-as-you-go approaches to manage their capital programs.

Based on a small survey of transit systems, approximately half have utilized financing techniques in the past, but the majority of these were lease-financing techniques that are structured to generate revenue more than to finance capital investments (see discussion in Chapter 6).⁷ Transit managers note a number of barriers to greater use of financing approaches, including legal barriers and institutional biases as well as fundamental limitations of potential repayment sources.

This section briefly addresses the capital market experience of transit systems today, highlights some of the innovations with which these systems have experimented, and identifies the range of barriers to greater use of available financing techniques. This discussion serves as a starting point for later chapters of this primer.

The Three Legs of Finance—Sources of Capital, Financing Mechanisms, and Repayment Sources

The process of financing capital investments is complex, and the terminology is often muddled—even by those actively involved in the process day in and day out. This section, therefore, takes a moment to establish a framework for thinking about the financing process and its key components:

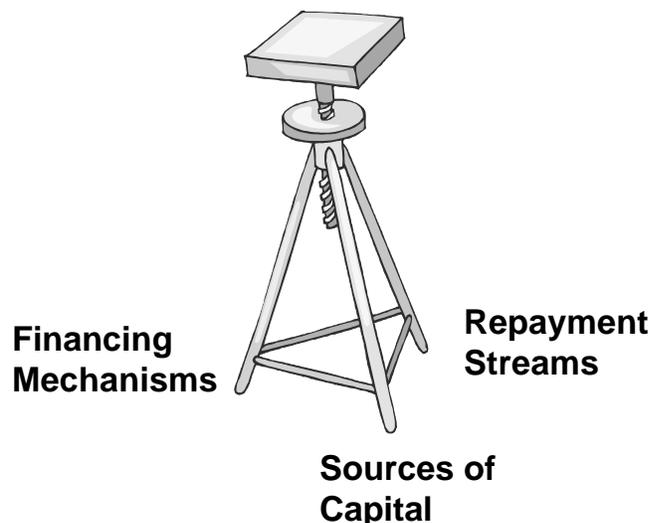
- Sources of capital;
- Financing (debt) mechanisms; and
- Repayment streams.

This framework is carried through the primer with individual chapters on each of the three legs of the financing stool as well as supporting chapters on the framework for making decisions regarding a transit agency’s choices of financing and on the process of implementing those decisions.

Sources of Capital

“Sources of capital” generally refers to the entities or individuals who may provide funding—either in the form of grants or in the form of debt, lease, and credit enhancement mechanisms. These capital sources include private firms and not-for-profit organizations (generally as providers of equity), institutional and individual investors (generally as bondholders), and governmental entities (federal, state, and local agencies administering grant

Financing 101



⁷ Based on interviews with 19 transit systems conducted between March and May 2000 (see Technical Annex 3 for additional interview results).

programs, loan and credit enhancement programs, or both). Chapter 4 of this primer offers a more complete discussion of the sources of capital financing.

Financing Mechanisms

There are a number of mechanisms available to access the various sources of capital described above. Generally, these mechanisms (or tools) can be organized into four categories:

1. **Debt mechanisms**—including long- and short-term issuances of bonds in the taxable and tax-exempt markets as well as direct loans from governmental and non-governmental sources.
2. **Capital lease financing mechanisms**—whereby rather than purchasing an asset outright, the acquiring entity leases the asset over a number of years. While this is not always truly a mechanism to finance the *acquisition* of an asset, it most certainly is an alternative approach to gain use of the asset over a comparable period of time. Lease payments are made in lieu of payments of principal and interest. In many instances in which a lease-to-purchase arrangement is utilized, lease mechanisms do indeed result in full asset ownership.
3. **Equity and partnership mechanisms**—arrangements whereby an outside entity invests a certain amount of funds in a capital asset with the expectation of sharing in the profits of its operation or otherwise directly benefiting from its operation. In the transit arena, this can include joint development and vendor or construction firm financing arrangements.
4. **Credit enhancement mechanisms**—such as bond insurance, letters and lines of credit, and governmental guarantees used not as stand-alone financing mechanisms but in support of the direct financing techniques.

It is important to note that these financing options are not mutually exclusive and that the most innovative project delivery approaches tend to use them in combination. Each is discussed in greater detail in Chapter 5.

Repayment Streams

When capital investments are financed rather than paid for on a pay-as-you-go basis, the financing must be repaid over a set number of months or years and at an established, although sometimes varying, rate of interest. Sources of repayment, therefore, must be identified and secured. Chapter 6 describes sources of revenue that can be applied to the repayment of debt financing or the funding of lease arrangements. In addition to serving as the source of payment for debt and lease obligations, each of the revenue streams discussed also may be used to fund capital investments on a pay-as-you-go basis.

Capital Market Experience⁸

Transit agencies with experience in the capital markets range in size from the very largest systems serving metropolitan areas to relatively small systems serving medium-sized cities and rural

⁸ Based on interviews with investment bankers, rating agency representatives, bond insurers, and other financial market players (see Technical Annex 3 for additional interview results).

areas. Outside of metropolitan areas, smaller systems serving medium- and small-sized cities and rural areas are predominantly bus-only systems. Their capital requirements, therefore, generally are lower and their investments more seemingly manageable without debt financing. Because such bus systems tend to recover less of their operating costs from farebox receipts, they also tend to be more heavily reliant on external funding sources such as intergovernmental grants to fund their capital programs.

While there are issuers of all sizes, a small number of major transit agencies are responsible for the vast majority of transit-related debt financing. These agencies fall into two categories:

1. **“Major Players”**—including, for example, the New York Metropolitan Transportation Authority (NYMTA), Chicago Regional Transportation Authority (RTA), New Jersey Transit (NJT), San Francisco’s Bay Area Rapid Transit District (BART), Los Angeles County Metropolitan Transportation Authority (MTA), Metropolitan Atlanta Rapid Transit Authority (MARTA), Massachusetts Bay Transportation Authority (MBTA), Southeastern Pennsylvania Transportation Authority (SEPTA), and Washington Metropolitan Area Transit Authority (WMATA). These agencies characteristically operate established heavy rail systems that were initially funded using debt. Their capital programs are now focused primarily on meeting maintenance needs rather than on expansion. Debt financings of these agencies typically range from \$100 million to \$500 million. The magnitude and frequency of the deals conducted by major players help make debt financing an attractive option for both the transit agencies and prospective lenders.
2. **“New Systems”**—such as Dallas Area Rapid Transit Authority (DART), St. Louis’ Bi-State Development Agency, Denver’s Regional Transportation District (RTD), and several California agencies. These systems characteristically are in the process of building new light rail (LRT) systems. They are relatively new entrants to the capital markets using debt finance because they require major capital investments that exceed resources from pay-as-you-go funding programs.

In contrast to the “major players” or the new LRT systems, most transit agencies—particularly those with bus-only systems—have depended primarily on federal and state grants and lease funding arrangements for their capital programs. Pay-as-you-go funding approaches are seen as more feasible for bus-only systems because acquisition of replacement buses can generally be staggered over an extended time period, reducing one-time capital costs. The relatively limited debt financing experience of smaller agencies also can be attributed to their historical reliance on state and federal funds, the lack of an alternative repayment stream for debt service, and their inherently conservative approach to risk (see Figure 1-4).

Barriers to Debt Financing

A number of barriers have been identified as limiting the access of transit agencies to use of the capital markets to finance capital investments. Following is a summary of those barriers most consistently identified by transit managers and members of the finance community.⁹

⁹ Based on interviews with transit systems conducted between March and May 2000 (see Technical Annex 3 for additional interview results) and interviews with investment bankers, rating agency representatives, bond insurers, and other financial market players (see Technical Annex 3 for additional interview results).

Figure 1-4. Matrix of Financing Approaches by System Size and Investment Type

	Bus Investments	Rail Investments
Small Systems	<ul style="list-style-type: none"> • Predominantly PAYGO • Limited Commercial & Vendor Financing 	N/A
Large Systems	<ul style="list-style-type: none"> • Commercial & Vendor Financing • Lease Financing 	<ul style="list-style-type: none"> • Most Significant Capital Market Participants • Commercial & Vendor Financing • Lease Financing

- **No Dedicated, External Revenue Source/Borrowing Capability.** “Major player” agencies have established authority to borrow and revenue sources to support the debt. New entrants, however, must secure these capabilities, frequently via voter-approved referendums. Recent experience of agencies such as DART suggests that there is currently more widespread public and political support for such initiatives.
- **Legal Barriers to Repayment Streams and Debt Obligations.** Many agencies face state constitutional and statutory restrictions on their ability to generate new revenue streams and on the allowable use of those streams. They also face strict limitations on the issuance of debt and the application of credit thresholds such as limitations on debt as a percentage of income or on a per capita basis.
- **Conservative Capital Planning Approaches.** Beyond explicit legal restrictions, transit agencies tend to be conservative in their willingness to consider debt financing, with many oversight boards and managers believing that it is not cost-effective to accelerate projects through debt financing. They also tend to face local governing and state oversight bodies that are more concerned with public accountability and control than with potential—perceived to be modest—savings. In part, this appears attributable to the traditional reliance on funding from federal and state sources. In contrast, the water and sewer sector, which has not had similar access to federal funding for a number of years, has a stronger record in developing in-house expertise needed to access the capital markets and in willingness of governing bodies to engage in capital finance programs. This, of course, is due in large measure to the strength of water and sewer rates and rate-setting methodologies supporting these entities. In contrast, the transit industry faces fairly severe opposition to fare increases—or, in economic terms, fare inelasticity.
- **Limited Expertise.** Beyond the “major player” agencies that are already involved in capital market transactions, most transit agencies do not possess the in-house expertise necessary to fully consider debt finance options. Transit agencies could expand their staffs to include financial managers with capital market experience to access the capital markets most effectively. They also could rely on outside advisors to help them get acclimated to the market but often are uncomfortable relying fully on such outside advice.
- **Small-Scale Capital Funding Needs.** Smaller and, particularly, one-time deals, which are characteristic of those pursued by small- to mid-size transit agencies, are not as attractive to lenders. In addition, the fixed costs of arranging smaller, one-time deals and higher

interest rates charged by lenders to smaller agencies together make capital market debt financing less attractive. In contrast, small deals are not uncommon in other areas of infrastructure, such as water and sewer, suggesting that the history and culture of transit agencies still plays a significant role in why such agencies do not pursue debt financing more frequently. This is coupled with the more limited revenue streams available to transit agencies for debt service.

- **Bus-Only System Capital Funding Needs.** Many lenders believe that the capital needs of bus-only systems are not well suited to debt financing approaches. The acquisition of replacement buses can be staggered over an extended time period, which reduces one-time capital costs to a level below those required to support a debt financing. In addition, the typical lifetime of buses falls below the 20- to 30-year lifetime of traditional long-term debt.

Together, these barriers have served to limit the number of systems that have accessed the capital markets to finance capital investments. This, in turn, has limited the experience of the capital markets in serving the needs of transit systems, producing something of a cyclical effect of limiting access to and use of the capital markets by a majority of transit systems.

Innovations in Transit Financing

Partially in response to identified barriers and partially in spite of them, there have been a number of innovations that have served to expand the transit industry's use of financing approaches beyond traditional pay-as-you-go techniques. Following are a few examples of such innovations. These and others are discussed in more detail in later chapters.¹⁰

- **Leveraging Market Access Through Inter-Agency Partnering and Pooled Financings.** Smaller agencies seeking debt finance are discovering opportunities to partner together for greater leverage in the markets. State and local agencies are taking steps to support such pooling. The California Transportation Finance Corporation, for instance, was set up by the California Transit Association specifically to help transit agencies in this regard. There are, of course, challenges to partnering, including limiting tax laws, financial liability concerns, and timing issues. Bond banks and state revolving funds have paved the way for pooled financings and for dealing with the challenges and, in some states, make themselves available to transit agencies.
- **State Revolving Funds and State Infrastructure Banks.** As noted above, state-operated revolving funds are an obvious way to help transit agencies secure capital funding for smaller agencies on a pooled basis while also taking advantage of the greater leveraging power of the state. Revolving loan funds have been in use for quite some time to meet a wide range of infrastructure needs, but they are just recently being applied to transit investments and face some limitations (see further discussion in Chapter 5).
- **Alternative Revenue Sources.** Transit sponsors are experimenting with alternative revenue sources that go beyond the traditional farebox and ancillary revenue (e.g., advertising,

¹⁰ Based on interviews with transit systems conducted between March and May 2000 (see Technical Annex 3 for additional interview results) and interviews with investment bankers, rating agency representatives, bond insurers, and other financial market players (see Technical Annex 3 for additional interview results).

concessions, etc.) sources. Some sponsors, for instance, have discovered the potential applications of tax increment financing for transit investments. While the direct link between development and transportation makes a strong argument for the imposition of fees to support transit, cities typically control tax increment financing programs and have not been willing to give up control (see further discussion in Chapter 6).

- **Multi-Modal Planning and Funding.** Some agencies are discovering the advantages of multi-modal funding approaches for so-called “mega-projects” that involve more than one mode. Colorado’s T-Rex Project is an example. This is a joint project between the Colorado Department of Transportation (DOT) and the RTD. The project is the largest surface transportation project undertaken to date within the State of Colorado. The highway improvements consist of reconstructing and widening 14 miles of I-25 and four miles of I-225. The light rail portion of the project is 19 miles in length, will be grade-separated and double-tracked, and will include 13 light rail stations and park-and-ride facilities. The multimodal project is expected to cost approximately \$1.67 billion and to be completed in 7 years. Through multi-modal approaches, transit can be incorporated into a larger project with other potential revenue sources such as tolls or surcharges and can benefit from legislative initiatives aimed at the entire project.
- **Federally Supported Innovations.** Debt financing backed by federal funds (grant anticipation notes) and, in particular, Full Funding Grant Agreements has been identified as the preeminent recent advance in debt financing for transit capital investments. The “major players” have been the early innovators, but others are following suit. As with many financing techniques, this will continue to have limited direct applicability to smaller systems and investments but is helping to change the mindset of the transit industry as a whole regarding the appropriateness of debt financing. Similarly, federal credit available via the Transportation Infrastructure Finance and Innovation Act will have direct relevance to a small subset of systems but has been important in changing attitudes (see discussion in Chapters 4 and 5).

Looking to the Future

Transit managers and members of the finance community predict continued slow to moderate growth in the use of capital markets by transit agencies. Much of this growth will be generated by agencies that already have experience accessing the financial markets, with new LRT systems contributing to the expansion as well. The recent “transit renaissance” (as described by some)—driven by economic prosperity, increased congestion, and environmental concerns—is a key factor in expanding interest in financial markets to advance transit investment.

1.6 DOCUMENT STRUCTURE AND CONTENT OVERVIEW

This primer is organized to provide a wide-ranging audience with easy access to the information they need most. Following this introductory chapter is a brief chapter on the financing opportunities created by federal legislation and programs, with emphasis on the current federal transportation program. Chapter 3 offers an introduction to the world of municipal debt finance and offers those readers with less of a grounding in public finance with a framework for making the choice between pay-as-you-go funding and financing alternatives. Chapters 4, 5, and 6 introduce the three components of finance (or legs of the stool)—capital sources, financing mechanisms,

and repayment streams. Together, these chapters provide an inventory of available funding and finance methods and offer real-life examples for many of the approaches. Chapter 7 addresses how—once the options are understood—a transit system and its managers go about formulating a comprehensive capital financing plan and carrying it out for individual projects or programs of projects. The final chapter of the main body of the primer offers some insights and observations based on the research that contributed to development of the primer, including a collection of interviews with transit system managers, state and local officials, and members of the public finance community.

Following the last chapter, the primer includes five technical annexes (or appendixes) that provide supporting material or additional detail for those interested in more technical detail than is captured in the primer itself. Throughout the primer, references are made to these supporting sections for those who are interested in learning a bit more about a particular subject. The technical annexes are

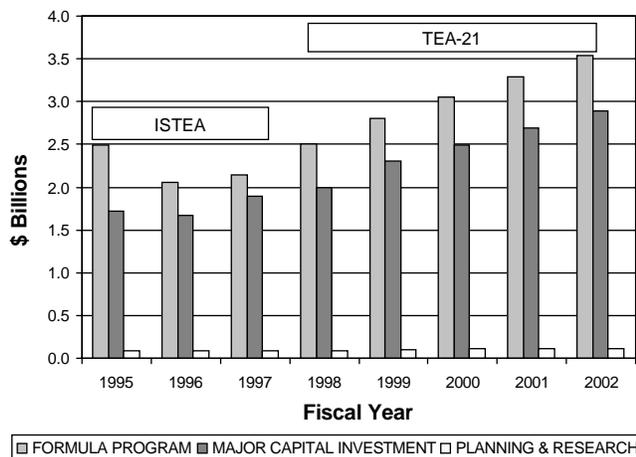
- Technical Annex 1—Evaluating Alternative Approaches
 - Technical Annex 2—Rating Criteria for Transit
 - Technical Annex 3—Interview Summaries
 - Technical Annex 4—Glossary
 - Technical Annex 5—Literature and Resources
-

2. FINANCING OPPORTUNITIES CREATED BY FEDERAL LEGISLATION AND PROGRAMS

2.1 INTRODUCTION

As noted in the preceding chapter, federal funding composes nearly 50 percent of all funding for transit capital investments. For systems serving populations under 1 million, the federal capital contribution to capital funding is closer to 60 percent. The most recent federal authorizing legislation (TEA-21) included substantially increased funding and unprecedented provisions aimed at guaranteeing funding, authorizing \$41 billion in transit funding and guaranteeing \$36 billion of that amount. This represents at least a 50 percent increase over appropriated funding made available under the predecessor legislation (see Figure 2-1).¹

Figure 2-1. Federal Appropriations, Fiscal Year 1995–Fiscal Year 2002 (Billions of Dollars)



In addition to providing direct funding, federal laws and regulations can serve to support the use of financing by transit systems. Conversely, certain federal provisions can serve as barriers to the use of debt and other financing approaches.

This chapter provides a synopsis of the key transit-related provisions of TEA-21 and of the federal transit program as they relate to the financing of capital investments.

2.2 CONTINUUM OF PROGRESS: ISTEA AND TEA-21

ISTEA and TEA-21 together have generated substantial changes in federal transit policy. These changes include

¹ APTA, *TEA-21: A Summary of Transit Related Provisions*, July 1998.

- Not only greater overall funding levels, but also guaranteed funding, which is extremely important to financing;
- Greater reliance on flexible funding provisions and an emphasis on state and local decision-making relative to federal mandates regarding spending; and
- Increasing emphasis on non-grant financing programs to increase the leverage of federal funds.

Guaranteed Funding Availability for Transit

TEA-21 did not substantially alter the basic transit funding mechanisms in place under ISTEA. It did, however, substantially increase the amount of guaranteed funding authorized for transit capital projects. Prior to enactment of TEA-21, funding for surface transportation programs was one item among many on a list of priorities for federal program spending in the budget. In a major change to federal budget rules, transportation programs are now guaranteed a minimum level of spending. Under the new budget rules, authorization of transit funding is guaranteed at a selected fixed amount over the authorization period and can be used only to support projects eligible under transit programs.

TEA-21 authorized federal transportation funding over a 6-year period from 1998 to 2003. Over this period, transit is guaranteed \$36.3 billion in federal funding authorization (see Table 2-1). Beyond simply ensuring transit agencies of future funding, the funding guarantee opens up many possibilities for innovative short- and long-term financing of capital projects.

TEA-21 Transit Formula Program²

TEA-21 did not substantially modify the formulas used under ISTEA. A few relevant changes to formula-based transit programs include the following:

Urbanized Area Formula Grant Program (Section 5307 Funds). Section 5307 funds are the largest component of the formula funds. TEA-21 continued the urbanized area apportionment formulas used under ISTEA. It also continued the phase-out of federal support for operating costs begun under ISTEA. Transit operating costs are no longer an eligible use of Section 5307 funds in urbanized areas with populations of 200,000 or more. However, the definition of capital expenses in these areas is broadened to include preventive maintenance. TEA-21 continued the eligibility of Section 5307 funds for operating costs in urbanized areas with populations of less than 200,000. The Urbanized Area Formula Grant Program is guaranteed to receive approximately \$17 billion in funding over the life of TEA-21.

Transit Enhancements and Section 5307 Funds. TEA-21 created a new requirement that at least 1 percent of transit systems' Section 5307 funds apportioned each year be used for transit enhancement projects. Eligible enhancement projects include historic preservation, landscaping, public art, pedestrian access, bicycle access, and enhanced access for persons with disabilities.

² All funding levels in this section are based on guaranteed funding levels cited on the TEA-21 website, September 1998. www.fhwa.dot.gov/tea21/index.htm.

Table 2-1. Total Guaranteed Federal Transit Funding Authorizations 1998–2003 (Billions of Dollars)³

	1998	1999	2000	2001	2002	2003	Total
Total Guaranteed Funding	\$4.64	\$5.32	\$5.80	\$6.27	\$6.75	\$7.23	\$36.00
Formula Grants	\$2.50	\$2.85	\$3.10	\$3.35	\$3.59	\$3.84	\$19.22
Clean Fuels		0.05	0.05	0.05	0.05	0.05	0.25
Urbanized Area Formula	2.30	2.55	2.77	3.00	3.22	3.45	17.29
Non-Urbanized Formula	0.13	0.18	0.19	0.21	0.22	0.24	1.18
Individuals with Disabilities	0.06	0.07	0.07	0.08	0.08	0.09	0.46
Capital Investment Grants and Loans	\$2.00	\$2.26	\$2.45	\$2.65	\$2.84	\$3.00	\$15.23
New Starts	0.80	0.90	0.98	1.05	1.14	1.21	6.09
Fixed Guideway and Modernization	0.80	0.90	0.98	1.05	1.14	1.21	6.09
Bus and Related	0.40	0.45	0.49	0.53	0.57	0.61	3.05
Planning	\$0.05	\$0.05	\$0.06	\$0.06	\$0.07	\$0.07	\$0.36
Research	\$0.04	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05	\$0.28
University Transportation Centers	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.04
Administration	\$0.05	\$0.05	\$0.06	\$0.06	\$0.07	\$0.07	\$0.37
Job Access and Reverse Commute	\$0.00	\$0.05	\$0.08	\$0.10	\$0.13	\$0.15	\$0.50

This requirement will result in approximately \$163.5 million in funding for transit enhancements over the life of TEA-21.

