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FEDERAL TRANSIT ADMINISTRATION

Bus Rapid Transit Offers Communities a Flexible Mass Transit Option

Statement of JayEtta Hecker, Director
Physical Infrastructure Issues

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GAO-03-729T

June 24, 2003

FEDERAL TRANSIT ADMINISTRATION

Bus Rapid Transit Offers Communities a Flexible Mass Transit Option

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Highlights

Highlights of GAO-03-729T, a testimony before the Senate Committee on Banking, Housing, and Urban Affairs

Why GAO Did This Study

Buses form the backbone of the nation's mass transit systems. About 58 percent of all mass transit users take the bus, and even in many cities with extensive rail systems, more people ride the bus than take the train. In recent years, innovative Bus Rapid Transit systems have gained attention as an option for transit agencies to meet their mass transit needs. These systems are designed to provide major improvements in the speed, reliability, and quality of bus service through barrier-separated busways (see photo), high-occupancy vehicle lanes, or reserved lanes or other enhancements on arterial streets.

The characteristics of Bus Rapid Transit systems vary considerably, but may include (1) improved physical facilities or specialized structures such as dedicated rights-of-way; (2) operating differences such as fewer stops and higher speeds; (3) new equipment such as more advanced, quieter, and cleaner buses; and (4) new technologies such as more efficient traffic signalization and real-time information systems.

This testimony, which updates a report GAO issued in September 2001, provides (1) information on federal support for Bus Rapid Transit systems and (2) an overview of factors affecting the selection of Bus Rapid Transit as a mass transit option.

www.gao.gov/cgi-bin/getrpt?GAO-03-729T.

To view the full testimony click on the link above. For more information, contact JayEtta Hecker, (202) 512-8984, heckerj@gao.gov.

What GAO Found

Federal grants are available for Bus Rapid Transit projects, primarily through the Federal Transit Administration's (FTA) New Starts program. However, only one project currently has a funding commitment since few Bus Rapid Transit projects are ready to compete for funding, competition for New Starts funding is intense, and certain types of Bus Rapid Transit projects are not eligible for New Starts funding because the program provides grants only for projects that operate on a separate right-of-way for the exclusive use of mass transit and high-occupancy vehicles. FTA is proposing to change this requirement so that more Bus Rapid Transit projects can be eligible for New Starts funding. In addition, constraints on the use or size of the other federal grants may limit their usefulness for Bus Rapid Transit projects. Under a demonstration program that began in 1999, FTA awarded $50,000 to each of 10 grantees for projects designed to help determine the extent to which Bus Rapid Transit can increase ridership, improve efficiency, and provide high-quality service. FTA plans to evaluate the demonstration projects to determine their most effective elements.

When selecting a mass transit system, communities consider its capital and operating costs, performance, and other advantages and disadvantages. In the cities that GAO reviewed, the per-mile capital costs of Bus Rapid Transit varied with the type of system—averaging $13.5 million for busways, $9.0 million for buses on high-occupancy vehicle lanes, and $680,000 for buses on city streets—and compared favorably with the per-mile capital costs of Light Rail. In the cities that GAO reviewed with both Bus Rapid Transit and Light Rail service, neither type of service had a consistent advantage in terms of operating costs, and Bus Rapid Transit was comparable to Light Rail in terms of ridership and operating speed. A major advantage of Bus Rapid Transit is its flexibility: buses can be rerouted to accommodate changing traffic patterns and can operate on busways, high-occupancy vehicle lanes, and city arterial streets. However, the public may view Bus Rapid Transit as less likely than Light Rail to improve a community's image and spur economic development.

Bus Rapid Transit Service on a Barrier-Separated Busway

Source: Charlotte Area Transit System.

Mr. Chairman and Members of the Committee:

We appreciate the opportunity to testify today on Bus Rapid Transit as an innovative option for improving bus service. Buses form the backbone of the public mass transit system in the United States. The majority of those who use mass transit, about 58 percent of all riders, take the bus. Even in many cities with extensive rail networks, such as Chicago and San Francisco, more people ride buses than use the rail systems.

