



**Bus Rapid Transit Initiative
White Paper**

**CAPITAL FUNDING SOURCES
FOR TRANSIT PROJECTS**

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Prepared by:

Booz | Allen | Hamilton
Booz Allen Hamilton, Inc.
8283 Greensboro Drive
McLean, Virginia 22102

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PREFACE

This paper was prepared for the Office of Research, Demonstration and Innovation of the Federal Transit Administration (FTA). It is oriented toward helping sponsoring agencies develop capital financial plans for transit projects. It explains an array of funding programs and financing options available to transit project sponsors. This document was prepared by Donald Schneck, Richard Laver, Georges Darido, and Roderick Diaz of Booz Allen Hamilton, Inc. in McLean, Virginia. This effort was funded under a Bus Rapid Transit Initiative assistance task of the Omnibus Contract with the Federal Transit Administration.

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1 INTRODUCTION

This paper is sponsored by the Federal Transit Administration's (FTA) Office of Research, Demonstration, and Innovation and is oriented toward helping sponsors of transit projects with the development of their project financial plans. The hypothesis of this paper is that the some projects may be slowed in their implementation by an insufficient amount of federal and nonfederal funding being committed to the projects. This may be caused in part by the fact that some agencies lack experience with detailed financial planning and are not as familiar with the rigorous FTA reviews. Some projects may not be as successful at attracting funding sources as they need to be due to insufficient information on the available funding sources and the processes required to achieve funding approval from each of these potential sources. The objective of this paper, therefore, is to improve the quality of project financial plans and to enhancing the chances of gaining funding approval.

Transit projects can utilize a wide range of federal formula, discretionary and earmark programs as part of their funding sources to help fill this funding need. These program funds are available to transit projects and are generally not exclusive but can be combined with other federal program sources within a project financial plan to enhance its viability. The state and local funding sources are similarly nonexclusive and should be included among the several funding sources proposed for each project's financial plan. The successful financial plan combines funding from multiple federal and nonfederal program sources into an integrated financial plan. The strength of this approach is the supporting nature of each source in building a more credible and sustainable funding plan for each project. This allows the project financial plan to withstand the many challenges faced through each of the project development phases.

The following discussion presents background on the development of financial plans and on the federal and non-federal program sources available for funding transit projects. In the subsequent chapters, a descriptive inventory of these funding sources is presented with the process requirements that are typically used to develop financial plans for the funding of project capital costs. Each of the funding sources noted in the following chapters include constraints upon their use such as capital or operating funds and their requirements for matching from nonfederal funds. These funding sources are presented individually to aid in the development of financial plans for the transit projects.

1.1 TRANSIT FINANCIAL PLANNING

Transit projects can range from enhancement of existing bus services along major thoroughfares to exclusive fixed guideway facilities with station facilities, parking, and local transit service connections. For all modes, transit projects that include significant infrastructure and rolling stock result in significant costs. These significant capital costs, in turn, require significant levels of funding. While the funding sources available

to transit projects are quite varied, the process for the development of a feasible financial plan is fairly consistent. The suggestion offered by this paper is for each project to review these many funding sources presented in the following chapters, both traditional and those considered innovative, and identify those that are most pertinent to their project and their sponsoring agencies. The next step is to estimate reasonable funding proportions from each of the sources identified and review the funding proposals with the appropriate agencies to determine viability and amounts.

To attract measurable transit capital funding sources, sponsors of transit projects need to prepare a financial plan that will attract the proposed funding from each source at the proposed amounts. The FTA has developed guidelines on the development of financial plans for all projects in the New Starts Program and presents the process requirements for all rail and bus fixed guideway projects requesting New Starts Program funding. This guidance document provides a good financial planning framework for all transit projects.¹

The central element of the guidance is the development of the twenty-year cash flow. This cash flow includes a framework to present both the capital and operating budgets' sources and uses of funds. The twenty-year time period is pertinent to match the region's long-range plan and include the full development period of the project and several years of ongoing operations. This is intended to demonstrate the ability to maintain both existing operations and the new fixed guideway services. Typically, a few years of actual costs and revenues are added from the financial statements to the beginning of the cash flow to provide a foundation. The cash flow includes the ongoing transit agency operations, the proposed project development and implementation, plus all of the other projects that may be under development through this twenty-year period. The practices described are intended to be an integral part of the planning and development of all transit projects.

1.2 PURPOSE OF THIS DOCUMENT

The purpose of this document is to help agencies identify those potential funding sources which best meet the needs of their capital investments and help ensure the financial success of their project. Specifically, this document provides a catalog of Federal, state, local and non-traditional funding sources that agencies may wish to consider when developing their project financial plans. Beyond identifying these sources, it outlines the eligibility requirements, program selection criteria and recent funding authorizations for each source, and cites references where the reader can learn more about each individual source. In addition to considering funding sources derived from all levels of government, this document also looks at both traditional project financing options (i.e., debt), as well as innovative financing methods.

¹ The report is titled "Guidance for Transit Financial Plans," and is available on the FTA web site:
<http://www.fta.dot.gov/library/policy/ns/grqanda.htm>.

The document is segmented into four chapters. Chapter two focuses on Federal capital programs including FTA sources intended specifically for transit uses as well as sources available from other federal agencies (e.g., FHWA) with potential transit applications. Chapter three identifies a variety of state and local funds available for transit capital investments. Included here are discussions of generic funding sources frequently available at the state and local levels (e.g., dedicated tax sources), as well as examples of specific funding programs offered by select states. Next, chapter four considers a broad variety of traditional and innovative financing methods, ranging from municipal debt issues to tax increment financing. Finally, chapter five provides web page and document references where the reader can obtain more detailed information on the individual funding sources identified here.

1.3 BACKGROUND ON FUNDING SOURCES

The Transportation Equity Act for the 21st Century (TEA-21) renamed the Capital Investment Grants and Loans Program (formerly Discretionary Grants) and continued their authorization to provide transit capital assistance for new fixed guideway systems and extensions to existing fixed guideway systems (New Starts), fixed guideway modernization, and bus and bus related facilities. TEA-21 continues the discretionary nature of the program, and transit projects can qualify for one or more of these discretionary programs.

Bus and rail transit projects having some portion of the alignment as a dedicated or separated fixed guideway are considered eligible for New Starts program funds. Another discretionary federal funding source is the Bus Discretionary Program. This program funds bus vehicle and facility projects and is authorized for a total program funding level of \$3.3 billion over the six years of TEA-21. In addition, with one mile or more of dedicated or separated fixed guideway alignment, transit projects become eligible for Fixed Guideway Modernization funds that can be used for the capital rehabilitation or replacement of the vehicles, systems and facilities.

Despite the significant increase in Federal capital funding for transit under TEA-21, competition for transit capital funds has never been greater. For example, from 1986 to 2002, the number of New Starts projects advancing through the project development process and seeking Federal Section 5309 New Starts funding increased almost 150 percent, from 20 to 49 (including all projects in preliminary engineering or final design). Over this same period, the combined capital cost of these projects increased more than 300 percent, from roughly \$9.7 billion in 1996 to roughly \$42.5 billion in 2002. These New Starts projects include bus and rail fixed guideway projects.

Within this highly competitive funding environment, agencies contemplating development of a large capital project have been forced to consider a broader range of funding options and mechanisms to ensure the financial success of their project. In

particular, any funding strategy that decreases a major transit capital project's reliance on FTA Section 5309 New Starts funds both improves the strength of a project's financial plan and directly increases its likelihood of obtaining access to these highly valued Federal funds. However, decreasing New Starts funding percentage leaves an unfunded amount that needs alternative funding sources. Multiple sources of federal, and state and local funding for the capital and operating costs of transit projects are often necessary to maximize the financial feasibility of the project. It is within this highly competitive environment for funding transit projects that this paper has been prepared and made available. Its purpose is to assist all transit projects with the development of successful financial plans.

2 FEDERAL FUNDING SOURCES

The federal government has supported the development of transit projects since 1964 through the initial Urban Mass Transportation Act and subsequently through the more recent Federal Transit Act as updated and authorized through the Transportation Equity Act for the 21st Century (TEA-21). These acts have authorized the federal government to fund, among many programs, major transit capital projects. Under these programs the United States Department of Transportation (USDOT) reimburses expenditures on transportation infrastructure investment at maximum federal matching rates prescribed individually for each program, while the remainder of the project capital costs are borne by state and local project funding contributions.

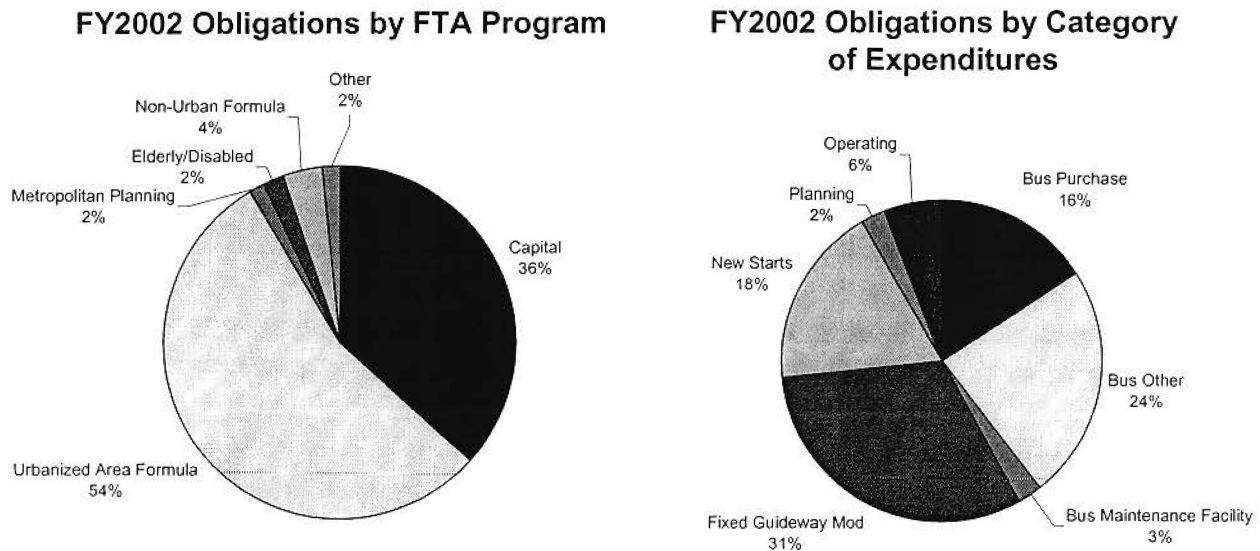
The following chapter presents the federal funding programs available to transit projects. These include the more traditional, discretionary and formula transit capital programs sponsored by the Federal Transit Administration and the other capital programs in the other transportation modal and related program administrations that can be utilized by these types of projects. In addition, with the recent transportation legislation, the federal government is authorized to provide funding assistance through a number of more innovative funding programs that can help fund and finance transit projects. With the higher demand for public infrastructure funding and the limited amounts of federal funding to these programs, new funding and financing techniques have been authorized and developed to complement and enhance the existing grant funding programs. The current transportation legislation, TEA-21, encouraged these sources by streamlining the administrative procedures and provided a wider range of financing options. The following sections present each of the more traditional discretionary and formula programs and the more innovative funding programs that have been authorized by TEA-21 and made available to agencies proposing transit projects.

2.1 FEDERAL TRANSIT ADMINISTRATION GRANT ASSISTANCE PROGRAMS

The largest sources of federal funds for mass transit are the grant assistance programs administered by the FTA. The total amount obligated for all FTA programs in FY 2001 was \$7.3 billion, which is \$0.4 billion (or 5 percent) lower than the previous fiscal year. About 92 percent was obligated under the two largest programs – the Capital Program and Urbanized Area Formula Program. Furthermore, about 91 percent was programmed for capital, 6 percent for operating, and 3 percent for planning expenditures. **Figure 1** illustrates the shares of FTA obligations by program and expenditure category in FY 2001.

**Figure 1: Distribution of FTA FY2001 Obligations
by Program and Category²**

The FTA reported a total capital obligation of \$7.1 billion for FY 2001. Of this amount,



about 46 percent was used for Bus, 34 percent for Fixed Guideway, and 20 percent for New Starts. The FTA funded the purchase of 10,371 motorbuses totaling \$1.2 billion. The purchase of 1,470 rail cars was funded with \$277.1 million. The bus and rail rolling stock rehabilitation totaled \$46.0 million and \$214.6 million, respectively. Obligations for bus and rail preventive maintenance were \$788.3 million and \$128.2 million, respectively.

The following sections describe each of these FTA programs including their intended use, restrictions and recent authorization levels. Unless otherwise noted, the grant program information in this section was referenced from the FTA's publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs."³

2.1.1 Urbanized Area Formula Program (49 U.S.C. § 5307)^{4, 5}

The Urbanized Area Formula Program, referred to as Section 5307, was established by the Surface Transportation Act of 1982, became the primary federal transit assistance program in FY 1984 and is funded from both General Revenue and Trust Funds. The Section 5307 grant program provides capital, operating, and planning assistance for

² Federal Transit Administration, "2002 Statistical Summaries: FTA Grant Assistance Programs," Table 4.

³ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs", available on-line at: <http://www.fta.dot.gov/library/reference/statsum02>

⁴ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

⁵ TEA-21 Fact Sheets, available at: <http://www.ftwa.dot.gov/tea21/factsheets/index.htm>

mass transit in urbanized areas of 50,000 inhabitants or more by utilizing a formula based on population, population density, and other factors associated with transit service and ridership.

Section 5307 funds are available for transit improvements for 34 areas with a population over 1 million, 91 areas with populations between 200,000 and 1 million, and 283 areas with populations between 50,000 and 200,000. Funds are distributed directly to the designated recipient for urbanized areas of over 200,000 inhabitants or apportioned to the Governor of each state for distribution for areas with less than 200,000 inhabitants.

In FY 2001, a total of \$4.1 billion of Section 5307 funds was obligated. This was about \$300 million or 7 percent less than the total obligated in FY 2000. These funds were obligated to 437 FTA grantees. **Table 2** provides detail of the FY 2001 Section 5307 obligations by urbanized area category and funding type. The top two large urban areas receiving Section 5307 funds were New York/NE New Jersey (\$782.0 million) and Los Angeles (\$351.2 million).

Table 1: Urbanized Area Formula Program (Section 5307) FY 2001 Obligations⁶

UZA Category	Large	Medium	Small	Total
Population	Over 1 million	200,000-1 million	50,000-200,000	All UZAs
Number of UZAs	34	91	283	408
Capital				
Bus Purchase	\$ 498,695,006	\$ 140,431,646	\$ 88,521,132	\$ 727,647,784
Bus Other	884,560,234	321,126,343	90,255,470	1,295,942,047
Bus Maint. Facilities	89,416,080	36,338,383	22,744,341	148,498,804
Fixed Guideway Modern.	1,241,371,744	56,448,730	61,497,635	1,359,318,109
New Starts	250,281,816	9,423,181	5,346,960	265,051,957
Subtotal – Capital	2,964,324,880	563,768,283	268,365,538	3,796,458,701
Planning	28,236,747	17,712,982	5,886,639	51,836,368
Operating	93,748,409	24,175,469	158,651,227	276,575,105
TOTAL	\$ 3,086,310,036	\$ 605,656,734	\$ 432,903,404	\$ 4,124,870,174
<i>Percent of Total</i>	<i>74.8%</i>	<i>14.7%</i>	<i>10.5%</i>	<i>100.0%</i>

Several changes to this program were realized in fiscal year 1998 with the passage of the Transportation Equity Act for the 21st Century (TEA-21). These changes included:

- One percent of appropriated Section 5307 funds is set-aside to be used for transit enhancement projects that physically or functionally enhance transit service or use.
- Preventive maintenance (all maintenance costs) became eligible for FTA capital assistance at a federal share of 80 percent.

⁶ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs", Table 14.

- FY 2001 operating assistance is available only to urbanized areas with populations under 200,000, except if the number of total bus revenue vehicle miles operated is under 900,000 and the number of buses operated does not exceed 15.
- Up to 10 percent of an area's apportionment may be used for complementary ADA paratransit service cost.

As in previous years, flexible funds transferred from FHWA had a significant impact on the availability of funds for obligation. In FY 2001, a total of \$1.1 billion was transferred to the Section 5307 program. The total flexible funds obligation for this program was \$1.3 billion, some of which was carried over from funds transferred in prior years. Of the total obligations for capital (planning included), roughly 33 percent represents flexible funds. The program sources of these obligations are:

- Congestion Mitigation and Air Quality (CMAQ), \$656.0 million (52 percent)
- Surface Transportation Program (STP), \$558.7 million (44 percent)
- FHWA earmarks \$45.6 million (4 percent)

2.1.2 Clean Fuels Formula Program (49 U.S.C. § 5308)^{7,8}

The Clean Fuels Formula Grant Program purpose is to assist transit operators in the purchase of low-emissions buses and related equipment, construction of alternative-fuel fueling facilities, modification of garage facilities to accommodate clean-fuel vehicles, and assist in the utilization of biodiesel fuel. The program is funded from both the Mass Transit Account and General Funds. It allocates available funding only to grantees that apply using a formula based on population, fleet size, bus passenger miles, and the severity of air quality non-attainment. The Clean Fuels program establishes a cap on annual grants to any one recipient as follows:

- \$15 million for areas with less than one million population
- \$25 million for areas with populations of one million or more

The maximum federal match is 80 percent of the cost of the eligible project. Project funding eligibility has been established as propulsion technologies including compressed natural gas (CNG), liquefied natural gas (LNG), biodiesel fuel, battery, alcohol-based fuel, hybrid electric, fuel cell or other zero-emissions technology. Eligible projects include purchase of clean-fuel buses, construction, modification and/or leasing of associated facilities, and re-powering or retrofitting of existing buses. The program requires certification by grant applicants that vehicles purchased with funds under this program will be operated only with clean fuels.

⁷ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

⁸ TEA-21 Fact Sheets, available at: <http://www.fhwa.dot.gov/tea21/factsheets/index.htm>

The Clean Fuels Formula program was created to finance the purchase or lease of clean fuel buses and associated facilities, and the improvement of existing clean fuel bus facilities. Specifically, these funds may be used for the purchase or lease of clean fuel buses, the construction or lease of clean fuel electrical recharging facilities, improvement of existing facilities to accommodate clean fuel buses, the re-power of pre-1993 engines with clean fuel technology and the retrofit or rebuild of pre-1993 engines if before a mid-life rebuild. Clean Fuels Formula Program funds are available to public transit operators in clean air non-attainment or maintenance areas, both urbanized and non-urbanized. Two-thirds of the funds appropriated for this program have been allocated to areas with populations greater than 1 million. Half of the program is funded under Formula and half under Capital Investment Grants. The formula to distribute these funds was based on the number of buses in an operator's fleet, the number of passenger miles per year, and the air quality rating for ozone and carbon monoxide for the locality the operator serves (relative to the same statistics for the entire pool of applicants within its population size category). In FY 2001, the funds for the Clean Fuels Formula program were merged with the bus category of the Capital Program (described below) making them indistinguishable. Capital assistance is currently provided on an 80 percent federal, 20 percent local matching basis within the bus capital discretionary program.

2.1.3 Capital Investment Grants and Loans Program (49 U.S.C. § 5309)^{9,10}

The Section 5309 program provides three types of capital funding including (1) fixed guideway modernization funds (formula), (2) new starts funds (discretionary) and (3) bus allocations (discretionary). Each of these sources is described in detail below. These capital assistance grants made to states and local agencies may fund up to 80 percent of net project costs. However, a more recent budget submission by the FTA includes a new cap of 50 percent of funding from this source for New Starts program projects. Congress also provided guidance to the FTA in the FY 2001 Appropriations Conference Report suggesting a 60 percent/40 percent federal/nonfederal shares for New Starts projects. Either matching share requires a substantial increase in other federal and nonfederal funding sources to fulfill the needs of a transit project capital-funding plan.

The renamed Capital Investment Grants and Loans Program (formerly Discretionary Grants) is funded from both the Mass Transit Account of the Highway Trust Fund and the General Fund. The program continues the 90 percent Federal share for the incremental costs of vehicle-related equipment needed to comply with the Clean Air Act Amendments and the Americans with Disabilities Act requirements and 80 percent Federal share for all other eligible costs. The allocation formula for distribution of the total discretionary program funds is 40 percent, 40 percent, 20 percent among fixed

⁹ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

¹⁰ TEA-21 Fact Sheets, available at: <http://www.ftwa.dot.gov/tea21/factsheets/index.htm>

guideway modernization, new fixed guideway systems and extensions, and bus and bus-related facilities. Highlights of these capital grant programs follow.

- **Fixed Guideway Modernization** - Formula apportionment uses system wide fixed guideway mileage data used to apportion the funding in FY 1998. The program renewed modifies slightly the allocation of funding under the first four tiers. The number of tiers was increased from four to seven. The funding in these additional three tiers is apportioned based on actual route-miles and revenue vehicle-miles on segments at least 7 years old.
- **New Starts** - Projects must compete for discretionary funding using criteria to justify the major investment involved. Projects are evaluated and rated as "highly recommended," "recommended," or "not recommended." The current program limits the amount of New Starts funding that can be used for purposes other than final design and construction to 8 percent of the amounts made available for this program.
- **Bus** - This program provides discretionary funding to transit capital projects. It is authorized for a total of \$3.3 billion for bus and bus related facilities (excluding amount for Clean Fuels) over the six years of TEA-21. Of this total amount of program funding, \$3M/year is authorized for the Bus Testing Facility and \$4.85M/year for the Fuel Cell Bus and Bus Facility Program. Note that authorization levels do not include \$50M/year for FY 1999-2003 for the Clean Fuels program derived from Bus & Bus Related Facilities.

In FY 2001, total Section 5309 obligations totaled over \$2.5 billion. However, this was about 7 percent lower than obligations in FY 2000. These funds were distributed to 222 grantees and helped budget over 1,900 buses and other transit vehicles. Although current legislation increases the funding for this program in the future, potential revenues from this source for a particular project may nevertheless be reduced as a result of increasing competition for these funds from transit agencies nationwide. Table 3 provides a breakdown of how the funds were obligated in FY 2001.

Table 2: Capital Program (Section 5309) FY2001 Obligations ¹¹

Area Category	Large	Medium	Small	Rural	All UZAs
Population	Over 1 million	200,000 - 1 million	50,000-200,000	<50,000	Total
Bus					
Bus Purchase	\$ 84,752,210	\$53,182,358	\$ 55,880,094	\$43,518,432	\$237,333,094
Bus Other	80,563,662	62,002,563	52,980,023	38,723,095	234,269,343

¹¹ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs", Table 25.