Clean Fuels Formula Grant Program. TEA-21 established a new formula grant program to support advanced bus propulsion technologies. Projects eligible for funding include purchase or lease of clean fuel buses and facilities. Recipients may improve existing facilities to accommodate clean fuel buses. Clean fuel buses include those powered by compressed natural gas, liquefied natural gas, biodiesel fuels, batteries, alcohol-based fuels, hybrid electric, fuel cell, certain clean diesel, and other low or zero emissions technology. Funds made available would be allocated by formula among the eligible grant applicants. Criteria included a region's nonattainment rating and the transit property's number of buses and bus passenger-miles. No funds were appropriated to this program.

Other Formula Programs. TEA-21 made no significant changes to the Non-Urbanized Area Formula Program (Section 5311). It provided \$1.2 billion in guaranteed funding over the authorization period for capital and operating assistance to non-urbanized areas with a population of 50,000 or less. In addition, TEA-21 made no changes to the Elderly Persons and Persons with Disabilities Program (Section 5310), which provides at least \$512 million in funding over the life of TEA-21.

TEA-21 Capital Investment Grants and Loans Program

The renamed Capital Investment Grants and Loans Program (formerly Discretionary Grants) continues under TEA-21, with authorization of \$16.9 billion in funding over the life of TEA-21 (\$15.2 billion of which is guaranteed). The legislation has three basic categories: new fixed guideway systems and extensions to existing fixed guideway systems, or "New Starts"; fixed guideway mod-

³ www.fhwa.dot.gov/tea/21/

ernization; and bus and bus-related facilities. Within each of these three categories, some minor changes have been made, as described below.

New Starts. TEA-21 broadened the criteria used to select New Starts projects. These criteria include population density and current transit ridership in the corridor; the technical capability of the grant recipient to construct the project; and factors that reflect differences in local land, construction, and operating costs. TEA-21 also limited the amount of New Starts funding that can be used for planning, environmental, and preliminary engineering to 8 percent of the total amounts made available for this program. The House and Senate Appropriations Committees continue to earmark funds for individual New Starts on an annual basis (see Chapter 6 for additional discussion of the New Starts process).

Fixed Guideway Modernization. Funds for fixed guideway modernization projects are distributed using a complex system of tiers to determine the availability of funding for existing transit systems. Each system is categorized in a tier, and total available funds are distributed across tiers. TEA-21 modified the formula for allocating Fixed Guideway Modernization funds. The new formula contains seven tiers rather than four. The allocation of funding under the first four tiers has been modified slightly and, through Fiscal Year 2003, is based on data used to apportion the funding in Fiscal Year 1997. Funding in the three new tiers is apportioned based on the latest available route miles and revenue vehicle miles on segments at least 7 years old as reported to the National Transit Database. This changes the former allocation based only on route miles and revenue vehicle miles on entire systems that are 7 years old.

Bus and Bus-Related. TEA-21 made no significant changes to the bus and bus-related capital grant program. A total of \$3.55 billion was authorized for bus and bus-related facilities over the 6-year authorization period. A number of bus projects were identified for funding in Fiscal Years 1999 and 2000.

Flexible Funding Provisions

There are a number of provisions in TEA-21 that expand upon or create new flexibility for the funding of transit.

STP and CMAQ Funding

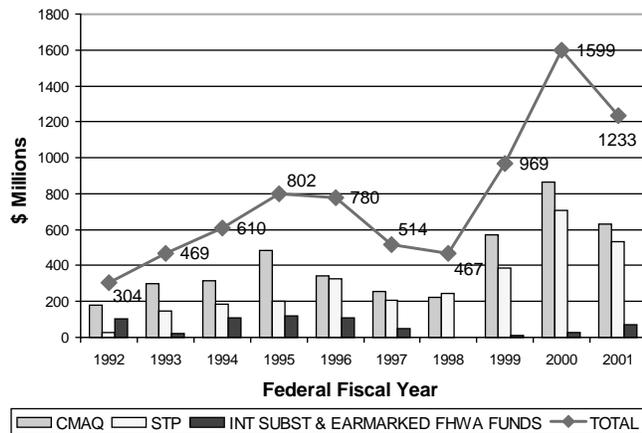
TEA-21 preserved the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality (CMAQ) Program, which have been the primary sources of highway funding transferred (commonly referred to as “flexed”) to transit-related uses. When these funds are flexed, they may be used for a variety of transit improvements such as new fixed guideway projects, bus purchases, construction and rehabilitation of rail stations, maintenance facility construction and renovations, alternatively fueled bus purchases, bus transfer facilities, multi-modal transportation centers, and advanced technology fare collection systems.

Once transferred, the funds are administered as FTA funds and take on all of the requirements of the program to which they are transferred (i.e., Section 5307 Urbanized Area Formula Program, Section 5311 Nonurbanized Area Formula Program, or Section 5310 Elderly and Persons with Disabilities Program). In urbanized areas with populations greater than 200,000, the decision to

transfer funds is made by the metropolitan planning organization (MPO). In areas with less than 200,000 population, the decision is made by the MPO in cooperation with the state DOT. In rural areas, the state DOT makes the transfer decision.⁴

Over the 10-year period from 1992 to 2001, approximately \$7.7 billion was transferred (also see Figure 2-2). To date, 46 states, the District of Columbia, Puerto Rico, and the Virgin Islands have made use of the flexible funding provisions.⁵

Figure 2-2. Highway Funds Flexed to Transit, 1992–2001 (Millions of Dollars)⁶



Federal Matching Flexibility

Several provisions are included in TEA-21 that provide greater flexibility in satisfying the non-federal matching requirements of a project. The Act removes a former requirement that federal match be applied to each progress payment to the state, thereby providing the DOT with discretion in developing policies to allow the federal match to be adjusted during the life of the project (also known as “tapering”). The Act also establishes an annual program-wide approval process for STP projects—in place of the quarterly project-by-project approval process—which provides the Secretary with discretion to apply the match requirement to the annual program as opposed to individual projects.

TEA-21 provides that the local share of transit funding can include revenue bond proceeds, as long as the aggregate level of state and local support in the urbanized area (UZA) over the next 3 fiscal years is at least as much as in the previous 3 years.⁷

TEA-21 also provides more flexibility to states and local governments in meeting the non-federal matching requirement by allowing the fair market value of land lawfully obtained by the state or local government to be applied to the non-federal share of project costs. It allows funds from other

⁴ U.S. DOT, FTA, Flexible Funds, www.fta.dot.gov/library/reference/flex/ffi2.html.

⁵ U.S. DOT, FTA, Flexible Funds, www.fta.dot.gov/library/reference/flex/ffi2.html.

⁶ U.S. DOT, FTA, Flexible Funds, www.fta.dot.gov/library/reference/flex/ffi2.html.

⁷ APTA, *TEA-21: A Summary of Transit Related Provisions*, July 1998, p. 13.

federal agencies to be applied to the non-federal share of recreational trails or transportation enhancement projects, or allowing funds appropriated to federal land management agencies or to the Federal Lands Highway Program to be applied to the non-federal share of certain projects.

Non-Grant Financing Programs

There are a number of non-grant programs within TEA-21 that either provide financing to capital investments directly or help to facilitate the use of innovative finance and project delivery approaches. These include bond finance provisions, federal credit programs, the State Infrastructure Bank (SIB) program, and the Transportation and Community and System Preservation (TCSP) Pilot.

Bond Provisions

TEA-21 allows the use of proceeds from the sale of revenue bonds as part of local matching funds for a transit capital project. This increases flexibility and local funding for transit capital projects. Any transit capital project funded under Sections 5307 and 5309 is eligible (see Chapter 5 for further discussion of system-based transit revenue bonds).

Transportation Infrastructure Finance and Innovation Act

TEA-21 established an innovative financing program, under the Transportation Infrastructure Finance and Innovation Act (TIFIA), through which U.S.DOT can provide credit assistance on flexible terms directly to public and private sponsors of major surface transportation projects. The TIFIA credit program consists of three distinct types of financial assistance designed to address projects' varying requirements throughout their life cycles:

1. **Secured loans** are direct federal loans to project sponsors with the opportunity for flexible repayment terms and financing for both construction and permanent financing of capital costs.
2. **Loan guarantees** provide guarantees by the federal government to institutional investors who make loans for projects.
3. **Standby lines of credit** may be drawn upon to supplement project revenues, if needed, during the first 10 years of project operations.

The amount of federal credit assistance may not exceed 33 percent of total project costs. Eligible projects include any transportation and capital project under Title 23 (title of the U.S. Code that includes many of the laws governing the federal-aid highway program) and Title 49 (title of the U.S. Code that includes, among other transportation-related programs, the laws governing transit investments). Projects must cost at least \$100 million (\$30 million for ITS projects) or 50 percent of a state's annual apportionments. Loans must be supported by user charges or other dedicated revenue streams and may not be repaid with future federal funds (see Chapter 4 for additional discussion of the TIFIA program and more detail on project eligibility).

Railroad Rehabilitation and Improvement Financing

TEA-21 also authorized a new Railroad Rehabilitation and Improvement Financing program. The program allows the Federal Railroad Administration (FRA) to provide credit assistance, in the form of direct loans and loan guarantees, to public or private sponsors of intermodal and rail projects. The Act does not provide budget authority but authorizes future appropriations and contributions from potential borrowers and other non-federal sources to fund the credit assistance. Eligible projects include the acquisition, development, improvement, or rehabilitation of intermodal or rail equipment or facilities, including track, bridges, yards, buildings, and shops. To date, only a few loans have been made under the program and none for transit-related purposes (see Chapter 4 for additional discussion).

State Infrastructure Banks

TEA-21 established a new pilot program for SIBs in which four states—California, Florida, Missouri, and Rhode Island—may participate.⁸ U.S. DOT may enter into cooperative agreements with these states allowing them to capitalize their banks with federal-aid funds authorized and apportioned in Fiscal Years 1998–2003. SIBs provide various forms of non-grant assistance to eligible projects, including below-market rate subordinate loans and other forms of credit enhancement.

Thirty-four other states and the Commonwealth of Puerto Rico, which had been approved to establish SIBs under an earlier SIB pilot program authorized by the National Highway System (NHS) Designation Act of 1995, may continue to operate their SIBs under the provisions of the NHS Act and related guidance. TEA-21 funds, however, may not be used to further capitalize these SIBs (see Chapter 4 for further discussion of SIB-related opportunities).

Transportation and Community and System Preservation Pilot

TEA-21 provided funding under the new TCSP Pilot program to investigate relationships between transportation and community and system preservation and private sector-based initiatives. States, local governments, and MPOs are eligible for discretionary grants to plan and implement strategies that improve the efficiency of the transportation system; reduce environmental impacts of transportation; reduce the need for costly future public infrastructure investments; ensure efficient access to jobs, services, and centers of trade; and examine private sector development patterns and investments that support these goals. Eligible activities include any highway or transit project and corridor preservation activities needed to implement transit-oriented development plans.

2.3 LOOKING TO THE FUTURE: THE NEXT AUTHORIZATION AND BEYOND

As transit sponsors look beyond ISTEA and TEA-21 to consider possible enhancements to the federal program to further support financing of the increasing capital funding demands, a number of themes emerge. These include

⁸ Texas was later granted a place in the program.

- Calls for continuation of the trend of increasing federal funding—given the magnitude of unmet transit needs across the country;
- Support of maintaining the funding guarantees included in TEA-21—especially given the proven ability of systems to leverage future federal funding via the use of grant anticipation financing; and
- Development of recommended program adjustments to facilitate innovative and cost-effective capital financing approaches—such as refinements to the planning process and, in particular, adjustments to Transportation Improvement Plans (TIP)/state TIP (STIP) mechanics to reflect local funding commitments.

All three categories are seen as essential to deal with the mounting capital investment needs facing transit systems of all sizes and to take full advantage of the innovations made available through prior federal legislation.

3. INTRODUCTION TO PUBLIC FINANCE FOR TRANSIT INVESTMENTS

3.1 INTRODUCTION

As transit agencies explore opportunities available to them to finance capital investments through the capital markets, they are faced with a new lexicon of terms, a cast of characters seeking to help them through the financing process, and a myriad of decisions on how and whether to finance a project or program of projects.

This chapter offers an introduction to the world of public finance, including a basic discussion of the decision to use debt financing versus a traditional pay-as-you-go approach, and an overview of the municipal bond market, its primary players, and relevant terminology. The final section provides a synopsis of the capital markets experience of transit agencies in recent years.

Additional discussion of the process of issuing debt in the capital markets can be found in Chapter 7. Discussion of specific sources of capital, debt and lease financing mechanisms, and repayment streams can be found in Chapters 4, 5, and 6, respectively.

NEW ISSUE-BOOK-ENTRY ONLY Ratings: (See “RATINGS” herein)

In the opinion of O’Melveny & Myers LLP and Robinson & Pearman LLP Co-Bond Counsel, assuming the accuracy of certain representations and compliance by the Authority with certain tax covenants described herein, interest on the Series 1999-A Bonds is excluded from gross income for federal income tax purposes under existing statutes, regulations, rulings and court decisions, and in the opinion of Co-Bond Counsel, interest on the Series 1999-A Bonds is exempt from personal income taxes of the State of California under present state law. In addition, Co-Bond Counsel are of the opinion that interest on the Series 1999-A Bonds will not be treated as a specific item of tax preference for purposes of the federal alternative minimum tax for individuals and corporations. However, interest on the Series 1999-A Bonds is included in the computation of certain federal taxes and corporations. See “TAX EXEMPTION” herein.

\$160,205,000

**LOS ANGELES COUNTY METROPOLITAN
TRANSPORTATION AUTHORITY**

(California)

**PROPOSITION A FIRST TIER SENIOR
SALES TAX REVENUE REFUNDING BONDS
SERIES 1999-A**

Dated: April 1, 1999 Due: July 1, As Shown on the Inside Cover

The Los Angeles County Metropolitan Transportation Authority Proposition A First Tier Senior Sales Tax Revenue Refunding Bonds, Series 1999-A (the “Series 1999-A Bonds”), are special obligations of the Los Angeles County Metropolitan Transportation Authority (the “Authority”) payable from and secured by a pledge of the Pledged Revenues (which term is defined herein and includes the receipts from the imposition in the County of Los Angeles for public transit purposes of a one-half cent retail transaction and use tax, less 25% thereof paid to local jurisdictions and certain administrative fees). See “SECURITY AND SOURCES OF PAYMENT FOR THE SERIES 1999-A BONDS” herein. The proceeds of the Series 1999-A Bonds will be used by the Authority to (i) refund \$148,648,858.10 aggregate principal amount of the Authority’s Sales Tax Revenue Refunding Bonds, Series 1989-A and (ii) pay the costs associated with issuing the Series 1999-A Bonds. See “INTRODUCTION—PURPOSE OF SERIES 1999-A BONDS” herein.

The scheduled payment of the principal of and interest on the Series 1999-A Bonds when due will be guaranteed under an insurance policy to be issued concurrently with the delivery of the Series 1999-A Bonds by FINANCIAL SECURITY ASSURANCE INC.



NEITHER THE FAITH AND CREDIT NOR THE TAXING POWER OF THE COUNTY OF LOS ANGELES, THE STATE OF CALIFORNIA OR ANY POLITICAL SUBDIVISION OR PUBLIC AGENCY THEREOF, OTHER THAN THE AUTHORITY TO THE EXTENT OF THE PLEDGED REVENUES, IS PLEDGED TO THE PAYMENT OF THE PRINCIPAL OF, OR INTEREST ON, THE SERIES 1999-A BONDS.

3.2 FINANCE 101: PAY-AS-YOU-GO VERSUS DEBT FINANCING

Debt financing allows transit agencies to develop projects faster than is possible under a pay-as-you-go approach by improving short-term cash flow and matching project funding with the useful life of assets. In some instances, faster project delivery can strengthen revenue generation through increased ridership and can reduce maintenance costs by retiring older, less reliable equipment.

Debt does, of course, have a downside—it must be repaid, with interest. This promise of repayment reduces a transit agency’s ability to invest in other capital projects in the future and draws financial resources away from system operations.

This section focuses on the choice between using grant funds, internally generated funds, and revenues from dedicated and general taxation—collectively known as “pay-as-you-go” or “PAYGO” approaches—and drawing on debt and lease financing alternatives—sometimes referred to as “pay-as-you-use” approaches.

The primary issues to consider when deciding whether to use PAYGO or debt finance to fund a particular project or program of investments include

- The extent to which there is an immediate need for the asset to be financed;
- The expected useful life of the asset;
- The current availability of funds relative to the size of the project;
- The desire to complete multiple projects simultaneously;
- The expected inflation rate (or cost of waiting); and
- The anticipated borrowing rate (or cost of financing).

These factors must be considered in combination with one another. Analysis of the tradeoffs also will require selection of an appropriate discount rate to use to capture the opportunity cost of using available funds one way or the other.

Immediate Need for the Asset

The first consideration in whether to consider debt financing for capital acquisitions is whether there is an immediate need for the asset to be financed. If there is such an immediate need, then further consideration of debt financing is most warranted. Otherwise, a PAYGO approach is appropriate.

Expected Useful Life of the Asset

As a general rule of thumb, debt financing is appropriate for funding capital assets with a long useful life (i.e., 10 to 30 years), such as train cars and fixed guideway infrastructure. Conversely, PAYGO is most applicable for funding assets with a short useful life (i.e., less than 10 years), such as computers. For assets with longer useful lives, debt financing ensures that the burden of the capital costs is spread evenly over the life of the asset and is matched to available revenue streams. In addition, with debt financing supported by dedicated taxes or other ongoing revenue streams, direct users or other beneficiaries of the asset pay for its cost over the life of the asset.

There are many nuances to the decision of whether to use debt financing for a particular capital investment or program of investments. As is discussed in later sections of this primer, there are instances in which financing for shorter-lived assets is appropriate and, conversely, where a PAYGO approach for a longer-lived asset is a logical choice.

Availability of Funds and Project Size

Availability of funding is a key limit on the size of project that can be supported using a PAYGO approach. Debt financing may be required to speed up implementation of large projects whose

costs exceed currently available revenues. For smaller projects, debt financing may still be appropriate on a shorter-term basis to allow a project to proceed in advance of anticipated, but uneven revenue streams such as property taxes that are collected annually or semi-annually or grant funds that are forthcoming.

Completing Multiple Projects

A major project that is funded on a PAYGO basis, with all costs paid as they are incurred over a relatively short period of time, may consume all or most of a transit agency's available budget for capital projects. Most agencies, however, have multiple competing capital needs that must be addressed. By using debt financing to even out the costs of a large project over a longer time-frame, more of an agency's budget can be made available for other important investments.

Often, debt financing a particularly large project can free up funds so that more routine projects can continue to be completed. Figure 3-1 is a simple example.

Figure 3-1. Example of Debt Financing a Large Project and Impact on Other Investments

A transit authority has \$100 million available annually for capital projects. The transit authority has a \$500 million capital project that it needs to undertake, as well as several other smaller capital projects that it wishes to undertake. In a PAYGO approach, it would take 5 years to complete the large capital project (\$100 million saved up per year for 5 years), and while this large project is being completed, none of the smaller capital projects can be undertaken. If, instead, the transit authority can obtain \$500 million in capital financing (most likely through the issuance of bonds) for the large capital project, PAYGO funds are preserved for other projects. The terms of these bonds are that they are to be paid back over a 10-year period, with level annual debt service payments, at an annual borrowing rate of 6.00%. The annual debt service payments would be about \$68 million, exclusive of the costs of issuance. This leaves approximately \$32 million per year for other capital projects to be completed on a PAYGO basis or via additional debt. In addition, the large capital project can be completed in a much shorter time than the 5 years that would have been required using the PAYGO financing method. The transit authority must pay the interest on the bonds, which in this case is approximately \$180 million over the life of the 10-year loan, as well as costs associated with the issuance of the debt (on the order of \$3–\$10 million, depending on the complexity of the transaction).

As indicated in Figure 3-1, there are no free lunches because interest must be paid in almost any debt financing. However, the benefits of completing a large capital project more quickly can often outweigh the cost of borrowing to finance a project. In addition, other capital projects are not “squeezed out” by larger capital projects.

Expected Inflation Rate (or Cost of Waiting)

As noted above, debt financing is often undertaken to speed up completion of a project. An important factor to consider when deciding whether to accelerate the completion of a project is the

expected rate of inflation for the project. In estimating the future inflation of project costs, it is important to note that the price level increase for the project may not be the same as the general rate of inflation for the local economy. In a booming economy with a high level of building activity, for example, the price level increase in the construction industry may be much higher than the Consumer Price Index, the most commonly used measure of general inflationary pressures. Conversely, in a construction market saturated with labor and available materials, construction inflation can be lower than the Consumer Price Index. Therefore, the inflation rate used in the analysis should be closely linked to the asset to be constructed or purchased.

Figure 3-2 illustrates the assessment of the impact of project cost inflation, or the “cost of waiting.” To understand this analysis, the reader must first understand the application of present value analysis. The accompanying sidebar provides a quick lesson in present value (pv) analysis.

Even in cases in which the financial benefits of borrowing in order to more quickly complete a project cannot be proven, there may be economic or societal benefits produced from the acceleration of project completion that justify the additional borrowing costs. For example, finishing improvements more quickly may increase safety (thereby saving lives) and reduce travel times for commuters (thereby increasing the quality of life of a substantial number of people).

Also, if a large construction project is undertaken quickly, then there can be a one-time economic boost to the local economy because of the large number of construction jobs and the implicit multiplier effect of injecting a substantial amount of currency into the economy. This positive economic impact will still take place if the project is completed over a number of years, but achieving the full benefit will be drawn out over a longer time period.

Expected Borrowing Rate

The cost of borrowing funds is a critical part of any financing decision. In a very-low-interest-rate environment, it may be prudent for an entity to borrow for a project that would otherwise be paid

Present Value Lesson

Present value (PV) is the value at the current time of a cash payment that is expected to be received in the future, allowing for the fact that an amount received today could be invested to earn interest for the period to the future date. Alternatively, it is the amount that would have to be invested today to have the needed value at the specified future time, based on the presumed interest rate.

$$PV = \text{Future Payment} / (1 + \text{interest rate})^{\text{\# Periods}}$$

- **Example 1. Single-Period Case**

If the prevailing interest rate equals 10 percent, what is the PV of a cash payment of \$1,000 to occur 1 year (single period) from now?

$$PV = \$1,000 / 1.10 = \$909.09$$

This formula states that the PV is the payment value discounted by the interest rate for one period. This means that a person would be willing to accept \$909.09 today to forego the payment of \$1,000 in the future. Alternatively, it means that the current value of the \$1,000 payment equals \$909.09.

- **Example 2. Multi-Period Case**

If the cash payment will occur 3 years from now, what is the PV of the cash payment?

$$PV = 1,000 / (1.10)^3 = \$751.31$$

This formula states that for the multi-period example, the PV is the payment value discounted by the compounded interest rate over the number of periods. This means that the current value of the \$1,000 payment 3 years from now equals \$751.31 at an interest rate of 10 percent.