In recent years, innovative Bus Rapid Transit systems have gained attention as an option for transit agencies to meet their mass transit needs. In general, Bus Rapid Transit is designed to provide major improvements in the speed, reliability, and quality of bus service through barrier-separated busways (see fig. 1), high-occupancy vehicle lanes, or reserved lanes or other enhancements on arterial streets. Bus Rapid Transit systems vary considerably in their characteristics but may include (1) improved physical facilities or specialized structures such as dedicated rights-of-way; (2) operating differences such as fewer stops and higher speeds; (3) new equipment such as more advanced, quieter, and cleaner buses; and (4) new technologies such as more efficient traffic signalization and real-time information systems.

Figure 1: Barrier-Separated Busways

Sources: Bus Rapid Transit Institute (top), Charlotte Area Transit System (bottom).

My testimony today will provide (1) information on federal support for Bus Rapid Transit systems and (2) an overview of the factors affecting the selection of Bus Rapid Transit as a mass transit option. My statement is primarily based on information presented in our September 2001 report on Bus Rapid Transit.[1] To complete that effort, we visited transit agencies in Dallas, Denver, Los Angeles, Pittsburgh, San Diego, and San Jose to obtain capital and operating cost information. We made cost and other comparisons between Bus Rapid Transit and Light Rail transit systems,

[1]U.S. General Accounting Office, *Mass Transit: Bus Rapid Transit Shows Promise*, GAO-01-984 (Washington, D.C.: Sept. 17, 2001).

which often compete as project alternatives. We also interviewed federal officials and industry experts to identify the advantages and disadvantages of Bus Rapid Transit. In addition, for the testimony, we obtained updates of the information in our 2001 report from Federal Transit Administration officials.

In summary:

- Federal support for Bus Rapid Transit projects may come from several different sources, including the Federal Transit Administration's New Starts, Bus Capital, and Urbanized Area Formula Grants programs.[2] However, few Bus Rapid Transit projects are scheduled to receive New Starts grant funding. Through fiscal year 2004, one Bus Rapid Transit project in Boston was awarded a New Starts grant, totaling about $331 million. New Starts commitments for Bus Rapid Transit projects are limited because (1) few Bus Rapid Transit projects are ready to compete for funding; (2) competition for New Starts funds is intense—currently, 85 mass transit projects at various stages are competing for funds; and (3) certain types of Bus Rapid Transit projects are not eligible for New Starts funding because the program provides funding only for projects that operate on separate right-of-ways for the exclusive use of mass transit and high-occupancy vehicles. In addition, constraints on the use or size of the other federal grants may limit their usefulness for Bus Rapid Transit projects. However, some programs that expand the capacity of highways, such as introducing new variable toll lanes, can be used in conjunction with Bus Rapid Transit to the mutual benefit of transit and highway users.[3] Besides awarding grants to construct systems, the Federal Transit Administration supports Bus Rapid Transit through a demonstration program that began in 1999. Under this program, $50,000 was provided to each of 10 grantees to improve information sharing among transit agencies about issues pertaining to Bus Rapid Transit. The demonstration program is designed to determine the extent to which Bus Rapid Transit can

[2]The New Starts program is the primary federal program that supports the construction of new fixed-guideway transit systems. As a result, its grants have generally been used to fund rail projects. The Bus Capital and Urbanized Grants programs provide funds to states that may be used to help fund Bus Rapid Transit projects as well as other state transit programs.

[3]The Federal Highway Administration's Value Pricing Pilot Program allows high-occupancy vehicle lanes to be converted to variable toll lanes. In one pilot program, toll revenues were used to operate an express bus service on the toll lanes. Expansion of this concept, where toll revenues fund Bus Rapid Transit service along the toll lanes, has been proposed in new pilot projects.

increase ridership, improve efficiency, and provide high-quality service. The grantees' projects include dedicated busways, bus lanes on arterial streets, improved technology on buses, and other innovations.