Bus Maint. Facilities	7,674,157	19,329,150	16,912,355	8,059,627	51,975,289
Subtotal – Bus	172,990,029	134,514,071	125,772,472	90,301,154	523,577,726
Fixed Guideway Modernization	1,011,330,172	12,832,552	0	0	1,024,162,724
New Starts	861,038,870	75,566,844	7,648,488	30,171,739	974,425,941
TOTAL	\$ 2,045,359,071	\$ 222,913,467	\$ 133,420,960	\$ 120,472,893	\$ 2,522,166,391
<i>percentage of Total</i>	<i>81.1%</i>	<i>8.8%</i>	<i>5.3%</i>	<i>4.8%</i>	<i>100.0%</i>

The Fixed Guideway Modernization Program provides formula funds for the improvement and maintenance of existing rail and other fixed guideway systems. Here a fixed guideway refers to any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. The term includes heavy rail, commuter rail, light rail, trolleybus, aerial tramway, inclined plane, cable car, automated guideway transit, ferryboats, that portion of motor bus service operated on exclusive or controlled rights-of-way, and high-occupancy-vehicle (HOV) lanes. Eligible uses include Capital projects to modernize or improve fixed guideway systems including purchase and rehabilitation of rolling stock, track, line equipment, structures, signals and communications, power equipment and substations, passenger stations and terminals, security equipment and systems, maintenance facilities and equipment, operational support equipment including computer hardware and software, system extensions, and preventive maintenance. A threshold level of more than one mile of fixed guideway is required to receive these funds. Capital assistance is currently provided on an 80 percent federal, 20 percent local matching basis.

The formula for allocating funds contains seven tiers. The allocation of funding under the first four tiers is based on data used to apportion the funding in fiscal year 1997. Funding under the last three tiers is apportioned based on the latest available route miles and revenue vehicle miles on segments at least seven years old as reported to the National Transit Database. In FY 2001, the Section 5309 obligations for fixed guideway modernization were \$1,024.2 million, down \$3.8 million from the previous fiscal year. These projects included of the purchase of 487 rail cars.

The New Starts Program provides discretionary funding for the design and construction of new fixed guideway projects (including both rail and busways) or extensions to existing fixed guideway systems. While New Starts funds have historically been used to fund up to the authorized limit of 80 percent of project capital costs, intense competition for these funds has forced the New Starts share downward toward 50 percent. Each year, the FTA submits its recommendations to Congress on how these discretionary funds should be allocated among competing transit projects via the annual New Starts Report. Prior to making these recommendations, FTA is required to submit each proposed project to an extensive evaluation process designed to rate project effectiveness with respect to a series of criteria such as land use impacts, cost effectiveness (e.g., hours of transportation system user benefits) and the strength of

the local financial commitment. Based on this assessment, projects are then categorized as recommended, highly recommended or not recommended. Projects assigned either the recommended or highly recommended rating are then eligible to advance to the next stage of project development (e.g., to enter either preliminary engineering or final design) or, if already in final design, to obtain a full funding grant agreement (FFGA). Two recent examples of projects securing a "highly recommended" New Starts rating for FY 2003 are the South Corridor Light Rail Transit (LRT) in Charlotte, NC and the Mid-Coast LRT Corridor in San Diego, CA.¹² **Table 4** provides a summary of the details of these two projects.

Table 3: Summaries of Two Highly Rated New Starts Projects ¹³

Proposed Project:	Charlotte South Corridor LRT (11.2 miles, 16 Stations)	San Diego Mid-Coast LRT Corridor (3.4 miles, 3 Stations)
Total Capital Cost (\$YOE):	\$348.2 million	\$131.5 million
Section 5309 New Starts Share (\$YOE):	\$174.1 million (50%)	\$65.6 million (50%)
Other Funds (\$YOE):	\$87.1 million (25%) in State funds and \$87.1 million (25%) in local funds	\$17.0 million (12.9%) in state funds and \$48.9 million (37.2%) in local funds
Ridership Forecast (2025):	21,100 average weekday boardings; 14,200 daily new riders	12,100 average weekday boardings; 9,860 daily new riders
Finance Rating:	Medium-High	Medium-High
Project Justification Rating:	Medium-High	Medium-High
Overall Project Rating:	Highly Recommended	Highly Recommended

Once a project requesting more than \$25 million has been approved into final design, the FTA may recommend the project for a FFGA. The FFGA is a contract between FTA and the grantee that details the scope of the project and provides a schedule of New Starts funding for a period of years. In FY 2001, funding for new starts projects was fully allocated by Congress. The obligation of funds for Section 5309 new starts was \$974.4 million, a decrease of \$111.0 million from FY 2000.

It is important to understand that New Starts funding is limited while the competition for funds is intense. Hence, few of the projects requesting New Starts funds will actually receive an FFGA. For example, at present there are over 75 projects that are either in preliminary engineering, final design or have a full funding grant agreement. However, in FY 2001 only eight were approved to enter preliminary engineering (PE) and seven to enter into final design. In FY 2001 there were 27 active and 9 new FFGAs.

¹² For a complete list of New Starts Project Ratings for FY 2003, the reader is referred to the FTA web site: <http://www.fta.dot.gov/library/policy/ns/ns2003/nstable1a.html>

¹³ FTA Annual Report on New Starts 2002, available at: <http://www.fta.dot.gov/library/policy/ns/ns2003/appendixatoc.html>

The Section 5309 Bus Program provides discretionary capital funding for bus systems and bus-related projects. These activities include the acquisition of rolling stock and ancillary equipment, construction of new bus facilities and renovations to existing facilities (e.g., maintenance facilities, garages, storage areas, and bus terminals). The funding appropriated for the bus capital program is fully allocated to projects designated or earmarked by Congress. In FY 2001, the Section 5309 obligations for bus were \$523.6 million, a decrease of \$71.6 million from FY 2000. While, the legislation states that at least 5.5 percent of these Section 5309 bus funds must be used in non-urbanized areas, the actual obligation to these areas tends to be much higher (e.g., 17 percent in FY 2001).

2.1.4 Elderly Persons and Persons with Disabilities Program (49 U.S.C. § 5310)¹⁴

Section 5310 makes funds available to meet the special transportation needs of elderly persons and persons with disabilities. These funds are apportioned annually based on the number of elderly persons and persons with disabilities in each state. In FY 2001, a total of \$175.0 million was obligated to 53 grantees. Of this amount, about \$77 million was appropriated for this program, an additional \$102 million came from flexible funds transferred into the program, and about \$4 million were transferred out to other programs. Since the program began in 1975, state agencies have obligated over \$1.2 billion for the purchase of vehicles, equipment or service designed to meet the needs of elderly persons and persons with disabilities.

Capital assistance is provided on an 80 percent federal, 20 percent local matching basis. The exception is the vehicle-related equipment needed to meet Americans with Disabilities Act (ADA) and Clean Air Act Amendment (CAAA) requirements, which are funded on a 90 percent federal, 10 percent local matching basis. Those eligible to receive Section 5310 funding include private non-profit agencies, public bodies approved by the state to coordinate services for elderly persons and persons with disabilities, or public bodies which certify to the Governor that no non-profit organizations are readily available in an area to provide the service.

Once Section 5310 funds are apportioned to the states, specific funding decisions are made at the state level. The period of availability for Section 5310 funds is one year. Any amount of a state's apportionment remaining unobligated may be transferred to the Section 5311 or the Section 5307 program during the fourth quarter of the fiscal year. Any Section 5310 funds left unobligated or not transferred at the end of the fiscal year will be reapportioned among all the states in a subsequent year's apportionment.

2.1.5 Non-Urbanized Area Formula Program (49 U.S.C. § 5311)¹⁵

¹⁴ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

¹⁵ *Ibid.*

The Section 5311 program provides funding for public transportation in non-urbanized areas. From FY 1979 to FY 1991, Congress appropriated \$65-\$85 million annually for the program. The annual appropriations increased under ISTEA with Section 5311 receiving 5.5 percent of the total appropriation for urbanized and non-urbanized areas, and again under TEA-21 with Section 5311 receiving 6.37 percent of the funds appropriated for formula programs for both urbanized and non-urbanized areas and for elderly and persons with disabilities. In FY 2001, \$205.0 million was appropriated. In addition, Section 5311 funds have been supplemented by funds transferred annually since 1984 from a state's apportionment of urbanized area formula funds for cities under 200,000. Flexible funds may also be transferred to Section 5311. In FY 2001, the total obligated funds distributed to 53 grantees in the Section 5311 program were \$214.1 million.

The FTA apportions funds for non-urbanized areas to the states according to a statutory formula based on each state's population in rural and small urban areas (under 50,000 population). The funds are available to the state for obligation for the year of apportionment plus two additional years. The states administer the program in accordance with State Management Plans. Eligible recipients include public bodies and private non-profit organizations. Participation by private for-profit enterprises under contract to an eligible recipient is encouraged.

The Section 5311 funds may be used for capital and administrative expenses with a federal share of 80 percent, and for operating expenses with a federal share of 50 percent. The state may use up to 15 percent of its apportionment for program administration, planning and technical assistance, with no local match required. Coordination with other federally assisted transportation services is encouraged, and income received through purchase of service contracts with human service agencies may be used as local match. Each state must spend 15 percent of its appropriation for the support of inter-city bus transportation, unless the governor certifies that the inter-city bus transportation needs of the state are adequately met.

Another part of the section 5311 program is the Rural Transit Assistance Program (RTAP) which provides training, technical assistance, research, and related support services for providers of rural public transportation at the national and state levels. Since FY 1987, Congress has appropriated \$4.25 to \$5.25 million a year for the RTAP.

2.1.6 Metropolitan Planning Program (49 U.S.C. §5303)¹⁶

Metropolitan Planning Program (MPP) funds are available to carry out the transportation planning process and meet the programming requirements of the joint

¹⁶ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

FTA/FHWA planning regulations, "Planning Assistance and Standards." The FTA apportions MPP funds to the states based on a set of formulas:

- 80 percent of the funds available are apportioned according to a formula based on urbanized area population.
- The remaining 20 percent is provided to the states based on an FTA administrative formula to address planning needs in larger, more complex urbanized areas with one million or more in population.

Acting as the FTA grantee, the states distribute these funds to each urbanized area within the state according to a formula developed by the state and approved by the FTA. The MPP, therefore, provides financial assistance through the states to Metropolitan Planning Organizations (MPO) to support the costs of preparing long-range transportation plans and financially feasible TIPs. These are required as a condition of obtaining Federal Capital Program and Urbanized Area Formula Program grants for transit projects. In addition to providing funding for local and state transportation planning and objectives, the MPP provides a means of drawing state and local attention to national priorities through a series of periodically issued Planning Emphasis Areas (PEA). A planning emphasis area is established by the FTA and FHWA to advance national goals as established by federal law, to reflect FTA and FHWA priorities, and to respond to congressional direction established through the appropriations process. In FY 2001, a total of \$40.4 million in MPP funds were obligated.

2.1.7 State Planning and Research Program (49 U.S.C. §5313(b))¹⁷

State Planning and Research Program (SP&R) funds may be used for a variety of purposes such as planning, technical studies and assistance, demonstrations, management training and cooperative research. In addition, a state may authorize a portion of these funds to be used to supplement planning funds allocated by the state to its urbanized areas. The SP&R is a source of federal financial assistance to the States to meet the planning requirements of the joint FTA/FHWA planning regulations, "Planning Assistance and Standards." As with the MPP, the state is the FTA grantee for this program. In FY 2001, \$9.6 million in SP&R funds were obligated.

In addition to its function as a source of financial support for state transportation planning activities, SP&R funds can also be used to fund the following programs:

- Research, Development, and Demonstration (49 U.S.C. §5312(a))
- Training (49 U.S.C. §5312(c))
- Research and Training in Urban Transportation Problems (49 U.S.C. §5312&5317(a))

¹⁷ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

- Human Resource (49 U.S.C. §5322)
- Metropolitan Planning (49 U.S.C. §5303)

2.1.8 Consolidated Planning Grant Pilot Program¹⁸

In fiscal year 1997, FTA and FHWA began offering states the option of participating in a pilot Consolidated Planning Grant (CPG) program. The FTA and FHWA have instituted CPG as a permanent pilot program. Since the first CPG grant was awarded in April 1997, almost \$232 million has been obligated by the pilot states. Of this total, more than \$180 million is from FHWA sources. In FY 2001, a total of \$18.6 million in CPG funds were obligated. Of the 11 state pilot participants:

- Three have used annual grants only;
- Three have a mixture of grant lengths, starting with annual and switching to multi-year grants or vice versa;
- Five have used only multi-year grants with the grant period ranging up to three years.

Those with the multi-year grants can close them at any time and begin the next year with either a new multi-year grant or an annual grant. The ease with which a state can opt for the single year or the multi-year approach to the CPG grant is just one example of the flexibility intended for the pilot.

Under the CPG, states can report metropolitan planning expenditures (to comply with the Single Audit Act) for both FTA and FHWA under the Catalogue of Federal Domestic Assistance number for the FTA's Metropolitan Planning Program. Additionally, for states with an FHWA Metropolitan Planning (PL) fund matching ratio greater than 80 percent, the state can request a waiver of FTA's 20 percent local share requirement so that all FTA funds used for metropolitan planning in a CPG can be granted at the higher FHWA rate. For some states, this Federal match rate can exceed 90 percent. Currently, two western states participating in the pilot are using the FHWA PL match rate. Pre-award authority has been granted to both of FTA's planning programs for the life of TEA-21 (through FY 2003). This pre-award authority enables states to continue planning program activities from year to year with the assurance that eligible costs can later be converted to a regularly funded Federal project without the need for prior approval or authorization from the granting agency.

2.1.9 Job Access/Reverse Commute Program (Section 3037)¹⁹

The Job Access/Reverse Commute program funds projects intended to connect welfare recipients and other low-income persons to jobs and other support services.

¹⁸ *Ibid.*

¹⁹ *Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"*

Specifically, a job access project is one that would transport welfare recipients and eligible low-income individuals to and from jobs and activities related to their employment. The grant may include capital items or the cost of operating service. A reverse commute project is related to the development of transportation services designed to transport residents from urban areas, urbanized areas, and non-urbanized areas to suburban employment opportunities. Eligible projects include subsidizing costs associated with adding reverse commute service or subsidizing the purchase or lease of shuttle vehicles. Planning and coordination are not eligible activities.

In FY 2001, the FTA approved 83 competitive projects totaling \$27.1 million. Additionally, Congress designated \$75 million for 67 specific projects. During FY 2001, 147 grants (some containing multiple projects) were awarded to 119 grantees. Of the \$85.0 million of total funds obligated under this program in FY 2001, about 67 percent are allocated for eligible projects in urbanized areas with populations of 200,000 and above, 13 percent to urbanized areas with populations under 200,000, and the remaining 20 percent to non-urbanized areas. The program provides a 50 percent FTA share. Matching funds may include those from other Federal welfare-to-work programs.

Job Access/Reverse Commute applications undergo a competitive grant selection process. Several factors are considered:

- Percentage of the population in the service area that are welfare recipients
- The need for additional service in the area
- Coordination with existing local transit providers and state administrators
- Maximum utilization of existing transportation service providers and expanded transit networks or hours of service
- Innovation
- Identification of long-term financing and fit into regional transportation plan
- Demonstration of community involvement
- And need for reverse commute service

An example of a job access project funded by a Section 3037 grant is a Regional Job Access and Reverse Commute Transportation Plan for Northern New Jersey. The North Jersey Transportation Planning Authority (NJTPA) was awarded an FTA Job Access Challenge Grant to coordinate welfare-to-work issues through the New Jersey Department of Transportation, New Jersey Transit, and 21 counties of the State. NJTPA provided a regional perspective to the community transportation plans of the northern New Jersey counties. The product of this effort is a technical report that provides recommendations for practical implementation of county and community transportation plans. The report identifies proposed projects in each county's Community Transportation Plan developed during the "New Jersey Statewide County and Community Transportation Planning Project," that have regional linkages (i.e. inter-county significance). In addition, the report identifies opportunities for

cooperative efforts between counties and coordinates, county-based services across borders, and provides general guidance to the county agencies. Through this effort, NJTPA developed a prioritization structure for future Job Access/Reverse Commute projects in the NJTPA region. NJTPA also contributed to the agency goals contained within Access & Mobility 2025, and the Long-Range Regional Transportation Plan.²⁰

2.1.10 Over-The-Road Bus Program (Section 3038)²¹

The Over-the-Road Bus program is designed to assist bus operators with financing the incremental capital and training costs of complying with the Department of Transportation's final rule regarding accessibility of over-the-road buses as mandated by the Americans with Disabilities Act (ADA). Eligible projects include the incremental cost of adding a lift to a new bus, retrofit of a bus to add a lift, and training.

Applications are reviewed and selected on a competitive basis. Several factors were considered:

- The need for over-the-road bus accessibility in the areas served
- The extent to which the applicant demonstrates innovative strategies and financial commitment
- The extent to which the operator acquires equipment required by the final rule prior to any required timeframe
- The extent to which financing the costs of compliance presents a financial hardship for the applicant
- The impact of accessibility requirements on the continuation of over-the-road bus service (particularly to rural areas and for low-income individuals)
- And other factors for inter-city fixed route providers, such as fleet size and prior year funding.

Since the Over-the-Road Bus program provides funds to inter-city bus providers, the service area for any grantee may include any or all of the population categories used to report FTA obligation data – large, medium, or small-urbanized areas, or non-urbanized areas. In this case, "inter-city" refers to service provided by any grantee including more than one area.

In FY 2001, a total of about \$2.88 million was obligated to 30 projects. The federal share of a grant under this program was 90 percent for all providers and a total of 63 projects

²⁰ Adapted from case studies at the FTA web site: <http://www.fta.dot.gov/wotw/casestudies/toc.html>; The final report for this project is also available on the web at www.njtpa.org/planning/jarc/jarc.htm

²¹ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

were selected. About 61 percent was obligated for inter-city fixed route service and 39 percent for other types (such as charter bus, tour bus, etc.).

2.2 FEDERAL HIGHWAY ADMINISTRATION PROGRAMS²²

The passage of ISTEA and subsequently TEA-21 expanded the decision making powers of states and regions in the usage of federally provided transportation funds by allowing the transfer of funds among federal program categories. Most notably, the legislation allows for the use of funds authorized under Title 23, Federal Highway Administration (FHWA) programs to be used for transit purposes. These programs can be utilized in funding transit projects if they are transferred into the associated transit programs. Other than those noted in the following section, FHWA program funds are used on public access facilities, a constraint that limits the potential application to transit projects, unless they are operated on public access facilities.

The main highway formula programs can be used for combined highway and transit projects such as high occupancy lanes along highways that allow public access for higher occupancy vehicles including transit vehicles. These highway formula programs can be used for certain capital components of transit projects, but these components must generally be available for unrestricted public access, except for higher occupancy restrictions. This makes the Federal-Aid Highway Program only available for selected types of transit projects (such as some BRT projects) that allow for either full public or high occupancy vehicle access and for only a limited number of capital asset categories that support the general public access provisions within these transit projects.

More appropriately, the flexible funding provisions have several objectives; to support innovative multi-modal planning and project development; and to delegate authority to states and regions to create their own transportation solutions and funding strategies. Title 23 funds used for transit purposes may be administered directly by the FHWA or through formal fund transfers from the FHWA to the FTA. Current FHWA programs eligible to be "flexed" for transit purposes include Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds and Surface Transportation Program (STP) funds. These funds can be transferred to the Urbanized Area Formula Program (Section 5307), Non-urbanized Area Formula Program (Section 5311), or Elderly and Persons with Disabilities Program (Section 5310). Funds transferred to these programs are subject to all of their statutory usage restrictions and regulatory requirements.

2.2.1 Surface Transportation Program

The STP program is the largest Title 23 highway program with over \$33.3 billion authorized over the life of TEA-21 (FY 1998-2003). In addition, the STP provides the

²² TEA-21 fact sheets, available at: <http://www.fhwa.dot.gov/tea21/factsheets/index.htm>

widest flexibility in funding highway and transit capital and planning activities. Some eligible activities include transit capital improvements, vanpool projects, corridor parking facilities, transit research and development, and transit safety improvements. In the first three fiscal years of TEA-21, a total of \$15.9 billion of STP funds were authorized, approximately \$1.3 billion or 8.2 percent of those funds were transferred to the FTA.²³

Recently, the Central Florida Regional Transit Authority (LYNX) has been planning light rail and commuter rail systems for the Orlando area. Its current 5-year needs and capital improvement program is supported by the MPO by the commitment of 20 percent of the regions approximate \$13 million in annual STP funds. LYNX was successful in gaining this support due to a local funding strategy based on a regional perspective, ability to define its role in Orlando as more than just a bus operator, and formal representation on the MPO policy board.²⁴

2.2.2 Congestion, Mitigation, and Air Quality Program

The objective of the CMAQ program is to aid in the management of traffic congestion and the improvement of air quality. The funds are available to areas designated by the Environmental Protection Agency as "non-attainment" or "maintenance areas" based upon compliance with national ambient air quality standards for carbon monoxide and ozone. Eligible activities under the CMAQ program include transit system capital expansion and improvements that are projected to increase ridership, alternative fuel projects, public/private partnerships, travel demand strategies, and construction of high-occupancy vehicle lanes. In 1998, TEA-21 authorized a total of \$8.1 billion for the program covering FY 1998-2003. In the first three fiscal years of TEA-21, a total of \$3.9 billion was authorized and approximately \$1.7 or 43.6 percent has been transferred to the FTA.²⁵

Since 1994 the Niagara Frontier Transportation Authority (NFTA) located in Buffalo New York has been receiving CMAQ grants to support its bus replacement program. Since then, NFTA has purchased 105 new buses funded primarily by CMAQ grants totaling over \$21 million, accounting for approximately 58 percent of capital costs. In addition to the bus replacement program NFTA has used CMAQ funds to pay for 100 percent of several park-and-ride facilities and customer enhancements. The state DOT agrees that bus purchases are a good use of CMAQ funds; hence, there continues to be political support for these purchases.²⁶

²³ TCRP Synthesis 42, *Use of Flexible Funds for Transit Under ISTEA and TEA-21, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 2002*

²⁴ TCRP Synthesis 42, *Use of Flexible Funds for Transit Under ISTEA and TEA-21, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 2002*

²⁵ *Ibid.*

²⁶ *Ibid.*

2.2.3 FHWA Discretionary Programs

Several additional federal programs exist that can be used to help fund transit capital projects. Most of these programs are FHWA discretionary programs. Other federal agencies include special programs that may offer opportunities for funding specialized components of rapid transit projects.

The FHWA administers discretionary programs that can be accessed by transit projects for many types of capital cost components. These discretionary programs represent special funding categories where FHWA solicits for candidate projects and selects projects for funding. Each program has its own eligibility and selection criteria that are established by law, by regulation, or administratively.

