

## **Funding Bus Rapid Transit in the U.S.**

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**Abstract:**

The number of U.S. communities planning or studying bus rapid transit has increased significantly in the last few years. This is the result of recent BRT projects that have proven that BRT can work in the US. Also, there is fierce competition for federal capital project funds. Many transit agencies are also facing internal budget restrictions. This is creating a strong incentive to find more cost-effective transit options.

This paper looks at the current state of BRT funding. It briefly describes major sources of BRT funding, and then describes how 17 BRT, rapid bus, and express bus projects – both operating and planned — have used these sources.

The paper finds that, while funding opportunities for BRT have improved over the last few years, there are still some artificial barriers to BRT funding that will continue to challenge transit agencies if they are not addressed.

## INTRODUCTION

The number of U.S. communities planning or studying bus rapid transit has increased significantly in the last few years. This is the result of two concurrent developments in transit.

First, the success of recent BRT projects has proven that BRT can work in the US. Although the benefits of BRT have long been demonstrated in Latin America, Europe and Australia, US transit agencies have had little concrete data on how BRT performs in the US context. In the last three years, new BRT and rapid bus corridors have provided this data. As shown in Table 1, these systems have increased transit ridership and attracted people out of their cars.

<b>TABLE 1 Recent BRT and Rapid Bus Ridership Results</b>		
Service	Year Opened	Ridership and Mode Shift Results
Eugene EmX Green Line (1,2)	2007	Reached 6,200 average weekday boardings as of October 2007. Corridor ridership increased by over 45%.
Los Angeles Orange Line (3)	2005	Met 20-year ridership goal of 22,000 average daily boardings in 7 months; 17% of riders are new to transit
Kansas City MAX (4)	2005	Ridership in the MAX corridor has increased by over 30 %.
Boston Silver Line Waterfront (5)	2004	Transit ridership to Waterfront increased by nearly 100%. Of these new riders, more than 12% previously drove
Las Vegas MAX (6)	2004	Corridor ridership is up nearly 40% Approximately 30% of riders are new to transit, 10% previously drove to make their trip.

Second, there is fierce competition for federal capital project funds. Many transit agencies are also facing internal budget restrictions. This is creating a strong incentive to find more cost-effective transit options. It is well established that BRT has lower capital costs than comparable rail-based systems. Interest in BRT, therefore, is likely to continue to increase in this atmosphere, particularly among small and mid-sized cities where ridership demand cannot justify expensive rail projects under federal funding guidelines.

As a result, over the next several years, we are likely to see a major increase in communities seeking funding to build BRT or rapid bus projects. What can these communities expect to find? What funding strategies have worked for other cities? And are there funding issues or challenges that are specific to BRT?

This paper looks at the current state of BRT funding to address these questions. The paper follows on previous studies that have already explored this topic -- principally, the TCRP Report 90 on Bus Rapid Transit, published in 2003, and the 2004 TRB paper by Barker, Brosch, and Polzin entitled *Issues Related to Federal Funding of Bus Rapid Transit*. These studies both found that there are challenges to funding BRT projects, especially with regard to federal funding.

This paper takes an updated look at these issues. It briefly describes the major sources of BRT funding, and then describes how 18 BRT, rapid bus, and express bus projects – both operating and planned — have used these sources (see list of projects in Table 2). All the selected BRT sites have either been deployed or entered into the planning process since 2000, as older projects may employ funding strategies that are no longer viable due to changes in federal policy. They represent a range of projects and funding strategies. This discussion is based on review of available research on these sites and on interviews with representatives of these projects. The paper then draws some conclusions about the current state of BRT funding and future prospects.