Figure 3-2. Second Example of Impact of Project Cost Inflation and Large Project Financing

As in Example 1, in this example, the loan is for a principal amount of \$500 million, exclusive of the costs of issuance. Assuming that the issuer finances the issuance costs in the transaction, the principal amount to be issued is approximately \$505 million, assuming issuance costs of 1 percent of the principal amount to be borrowed. The term is still 10 years. The present value of the project is computed using a discount rate of 7.00 percent (see later discussion of arriving at the proper discount rate).

Following is a comparison of the potential cost of waiting under varying inflation assumptions. It is assumed that in the PAYGO scenario, funds are not available to begin construction until Year 5 (and that no interest is earned in the interim).

Expected Rate of Project Inflation	NPV of Costs of PAYGO	NPV of Costs Using Debt	(Cost)/Benefit of Using Debt
3.00%	\$ 413,273,197	\$ 432,857,144	\$ (19,583,947)
3.50%	423,401,961	432,857,144	(9,455,183)
3.96%	432,857,144	432,857,144	0
4.00%	433,728,352	432,857,144	871,208
5.00%	454,985,558	432,857,144	22,128,414
6.00%	477,068,171	432,857,144	44,211,027
7.00%	500,000,000	432,857,144	67,142,856

The breakeven expected inflation rate is 3.96 percent. In general terms, this means that if one expects the project inflation rate to average greater than 3.96 percent over the next 5 years—the period of accumulation of capital for project construction, then debt financing would be economically beneficial.

Using a lower discount rate (e.g., the assumed tax-exempt borrowing rate of 6.00 percent), the breakeven point—or point of financial indifference—would be at a rate of project inflation of 6.21 percent.

for using PAYGO. Conversely, a high-interest-rate environment is probably not the best time to enter into a long-term financing arrangement, all else being equal.

There are a number of methods to project future borrowing rates—and resources available to help issuers and their advisors do so most accurately. Investment bankers tend to base assumptions regarding interest rates on current market conditions. Financial consultants often look to firms like DRI-WEFA, which provide historical information and projections for interest rates over a longer time horizon (e.g., for financings that are anticipated for 5 and 10 years hence).

Discount Rate to Use

One of the more analytically challenging areas in conducting a PV analysis of net savings relates to the selection of the discount rate, or the rate used to bring future funding flows back to a comparable value today. In the corporate world, the discount rate selected is often referred to as the “opportunity cost”—or the return that the corporation’s funds could provide in an alternative investment. Alternatively, corporate investment decisions are made based upon a minimum rate of return (commonly referred to as a “hurdle rate”). If the project cash flows produce a positive net present value using this discount rate, then the project should be undertaken. As an oversimplification, if the net present value is negative, then the project should be rejected. The selection of the proper discount rate can make or break project-financing decisions.

In the public sector, the proper discount rate to use may be even more difficult to determine than in the corporate world. Public-sector entities do not choose among projects based simply on a quantified rate of return. Elements of return include environmental benefits, lifestyle benefits, and other social benefits that are not easily quantified.

With the above caveats in mind, it is still important for public-sector agencies to take into account the relative risk of the project that is being undertaken when the project is being analyzed. A rational economic rule is that the discount rate for government and public-sector projects should approximate the discount rate for business and industry—because public-sector agencies receive funds indirectly, and often directly, from corporations and individuals through taxes on the private sector. This money that is derived from companies and individuals restricts their opportunities to invest in productive facilities or to pay off debts; therefore, the private-sector discount rate represents the loss of productivity to society (i.e., opportunities foregone because of taxes). However, it is generally agreed that the discount rate for government-affiliated organizations should be lower than the average rate of returns in private industry. The rationale is that government activities generally involve less risk, and discount rates closer to those of regulated industries are generally appropriate. Municipal bond financial analysis, for instance, typically applies the tax-exempt yield as the discount rate.

As described here, the choice of the discount rate is a matter of judgment and can have a substantial impact on the outcome of project analysis. There is never an “exactly right” discount rate to be used and there are benefits of testing the analysis at varying discount rates to determine the sensitivity of the results to the discount rate. Based on guidance from the Office of Management and Budget (OMB), FTA requires that transit systems use 7 percent as the discount rate for analyses presented to FTA where federal funds will be used for debt service.

Conclusions

Deciding whether to use PAYGO or debt to pay for a project is generally a difficult decision, influenced by many financial, operational, and political factors (see box entitled Pros and Cons of Pay-as-You-Go versus Financing, this section). This decision must be made in the context of a long-term plan rather than on an ad hoc project-by-project basis. Development of guidelines to assist in the determination of how best to pay for individual capital projects as part of an overall plan is critical for transit agencies juggling their many competing priorities for funding (for further discussion of capital planning and budgeting, see Chapter 7).

Pros and Cons of Pay-as-You-Go versus Financing (or Pay-as-You-Acquire versus Pay-as-You-Use)

Arguments for pay-as-you-go (pay-as-you-acquire):

- ◆ **Limiting risk of financial hardship (default)**—by only paying for projects with available funds, the sponsor avoids over-extending itself and risking financial hardship or default.
- ◆ **Maximizing future flexibility**—related to avoiding the risk of financial hardship due to an economic downturn, it is sometimes argued that pay-as-you-go approaches increase future flexibility to deal with such downturns or other unanticipated events.
- ◆ **Preserving funds for future projects**—rather than being tied up meeting debt service requirements for prior projects.
- ◆ **Reducing interest cost**—over a period of time, savings can be used to pay for additional facilities or expand operations. This is the corollary to the inflation savings argument for financing offered below.

Arguments for financing (pay-as-you-use):

- ◆ **Providing capital asset when it is needed**—this is probably the fundamental reason that any infrastructure is financed—the project is needed now and the non-financial benefits of providing it now outweigh the potential costs.
- ◆ **Gaining environmental, societal, and economic benefits of earlier delivery**—providing the asset earlier can have environmental benefits (e.g., where the asset is a cleaner-fueled vehicle); societal benefits (e.g., providing vehicles better equipped to serve those with disabilities or the elderly); or economic benefits (e.g., investments in a transit station that spurs economic development in the surrounding area).
- ◆ **Capturing inflation savings/potential PV savings**—based primarily on savings from avoided inflation relative to financing costs (FTA’s cost-effectiveness assessment, discussed in later chapters, is based primarily on a PV savings analysis).
- ◆ **Creating additional spending capacity**—for other projects at the same time, by trading a one-time large expenditure for a series of much smaller annual expenditures.
- ◆ **Improving cash flow**—by smoothing out the capital requirement for a lumpy investment over the life of that asset, making budgeting easier and providing more stable cash flow.
- ◆ **Matching of investment with users/beneficiaries**—by spreading out debt payments funded by operating and/or tax revenues, projects are paid for by the people who benefit from them. This is sometimes referred to as “intergenerational equity.”

3.3 OVERVIEW OF MUNICIPAL BOND MARKET

This section provides a general overview of the municipal bond market, introduces the primary players in the debt-issuance process and their respective roles, and offers readers some technical grounding to help understand later discussions of interest rates, yields, and bond structures.¹ For those readers already familiar with the public finance market and its associated terminology, they may wish to skip forward to the next chapter.

¹ This section draws heavily on information in FTA’s *Introduction to Public Finance and Public Transit* (January 1993, prepared by Public Financial Management, Inc.) and the U.S. Army Corps of Engineer’s *Financial Analysis Guidebook* (April 1993, prepared by Apogee Research, Inc.).

Market Overview

The “municipal bond market” is a misnomer: it refers not only to the bonds of municipalities, but also to those of states, counties, villages, special districts and, in a few instances, even private corporations. The municipal bond market also is referred to as the “tax-exempt market” because buyers of municipal bonds generally can exclude the interest income from these bonds in their federal—and, in the state where the bonds are issued, sometimes state and local—income tax statements. New York City bonds, for instance, are referred to as triple-tax free because interest earnings are exempt from federal, New York State, and New York City income taxes. As a result of the tax-exempt nature of most debt issues, municipal bond issuers pay a lower interest rate on the bonds than they would otherwise (historically on the order of 70-80 percent of prevailing taxable rates for similarly-rated debt).

The primary purpose of the municipal bond market is to finance the public projects of state and local authorities. Typically, when a municipal issuer wishes to undertake a large project that cannot be funded from ongoing revenues, officials turn to the capital markets to finance the project. The bond market allows governmental units to bridge the gap between immediate cash needs and future cash inflows and to match project costs with benefits and beneficiaries, as was discussed in the preceding section.

MARKET PLAYERS AND ROLES

Throughout the life of a bond issue, there are three primary groups of players involved: those who borrow funds (issuers); those who lend funds (buyers or holders of bonds); and those who bring together the borrowers and lenders (underwriters). There also are a number of supporting players, including financial advisors, bond counsel, feasibility consultants, trustees, investment managers, bond insurers, and rating agencies. Each of these players and their roles in the financing process are described below.

Primary Players

Issuers. Issuers of municipal debt include the more than 40,000 governmental units across the country eligible to sell federally tax-exempt bonds. Projects financed include such public purpose facilities as airports, docks, wharves, mass commuting systems, schools, sewage treatment plants,

Bond Lesson

A bond is an interest-bearing certificate issued by governments and corporations when they borrow money. The issuer agrees to pay a fixed principal sum on a specified date (the maturity date) and at a specified rate of interest. Municipal bonds are denominated in units of \$5,000 par value.

- **Example: Features of a Hypothetical Bond Issue**

Amount of issue	\$200 million
Date of issue	10/31/02
Maturity	10/31/22
Denomination	\$5,000
Annual rate	6.00%
Coupon dates	5/01, 11/01
Offer price	100
Yield to maturity	6.00%
Rating	AAA/Aaa

This represents a \$200 million bond issue, with bonds issued on October 31, 2002 to be redeemed 20 years later on the same date. The denominations of the bonds are the standard \$5,000. The bonds have an annual rate of return of 6.00 percent, which is divided over semi-annual coupons of \$150 each. The bonds are being sold at par, or at their face value (see “Offer Price” of 100% above), and carry a AAA/Aaa rating, indicating they are the highest level of investment-grade bonds.

water supply facilities, solid waste disposal sites, and other public works.

There also are two non-governmental groups that may issue tax-exempt debt based on the “public purpose” of their activities. Some not-for-profit organizations (e.g., hospitals) and private corporations (e.g., those involved in “industrial development” activities) may issue bonds that are tax-exempt via a state or local entity. The rationale is that some activities—whether carried out by the public, private, or not-for-profit sectors—should benefit from less costly sources of financing because of their broad public benefit. Figure 3-3 offers a breakdown of bond issues by the category of issuer for 2001.

The Tax Reform Act of 1986 altered the tax-exempt status of some government-issued bonds. The Act reclassified bonds into two categories: (1) governmental purpose bonds and (2) private activity bonds. Governmental purpose bonds are automatically tax-exempt, but private activity bonds must meet certain criteria in order to be classified as tax-exempt.

To qualify as a governmental purpose bond, at least 90 percent of the bond proceeds must be used by a state or local government, and no more than 10 percent of the debt service on the bond may be derived from or secured by a trade or business. If a bond does not meet these criteria, it is classified as a private activity bond.

Private activity bonds that are issued for specific public-purpose projects can be tax-exempt. Each state, however, was limited by the Tax Reform Act of 1986 to issuing private activity bonds in the amount of \$50 per capita or \$150 million each year, whichever was greater. These restrictions were eased via legislation enacted in 2000. Private activity bonds are now limited to \$225 million per state or \$75 per capita, whichever is greater. As of 2003, these figures will be indexed to inflation.²

Other limitations on private activity bonds include: (1) that no more than 10 percent of the proceeds may be used by private parties; and (2) that no more than 10 percent of the debt service

Municipal Bond Market Players

Issuers—governmental and non-governmental entities financing “public purpose” projects

Buyers—individual and institutional investors seeking relatively low-risk, generally tax-exempt financial returns

Underwriters—national and regional securities dealers and commercial banks

Financial Advisors—independent consulting firms or divisions of investment banks specializing in financial analyses required to evaluate and implement debt transactions

Bond Counsel—legal advisors serving the issuer regarding the legality of debt issuance and the debt’s tax-exempt status

Underwriter’s Counsel—legal advisors serving underwriters regarding the regulatory and disclosure requirements of municipal securities law

Feasibility Consultants—experts in developing and assessing the reasonableness of revenue projections and/or technical aspects of the project

Trustees—generally commercial banks that handle the administration of pledged revenues and the movement of funds between the issuer and investors

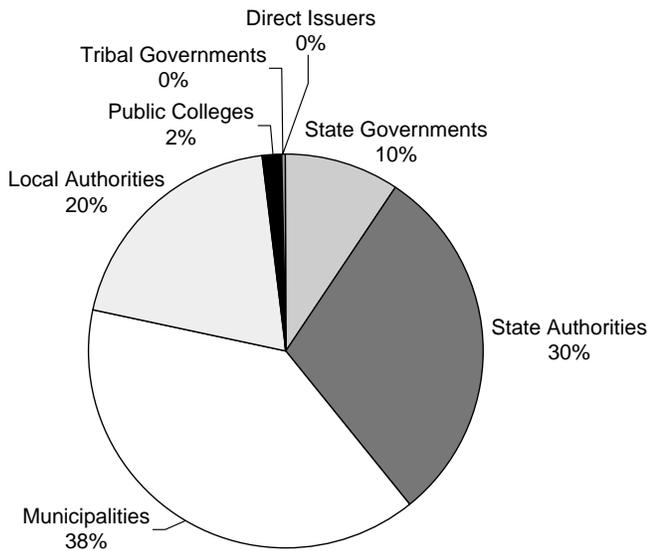
Investment Managers—generally from an investment bank, commercial bank, or independent firm responsible for investing bond proceeds prior to full use for the project to be financed as well as funds pledged for repayment

Credit Enhancers—bond insurance companies, commercial banks, or governmental entities providing financial guarantees and other credit support to the transaction

Rating Agencies—independent private firms that provide an assessment of the credit risk of bond issuers and individual issues

² Government Finance Officers’ Association, *Issue Brief: Private Activity Bond Volume Caps*, updated January 1, 2002.

Figure 3-3. 2001 Distribution of Bond Issues, Percent Issued by Issuer Category



may be backed by private resources. There are, however, facilities that are exempt from these limitations. Mass commuting facilities are among the exempt facilities.³

Buyers. Buyers of municipal debt include households, mutual and money market funds, insurance companies, commercial banks, and many other entities that have excess funds to invest. For the most part, interested investors will be those individuals or institutions for which there is a tax benefit from the investment in municipal bonds as opposed to other investments for which earnings are taxable. For this reason, pension funds—themselves non-taxable entities—do not generally buy tax-exempt securities (see Chapter 4 for additional detail on the makeup of municipal bond investors).

Underwriters. Underwriters are national and regional securities dealers, or investment banks, and some commercial banks that facilitate the process of matching issuers with buyers of bonds. Their primary function is to purchase bonds from the issuer for resale and distribution to the ultimate buyers. The underwriters must price the bond issue at a low enough interest rate to win the business from the issuer but at a high enough interest rate to attract buyers. Without the network of financial contacts of an underwriter, an issuer would have great difficulty in selling its bonds. For a negotiated financing, the underwriting firm also renders the services described below under Financial Advisor.

The process described above—in which syndicates (groups) of investment banks bid together against other syndicates for the right to purchase bonds from the issuer and resell them to the initial buyers—is called the “primary market.” Subsequent trading of existing bond issues among investors and financial institutions is called the “secondary market.” Changes in secondary mar-

³ Other exempt facilities are airports, docks and wharves, sewage disposal facilities, solid waste disposal facilities, facilities for the local furnishing of electric energy or gas, facilities for the furnishing of water, and local district heating or cooling facilities.

ket prices of bonds do not directly affect the issuers of those bonds; their debt repayment obligations remain the same.

Compensation for the underwriters generally comes in the form of the “spread” between the cost of buying the bonds from the issuer and the price for which they are able to sell the bonds in the market. For most (negotiated) issues, the spread is made up of four components⁴:

1. **Management fee**—the fixed part of the spread that goes to the senior managing underwriter and is sometimes shared with co-managers;
2. **Underwriting risk fee**—this portion of the payment has decreased as the relative safety of municipal securities has been proven;
3. **Expense reimbursement**—including legal expenses, travel, copying, and computer time; and
4. **“Takedown”**—the compensation paid to the sales and trading workforce of the underwriter.

Supporting Players

In addition to the three main players (the issuer, the buyer, and the underwriter), there is a host of support players in the bond issuance process. These include financial advisors, bond counsel, underwriter’s counsel, various feasibility consultants, the trustee or paying agent, the investment manager, credit enhancers, and rating agency analysts.

Financial Advisors. Financial advisors are hired to serve the interests of the issuer and come either from an independent consulting firm or from a division of an investment bank. The role of the financial advisor is to evaluate the feasibility of funding the project out of current revenues and, to the extent that this is not feasible or desirable, to help determine the best financing approach and to arrange for the most advantageous financing structure. They also assist the issuer in evaluating the fairness of the pricing and fees proposed by the underwriters. Financial advisors also often serve as key coordinators of the activities of other players in the debt-issuance process, working as the agent of the issuer.

Financial advisors are generally compensated either on an hourly basis or by task. Alternatively, the advisor may be paid a percentage of the par value (or principal amount) of the issuance. Some issuers prefer to secure financial advisory services from an independent advisor rather than from a representative of an investment bank. Although financial advisors and underwriters may appear to offer overlapping or similar services, the financial advisor is generally sought by issuers when the question of actual debt issuance remains in doubt or is so distant or infrequent that an underwriter cannot efficiently render the service. Also, financial advisors offer continuity when an issuer deals with a number of different underwriters. It should be noted that not all issuers retain financial advisors, with some issuers carrying out these activities on their own behalf.

⁴ See Chapter 7 for a discussion of the choice of negotiated versus competitive issuance. In a negotiated sale, the issuer chooses the underwriters early in the process and negotiates the pricing of the issue. Alternatively, in a competitive bid situation, later in the process the issuer puts out an invitation for pricing bids and several investment banks respond by submitting proposals.

Bond Counsel. Bond counsel is the individual or firm that officially determines the legal authority of an issuer to issue debt and attests to the tax-exempt status of the issue. The bond counsel is responsible for all legal matters regarding the issue, including (1) drafting the bond resolutions (legal documents describing the terms and conditions of a bond offering) and trust indentures (contracts between bondholders and issuers setting forth how all monies of issuers will be applied to operating costs, debt repayment, reserve funds, and construction funds) and (2) reviewing the disclosure documents (e.g., the Official Statement, or disclosure document required for each new issue that contains information about the nature of the security being offered and the pledged sources of payment). The bond counsel also reviews documents pertaining to previous debt issues to confirm the issuer's authority to issue additional bonds. Bond counsel is generally compensated on an hourly or per issue basis.

Underwriter's Counsel. The Underwriter's Counsel has responsibility for preparing preliminary and final versions of disclosure documents in a negotiated transaction. It also is responsible for researching state and local laws regarding issuance to ensure that the offering to investors complies with all relevant legal restraints. Underwriter's counsel provides its findings to the underwriter and prepares various contracts involving the underwriter.

Feasibility Consultants. Feasibility consultants generally are required when the income from the project to be constructed with the bond proceeds will ultimately be applied to the debt service or where some other dedicated revenue stream must be evaluated as to its potential to meet debt service obligations. The consultant provides independent revenue projections that often are included in disclosure documents to support the bond issuance.

Trustee. The trustee is usually a commercial bank appointed to perform the functions necessary for the smooth handling of funds in the debt-issuance process and over the life of the bonds. This includes establishing the necessary trust accounts and accounting structures. At closing, funds are transferred into the trust account to be invested prior to their full use for the project to be funded. The trustee is responsible for providing investment instructions, making interest and principal payments (when the trustee also serves as the paying agent), and representing the interests of bondholders in the case of a default. While the trustee works for the benefit of the bondholders, the trustee's annual compensation comes directly from the issuer.

Investment Manager. The investment manager manages the bond proceeds. Often, the trustee also performs this function. In many cases, state law restricts investment options to a few allowable instruments, including federally backed U.S. Treasury and U.S. Agency securities and other safe investments. The bond resolution or trust indenture may further specify permitted types of investments. An important function of the investment manager is management of the portfolio in light of arbitrage restrictions. "Arbitrage" is defined as the interest earnings in excess of the cost of borrowing. Such earnings must be rebated to the Internal Revenue Service except in certain allowable circumstances.⁵ Investment managers are generally paid based on the size of the portfolio being managed, although compensation on a per hour basis is also an option.

Credit Enhancers. Credit enhancers are highly rated organizations that provide financial backing to some issues in the form of bond insurance, letters of credit, or lines of credit that serves to

⁵ Arbitrage tracking and reporting has become a complex and important function since passage of the Tax Reform Act of 1986.

lower the cost of borrowing to the issuer. In the case of bond insurance, the bond insurance company provides a guarantee that the insurer will pay all principal and interest on the debt for the life of the debt in the event that the issuer fails to do so. There are four major bond insurance companies in the market today—American Municipal Bond Assurance Corporation (AMBAC), Financial Guaranty Insurance Company (FGIC), Municipal Bond Investors Assurance Corporation (MBIA), and Financial Security Assurance Holdings Ltd. (FSA). XL Capital Assurance also entered the municipal bond insurance market as a AAA-rated insurer in 2000. Each carries an AAA rating and any issue backed by one of these bond insurers also carries the highest rating. Bond insurers are compensated for this credit support via a fee paid to them at the time of closing (when the bonds and investment funds officially trade hands).

Letters of credit differ from bond insurance in that they are issued for a specific period of time. They are issued by commercial banks or governmental sources whose credit rating is applied to the issuer. The cost of the letter of credit instrument is in the form of a fee paid to the bank at closing. A Line of Credit is yet another credit enhancement instrument. Unlike a letter of credit, the financial commitment on a line of credit runs to the issuer rather than to the investors directly. In the case of a line of credit, a renewal fee is paid on an annual basis based on the debt remaining outstanding.

Rating Agencies. Rating Agencies are in the business of providing information on the credit risk of bond issuers and their bonds. They are private, for-profit corporations that provide rating services on a fee-for-service basis. There are three major rating agencies in the municipal market today—Moody’s Investors Service, Standard & Poor’s, and Fitch Ratings. Rating agencies perform in-depth analyses of the credit quality of the bond issuer and the particular bond issue and arrive at a relative rating for the bond issue. The published ratings group bonds according to their likelihood of repayment. The higher the rating (the lower the risk that the bonds will not be repaid), the lower the interest rate that will be required, assuming all other factors are the same. Table 3-1 presents the span of possible ratings of the three prominent rating agencies (see Technical Annex 2 for a similar chart for short-term debt).