- Communities consider several factors when they select mass transit options. Our 2001 report examined such factors as capital cost and operating costs, system performance, and other advantages and disadvantages of Bus Rapid Transit. We found, for example, that the capital costs of Bus Rapid Transit in the cities we reviewed averaged $13.5 million per mile for busways, $9.0 million per mile for buses on high-occupancy vehicle lanes, and $680,000 per mile for buses on city streets, when adjusted to 2000 dollars.[4] For comparison, we examined the capital costs of several Light Rail lines and found that they averaged about $34.8 million per mile, ranging from $12.4 million to $118.8 million per mile.[5] In addition, in the cities we reviewed that had both types of service, neither Bus Rapid Transit nor Light Rail had a consistent advantage in terms of operating costs. We also found that Bus Rapid Transit compared favorably with Light Rail systems in terms of operating speed and ridership. Furthermore, Bus Rapid Transit has the advantage of being flexible: buses can be rerouted more easily to accommodate changing travel patterns to eliminate transfers; buses can operate on busways, high-occupancy vehicle lanes, and city arterial streets. However, Bus Rapid Transit has some disadvantages as well. For example, the public may view buses as slow, noisy, and polluting. Moreover, according to some transit agency officials, alternatives to Bus Rapid Transit, such as Light Rail, may be viewed as a hallmark of a "world-class" city and a means to improve the community's image and spur economic development.

Background

Bus Rapid Transit involves coordinated improvements in a transit system's infrastructure, equipment, operations, and technology that give preferential treatment to buses on urban roadways. Bus Rapid Transit is not a single type of transit system; rather, it encompasses a variety of approaches designed to improve speed, reliability, and quality of service. We identified three general types of Bus Rapid Transit systems—those that

[4]Capital costs typically include the costs to plan, design, and construct a project.

[5]Light Rail transit is a metropolitan-electric railway system characterized by its ability to operate in a variety of environments, such as streets, subways, or elevated structures. Because Light Rail systems can operate on streets with other traffic, they typically use an overhead source for their electrical power, and passengers board from the street or platforms.

(1) use buses on exclusive busways, (2) share high-occupancy vehicle (HOV) lanes with other vehicles, and (3) provide improved bus service on city arterial streets. Busways—special roadways designed for the exclusive use of buses—can be totally separate roadways or separated by barriers from other traffic within highway rights-of-way. Busways currently exist in Pittsburgh, Miami, and Charlotte. Buses on HOV lanes operate on limited-access highways designed for long-distance commuters. Dallas, Denver, Houston, Los Angeles, and Seattle make extensive use of HOV lanes for buses.[6] Bus Rapid Transit service on busways or HOV lanes is sometimes augmented by park and ride facilities and entrances and exits for these lanes. Bus Rapid Transit systems using arterial streets may have lanes reserved for buses and street enhancements that speed buses and improve service. Los Angeles has instituted a type of Bus Rapid Transit service on two arterial corridors.

Bus Rapid Transit may also include any of the following features:

- *Traffic signal priority*. Buses receiving an early or extended green light at intersections reduce travel time—in Los Angeles, for example, by as much as 10 percent.

- *Boarding and fare collection improvements*. Prepaid or electronic passes increase the convenience and speed of fare collection, and low-floor or wide-door boarding saves time.

- *Limited stops*. Increasing distances between stations or shelters improves operating speeds.

- *Improved stations and shelters*. Bus terminals and unique stations or shelters differentiate Bus Rapid Transit service from standard bus service. (See fig. 2.)