- Bridge
- Corridor Planning and Development and Border Infrastructure (Corridors & Borders)
- Ferry Boats
- Innovative Bridge Research and Construction
- National Historic Covered Bridge Program
- ITS Deployment Program
- Interstate Maintenance
- Public Lands Highways
- Scenic Byways
- Transportation and Community and System Preservation Pilot Program
- Transportation Infrastructure Finance and Innovation Act (TIFIA)
- Value Pricing Pilot Program

More information on each of these programs is available under the FHWA Discretionary Program information. Information is also available on current solicitations for projects and recent awards. Most of these funds are for specific purposes, but can enhance project capital funding sources by investments in mobility and accessibility. The following sections describe three of these discretionary programs.²⁷

2.2.4 FHWA Intelligent Transportation Systems (ITS) Integration Program (Metro/Rural)

Funds are available to accelerate the integration and interoperability of intelligent transportation systems (ITS) across system, jurisdiction and modal boundaries, in metropolitan and rural areas, to improve transportation efficiency, promote safety (including safe freight movement), increase traffic flow (including the flow of intermodal travel at ports of entry), reduce emissions of air pollutants, improve traveler

²⁷ For information on other programs, the reader is referred to the web site of the Community Transportation Association of America at <http://www.ctaa.org/ntrc/atj/pubs/innovative/innov7>

information, enhance alternative transportation modes, build on existing intelligent transportation system projects or promote tourism.

Section 5001(c)(4)(A) of TEA-21 authorized \$74 million, \$75 million, \$80 million, \$83 million, \$85 million, and \$85 million for FYs 1998 through 2003 respectively for ITS integration. The Federal share of the cost of a project payable from ITS funding shall not exceed 50 percent. Total Federal funds cannot exceed 80 percent of the cost of a project payable, and the funds are subject to the obligation limitation.

Eligibility for the program requires that the project integrates at least two different intelligent transportation infrastructure elements, including: traffic signal control, freeway management, transit management, incident management, electronic fare payment, electronic toll collection, highway-rail intersection, emergency management services, and regional multimodal traveler information services, or one infrastructure element across multiple jurisdictions.

2.2.5 FHWA Transportation & Community and System Preservation Pilot Program²⁸

The Federal Highway Administration's Transportation and Community and System Preservation (TCSP) Pilot Program is an initiative of research and grants to investigate the relationships between transportation and community, system preservation, and private sector-based initiatives. States, local governments, and metropolitan planning organizations are eligible for discretionary grants to fund projects 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
- Examine private sector development patterns and identify strategies to encourage compatible private sector development patterns.

The TCSP Program is a FHWA program being jointly developed with the FTA, the Federal Rail Administration, the Office of the Secretary, and the Research and Special Programs Administration within the US Department of Transportation, and the US Environmental Protection Agency. Section 1221 of the Transportation Equity Act for the 21st Century (TEA-21) established the Transportation and Community and System Preservation Pilot (TCSP) Program with a total funding of \$120 million for the period FY 1999-2003. TCSP funding is authorized in the amount of \$20 million in FY 1999 and \$25 million per year after that. TCSP grant applications are evaluated by an interagency team on a competitive basis but may also be designated by Congress. In FY 2001, TCSP

²⁸ FHWA Transportation & Community and System Preservation (TCSP) Pilot Program web site, <http://www.fhwa.dot.gov/tcsp/>

grants totaled \$46.9 million for 80 projects in 34 states. In FY 2002, all available funds were designated to particular projects by Congress.

TCSP funds have been used for a wide variety of projects to date. The following paragraphs contain three example projects. Several more examples of TCSP funds are described as project case studies on the TCSP web site.²⁹

- **Hartford, Connecticut** – The "Picture It Better Together" project was awarded a TCSP grant of \$480,000 in FY 1999. It was a collaborative effort between the City of Hartford, on behalf of Parkville neighborhood organizations, and the Capitol Region Council of Governments (CRCOG). At the regional level, the project sponsors decided to focus initially on education and dialogue, in order to introduce people to alternative development concepts and determine reactions to these concepts. Activities have included:
 - A visual preference survey to determine residents' preferences for different types of development
 - A telephone survey comparing attitudes toward growth and development among residents of the three communities
 - A focus group with commercial and residential developers to identify barriers to alternative development patterns
 - Evaluating the long-term impacts of a busway project, including land use and zoning changes along the busway corridor, using land use and zoning databases developed by CRCOG

Final recommendations for the Parkville neighborhood were presented in June 2001. These recommendations included pedestrian and traffic linkages, urban design strategies, the design of a busway station, and zoning changes that will better integrate planned transportation improvements and development projects with the neighborhood. As part of this project, West Hartford has also developed a best practices guide that includes model policies, zoning ordinances, and design practices to assist communities throughout the Hartford region in implementing transportation, land use, and economic development strategies that preserve and enhance community character.

- **Houston, Texas** – The Main Street Corridor Planning and Research Project is a multi-year TCSP project receiving nearly \$3.4 million in federal funds between FY 1999 and FY 2001, including \$935,500 in TCSP funds. Local contributions of cash and in-kind services are valued at over \$800,000. While the City of Houston is the grantee, the Main Street Coalition, a broad-based group of public, private, and non-profit stakeholders, is coordinating the actual work. The project included three components:

²⁹ Adapted from case studies at the FTA web site: <http://www.fta.dot.gov/wtw/casestudies/toc.html>; The final report for this project is also available on the web at www.njtpa.org/planning/jarc/jarc.htm

- Preparation of a corridor Master Plan and a Strategic Plan to guide implementation
- Evaluation of the planning process, data collection on existing transportation conditions, and development of a land development forecasting and evaluation model
- Implementation of coordinated physical improvements to roadways, pedestrian, and transit facilities

This eight mile-long corridor, once the economic core of the region, had experienced several decades of decline as development spread outward and shifted to other parts of the region. However, renewed interest and private investment in the early 1990s stimulated private and public efforts to guide the revitalization and redevelopment of the Main Street Corridor. Local business and civic leaders formed the Main Street Coalition and helped coordinate public infrastructure improvements by the City of Houston, the Houston Metro transit agency, and the Texas DOT.

The resulting Main Street Corridor Master Plan was made public in August 2000. It is organized around seven geographical districts. The plan establishes a number of principles for the corridor including:

- A continuous and inclusive corridor, spanning at least two blocks on either side of Main Street for its entire length
 - Higher coverage, higher density, and a mix of uses
 - Parking resources at intersections with major highways (10,000 spaces are recommended)
 - LRT stations to become the focus of smaller districts
 - Emphasis on the public environment
 - Landscape connections throughout the corridor for recreation, aesthetics, and flood control
- **Shreveport, Louisiana** – The Northwest Louisiana Council of Governments is working to establish Shreveport's core inner-city neighborhoods as a regional technology and residential center focusing on a 2,400-acre "InterTech" area that once thrived as an urban industrial district. This area has recently atrophied as businesses have moved out to the perimeter into modern industrial parks and the surrounding neighborhoods experienced residential dislocation and disinvestments because of the loss of jobs.

The InterTech community redevelopment project is supported by a FY 2000 TCSP grant of \$225,000. This grant is being used to create an economic and transportation plan for the InterTech area as well as community preservation and transportation plans for the surrounding neighborhoods. The goal of local planners is to reduce the need for regional infrastructure investment with the redevelopment of this urban area with existing infrastructure (i.e., electric, water,

sewer, gas, public transportation, and two interstate highways). The project also expects to create 5,000 new jobs in this inner-city area where unemployment levels are high and many people depend on transit.

2.3 OTHER FEDERAL PROGRAMS

Certain other federal departments offer grant funding programs that can be used in funding transit projects. These may not be available or suitable for funding major portions of these transit projects, but these programs can be used for particular portions of these projects. For example, HUD grants can be used for joint development residential projects surrounding stations areas or portions of the station areas. The following sections present several of these programs that can be accessed to fund particular portions of transit projects.

2.3.1 HUD Community Development Block Grants³⁰

The Department of Housing and Urban Development's (HUD) Community Development Block Grants (CDBG) Program is authorized under Title I of the Housing and Community Development Act of 1974. It provides eligible metropolitan cities and urban counties (i.e., "entitlement communities") with annual direct grants to revitalize neighborhoods, expand affordable housing and economic opportunities, and/or improve community facilities and services. It is principally intended to benefit low- and moderate-income persons, prevent or eliminate slums, and meet other urgent community-identified development needs. Entitlement communities may use CDBG funds for a wide variety of activities including:

- Acquiring real property (primarily land, buildings, and other permanent improvements to the property) for public purposes
- Reconstructing or rehabilitating property
- Building public facilities and improvements, such as streets, sidewalks, stations, sewers, water systems, community and senior citizen centers and recreational facilities
- Helping people prepare for and obtain employment through education and job training, welfare-to-work activities, and other services including transportation
- Assisting for-profit businesses for special economic development activities such as micro-enterprise loans to low-income entrepreneurs, assembling land to attract new industry, or business expansion loans to help retain existing businesses that employ low-income workers
- Providing public services for youths, seniors, or the disabled including transportation
- Carrying out crime reduction initiatives

³⁰ HUD Community Development Block Grants web site, <http://www.hud.gov/progdesc/cdbgent.cfm>

- Assisting low-income home buyers
- Enforcing local building codes to reverse housing deterioration
- Paying for planning and administrative expenses, such as costs related to developing a Consolidated Plan and managing CDBG funds

One example of a CDBG project involving best practices in many areas (e.g., community planning, economic development, infrastructure, historic preservation, and public services) is the Nassau Urban County Consortium in Nassau County, New York.³¹ The goal of the Consortium is to provide a suitable living environment and preserve open spaces for county residents using a coordinated approach to development and focusing on revitalizing existing business centers. The County undertook several projects considering historic preservation, economic development, infrastructure improvements, and transportation needs. For instance, the revitalization of Bedford Avenue, a traditional shopping district, involved \$250,000 in Community Development Block Grant (CDBG) funds for infrastructure improvements (e.g., sidewalks, curbs, street lighting, and tree plantings) and \$100,000 in Empire State Development Corporation funds for facade improvements. Additional funding was provided for planning and consulting work. The local governments also coordinated on resurfacing the avenue and several arterial streets. A Master Plan was also developed in 1999 that described the linking of museums, shopping, hotels, office space, and a new sports arena with a future light rail system. Capital expenditures for transit-related items such as pedestrian improvements and connections to transit stations, made with CDBG funds, are eligible as local match for transit projects.

The CDBG program provides federal assistance to nearly 1,000 of the largest urban areas in the country. Recipients of CDBG entitlement funds include local governments with 50,000 or more residents, other local governments designated as central cities of metropolitan areas, and urban counties with populations of at least 200,000 (excluding the population of entitled cities). Local governments may carry out all activities themselves or award some or all of the funds to other organizations. A separate component of CDBG Program provides funds directly to states, which are allocated among localities that do not qualify as entitlement communities. In FY 1999, \$2.958 billion was awarded out of a \$4.75 billion CDBG allocation. Each year, the grant funds available for entitlement communities are allocated according to relative need on the basis of the higher of two formulas. The first considers the presence of overcrowded housing in the locality, its population, and poverty rate. The second uses housing age, population growth lag, and poverty rate. Approximately 70 percent of this amount is distributed by formula to entitlement communities.

In addition, the Section 108 Loan Guarantee Program is designed to assist local governments that are participating in the CDBG program with federally guaranteed

³¹ For many other examples of CDBG projects, the reader is referred to the HUD Blue Ribbon Practices web site, <http://www.hud.gov/ptw/keywords.html>

loans to support large economic development projects. This program allows local governments access to larger pools of capital by allowing them to pledge future CDBG grants as support for the loans.³² One such example of economic development and supporting services is in Jefferson County, Kentucky. Jefferson County and Jefferson Riverport International (JRI) forged a partnership to create an industrial park offering job opportunities to low and moderate-income residents of the county. The Jefferson County Community Development Office used Section 108 loans for the development of infrastructure at JRI. The \$9.5 million in Section 108 loan guarantee funds, which were paid off in 1995, were used to leverage about \$225 million in private investments. JRI currently has approximately 70 businesses employing about 4,500 persons. As a result of this program, there is a training and day care facility available to employees of the JRI and enhanced public transportation provided by the Transit Authority of River City from the low-income and moderate-income areas in Jefferson County to JRI. There is also affordable housing on property within JRI.

2.3.2 Employment Training Administration³³

The U.S. Department of Labor's Employment Training Administration (ETA) has made available two short-term Welfare-to-Work grant programs, each of more than \$1 billion. Three-quarters of these funds are being awarded to states and Private Industry Councils (PIC) that choose to participate on a formula basis. The remaining 25 percent of these funds are being used to fund nationally competitive grants that the ETA has awarded to PICs and their partners. Under these programs, transportation is an allowable expense but only when these services are not already available to program participants. In the first round of Welfare-to-Work grants, transit agencies in Michigan, Illinois, California, Virginia and Massachusetts were among the recipients. The following provides greater detail on the Department of Labor programs:

- **Welfare-to-Work Grants** — This \$3 billion formula and competitive grant program provides funding for those who are the most difficult to move from welfare to work. The states are recipients of the grants while local PICs administer the grants.
- **Trade Adjustment Assistance** — This program provides \$8.5 million of temporary benefits to workers whose employment has been adversely affected by increased imports. It also provides benefits for job training and necessary related services, specifically including transportation to training programs.
- **Employment Training Research and Demonstration Programs** — These sources provide a total of \$10.2 million in support for transportation services that are part of employment training projects.

³²Transit Station Communities Project, <http://www.todcommunities.org/finance.htm>

³³ Adapted from the Community Transportation Association of America web site at: <http://www.ctaa.org/ntrc/atj/pubs/innovative/innov7>

2.3.3 Department of Agriculture³⁴

The U.S. Department of Agriculture (USDA) has several grants and loan programs that primarily support transportation and transit investments in rural areas. The following are highlights of such programs:

- **Intermediary Relending Program (IRP)** – This \$371 million program provides revolving loans to finance businesses and community development projects in rural communities and towns with less than 25,000 in population. Non-profit organizations, public bodies, Indian tribes, and cooperatives are eligible. Transportation is among the eligible uses of borrowed funds.
- **Community Transportation Development Fund (CTDF)** – This is a \$2.1 million fund of the Rural Business and Cooperative Services Division used to assist rural communities in improving or expanding local transit services, purchasing vehicles, building facilities and promoting economic development.
- **Business and Industrial Guaranteed Loan Program** – This is a \$738.2 million program of direct and guaranteed loans for any legally organized entity that is designed to create and save rural jobs and to improve the economic and environmental climates of rural communities under 50,000 population. This may include financing for transportation-related facilities, vehicle acquisition or other infrastructure investments.

³⁴ TCRP Synthesis 42, *Use of Flexible Funds for Transit Under ISTEA and TEA-21, Transit Cooperative Research Program*, National Academy Press, Washington, D.C., 2002

3 STATE AND LOCAL FUNDING SOURCES

The states and local agencies contribute significantly to the development of major capital transit projects. The overall proportion of capital funds contributed through nonfederal sources exceeds 50 percent. These mainly state and local agencies contribute either the matching share to federal grants, or sometimes the full funding amounts for projects when federal funds are not available. This section identifies those revenue sources used by the state and local governments and regional agencies to generate the necessary funding for major capital transit projects.

3.1 STATE FUNDS

Many states provide more than one source of funding for transit. Two of the most common sources of state funding are discretionary transfers from general funds and highway funds, and dedicated sources such as lotteries, special taxes or sales taxes. Transit systems in states that primarily rely on discretionary funding sources receive funds at the discretion of the state legislatures, resulting in state contributions that can vary from year to year. Transit systems in states with dedicated funding sources such as sales taxes or fees receive more consistent and reliable state contributions yet may still be susceptible to macro-economic volatility. Many states, such as California, Massachusetts, Illinois, Ohio, New Jersey, New York, Maryland, Delaware and Pennsylvania, also receive large amounts of revenue from independent toll and turnpike authorities.³⁵ For instance, the Delaware River Port Authority contributes tens of millions of dollars each year to PATCO, the rapid rail line linking suburban New Jersey and Philadelphia, and the New York Metropolitan (MTA) Bridges and Tunnels Division has contributed more than \$750 million annually to the other MTA transit agencies for operating and capital project funding.

Many states allocate a portion of highway user fees for transit purposes, thereby, funding public transportation with highway fund revenues. This approach is used in California, Florida, Michigan, North Carolina, and Virginia. Other states, including Ohio and Pennsylvania, allocate general funds, rather than highway funds, for transit purposes. In addition, states may use a wide variety of revenue sources to fund and finance transit. Some states identify a specific source for transit funds, others commit annual amounts or percentages of funds to transit, and still others use non-traditional sources such as lottery proceeds, special taxes, tolls or benefit assessment districts. **Table 5** provides a summary of select state sources used for funding transit with brief descriptions. This table is intended to illustrate the various state funding programs available to transit projects and not to be a complete resource of all state funding programs. The following sections provide several additional examples of state funding sources and programs in greater detail.

³⁵ *Transit 2001 Technical Report*, <http://www.ncdot.org/transit/transitnet/Activities/T2001/TechReportSec3.4.html>

Table 4: Summary of Select State Funding Sources for Transit ³⁶

State	Sources
California ³⁷	<p>Sales and Use Tax (statewide 7.25% retail sales tax rate)</p> <ul style="list-style-type: none"> • Voters in various localities have approved the creation of one or more special tax districts (each funded by transaction taxes ranging from one-eighth to one-half percent). • This added tax is used for mass transit programs, streets and roads, and other government services. • In FY 99-00 the state collected approximately \$25.60 billion in sales taxes for the state, \$5.24 billion for cities and counties, and \$2.78 billion for special districts. • Sales and Use Tax on Motor-Vehicle Fuels (4.75% statewide) • Net revenue deposited into Public Transportation Account of State Transportation Fund. • Supports state and local transportation planning for transit.
Florida ³⁸	<p>State Transportation Fund</p> <ul style="list-style-type: none"> • Revenues collected from nine sources including fuel taxes, license fees, registration fees, title fees, vehicle rental fees • Through FY 2000, a minimum of 14.3 percent of State Transportation Trust Fund receipts was allocated to public transit projects. Beginning in FY 2001, the minimum was raised to 15 percent. • A minimum of 10% of fuel sales tax receipts must be allocated to public transit and capital rail projects.
Michigan ³⁹	<p>Comprehensive Transportation Fund</p> <ul style="list-style-type: none"> • A portion of highway user fees from gasoline taxes and registration fees are deposited into a Statewide Transportation Fund. • A minimum of 10% is designated for public transportation in the following order of priority: <ol style="list-style-type: none"> (a) Payment of principal and interest on notes or bonds issued for comprehensive transportation (b) Costs of administration (c) Formula operating assistance, new small bus and specialized services, inter-city passenger and freight transportation, and specific line item appropriations • The fund is distributed as follows: <ul style="list-style-type: none"> – 70% for formula operating assistance - per formula percentage of eligible operating expenses less Federal operating grant – 20% for public transportation purposes – 10% for inter-city passenger and freight transportation

³⁶ For more information, the reader is referred to the FHWA's web site at:
<http://www.fhwa.dot.gov/ohim/twytaxes/2001/index.htm>

³⁷ California State Board of Equalization, <http://www.boe.ca.gov>

³⁸ <http://www.fhwa.dot.gov/ohim/twytaxes/2001/florida.htm>

³⁹ <http://www.house.state.mi.us/hfa/grants01.pdf> and <http://www.fhwa.dot.gov/ohim/twytaxes/2001/michigan.htm>

State	Sources
Michigan	<p>Transportation Economic Development Fund</p> <ul style="list-style-type: none"> About \$45 million for transportation projects relating to the following categories: <ul style="list-style-type: none"> (a) Industries (agriculture, tourism, forestry, high technology research, manufacturing, or office centers) (b) Addition of county roads, city or village streets to the state trunk line system (c) Reduction of congestion on county primary and city major streets within urban counties (d) Development within rural counties on county rural primary roads; major streets within villages and cities with a population of less than 5,000.
Pennsylvania	<p>Lottery Proceeds</p> <ul style="list-style-type: none"> Statewide lottery proceeds and other sources reimburse transit operators for 100% of the costs incurred for providing free transit services to elderly citizens
Virginia ^{40, 41}	<p>Highway Maintenance and Operations Fund</p> <ul style="list-style-type: none"> Revenues from gasoline taxes, motor-vehicle excise taxes, registration fees and tire tax Transit receives 2% of the total <p>General sales tax of 0.75%</p> <ul style="list-style-type: none"> Deposited into a Transportation Trust Fund 8.4% is allocated to transit (Commonwealth Mass Transit Fund) <ul style="list-style-type: none"> High Priority Transit Project Fund created as a non-reverting special sub-account within the Commonwealth Mass Transit Fund Fund used to cover capital expenditures associated with mass transit projects approved by the Commonwealth Transportation Board and may be used to support the issuance of revenue bonds <p>Deed-recording fee for all statewide property transactions</p> <ul style="list-style-type: none"> A portion is used to pay local bond issues that fund transit projects
Washington ⁴²	<p>State Transportation Fund</p> <ul style="list-style-type: none"> Created by the legislature in 1990 Receives revenue from statewide motor-vehicle excise tax rate of 0.725% 1/4 of the revenues are returned to the region where they were collected to be used for transit

3.1.1 New York State Transit Operating Assistance⁴³

The New York State Department of Transportation distributes over \$1.6 billion annually in State Mass Transportation Operating Assistance (STOA), and other transportation assistance, to approximately 130 transit operators. New York State transit systems carry nearly one-third of the nation's transit riders and provide nearly one-quarter of transit

⁴⁰ <http://www.fhwa.dot.gov/ohim/hwytaxes/2001/virginia.htm>

⁴¹ <http://www.drpt.state.va.us/business/grants.htm>

⁴² TCRP Synthesis 42, *Use of Flexible Funds for Transit Under ISTEA and TEA-21*, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 2002

⁴³ Adapted from New York State Department of Transportation web site, <http://www.dot.state.ny.us/pubtrans/stoa.html>

services nationwide. Over the past five years statewide ridership has increased by about 30 percent.

In State Fiscal Year (SFY) 1975-76, the New York State Legislature enacted a permanent, on-going STOA Program with appropriations from the state's General Fund and administered by the State Commissioner of Transportation. In SFY 1981-82, in response to anticipated continuing operating deficits of State mass transportation systems, the legislature enacted a series of taxes. Portions of these proceeds are deposited in the Mass Transit Operating Assistance (MTOA) fund. This fund is subdivided into upstate and downstate dedicated tax fund accounts. The upstate account provides funding to all transit systems outside the 12-county metropolitan transportation commuter district. A portion of the Petroleum Business Tax (PBT) is the sole dedicated revenue source for the upstate account. The downstate account provides funding to transit systems in the 12-county New York metropolitan transportation commuter district and consists of revenues from the following sources:

- A portion of the PBT
- The MTA Corporate Tax Surcharge
- A ¼ percent Sales Tax in the MTA region
- The Long Lines Tax

The STOA payment formula for January-March 2002 was \$0.405 per passenger plus \$0.69 per vehicle mile for both upstate and downstate. In SFY 2001-02, STOA funds and other transportation assistance from all revenue sources accounted for approximately \$1.6 billion in operating aid statewide. This level of appropriation is supported by additional general funds for upstate transit systems and dedicated transportation funds for downstate transit systems. In addition, a portion of the new non-MTA transit dedicated fund resources were used to enhance operating aid. STOA funds distributed require a 100 percent local match. In SFY 2001-02, the portion of the total STOA appropriation subject to the required matching provisions remained at \$224 million. The SFY 2001-02 budget also continues to provide \$45 million for the Metropolitan Transportation Authority's reduced fare program for New York City school transportation. The City of New York matches that amount.