Standard & Poor’s and Fitch further refine ratings by placing a “+” or a “-” after the letters, while Moody’s uses a “1,” “2,” or “3.” A “+” or “1” signifies that the issue is in the upper range of the rating. Thus, an AA+/Aa1 rating is higher than an AA-/Aa3 rating.

Bonds rated BBB/Baa or higher are considered “investment grade,” signifying that they have a high likelihood of being repaid; this qualifies them to be held by some institutional investors who

Table 3-1. Bond Rating Categories

Quality Grade	Standard & Poor’s	Moody’s	Fitch
Top Quality	AAA	Aa a	AA A
	AA	Aa	Aa
	A	A	A
Medium Quality	BBB	Baa	BBB
Speculative	BB	Ba	BB
	B	B	B
Poor Quality	CCC	Caa	CCC
	CC	Ca	CC
	C	C	C
Default	D		DDD
			DD
			D

legally cannot hold “speculative grade” investments (bonds rated BB/Ba or lower). Additional detail on the steps in the debt-issuance process can be found in Chapter 7.

A Lesson on Risk and Return of Municipal Bonds

Building on knowledge about the makeup of the municipal bond market, it is beneficial to explore the primary drivers of interest rates (from the perspective of the issuer) and various measures of return (from the perspective of the bondholder). In all capital markets, including the municipal bond market, the return (or interest rate) on a bond generally varies directly and positively with the bond’s perceived level of risk. The return on a municipal bond is made up of three components:

1. The risk-free return that a U.S. government bond with the same stream of payments would yield;
2. The additional return specific to the bond required to compensate investors for the risk that the bond will not be repaid; and
3. The effect of the interest payments being tax-exempt.

Conceptually, if a comparable-term U.S. Treasury obligation yields 5.00 percent, a municipal bond that yields 6.00 percent may be viewed as the risk-free rate of 5.00 percent plus a credit risk premium of 4.00 percent less the beneficial effect of tax-exemption of 3.00 percent. As a practical matter, however, the investor would compare the municipal bond with a similar quality taxable bond’s after-tax return, based on the investor’s own tax bracket.

The first component of return—the risk-free yield—varies constantly and is driven by supply and demand for money in the entire economy. The second component—the credit risk premium—generally stays fairly constant for a given issuer unless there is an event that changes the market’s perception of the issuer’s ability to repay, such as a default or less-than-anticipated tax revenues. The third component—the effect of tax-exemption—usually works to lower the return by the bond buyer’s marginal tax rate.

From the perspective of prospective buyers of a municipal bond issue, the buyers are faced with evaluating several inherent risks that are factored into the required return. The most common are

- **Credit risk**—referring to the possibility that a debtor (the issuer of the bonds) is unable or unwilling to make timely payments of interest and principal (also known as the default risk and is addressed by the rating agencies in their assignment of bond ratings [see Table 3-2 for an example of the general correlation of ratings and interest rates]);
- **Interest rate risk**—referring to the possibility that a bond will lose value because of a general rise in the level of interest rates (If interest rates rise, the value of a specific stream of bond payments falls; alternatively, if interest rates fall, there is a gain in value);

Table 3-2. Bond Ratings and Interest Rates

	Aaa	Aa	A	Baa
2003	2.10	2.23	2.46	2.76
2007	3.73	3.88	4.11	4.41
2012	4.34	4.51	4.75	5.05
2017	4.86	5.02	5.26	5.56
2022	5.10	5.27	5.52	5.82
2027	5.17	5.34	5.59	5.90
2032	5.20	5.37	5.62	5.93

Source: *Bond Buyer Municipal Marketplace* (April 12, 2002).

- **Callability/reinvestment risk**—measuring the risk associated with the fact that an investor may buy a bond that yields a certain return (e.g., say 10 percent) but may not actually get a total return of 10 percent because the bonds are called (redeemed by the original issuer) prior to maturity; and
- **Liquidity risk**—capturing the possibility that a bond may not be quickly turned into cash (sold) at its fair market value. Large issuers that are well-known to individual and institutional investors typically have very liquid bonds that easily can be sold at fair market value; less known issuers may have bonds with more limited liquidity.

The buyer must condense all these sources of worry into one risk rating that determines the return the buyer would accept for undertaking such a level of risk. The higher the perceived risk, the higher the required or expected return. The governmental unit—or the underwriter acting as the issuer’s agent—tries to address buyers’ concerns so as to decrease the interest payments (i.e., the return to the buyer) on funds borrowed. Bond ratings provided by the rating agencies directly relate only to the credit risk of the issue but also can affect the assessment of liquidity risk.

Rates of Return, Yields, and Yield Curves

Rates of Return. The concept of a “rate of return” is fairly well understood in one-period examples. An investor—in the case of debt, a bondholder—gives up an amount today (principal) for a larger amount tomorrow (principal plus interest); the return is simply the interest divided by the principal. However, once multi-period examples are introduced, the measurement of a rate of return becomes more complicated.

Yields. Current yield, yield to maturity, and yield to call are common measures used to describe return. The most precise of these measures of return are yield to maturity and yield to call because they take into account the time value of money. The current yield is an adequate approximation, especially for short-term bonds. Net interest cost (NIC) is used by issuers when bonds are first issued but is only an approximation.

Yield Curves. The yield curve draws a relationship between the maturity of bonds and their yield to maturity. The horizontal axis represents the years to maturity, while the vertical axis represents the yield to maturity. Normally, the yield curve slopes upward, signifying that the longer the term of the bond, the higher the required rate of return. Occasionally, the yield curve slopes downward or has a hump in the middle (see Figure 3-4 for examples of common yield curves).

Yield Terminology

Current Yield: the ratio of the annual dollar amount of interest to the purchase price of a bond, stated as a percentage.

Yield to Maturity: The rate of return to the investor earned from payments of principal and interest, with interest compounded semi-annually and assuming that interest paid is reinvested at the same rate. This is the same as the Internal Rate of Return (or IRR).

Yield to Call: The yield to maturity if bonds are redeemed prior to the stated maturity date. This only applies to callable bonds.

Net Interest Cost: A measure used by issuers but not investors, the sum of all interest payments over the life of a bond plus the discount (or less the premium), all divided by the number of years to maturity. The bond discount (premium) is the amount below (above) the face value of the bond for which it is purchased.

Whenever comparing bonds from different issuers with different likelihood of repayment (i.e., credit risk), it is important to make sure that the maturities are comparable. For example, in an interest rate environment with an upwardly sloping yield curve, the yield on a 2-year bond of a risky, BBB-rated issuer could be the same as the yield of a 10-year, AAA-rated bond. Municipal interest rates are at historic low rates today. Figure 3-5 illustrates the trend in long-term fixed-rate bond returns over the last decade.

Figure 3-4. Sample Yield Curves

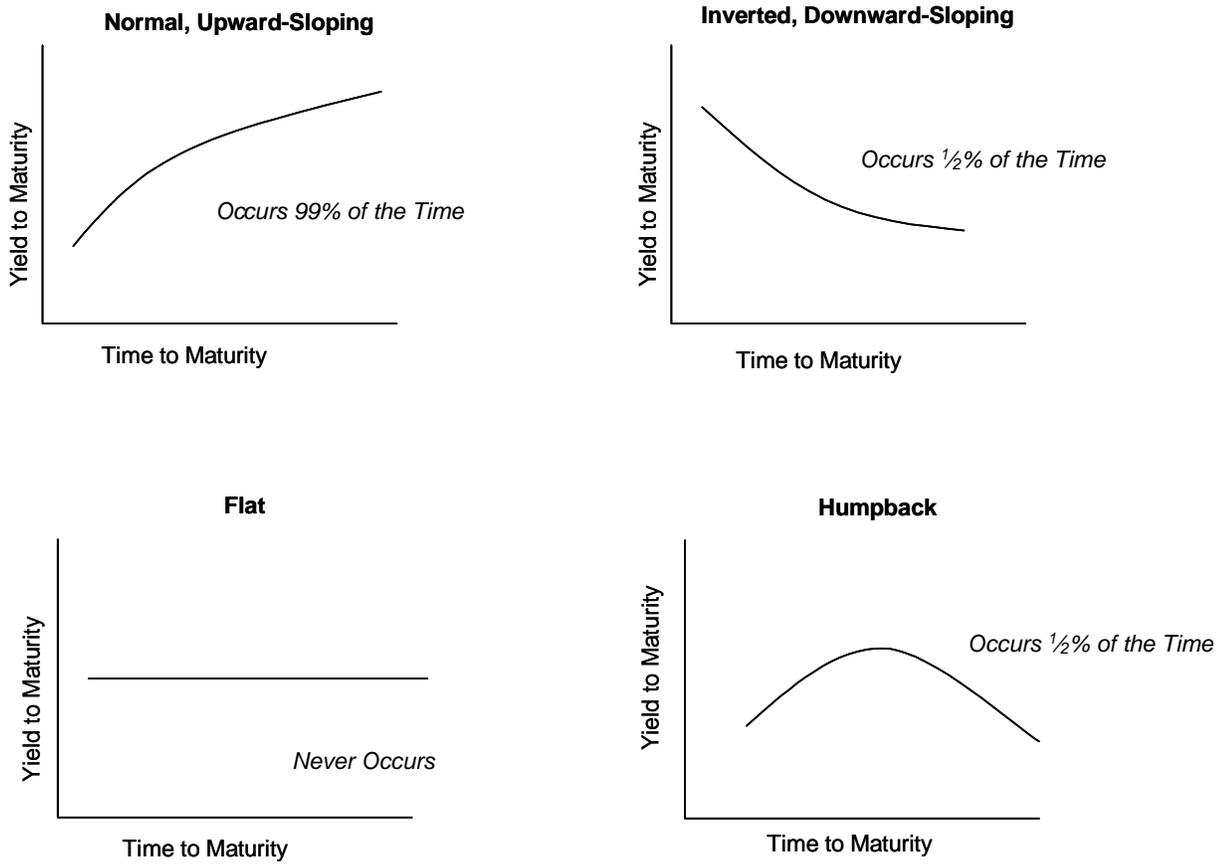
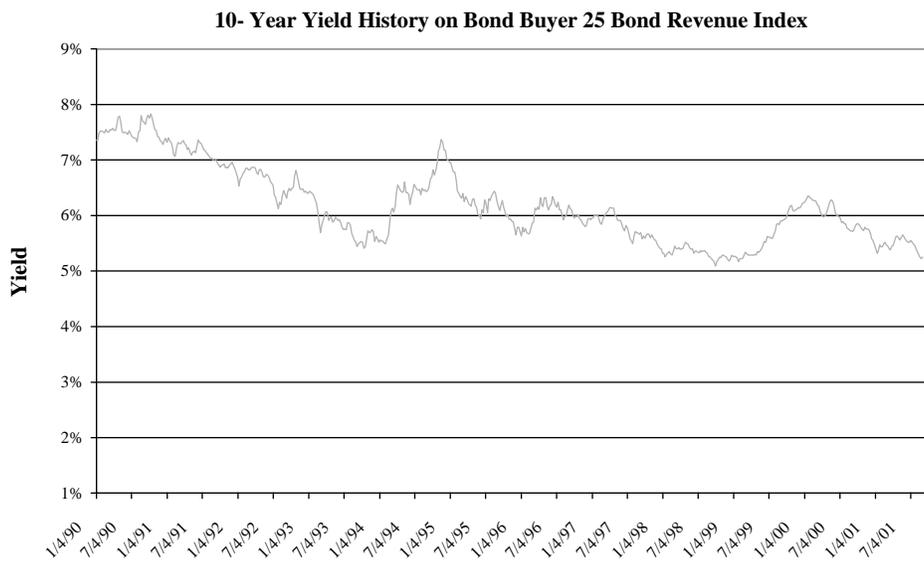


Figure 3-5. Trend in Long-Term Interest Rates

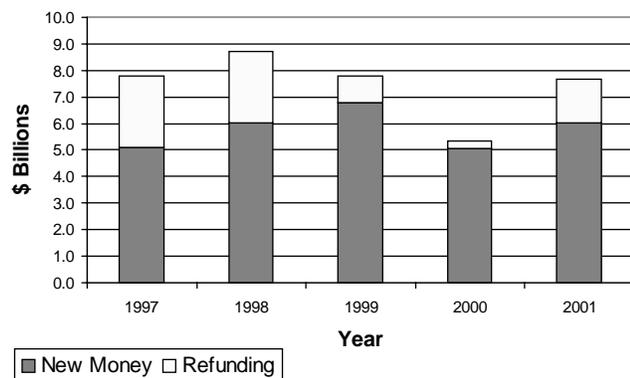


Note: The Bond Buyer Revenue Bond Index consists of 25 various revenue bonds that mature in 30 years. The average rating is roughly equivalent to Moody's A1 and Standard & Poor's A+.

3.4 TRANSIT EXPERIENCE IN THE MUNICIPAL BOND MARKET

As discussed in Chapter 1, although transit agencies of all sizes have participated in the capital markets, a small number of major transit agencies are responsible for the vast majority of transit-related debt financing today. In contrast to the “major players” or the new LRT systems, most transit agencies—particularly those with bus-only systems—have depended primarily on federal and state grants and lease funding arrangements for their capital programs. Figure 3-6 provides a summary of transit system debt issuances over the last 5 years.

Figure 3-6. Mass Transportation Bond Issues, 1997–2001 (Billions of Dollars)



Note: Includes new money and refunding issuances as reported.

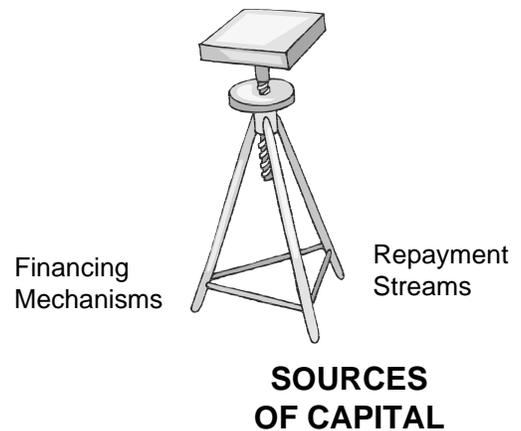
Source: Securities Data Corporation data with use of proceeds code of “mass transportation.”

4. SOURCES OF CAPITAL

4.1 INTRODUCTION

As discussed in the introduction, the financing process can be described as comprising of three elements—or legs of the financing stool. This chapter introduces the leg of the financing stool that relates to the sources of capital—or providers of upfront capital that, except in the case of grants, ultimately must be repaid. The primary categories of sources of capital for transit capital investments are

- Investors in the tax-exempt bond market,
- Investors in the taxable bond market,
- Equity investors,
- Vendors and lessors, and
- Governmental sources of capital.



This chapter introduces each of the primary sources of investment capital and provides an overview of the basic dynamics of accessing each particular capital source. Links are drawn to the financing mechanisms (e.g., bonds, loans, equity securities) used to access the individual capital sources and to the most commonly linked repayment streams (e.g., grant funds, taxes, and operating revenues). Additional detail on financing mechanisms can be found in Chapter 5 and on repayment streams in Chapter 6.

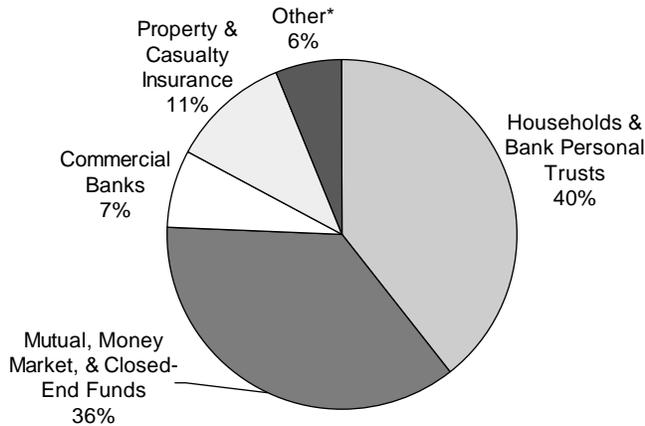
4.2 TAX-EXEMPT BOND MARKET INVESTORS

As was discussed in Chapter 3, the tax-exempt bond market is the capital market in which investors—including individual households, mutual and money market funds, insurance companies, and other institutions with excess funds to invest—offer their capital to those eligible to issue debt on a tax-free basis (free of federal income tax and, often, state and local taxes in the jurisdiction of issuance). Institutions that participate in the tax-exempt market are those that both have funds to invest and an appetite for tax-exempt income.

Outstanding state and local debt obligations totaled \$1.685 trillion at the end of 2001, according to Federal Reserve estimates. The largest owners of tax-exempt securities are individuals and their agents (mutual funds and bank trust departments and investment advisors purchasing on behalf of individuals)—accounting for 76 percent of all holdings as of 2001. In recent years, individual participation in tax-exempt municipal bonds has expanded significantly through investments in unit investment trusts and mutual and money market funds (see Figure 4-1).¹

¹ The Bond Market Association.

Figure 4-1. Holdings of Municipal Securities—2001

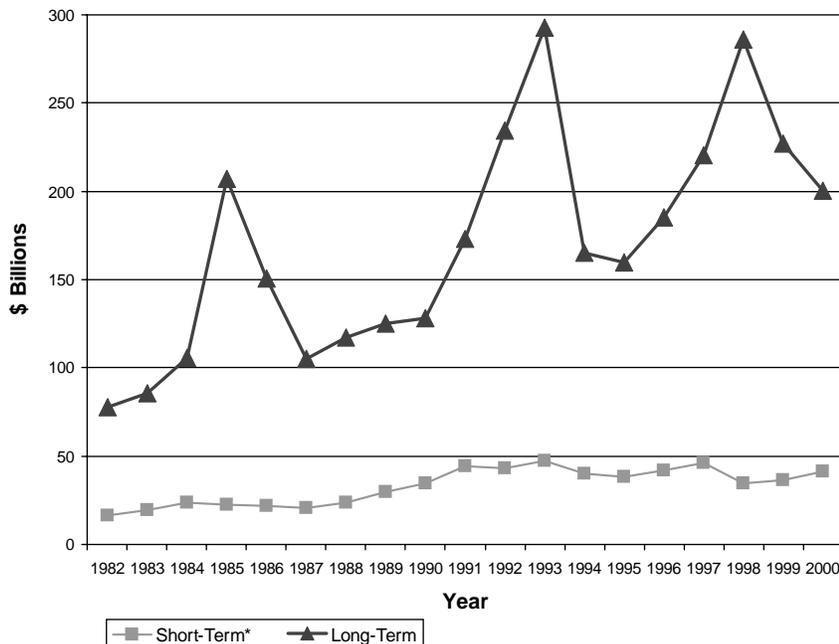


*Includes non-financial corporations, state and local government general funds, savings institutions, life insurance companies, private pension funds, state and local government retirement funds, broker/dealers and government-sponsored enterprises.

Source: The Bond Market Association.

The tax-exempt market continues to expand—as does transit sponsors’ use of the market for financing capital investments. As shown in Figure 4-2, both long- and short-term municipal debt issuances have climbed over the last 20 years, with a steady rise over the last 10 years. Transit financings have mirrored the overall municipal market debt levels on a smaller scale, with an estimated \$37 billion in issuances over the 1997–2001 period, averaging \$7.5 billion per year.

Figure 4-2. 19-Year History of Short- and Long-Term Municipal Debt Issuance, 1982–2000 (Billions of Dollars)



*Short-term refers to municipal securities with maturities of 13 months or less.

Source: The Bond Market Association.

4.3 TAXABLE BOND MARKET INVESTORS

Largely as a result of the Tax Reform Act of 1986, there is not only a market for municipal tax-exempt debt, but also there is a small companion market for municipal taxable debt. Taxable municipal bonds exist because the federal government will not subsidize the financing of certain activities that are not deemed to provide a significant benefit to the public at large. Investor-led housing, local sports facilities, refunding of a previous issue (a new bond issue to replace an existing bond issue), and borrowing to replenish a municipality’s underfunded pension plan are a few examples of bond issues that may be federally taxable. Taxable municipals offer yields more comparable with those of other taxable sectors, such as corporate bonds, than with those of other municipal issues.

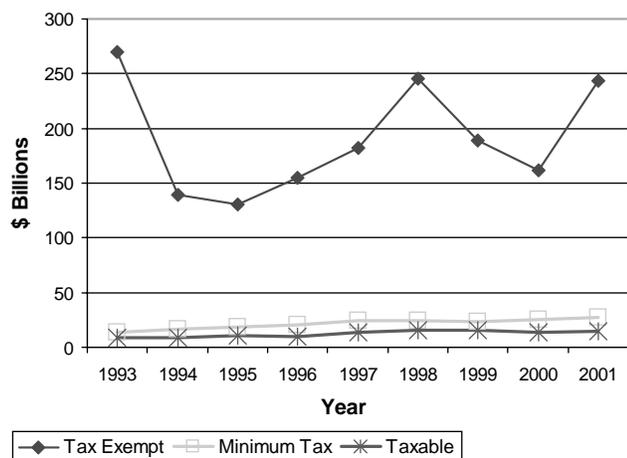
Primary investors in the taxable municipal market include individuals and institutions for which the tax exemption is of little or no value. The biggest class of such investors is pension funds that do not pay taxes with or without the additional exemption. They, therefore, seek the highest possible return at the lowest possible risk. Tax-exempt municipal bonds do not offer this, but taxable municipals may.

While still a small market, the growth of the taxable municipal market in recent years has been significant. In the 5-year period from 1997 to 2001, nearly \$75 billion in taxable municipals was issued (see Figure 4-3 for a comparison of taxable and tax-exempt issuances over the 1993–2001 time period).

4.4 EQUITY INVESTORS

As with the vast majority of public-purpose capital investments in the United States, transit investments have only limited appeal to potential equity investors. The financial returns are generally too small—based in large part on the clear advantages to project sponsors of accessing capital via the low-interest tax-exempt markets—and project timelines often too protracted to attract private capital. Tax laws also generally prohibit combining tax-exempt debt and private equity, discouraging the use of the latter.

Figure 4-3. Taxable Debt versus Tax-Exempt Debt, 1993–2001 (Billions of Dollars)



There are exceptions to this general rule, however. To the extent that a private individual or organization has a direct interest in the project to be constructed, the necessary conditions may exist to entice direct equity investment and to cause the project sponsor to be willing to consider potentially higher returns for a portion of the investment capital (see later discussion of vendor financing in this chapter). Also, the tax-oriented leasing market (lease-leasebacks, cross-border leases, etc.) attract equity investment in which the investor's financial return is derived largely from tax benefits associated with depreciation deductions on transit assets, not "financial equity" per se.