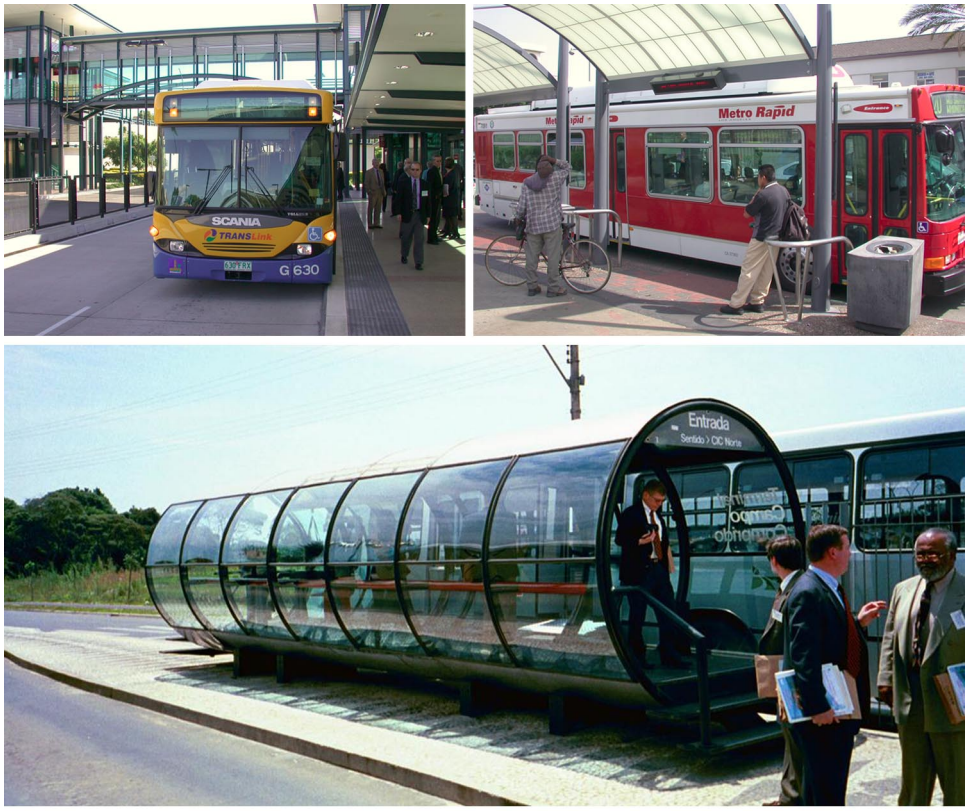
- *Intelligent Transportation System technologies*. Advanced technology can maintain consistent distances between buses and inform passengers when the next bus is arriving.

- *Cleaner and quieter vehicles*. Improved diesel buses and buses using alternative fuels are cleaner than traditional diesel buses.

[6]Los Angeles and Houston originally built their systems as exclusive busways and later converted them to HOV facilities.

In our September 2001 review of Bus Rapid Transit systems, we found that at least 17 U.S. cities were planning to incorporate aspects of Bus Rapid Transit into their operations.

Figure 2: Improved Stations and Shelters



Source: Bus Rapid Transit Institute.

Federal Grants and a Demonstration Program Are Available to Help Support Bus Rapid Transit Projects

A variety of federal grant programs could be used to help fund Bus Rapid Transit projects, but few projects are in line to receive awards. The Federal Transit Administration (FTA) has also provided funding for several Bus Rapid Transit projects through a demonstration program.

One Bus Rapid Transit Project Is Receiving Federal New Starts Grant Funding

Grant funds administered primarily by FTA and, to a lesser extent, by the Federal Highway Administration are available for Bus Rapid Transit projects. However, few Bus Rapid Transit projects are ready to compete for these funds, competition for funding is intense, and constraints on the use and size of the grants limit their usefulness for Bus Rapid Transit projects.

