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MASS TRANSIT

Bus Rapid Transit Shows Promise



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Abbreviations

FTA	Federal Transit Administration
GAO	General Accounting Office
HOV	High-Occupancy Vehicle



United States General Accounting Office
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Congressional Requesters

Each day millions of Americans face traffic congestion as they commute to work in automobiles. The impact from this congestion is substantial in time, resources, and pollution. For example, it is estimated that in 68 urban areas congestion cost U.S. travelers 4.5 billion hours of delay, 6.8 billion gallons of wasted fuel, and \$78 billion in 1999.¹ In an attempt to present buses as a more reliable and effective high-speed transit alternative, a concept involving the improved use of buses—Bus Rapid Transit—has emerged. Bus Rapid Transit includes operating buses on exclusive bus highways, High-Occupancy Vehicle (HOV) lanes, or improving service on busier routes on city streets. Bus Rapid Transit may also include a variety of technological and street design improvements, including traffic signal prioritization for buses; exclusive lanes; better stations or bus shelters; fewer stops; faster service; and cleaner, quieter, and more attractive vehicles.

Bus Rapid Transit as a comprehensive transportation option is exemplified in Curitiba, Brazil. Curitiba's Bus Rapid Transit system is an extensive commuter bus system that includes exclusive busways and a number of other features designed to increase speed, such as traffic signal prioritization, rail-like stations with level-floor boarding, and advance fare collection. In the United States at least 17 cities are planning to incorporate aspects of Bus Rapid Transit. The Department of Transportation's Federal Transit Administration (FTA) has begun to support this concept and expand awareness of new ways to design and operate high capacity Bus Rapid Transit systems as an alternative to building Light Rail systems. Light Rail systems generally are electric trains that may operate on streets with other traffic.

¹The 2001 Urban Mobility Report, Texas Transportation Institute, Texas A&M University System, 2001.

Figure 1: Example of Bus Rapid Transit System



Busway in Charlotte, NC

Source: Charlotte area transit system.

You asked us to (1) examine the federal role in supporting Bus Rapid Transit; (2) compare the capital costs, operating costs, and performance characteristics of Bus Rapid Transit and Light Rail systems; and (3) describe the other advantages and disadvantages of Bus Rapid Transit and Light Rail.

To address these questions, we identified where Bus Rapid Transit is being used extensively in the United States and determined how FTA supports Bus Rapid Transit projects. In addition, we visited transit agencies in Dallas, Denver, Los Angeles, Pittsburgh, San Diego, and San Jose to obtain capital and operating cost information on Bus Rapid Transit and Light Rail systems in those cities. We also interviewed FTA officials and industry experts to identify the advantages and disadvantages of Bus Rapid Transit and Light Rail systems. Appendix I provides a detailed discussion of our scope and methodology.

Results in Brief

Federal support for Bus Rapid Transit projects may come from several different sources, including FTA's New Starts, Bus Capital, and Urbanized

Area Formula Grants programs, but its use is constrained. Two Bus Rapid Transit projects have received funding commitments from the current New Starts Program, totaling about \$831 million. Few additional Bus Rapid Transit projects will likely receive funding commitments under the current New Starts Program, which expires in 2003, because (1) few Bus Rapid Transit projects are ready to compete for funding, (2) there are a large number of projects eligible to compete for the approximately \$462 million that is projected to remain available for fiscal year 2003, and (3) certain types of Bus Rapid Transit projects are not eligible for New Starts funding due to the requirement that projects operate on separate right-of-ways for the exclusive use of mass transit and high-occupancy vehicles. FTA also supports Bus Rapid Transit through a demonstration program that began in 1999. Under this program, \$50,000 was provided to each of 10 initial 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 increase ridership, improve efficiency, and provide high-quality service. The grantees' projects include dedicated busways, bus lanes on city arterial streets, improved technology on buses, and other innovations.

The Bus Rapid Transit systems generally had lower capital costs per mile than the Light Rail systems in the cities we reviewed, although neither system had a clear advantage in operating costs. Adjusting to 2000 dollars, the capital costs for the various types of Bus Rapid Transit systems in cities that we reviewed ranged from a low of \$200,000 per mile for an arterial street-based system to \$55 million per mile for a dedicated busway system (see table 1). Light Rail systems had capital costs that ranged from \$12.4 million to \$118.8 million per mile.

Table 1: Capital Costs for Selected Bus Rapid Transit and Light Rail Projects

Project type	Number of facilities examined	Capital cost per mile	
		Cost range	Average cost
Bus Rapid Transit			
Busways	9	\$7 million to \$55 million	\$13.5 million
HOV lanes	8	\$1.8 million to \$37.6 million	\$9.0 million
Arterial streets	3	\$200,000 to \$9.6 million	\$680,000
Light Rail	18	\$12.4 million to \$118.8 million	\$34.8 million

Source: Our analysis of data supplied by FTA and local transit agencies. We did not independently verify this information. See appendix I for additional details on the methodology used.

Precise operating cost comparisons for Bus Rapid Transit and Light Rail systems within and between cities are difficult due to differences among transit agencies, transit systems, and how they account for costs. We found mixed results when we compared the operating costs for Bus Rapid Transit and Light Rail systems in the cities we reviewed that operated both types of systems. Bus systems generally had lower vehicle operating costs. However, we found no clear pattern for operating cost per trip. In some cases Light Rail had higher operating costs per trip than Bus Rapid Transit, and in other cases the reverse was true. The performance characteristics of Bus Rapid Transit and Light Rail systems also varied widely, with the largest Bus Rapid Transit system ridership about equal to the largest Light Rail ridership. Finally, Bus Rapid Transit routes showed generally higher operating speeds than the Light Rail lines in these cities.

Bus Rapid Transit and Light Rail systems offer various advantages and disadvantages. Bus Rapid Transit provides a more flexible approach than Light Rail because buses can be routed to eliminate transfers; operated on busways, HOV lanes and city arterial streets; and implemented in stages. However, transit officials repeatedly noted that buses have a poor public image. As a result, transit planners are designing Bus Rapid Transit systems that offer improved service from standard bus service. Transit officials believed that because Light Rail is permanent in a given corridor it could influence economic development over time. Such long-term changes, they said, help justify the higher capital cost of Light Rail.