While outside equity investment in transit projects faces substantial barriers, private participation in transit capital projects on more of a partnership basis is considered more regularly. For instance, for years, private partners have participated on a joint development basis in the development of transit stations and related facilities. Under such arrangements, private firms help pay for all or a portion of an investment that benefits both themselves and a transit partner. In return, they receive the right to co-locate their operations with the transit operation or on property owned by the transit agency. Recent changes in federal financing regulations, improved market conditions, and technological advances also have resulted in expanded use of existing public-private partnership mechanisms as well as creation of creative new private participation methods. Chapters 5 and 6 provide additional detail on the structures of these partnership arrangements and the role of private capital in making them work.

4.5 VENDORS AND LESSORS

Vendors are sometimes willing to provide financing for the products that they sell. For transit agencies, the most common assets to which this source of capital is available are bus and rail vehicles. It also can apply to financing provided by construction firms (for instance, design-build arrangements that include financing) in which the constructor may be asked to take back financing for a portion of its payment.

In most vendor financing arrangements, the equipment manufacturer actually acts as more of an intermediary between a financial institution—a commercial bank, for instance—and the transit agency. The vendor provides the services or products and the commercial bank the financing. This financing can be in the form of a loan or a lease. Leases carry many of the same characteristics as debt mechanisms and, for most transit systems, are an alternative to loans or bond financing. Thus, they are considered here and in each of the subsequent chapters.

In the transit arena, vendor financing often involves foreign producers who are leading manufacturers of rolling stock. These international vendor financings often involve export-promoting credit banks in the manufacturers' home nation. Export credit banks often provide low-interest loans and other credit enhancements to the equipment producer. The savings can be passed along to the transit agency in the United States.

The potential benefits to a U.S. transit agency of entering into an international vendor financing arrangement is largely associated with current international market conditions such as

- A strong U.S. Dollar, which provides incentives to purchase foreign equipment;
- Low foreign interest rates, the savings from which can be passed along to the U.S. transit agency;

- Favorable terms from foreign export banks to foreign equipment manufacturers, who pass along associated savings to the U.S. transit agency; and
- Agreeable depreciation benefits realized by foreign investors, which reduce effective interest rates paid by the transit agency (much like the benefits realized in a cross-border lease arrangement, discussed in Chapter 6).

The risks or disadvantages associated with international vendor financing include

- Thin and irregular markets (especially for cross-border leasing);
- Volatile foreign currency exchange rates and foreign interest rates that can expose an agency to long-term risk; and
- Buy America provisions that limit procurement of foreign-produced equipment.

(Chapter 5 offers additional detail on the mechanics of vendor financing arrangements and provides an example of how this source of capital can be used to support a transit agency's capital program.)

4.6 COMMERCIAL BANKS

Commercial banks are the predominant source of capital for a great number of smaller capital investments of governmental entities, including transit agencies. They are, in fact, the only outside capital source with which many transit agencies have any experience. Many such banks have developed products and programs aimed at governmental borrowers. Such products often focus on short-term debt and lease financing but also can include longer-term loans. Commercial banks also provide letters of credit and lines of credit as credit enhancement or short-term financing mechanisms.

Commercial banks are an important source of capital, especially for smaller projects or short-term financings that do not make sense to take to the broader capital markets because of the relative cost of bond issuance and time required to access the bond market. The tradeoff that often must be considered is between the relatively higher interest costs of commercial loans and the costs of issuance associated with a bond issuance (Chapter 5 provides more detail on the structure of commercial bank financing).

4.7 GOVERNMENTAL CAPITAL SOURCES

Sources of capital from governmental units go beyond grants to include financing programs run by state, federal, and even local governments. Examples include state revolving loan funds—and, specifically, the SIB program—federal credit programs, and state and local bond banks and loan programs. SIB debt is intended to serve smaller projects and communities; TIFIA is targeted at major projects, with costs generally in excess of \$100 million.

SIBs and State Revolving Funds

SIBs and other state revolving funds provide various forms of non-grant assistance to eligible projects, including below-market rate subordinate loans, interest rate buy-downs on third-party loans

(in which the SIB provides a grant that has the effect of lowering the interest rate charged by another source), and guarantees and other forms of credit enhancement. The revolving loan fund structure also allows pooled vehicle purchases that may help reduce acquisition costs.

Although more than 20 states are eligible to offer SIB loans to transit projects, as of October 2001, only 7 had made transit loans, with a total value of approximately \$25 million.²

A SIB must enter into an agreement with FTA to commence transit lending. Among the states with the legal authority to lend to transit projects, two declined to commit capital to a designated transit account. Transit projects must satisfy a relatively extensive set of federal regulations, making SIB loans to transit projects a fairly complex endeavor.

Similar to the SIB program, some states have developed revolving loan funds for transportation. In fact, prior to the SIB Pilot program, over a dozen states had developed state transportation loan funds.³ Much like SIBs, state transportation revolving loan funds can provide a mechanism to lower financing costs by pooling purchases, providing low-interest loans, guaranteeing loans, and providing other forms of credit enhancement.

History of the State Infrastructure Bank Program

Congress established a State Infrastructure Bank (SIB) Pilot program as part of the National Highway System Designation Act of 1995 (NHS Act). The NHS Act authorized US DOT to enter into cooperative agreements with up to 10 states for the establishment of SIBs—for the purpose of making loans and providing other forms of credit assistance to both public and private entities. Of the 10 original pilot participants, 9 signed agreements with both FTA and FHWA.

Based on the success of this small pilot, the program was expanded under provisions of the Appropriations Act of 1997 such that 39 states were approved to participate in the program. This number was later reduced to 34 based on issues involving state enabling legislation.

TEA-21 established a new pilot program for SIBs in which only four states—California, Florida, Missouri, and Rhode Island—may participate. In a manner similar to the original pilot program established under the NHS Act, the DOT may enter into cooperative agreements with these states, allowing them to capitalize their banks with federal-aid funds authorized and apportioned in Fiscal Years 1998–2003. In 2001, Texas was added as a fifth state eligible to use TEA-21 funds to capitalize its SIB.

The 34 states and the Commonwealth of Puerto Rico, which had been approved to establish SIBs under the earlier pilot program, may continue to operate their SIBs under the provisions of the NHS and related guidance. TEA-21 funds, however, may not be used to further capitalize these SIBs.

Federal Credit—TIFIA Program

In 1998, Congress authorized TIFIA as part of TEA-21. The program's goal is to provide credit rather than direct grants to sponsors of surface transportation projects. Under this program, U.S. DOT provides credit assistance directly to private and public sponsors of eligible transportation projects (see Figure 4-4 for credit limits under the program).

Of the early projects receiving financial assistance from the TIFIA program, four have been for transit-related capital projects. These projects include a loan guarantee for WMATA (see Chapter 5 for a description of the WMATA transaction); a direct loan for the Tren Urbano project in Puerto Rico (see sidebar description); a direct loan for Staten Island Ferry–related investments in New York; and direct loans to the Miami Intermodal Project, including a peplemover at the Miami International Airport.

² U.S. DOT, FHWA, *Review of State Infrastructure Banks*, February 2002.

³ U.S. DOT, FHWA, Innovative Finance Home Page, www.fhwa.dot.gov/innovativefinance/ifapp-a.htm.

Tren Urbano, Puerto Rico—Federal Credit (TIFIA)

Tren Urbano—a venture of the Puerto Rico Highway and Transportation Authority (PRHTA)—is a 17-kilometer rapid rail line that will serve metropolitan San Juan and be closely integrated with the local bus system. The system is estimated to cost \$1.68 billion. PRHTA is implementing a “turnkey” development strategy with private-sector consortia and will enter into a separate operating agreement with a private-sector entity to run the system.

The population of the San Juan metropolitan area (SJMA) generates about 3.2 million trips per day, and an estimated 4,206 vehicles per square mile in the central SJMA create one of the most congested roadway networks in the world. Tren Urbano will have 16 stations and carry approximately 100,000 trips per day in the first year of operation, resulting in a significant reduction in congestion and pollutant emissions in metropolitan San Juan.

A direct federal TIFIA loan of \$300 million to Tren Urbano provided the PRHTA with new capital to accelerate the public portions of the Capital Improvement Program (CIP), while freeing up financial capacity to advance the public-private portions of the CIP. The TIFIA loan carries a 35-year term and an interest rate based on a 35-year U.S. Treasury rate. Principal repayment will be deferred until 5 years following the anticipated substantial completion date. The repayment source for the loan is a junior lien on PRHTA’s fuel-tax receipts, motor vehicle–registration fees, and farebox receipts. A summary of the project funding sources and uses is provided below.

Tren Urbano Project Funding (dollars in millions)

SOURCES		USES	
Federal Funds		Right-of-Way	\$87
TIFIA	\$300	Construction Mgmt/Admin	207
Section 5307 Formula	141	Systems & Test Track	656
Other	<u>272</u>	Bayamon Alignment	78
Total Federal	\$713	Rio Bayamon	42
PRHTA Funds		Centro Medico	81
Section 5307 Formula Match	32	Villa Nevarez	78
Other (bond proceeds, costs incurred, future revenues)	<u>930</u>	Rio Piedras	279
Total PRHTA	\$962	Hato Rey	134
		CDC Lab Replacement	4
		Transit Enhancements	5
		Other	<u>22</u>
Total Sources	\$1,676*	Total Uses	\$1,676*

Without TIFIA financing, PRHTA would have been forced to issue additional revenue bonds, with less favorable terms and at higher overall cost. This also would have consumed debt capacity that could be used for other project elements. It was thus determined that, by improving Tren Urbano’s cash flow and preserving debt capacity, the TIFIA financing approach was the preferred financing option.

*Differences due to rounding.

Sources:

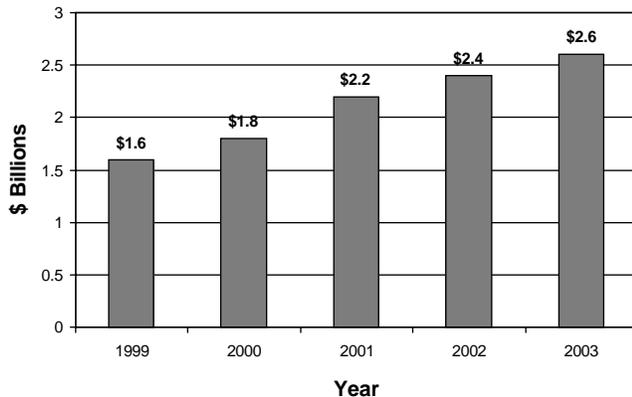
- Public Financial Management. *Revised TIFIA Financial Model*. August 6, 1999.
- Puerto Rico Department of Transportation and Public Works. *TIFIA Application*. July 1999.
- U.S. DOT. <http://tifa.fhwa.dot.gov/tifa/fs4.htm>. *Project Fact Sheet. Tren Urbano*. Information obtained on March 6, 2001.
- U.S. DOT, FHWA. *Innovative Finance Quarterly*. Summer/Fall 1999.
- www.dtop.gov.pr/english/tu/tu.htm. Information obtained on March 6, 2001.

Forms of TIFIA Assistance

The general availability and advantages and disadvantages of the three forms of TIFIA credit assistance are discussed below.⁴

1. **Secured loans**—Direct federal loans are available for up to 33 percent of project costs and have a final maturity date as long as 35 years after construction. Debt can be structured

⁴ U.S. DOT, TIFIA website, <http://tifa.fhwa.dot.gov/>.

Figure 4-4. TIFIA Credit Amount Available, Fiscal Years 1999–2003 (Billions of Dollars)

with flexible repayment terms (allowing sponsors to defer principal and interest payments for up to 10 years) to match project revenues. Interest rates on loans are established at the time loan agreements are executed and set at the prevailing yields on U.S. Treasury bonds issued for comparable terms. Federal funds may not be used to repay secured loans.

2. **Federal loan guarantees**—Similar to the secured loans, loan guarantees may secure taxable debt with flexible repayments terms, improving the rating and thus lowering the cost of the secured debt. This also may, in turn, allow the issuer to more fully leverage the forecast revenues to the benefit of bonds that are senior to the guaranteed debt. The borrower and lender, subject to the approval of the Secretary of Transportation, determine interest rates on the guaranteed debt.
3. **Standby lines of credit**—Federal lines of credit are available to assist projects in attaining an investment-grade bond rating and securing bond insurance by providing a secondary source of capital during the first 10 years following project completion. The standby line of credit takes the form of a future government commitment to make one or more direct loans. If drawn upon, the proceeds could be used to support debt service payments on outstanding taxable debt, operating and maintenance costs, extraordinary repair and rehabilitation costs, and costs of unexpected environmental requirements. The total line may not exceed 33 percent of project costs. Up to 20 percent of the line may be loaned in any given year, and any draws must be repaid from project-related revenues within 30 years of project completion.

Sponsor and Project Eligibility Under TIFIA Program

Eligible transit projects include the design and construction of stations, track, and other transit-related infrastructure; purchase of transit vehicles; and any other type of project that is eligible for grant assistance under Chapter 53 of Title 49 of the U.S. Code. Intercity bus vehicles and facilities also are eligible to receive TIFIA assistance. Rail projects involving the design and construction of intercity passenger rail facilities or the procurement of intercity passenger rail vehicles are eligible.

Eligible highway facilities include Interstates, state highways, bridges, toll roads, and any other type of facility that is eligible for grant assistance under Title 23 of the U.S. Code. Publicly owned

intermodal facilities on or adjacent to the National Highway System also are eligible, as are projects that provide ground access to airports or seaports. Finally, surface transportation projects principally involving the installation of ITS are eligible for TIFIA assistance.

To qualify for TIFIA assistance, a project also must meet the following requirements:⁵

- Be included in the state transportation plan and the approved STIP;
- Be sponsored by a state, regional, or local government entity;
- Cost at least \$100 million or 50 percent of the state's federal apportionments (with a lower threshold for ITS projects); and
- Be supported in whole or in part by user charges or other non-federal dedicated revenue sources.

In addition, the project sponsor must provide a preliminary rating opinion letter from a nationally recognized bond-rating agency.

TIFIA Evaluation and Application Process

Projects meeting the initial threshold criteria are evaluated based on their ability to meet the following criteria:

- Extent of national or regional significance (economic benefits, supporting international commerce, or otherwise enhancing the national transportation system);
- Creditworthiness of project;
- Financial participation by the private sector and promotion of public-private partnerships;
- Timing of project (emphasis on early completion);
- Proposed project's utilization of new technologies;
- Level of budget authority consumed by the project;
- Extent project helps the environment; and
- Extent to which it would reduce federal grant assistance.

Project sponsors may apply for TIFIA assistance at any time if their projects have met the program's threshold requirements. At least once per year, U.S. DOT will publish in *Federal Register* a Notice of Funding Availability advising potential applicants of the estimated amount of funding currently available for credit instruments as well as any changes to the application process or fee structure.

To begin the application process, prospective applicants first submit a detailed letter of interest. Then, upon receipt of U.S. DOT's notification that the project meets the basic eligibility criteria, the project sponsor may submit an application. U.S. DOT currently requires three different fees from TIFIA participants: (1) a nonrefundable application fee, (2) a credit-processing fee for projects selected to receive assistance, and (3) an annual servicing fee for each credit instrument provided.⁶

⁵ U.S. DOT, *Transportation Infrastructure Finance and Innovation Act Program Guide*, May 2001.

⁶ Detailed application guidelines are located on the U.S. DOT TIFIA website (<http://tifa.fhwa.dot.gov/>).

Railroad Rehabilitation and Improvement Financing Program

TEA-21 authorized the Railroad Rehabilitation and Improvement (RRIF) Program to provide credit assistance, in the form of direct loans and loan guarantees, to public or private sponsors of intermodal and rail projects. The Act does not provide budget authority; however, it authorizes future appropriations and contributions from potential borrowers and other non-federal sources to fund the credit assistance. At this time, the RRIF program requires outside funding of the budgetary cost of the credit assistance.

The aggregate amount of outstanding loans and guarantees made available under the RRIF program is limited to \$3.5 billion; \$1 billion is reserved for projects primarily benefiting freight railroads other than Class I carriers. Eligible projects include the acquisition, development, improvement, or rehabilitation of intermodal or rail equipment or facilities. Only a few loans have been made to date and none for transit-related purposes.

Other Governmental Sources of Capital

Similar to SIBs and revolving loan funds described previously, a great number of states operate financing programs targeted at infrastructure projects, of which transit capital investments are an eligible use. While these programs may not necessarily be directed specifically at transit—or at even transportation more broadly—they may be available for use by transit systems as a lower-cost borrowing mechanism.

Transit system managers should explore the extent to which such programs exist in their own state and should work to take full advantage of low-cost loans, leasing services, and mechanisms to issue debt on a pooled basis in the municipal market. This sometimes requires minor adjustments to program operations or acquisition plans but can often be the difference between acquiring an asset today or having to wait many years to accumulate the needed funds or to amass enough capital needs to justify issuing debt independently.

In addition to various state funding sources, transit agencies may be able to take advantage of other federal financing programs that can be used in conjunction with transit grant funds. Examples include Housing and Urban Development (HUD) Community Development Block Grant funds, Economic Development Administration (EDA) grants and loans, and Environmental Protection Agency (EPA) brownfields grant and revolving loan fund programs. While these programs do not generally offer substantial sums for transit, they can help on a project basis including, in some instances, for funding of local matching requirements. Transit agencies also may be able to take advantage of economic development bonds on a limited basis.

5. FINANCING MECHANISMS

5.1 INTRODUCTION

As introduced in the previous chapter, transit providers can often benefit financially by taking advantage of outside sources of capital to fund large-scale capital projects. The mechanisms used to access these capital sources evolve continuously, as new projects, new market and legal conditions, and even new players arrive on the scene.

This chapter provides an inventory of financing mechanisms used to access the sources of capital introduced in Chapter 4. It describes the advantages and disadvantages of each mechanism, discusses their applicability to categories of projects and types of transit systems, and provides real-life examples of their use by specific transit systems.

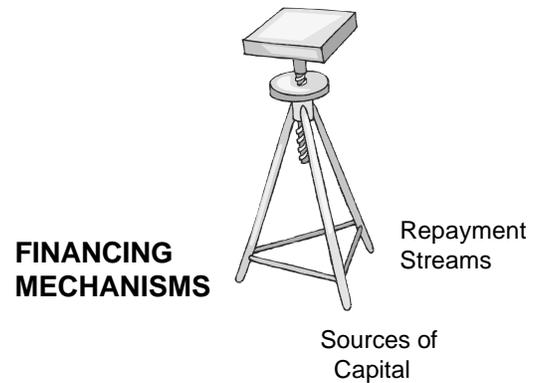
Once an agency decides that debt financing is appropriate for a capital project or set of projects, it must evaluate the range of financing mechanisms. Generally, these mechanisms fall into one of the following five categories:

1. **Long-term debt mechanisms**—including bonds and loans backed by dedicated local and state revenues (e.g., sales taxes); general obligation pledges of taxing power; pledges of federal and other grant funds; or system revenues (e.g., farebox and ancillary revenues);
2. **Short-term debt mechanisms**—including commercial paper and tax, revenue, and bond anticipation notes;
3. **Lease financing mechanisms**—including Certificates of Participation (COPs) and other leasing approaches used for the acquisition or long-term use of capital assets;
4. **Equity and partnership mechanisms**—including joint development, concessions, and project development and financing arrangements; and
5. **Credit enhancement mechanisms**—including bond insurance, letters of credit, lines of credit, and governmental guarantees.

These financing options are not necessarily mutually exclusive and are often used in combination or hybrid structures. In particular, credit enhancement mechanisms are not financing mechanisms unto themselves but rather are used in combination with the other mechanisms to enhance the creditworthiness and, in some instances, lower the cost of borrowing. The remainder of this chapter addresses each of the financing mechanism categories, linking both to the sources of capital outlined in Chapter 4 and the relevant repayment streams discussed further in Chapter 6.

5.2 LONG-TERM DEBT MECHANISMS (BONDS AND DIRECT LOANS)

Issuance of long-term debt is the most commonly applied approach to financing of public infrastructure. This category includes bond instruments for large-scale capital projects and secured and unsecured loans for both large- and small-scale projects.



Long-term debt financing allows transit agencies to develop projects faster than under a pay-as-you-go approach by improving short-term cash flow and matching project funding with the useful life of assets. Faster project delivery can, in some instances, strengthen revenue generation through increased ridership and reduce maintenance costs by retiring older, less reliable equipment.

Debt does, of course, have a downside—it must be repaid, with interest. This promise of repayment reduces a transit agency's ability to invest in other capital projects in the future and draws financial resources away from system operations. It also may limit a system's flexibility to use its cash reserves, based on bond covenants that require maintenance of minimum cash reserves.

Transit agencies must conduct thorough analyses of the cash flow and other benefits of debt issuance prior to jumping into the business of issuing debt. They should conduct such analyses as part of a broader effort to make the best capital investment decisions in the context of a long-term capital budget and debt management plan (see further discussion in Chapter 7).

The following sections provide details on the issuance of the various forms of long-term debt and offer examples of their use by transit systems. Where possible, distinctions are made between those mechanisms that are appropriate to systems of all sizes and uses and those which, for a variety of reasons, are more appropriate to a particular type of transit agency or category of investment.

Bonds

Bonds are long-term negotiable debt instruments signifying an issuer's obligation to repay a specified principal amount at a specified time with interest at a stated rate. They typically are sold in the public capital market to multiple investors. Municipal bonds are generally—but not always—issued on a tax-exempt basis such that the interest earned by investors is exempt from federal income taxes and often from state and local taxes in the state (or local jurisdiction) of issuance (also see discussion in Chapter 3 on the municipal bond market and Chapter 7 for additional information on the bond-issuance process).

Bonds have a longstanding successful history in many areas of public finance, including transit. There are three general types of bonds utilized to varying degrees by transit agencies today. Listed roughly in order of their prevalence in financing transit capital investments, the bond types are as follows:

- **Limited recourse bonds** backed by dedicated or appropriated revenues other than those resulting directly from system operations, including state or local dedicated sales taxes, motor fuel taxes, property taxes, and pledges of future federal or other grant funds;
- Bonds supported by a **general promissory pledge of system revenues** (e.g., farebox revenues, advertising, etc.); and
- Bonds supported by a **general obligation full faith and credit pledge** of supporting state or local governments.

Limited Recourse Non-System Revenue Bonds

Limited recourse bonds refer to those bonds backed only by a specific revenue stream, with no promise of other available funds (in particular, no promise of accessing the general taxing author-

Large System Example: New York City MTA

Description: An example of revenue bonds backed by dedicated local and state revenue streams is New York City MTA's 1998 \$396 million issue supported by the state's petroleum business tax.