FTA's New Starts Program is the primary source of federal funding for the construction of new transit systems and extensions to existing systems. It provides grants of up to 80 percent of the capital costs of bus and rail projects that operate on exclusive rights-of-way.[7] To obtain funds, a project must progress through a local or regional review of alternatives, develop preliminary engineering plans, and receive FTA's approval of the final design. FTA annually proposes New Starts projects to the Congress for funding, basing its proposal on an evaluation of each project's technical merits, including its planned mobility improvements and cost effectiveness, and the stability of the locality's financial commitment. In making its funding proposal each year, FTA gives preference to projects with existing grant agreements. FTA then considers projects with overall ratings of "recommended" or "highly recommended" under the evaluation criteria. The Transportation Equity Act for the 21st Century (TEA-21) authorized about $6 billion in "guaranteed" funding over 6 years for New Starts transit projects.[8]

As table 1 indicates, few Bus Rapid Transit projects are ready to compete for New Starts funding. Apart from the one project that has already received a funding commitment, none has progressed far enough for FTA to evaluate it for funding, and not all of the six projects that are in the preliminary engineering and final design categories may decide to compete for New Starts funding.

[7]A full-funding grant agreement establishes the terms and conditions for federal participation, including the maximum amount of federal funds to be made available to the project. The administration has recommended reducing the cap on New Starts funding to 50 percent of a project's cost to ensure that local governments play a major role in funding these transit projects. Under the current program, transit agencies could supplement New Starts funds with other federal transit funds for a total federal contribution of up to 80 percent. In addition, for fiscal year 2003, FTA instituted a preference policy of favoring projects seeking only 60 percent for the maximum federal share for all current and future projects because it wanted to fund more projects.

[8]These funds are subject to a procedural mechanism designed to ensure that minimum amounts are provided each year. In addition, TEA-21 authorized FTA to make contingent commitments subject to future authorizations and appropriations acts.

Table 1: Proposed Fiscal Year 2004 New Starts Program Funding for Bus Rapid Transit

Dollars in millions

	Total New Starts		Bus Rapid Transit portion	
Category of projects	**Number of New Starts projects**	**Actual or proposed funding[a]**	**Number of Bus Rapid Transit projects**	**Actual or proposed funding[a]**
Projects with full-funding grant agreements	26	$7,375	1	$331
Projects pending full-funding grant agreements	3	772	0	0
Projects in final design	14	3,622	1	123
Projects in preliminary engineering	42	19,343	5	1,149
Other projects authorized[b]	123	N/A	8	N/A
Total	**208**	**$31,112**	**15**	**$1,603**

Legend: N/A = Not applicable.

Source: GAO analysis of FTA data.

[a]For projects with full-funding grant agreements, figures represent amounts committed; for projects in other categories, figures represent amounts proposed by transit agencies for New Starts funding.

[b]Includes projects that were specifically identified in FTA's Proposed Fiscal Year 2004 Annual Report on New Starts as having Bus Rapid Transit as one of the transit options being considered.

In addition to Bus Rapid Transit projects, Light Rail, Heavy Rail, and Commuter Railroad projects can compete for New Starts funding. Nationwide, over 200 projects are now in various stages of development, and these other types of projects outnumber Bus Rapid Transit projects in all of the New Starts program categories. Of the approximately $7.4 billion in proposed commitments for New Starts projects with full-funding grant agreements for fiscal year 2004, about $4.6 billion is for Light Rail, $2.0 billion for Heavy Rail, $430 million for Commuter Rail, and $330 million for Bus Rapid Transit. The funding for Bus Rapid Transit was awarded to a project in Boston.

A constraint on the use of New Starts funding further limits its use for Bus Rapid Transit projects. Currently, the program requires that, to be eligible for funding, a project must operate on separate rights-of-way for the exclusive use of mass transit and high-occupancy vehicles. While some Bus Rapid Transit projects, such as busways, fit this requirement, others, such as those that operate buses on city streets in mixed traffic, do not. FTA has proposed changing the fixed-guideway requirement in its fiscal year 2004 budget proposal. Under the proposal, new non-fixed-guideway improvements done on a corridor basis would be eligible for New Starts funds. This change could allow New Starts funds to be used for arterial street Bus Rapid Transit projects, because these projects operate in specific corridors.