<b>Locality</b>	<b>Operating System(s)</b>	<b>Planned System(s)</b>
Boston, MA	Silver Line Phase I, Washington Street, and Phase II, Waterfront	Silver Line Phase III
Cleveland, OH		Euclid Corridor
East Bay area, CA		East Bay BRT
Eugene, OR	Franklin EmX	Pioneer Parkway EmX
Hartford, CT		Hartford-New Britain Busway
Kansas City, MO	MAX (Main Street)	Troost Corridor
Las Vegas, NV	MAX	Downtown Corridor BRT
Los Angeles, CA	Metro Rapid Orange Line	Metro Rapid Gap Closure
Pittsburgh, PA	West Busway East Busway Extension	
Snohomish County, WA		Swift BRT Corridor

## **FUNDING SOURCES FOR BRT CAPITAL PROJECTS**

Communities may pursue capital funding for BRT from a range of federal, state and local sources. Although they cost significantly less than conventional rapid transit infrastructure, BRT projects typically still require multiple funding sources.

### **Federal funding**

#### *New Starts Program (Section 5309)*

The New Starts program is the biggest funding source for major new transit capital investments. Eligible projects include “any fixed guideway system which utilizes and occupies a separate right-of-way, or rail line, for the exclusive use of mass transportation and other high occupancy vehicles...” (7) In the past, New Starts would provide up to 80% of project costs. Because of significantly increased demand, the program now typically provides no more than 50 percent of project costs.

In the last ten years, the New Starts program has allocated billions of dollars for new transit construction (6). Very few have been BRT projects. This is principally because, until recently, few US communities considered building BRT. Consequently, there were significantly fewer BRT projects proposed for New Starts funding.

In addition, demand for New Starts has significantly outstripped available funds, and much of the annual appropriations are already committed to existing grantees. For example, in FY'08, 62% of FTA's proposed New Starts budget is allocated to existing grants. (8) While limited funding is an equal obstacle for any new, cost-effective capital project, regardless of mode, the effect tends to reinforce the apparent disparity of funding between rail and BRT since most of the existing grantees are building rail systems. Further, since BRT projects typically cost less, they will likely consume a smaller portion of the annual New Starts budget than an equal number of rail projects.

However, another important issue has been the fixed guideway requirement, which can exclude BRT projects that operate on arterial roadways. In the *Barker et al* paper, the authors suggested that it may be beneficial to remove this restriction. During the transportation reauthorization, FTA proposed doing just that, recommending that Congress expand eligibility for New Starts to non-fixed guideway, corridor-based transportation projects (9). This proposal was not enacted into law. Congress instead created the Small Starts program to fund BRT; this is discussed below.

In spite of these challenges, the number of BRT projects in the New Starts has been increasing. Since 2000, seven BRT projects have been awarded full funding grant agreements, and three more are close to receiving grants. A July 2007 GAO report found that, of 19 projects in the New Starts pipeline in FY'08, approximately one-third were BRT. However, the BRT projects account for only 12% of total costs of projects in the pipeline (8).

#### *Small Starts Program (Section 5309)*

In the 2005 transportation reauthorization bill, Congress created the "Small Starts" funding category for small-scale, low cost capital projects like BRT or rapid bus. A major benefit of these funds is that projects may apply for up to 80% of total costs. Eligible projects must request less than \$75 million in Small Starts funding for a total project budget of less than \$250 million; and must either use a fixed guideway for at least 50% of the corridor in the peak period, or be a corridor-based bus project with certain BRT features. The intent was to expedite these projects by employing a shorter, simpler evaluation and approval process. Projects that cost less than \$50 million are labeled Very Small Starts, a subset of Small Starts with an even more streamlined application process.

FTA is still developing final guidance for this program, although the interim guidance has already eliminated some of the New Starts ratings requirements. In spite of uncertainties about the application process, ten BRT projects applied for FY'08 Small or Very Small Starts funding (9). FTA approved one Small Starts BRT project and three Very Small Starts rapid bus projects.

While Small Starts is encouraging more BRT projects to apply for Sect. 5309 grants, the funding levels for this program are low: Congress authorized \$600 million for FY'06 through FY'09, compared to \$6 billion for New Starts, and only \$100 million has been requested thus far.