Repayment Source: The bonds are secured by a first lien (like a mortgage, this is the rights to the pledged asset or repayment stream) on a portion of the state's petroleum business tax (PBT) and other MTA operating assistance revenues.

(Also see rating review in Technical Annex 2.)

Source: Moody's Investors Service, Municipal Credit Research, *Rating Methodology: Mass Transit*, June 2000.

Medium-Sized System Example: Missouri-Illinois Bi-State Development Agency

Description: The St. Louis-based Bi-State Development Agency will issue \$400 million of revenue bonds to pay for the fourth major expansion of the light rail system.

Repayment Source: The bonds are backed by a city and county appropriation and repaid with revenues raised from a quarter cent sales tax in St. Louis and St. Louis County. The tax was enacted in the mid-1990s for the purpose of expanding the light rail system known as MetroLink and for subsidizing operating expenses.

Credit Analysis: This transaction is much larger than others carried out by the agency and it is expected to carry bond insurance and secure a bond rating. The agency has not carried an underlying rating for at least 20 years.

Source: *Bond Buyer*, May 3, 2002.

Small System Example: Utah Transit Authority TRAX Project Financing

Description: The Utah Transit Authority issued \$65 million in sales tax and transportation revenue bonds for the Salt Lake County Light Rail Transit ("TRAX") project.

Repayment Source: Bonds are to be repaid from sales tax and transportation revenues of the Utah Transit Authority.

Credit Analysis: The bonds were rated AAA/F1+ by Fitch based on the Letter of Credit support of Bayerische Landesbank Girozentrale. The bank is obligated to make payments of principal, interest and purchase price upon maturity, redemption and tender of the bonds if the authority fails to do so.

Source: Fitch IBCA Financial Wire, New York, May 19, 1998.

ity of the sponsoring jurisdiction). Non-system revenues refer to revenues derived from sources external to the operation of the transit system itself. In some instances, such funds are provided on a dedicated basis, while in other instances their availability is dependent on annual appropriations or other actions of state and/or local governing bodies.

There are essentially two categories of limited recourse non-system revenue bonds—those backed by specific state and local tax revenues and those backed by anticipated federal and other grant funds. There are, of course, also hybrid issues backed by a combination of revenue sources.

Revenue Bonds Backed by State and Local Tax Revenues. Revenue bonds backed by non-system-generated local and state revenues are the most common type of bonds used to finance transit capital projects today. Numerous revenue sources have been used to support these bonds. They include state and local sales taxes, local impact fees, and state motor fuel taxes (see further discussion in Chapter 6). Historically, sales tax revenues have been the most common security for mass transit system debt issues.¹ Also included in this category are bonds backed by an annual appropriation in which the certainty of each year's appropriation is subject to action of a state legislature or local governing body.

Revenue bonds backed by local and state taxes and fees generally are viewed favorably by the investment community and rating agencies because they are not dependent upon the operation of the transit system. They have a long-standing history in municipal finance and are backed by revenue streams from large, stable entities such as states and counties. From the perspective of transit agencies, bonds backed by local and state government taxes are relatively low-cost.

Some of the largest transit agencies routinely issue sales tax and other non-system limited recourse revenue bonds (see sidebar example of NYMTA issue). Smaller agencies have had less experience with this financing approach because of their more limited ability to secure the authority to promise future tax revenues for their systems and their limited experience in the capital markets more generally (see sidebar for example of smaller system issuances of the Bi-State Development Agency and the Utah Transit Authority).

Limited Recourse Non-System (State and Local) Revenue Bond Financing Structures. Following is a summary of a few key structural factors relating to the issuance of limited recourse non-system revenue bonds, including those backed by sales and other state and local taxes.

- **State versus local collection.** The revenue pledge for sales tax revenue bonds can take on one of two forms: a dedicated tax imposed locally or a dedicated allocation of sales tax receipts collected by the state. This is largely dependent on the taxation structures in any given state and the relationship between state and local taxation. It is often the case that rating agencies will show a preference for state collection, even where the tax is imposed locally.
- **Gross revenue pledge.** When bonds are backed by non-system revenues, they are generally issued as a “gross pledge,” meaning that all dedicated revenues are pledged to the repayment of the debt before the deduction of any operating and maintenance expenses. This is in contrast to a “net revenue pledge” in which the revenues pledged are those same gross revenues *after* payment of operating and maintenance expenditures. Since the revenues pledged in a sales tax or other non-system revenue financing are independent of the operation and use of the facility, the revenues are generally pledged on a gross basis, and operating and maintenance expenditures are funded with residual dedicated taxes as well as system and other supporting revenues.
- **Security features.** Because increases in tax rates typically require legislative approval, voter approval, or both, dedicated tax bonds contain no rate covenant to increase the level of taxes. Instead, the principal protective feature is an “additional bonds test,” which limits further debt issuance. Typically, the issuer must demonstrate before issuing any fur-

¹ Moody's Investors Service, Municipal Credit Research, *Rating Methodology: Mass Transit*, June 2000.

ther debt that historical revenues exceed any future year's debt service by some multiple, such as 1.5 times. A cash-funded debt service reserve fund is generally a positive element of such transactions (see Chapter 7 for additional detail on the use of these security features in structuring a bond issue).

Credit Considerations Relating to State and Local Tax Pledges. Rating agencies focus on three elements in assessing the credit quality of sales tax (and other state and local tax) financings:

1. **The tax base** (or what mix of goods are being taxed)—the broader the tax base, the better the credit rating;
2. **The profile of the local economy**—with a broad and varied retail trade base generally making for the most stable and predictable revenue stream; and
3. **State and local political environments**—which can have a significant impact on the ability to institute tax rate increases, should the need arise.

The agencies also look to operating conditions of the individual transit system, in particular how vital it is to the local community, which relates back to the issue of public support and political risks. Despite the relative limited frequency of repeals (or sunsets) of taxes once put in place, it is something that the rating agencies consider in their credit evaluations. A jurisdiction's track record with maintaining tax provisions and the political climate in the state (and locality) bear on this assessment (see Technical Annex 2 for additional discussion on credit considerations relating to state and local dedicated taxes).

Revenue Bonds Backed by Federal Funds (Grant Anticipation Financing). Bonds backed by federal or state grants are commonly referred to as "grant anticipation notes" (GANs). They also are sometimes referred to as "grant anticipation revenue vehicles" (GARVEEs), although this alternative term is used primarily with respect to highway-related projects. GANS (or GARVEEs) are similar to bonds backed by dedicated non-system local and state revenues, as described above, but instead of state and local tax revenues, they are backed (at least primarily) by inter-governmental grants. Even though use of the term "notes" suggests relatively short-term issuances, GANs are being issued on a longer-term basis than most notes (although not as long as traditional bonds).

Grant anticipation financing is attracting the attention of transit issuers because

- The financial markets have begun to accept the credit-worthiness of federal funds pledged from current and even future authorization acts;
- Favorable ratings from Moody's, Standard & Poor's, and Fitch have helped to reinforce market acceptance;
- GANs can be structured to meet each sponsor's particular needs and financial parameters in the same manner as other types of debt; and

San Francisco Airport Link— FFGA-Backed GANs Financing

Description: A \$500 million issue of grant anticipation bonds to help connect San Francisco to the airport. Bonds used, in part, to refinance outstanding commercial paper.

Use of Bond Proceeds: Finance or refinance portion of \$1.48 billion San Francisco International Airport extension project.

Financing Structure: The Association of Bay Area Governments as conduit issuer. Bond issue backed by federal government's \$750 million Full Funding Grant Agreement (FFGA) and ability to issue sales tax bonds.

Credit Analysis: The bonds are insured by AMBAC and thus carry the AAA credit rating of the insurer.

- Of the fact that GANs may not count against a political jurisdiction’s borrowing capacity or be subject to other local debt limitations.

The central risk associated with this debt-financing vehicle is the risk that Congress could fail to fund the current program or could fail to reauthorize the federal program with adequate funding levels to cover necessary grant levels in the future (as discussed in Chapter 2).

GANs Financing Structures. Transit GANs have been issued based both on a pledge of a transit system’s formula funding and, more recently, based on Full Funding Grant Agreements (or FFGAs).

- **Formula Funding—Backed Financing.** Transit agencies may use formula funding as a source of repayment for GANs. This does not in any way provide a promise from the federal government as to the delivery of those funds, nor a guarantee of the outstanding debt; however, with the guaranteed funding provisions of TEA-21, there is a greater certainty as to aggregate funding levels. Funds that can be used as a source of repayment are the same funds that can be used to pay for capital projects on a pay-as-you-go basis, with the same requirements and restrictions as to use. As part of TEA-21, interest costs are now an eligible expense, based on satisfaction of an assessment of cost-effectiveness by FTA.
- **FFGA-Backed Financing.** An FFGA is a multi-year federal funding arrangement under which FTA spreads its grant commitment over a 6- to 10-year or longer time period, to reduce the annual burden of funding large capital projects. FTA’s funding schedule is not an irrevocable pledge but rather a best efforts target, subject to annual appropriations by Congress. In recent years, FFGA grantees have begun borrowing against their grants receivable to monetize the proceeds to meet construction requirements. Table 5-1 provides a summary of some of the early FFGA-backed GANs issuances. As shown, other than the NJT transaction, each of these transactions carried a backup pledge of some other revenue stream such as a sales tax pledge or claim on other transportation revenues. The NJT bonds were insured.

Table 5-1. Sample FFGA-Backed GANs

Issuer/Project	Par Issue/ Type of Debt	Repayment Source(s)	Expected Repayment Period/ Stated Maturity	Credit Enhancement	Rating
NJT New Light Rail Hudson Bergen 1	\$347 million Fixed Rate	FFGA + Contingent backup of Transportation Trust Fund	6 Years 2003	FSA	AA3/A+/AA (underlying)
NJ T Hudson Bergen 2 and Newark Elizabeth	\$562 million Fixed Rate	FFGA Only	2001 and 2005	AMBAC	A3/BBB- (underlying)
St. Louis/St. Clair LRT Extension	\$112 million Variable Rate	FFGA+ Gross Sales Tax Pledge	4 Years 2028	MBIA	Not applied for
Salt Lake City New Light Rail	\$65 million Variable Rate	FFGA+ Sales Tax Pledge	3-4 Years 2028	Bayerische Landesbank Letter of credit (LOC)	Not applied for
BART Airport Extension	\$300 million Comm. Paper	FFGA+ Ability to issue Sales Tax Bonds to repay LOC	The earlier of (1) 270 days from issue and (2) 15 days before LOC expiration	UBS AG LOC	P-1/A-1+ (underlying)
DART Light Rail Improvements	\$150 million Variable Rate	FFGA+ Gross Sales Tax Pledge	5 Years 2005	Credit Local de France LOC	AA+/A-1+ (underlying)

Credit Considerations Relating to Federal Pledge. Rating agencies have become increasingly comfortable with the pledge of federal funds—to the point that they are willing to give strong ratings to issues in which federal funding is the sole security for the debt. The stability of federal funding and funding guarantees, FTA’s regulatory structure and procedures, and debt-structuring provisions make financings backed solely or primarily by future federal funds creditworthy from the perspective of the major rating agencies. Because of the political, appropriation, and project-performance risks, rating analysts predict that ratings on pure (sometimes referred to as “naked”) FFGA-backed transactions—as distinct from formula funding-backed financings—will hover in the BB to BBB rating category (see Technical Annex 2 for additional discussion and sample ratings).

FFGA Construction Phase Credit Considerations

- ◆ Project Significance
- ◆ Mitigation of Construction Risks
- ◆ Confidence in Transit Authority Management
- ◆ Political Support for Project
- ◆ Historical Working Relationship with FTA

Source: Fitch Ratings, *Transit New Starts*, April 2001.

System (Farebox) Revenue Bonds

Transit bonds supported by directly generated system revenues are not very common. Although mass transit provides a critical service, user fees (fares) do not fully cover operating expenses, much less systems’ capital expenditures. Revenues from transit fares fund less than 40 percent of transit operating costs in the United States (see Chapter 6 for more detail).²

In certain instances, however, transit systems have high ridership (and associated user fees) or receive operating subsidies from local or state governments, freeing up fare and other operating revenues for capital investments. In these cases, system-generated revenues can potentially be pledged to support bonds. Examples of transit systems that have issued revenue bonds backed at least in part by farebox revenues include NYMTA, Los Angeles County MTA, and WMATA.

To the extent that they are feasible, system-based revenue bonds benefit transit agencies because they minimize the agencies’ reliance on local, state, and federal governments. The bonds also free project financing from costs and mandates tied to the use of certain state and federal funds. Based on the transactions to date, it is most likely that operating revenues will, for the most part, be one contributing revenue source to a bond financing rather than the sole revenue source, except in unusual circumstances. It should be noted, however, that FTA funds for a project may not be matched by revenues from that same project such that bonds issued against fare revenues for a project may not be used as the local match for grant funds for the project; they may, however, be used for match for a separate project.

An example of such an unusual situation is offered in the case of the Las Vegas Monorail project, the first farebox financing for a startup transit project. This unique project involves private development and, before it is fully completed, will include just about every innovative finance mechanism available. Las Vegas is a fully saturated transportation market in which 34 million visitors a year make almost four trips a day within a narrow and congested corridor. There is minimal seasonal or daily variation in travel demand. It is anticipated that the monorail’s farebox—projected

² *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999.

NYMTA Farebox and Other Revenue Bonds

Description: In December 1998, NYMTA issued \$317 million in principal amount of Transit Facilities Revenue Bonds (Series 1998C).

Use of Bond Proceeds: NYMTA has the authority to issue bonds payable from certain revenues and operating subsidies to fund a portion of its capital needs. The Series 1998C bonds were issued to refund other bonds issued for this purpose.

Financing Structure: The bonds are special obligations payable only from a pledge of fares collected, payments from concessionaires, and operating subsidies (exclusive of federal operating subsidies). The operating subsidies include expense reimbursements from the State of New York and the City. NYMTA also benefits from a payment of surplus Triborough Bridge and Tunnel Authority funds that can be used for expenses.

The financing agreement obligates NYMTA to adjust fares, fees, rentals, and other charges for the use of the system to the level required by the Resolution, thus obligating NYMTA to produce revenues sufficient to pay debt service, maintain debt service reserve funds at required levels, and pay all operating and maintenance expenses and other obligations. Although similar to a traditional revenue bond rate covenant, this covenant has the added feature of including subsidy payments and other revenues. NYMTA's debt service coverage test for the purpose of issuing additional bonds is a gross coverage test of certain revenues at four times annual debt service.

Pledged revenues amounted to approximately \$3.36 billion in 1998, or 21 times the aggregate debt service for that year. It is worth noting that NYMTA's 2002 restructuring program made significant changes to the farebox pledges (see Technical Annex 2 for additional details).

Credit Analysis: While such a credit would generally seem quite risky for a system such as New York's in which the transit system is vital to the economy and thus expected to maintain current levels of subsidy support, a revenue based financing is deemed to be adequately creditworthy.

at \$46 million starting in 2004—will cover the debt service (on a net revenue pledge basis), along with advertising revenues, which will cover as much as 11 percent of the debt service. The senior debt is insured by AMBAC.³

Farebox Revenue Bond Transaction Structure. Transit systems do not generally produce sufficient net farebox revenue to cover debt service; therefore, they should consider a “gross revenue pledge” rather than a “net revenue pledge” as used by other infrastructure providers. A gross revenue pledge ensures gross revenues are first directed to debt service and requires some other form of revenue to cover operating costs. An acceptable gross revenue pledge is often in the three-to-four-times range, meaning that projected annual gross revenues are three to four times the size of the annual debt service.⁴

Large metropolitan systems with well-developed routes and strong ridership will have the easiest time issuing revenue bonds backed at least in part by farebox revenues (see sidebar on NYMTA

³ William G. Reinhardt, “Farebox Financing Closed for Las Vegas Casino Monorail,” *Public Works Financing*, September 2000, and presented at the 2002 Transportation Research Board Annual Meeting by Greg Carey.

⁴ *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999.

Los Angeles County MTA Farebox and General Revenue Bonds

Description: In January 1995, the Los Angeles County MTA issued \$169.5 million in principal amount of general revenue bonds, Series 1995-A. This was the MTA's first experience with revenue bonds backed in part by farebox revenues.

Use of Bond Proceeds: Bond proceeds were used to finance construction of a new headquarters building for the MTA, known as the Union Station Gateway Headquarters Building. The Headquarters Building and adjacent improvements are intended to serve as a transportation hub for the region, connecting passengers of commuter rail, subway, light rail, bus and Amtrak.

Financing Structure: The bonds issued are special, limited obligation bonds, payable from and secured by farebox revenues and advertising revenues, along with interest earnings, and "remaining sales tax" revenues, defined as the net proceeds of the MTA's transportation sales tax (after payment of debt service on senior obligations secured by the sales tax revenues). If pledged revenues are not sufficient to pay debt service, the MTA agreed to make such payments from any moneys available to it.

Because state and federal grants could not be pledged to pay debt service or were too unpredictable, they are not part of the primary pledge. The MTA's state and local subsidies are made available for debt service only to the extent pledged revenues are insufficient.

The structure provisions reflected something of a hybrid of enterprise revenue financings—in which bonds are secured directly by the revenues of an enterprise conducted by the issuing entity—and unsecured financings. There was a gross revenue pledge of farebox and advertising revenues, but no rate covenant. The Trust Agreement established debt service accounts, but the coverage ratio for additional parity bonds called for pledged revenues and remaining sales tax to be at least 300 percent of maximum annual debt service. This means that the agency may only issue additional bonds that are at the same lien status (i.e., on parity) with the bonds if pledged revenues are three times the highest year's annual debt service. This is an unusually stringent test and reflects the fact that transit revenues are quite volatile.

The bonds were initially structured as variable rate securities and were insured by FSA (thus securing a AAA rating). To hedge a portion of its variable rate exposure, the MTA entered into interest rate swap agreements, scheduled to terminate in 10 years. The MTA anticipated that this partial synthetic fixed-rate structure would achieve a lower overall cost of borrowing than would simply issuing the bonds on a fixed-rate basis. After construction of the Headquarters Building and a change in management personnel, the MTA chose to refund the bonds with General Revenue Refunding Bonds (Series 1996-A) and to terminate the related swap agreements.

Credit Analysis: Based on the MTA's other anticipated financing needs, farebox revenues provided the best alternative security for the headquarters financing. There was some logic to this in that such revenues were the historic source of payment for office space leases.

The MTA was initially willing to provide additional security for the bonds by granting a first mortgage on the Headquarters Building, but this was rejected by the bond insurer because of the anticipated difficulty of foreclosing on a governmental entity.

and Los Angeles County MTA issuances). Even such systems will likely be required to provide other dedicated funding sources such as a dedicated sales tax to gain an investment-grade rating on the debt.

Credit Considerations Relating to Farebox Pledge. The most important consideration in rating a bond backed by farebox revenues is the demand for that service. For existing transit systems, demand is estimated by reviewing historical ridership levels. Rating agencies also assess the rel-

ative competitiveness of other transportation modes or transit systems. They use this information to approximate future demand and to speculate about what would happen to ridership if fares were increased (see Technical Annex 2 for additional information on ratings of farebox pledges). Large systems that finance against the farebox must show the availability of sufficient resources to support operations. By convincing investors (and rating analysts) that the system is essential to the jurisdictions being served, the systems also convince investors and analysts that, over the long run, those jurisdictions will provide the necessary subsidies for operations.

General Obligation Bonds

General obligation (GO) bonds are the most basic form of debt used in public finance, but they are not commonly used to finance transit projects. GO bonds are backed by the full faith and credit of taxing authorities, such as local or state governments.

GO debt is viewed favorably by the investment community because the full faith and credit pledge that backs it is perceived to reduce the relative risk of default compared with other types of debt. Also, accessing the bonding authority of a large city, metropolitan area, or even an entire state spreads risk across an entire region.

A transit agency seeking to access GO debt authority of a state or local government, however, must compete against other local agencies such as public schools and health department. The likelihood of successfully tapping GO support is fairly limited.

Examples of transit agencies that have issued GO debt with unlimited tax pledges include the Minneapolis–St. Paul Metropolitan Area Transit Commission, the Tri-County Metropolitan Transportation District of Oregon (Tri-Met), and San Francisco’s BART.⁵

Secured and Unsecured Loan Agreements

Like bonds, loan instruments are used by transit agencies to borrow funds on a long-term basis. They are typically used to fund smaller projects that are too small to attract interest in the bond market or for which the expense of bond issuance is not cost-effective. Sources of these loan funds include private commercial banks, vendors, and state and local governmental loan programs (also refer back to discussion in Chapter 4).

Although the debt instrument is different—a loan document or financing contract to be entered into with a single financing source rather than a series of bonds issued to many investors under a bond indenture—the process of gaining loan funds is similar to the issuance of bonds. Repayment streams must be identified, credit evaluations considered, and the terms of the loan carefully constructed to protect the interests of the borrower as well as those of the lender.

Secured loans are loans for which a security interest in an asset (often real property) is given to the lender as collateral to be turned over to the lender in the event that the borrower fails to meet its obligations under the loan. In contrast, unsecured loans do not carry any such collateral.

⁵ Susan Mills Farrington, *Leveraging Bond, Lease Payment, & Capital Leasing—Municipal Bond Finance 101*, Remarks at Workshop on Innovative Financing, October 27–28, 1998, Oakland, CA.

Missouri's Transportation Finance Corporation and the Bi-State Development Agency Bus Acquisition

Description: The Missouri DOT (MoDOT) has operated a SIB (known as the Missouri Transportation Finance Corporation [MTFC]) since 1996. MTFC's mission is to provide financial assistance to accelerate or add local transportation projects to the state's transportation system.

The Bi-State Development Agency of the Missouri-Illinois Metropolitan District operates the St. Louis area's network of light rail, bus, and paratransit van transportation. Bi-State has a fleet of 600 buses, 41 light rail vehicles, and 63 Call-A-Ride paratransit vans. The Fiscal Year 2001 operating budget for the Bi-State Transit System is \$145 million, and the capital budget totals \$455 million.

Bi-State needed financing for 217 buses to replace a like number of over-age fleet vehicles. Currently, the average age of the Bi-State bus fleet is 16 years, with the oldest 99 buses at 20 years of age. Replacing this number of buses represents a significant short-term financial impact for the Bi-State. The total cost of the 217 buses is \$58 million, and Bi-State needed \$11 million to meet the required 20-percent local match.