As part of the multi-year capital and operating financing plans approved in the early 1990's, the dedicated Mass Transportation Trust Fund was created in SFY 1993-94. The fund is financed from the share of PBT revenues allocated to transit as part of the State Dedicated Transportation Trust Fund (a separate fund from the MTOA fund used to finance STOA). This dedicated funding is split 37 percent for the Mass Transportation Trust Fund and 63 percent for the Highway and Bridge Trust Fund. The Mass Transportation Trust Fund is further split 34 percent to the MTA and 66 percent to the non-MTA systems.

3.1.2 Sales Taxes in Texas⁴⁴

Texas has eight transit authorities that receive funding from the state-collected transit sales tax. More than half the Texas population lives or conducts business with retailers in the jurisdictions served by the state's transit authorities. Businesses in the transit authorities collect a special transit sales tax of up to 1 percent, along with other state sales and use taxes and any applicable local sales and use taxes. Retailers collect the transit sales and use tax on the same items that are subject to state and other local sales and use taxes. The jurisdictions served by the transit authorities in Austin, Dallas, and Houston are taxed at a rate of 1 percent, while the jurisdictions served by the transit authorities in Corpus Christi, El Paso, Fort Worth, and San Antonio are taxed at a ½ percent rate. The City of Laredo is taxed at a rate of ¼ percent.

3.1.3 North Carolina Highway Trust Fund⁴⁵

North Carolina allocates public transportation investments for a wide range of needs including urban operating assistance (the largest single component of state transit funding/expenditure in the state), urban capital investments, rural capital investments, rural operating support, support for transportation for rural elderly citizens and rural residents with disabilities, inter-city bus services, and inter-city rail passenger programs. North Carolina has two primary sources of state revenue for public transportation. The nearly \$20 million in state funds for transit originates from two sources:

- Discretionary transfers from the state Highway Trust Fund: The Highway Trust Fund totaled about \$700 million in fiscal year 1995-96 and is supported primarily by revenues from motor fuel taxes, vehicle taxes and vehicle title fees.
- Allocations from the state Highway Fund: According to statute, an amount at least equal to \$0.50 multiplied by the total number of registered vehicles in the state is allocated to transit from the state Highway Fund.

3.1.4 California Transportation Development Act⁴⁶

California's mass transit systems are funded by a wide range of sources including passenger fares (28 percent of all operating revenues and 23 percent of total transit revenues), the statewide sales tax (about 20 percent of all revenues), federal grants (about 13 percent of all revenues), countywide sales taxes (about 12 percent), local

⁴⁴ *Texas State Comptroller of Public Accounts web site,*
http://www.window.state.tx.us/taxinfo/taxpubs/tx96_285.html

⁴⁵ "Transit 2001" Technical Report to the Governor of North Carolina, February 1997. Available on-line at
<http://www.ncdot.org/transit/transitnet/Activities/T2001/TechReportContents.html>

⁴⁶ <http://www.tamcmonterey.org/funding/tda.htm>; For more detailed information, the reader is also referred to the Caltrans Mass Transportation web site at: <http://www.dot.ca.gov/hq/MassTrans>

transit district sales taxes, property taxes, general fund monies, and other local and state grants.⁴⁷

The State Legislature established the Transportation Development Act (TDA) in 1971 and it provides two of the major funding sources for public transportation in California – the Local Transportation Fund (LTF) and the State Transit Assistance (STA) fund. The TDA is intended for any transit district, municipal operators, or development board in California provided they meet certain requirements such as a minimum farebox recovery ratio. The TDA Program funding priorities include:

- Administration
- Planning and Programming
- Pedestrian and Bicycle
- Rail Passenger Services
- Transit Development Board Area
- Community Transit Service
- Public Transportation
- Miscellaneous Transportation

The LTF is derived from a ¼ cent of the 7.5 percent general sales taxes collected statewide. The revenues generated by the ¼-cent sales tax are returned to every county in the state, where the taxes were collected, and deposited in the LTF account. Every county in the state has established an LTF account. Based on the amount received in the LTF account, the Regional Transportation Planning Agency (RTPA) for that county apportions the LTF according to population. After funds are apportioned, transit operators submit claims requesting funds.

The STA fund derives its revenue from statewide sales tax on gasoline and diesel fuel appropriated to the State Controller's Office (SCO) by the Legislature for allocation to transit operators by RTPAs (Regional Transportation Planning Agencies). Fifty percent of the STA funds are allocated according to the ratio of population of the area of the RTPA to the total population of the state. The remainder is allocated according to the ratio of the total revenues of all the operators in the area of the RTPA that were generated during the prior fiscal year, to the total revenues of all the operators in the state.

3.1.5 Bond Issuance in Massachusetts

Chapter 161A of the General Laws of Massachusetts provides the authority for the Massachusetts Bay Transportation Authority (MBTA) to utilize debt financing. Under the provisions of Chapter 161A, bonds issued by MBTA constitute direct and general obligations of the Authority. The law provides that if at any time the Authority lacks

⁴⁷ http://www.transact.org/Ca/public_transport7.htm

funds to pay a bond or note issued or assumed by it, the Authority shall requisition the required amount from the Commonwealth. In the opinion of bond counsel, the obligation of the Commonwealth to pay the required amount to the Authority is a general obligation of the Commonwealth and the full faith and credit of the Commonwealth is pledged to make such payment. Revenue for the bond repayment comes from two primary sources:

- Property tax levied within the cities and towns of the Authority's service area
- State annual appropriations in the form of "Section 28 Contract Assistance" and "Additional Contract Assistance"

Property tax assessments are levied in the cities and towns of the MBTA service area to cover additional costs. Additional Contract Assistance is provided by appropriation for the purpose of reducing the amount of the net cost of service to be assessed upon the cities and towns.

3.1.6 Maryland Transportation Trust Fund⁴⁸

The State of Maryland funds an integrated account called the Transportation Trust Fund. It was created in 1971 to establish a dedicated source to support the Maryland Department of Transportation (MDOT). The use of this integrated trust fund allows flexibility in meeting various transportation service and infrastructure needs. All MDOT activities are supported by the Trust Fund (including debt service, maintenance, operations, administration, and capital projects) and all funds apportioned to MDOT are deposited in the Trust Fund for disbursements. Trust Fund revenues are not earmarked for specific programs but are allocated in conjunction with state and local elected officials. Unexpended funds remaining in the Trust Fund at the close of the fiscal year are carried over and are not reverted to the State's General Fund.

Sources of funds include motor fuel taxes, motor vehicle excise (titling) taxes, motor vehicle fees (registrations, licenses and other fees), and federal assistance. In addition, the Trust Fund also includes corporate income taxes, operating revenues (e.g., transit fares, port fees, airport fees), and bond proceeds. Certain Trust Fund revenues are shared with other state agencies and local governments based on statutory requirements. For instance, funds in the Gasoline and Motor Vehicle Revenue Account are distributed 70 percent to MDOT, 15 percent to Baltimore City, and 15 percent to the counties and municipalities based on motor vehicle registrations and road miles. Deductions are also made for certain General Fund purposes, including environmental, fuel tax collection, and state police programs.

After the state agency and local government deductions, the remaining funds are allocated for debt service, MDOT operating expenditures, and MDOT capital

⁴⁸ Adapted from the Maryland Department of Transportation web site at: <http://www.mdot.state.md.us/transfund/>

expenditures. MDOT expenditures cover various transportation modes including the following: State Highway Administration (SHA), Maryland Transit Administration (MTA and MARC commuter rail, Washington Metropolitan Area Transit Authority (WMATA), Maryland Port Administration (MPA), Maryland Aviation Administration (MAA), and Motor Vehicle Administration (MVA).

3.2 LOCAL FUNDS

Local funding of transit has been a key revenue source since the transit operations were still privately owned. Many of the older transit systems went through a period of declining passenger revenues and the introduction of some very limited local governmental funding. These sources were mainly concentrated in the assistance with facility capital and subsequent maintenance funding and the subsidized city school bus services. As the private operators began failing, cities and urban regions developed quasi-governmental organizations to assume operations and include some local funding sources within the operating budgets of these organizations. As the service needs expanded for these systems and the needs were created for the developing systems, additional funding sources were identified for these transit systems. This section identifies many of the funding sources used in the capital funding of major transit capital projects for these systems.

3.2.1 Dedicated Local Sales Taxes

Dedicated local taxes typically represent the most stable and reliable source of funding available to a transit system.⁴⁹ Unlike most other sources of transit capital or operating funds, where an operator must compete with other potential uses of scarce funds, these funds are clearly committed to supporting the specific needs of a specific transit agency. This commitment of funds typically allows the agency to issue debt against the future stream of tax receipts, providing additional capacity with which to fund expensive capital projects. Finally, dedicated tax sources frequently yield sufficient capacity to fund both capital and operating needs. Given these qualities of reliability, stability and commitment to transit uses, agencies with strong dedicated tax sources have typically obtained the highest financial plan ratings through the FTA's New Starts process and enjoy a greater likelihood of gaining access to FTA Section 5309 New Starts funds. As of 1998, approximately 50 percent of American transit systems had access to some dedicated local tax source.

The most common form of local tax dedicated to transit use are sales taxes. Other examples include utility taxes, property taxes, gasoline taxes, car rental taxes, airport access fees, payroll taxes, automobile registration and excise taxes. While a dedicated local tax can be a significant source of revenue, implementation may be a considerable

⁴⁹ *TCRP Report 31: Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 1998*

challenge, even in a positive economic environment. Therefore, an agency seeking funding through a dedicated tax should develop a strong public outreach plan tying the benefits of transit to the entire community.

The following are several brief examples of taxes dedicated to transit:

- **The Metropolitan Atlanta Rapid Transit Authority (MARTA)** in Atlanta Georgia collects a one percent sales tax on items sold in MARTA's service area. MARTA uses these funds to cover roughly one-half of system operating costs, provide the local match to system capital investments (including MARTA's 45 mile heavy rail system) and to cover the agency's debt service payments. The enabling legislation requires MARTA to spend roughly one-half of tax receipts on operating costs and the remainder on agency capital investments. In 2032, the sales tax will fall from one to one-half percent. This time period corresponds with the completion of MARTA's rail investment program and repayment of related debt issues. The tax is collected by area merchants who then forward the receipts to Georgia's State Revenue Commissioner. The Commissioner then withholds MARTA's monthly debt service payments and forwards the balance to MARTA. The State of Georgia charges MARTA a handling fee of one-half percent of total tax receipts; area merchants also retain a portion of the tax for this purpose. These handling fees detract from MARTA's total receipts from this source.
- **The Fort Worth Transportation Authority (The "T")** collects a half-cent sales tax on items sold in the T's service area. Tax receipts are used to fund both agency operations (roughly 70 percent of total operating costs) and system capital investments. The ½ percent sales tax replaced an earlier property tax used for the same purpose.
- **Washoe County Nevada, (Reno)** received voter approval in 1982 for a one-quarter percent sales tax for general transit and for transportation for passengers who are elderly or have disabilities. In 1997 their receipts were approximately \$10 million providing their largest source of funding.⁵⁰
- **Pierce Transit** located in Tacoma, Washington suffered a significant setback in November of 1999 when voters repealed the state motor vehicle excise tax. This tax comprised about 40 percent of Pierce Transit's revenue. Recently, the voters of Pierce County approved a 0.3 percent sales tax dedicated to transit. The tax is estimated to generate approximately \$27 million annually for Pierce Transit.⁵¹

⁵⁰ TCRP Report 31: *Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 1998*

⁵¹ "Newly approved tax increase saves Washington transit agency", *Metro Magazine, April 2002*

3.2.2 Advertising

The sale of advertising space on transit assets can generate a significant source of operating or capital funds. A survey conducted by the Transit Cooperative Research program found that 85 percent of surveyed agencies sell or lease advertising space and that roughly three fourths of those agencies contract for the service. The study found that among advertising agencies revenues generated ranged from \$1,000 a year in Dayton, Ohio (policy limits advertising to non-profits for a nominal fee), to \$17 million in New York City.⁵² The study also found that among respondents the percentage of operating costs covered by advertising range from .11 to 5.98 percent. These funds can be used to support either the operating budget or in the capital budgets as local matching funds.

Transit agencies considering the implementation of an advertising program should consider legal, operational, safety, and aesthetic issues. Legal concerns include local sign codes and agency control over ad content. Operational concerns include a reduction in the transit operator's flexibility in order to meet the needs of advertisers and scheduling of busses for advertising related activities. Safety concerns may include decreased visibility and opportunities for vandalism. Finally, many agencies are concerned with the degradation of their public image.

Traditional forms of advertising space sold by agencies include exterior bus posters, wrapped buses, interior posters, bench and shelter ads, fare cards and transfers, schedules and even trestles and overpasses. Many new and innovative forms of advertising include the sponsorship of morning traffic reports, fast food restaurant scratch off games, wrapping trains, station naming rights, and creative use of electronic display boards and public address systems.

LYNX in Orlando, Florida maintains an aggressive in-house advertising program comprised of two full-time commissioned staff people who work to sell the available space on approximately 250 buses, 100 bus shelters, and print ads on schedules. LYNX makes a 10 percent commission on bus ads, and a 15 percent commission on shelter ads netting in the range of \$2.5 to \$3 million per year, which amounts to approximately 5 percent of the agencies operating budget.⁵³

3.2.3 Motor Fuels Sales Tax

The use of a motor fuels tax to fund and finance a transit project could be considered. The Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC) currently utilize this motor fuels tax.

⁵² TCRP Synthesis 32, *Transit Advertising Revenue: Traditional and New Sources*, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 1998

⁵³ *Ibid.*

A percentage tax is imposed on retail sales of fuels sold within the designated region defined typically by the transit agency service area. These funds can be applied to operations, capital expenses or debt repayment of transit systems or specific projects in the district, or for any other transportation purpose in the district.

3.2.4 Vehicle License Fees

State and local governments have collected vehicle-licensing fees for the generation of transportation funds. These funds can be used as an increment to the local governmental bodies for their transportation projects. A portion of the local funding to major transit capital projects could be from increases in the vehicle license fees.

3.2.5 Alcohol or Cigarette Taxes

Local and state governments have taxed alcohol and tobacco to generate general fund revenue. These sources have contributed revenues to the state and local funds used for transit capital projects. Philadelphia uses an alcohol tax for all served drinks in the city. As a general fund revenue source, these funds are then applied, among many public infrastructure projects in the city, including major transit capital projects for SEPTA.

3.2.6 Corporate Income Tax

This is a direct taxation on the corporate income generated in that state or region. There are a limited number of transit agencies that use this tax, such as the New York Metropolitan Transportation Authority. New York MTA allocates a portion of these funds back to the regional transit agencies for funding the five-year capital program.

3.2.7 Personal Property Tax

This local or state revenue source taxes the value of personal property such as automobiles, art, stocks and bonds. Measurable funding levels have been raised through personal property taxes such as the Commonwealth of Virginia's tax on automobiles and other motor vehicles. A portion of these funds is allocated to the local governments and is used by the local transit agencies to fund capital projects.

3.2.8 Employer Payroll Tax

Portland, OR uses this tax to fund transit, paid by employers based on gross payroll. It has the potential for significant growth as the region grows economically, but is not directly tied to transportation and may face significant opposition from the local business community.

3.2.9 Mortgage Recording Tax

The State of New York uses this tax to generate revenue for individual transit systems statewide. Tax revenues from recordation fees on mortgages of certain real property are used to fund capital programs and/or repay bond issues to benefit transit capital programs.

3.3 PUBLIC PRIVATE PARTNERSHIPS

Public-private partnership is a broad term used to define mutually beneficial commercial relationships between transit agencies and private enterprises or entities.

Transit public-private partnerships include:

- Joint Development
- Benefit Assessment District
- Tax Increment Financing
- Super Turnkey or Design-Build-Operate-Maintain delivery of capital projects
- Private sector investment in transit facilities/vendor financing

3.3.1 Joint Development of Transit Assets^{54,55,56,57,58}

There is a great deal of flexibility in FTA's treatment of Joint Development, particularly as this relates to transit supportive development in FTA's "Livable Communities Initiative." Grantees can lease air rights above a transit station, or transfer the FTA interest in one property to another, to allow the private development or other use of the property. FTA funds cannot generally be used to support development of property that is not directly adjacent to the transit facility. However, if property can be subdivided, the FTA interest can be vested wholly in one part while the other would be considered 100 percent local share, for purposes such as leasing or mortgaging, which allows the transit system to actively support land use changes that increase transit use and program income. Joint development proposals will be reviewed and approved by FTA on a case-by-case basis.

FTA has actively supported joint development as a strategy for enhancing transit ridership and revenue and for promoting the Livable Communities Initiative. To facilitate transit

⁵⁴ NCHRP *Innovative Finance*, <http://www.innovativefinance.org>

⁵⁵ TCRP *Legal Research Digest Number 13, Transit Cooperative Research Program, August 1999*

⁵⁶ *Innovative Financing Techniques for America's Transit Systems, Federal Transit Administration, September 1998*

⁵⁷ *Innovative Financing Handbook, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhmbk.html>*

⁵⁸ TCRP *Report 31: Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 1998*

joint development projects, FTA, as described in a March 14, 1997 Federal Register, will make grant funds available for joint development and allow the proceeds from the sale, lease, or other encumbrance of property for transit oriented development to fund capital and operating expenses.

Transit agencies are allowed to sell property as excess for non-transit use, lease the property for incidental, non-interfering use by others while the property is held for a future identified transit use; or they can undertake a transit-oriented development on the property site. In the case of the sale of a property where there would no longer be a continuing transit use, the transit agency would be required to return the pro-rata federal share of the net proceeds from the sale to the U.S. Treasury.

Transit oriented joint development can be undertaken through a sale or lease of federally funded property, or through the direct participation of the transit agency in the development. FTA requires that to qualify as a “transportation project,” the transit agency must retain sufficient continuing control over the property to ensure its continuing relationship to transit. The FTA policy noted that continuing control can be accomplished through the use of easements, or contract/lease clauses that would allow the property to revert to the transit agency if access was unreasonably curtailed.

To be eligible for consideration as a transit oriented joint development, FTA requires that the project:

- Has a transit element *and*;
- Enhances urban economic development, or incorporates private investment *and*;
- Enhances the effectiveness of a transit project, and the non-transit element is physically or functionally related to the project, *or*;
- Creates new or enhanced coordination between public transit and other forms of transportation, *or*;
- Includes non-vehicular capital improvements that result in increased transit usage

In addition to the above, FTA identifies several financial criteria that would be used to evaluate a transit joint development project:

- The project would generate either a one time payment or revenue stream where the present value equals either the current market value or the appraised value of the property, taking the highest and best transit use into account.
- When more than one joint development project would be undertaken, the combined revenue streams from all the projects may be balanced against the cumulative appraised value of the real estate on a portfolio basis.
- As long as the transit agency retains effective continuing control of the joint development project, FTA will not consider it to be disposition of property. However, if the transit agency does not maintain effective continuing control, the

agency may be liable to repay the federal share of the current market value of the property.

The following identifies the range of joint development and benefit capture strategies that are typically used by transit agencies

Leasing/Selling Development Rights: In most instances the transit agency sells or leases the rights to develop the air space over a transit station. This provides a direct economic benefit to the private developer, as well as to the transit agency that can earn a stream of revenues, or in some cases, a one-time payment. For example, the redevelopment of South Station in Boston included the construction of office and retail space above and adjacent to the station. According to a 1991 FTA Joint Development report, the Massachusetts Bay Transportation Authority (MBTA) spent \$60 million to restore the station's shell before turning the project over to the private developer. In exchange for the development of the air rights, the developer agreed to pay 50 percent of the annual operating and maintenance cost of the station. In addition, the developer provided a higher quality building finish and HVAC system than the MBTA would normally install in a transit station.

Leasing/Selling Land or Facilities: Leasing of land-based facilities can occur through either a traditional ground lease or a sale/leaseback mechanism (although approval of sale/leaseback mechanisms are on hold as of the publication of this document pending a federal government review of the procedure). A ground lease is similar to the concept of leasing air rights in that the transit agency would lease the rights to develop a piece of publicly-owned property. This provides an opportunity for joint development at a station as well as a steady stream of income for the agency. Selling land or facilities that are publicly owned can provide immediate revenues for the transit agency while also disposing of public assets.

In a sale-leaseback program, the transit agency would sell a land-based facility to a private owner, who then uses the revenues from the lease payment to cover the debt assumed for the purchase. The transit agency receives cash for the sale that can be used for other purposes, while maintaining the use of the property. The private party receives the benefit of depreciation allowances for the property without incurring additional expenses. In some cases the value of the real property could appreciate over time, providing an additional benefit to the private developer. As of the publication of this report, February 2004, approval of sale/leaseback mechanisms is on hold pending a review of the procedure.

One of the most successful projects of this type is the development above WMATA's Ballston Station in Arlington, Virginia. This is a 28 story, 711,500 square foot, mixed use development, which was completed in the early 1990's that includes a hotel, condominiums, retail, parking, a bus terminal facility and direct access to both Metrorail and Metrobus services. The joint development included the lease of over 72,000 square

feet of property owned by WMATA to the developer and the sale of 15,000 square feet of WMATA owned property to the developer.

In 1997 the FTA issued a revised "Policy on Transit Joint Development." The policy statement announced that real property acquired with Federal grant funds could be used to support transit oriented joint development. Further, if the joint development produced income for the transit system, it was to be considered "program income" as defined by the Common Grant Rule, and freely usable by the transit system for eligible transit purposes. In all transactions the FTA requires that the transit agency retain effective continuing control over the asset for transit purposes. This allows for the sale of property to a developer, given the transit operator maintains assurance that the development will remain accessible to the transit system over the life of the project.

The Washington Metropolitan Area Transit Authority (WMATA) defines joint development as a lease of agency land near rapid transit stations. WMATA encourages joint development through the leasing of land and air rights over stations or connection and cost-sharing arrangements with properties on WMATA owned land surrounding transit stations. In exchange for building a connection to a station, property owners grant WMATA easements, contribute to station construction costs, and pay annual connection fees.

During construction of the Rosslyn Station in Arlington, Virginia, a developer approached WMATA, proposed a development over parts of the station, and asked for the air rights to land that was being used as a bus turnaround. This agreement became WMATA's first joint development projects. In the 1970s WMATA signed an additional land lease deal with a developer to build an office and retail complex over the Farragut North Station. This lease now generates \$1 million per year. Since that time WMATA has developed a formalized joint development program and actively solicits projects. It is estimated that WMATA collects nearly \$6 million in joint development revenue each year.