Other federal programs also provide grants for transit projects, but constraints on the use or size of these grants may limit their usefulness for Bus Rapid Transit projects. For example:

- As we noted in our 2001 report, transit agencies can apply funds obtained through FTA's Urbanized Area Formula Grants program to Bus Rapid Transit and other transit projects. This program provides capital and operating assistance to urbanized areas with populations of more than 50,000. However, areas with populations over 200,000 may only use the funds for capital improvements.

- The Bus Capital Program provides a large number of relatively small grants to states and local transit agencies for bus improvements. In fiscal year 2003, the Congress appropriated about $651 million for 387 grants, ranging from $30,000 to $16 million; the largest amounts were typically provided for statewide bus projects. In fiscal year 2003, a number of Bus Rapid Transit projects are expected to receive funds under this program. For example, the Hartford-New Britain busway project in Connecticut was allocated about $7.4 million, and the Bus Rapid Transit system in Honolulu was allocated about $7.9 million. While these funds can be combined with funds from other programs, such as New Starts, they are generally not sufficient to fund a major Bus Rapid Transit project alone.

- Bus Rapid Transit and other transit projects can qualify for certain types of federal highway funds administered by the Federal Highway Administration. For example, as noted in our 2001 report, transit agencies have used Surface Transportation Program and Congestion Mitigation and Air Quality Improvement funds to help pay for transit projects.[9] The Boston Bus Rapid Transit project, with a full funding grant agreement, did not plan to use highway funds as part of its project financing.

- Bus Rapid Transit can also be utilized in conjunction with the Federal Highway Administration's Value Pricing Pilot Program. This program allows high occupancy vehicle lanes to be converted to variable toll lanes, where the toll varies with the level of congestion on the highway. In a project on the I-15 freeway in San Diego, the revenue generated from the tolls is used to help fund an express bus service operating on the toll lane. Plans to build additional variable toll lanes in San Diego include expansion

[9]Among other things, Surface Transportation Program funds are provided to states to be used for the capital costs of transit projects. Congestion Mitigation and Air Quality Improvement Program funds are generally available to states for transportation projects designed to help them meet the requirements of the Clean Air Act.

of Bus Rapid Transit to operate on the new lanes. Projects such as this are limited, however, by a prohibition on charging tolls on the Interstate Highway System and by the inherently limited scope of the pilot program.

FTA Supports Bus Rapid Transit through a Demonstration Program

In 1999, FTA initiated a demonstration program to generate familiarity and interest in Bus Rapid Transit. From FTA's perspective, Bus Rapid Transit is a step toward developing public transit systems that have the performance and appeal of Light Rail systems, but lower capital costs. FTA contends that using technological advancements will allow buses to operate with the speed, reliability, and efficiency of rail systems. FTA promotes the Bus Rapid Transit concept with the slogan "think rail, use buses."

The goal of the demonstration program was to promote improved bus service as an alternative to more capital-intensive rail projects. The program provided $50,000 to 10 transit agencies to share information and data on new Bus Rapid Transit projects.[10] FTA wanted the Bus Rapid Transit program to show how using technological advancements and improving the image of buses would allow buses to increase ridership and operate with the speed, reliability, and efficiency of Light Rail. The grantees in the demonstration program may also be eligible for federal capital funds through the New Starts, Bus Capital, and Urbanized Area Formula Grants programs. FTA has held workshops focusing on developing components of Bus Rapid Transit systems, such as vehicles, marketing and promoting the system's image, fare collection, and traffic operations.