Financing Structure: The Bi-State Development Agency received an \$11 million direct loan from MTFC for the local-share portion of FTA grants to replace transit buses. The loan was made in three disbursements of \$5.2 million, \$5.5 million, and \$0.4 million in June 2000, June 2001, and October 2001, respectively. Each loan disbursement had a term of 10 years and interest rates of 5.49, 4.64, and 4.64 percent, respectively.

Analysis: MTFC is facilitating the advancement of transportation investment—in this case, the purchase of 217 buses—while spreading the payments over a much longer period of time. For Bi-State, the interest rate reduction available through MTFC also approximates a savings of \$300,000 over the life of the loan, compared with otherwise available financing. These savings can be used to meet operating costs for the public transit system. In addition, the new buses, engineered to meet today's new ozone and particulate matter standards, will reduce the impact Bi-State's buses have on air quality.

Sources:

- ◆ Bi-State Development Agency website: <http://www.bi-state.org>.
- ◆ MTFC Application: Bus Acquisition.
- ◆ Bi-State Development Agency, Description of MTFC Bus Acquisition.
- ◆ Missouri Transportation Finance Corporation, *1999 Annual Report*.

Commercial Bank Loans

One of the most common sources of long-term debt financing for smaller investments of small- and medium-sized transit agencies is financing from commercial banks. This financing can come in the form of both secured and unsecured loans.

Vendor Loans

Vendor financing is sometimes offered by manufacturers of transit equipment, particularly bus and rail vehicles, to finance the sale of assets to a transit agency. Vendor financing often involves non-U.S. manufacturers and export-promoting credit banks in the manufacturers' home nation. The credit bank provides low-interest loans and other credit enhancements to the equipment producer, and the savings are passed along to the U.S. transit agency.

In most circumstances, funds raised in the U.S. tax-exempt market will be less costly than funds provided by a foreign commercial bank, an export credit bank, or both. However, circumstances can exist in which vendor financing is the most cost-effective (or the only) financing means available and in which the benefits outweigh the costs. The effective interest cost to a transit agency can be lowered sometimes through arrangements that are structured to transfer tax benefits from the transit agency—for whom the tax benefits have no value—to a for-profit entity for whom the ability to offset taxable income has value.

Additionally, lower foreign interest rates can help to lower the cost of capital in certain circumstances. The challenge of borrowing in a foreign currency is that loan proceeds and debt service payment also are denominated in that currency. This can work to the transit agency's advantage when the vendor prefers to receive payments in the foreign currency, lowering the required price for the transaction. It also can work to the agency's disadvantage when it has to repay the loan over a number of years in the foreign currency, requiring the agency to hedge against currency exposure for an extended period of time.

Construction Loans Provided by Construction Firms

Construction firms use a variety of mechanisms to provide financing support for a project including interim (or bridge) financing, long-term financing in the form of direct loans, and equity investment (discussed later in this chapter). Interest among transit agencies and construction firms in construction financing is growing; a number of transit project sponsors have explored opportunities for turnkey procurements, with some of these arrangements (referred to as “super turnkey” projects) also including financing for the project as part of the arrangement (see discussion under Equity and Partnership Mechanisms later in this chapter).

Direct Loans from Governmental Capital Providers

As discussed in Chapter 4, governmental programs at the state and federal level offer a number of opportunities to secure financing. The most prominent of these for transit agencies are SIB and other state revolving loan fund programs and the federal credit (TIFIA and RRIF) programs for surface transportation. Individual states also sponsor a variety of loan programs directed at infrastructure investments that could be applicable to transit systems.

Common structural features of governmental loan programs include

- Availability of low interest rates;
- Opportunities for extended repayment periods with construction period grace periods;
- Limited requirements for debt service and other reserve funds;
- Lower expectations regarding debt coverage ratios; and
- Lower transaction costs.

Beyond the federally sponsored programs, which are discussed in some detail in Chapter 4, transit managers should be sure to explore the opportunities in their own states for low-cost, flexible financing from governmental sources of capital.

5.3 SHORT-TERM DEBT MECHANISMS

A variety of short-term debt-financing mechanisms are available to transit agencies. These financing mechanisms are generally deployed to bridge a gap between a desired acquisition or construction start date and the availability of permanent financing or grant and other pay-as-you-go funding sources. Examples of short-term debt mechanisms include

- Tax and revenue anticipation notes,
- Grant anticipation notes,
- Bond anticipation notes, and
- Commercial paper programs.

Tax and Revenue Anticipation Notes

Tax and revenue anticipation notes (TRANs) are issued in anticipation of future tax receipts and other anticipated revenues. They are generally issued as general obligation securities and used to meet *operating costs* prior to the availability of tax and other revenues. This gap often occurs because taxes are collected on a periodic rather than on an ongoing basis.

Although not common, TRANs also may be used to bridge the gap in timing between the desired acquisition or project construction start date and the availability of tax and other revenues. For instance, a transit project sponsor may wish to begin construction of a small capital project or acquire a capital asset in the early spring but tax revenues are not available until a July collection cycle. By issuing TRANs, the sponsor can begin construction or make the acquisition at the best time from a construction-cost and traffic-disruption perspective and, via the TRANs, bridge the timing gap for the needed revenues.

GANs

GANs are short-term notes issued in anticipation of grant funds to be received in the future. Because today these so-called “notes” are being issued on a longer-term basis, they are discussed in this primer along with other long-term financing approaches. They can, of course, be used on a shorter-term basis. This improves the marketability and lowers the interest costs associated with these securities.

Bond Anticipation Notes

Bond anticipation notes (BANs) are issued to obtain financing for projects that will ultimately be financed through the sale of long-term bonds, but for cases in which that long-term issuance must take place at a later date. This can be due to a number of factors, including legal limitations on debt issuance, market timing considerations (including prevailing interest rates), or the desire to pool the financing of a particular project with other projects that are not yet ready to go to market.

BANs generally are considered to be the least secure form of short-term notes because, without alternative security, their repayment is wholly dependent on the project sponsor's ability to issue the bonds in the future.⁶

Commercial Paper

The issuance of commercial paper is a popular technique to help meet seasonal borrowing needs for ongoing capital spending programs. It can be issued on either a tax-exempt or a taxable basis, although tax-exempt commercial paper (TECP) is the predominant form issued by public agencies. TECP is a short-term unsecured note backed by a bank letter or line of credit. The ultimate credit support is the pledged revenues of the given project or the general obligation pledge of the issuing entity. The paper's life extends from 1 to 270 days and can be rolled over (reissued) until permanent financing is secured.⁷

TECP programs for transit are still fairly uncommon (and taxable programs even less so), but they are gaining greater consideration by transit and other transportation systems. As obligations accumulate, the issuer can structure a more permanent financing mechanism and redeem the outstanding commercial paper. This mechanism is often used in place of BANs, TRANs, and GANs because of its greater flexibility in setting maturities and lower net borrowing cost.

Because of the cost of structuring a commercial paper program, TECPs are generally used only for programs that exceed a minimum threshold (on the order of \$20 million).⁸ Liquidity for commercial paper programs is often provided by an irrevocable letter of credit, a revolving credit agreement, or a line of credit with a commercial bank (see later discussion of these credit support mechanisms).

Advantages of using a commercial paper program include

- The ability to initiate a capital program prior to the availability of long-term debt;
- The ability to borrow a smaller amount than is generally the case in a municipal bond issuance; and
- The opportunity to access lower cost capital than bank lines of credit or direct secured and unsecured loans.

DART \$500 Million Commercial Paper Issuance

Description: In February 2001, DART issued \$500 million of commercial paper as part of a \$5 billion capital finance plan.

Use of Note Proceeds: \$300 million to be used to refund prior commercial paper; \$150 million to retire a line of credit; and \$50 million to fund construction.

The commercial paper is to be retired through the issuance of sales tax revenue bonds.

Financing Structure: A consortium of banks provided credit liquidity for the program.

Credit Analysis: Strong ratings from Standard & Poor's (A1-plus), Fitch (F-plus/zAA), and Moody's (Aa1/VMIG-1).

⁶ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993; p. 56.

⁷ George J. Marlin and Joe Mysak, *The Guidebook to Municipal Bonds*, 1991; p. 125.

⁸ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993; p. 57.

Issues to factor into a decision of whether a commercial paper program makes sense for an individual transit agency include the following costs and constraints⁹:

- Administrative overhead, which can be costly because of the daily attention required to manage a commercial paper program;
- Various fees—including bond counsel fees, letter of credit fees, and underwriting/remarketing fees;
- Time required to organize a commercial paper program is generally longer than the time required for TRANS or BANS; and
- Disclosure requirements of the rating agencies.

Credit Considerations

Short-term debt is rated in much the same way as long-term debt obligations (see Technical Annex 2 for a table of ratings for short-term debt instruments). In general, the higher an entity's bond rating, the more likely it is that its note rating also will be high, but this is not a certainty. Many issuers who have low investment-grade ratings may receive high note ratings on tax anticipation notes (TANs), for instance. The opposite can also be the case, depending on the specific circumstances. The note rating depends in part on whether the note is secured on parity (i.e., with the same lien status) with the issuer's long-term debt and also on how strong the issuer's cash flow projections are to pay the notes.¹⁰

It is generally considered that TRANS secured by property tax revenues are more secure than are notes secured by other revenue sources. Rating analysts tend to scrutinize the use of notes and whether the issuing agency is over zealous in rolling over such notes. A final consideration is the sensitivity to potentially higher interest rates upon take out with long-term debt instruments.

5.4 LEASE FINANCING MECHANISMS AND CERTIFICATES OF PARTICIPATION

Although leases are a different type of financing mechanism (requiring ongoing lease payments rather than the payment of principal and interest on a loan), capital leases carry many of the same characteristics as debt mechanisms and, for most transit systems, are an alternative to debt. Thus, they are considered alongside debt mechanisms in this chapter.

Lease financing is a mechanism whereby transit agencies acquire the use of capital assets without actually purchasing the assets. In lease-purchase arrangements, the agency does ultimately purchase the assets, often for a nominal residual amount at the end of the lease. The advent of leasing as an alternative form of financing capital assets springs largely from the fact that, unlike traditional bonded indebtedness, leasing is not generally subject to statutory debt limitations and does not generally require voter approval. Lease financing arrangements typically match payments to the

⁹ George J. Marlin and Joe Mysak, *The Guidebook to Municipal Bonds*, 1991; p. 126.

¹⁰ Robert Lamb and Stephen Rappaport, *Municipal Bonds*, 1987.

useful life of leased assets. They can ensure efficient use of agency funds and enhance agency flexibility.

Transit agencies are involved in a number of forms of leasing. For the purposes of this primer, we focus primarily on capital leases—or those arrangements whereby an outside party, such as a vendor or an intermediary financial institution, leases a capital asset to a transit agency in lieu of selling it to them outright. A capital lease is a form of financing that is treated as a borrowing for financial accounting purposes, but as a lease for legal purposes. The transit agency, as lessee, is deemed the owner for tax purposes, enabling the interest portion to be tax-exempt. The term “capital lease” is used synonymously with the term “financing lease.”

Another distinction that is commonly made is between a capital or financing lease and an installment sale lease. The only substantive difference between these two lease mechanisms is the manner by which ownership is ultimately transferred. In a financing lease structure, the asset can be acquired by making one final payment, generally a nominal one to the lessor. In an installment sale lease, no additional payment is needed. The title is simply transferred to the lessee at the end of the lease. In both cases, the lease is meant to serve as a vehicle for transferring ownership.¹¹

Other leasing transactions (e.g., sale-leaseback and lease-leaseback arrangements) undertaken by transit agencies generally are used to convey tax ownership to private investors. Tax-oriented leases are “true” or operating leases, in which the lessor, not the lessee, is deemed the owner for tax and accounting purposes. These “tax-oriented leases” do not generally serve as a method of financing the acquisition or construction of a capital asset but rather as a revenue-generating mechanism. This revenue can, of course, be considered a source of capital for other capital investments of the transit agency. These revenue generation–motivated leasing arrangements are addressed in Chapter 6.

COPs and Lease Financing

The most common forms of capital lease financing in the transit arena involve capital leases in which the lessor securitizes the lease through the issuance of COPs. COPs are securities payable

Pay-as-You-Go Versus Lease Financing

Factors supporting a pay-as-you-go approach:

- ◆ Level capital program requirements
- ◆ Level revenue flow matching capital program requirements
- ◆ Significant projected future capital needs
- ◆ Unstable revenue sources
- ◆ Little capacity to withstand grant funding reduction
- ◆ No identified inflation savings
- ◆ Ability to fund from cash as it becomes available
- ◆ High existing debt burden

Factors supporting a lease financing approach:

- ◆ Major imbalance in revenues currently available and project requirements
- ◆ One time project funding needs with reduced future capital needs
- ◆ Strong local cash flow position
- ◆ Stable revenue sources
- ◆ Ability to withstand reduction in grant funding
- ◆ Need for additional project funding in current year
- ◆ Opportunity to reduce inflation impacts by advancing projects
- ◆ Inability to fund current program of projects

Source: Adapted from U.S. DOT FTA’s *Introduction to Public Finance and Public Transit*, 1993, p. 132.

¹¹ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993; p. 98.

from a stream of payments associated with a lease or an installment sale agreement. They have been used by municipalities to pay for prisons, office buildings, vehicles, and even parks. In the case of transit agencies, they have most commonly been used for the acquisition of buses.

COPs are essentially rights to purchase cash flow. Instead of the transit agency as the lessee making lease payments directly to a lessor, the payments are assigned to a trustee who makes payments to the holders of the COPs. The trustee issues obligations (the securities) that match the term of the related lease. As with other investments in municipal transactions, the primary attractions to investors are the relative security of the investment and the tax-exempt status of the securities.

Use of a COPs financing structure allows a transit agency to finance projects without technically issuing long-term debt for state or local legal purposes.¹² For the agency, this is advantageous because lease arrangements are not commonly subject to the limitations placed on other forms of debt, such as requiring voter approval and being subject to state limitations on indebtedness.

The potential benefits of COPs to transit agencies are significant. These benefits include some that are common to the issuance of long-term debt:

- The ability to improve cash flow by better matching revenues to outlays;
- The opportunity to make larger purchases and to capture economies-of-scale savings;
- The ability to retire older vehicles and other assets sooner, thus reducing maintenance costs and standardize fleets; and
- Provision of a mechanism to avoid higher future costs caused by inflation.

Some advantages that are unique to COPs financing include

- The ability to finance large capital acquisitions without voter approval; and
- Provision of a mechanism to secure reimbursements from the lessee's FTA funding at the 80-percent matching level (if the lease is demonstrated to be more cost-effective than out-right purchase).

Potential drawbacks of COPs include

- Limiting of the use of agency funds for future capital acquisitions;
- The requirement of pledging the asset to the lender; and
- The risk of not securing future appropriations necessary to make payments.

In general, COPs have been of the most benefit to small- and medium-sized transit agencies because of the ability to manufacture economies of scale through these transactions. The size of COPs issues varies considerably, from as small as Los Angeles's \$1.6 million lease of six buses in 1991 to as large as NJT's \$562 million series of COPs backed in part by FFGAs and other federal funds. COPs have been used to purchase just a few buses or as many as 300 or more. Gen-

¹² *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999.

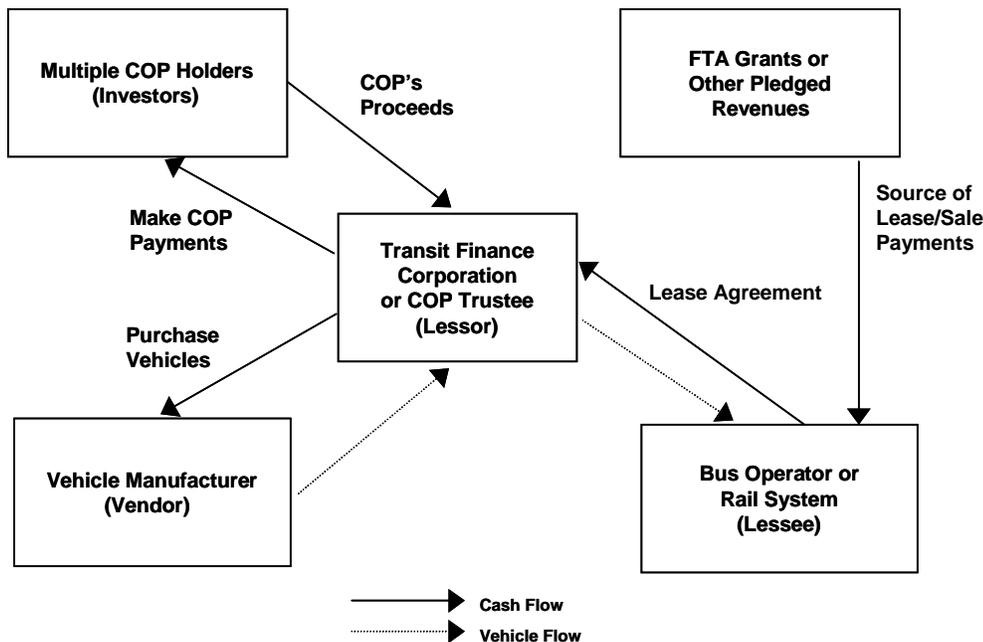
erally, transit COPs have been used to facilitate the lease of assets with medium-term life expectancies (i.e., approximately 12 years) such as buses, although they also have been used to lease assets with longer life expectancies.

A variation on the single COPs issue can be found in pooled transactions—of which the California Transit Finance Corporation is probably the best known. A second variation can be found in states that operate master lease programs, which can be financed through the sale of COPs. NJT, for example, has been an active lessee through the State of New Jersey Master Lease Program.

COPs Financing Structure

A typical COPs financing for a new capital asset is structured as follows (also see Figure 5-1 and sidebar case examples of Culver City and Sacramento COPs transactions):

Figure 5-1. Sample Certificates of Participation Structure



Source: Adapted from *Innovative Financing Handbook*, Federal Transit Administration, 1993.

- A financing corporation is created (or designated) for the purpose of serving as the lessor and the financial intermediary for the issuance of the COPs.
- The financing entity sells COPs as securities to investors via either a private placement or a public offering—much like it would issue tax-exempt bonds. The COPs are backed by the anticipated lease payments on the asset to be acquired. In some instances, the credit quality of the COPs is strengthened via insurance, letters of credit, or other credit support.¹³

¹³ *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999; p. 6.

- The asset is leased to the transit agency pursuant to a financing lease with lease payments that approximate the property's fair rental value. These payments have designated principal and interest components that equal the principal and interest represented by the COPs.
- The transit agency makes lease payments to the financing entity from a combination of funds, which can include federal grant funds.
- If the lessee's lease payments are subject to annual appropriation, the lease agreement typically provides that the lessee must relinquish the leased assets and may not substitute a similar asset from another funding source.
- Depending on the structure, there may or may not be a lien on the financed asset in favor of the investors.

FTA Section 5307 Urbanized Area Formula Grants and COPs

FTA grants may fund debt service on COPs at 80 percent, as long as transit agencies demonstrate the cost-effectiveness of the transaction (also see FTA *Final Rule on Capital Leases*, October 15,

Sacramento Regional Transit District COP Transaction

Description: In 1992, the Sacramento Regional Transit District (RTD) participated in the sale of \$32.44 million of COPs to finance the acquisition of 75 buses, a fare collection system, and a radio system.

The COPs represented proportionate interests in the lease payments to be made by the RTD to the California Transit Finance Corporation (CTFC), a non-profit corporation. One source of revenue supporting the RTD's lease payments was FTA capital grant funds.

The issuance of the COPs enabled the RTD to lower the cost of the buses through a larger order and to realize economies of scale in issuance costs for the remainder of the assets being financed.

Financing Structure: According to the Official Statement for the transactions, COPs proceeds were allocated as follows:

◆ Acquisition Fund	\$25,194,696
◆ Lease Payment Fund	3,231,382
◆ Reserve Fund	3,213,601
◆ Financing Fee	496,332
◆ Original Issue Discount	303,939
◆ Total Principal	\$32,439,950

(The Lease Payment Fund was funded with COP proceeds sufficient to make lease payments due prior to the expected project completion date.)

Each certificate represents a proportionate interest in the lease payments to be made by the RTD to the CTFC under the Financing Lease. CTFC assigned its rights under the lease agreement to the trustee bank for the benefit of the owners of the certificates, including its right to receive lease payments.

(continued on next page)

Sacramento Regional Transit District COP Transaction (*Continued*)

Principal and interest due with respect to the certificates is made from the lease payments payable by the RTD, insurance or condemnation proceeds, and interest or other investment income. Lease payments are paid from RTD revenues.

The RTD intended to use FTA funds as a source of funds for lease payments (up to 80 percent of the lease payments net of capitalized interest and earnings on the reserve fund). The lease payments were structured with equal principal payments and declining total annual payments. This was done to approximate the depreciating value of the buses and to protect investors from possible changes in FTA funding.

Credit Analysis: The RTD was assigned an A1 rating by Moody's Investors Service for the transaction.

Source: *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999; p. 8.

City of Culver City \$9.66 Million COPs Transaction

Description: In June 1996, the City of Culver City, California, and CTFC participated in the sale of \$9.66 million of COPs to finance a portion of the construction costs for the city's Transportation Administration/Maintenance Facility. The City operates the Culver City Municipal Bus Lines (CCMBL), the second oldest municipally owned bus agency in California.

Prior to this financing, CCMBL provided bus maintenance services on a crowded 3.96-acre City Yard site shared with the City's Public Works, Parks Maintenance, and Purchasing Divisions. To provide more efficient and cost-effective service, CCMBL proposed a plan to FTA that included dedicating the entire City Yard site for public transit purposes, demolishing existing buildings and constructing a new parking structure and transit facility, and purchasing a new site and remodeling an existing building to accommodate the displaced City divisions. With this project, CCMBL would be able to increase its bus fleet from 33 to 60 buses.

Not only did FTA approve the use of FTA capital grant funds for the project, it also allowed such funds to account for 100 percent of the debt service. Because the city contributed an estimated \$3.9 million of land and an additional \$3.1 million in cash to the project, the 20-percent local match requirement was fulfilled.

Financing Structure: The CTFC COPs represent a proportionate interest in lease payment made by the city to CTFC under a lease agreement between the city and CTFC. CTFC assigned the lease payments and any insurance or condemnation proceeds relating to the property not required for the repair or replacement to a trustee. Payments under the lease agreement are payable only from

- Certain FTA capital grant funds;
- The Local Transportation Fund portion of California Transportation Development Act funds;
- The city's share of State Transit Assistance Funds; and
- The city's discretionary and local return portion of two $\frac{1}{2}\%$ transportation sales taxes levied in Los Angeles County.

General fund moneys of the city are not included in designated revenues under the lease agreement.

The COPs also are secured by a reserve fund held by the trustee, funded at a level equal to the maximum annual debt service on the COPs.