The Miami-Dade Transit Agency recently completed a joint development project on the site of a 9.2 acre park-and-ride lot adjacent to the Dadeland North Station. The land was originally purchased with funds from an Urban Mass Transportation Administration grant. Phase 1 of the project involved a "vertical mall" containing approximately 315,000 square feet of retail space at a cost of approximately \$40 million. The developers of the vertical mall, a joint venture of Jeff Berkowitz & Co. and Mark Millgram & Co., entered into a 90-year ground lease with Miami-Dade for the use of the Dadeland North site. Under the terms of the lease, Miami-Dade will be paid not less than \$100,000 per year, plus 5 percent of gross revenues from the operation of the vertical mall. This 5 percent portion of revenues will result in an estimated \$1.5 million annually. MDT estimates the project will result in an additional 200,000 riders per year.

In developing the communications system for the Metrolink light rail system the Bi-State Development Agency entered into a partnership with WorldCom. Under the agreement WorldCom paid for the installation of fiber-optic cable along BSDA's rail right-of-way. WorldCom retained ownership of the fiber and agreed to pay BSDA right-of-way rent equal to \$1 per foot of cable along the 90,000 foot right-of-way per year. BSDA received usage of the fibers necessary to operate their communications system for \$1 per year. The agreement is scheduled to last 25 years.

3.3.2 Special Assessment Districts

The creation of special assessment districts is authorized in all 50 states to finance facilities or improvements with specific local benefits. The benefit assessment paid by entities within the established district is usually a fee on property used to pay all or part of the cost of capital improvements. Properties within special assessment districts are assessed in proportion to the benefits received. Special assessment districts that have been associated with transit improvements generally include properties within a specified distance of a planned transit station. These districts are commonly referred to as local improvement districts, road districts, benefit assessment districts, metropolitan districts or building authorities.

To capture benefits associated with enhanced real estate development partially attributable to improvements in transportation corridors, several jurisdictions have created special assessment districts. A special assessment is charged upon commercial real estate deriving a special benefit from a nearby capital improvement that is used to cover debt service for the improvement. The special assessment charge typically cannot be more than the cost of the improvement. Frequently, the assessment is apportioned on the basis of the front footage of the land, although other valuations such as the land area, or the value of the property benefited are also used. Benefit assessment districts have been used to finance transit improvements in Denver, Seattle, Minneapolis and Miami as well as highway improvements in Northern Virginia. The assessments rate can be levied uniformly for all commercial property owners within the benefit assessment district, or on a graduated rate based on distance from a rail station. The graduated rate, which was used in Denver for the 16th Street Benefit Assessment District, recognizes that benefits of a transit project are related to proximity to the project. Accordingly, the assessment rate is highest for the properties nearest to the transit station and lowest for those at the boundaries of the district.

- **Cost Sharing:** Developers and property owners wishing to have transit stations integrated with their commercial facilities are sometimes willing to share operating expenses and/or contribute to capital construction costs. Cost sharing can substantially reduce the costs to the public of constructing selected elements of transit facilities. Typical cost sharing arrangements include private developer funding of elements of a transit station, or the donation of land for a station.

Cost sharing arrangements have widely been used by New York City Transit and SEPTA to improve existing stations.

- **Concession Leases:** Transit agencies lease space to retail companies and independent vendors. At a minimum this involves the lease of excess space to newspaper stands and convenience centers. A more aggressive approach includes the cooperative design and development, or renovation or rehabilitation of station space. This more expansive strategy has been applied by SEPTA at commuter rail stations.
- **Density Bonuses:** Similar to the joint development concept, a municipality may provide incentives to developers in exchange for construction of station facilities or amenities. By granting a “density bonus” to a developer, the municipality allows a developer to build at a higher density (usually measured by floor-to-area ratio, or FAR); thereby enabling the developer to gain greater profit from the property. Increased density at or near station areas also has positive effects on transit ridership.
- **Tax Increment Financing:** Tax Increment Districts obtain funds from increases in ad valorem tax revenues that arise from a new infrastructure project. Tax increment districts differ from benefit assessment districts in that they use the diversion of regular tax revenues rather than additional fees. Tax increment financing is based on regularly recurring taxes, participation of all district taxpayers, assessments based on property values (although sales tax revenues have also been used as a basis for assessment). The incremental increase in tax revenues over a designated base year is diverted into a special fund, which can be used for debt service, or for reimbursing municipalities or private financial institutions.
- **Connector Fees:** Connector fees are charges to developers or owners of property that derive a benefit from being connected to an adjacent transportation facility. These are three types of fees: lump sum payments to cover capital costs of the connection to the station; an annual contribution to the operating capital costs of the facility; or “in lieu” dedication of property for station areas or easements. By having direct connections to commercial development, the transit system receives the benefit of additional riders.

Generally, property owners are more receptive to accepting a special assessment is imposed to provide for a specific public facility if it is demonstrated that the assessed property benefits in a substantial and appreciable way and that the benefit received is more than the assessment. This requirement makes their implementation much more complex and difficult to implement than general-purpose taxes.

Benefit assessment districts have been used to finance transit improvements in Denver, Seattle, Los Angeles, Minneapolis and Miami, as well as highway improvements in Northern Virginia. A graduated taxation rate is typically used based on the distance

from each station. The benefit assessment rate used in Denver for the 16th Street Benefit Assessment District recognized that the benefits are related to proximity to the project. Accordingly, the assessment rate is highest for the properties nearest to the transit station and lowest for those further away from the transit project or station area and at a lower benefit range from the station.

In Washington, D.C. a special assessment district has been established to help finance the construction of a new Metro station within the New York Avenue Corridor. The estimated cost of the new Metro station is \$75 million. Anticipated financing for the station consists of \$25 million each from the development community, the District's FY 2001 through FY 2004 capital budgets, and the Federal government. The New York Avenue Special Assessment District Subcommittee, consisting of city landowners and members of the development community, has signed a Memorandum of Understanding with the District that outlines a public/private financing plan to jointly fund the station. A special assessment will be levied on the properties directly benefited by the new Metro station, with the District and the Subcommittee working together to develop legislation for the implementation of the financing plan. The special assessment proceeds may be used to support a \$25 million bond issue.⁵⁹

In 1990, the Seattle Metro Council approved the Municipality of Metropolitan Seattle Local Improvement District No. 1. This Local Improvement District was established to assess properties in the downtown Seattle area to finance a portion of the downtown area transit improvements including the construction of four underground transitway stations, surface improvements, and the extension of the Waterfront Streetcar. The district was established to collect two lump sum amounts with one payment immediately after the establishment of the district and the second after ten years of project completion. The Metro Council set these lump sum amounts at \$13,648,000 and \$6,352,000. In total this would yield \$20 million, or 4.3 percent of the total project cost of \$460 million. These assessment amounts were deliberately set below the estimated \$220 million in benefit generated to the parcels in order to allow property owners to retain most of the benefit.⁶⁰

3.3.3 Exactions/Impact Fees

As cities and municipalities grow, increasing demand is placed upon the local civil infrastructure including increased usage of sewers, roadways, transit, schools and other publicly funded services. To help mitigate the cost of the expansion of these public services, localities have been increasingly charging developers exactions to compensate for the impacts of new development. Impact fees are prevalent in Florida, California, Utah, Arizona and Colorado and are growing more common in Illinois, Maryland, New

⁵⁹ NCHRP Innovative Finance, <http://www.innovativefinance.org>

⁶⁰ Schneck, Donald and Diaz Roderick, "Funding Transit Through Tax Increment Financing", Booz Allen Hamilton, McLean, VA

Hampshire, and North Carolina. Depending on the state, impact fees may require state legislation prior to the passage of local ordinances. To be successful ordinances enabling exactions, or impact fees, should incorporate a justification, a clear definition of the impact area, method used to calculate the fee, manner in which proceeds may be used, payment timing and methodology, and provisions for lack of payment.⁶¹

In 1981 the City and County of San Francisco enacted an ordinance enabling the collection of a Transit Impact Development Fee (TIDF) to recover the operating subsidy and capital expansion costs of the San Francisco Municipal Railway (Muni). The legality of the ordinance was subsequently contested and upheld in the California court system. Since then Muni has collected almost \$100 million in fees, the use of which are restricted to relieve the effects of the development in the downtown area. The TIDF is set at a maximum of \$5 per gross square foot of new office development, far below the estimated incremental cost.⁶² By restricting the fee to new office space the ordinance encourages mixed-use development that places less demand on the downtown transportation system.

3.3.4 Tax Increment Financing

Tax increment financing (also known as marginal value taxation) is a tax-financing scheme designed to capture the value associated with new infrastructure or public improvements. What distinguishes tax increment financing from other tax-based methods to capture the value of an infrastructure investment is that it does not require the levy of additional taxes. With tax increment financing, an authority collects all or part of the tax revenues generated from the incremental increase in property values generated by an infrastructure investment.⁶³

Over the past twenty years it has been proven that investments in rail transit can moderately increase the value of property located in close proximity to rail corridors, particularly station areas. Hence, under tax increment-financing revenue can be generated from capturing part or all of the additional property taxes associated with this added property value. There are three primary sources of property value increases that can be harnessed:

- Increases to the value of vacant land.
- Improvements to existing property add to the value of neighboring properties.
- Fixed guideway transit accessibility increases the relative land value of properties near transit stations compared to properties not served by transit.

⁶¹ TCRP Report 31: *Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program*, National Academy Press, Washington, D.C., 1998

⁶² Nickerson, Steve, *San Francisco Municipal Railway*

⁶³ Schneck, Donald and Diaz Roderick, "Funding Transit Through Tax Increment Financing", Booz Allen Hamilton, McLean, VA

The establishment of a tax increment-financing scheme follows several steps. First, a district from which to collect future revenues is established. This district is generally defined to include those properties that are likely to receive benefit and property value increases due to the planned program of new infrastructure and services. Once the district is established and an authority has been defined to oversee the district, that authority defines a time period within which tax increment revenues are collected. This is typically defined to begin either when construction for the infrastructure improvements begins or when construction is complete. The time period of tax collection is generally defined as a limited time period (such as twenty years) after the first collection of revenues. After which, it may become necessary to demonstrate continued benefit and renew the authorizing legislation. Finally, base revenue is defined for the life of the period. This base revenue is typically determined from historical tax revenues collected from the district or influence zone. Through the life of the tax increment-financing zone, this base revenue is collected and transferred to all established taxing authorities. The increase in tax revenues due to rising property values generated by infrastructure investment are then collected by the authority and used to pay for part of the infrastructure investment.

An added advantage of tax increment financing revenues is that they can provide a source of operating income or construction capital depending on the needs of the agency. In 1997 the Illinois legislature adopted the *Tax Increment Allocation Redevelopment Act* in response to declining redevelopment funding. This legislation provided municipalities with a unique new tool to finance and stimulate urban redevelopment. Since 1997 Chicago has adopted over forty (40) TIF districts and facilitated over fifty-two (52) redevelopment agreements between the City and private developers. Since 1983, these TIF districts have generated over \$270 million in incremental property taxes that have been available to fund redevelopment activities.⁶⁴

In addition to successful implementation in Chicago, TIF is gaining popularity in the financing of rail transit projects. The San Francisco Municipal Railway's (Muni) Third Street Light Rail Project is a \$446 million, 5.6-mile extension located in the southeast sector of San Francisco. The locally proposed financing plan includes \$8.5 million in tax increment financing revenues.⁶⁵ More recently, the Transit Authority of River City (TARC) of Louisville, Kentucky is proposing the use of TIF in the construction of a 15-mile light rail line. The TARC proposed financing plan includes \$30 million in TIF funds accounting for approximately 12 percent of all state and local funds.

⁶⁴ *Review of Tax Increment Financing in The City of Chicago*

⁶⁵ *Third Street Light Rail Project Phase 1, San Francisco, CA, November 1998,*
<http://www.fta.dot.gov/library/policy/ns/MUNI100.html>

4 FINANCING PRACTICES

The next step in the funding of transit projects involves the financing aspects. These include the many methods of increasing the more traditional sources noted previously, the financing methods of concentrating revenue streams to fund the up front capital expenditures, and the more innovative funding sources that can help agencies capture the value of the public investment in the transit project. A key feature of the transit project financial analysis is to evaluate the revenue capacity, reliability and stability from the more traditional funding sources and to augment these as appropriate to the local agency risk profile and project funding needs. The following sections describe financing options and innovative funding opportunities that can assist agencies in developing financial plan options that will provide sufficient resources to support the project. This section outlines the range of funding options that can be considered in the financial planning analysis and discusses the options that can be used to develop project revenue capacity.

4.1 TRADITIONAL FINANCING PRACTICES

The more traditional financing practices have been utilized on many types of major transit capital investments for quite a long time period. These are mainly oriented toward bond financing methods that convert future year revenues into current year dollars to fund capital expenditures.

4.1.1 Municipal Bonds – General Obligation (GO) Bonds⁶⁶

General obligation (GO) bonds are municipal debt backed by the full faith and credit of the issuer, typically a local government. Hence, unlike revenue bonds (see below), where the issuer must service the debt from a specific revenue source, general obligation bonds allow the issuer to pay down debt using revenue from any source. This flexibility in debt payment provides general obligation bonds with the most secure credit ratings of all municipal bonds. While issuers can use any revenue source to service this form of debt, in practice most local governments typically support their general obligation bond issues from an ad valorem tax on the assessed value of local real estate. Issuance of new general obligation bonds typically requires the approval of local area voters in a public referendum.

4.1.2 Municipal Bonds – Revenue Bonds

Revenue bonds are municipal debt backed by a specific revenue source including a local sales tax, gasoline tax or income tax (revenue bonds are not backed using property taxes). Revenue bonds are typically secured by a pledge of revenues from the selected

⁶⁶ NCHRP Innovative Finance, <http://www.innovativefinance.org>

revenue source, by related covenants assuring the adequacy of the pledged revenue source and in some instances using the financed investment as additional security. Because debt repayment is backed by revenues from a single source and not the full faith and credit of the issuing entity, revenue bonds are generally higher risk and higher yield investments as compared to general obligation bonds.

4.1.3 Farebox Revenue Bonds^{67,68}

Section 3011 of TEA-21 authorized transit grantees to issue bonds secured by a pledge of fare revenues, provided they requested the Secretary's approval and demonstrated that the level of State and local support for public transit in the three years following the bond issue were to be higher than in the three years prior, as shown in the State Transportation Improvement Plan. To date, only one project, the Las Vegas Monorail, plans to avail itself of the Section 3011 authority. Farebox revenue bonds involve the issuance of debt by a transit agency, which is secured by a pledge of the revenues collected by operating the transit system. Farebox revenue bonds are rare due to the fact that transit systems operate at deficits, depending on Federal, state and local subsidies to maintain operations.

For a traditional revenue bond an issuer covenants to charge rates that will produce revenues sufficient to cover operating and maintenance costs and debt service. Because a transit system does not produce sufficient net farebox revenues to cover debt service, a gross revenue pledge is employed. A gross revenue pledge measures gross revenues to debt service. Three to four times the debt services is usually required.

4.1.4 Short-Term Notes

Tax-Exempt Commercial Paper represents a municipal equivalent to corporate commercial paper. These securities, with a maximum maturity of 270 days, provide a valuable means of financing ongoing capital needs and meeting short-term needs during project construction. Although this short-term debt can be turned over and refinanced, this form of debt does not represent an effective means of financing capital needs over the long term. In the event these short-term obligations should increase, this debt can be converted into a longer-term obligation, generally at improved rates. Tax-exempt commercial paper programs are generally supported by a letter of credit, a revolving credit agreement or a line of credit.

Bond Anticipation Notes (BANs) are used to obtain short-term financing for investments that will ultimately be financed through a long-term revenue or general obligation bond. Hence, use of this option is contingent on the local agency's ability to issue long-term debt. The Texas TIFIA loan project is using BANs as a forward hedge

⁶⁷ NCHRP Innovative Finance, <http://www.innovativefinance.org>

⁶⁸ TCRP Legal Research Digest Number 13, Transit Cooperative Research Program, August 1999

mechanism on the project. When the BANs come due, Texas DOT will have a choice of whether to draw on the TIFIA loan (at the interest rate negotiated at closing) or whether to issue new long-term bonds if interest rates at the time make it worth while.

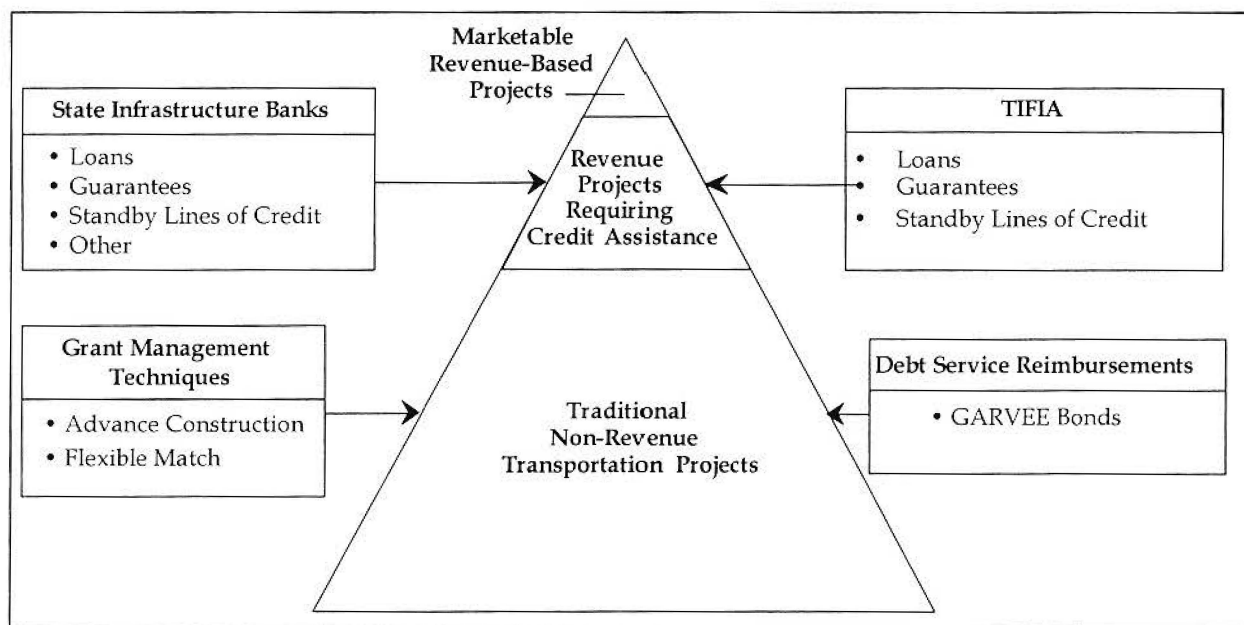
4.2 FEDERAL PROJECT FINANCING

The purpose of DOT’s innovative project finance initiative is to supplement traditional financing techniques by directing resources to areas of critical importance and responding to the shortfall in conventional public funding for transportation infrastructure in the United States. Specifically, this is accomplished by fostering public-private partnerships; drawing on the public’s willingness to pay direct user charges for transportation benefits and services; leveraging new sources of capital; and enabling additional transportation facilities to be developed more quickly and at less cost than would be possible under conventional public procurement, funding and ownership. This section presents a summary of the DOT’s innovative financing initiatives that may provide opportunities for transit projects to leverage certain federal and nonfederal revenue streams into up front funding available for the capital costs of these projects.

4.2.1 Federal Financing Tools

Figure 2, adapted from FHWA, summarizes the various Federal-financing mechanisms available to assist surface transportation projects. The pyramid’s shape reflects the relative number of projects in each funding category.

Figure 2: Federal Assistance for Transportation Infrastructure



The base of the pyramid represents the vast majority of projects that cannot generate revenues and, therefore, rely upon funding primarily through grants. The Federal Government has adopted enhanced grant management techniques such as advance construction and grant-supported debt service to help move these projects to construction more quickly.

The middle layer of the pyramid – perhaps five to ten percent of total capital investment – represents those projects that can be at least partially financed with debt payable from project-related revenues, but may also require some form of public credit assistance to gain market access. The State Infrastructure Banks (SIBs) can offer many types of assistance (e.g., low interest loans, loan guarantees and other credit enhancements) to local or regional projects with revenue streams, while the Federal credit program established under TIFIA is designed to assist large-scale projects generating major economic benefits that might otherwise be delayed or not constructed at all because of their risk, complexity or cost.

The peak of the pyramid represents the very small number of projects that can arrange private capital financing without any governmental assistance. These few completely privately financed, owned and operated facilities may be developed on high-volume corridors where the revenues from user charges are sufficient to cover capital and operating costs.

Ten major types of financing tools have been tested that are generally characterized as investment tools or cash flow tools (**Table 6**). Investment tools can be used to attract new sources of funds to transportation investment. Cash flow tools accelerate the construction and completion of projects. Virtually all of these financing tools have been approved.

Table 5: Federal Financing Tools

Investment Tools	Cash Flow Tools
Flexible Match*	Advance Construction*
State Project Loans*	Partial Conversion of Advance Construction*
Lease Payments	Phased Funding
Toll Credits*	Tapered Match*
Reimbursement of Bond Financing Costs*	STP Simplification*

**Asterisked techniques have now been approved as standard features of the Federal-aid program, either by law (NHS Designation Act or TEA-21) or by administrative action.*

4.2.2 Flexible Match

Flexible match allows the value of private and certain State or local contributions - including publicly owned property - to be used to satisfy the non-Federal matching requirement for Federal-aid funding. Funds from other Federal agencies may count towards the non-Federal share of recreational trails and transportation enhancement projects. Funds from DOT's Federal Lands Highway Program may count towards the non-Federal match for projects within or providing access to Federal or Indian lands.

4.2.3 State Project Loans

Under Section 129 of Title 23 of the United States Code (23 U.S.C.), States may use Federal aid to fund loans to projects with dedicated revenue streams. States have the flexibility to negotiate interest rates and other terms of these loans. When a loan is repaid, the State must use the funds to make loans or grants to other title 23-eligible transportation projects. Section 129 loans allow States to leverage additional transportation resources and recycle assistance to projects, which are not in a position to make repayments.

4.2.4 Lease Payment

Most FTA capital funding can be used to repay the principal and imputed interest costs of a facilities or rolling stock lease. This capability also applies to the capital and interest costs of contracting for service, referred to as "Capital Cost of Contracting." While FTA currently must pre-approve the use of discretionary funds for lease payments, no such pre-approval is required for the use of formula funds. A modification is being considered to allow the use of discretionary funds on the same basis as formula funds.

Under a lease structure (provided the grantee demonstrated that a lease was more cost-effective than direct purchase) the equipment or facility could be purchased by a leasing company, and leased to the grantee. The grantee would make lease payments from a combination of Federal Funds and local matching funds. The primary benefit of such a structure is that it allows the grantee to arrange its cash flow needs on a more level basis, even when an unusually large acquisition must be made. Secondary benefits include the ability to bank the local share, allowing it to earn interest pending its use for making lease payments, as well as the ability to reprogram some of the current formula grant funds to other projects.