Some localities participating in the demonstration program have planned or put in place more extensive components of a Bus Rapid Transit system than others. For example, Miami and Charlotte have busways for the exclusive use of buses, while San Jose is implementing technological and service improvements, such as signal prioritization on a high-ridership HOV-lane arterial corridor. In Eugene, plans are to purchase buses that will look like trains and operate in special bus lanes. In Cleveland, an extensive Bus Rapid Transit project is planned that involves the extensive reconstruction of Euclid Avenue, including signal prioritization, bus

[10]FTA recently provided funding to Los Angeles, California and Las Vegas, Nevada. The program includes six additional members of the Bus Rapid Transit consortium. These consortium members attend workshops and support the program's goals.

station structures, and reconstructed sidewalks along the corridor. Table 2 summarizes differences in the components of Bus Rapid Transit demonstration projects.

Table 2: Elements of Bus Rapid Transit in the FTA Demonstration Program's Projects

Elements	Boston	Charlotte	Cleveland	Washington, D.C.; Dulles	Eugene	Hartford	Honolulu	Miami	San Juan	San Jose
Busways		●			●	●		●		
Bus lanes	●	●	●			●		●		
Bus on HOV-Expressways		●		●[a]			●		●	
Signal priority		●	●	●	●		●			
Fare collection improvements			●	●	●					●
Limited stops	●		●	●	●		●	●		●
Improved stations and shelters		●	●	●	●	●		●		●
Intelligent transportation systems	●	●	●	●	●	●	●	●	●	●
Cleaner/quieter vehicles	●		●		●					

Source: GAO presentation of FTA information.

Note: Individual elements may change as demonstration projects evolve.

[a]Includes the use of a limited-access airport road.

FTA plans to evaluate the demonstration projects after they are implemented. Through these evaluations, FTA wants to determine the most effective Bus Rapid Transit elements so that other transit agencies can model similar systems.

Several Factors Affect the Selection of Bus Rapid Transit As a Mass Transit Option

Decisions to pursue a Bus Rapid Transit project require significant planning and analysis of factors associated with transit options. Our 2001 report examined such factors as capital and operating costs, system performance, and other advantages and disadvantages of Bus Rapid Transit.

Capital and Operating Costs

The cost of constructing a mass transit system is a major consideration for communities as they evaluate their transportation options. Our September 2001 report examined 20 existing Bus Rapid Transit lines and found that

Bus Rapid Transit capital costs, when adjusted to 2000 dollars, averaged $13.5 million per mile for busways, $9.0 million per mile for buses on HOV lanes, and $680,000 per mile for buses on city streets.[11] To put this information in perspective, we also determined the capital costs for 18 existing Light Rail lines and found that, when adjusted to 2000 dollars, they averaged about $34.8 million per mile, ranging from $12.4 million to $118.8 million per mile. Bus Rapid Transit has some capital cost advantages because it does not require certain features typical of rail systems, such as train signals, electrical power systems, and overhead wires to deliver power to trains, nor does it need rail, ties, and track ballast. As a result, Bus Rapid Transit projects typically cost less to build than some alterative approaches.

The operating cost associated with alternatives also need to be considered in selecting a transit option. Our 2001 report analyzed operating costs for six cities that had some form of Bus Rapid Transit and Light Rail systems.[12] In general, we found that the operating cost of Bus Rapid Transit varied considerably from city to city and depended on what cost measure was used. In considering operating costs, we did not find a systematic advantage of one mode over the other.

System Performance

An important objective of any mass transit system is to move as many people as quickly as possible. Ridership and the speed of a system are therefore factors to be considered in selecting transit options. In the systems we examined, these factors varied considerably for Bus Rapid Transit. For example, we found that Bus Rapid Transit ridership on 4 busways ranged from about 7,000 to about 30,000 per day, and averaged about 15,600 per day. For 13 bus lines on HOV lanes, ridership varied from about 1,000 to 25,000 per day. In addition, the ridership on the two arterial-street Bus Rapid Transit lines in Los Angeles was about 9,000 to 56,000 per day, with an average of 32,500 per day. Thus, Bus Rapid Transit systems are capable of moving large numbers of passengers each day. We also found that Light Rail ridership varied widely on the 18 lines we reviewed, ranging from 7,000 to 57,000 riders per day and averaging about 29,000 per day.