(continued on next page)

City of Culver City \$9.66 Million COPs Transaction (*Continued*)

Innovations: The primary innovation in the transaction is the use of real property rather than buses as the asset encumbered by the lease agreement. This enables a longer-term financing of 20 years rather than the 12-year terms commonly seen in bus financings. Use of the facility rather than buses to secure the lease also allows for sufficient rental value in the project to accommodate level debt service rather than declining payments generally associated with bus leases.

A second innovation involves the lack of capitalized interest. Typically, FTA requires interest payments on lease financings with federal participation to be capitalized for a period sufficient to allow the construction or acquisition of the asset encumbered by the lease. Until the asset is ready for use, FTA capital grants may not be used to pay debt service. Generally, the need to capitalize interest increases the amount of COPs that must be issued and increases the total debt service requirement. In this transaction, FTA allowed for the use of federal funds to make lease payments prior to completion of the facility construction.

Credit Analysis: The payment of principal and interest on the certificates is guaranteed by a municipal bond insurance policy. This insurance was determined to be cost-effective because the net present value of the marginally higher interest that would have been required without insurance was more expensive than the cost of the policy. By virtue of this insurance, the certificates carried an AAA/Aaa rating by Standard & Poor's and Moody's, respectively.

Source: *TCRP Legal Research Digest 13: Report on Innovative Financing Techniques for Transit Agencies*, Transportation Research Board of the National Academies, 1999; pp. 10–13.

1991). This allows transit agencies to use federal funds to support long-term financings. In addition to proof of the cost-effectiveness of the transaction, FTA requires that the transit agency certify that it has the ability to meet future lease obligations without federal funding.

In a Section 5307 lease financing, the transit agency issues lease obligations (i.e., COPs) for the full value of the project, including both the federal and local share of costs. The focus of the FTA approval is to allow future years' funds to be used for debt service, assuming continued funding of the FTA formula assistance program, compliance with match requirements, continued use of the asset in transit service, and compliance with all grant terms and conditions. FTA also has required a finding that the local agency has sufficient local resources to make the full debt service payment should FTA cease in its grantmaking.

Upon receipt of the necessary approvals, lease obligations are sold in the capital markets. When the first principal and interest payments attributable to the project (FTA generally does not participate in payment of capitalized interest—that is, when an issuer borrows additional funds upfront to make interest payments prior to the availability of other revenues) are due, the grantee is allowed to use Section 5307 funds equal to the federal match share for net debt service (meaning debt service after application of available interest earnings on the debt service reserve fund).

Other Capital Lease Mechanisms

The world of lease financing is constantly evolving. New techniques are being introduced on a regular basis to meet the changing needs of transit systems and to respond to the changing market

environment, in particular U.S. and foreign tax provisions that favor one form of financing over another.

Larger transit systems have made substantial use of capital leasing for buses, rail cars, and other equipment. In the past, smaller and mid-sized systems had some difficulty attracting interested lessors. Moreover, FTA requirements regarding proof of the cost-effectiveness of the lease transaction are more challenging for smaller systems, which generally face higher borrowing costs.¹⁴ Recent examples of leases to smaller transit systems currently being provided (e.g., by G.E. Capital) suggest that the trend may be changing. The structure of these leases is generally a 10-year lease (on a 12-year bus) or sometimes a 12-year lease in which the transit authority pays the first year before seeking FTA reimbursement. This arrangement is undertaken so that the system does not violate the requirement that the federal investment not exceed the value of the asset in use.¹⁵

Choosing the Best Lease Structure

Factors that affect the choice of lease instrument include the size of the transaction, the credit standing of the issuer, the legal authority to enter into various types of agreements, and the overall capital financing plan for the agency's capital program (see Chapter 7 for a more complete discussion of capital planning).

For small financings (e.g., under \$200,000), a transit agency would most likely be best off with a municipal lease structure, by which a leasing organization provides a tax-exempt loan to the transit agency. These loans generally carry higher interest rates than do capital market financings, but these loans do not entail the issuance costs of the public market securities. For small projects, they are therefore cost-effective. For larger projects (e.g., more than \$2 million), COPs and other lease obligation securities are appropriate, based on the specific circumstances in the transit agency's own state. State-operated pooled finance programs exist in a number of states to allow smaller issuers to take advantage of economies of scale available through such pooling (see discussion in Chapter 4 and California case examples in this chapter).¹⁶

An additional consideration relating to the partnership with FTA exists. A grantee may be required to advance fund a portion of a lease (about 1 year's worth) so that federal grant funds are always requested in arrears. This allows the lessor to hold title (if necessary) and to structure the lease optimally and, thus, to lower the lease cost for smaller grantees who cannot pledge significant revenues.

Credit Considerations

At the time of the financing, a debt service reserve fund is generally established equal to at least 1 year's lease payments. The transit system makes a promise to make lease payments from the designated revenues, but they are not necessarily legally pledged revenues as in a bond issue. Lease payments are generally subject to annual appropriation and thus carry with them appropri-

¹⁴ *TCRP Legal Research Digest 6: Requirements that Impact the Acquisition of Capital-Intensive Long-Lead Items, Rights of Way, and Land for Transit*, Transportation Research Board of the National Academies, 1996.

¹⁵ Correspondence from Paul Marx, FTA.

¹⁶ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993.

ation risk. To offset concerns over the timing of federal and state and local funding, debt service payments are commonly made to the trustee 1 year in advance of the due date, thus in combination with the debt service reserve fund mitigating the impact of delays in federal and other funding streams.

The agency's liquidity and overall financial position also play an important role in the evaluation of COPs credit quality. It is important for a transit system to have a dedicated revenue source other than federal funds to serve as a backstop. A primary revenue source for COPs is a dedicated sales tax. In the event that an agency does not have a backstop revenue source, it will be important to secure a backup credit pledge that would be available to step in and make lease payments should the transit agency fail to do so. This credit support can be either from governmental programs or commercial sources.¹⁷ Additional credit considerations are state law requirements relating to beneficial use of the asset and the ability to make lease payments.

Credit Considerations for Lease Financings

- ◆ Is the property being financed properly insured?
- ◆ Will the lessee be able to make lease payments over the term of the lease?
- ◆ Is the leased property essential to the lessee?
- ◆ Has the lessee made sufficient considerations of how the additional financial burden of the lease will affect it in the future?

Source: U.S. DOT FTA's *Introduction to Public Finance and Public Transit*, 1993, p. 101.

5.5 EQUITY AND PARTNERSHIP MECHANISMS

The primary drivers for private equity investment in public infrastructure can be divided into three categories:

1. **Financial**—in which private parties invest their money for pure financial return;
2. **Tax-oriented**—based on the tax benefits that can inure to private equity investors; and
3. **Strategic**—such as when developers or vendors invest in a project in order to help “win” the business for themselves.

As noted in Chapter 4, there is very little appeal to unrelated equity investors in transit or other public infrastructure projects. The returns are generally too low and the risks perceived to be too high, mostly in terms of project delays and other effects of governmental processes. While outside equity investment in transit projects faces substantial barriers, private participation in transit capital projects on more of a partnership basis is considered more regularly. For years, transit agencies have contracted with private consortia on design-build projects, as well participated in joint-development arrangements for development of transit stations and related facilities.

Private participation allows transit agencies to take advantage of the market value of transit assets and to share the risks associated with acquiring these assets with private partners. Private participation in transit includes

- Turnkey procurements, and
- Joint-development and shared-resource arrangements.

¹⁷ Susan Mills Farrington, *Municipal Bond Finance 101*, presented at FTA Workshop on Innovative Financing, October 27–28, 1998.

Also addressed in this section is the potential for a new institutional structure in the form of a 63-20 corporation—a non-profit corporation that may issue tax-exempt debt for the purpose of financing public purpose facilities.

TURNKEY PROCUREMENTS

The premise of a turnkey project is that a public agency hires private contractors to design and construct a facility for a specific price and by a specific time. Financial risks associated with project delays are usually borne by the contractor and incentives are provided to the contractor—in the form of increased profit—for early completion.

Turnkey projects allow transit agencies to take advantage of the technical expertise of private contractors, who often have relevant expertise and experience in developing similar facilities. This arrangement is particularly beneficial for agencies developing new facilities with which they are not familiar.

Public-Private Partnership for Compressed Natural Gas Fueling Facilities and Bus Purchases

Description of Need: The Central New York Regional Transportation Authority (CNYRTA)—serving the counties of Onondaga, Cayuga, and Oswego in central New York—wanted to replace its diesel buses with natural gas–fueled vehicles. Although the compressed natural gas (CNG) fuel operation is desirable, the bus purchase would be more expensive and the operation more costly than for traditional diesel buses. CNYRTA would need to build a special fueling station, at a cost of more than \$4 million. Of this cost, 80 percent was eligible for federal funding, 10 percent would be funded by the State of New York, and the remaining 10 percent by CNYRTA. However, CNYRTA did not have the \$400,000 to \$500,000 for its share of the fueling facility.

Partnership Structure: CNYRTA issued a request for proposals to form a public-private partnership to design and build a fueling station and to provide the fuel. Proposers also were required to assist in the financing of the project. The local utility company, Niagara Mohawk, was chosen as the private-sector partner.

Through a turnkey contract, Niagara Mohawk provided preliminary design, management of the design-build contract, and payment of the entire local share for the fueling facility. It also paid the local share of the cost difference between CNG- and diesel-fueled buses for 18 new vehicles.

At each stage in the process, CNYRTA approved the work, but Niagara Mohawk managed the various contracts involved. The fueling facility includes a fueling site for the public, with the profits to be split 50-50 between the utility and the transit agency. CNYRTA may purchase natural gas from any provider it chooses, but must pay the utility a fee for use of Mohawk Niagara’s pipelines.

Analysis: The turnkey structure was critical to this venture because of the special expertise required to build a CNG fueling facility, of the speed advantage of design-build procurement (over traditional design-bid-build), and of the fact that participation by the fuel provider helped ensure that the provider’s needs were factored into the design and construction. The fact that this arrangement also saved the transit agency the \$400,000 to \$500,000 in local share for the project was “icing on the cake.”

Source: *TCRP Report 31: Funding Strategies for Public Transportation, Volume 2: Casebook*, Transportation Research Board of the National Academies, 1998; p. 133.

The term “turnkey” comes from the idea that the public partner will have no responsibility for the project until it is (figuratively) ready to “turn the key.” That is to say, private partners design, build, and deliver assets to public partners. An example of an arrangement in which the turnkey project’s private participants also operate and maintain the facilities is the Hudson Bergen project in New Jersey.

Some projects also may involve contractor financing of the project. The turnkey manager may assist with project financing by accepting delayed compensation (e.g., postponement of progress payments), credit enhancements such as an insured line of credit, or even total project financing through the issuance of their (the private consortium’s) own bonds. Although these financing methods have costs associated with them, they may allow a new transit project to proceed in a timely manner, thus generating time and project savings well in excess of the financing cost.

Turnkey Structure

Turnkey procurements encompass a variety of specific structures, including

- **Build-transfer**—the simplest form of turnkey procurement. Private partners are contracted with to build assets, which are then transferred to the public agency.
- **Build-operate-transfer**—more complex than build-transfer procurements; private partners are contracted to operate facilities for a specified period after construction before it is turned over to the public agency.
- **Design-build-operate-maintain**—private partners design, build, operate, and maintain facility.
- **Design-build-operate-maintain and finance (or “super turnkey)”**—some turnkey arrangements even include project financing by private consortia. Private participation often lasts throughout the useful life of the assets in these procurements (this was the original structure of New Jersey’s Hudson-Bergen LRT).

The parties to a turnkey financing include the sponsoring agency, an equipment manufacturer, an engineering firm, a general contractor, and associated professional firms, based on the specifics of the project to be undertaken. In addition to the technical skills required to develop and build a rail line, most U.S. turnkey projects are associated with real estate development or other activities that can generate revenues that can be made available for project financing. Thus, real estate developers and analysts are often involved in turnkey project development.

The private partner can sometimes be a new company created explicitly for the project or a joint venture of existing companies. In most cases, an equipment manufacturer plays a primary role with a general contractor.¹⁸

Assessment of Turnkey Opportunities

Turnkey arrangements, especially those involving financing, are very complex transactions. They require careful scrutiny of all of the advantages and risks in a structured analysis. Following is a

¹⁸ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993; p. 167.

summary of some of the common advantages and potential risks of turnkey arrangements. It is important to note that every transaction has its unique characteristics and must be analyzed on a case-by-case basis.

Common risks to consider include the following:

- **Economic risk**—the extent to which farebox revenues and other project revenues may not provide an adequate income stream to amortize debt, pay operating expenses, and provide an adequate return to investors;
- **Completion risk**—as a counterpart to the risk of revenue streams being insufficient, there are the risks that construction costs will exceed initial projects and the capacity of the financing or that the project will be delayed;
- **Legal risks**—including federal and state statutory provisions relating to construction and operation of the system and relating to the taxable and/or tax-exempt financing being applied, as well as limitations on the legal capabilities of contractors with respect to enforcement of the right of eminent domain;
- **Political risk**—mostly related to the extent of support for the project and the potential risk that such support could dissipate during the development process; and
- **Administrative risk**—referring to the ability of the private contractor and the sponsoring agency to manage the project successfully.

Although these risks can be quite overwhelming, the benefits that can accrue from carefully designed and well-executed turnkey arrangements can certainly outweigh the risks.

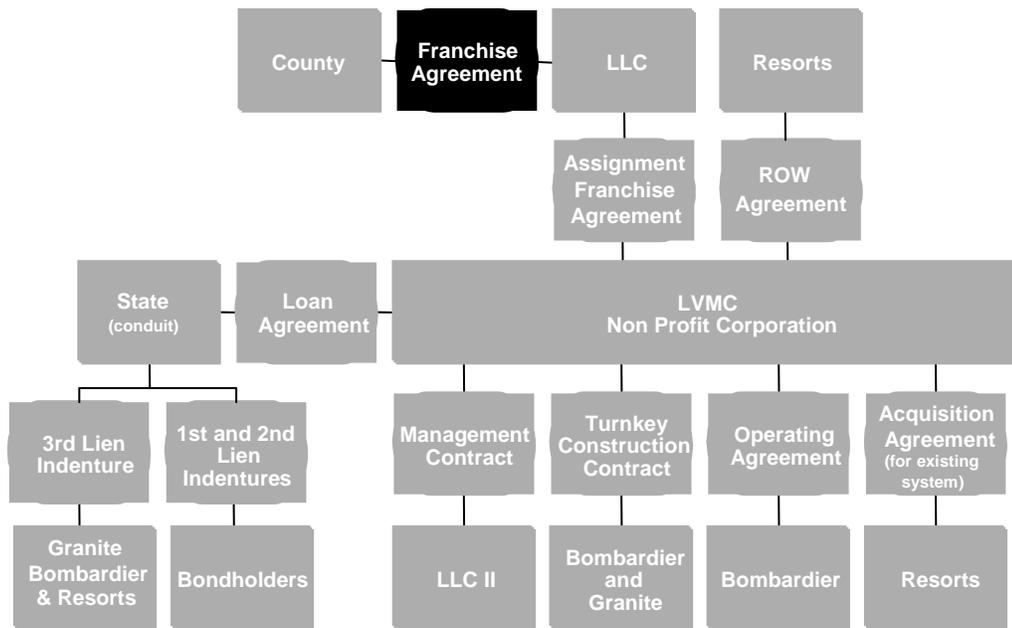
Common benefits of turnkey arrangements include the following:

- Allowing federal and local funds to be used more efficiently and effectively;
- Reducing project costs through the capabilities of private-sector management or the ability to avoid federal, state, and/or local contracting procedures;
- Transaction structures that transfer project completion and performance risks away from the transit agency; and
- Attracting alternative funding sources such as vendor financing and joint development as part of the transaction.¹⁹

While turnkey project delivery has been used extensively in other countries, it has been used only on a limited basis for infrastructure projects in the United States. Three transit projects involving turnkey elements are Puerto Rico's Tren Urbano project, NJT's Hudson-Bergen rail project, and the Las Vegas Monorail project (see Figure 5-2 for an example of the financing structure for the Las Vegas project).

¹⁹ U.S. DOT, FTA, *Introduction to Public Finance and Public Transit*, 1993; p. 172.

Figure 5-2. Las Vegas Turnkey Development and Farebox Revenue Financing Structure



Joint Development and Shared Resources

Joint development encompasses opportunities in which private investment in or around transit facilities can be harnessed to the benefit of the private party and the transit agency. Joint-development arrangements include arrangements in which the private partner makes payments to the public entity or in which the private partner shares directly in the capital costs with the transit agency. The private entity generally is willing to do this because of the anticipated enhanced real estate or market potential associated with its proximity to the transit facility.

Because joint-development and shared-resources arrangements are used primarily by transit agencies to generate revenue, lower costs, or enhance services rather than to provide upfront capital financing, they are discussed in the next chapter as revenue-generating mechanisms. There are instances in which cost-sharing arrangements offset capital funding required of the transit agency and in this manner are sources of capital funding. In the interest of keeping the discussion fluid, however, all joint-development activities are discussed in the next chapter.

63-20 Corporations

Under certain circumstances, there may not be an available governmental entity to serve as a debt issuer on behalf of a project, or a locality might prefer not to issue its own tax-exempt debt. This could be due to statutory debt limitations or political circumstances. In such an instance, formation of what is known as a “63-20 corporation” (named for the Internal Revenue Service ruling authorizing it) may be an appropriate alternative. In a 63-20 financing, a nonprofit corporation is created that may issue tax-exempt debt for the express purpose of financing public purpose facilities, which will ultimately end up in the hands of a governmental entity (once the debt is retired).

The 63-20 financing structure has not been widely used in the transportation sector. There are, however, conceivable applications for the acquisition of rolling stock or real estate for major transit developments.²⁰

Examples of reasons for using 63-20 structures include the following:

- To foster public-private partnerships;
- To facilitate completion of a single unique project;
- To insulate a governmental entity from credit concerns; and
- To avoid procurement restrictions, statutory debt limitations, or both.

There are a number of important restrictions and conditions on the use of the 63-20 structure. These include the following:²¹

- The non-profit corporation must engage in activities that are essentially “public in nature”;
- Corporate income may not inure to any private person or party;
- The state or political subdivision must have a “beneficial interest” in the corporation as long as the indebtedness is outstanding; and
- The corporation and the debt that it issues must be approved by the state or political subdivision; and
- Unencumbered legal title in the facilities that are financed by the corporation must vest in the governmental unit once the bonds are fully paid.

To the extent that these conditions can be met, 63-20 corporations can serve as vehicles to finance projects with tax-exempt bonds while maintaining for both the public and private participants many of the benefits of private development.

5.6 CREDIT-ENHANCEMENT MECHANISMS

Credit-enhancement mechanisms include bond insurance, letters of credit, or lines of credit that serve to lower the cost of borrowing to the issuer as well as governmental guarantees provided in support of bond issues or loan agreements. As noted earlier, such credit-enhancement mechanisms are not forms of financing in and of themselves, but rather they may be used to improve the credit-worthiness—and lower the cost—of the financing mechanisms discussed earlier in this chapter.

Bond Insurance

In the case of bond insurance, the bond insurance company provides a guarantee that it will pay all principal and interest coming due on bonds in the event that the issuer fails to do so. There are four major bond insurance companies in the market today—AMBAC, FGIC, MBIA, and FSA. XL Capital Assurance also has entered the municipal bond insurance market as an AAA-rated insurer. Each company carries an AAA rating, and any issue backed by one of the three bond insurers also carries the highest rating. Bond insurers are compensated for assuming the risk of default via a fee

²⁰ *TCRP Legal Research Digest 6: Requirements that Impact the Acquisition of Capital-Intensive Long-Lead Items, Rights of Way, and Land for Transit*, Transportation Research Board of the National Academies, 1996; p. 12.

²¹ Karen J. Hedlund, Nossaman Guthner Knox Elliott, LLP, *The Use of 63-20 Nonprofit Corporations in Infrastructure Facility Development*, pp. 3–4.

paid to them at the time of closing. A transit agency's decision to seek bond insurance (or one of the other credit mechanisms described here) is essentially a mathematical calculation of the costs of such insurance against the interest rate savings that will result from the higher rating. This calculation is generally made on a net present value (NPV) basis (see Chapter 4 for assistance with the NPV calculation and Chapter 7 for more on when in the debt issuance process this decision is made).

Commercial Bank Letters of Credit and Lines of Credit

Letters of credit are similar to bond insurance in that the commercial bank promises to make principal and interest payments on the bonds, even if the issuer is in default. They differ from bond insurance, however, in that they are issued for a period of time that may be shorter than the life of the bonds. They generally are issued by commercial banks whose credit rating is applied to the issuer. The cost of the letter of credit instrument is in the form of an annual fee paid to the bank.

A line of credit is yet another credit-enhancement instrument that provides liquidity for future bond payments. Under such an arrangement, a commercial bank is available to lend an issuer funds for a certain period of time in order to meet specified obligations. For this credit support, a renewal fee is paid on an annual basis based on the debt outstanding. Unlike a letter of credit, for which the bank guarantee extends directly to the bondholders, under a line of credit the bank's commitment runs to the borrower.

In addition to serving as a credit-enhancement mechanism, a line of credit also may be used directly as a short-term financing mechanism for operating costs. The line of credit mechanism, however, generally is not used for capital investments for other than credit-enhancement purposes.

Governmental Credit Support

In addition to providing direct loans, governmental programs exist that offer indirect credit support. Examples include the loan guarantee and line-of-credit provisions of the TIFIA program and similar provisions in some SIB and state financing programs. WMATA, for instance, secured a loan guarantee under the TIFIA program (see sidebar discussion).

WMATA Capital Program TIFIA Loan Guarantee

Description: The federal credit (TIFIA) program provided WMATA with a loan guarantee of up to \$600 million, supporting the agency's \$2.3 billion capital program. The guarantee is helping WMATA undertake its comprehensive Infrastructure Renewal Program (IRP) to rehabilitate and replace vehicles, facilities and equipment on the 103-mile system. The IRP includes 24 individual projects and preventive maintenance programs.

Financing Structure: The guarantee was designed to enable WMATA to demonstrate the availability of funding to initiate multiple projects on an expedited basis. WMATA entered into the agreement with the express intent of never drawing on the guarantee.

Credit Analysis: The federal loan guarantee provided WMATA with the ability to move forward with contracting for its capital program without having to wait for federal grants or local funding and, in this manner, to achieve significant cost savings. The TIFIA guarantee represents approximately \$20 million in savings relative to the cost of alternative commercial credit support.

Source: Transportation Infrastructure Finance and Innovation Act Project Fact Sheet, www.fhwa.dot.gov