4.2.5 Cross Border Lease

The basic form of this transaction is for the transit operator to purchase rollingstock, such as railcars, then simultaneously sell these to a non-U.S. investor who in turn leases them back to the transit system. The foreign lessee generates tax benefits in its country

of origin through investment tax credits and depreciation. These benefits are shared with the U.S. transit operator through reduced lease costs. Since 1990, cross border lease transactions have generated net benefits for transit systems of between 1.5 percent and 4.5 percent of total transaction size. The most cost effective cross border leases have exceeded \$50 million in transaction value, primarily because substantial transaction costs usually require a higher transaction value. However, a few transactions have been successfully concluded with equipment of somewhat lower value.

4.2.6 Toll Credits

The non-Federal share of a project's cost may be met through a "soft" match of toll credits. A State can earn such toll credits to the extent that it spends excess toll revenues (revenues not needed for debt service, returns to investors or the operation and maintenance of toll facilities) on its highway system. The amount of credit earned equals the amount of toll revenues spent on non-Federal highway capital improvement projects. The State must certify that its toll facilities are being properly maintained before excess revenues can be credited. It also must pass an annual maintenance of effort test, which assesses whether the State's transportation system is growing over time, as measured by non-Federal capital expenditures. Toll credits are considered an investment tool since they are designed to encourage States to increase capital investment in transportation infrastructure. However, they may also be considered a cash flow tool since they enable States to simplify program administration. To the extent toll credits are available, a State may use up to 100 percent Federal funds to construct some projects while using the State or local funds that would have been required to match Federal funds to construct other projects with 100 percent State or local funds.

4.2.7 Reimbursement of Bond Financing Costs

Under Section 122 of title 23 U.S.C., Federal-aid funds may be used for the retirement of principal and payment of interest, issuance, insurance, and other costs incidental to the sale of a debt financing instrument used to finance a Title 23-eligible project. This provision has come to be known as the GARVEE bond program. This technique enables a State to spread the cost of the project over its useful life rather than the construction period.

4.2.8 Advance Construction

Under advance construction, a State may use non-Federal funds to advance a Federal-aid project while preserving its eligibility to receive Federal-aid reimbursements in the future. At some future date when the State does have sufficient obligation authority, it may "convert" the advance-constructed project to a Federal-aid project by obligating the permissible share of its Federal-aid funds and receiving subsequent reimbursements. There is no commitment of Federal funds to the project until the State

obligates its Federal-aid on the future conversion date. The State generally must limit its use of advance construction to an amount equal to three years of anticipated Federal-aid funding plus its existing unobligated balance of apportioned funding. This procedure allows a State to begin an eligible project even if it does not currently have sufficient Federal-aid obligation authority for the Federal share of project costs.

4.2.9 Partial Conversion of Advance Construction

Partial conversion of advance construction (PCAC) allows a State to convert an advance-constructed project to a Federal-aid project in stages rather than all at once on a single future date. This refinement to the advance construction procedure enables a State to tailor its use of Federal-aid obligation authority and receipt of subsequent cash reimbursements according to its cash flow needs over the developmental life of an eligible project.

4.2.10 Phased Funding

Similar to PCAC, phased funding allowed a State to obligate its Federal-aid funds for an eligible project according to a staggered schedule, such that Federal-aid obligations and reimbursements were timed by the State to meet its cash requirements. Unlike PCAC, however, phased funding also involved an up-front Federal commitment to the project, subject to the availability of contract authority. Thus, phased funding involved an up-front contingent commitment of future obligation authority, while PCAC establishes project eligibility without committing Federal-aid funds. Due to Congressional concerns regarding prospectively committing future obligation authority and accelerated outlay rates, phased funding was not adopted as part of the Federal-aid program and is no longer being tested under TE-045.

4.2.11 Tapered Match

With tapered match, the non-Federal matching ratio is permitted to vary over time. Federal reimbursement of State expenditure can be as high as 100 percent in the early phases of a project provided that by the time the project is complete the overall Federal contribution does not exceed the statutory Federal-aid limit (typically 80 percent of project costs). This tool enables States to commence Federal-aid projects even if they lack the required State match at the outset.

4.2.12 STP Simplification

For Surface Transportation Program projects, Federal-aid funds can be matched across the full State program rather than on a project-by-project basis. This concept simplifies State record keeping, reduces paperwork and expedites project delivery.

4.2.13 Federal Credit Assistance: The Transportation Infrastructure Finance and Innovation Act (TIFIA)

The Transportation Infrastructure Finance and Innovation Act (TIFIA), which was authorized in sections 1501-1504 of TEA-21 and codified in sections 181-189 of title 23 U.S.C., authorizes DOT to provide secured (direct) loans, loan guarantees and standby lines of credit to private and public sponsors of eligible surface transportation projects. The objective of TIFIA is to use credit rather than grants to leverage limited Federal funding in a prudent, budget-effective manner in order to help advance major projects of national or regional significance.

As illustrated in **Table 7**, the Transportation Equity Act for the 21st Century provides \$530 million to cover the subsidy costs (expected losses) associated with the provision of Federal credit assistance under TIFIA. Total Federal credit assistance authorized under TIFIA for fiscal years 1999-2003 is limited to \$10.6 billion

Table 6: Urbanized Area Formula Program (Section 5307) FY2001 Obligations

Fiscal Year	1999	2000	2001	2002	2003	Totals
Authorization	\$80M	\$90M	\$110M	\$102M	\$130M	\$530M
Max. Nominal Amount of Credit	\$1,600M	\$1,800M	\$2,200M	\$2,400M	\$2,600M	\$10,600M

The Transportation Infrastructure Finance and Innovation Act (TIFIA) Program will provide Federal credit assistance (e.g., direct loans, loan guarantees, and lines of credit) to large-scale transportation projects of national significance. TIFIA was created to leverage substantial private co-investment to complete such projects. TIFIA was created in response to the demonstrated lack of public funding to meet growing transportation investment needs. The program is intended to stimulate additional investment in large-scale transportation infrastructure projects by encouraging private sector participation, advancing construction schedules, and sharing risks between public and private sectors more efficiently and equitably. A total of \$530 million of contract authority is provided to pay the "subsidy cost" of supporting Federal credit under TIFIA, that is, to cover the risk of losses. Annual caps totaling \$10.6 billion limit the nominal amount of credit instruments issued.

Any type of project that is eligible for Federal assistance through surface transportation programs under Title 23 or Chapter 53 of Title 49 U.S.C. (highway projects and transit capital projects) is eligible for the TIFIA credit program. Each project must meet certain objectively measurable threshold criteria to qualify: it must cost at least \$100 million or 50 percent of the State's annual apportionment of Federal-aid funds, whichever is less. (For ITS projects, the minimum cost is \$30 million.) The project also must be supported in whole or in part from user charges or other non-Federal dedicated funding sources

and be included in the State's transportation plan. The amount of Federal credit assistance may not exceed 33 percent of total project costs.

TIFIA funds have been used for a wide variety of projects to date. The following paragraphs contain three examples of transit related applications.

- **Washington DC, Metro (WMATA) – Capital Improvement Program:** The purpose of this project is to accelerate Washington Metro's Capital Improvement Program (CIP), a 20-year capital program to maintain a high level of service on the Metro's 103-mile Metrorail system. It will rehabilitate and replace vehicles, facilities and equipment, some of which are now 20 years old. The Capital Program is estimated to cost \$2.324 billion. To help finance the project, WMATA has received a Federal TIFIA loan guarantee of up to \$600 million. The guarantee will enable WMATA to demonstrate availability of funding to initiate multiple projects on an expedited basis. The loan, if ever drawn upon, would be repaid from revenues contributed by the District of Columbia and participating local governments in Maryland and Virginia, in accordance with the Inter-jurisdictional Funding Agreement for the CIP and gross system revenues. The project is scheduled for completion by December 2009. In fact, the projected cash shortfall in 2004 is planned to be funded through a Grant Anticipation Note or bond, rather than actually drawing on the loan as a lower cost option.
- **San Juan, Puerto Rico – Tren Urbano Rail Project:** The purpose of this project is to complete a 17-km rapid rail line that will serve Metropolitan San Juan and be closely integrated with the local bus system. The system will have 16 stations and carry approximately 100,000 trips per day in the first year of operation. It is estimated that over half of the ridership would not have used mass transit if it were not for Tren Urbano. Tren Urbano will result in a significant reduction in pollutant emissions in Metropolitan San Juan. Tren Urbano is estimated to cost \$2.1 billion. A direct Federal TIFIA loan of \$300 million has been approved. The repayment source of the loan is a junior lien on the Puerto Rico Highway and Transportation Authority's fuel tax receipts, motor vehicle registration fees and farebox receipts. Tren Urbano is scheduled for completion by May 2002. The TIFIA loan has been fully drawn and scheduled interest and principal payments are being made.
- **Miami, Florida – Miami Intermodal Center:** The purposes of the Miami Intermodal Center are to improve access to the Miami International Airport, to relieve roadway congestion within the airport, and to provide a regional transportation center for transit, commuter rail, Amtrak, and inter-city bus services. The estimated project cost of the Miami Intermodal Center is \$1.349 billion. Two Federal TIFIA direct loans will be provided: one in the amount of \$269 million, secured by State fuel tax revenues and the other, for the Rental Car

Facility (RCF) loan, in the amount of \$164 million, secured by rental car fees. The project is scheduled for completion by December 2005.

TIFIA Threshold Eligibility and Selection Criteria -- In order to qualify for assistance under TIFIA, a project must meet a number of threshold eligibility criteria. First, the project must cost at least \$100 million or 50 percent of a State's most recent Federal-aid apportionments (\$30 million for projects principally involving the installation of an intelligent transportation system), whichever is less. Second, the project must be supported at least in part by user charges or other dedicated revenue sources. Third, the project must be included in a State transportation plan and an approved State Transportation Improvement Program. Fourth, the project must meet all governmental eligibility and compliance requirements specified within Sections 181 and 182 of Title 23 U.S.C. Last, a State or other sponsor undertaking the project must submit a project application to the Secretary of Transportation.

To be eligible for assistance, a project must be classified within one of the following categories:

- 1) Surface transportation projects as defined within Title 23 or Chapter 53 of Title 49 U.S.C.;
- 2) International bridge or tunnel projects for which an international entity authorized under Federal or State law is responsible;
- 3) Intercity passenger bus or rail facilities and vehicles, including those owned by the National Railroad Passenger Corporation and components of magnetic levitation transportation systems; or
- 4) Publicly-owned intermodal surface freight transfer facilities, provided that the facilities are located on or adjacent to National Highway System routes or connections to the National Highway System and are not seaports or airports.

Eligible projects meeting the initial threshold criteria will then be evaluated by the Secretary of Transportation based upon:

- 1) The extent to which the project is nationally or regionally significant, in terms of generating economic benefits, supporting international commerce or otherwise enhancing the national transportation system.
- 2) The creditworthiness of the project, including a determination by the Secretary of Transportation that any financing for the project has appropriate security features, such as a rate covenant, to ensure repayment.
- 3) The extent to which assistance would foster innovative public-private partnerships and attract private debt or equity investment.
- 4) The likelihood that assistance would enable the project to proceed at an earlier date than would otherwise be possible.
- 5) The extent to which the project uses new technologies, including intelligent transportation systems, that enhance the efficiency of the project.

- 6) The amount of budget authority required to fund the Federal credit instrument made available to the project.
- 7) The extent to which the project helps maintain or protect the environment.
- 8) The extent to which credit assistance would reduce the contribution of Federal grant assistance to the project.

In addition, each project applicant must provide a preliminary rating opinion letter from at least one rating agency indicating that the project's senior obligations have the potential to achieve an investment-grade rating.

Credit Instruments -- Under TIFIA, DOT may offer three types of credit assistance to project sponsors - direct (secured) loans, loan guarantees and standby lines of credit. Direct loans and loan guarantees are intended to provide permanent financing, while standby lines of credit provide a secondary source of capital during a project's ramp-up phase. The remainder of this section describes the individual credit instruments in more detail.

Direct (Secured) Loans -- Direct loans from the Federal Government to project sponsors provide long-term, fixed-rate permanent financing in a manner that enables loan repayments to coincide with the receipt of project revenues rather than adhering to inflexible repayment schedules.

As authorized under TIFIA, direct Federal loans may fund up to 33 percent of project costs. The interest rate on such loans will be set at the Treasury rate for comparable-term securities. The maximum term is 35 years after project completion, and repayments may be deferred up to 10 years. Any deferred payments would be added to the outstanding loan balance and continue to accrue interest. The loans will be secured by a pledge on project revenues or other security features. DOT may charge application initiation and credit processing fees to offset a portion of the budgetary costs of providing loans.

More specific terms and conditions of each loan will be negotiated between DOT and the borrower, but will enable DOT to accept a claim on revenues junior to that of the project's senior indebtedness. In the event of default that leads to bankruptcy, insolvency or liquidation, DOT must have a parity or co-equal claim on project assets with other investors.

Loan Guarantees -- Loan guarantees offered under TIFIA are intended to facilitate senior project borrowing by guaranteeing junior loans made by institutional investors. The terms of the loan guarantees are very similar to those established for the direct loan program. Loan guarantees are capped at 33 percent of project costs. The interest rate on guaranteed loans will be negotiated between the borrower and the lender and approved by the Secretary of Transportation. Interest payments on guaranteed loans will be subject to Federal income taxation. The maximum term of guaranteed loans is

35 years after project completion, and repayments may be deferred up to ten years. The guaranteed loans will be secured with defined claims on project revenues.

Standby Lines of Credit -- Under TIFIA, standby lines of credit represent contingent loans to help pay debt service, operations and maintenance, extraordinary repairs and other costs if needed to respond to revenue shortfalls in the first ten years of project operations. In contrast to direct loans and loan guarantees, standby lines of credit would not be used to directly fund construction costs as part of the project's initial capitalization. The line is rather a supplemental source of reserves that can be drawn upon if needed during the project's ramp-up phase. The line is designed to provide a source of supplemental capital if needed, thereby assisting the borrower in obtaining an investment-grade rating on its senior bonds.

These contingent loans may be in an amount up to 33 percent of projects costs and may be drawn down over a ten year period following substantial project completion. The borrower may draw down up to 20 percent of the line in a given year. The interest rate on any draw will be set equal to the then-prevailing yield on 30-year Treasury bonds. The draws must be repaid, with interest, within 25 years following the period of availability. The contingent loans will be secured with defined claims on project revenues.

4.2.14 Grant Anticipation Revenue Vehicle (GARVEE) Bonds

Prior to November 1995, States could use their Federal-aid highway grants to repay only the principal component of debt service on bonds issued for title 23-eligible projects. Section 311 of the NHS Designation Act altered the rules by significantly expanding the eligibility of debt financing costs for Federal-aid reimbursement. This significant change to the Federal-aid program was codified into permanent highway law as an amendment to Section 122 of Title 23 U.S.C. Bond-related costs now eligible for Federal-aid reimbursement include:

- Interest payments and retirement of principal under an eligible bond issue (including capitalized interest); and
- Any other cost incidental to the sale of an eligible bond issue (including issuance costs, insurance or other credit enhancement fees and other bond-related costs as determined by the Secretary of Transportation).

The capitalization from bond proceeds of a reserve account or contingency fund required by or incidental to the debt issuance is considered an eligible Federal-aid expense. The funds deposited in such an account, along with any interest earnings, must be used for project costs - either on a current basis or as a final payment to the bondholders.

GARVEE Financing Procedures -- To receive Federal-aid payments for eligible debt-related costs under section 122 of title 23 U.S.C., a project must be approved by FHWA as a Federal-aid bond issue project. At the time of project authorization, the State must elect to seek payments for bond issue costs in lieu of construction invoice costs.

Once a State selects a project for GARVEE financing and its costs are estimated, the project must be designated as an advance construction (AC) project under Section 115 of Title 23 U.S.C. by the responsible FHWA Division Office. The AC designation preserves the project's eligibility for future Federal assistance. The amount of the AC designation should equal the Federal share (typically, 80 percent) of the debt-related costs that will be reimbursed during the life of the bonds. All projects approved for GARVEE financing must be eligible for Federal-aid funds under Title 23 U.S.C. State matching contributions may be accounted for using one of the following methods:

- 1) A State may annually contribute 20 percent of each year's debt service; or
- 2) A State may elect to provide the non-Federal match up front, and do so on the basis of 20 percent of the net present value of the anticipated payment streams.

A State or project sponsor may also separate the debt financing for a project into two issues, with one issue for the estimated Federal share and the other issue for the estimated non-Federal share. The costs associated with the former debt issue would then be reimbursed with Federal-aid funds, while the costs of the latter debt issue would be reimbursed with non-Federal funds. Federal-aid reimbursement may be simultaneous with the scheduled debt service payments.

Basic Structure of GARVEE Bond Issues -- The GARVEE bond concept can be applied in one of two ways:

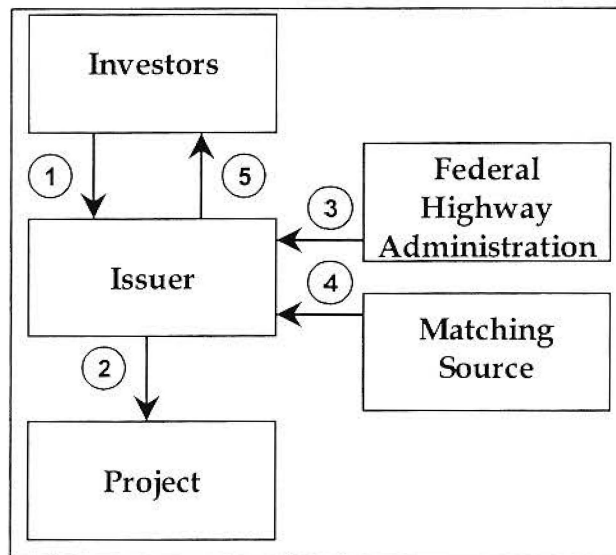
- 1) GARVEE bonds may be structured such that a State's Federal-aid funds provide the only security backing the Federal share of debt financing; or
- 2) GARVEE bonds may be backstopped by a secondary source of revenues (e.g., State fuel tax revenues or local property taxes).

For GARVEE bond issues without State or local backstops, the only form of security backing the debt instrument is the State's agreement to obligate future Federal-aid apportionments, to the extent available.

The basic framework of this type of GARVEE bond issue is shown in **Figure 3**. The first step involves the investors purchasing the bonds issued by the State DOT (or financing agent) with the proceeds flowing to the State DOT. The second step entails the State DOT expending proceeds to construct the Federal-aid project. Third, the State DOT receives the cost reimbursements from FHWA for the Federal share of debt service expenses using its annual Federal-aid obligation authority. Fourth, the State concurrently contributes its required matching amount. Last, the State DOT (or

financing agent) uses the combined Federal-aid payments and State or local matching funds to meet annual debt service requirements.

Figure 3: Flow of Funds for GARVEE Bond Issue without State or Local Backstop



The GARVEE bond issue may also be structured to provide future Federal-aid payments as the primary security to investors, and use other State and local funds as secondary pledges in the event Federal-aid revenues prove insufficient to meet annual debt service requirements. The purpose of the secondary pledge is to enhance the creditworthiness of obligations backed by future Federal-aid revenues, which are subject to risk associated with the periodic reauthorization of the highway program (recently every six years).

All relevant Federal and State rules, laws and administrative guidelines must be observed when structuring a GARVEE bond issue. Factors to consider include flexibility within the State Transportation Improvement Program, State limitations on the issuance of debt, and legal and political constraints on the availability of State revenues and Federal-aid reimbursements.

4.2.15 Grant Anticipation Notes

Grant Anticipation Notes (GANs) are the transit equivalent to Grant Anticipation Revenue Vehicles (GARVEEs). This form of bond allows transit agencies and grant recipients to borrow against future Federal Transit Administration funds. GANs can be used to amass up-front capital to advance a project while debt is paid over a period of time as federal funds are received. These bonds may be backed by Section 5307 funds or be supported by Section 5309, New Starts Full Funding Grant Agreements. In addition, Fixed Guideway Modernization funds can also be used as security for GANs

— it just hasn't been done yet. Presumably after the seven years duration until project are eligible for these program funds, transit projects could use this program for extensions or enhancements.

Under the 1982 Surface Transportation Uniform Relocation and Rehabilitation Act (STURRA), interest costs were made eligible for reimbursements for both formula and discretionary programs. Interest reimbursement is limited to the "best available municipal financing rate" for discretionary programs and to the "average current market rate" for formula funds, as determined by FTA.⁶⁹ TEA-21 contains provisions that enhance transit agencies' ability to borrow against future Federal aid including the separation of transportation funding from appropriations for other domestic purposes. States have been increasingly interested in borrowing against Federal aid funds since TEA-21 has enhanced both the security and amount of transit funding, as well as simplified FTA interest reimbursement provisions. The interest rate allowed in TEA-21, for all capital programs, is the best rate reasonably available at the time of financing.⁷⁰ Essentially FTA views this condition as the "market rate" — i.e., if the grantee sells a public bond issue, that is the best reasonably available rate.

The credit risks for GANs backed by Section 5309 funds are considered higher than those backed by Section 5307 funds because discretionary funds are subject to annual appropriations. To reduce risk and increase coverage levels, a GAN issuer may elect to borrow less than the FFGA. Congress has consistently funded the FFGAs, but at a slower rate than agreed.

New Jersey Transit's (NJT) Hudson Bergen Light Rail project is financed in part by the issuance of GANs backed by a FFGA. Additionally, the financing is backed by a pledge from the state's transportation trust fund to achieve a higher credit rating. NJT has combined the use of GANs with the Super Turnkey or Design-Build-Operate-Maintain project delivery methodology.⁷¹ The pledge of the New Jersey Transit Trust Funds was shed from the Phase 1 bonds when they were refinanced in 1999. The refinanced bonds were "pure" GANs.