[11]Project capital costs typically include the costs to plan, design, and construct a project.

[12]The six cities were Dallas, Denver, Los Angeles, Pittsburgh, San Diego, and San Jose.

According to a transportation consultant we contacted for our 2001 report, system speed generally depends on characteristics such as the distance between stops, fare-collection methods, and the degree to which the roadway or tracks are reserved for transit vehicles or share the right-of-way with cars and other vehicles. Our analysis for the 2001 report showed a range of average speeds for Bus Rapid Transit, from 17 miles an hour for an arterial system on city streets to over 55 miles an hour for a system that used HOV lanes. We also found that, in most instances, Bus Rapid Transit was faster than Light Rail in the six cities in our study.

Other Advantages and Disadvantages of Bus Rapid Transit

The other advantages and disadvantages of Bus Rapid Transit could also affect a community's decision to pursue it as a mass transit option. For example, Bus Rapid Transit generally has the advantage of being a flexible system that can respond to changes in employment, land-use, and community patterns by increasing or decreasing capacity. In addition, Bus Rapid Transit routes can be adjusted and rerouted over time to serve new developments and dispersed employment centers that may have resulted from urban sprawl. Bus Rapid Transit systems also have the ability to operate both on and off a busway or bus lane, giving them the flexibility to respond to operating problems. Furthermore, Bus Rapid Transit has flexibility in how it is implemented and operated. For example, it is not necessary to include all the final elements of a system before beginning operations; improvements, such as signal prioritization or new low-floor buses, can be added as they become available. Another advantage is that Bus Rapid Transit can be coupled with other transportation system improvements, such as newly added toll or variable toll lanes, to the mutual benefit of both transit and highway users.[13] Transit users benefit from a new high-speed transit option, which could be funded from the toll revenues generated by the new lanes, while highway users would benefit from fewer drivers on the highway as a result of adding the high-speed transit option.

Bus Rapid Transit also presents some disadvantages that may influence communities' decision-making. For example, according to a number of transit agency officials and experts, bus service has a negative image, particularly when compared with rail service. Communities might not

[13]For example, under the Federal Highway Administration's Value Pricing Pilot Program, a project in San Diego has proposed using toll revenue generated by newly constructed variable toll lanes to pay for Bus Rapid Transit service operating on the new capacity.

favor Bus Rapid Transit, in part because the public often views buses as slow, noisy, and polluting. In addition, the public might view an alternative to Bus Rapid Transit, such as Light Rail, as the mark of a "world-class" city and a means to improve the community's image and stimulate economic development. According to transit agency officials, because rail systems have permanent stations and routes, developers are more likely to locate new business, residential, or retail development along a rail line than along a bus route. As more experience is gained with Bus Rapid Transit, its advantages and disadvantages will become better understood.

Mr. Chairman, this concludes my testimony. I would be pleased to answer any questions that you or Members of the Committee may have.

Contact and Acknowledgments

For further information on this testimony, please contact JayEtta Hecker at (202) 512-2834 or heckerj@gao.gov. Samer Abbas, Robert Ciszewski, Elizabeth Eisenstadt, and Glen Trochelman made key contributions to this testimony.

Appendix I: Locations in FTA's Bus Rapid Transit Demonstration Program

Ten locations were originally included in FTA's Bus Rapid Transit Demonstration programs. In addition, various locations are consortium members that do not receive direct funding, but attend workshops and support program goals. The demonstration and consortium locations are shown below.

Demonstration Site	Consortium Member
Boston, MA	Alameda and Contra Costa, CA
Charlotte, NC	Albany, NY
Cleveland, OH	Chicago, IL
Dulles Corridor, VA	Las Vegas, NV
Eugene, OR	Louisville, KY
Hartford, CT	Montgomery County, MD
Honolulu, HI	Pittsburgh, PA
Miami, FL	
San Jose, CA	
San Juan, PR	

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