4.3 STATE INFRASTRUCTURE BANKS^{72,73}

The NHS Designation Act authorized DOT to establish the SIB pilot program as illustrated in **Figure 4**.⁷⁴ A SIB is a State (or multistate) revolving fund that can offer

⁶⁹ NCHRP *Innovative Finance*, <http://www.innovativefinance.org>

⁷⁰ *Ibid.*

⁷¹ *Innovative Financing Techniques for America's Transit Systems*, Federal Transit Administration, September 1995

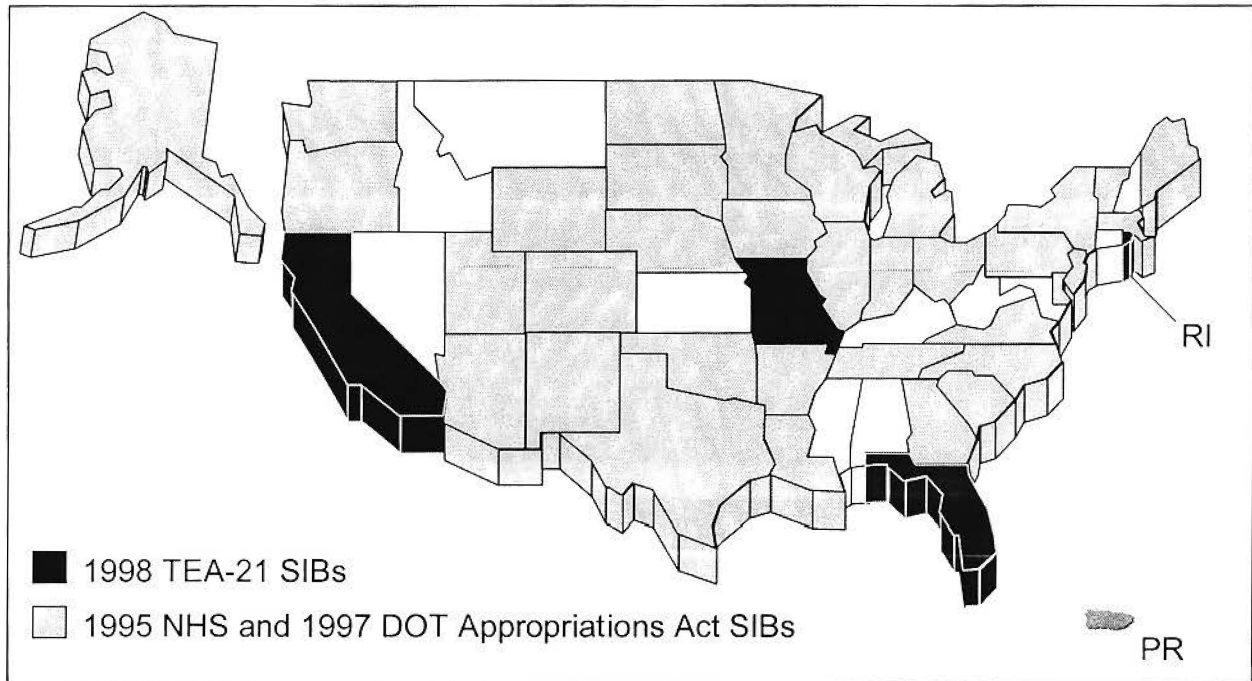
⁷² Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

⁷³ TEA-21 fact sheets, available at: <http://www.ftwa.dot.gov/tea21/factsheets/index.htm>

⁷⁴ Public Law 104-59, section 350

loans and non-grant forms of credit assistance to public and private sponsors of Title 23 highway construction projects or Title 49 transit capital projects. SIBs are intended to complement the traditional Federal-aid highway and transit programs by supporting certain projects with revenue streams which can be financed in whole or in part with loans, or that can benefit from the provision of credit enhancement. As loans are repaid, or the financial exposure implied by a credit enhancement expires, a SIB's initial capital is replenished and can be used to support a new cycle of projects.

Figure 4: State Infrastructure Bank Pilot States



Under the original NHS Designation Act provision, Congress established a pilot program for up to ten States to enter into cooperative agreements with FHWA and/or the Federal Transit Administration (FTA) for the capitalization of SIBs with a portion of their Federal-aid funds provided in fiscal years 1996-1997.⁷⁵ The DOT Appropriations Act of 1997 amended the NHS Designation Act to allow DOT to expand the SIB pilot program to include 38 States plus Puerto Rico, and appropriated \$150 million in Federal general revenue funds for SIB capitalization. The Transportation Equity Act for the 21st Century extended the pilot program for four States - California, Florida, Missouri and Rhode Island - by allowing them to enter into cooperative agreements with DOT to capitalize their banks with Federal-aid funds provided in fiscal years 1998-2003. The SIB authorization in TEA-21 modified some of the key provisions of the NHS Designation Act by: removing the 10 percent limit on capitalization; removing the

⁷⁵ The ten States initially selected by DOT for the SIB pilot program were: Arizona, California, Florida, Missouri, Ohio, Oklahoma, Oregon, South Carolina, Texas and Virginia.

requirement for separate highway and transit accounts; applying Federal requirements to all SIB assistance, including second round assistance from non-Federal sources; and establishing a five-year disbursement schedule for capitalization grants.

4.3.1 State Infrastructure Bank Implementation^{76,77}

The State Infrastructure Bank (SIB) pilot program was enacted by Congress in Section 350 of the National Highway System (NHS) Designation Act of 1995. A SIB is a state or multi-state entity that administers an investment fund with the capability to make loans and provide other forms of credit assistance to public and private entities to carry out highway construction and transit capital projects. Projects eligible for SIB assistance under the new TEA-21 pilot include highway and transit capital projects as well as other surface transportation projects designated by the Secretary of Transportation. The SIB program gives states the capacity and flexibility to leverage federal resources by attracting non-Federal public and private investment and provides various forms of non-grant assistance to eligible projects including below-market rate subordinate loans, interest rate buy-downs on third-party loans, and guarantees and other forms of credit enhancement. Any debt that the SIB issues or guarantees must be investment-grade.

TEA-21 provided for a revised pilot program in four states - California, Florida, Missouri, and Rhode Island. These states may enter into new or revised cooperative agreements that specify procedures and guidelines for establishing, operating, and providing assistance from the infrastructure bank. Texas was added to the TEA-21 authorized SIBs in the Appropriations Act for FY 2001. The revised pilot program does not set a limit on the amount of Federal funds that can be used to capitalize the infrastructure bank. Funds from Sections 5307, 5310, and 5311 (as well as Federal highway funds) can be used to capitalize the bank. Texas had used up its capitalization and needed the added authority to use TEA-21 highway funds to increase capitalization. No FTA funds were obligated for this purpose in FY 2001.

4.3.2 Capitalizing a SIB

Before a State can offer financial assistance to surface transportation projects through a SIB, it must first take the appropriate steps to establish and capitalize the bank. The steps necessary to create and capitalize a SIB using Federal-aid funds are:

- 1) Execute a SIB Cooperative Agreement - The first step in the implementation of a SIB is the signing of a cooperative agreement between FHWA and/or FTA, the State and any other party to the SIB. A cooperative agreement is a legal document that establishes how Federal and State funds will be managed once they are deposited into the SIB.

⁷⁶ Adapted from the FTA publication titled, "2001 Statistical Summaries: FTA Grant Assistance Programs"

⁷⁷ TEA-21 fact sheets, available at: <http://www.fhwa.dot.gov/tea21/factsheets/index.htm>

- 2) Establish an Advance Capitalization (ACAP) Amount – Once a State has signed a cooperative agreement with DOT, it can begin the capitalization process by requesting an ACAP amount. Advance capitalization is a Federal-aid funding procedure by which each State notifies DOT when it has identified an amount of Federal assistance that it may ultimately choose to convert to a SIB capitalization grant. As specified by the NHS Designation Act, each pilot State’s maximum potential ACAP amount is limited to 10 percent of most categories of apportioned and allocated funding for fiscal years 1996 and 1997.⁷⁸
- 3) Obligate Federal-aid Funds – Obligations occur when a State transfers and converts some portion of its requested ACAP amount into a SIB deposit. At this point, States must declare from which program categories SIB capitalization funds will be drawn.
- 4) Outlay Federal-aid Funds – Though an obligation represents a commitment on the part of the State to capitalize its SIB, a SIB is not actually capitalized until the State requests and DOT deposits funds into either a highway or transit account.

Within the overall 10 percent capitalization limit, the amount of Federal funding available for deposit into a SIB in a given year is constrained by a statutory disbursement constraint imposed for budgetary purposes. The disbursement limitation for SIB highway accounts is keyed to the nine-year outlay rate assumed for the rest of the Federal-aid highway program for fiscal years 1996 and 1997, as shown in **Table 8**.

Table 7: Outlay Rate for FY 1996-1997 Federal-aid Funds

Year	1	2	3	4	5	6	7	8	9
Percent of ACAP amount available for obligation and outlay	15%	53%	16%	5%	3%	3%	2%	2%	1%

For example, a State that ACAPs \$1 million of fiscal year (FY) 1997 Federal-aid funds, may deposit or outlay \$150 thousand of that amount in FY 1997, \$530 thousand in FY 1998 and \$160 thousand in FY 1999. States must contribute a matching amount equal to 25 percent of the Federal capitalization deposit to each account.

The four States identified for the extended SIB pilot program in TEA-21 are subject to revised outlay rates, as shown in **Table 9**. The second set of outlay rates apply to Federal-aid funds provided in FY 1998-2003.

⁷⁸ The eligible FHWA program categories are: Interstate Maintenance, National Highway System, Bridge, Surface Transportation Program, Minimum Allocation, Interstate Reimbursement, Hold Harmless, 90 percent of Payments Adjustment and Donor State Bonus. States are explicitly precluded from using apportionments for the Congestion Mitigation and Air Quality Improvement Program and allocations for special projects for the purpose of capitalizing their SIBs.

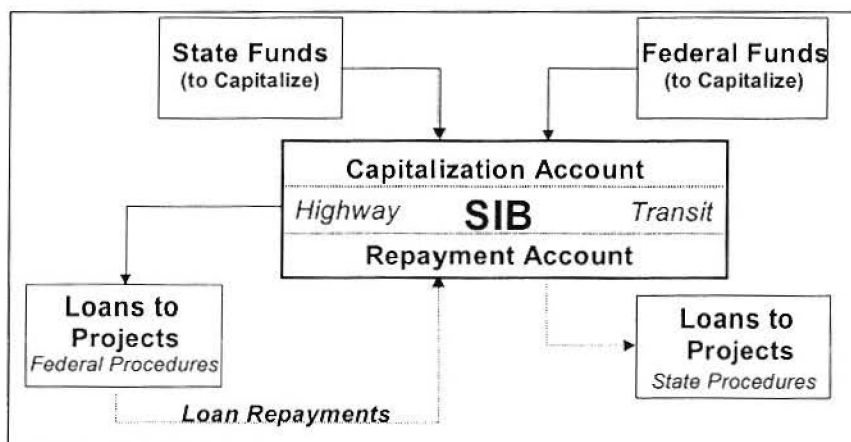
Table 8: Outlay Rate for FY 1998-2003 Federal-Aid Funds

Year	1	2	3	4	5
Percent of ACAP amount available for obligation and outlay	20%	20%	20%	20%	20%

4.3.3 Structuring a SIB and Providing Credit Assistance to Projects

Figure 5 illustrates the basic structure of a SIB. The structure is designed to allow for initial seed capital to be used to supply loans and credit enhancement on a revolving basis to eligible surface transportation projects.

Figure 5: Basic State Infrastructure Bank Process



State Infrastructure Banks provide financial support to public and private sponsors of eligible surface transportation projects during all project stages. The types of assistance which may be provided by SIBs include loans, guarantees, interest rate subsidies, letters of credit, purchase and lease agreements and other forms of non-grant assistance.

Initial assistance to projects may not be in the form of a grant and is required to comply with all relevant Federal Title 23 or Title 49 U.S.C. requirements. Repayments of first generation assistance to these projects that follow Federal procedures may be made with any source of funds - including Federal funds. Project repayments from Federal sources must return to the initial capitalizing accounts and cannot be deposited into secondary accounts. For pilot SIBs established pursuant to the NHS Designation Act, repayments derived from non-Federal sources can be deposited into a SIB secondary account that is not subject to Federal requirements. As noted previously, the SIB authorization in TEA-21 establishes Federal requirements for all rounds of SIB assistance, including repayments from non-Federal sources.

4.3.4 Certificates of Participation and Lease Backed Bonds

Certificates of Participation (COP) are tax exempt bonds, issued by State entities, that are usually secured with a specific revenue source such as an equipment or facilities lease. Certificates of Participation (COPs) are also a financial mechanism that allow for more effective management of a project or program's cash flow. In large capital purchases and projects, the use of COPs may accelerate project progress resulting in lower costs or advancing the project benefits. Federal Register, Volume 69, Number 89, defines COPs as "...a type of leasing arrangement in which bonds are issued to finance the purchase of transit assets."

The State entity issues tax exempt bonds with maturities that match the lease term of assets. These are purchased by the State entity with the proceeds from the bond issue. The State entity then leases the equipment to one or more transit system. The resulting lease payment, most often made with a combination of formula grant funds and local matching share, are then "passed through" to the bondholders by the State entity. The combination of larger vehicle order size, COP's with varying maturities, and lease arrangements, reduce and stabilize current capital costs significantly. An example is the California Transit Finance Corporation (CFTC) which provided funding for the bus purchases of several California grantees, including the Los Angeles County Metropolitan Transportation Authority which replaced 333 diesel fuel buses with buses that operate on methanol. The CFTC issued COP's secured by a lease on the buses that were purchased. Because the transaction involved 40 buses, the local gas utility provided a high-speed fueling facility with a favorable capital lease arrangement.

When a transit agency wishes to make a large capital purchase, (i.e. a facility or rolling stock purchase), it may coordinate with a state agency authorized to issue tax exempt bonds or a special purpose state entity designed for that purpose. The authorized state agency could then issue bonds or COPs secured with the revenue source (lease payments) provided by the transit agency. The issued bonds would be structured with interest payments and maturities to match the terms of the lease payments. The resulting lease payments are then generally repaid by a combination of formula grant funds and local matching share. These lease payments are then passed on to the bondholders by the state entity in order to retire the bonds. This combination of variable maturity bonds and lease arrangements can work to reduce and stabilize the capital costs over the life of the vehicle procurement or construction project. Additionally, using this structure to consolidate vehicle purchase may be facilitated on behalf of multiple transit operators in order to achieve lower vehicle prices associated with larger purchases.⁷⁹

Other potential benefits of completing projects on an accelerated basis include:

⁷⁹ *Innovative Financing Techniques for America's Transit Systems, Federal Transit Administration, September 1998*

- Reduced risk of higher future prices due to inflation or changes in environmental or other laws
- Lower operating costs from accelerated retirement of older vehicles and maintaining a more standardized fleet
- Higher quality of service to the public and potentially increased patronage
- Better conformance with mandates for air quality, or service to persons with disabilities
- Net cost savings from interest earned on cash balances

Since COPs are bonds secured by lease payments, they do require a reserve fund sufficient to make at least one scheduled payment and a promise of the transit system to use subsequent years grant funds to make lease payments. If a transit agency had originally programmed all of the federal funds required for the purchase in the initial years, those funds may be reprogrammed to advance other projects. This approach will require additional local match funds as the original local match funds are commonly used to fund the reserve fund. In recent years, due to increasing market familiarity with transit and COPs, Transit Finance Corporations have been able to issue COPs that included the Debt Service Reserve Fund (not requiring local funds to be used for the purpose), thus lowering the total cost of the financing mechanism.

4.3.5 State Revolving Loan Fund

States have the ability to use FTA grant funds to establish and operate Revolving Loan Funds in support of public and private non-profit transit operators. This mechanism allows the State, as recipient or by agreement with its sub-recipients, to aggregate certain section funds, pool purchases of vehicles, and either lease or sell these to the transit operators, or make loans to transit operators for vehicle and facility acquisitions. The revolving loan fund allows pooled vehicle purchases that may help reduce acquisition costs. It provides a mechanism for the State to make loans with interest or leases to transit operators who might not be able to arrange such transactions on their own. It also provides an ongoing source of local capital in support of the State's transit operators. The interest payments and lease payments returned to the State's revolving loan fund are considered to be "program income" in the context of the FTA grant program. These income streams are, therefore, not required to be returned to the U.S. Treasury and may be used to make additional loans, leases, and grants to the eligible transit grantees. The local grantees are able to use subsequent years' rural or urban grant funds to make loan or lease payments, including reasonable interest.

4.3.6 State Infrastructure Banks/Transportation Finance Corporations^{80,81,82}

In response to states' request for greater flexibility in transportation financing, Congress established a Pilot Program for State Infrastructure Banks (SIBs) through Section 350 of the National Highway System Designation Act of 1995. Section 350 authorized DOT to enter into cooperative agreements with up to 10 states for the establishment of SIBs. The purpose of SIBs is to provide assistance to public and private entities carrying out projects eligible for federal assistance. TEA-21 made several changes to the SIB pilot program. Most significant was the reduction in the number of states that could enter into agreements with the DOT to four specific states: California, Florida, Missouri, and Rhode Island. Other states, where SIBs were already established, may continue to operate those banks however, no additional funding was provided under the act.

The banks were specifically set up as revolving loan funds to leverage the initial federal capital and local match to:

- Make loans
- Provide credit enhancement
- Serve as a capital reserve for bond and debt financing
- Subsidize interest rates
- Issue letters of credit
- Finance purchase and lease agreements
- Provide debt financing security
- Pool rolling stock purchase
- Facilitate complicated financial transactions such as U.S. Leasehold Interest, Pickle Leases, and Cross-Border Leases.

The revolving loan fund allows pooled vehicle purchase to reduce acquisition costs and make loans or leases to transit operators who might not be able to finance transactions on their own. Because the interest and lease payments returned to the SIB are considered program income they may be used again for eligible transportation purposes.

The NEXTEA surface transportation proposal contains a request for \$150 million per year for six years in continuing capitalization for SIBs, and it would expand the SIB program to all states, provided they have the requisite local authority to use the mechanism. Currently, Georgia has received provisional designation to establish a SIB pending the securing the necessary state level authority.

⁸⁰ TCRP Legal Research Digest Number 13, *Transit Cooperative Research Program*, August 1999

⁸¹ *Innovative Financing Techniques for America's Transit Systems*, Federal Transit Administration, September 1998

⁸² *Innovative Financing Initiatives Final Report*, Federal Transit Administration, Marlaw Systems Technology, Inc. and P.G. Corbin and Company, December 1, 1999

The most common implementation form for SIBs is for states to form transportation finance corporations as special purpose entities. Examples include the Florida Transit Association Finance Corporation (FTAFC), California Transit Finance Corporation, and the Missouri Transportation Finance Corporation.

In response to FTA's request for innovative financing proposals, the Florida Transit Association, in cooperation with the Florida Department of Transportation, submitted a proposal to form the FTAFC. FTA awarded the requested grant of \$300,000 for start-up expenses.

FTAFC then met with several transit systems to propose a pooled leasing/purchase program for new bus purchases. Eight agencies met and agreed to participate. Specifications were developed to meet the needs and requirements of all participating transit systems. The FTAFC board approved the transaction but left open the decision whether to undertake a COPs-based lease or a cross-border lease. Fluctuating foreign interest rates ultimately made the cross-border lease unfeasible.

A COPs-based lease transaction was undertaken and is governed by the terms of a master lease. With this master lease, agencies that wish to use COPs can go through the FTAFC for their bus purchases. These transactions have saved participants anywhere from \$1,500 to \$15,000 per transaction. Not only is the master lease cheaper and more efficient for participants, the FTAFC also benefits by retaining transaction fees that range from \$500 to \$5,000.

4.3.7 State Revolving Loan Funds^{83,84}

States have the ability to use FTA grant funds to establish and operate revolving loan funds in support of public and private non-profit transit operators. This mechanism allows the state as a recipient or by agreement with sub-recipients to aggregate FTA funds to pool purchases of vehicles and either lease or sell these to the transit operators, or make loans to transit operators for vehicle and facilities acquisitions in a similar manner as SIBs. As with SIBs, interest payments and lease payments returned to the State's revolving loan fund are considered program income in the context of the FTA grant program and may be retained and used for eligible transportation purposes. The local grantees are able to use subsequent years' rural or urban grant funds to make loan or lease payments, including reasonable interest.

To address the growing need for dependable, accessible Arkansas Department of Transportation (DOT) decided to use its State authority to provide van pool vehicles under lease to establish a van-leasing program for public and human services

⁸³ *Innovative Financing Handbook, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhnbk.html>*

⁸⁴ *Innovative Financing Initiatives Final Report, Federal Transit Administration, Marlaw Systems Technology, Inc. and P.G. Corbin and Company, December 1, 1999*

transportation. DOT would purchase vans, make them accessible for persons with disabilities and then lease them without interest to the transportation providers of various human services agencies. The program was established with \$270,000 in FTA discretionary funds, \$330,000 in Federal Highway Vanpool program funds, and \$150,000 in local funds.

The initial vehicles purchased were provided to 15 human services transportation providers throughout the state. As a result, in addition to the cost savings from the pooled purchase and interest earned on the balance of the revolving fund, the DOT was able to save transportation providers over \$330,00 in accumulated interest costs. As funds are received by the fund, additional vehicles are purchased on an annual basis.

4.4 INNOVATIVE FINANCING PRACTICES

Innovative financing mechanisms have been a more recent form of financing available to public agencies for major capital transit investments. There are a number of innovative financing techniques that may be used by transit operators receiving Federal-financing assistance. Transit agencies may use FTA grant funds, or assets acquired with Federal assistance, to enhance the effectiveness of their capital investment program with these techniques. Many of these mechanisms were developed around special taxation measures passed to encourage increased investment in public facilities. The mechanisms described in the following section can be used on most transit projects.

4.4.1 Super Turnkey and Private Financing

The Super Turnkey process is one where the project engineers, constructors and/or project management consortium undertake to design, build, possibly operate for a time, and transfer a facility to the purchaser. In such a situation, designing, constructing, purchasing, delivering, installing, scheduling, and other critical aspects of the project are directed by the same entity - a Design-Build or Turnkey Manager. As a result, construction delays, start-up difficulties, disagreements about change orders and project timing are better organized, resulting in faster schedules, likely lower project costs and hopefully reduced litigation.

One modification to this Design-Build or Turnkey process is when the consortium also arranges financing. This technique may be attractive for smaller grantees who may not have the credit history to minimize their borrowing costs. 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 consortium's) own bonds. While 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 saving well in excess of the financing cost.

A Super Turnkey or DBOM contract requires the Turnkey manager to design, build, operate and maintain a transit facility or systems for a pre-established period of time. In such a situation, purchasing, deliveries, scheduling, and other critical aspects of the project are directed by the same entity. As a result, design and construction delays, start-up difficulties, change orders are minimized resulting in lower project costs. Another benefit of the Super Turnkey project delivery method is the potential for vendor financing.

Most transit operators depend on annual appropriations to fund major capital projects. Under the Turnkey arrangement, the Turnkey manager may be able to own credit ratings to seek financing for the project. There is also a lease variation to vendor financing. In this arrangement the Turnkey manager is generally granted a non-transferable ownership interest in the project, once it is completed. The Turnkey manager then leases the new system to a transit operator for a time, and at a cost, sufficient to cover the financing cost and provide a profit.

During the mid 1980s, the State of New Jersey began to accelerate economic development efforts along the waterfront areas of Hudson and Bergen counties. The Governor's Waterfront Development Office was formed to energize slow-moving plans to make this area more attractive for a wide variety of redevelopment activities. It was determined early on that a major deterrent to attracting redevelopment activities to this area was the high degree of roadway congestion and the lack of mass transit options.

The Governor's Waterfront Development Office decided that improved public transportation was a critical component of the overall redevelopment strategy. A waterfront light-rail transportation system using modern *trolley-car* technology was determined to be the best option. The project envisioned was a 20-mile light rail system stretching from Bayonne and Jersey City in Hudson County to Ridgefield, in Bergen County. The State's mass transit agency, New Jersey Transit (NJT) and its parent organization, the New Jersey Department of Transportation (NJDOT) were tasked by the Governor to build the light rail system. The project acquired its name at this point, the Hudson/Bergen Light Rail Transit System (HBLRT).

NJT began the HBLRT project using the same public works contracting strategy that the entire transit industry in the United States used at that time. This method is generally referred to as design-bid-build contracting. Under this contracting strategy NJT had to design every system element of the project (stations, track, signals, power distribution systems, vehicles, maintenance and control facilities) to the 100 percent level, issue separate competitive procurements to potential contractors, and then award separate contracts on a low-bid basis. Under a design-bid-build contracting strategy, NJT would

also bear final responsibility and all risk for integrating all of the individually procured system elements into a unified light rail transit system.

It was estimated that under a design-bid-build contracting strategy the project would take a minimum of 7 years to complete. It is likely that the project would have taken even longer due to the multiple contractor interfaces that NJ Transit would have to manage, the difficulty coordinating the schedules of separate contractors, with the resulting schedule delays and cost overruns that had become typical on similar public works projects. The lengthy project schedule also increased the overall budget required to complete the system and created political risk that the project would be able to sustain the long-term support of elected officials.

In 1995, NJT made the decision to undertake the first transit DBOM project in North America. By 1997 the procurement process was completed and a consortium selected. The final project was completed under original budget estimates in a period of about 3.5 years, approximately half of the original schedule estimate. The DBOM project delivery strategy provided the following benefits to NJT:

- It allowed a single contractor to assume all responsibility for the project and, therefore, reduced NJT's project management staff size by eliminating the coordination of multiple contractors.
- Schedule compression was possible because the contractor progressed design and construction in parallel, as opposed to sequentially using the Design-Bid-Build method.
- The contractor had incentive to use more durable, higher quality materials because of long term operations and maintenance responsibilities.
- Simpler performance specifications replaced detailed design specifications.
- Because the contractor was responsible for final design, there was no possibility of design omission/defect claims.
- There was reduced conflict and change orders because contractor had more ultimate responsibility.
- The 15-year operating period eliminated the need for NJT to add additional train operators, technicians and managers to their payroll.

4.4.2 Delayed Local Match

Transit systems may wish to delay the application of their local matching funding, particularly if they are trying to maximize the use of their locally available funds. This could occur because the funds are invested in a short-term security, for example, or otherwise encumbered. However, there may also be a situation where the grantee is seeking to arrange construction period financing or some other innovative financing mechanism which could be facilitated through an uneven expenditure of Federal and matching funds. Additional benefits could be generated through innovative project financing or other means.

The FTA grants process is generally based on a level outflow for a specific project. For every 20 percent expended by the locality, 80 percent in Federal funds are expended. Little value can be added to such a cash stream through the assistance of private capital markets. However, if the Federal dollars are expended first, e.g., for 100 percent of the design, engineering, or environmental reviews, then the construction period can be financed with some private participation. In this instance local funds can be banked or pledged as additional security for construction period financing. This is all possible because there are no arbitrage concerns with the local funds as there might be with the Federal funds. The benefits of delayed local match is that it may help assure the smooth progress of a major transit infrastructure project without any increase in Federal outlays.

4.4.3 Toll Revenue Credits

ISTEA provides that toll revenues on public roads and bridges expended for capital investment may count as local match (soft match) for Federal grant funds in a specific year. This capability allows the local matching share that would otherwise be required to match a transit grant to be used for other projects.

This results from the recognition that different modes of transportation are interconnected. Capital expenditures to reduce congestion in a particular corridor benefit all modes in that corridor, i.e., automobiles, transit buses, or rail systems. Thus, if a community constructs a toll bridge to be used as local match under the following specific circumstances:

- The toll revenues must be used for transportation capital investments, not operating expenses;
- The soft match in one year is counted as the amount of toll revenue used for transportation capital investment in that year. That is, there is no carryover.

Depending on local conditions and requirements, a projects local (non-toll) match could be banked, or used as matching funds for a discretionary grant, or used to facilitate the early completion of other capital projects.

The FTA Innovative Financing Initiative has shown two things. One, that the transit systems in our Nation have already made significant advances in financial innovation, and two, that the private sector - investors, developers, and the private capital markets - have an increasingly significant role to play in the continued and enhanced provision of public transportation. Only by providing an orderly and predictable transit program will we be able to keep the interest of the private investors focused on public transit.

4.4.4 Cross-Border Lease^{85,86,87}

A cross-border lease is a financial mechanism that permits investors in a foreign country, (usually Germany, Japan, or Denmark), to own assets used in the United States, lease them to an American entity, and receive tax benefits under the laws of their home country. The tax benefits generated by the foreign lessee are in the form of investment tax credits and depreciation. These benefits are shared with the U.S. transit operator through reduced lease costs. Typically the transit operator will transfer the lease payments and the portion of the asset sale proceeds sufficient to cover lease payments to a third party. The remainder of the asset sales proceeds is kept by the transit agency as net benefit.

Historically cross-border leases have netted transit agencies "up-front" cost savings of 1.5 to 7 percent of project capital expenditures. Between 1988 and 1996 there were 19 of these transactions involving a total of \$1.23 billion in asset value, which generated a total of \$66.9 million in net benefits to transit agencies. Due to the complexity and cost of these transactions, capital purchases of at least \$20 million are generally required. The most cost effective cross-border leases have exceeded \$50 million in transaction value. As with any financial mechanism there are risks involved with cross-border leases. The level of cash benefits generated by cross-border leases will vary as a result of interest rates, lease duration, asset type, foreign tax laws, transaction costs, and exchange rates.

In December 1994, the Regional Transportation District (RTD) of Denver, Colorado, successfully closed a cross-border lease transaction with DB Export Leasing GmbH (DBX), involving 11 light rail vehicles manufactured by Siemens Duewag Corporation. For the transaction the equipment was appraised at approximately \$25 million with a useful life of 20 years. Under the terms of the agreement CS First Boston (CSFB) entered into a lending agreement with DBX to aid in the purchase of the railcars. RTD then leased the equipment from DBX under a lease agreement granting RTD a purchase option at the end of its 18-year term. With the vehicle sales proceeds RTD paid its transaction costs, lease obligations, and funded an escrow account to finance the purchase price of the equipment, retaining approximately 2 percent of the proceeds as its net benefit from the transaction.

To reduce the cost of refurbishing its Arrow III commuter rail cars, New Jersey Transit (NJT) entered into a cross-border lease with Asea Brown Boveri (ABB) and its Netherlands banking subsidiary. NJT sold 223 refurbished commuter rail cars to ABB and leased them back for 12 years or more, realizing a transaction net benefit of \$18.4 million.

⁸⁵ *Innovative Financing Techniques for America's Transit Systems*, Federal Transit Administration, September 1998

⁸⁶ TCRP Legal Research Digest Number 13, *Transit Cooperative Research Program*, August 1999

⁸⁷ *Innovative Financing Handbook*, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhnbk.html>

Further guidance on cross-border leases can be found in FTA Circular 7020.1 "Cross-Border Leasing Guidelines."

4.4.5 Pickle Lease (Sale/Leaseback)⁸⁸

In 1986 the Tax Simplification Act eliminated the Safe Harbor lease and replaced it with a new form of municipal lease with far fewer benefits to the private investor. This new lease structure, named after one of its sponsors, Senator J.J. Pickle, is commonly referred to as the "pickle" lease. A pickle lease involves the sale and leaseback of assets belonging to tax-exempt entities that cannot, in ordinary circumstances, benefit from the depreciation on their capital assets. Pickle leases have traditionally involved both domestic and foreign investors and are therefore sometimes considered cross-border leases.

Pickle leases must meet the following criteria:

- The initial lease term may be for at most 80 percent of the assets useful life.
- Lease payments must be level from year to year.
- The asset being leased must be salable at the end of the lease, at a market price, to any willing buyer.

In a pickle lease the transit agency sells an asset to an equity investor and then leases the asset back in a lease structure involving a third party. Favorable lease terms allow the transit agency to realize a net present value benefit of 2.5 to 4.5 percent. The primary reasons investors seek pickle leases are that they are low risk and provide stable payments over the long term. Additionally pickle leases provide a means to shelter near term income from taxation.

As with other lease arrangements the FTA has reviewed all pickle leases to:

- Ascertain that the transit system would retain effective control of the leased asset for ongoing transit service.
- Ensure that the transaction did not unduly increase the transit system's current debt and thus hinder its ability to continue transit service.
- Ensure that the transit system derives more benefit than its financial advisors from the transaction undertaken.

It is important to note that approval by FTA of sale/leaseback programs is on hold pending a review by the federal government of the procedure.

⁸⁸ *Innovative Financing Techniques For America's Transit Systems, Federal Transit Administration, September 1998*

4.4.6 U.S. Leasehold Interest^{89,90}

U.S. leasehold interest transactions have gained popularity in the transit industry and are commonly referred to as a "467 leases," "lease-in/lease-out" (LILO), and lease/leaseback. This type of transaction is originally based on the lease of an intangible asset such as movie rights. In a U.S. leasehold interest transaction an investor leases an asset from a transit property creating an intangible asset in the form of this original or "head" lease. The investor then leases this lease, and the property usage rights, back to the transit property. Under this arrangement, as much as 8 percent of the transaction value may be returned to the transit property.

U.S. leasehold interest transactions are very similar to pickle leases. They are governed by the same laws and restrictions and are attractive to investors for the same reasons. However, unlike pickle leases, these transactions generally require assets with values of \$200 million or more. This suggests that practical use of lease/leaseback techniques may be restricted to large transit authorities.

There are also several key legal requirements related to U.S. leasehold interest transactions. The owner of the asset must be a non-taxpaying entity and be at least A-rated or willing to prove letters of credit from banks rated AA or better. The asset must have a 20-year minimum remaining life, a minimum of \$50 million in value, and a fair market value that increases or remains stable for at least 20 years. In addition, the asset must be property that the head lessee could reasonably use of lease to a party unrelated to the asset owner.

4.4.7 Vendor Financing^{91,92}

Vendor financing is a loosely defined term used to describe arrangements in which transit operators contract with vendors of transit related infrastructure to provide and share in the cost and/or operation of a particular transit asset. Vendor financing can be used to describe portions of Super Turnkey projects or joint development lease arrangements however it is most commonly used when referring to arrangements in which a single equipment or service vendor retains a long term interest in a facility provided explicitly for transit use. Recent examples have focused on the development of CNG fueling facilities and bus purchases.

In 1994 the Metropolitan Atlanta Rapid Transit Authority (MARTA) issued an RFP for bus purchases requesting prices for both diesel and CNG buses and vehicles. To

⁸⁹ NCHRP Innovative Financing web site, <http://www.innovativefinance.org>

⁹⁰ TCRP Legal Research Digest Number 13, Transit Cooperative Research Program, August 1999

⁹¹ TCRP Report 31: Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program, National Academy Press, Washington, D.C., 1998

⁹² Innovative Financing Techniques for America's Transit Systems, Federal Transit Administration, September 1998

encourage MARTA to purchase the CNG vehicles Atlanta Gas Light offered to cover the entire cost of the fueling facility and provide financial assistance for the bus purchases. Atlanta Gas Light paid the entire cost to build the \$2.5 million facility. Additionally, Atlanta Gas Light paid half of the price differential between CNG and diesel buses for the first 60 buses and 10 percent of the price differential for the next 140 buses. In return, MARTA committed to purchase its natural gas from Atlanta Gas Light.

In 1991 the Bi-State Development Agency (BSDA) undertook a test of CNG technology for buses in a partnership with the Laclede Gas Company, the local natural gas supplier. The test was so successful that BSDA purchased 36 new CNG buses to kick off a conversion to CNG for a third of its bus fleet. To complete the conversion required BSDA to modify an existing fueling and maintenance facility and purchase a total of 205 buses over 12 years. Since FTA could not provide grant funding for more fueling capacity than was needed at any point in time, the additional complication of how to pay for the fueling equipment was added. BSDA decided to try a mechanism promoted by the Natural Gas Industry known as "vendor financing."

In May of 1995, BSDA received a \$550,000 grant under the Innovative Financing Initiative to test its vendor-financing project. Shortly thereafter BSDA accepted a competitive bid from Laclede Venture Corporation to design, build, operate and maintain the CNG rapid fueling facility. To meet all of BSDA's requirements Laclede Venture proposed to install and maintain the fueling facility in four stages, over a seven-year period. Thus, BSDA would have the additional fueling capacity needed as more CNG buses are introduced into service. To pay for the fueling equipment service, BSDA and Laclede agreed to a service fee structure over 15 years.

4.4.8 Capital Cost of Maintenance/Contracting⁹³

FTA permits grantees to count a portion of the costs of a contract with a private operator for transit service operations, as a capital cost eligible for FTA capital program funding. This policy is described in more detail in FTA Circular 7010.1, "Capital Cost of Contracting." This policy generally applies to contracts for transit services where the use of facilities and equipment is provided as part of a transit service contract.

4.4.9 Advance Construction Authority^{94,95}

If granted by the FTA, Advance Construction Authority allows for the use of future federal grant funds to pay for up to 80 percent of principal and interest payments on a

⁹³ *Innovative Financing Handbook*, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/innovhbk.html>

⁹⁴ *TCRP Report 31: Funding Strategies for Public Transportation, Volume 2, Transit Cooperative Research Program*, National Academy Press, Washington, D.C., 1998

⁹⁵ *Innovative Financing Initiatives Final Report*, Federal Transit Administration, Marlaw Systems Technology, Inc. and P.G. Corbin and Company, December 1, 1999

bond issuance that is used to advance a capital project. Pursuant to the Federal Transit Act, a transit agency must apply for Advance Construction Authority for on-going projects with each subsequent transit authorizing legislation in addition to the regular grant application process. Under this mechanism a capital project may be advanced through a debt issuance and retain eligibility for federal capital grants. Thus, for projects that exceed an agency's annual FTA capital allocation, a transit agency can build them immediately without having to wait to collect multiple years of allocations and realize benefits of the project sooner. Another advantages of this method of payment is the ability to consolidate construction into a single contract that simplifies contract management and accelerates project completion.

Advance Construction Authority does have two disadvantages. First, if FTA funds are discontinued or decreased, an Agency could be responsible for funding project costs. Second, its use will dedicate a portion of future capital grant funds to the payment of debt interest.

In the early 1990's the Massachusetts Bay Transportation Authority (MBTA) was faced with the overhaul of its Boston Engine Terminal but could not identify sufficient capital funding to move the project forward, and undertaking the project piecemeal was not an acceptable option. In 1994 MBTA submitted its proposal to the FTA for Advance Construction Authority. Under the plan the \$235 million project was to be financed through using Section 5309 Fixed Guideway Modernization funds. They proposed to use \$16 million of their annual allocation per year, over 19 years, to pay off the principal and interest of debt instruments used to complete the project.

Advance Construction Authority was granted, and the MBTA was able to complete the project in six years. Based on an annual inflation rate of 5 percent, the project is estimated to cost \$34 million less that it would have cost had the MBTA used the traditional pay as you go method. In addition, MBTA is saving millions in vehicle maintenance costs due to the accelerated availability of the new facility.

4.4.10 Deferred Local Match^{96,97}

To maximize the use of local funds, transit grantees may wish to delay the application of local match funding. For instance if the funds are invested in short-term securities or there exists an opportunity for construction financing, this requires uneven expenditure of federal funds.

With FTA approval, a grantee may defer the local share of a transit project funded by Sections 5309, 5303, 5307, 5310, 5311, and 5320 funds. Under this policy, grantees may

⁹⁶ *Innovative Financing Handbook, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhnbk.html>*

⁹⁷ *FTA Circular 9030.1 C, Urbanize Area Formula Program: Grant Application Instructions*

draw down 100 percent of the first 80 percent of project cost. A request for the deferral should accompany the grant request. If a grant has already been approved, a written request to FTA must be made. Approval is contingent upon the deferral's resulting in benefits to transit and upon the applicant's demonstrating the grantees financial capacity to complete the project. Deferred local match is not available for projects with Full Funding Grant Agreements. Further information on the deferred local match policy is available in 57 Federal Register, 30880, "Policy Statements on Local Share Issues," July 10, 1992.

4.4.11 Toll Revenue Credits^{98,99}

The passage of ISTEA provided the provision that allows for toll revenues from public roads and bridges expended for capital investments to be used as a "soft match" for Federal grant funds. Thus, local match funds can be used for other projects. The passage of TEA-21 made this provision permanent. The amount of credit toward local share earned by a state is based on revenue generated by toll authorities within the state that are used to build, improve, or maintain highways, bridges, or tunnels that serve interstate commerce. TEA-21 also increased the eligibility time frame to four years. The determination of toll revenue credits within each state lies with the Federal Highway Administration.

4.4.12 Like Kind Exchange¹⁰⁰

FTA permits the transfer of the remaining Federal interest in an asset to be transferred to a new asset in order to facilitate the early replacement of such assets. For example, under the Like King Exchange policy, buses which have reached only half of their expected useful life may be sold, and the proceeds may be used to pay part of the cost of like-kind replacement vehicles, so long as the remaining Federal interest in the vehicles is applied to the new vehicles. In such cases proceeds from the sale of assets do not have to be returned to the Federal government. More information on the Like Kind Exchange policy can be found in 57 Federal Register, 39328, August 28, 1992.

4.4.13 Advance Right of Way Acquisition¹⁰¹

Under limited circumstances, FTA program funds can be used to acquire and preserve existing transportation corridors and rights-of-way for future use in transit fixed guideway projects. Alternatively, existing corridors and rights-of-way acquired with local funds may be used as a local match for FTA grants at its current value.

⁹⁸ *Innovative Financing Handbook, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhnbk.html>*

⁹⁹ *FTA Circular 9030.1 C, Urbanize Area Formula Program: Grant Application Instructions*

¹⁰⁰ *Innovative Financing Handbook, Federal Transit Administration, available at <http://www.fta.dot.gov/library/money/inovhnbk.html>*

¹⁰¹ *Ibid.*

Acquisitions of corridors and rights-of-way must meet the FTA/FHWA requirement for completion of a Major Investment Study before a project can be programmed for funding, and the land acquisition must not prejudice the ultimate decisions on mode and alignment for the project prior to the completion of the National Environmental Policy Act study for the project.

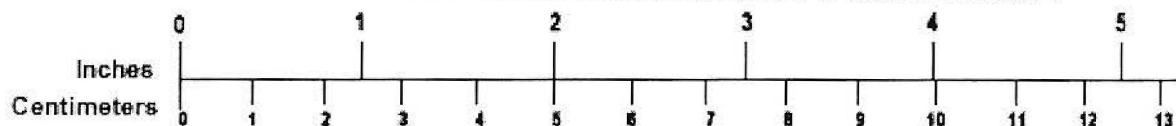
METRIC/ENGLISH CONVERSION FACTORS

ENGLISH TO METRIC

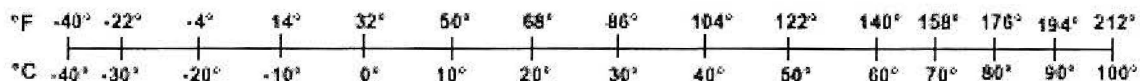
METRIC TO ENGLISH

<p>LENGTH (APPROXIMATE)</p> <p>1 inch (in) = 2.5 centimeters (cm)</p> <p>1 foot (ft) = 30 centimeters (cm)</p> <p>1 yard (yd) = 0.9 meter (m)</p> <p>1 mile (mi) = 1.6 kilometers (km)</p>	<p>LENGTH (APPROXIMATE)</p> <p>1 millimeter (mm) = 0.04 inch (in)</p> <p>1 centimeter (cm) = 0.4 inch (in)</p> <p>1 meter (m) = 3.3 feet (ft)</p> <p>1 meter (m) = 1.1 yards (yd)</p> <p>1 kilometer (km) = 0.6 mile (mi)</p>
<p>AREA (APPROXIMATE)</p> <p>1 square inch (sq in, in²) = 6.5 square centimeters (cm²)</p> <p>1 square foot (sq ft, ft²) = 0.09 square meter (m²)</p> <p>1 square yard (sq yd, yd²) = 0.8 square meter (m²)</p> <p>1 square mile (sq mi, mi²) = 2.6 square kilometers (km²)</p> <p>1 acre = 0.4 hectare (ha) = 4,000 square meters (m²)</p>	<p>AREA (APPROXIMATE)</p> <p>1 square centimeter (cm²) = 0.16 square inch (sq in, in²)</p> <p>1 square meter (m²) = 1.2 square yards (sq yd, yd²)</p> <p>1 square kilometer (km²) = 0.4 square mile (sq mi, mi²)</p> <p>10,000 square meters (m²) = 1 hectare (ha) = 2.5 acres</p>
<p>MASS - WEIGHT (APPROXIMATE)</p> <p>1 ounce (oz) = 28 grams (gm)</p> <p>1 pound (lb) = 0.45 kilogram (kg)</p> <p>1 short ton = 2,000 pounds (lb) = 0.9 tonne (t)</p>	<p>MASS - WEIGHT (APPROXIMATE)</p> <p>1 gram (gm) = 0.036 ounce (oz)</p> <p>1 kilogram (kg) = 2.2 pounds (lb)</p> <p>1 tonne (t) = 1,000 kilograms (kg) = 1.1 short tons</p>
<p>VOLUME (APPROXIMATE)</p> <p>1 teaspoon (tsp) = 5 milliliters (ml)</p> <p>1 tablespoon (tbsp) = 15 milliliters (ml)</p> <p>1 fluid ounce (fl oz) = 30 milliliters (ml)</p> <p>1 cup (c) = 0.24 liter (l)</p> <p>1 pint (pt) = 0.47 liter (l)</p> <p>1 quart (qt) = 0.96 liter (l)</p> <p>1 gallon (gal) = 3.8 liters (l)</p> <p>1 cubic foot (cu ft, ft³) = 0.03 cubic meter (m³)</p> <p>1 cubic yard (cu yd, yd³) = 0.76 cubic meter (m³)</p>	<p>VOLUME (APPROXIMATE)</p> <p>1 milliliter (ml) = 0.03 fluid ounce (fl oz)</p> <p>1 liter (l) = 2.1 pints (pt)</p> <p>1 liter (l) = 1.06 quarts (qt)</p> <p>1 liter (l) = 0.26 gallon (gal)</p> <p>1 cubic meter (m³) = 38 cubic feet (cu ft, ft³)</p> <p>1 cubic meter (m³) = 1.3 cubic yards (cu yd, yd³)</p>
<p>TEMPERATURE (EXACT)</p> <p>$[(x-32)(5/9)]^{\circ}\text{F} = y^{\circ}\text{C}$</p>	<p>TEMPERATURE (EXACT)</p> <p>$[(9/5)y + 32]^{\circ}\text{C} = x^{\circ}\text{F}$</p>

QUICK INCH - CENTIMETER LENGTH CONVERSION



QUICK FAHRENHEIT - CELSIUS TEMPERATURE CONVERSION



For more exact and/or other conversion factors, see NIST Miscellaneous Publication 286, Units of Weights and Measures. Price \$2.50 SD Catalog No. C-13 10286