#### *Bus & Bus Facilities Program (Section 5309)*

This program provides a large number of small grants for bus-related capital projects. BRT projects can use these funds for bus procurements, passenger shelters, transportation centers, intermodal terminals, and park and ride facilities. Bus capital funds are attractive because they

only require a 20% local match; however, single grants are small. This led *Barker et al* and TCRP 90 to downplay their applicability for BRT projects. However, the program has proven to be a good source of supplemental support for BRT. The Kansas City MAX, Las Vegas MAX, Los Angeles Orange Line, Hartford New Britain busway and proposed East Bay BRT all secured these funds for vehicle and station costs.

#### *Urbanized Area Formula Grants (Section 5307)*

This program provides transit capital and operating funds for urbanized areas over 50,000 in population. If the urbanized area is over 200,000, the funds may only be used for capital investment. Formula funds may support bus capital expenses, as well as system planning, engineering and design for BRT projects. Like the Bus program, formula funds only require a 20% local match. However, cities that can use the fund for operating costs are unlikely to divert them to capital projects. *Barker et al* felt that formula funds would not be a significant contributor to BRT budgets, but several systems have used them as supplemental funds. The New Britain Busway, Community Transit Swift BRT, Eugene EmX, Las Vegas MAX and Boston Silver Line II all used formula funding grants for non-vehicle expenses.

#### *Highway Funding and Flexible Funds*

Cities can use federal highway dollars for a variety of purposes, including transit, through programs like Congestion Mitigation and Air Quality Program (CMAQ). CMAQ will fund projects that improve air quality in regions classified as non-attainment or maintenance areas. CMAQ funds are useful because they will fund all project phases, not just capital expenses, and because they only require an 11.47 percent local share. Disadvantages are the small size of grants and heavy competition for limited funds from multiple state air quality priorities. Also, to accept CMAQ funds, cities must establish appropriate accounting mechanisms. This presents a hurdle for transit agencies in cities that have not already done this.

The *Barker et al* TRB paper also surmised that it was a disadvantage that accepting these funds requires partnering with the state. However, several projects have used CMAQ funds successfully -- most notably Metro Rapid, which has been funded almost entirely through CMAQ. The New Britain Busway and Las Vegas MAX also used flexible fund grants. It may be that, since BRT and rapid bus projects frequently require partnerships between the transit operator and state or local agencies in order to operate vehicles on city streets and implement traffic signal preemption, using CMAQ funds does not impose an additional burden. Indeed, this partnership can provide access to state and local funding sources, as described below.

#### *Fixed Guideway Modernization (Section 5309)*

This program is used almost exclusively for rail system upgrades. However, the New Britain busway, which will operate on an abandoned railroad right-of-way and on shared right-of-way with Amtrak, was able to secure \$13 million from this program. Other BRT projects with similar shared right-of-way may want to consider this funding mechanism.

### **State and local funding**

As noted in TCRP 90, state and local funding for transit projects typically comes from project-specific bond issues or from dedicated sales taxes, property taxes, and lottery revenue. Most BRTs reviewed for this paper relied on these state and local funding sources. One exception was

Lane County Transit (LTD), which receives funding from a payroll tax. LTD reports that this funding mechanism tends to correspond well with increased demand for transit service, by providing increased revenue during economic booms and lower revenue in downturns.

State and local capital infrastructure or maintenance budgets can be an important source of BRT project funds. Because BRT can operate on mixed-use roadways, agencies can tap into state and local commitments for road reconstruction, streetscape improvements, and traffic signal upgrades. This can be used as the required local cost share for federal funds and can help cities with limited transit-dedicated tax revenues. Several BRT projects have used this strategy, including Boston, Cleveland, Kansas City and Community Transit.

### HOW ARE BRT PROJECTS BEING FUNDED?

This section reviews the funding breakdown for BRT, rapid bus and express bus projects in ten U.S. communities, including both operating and planned corridors. See Table 3 for a breakdown of federal sources used by each project.

	New Starts	Small Starts	Very Small Starts	Bus & Bus Facilities	Urbanized Formula Grant	Highway/Flexible Funds	Other	Approx. % of Total Budget
Boston Silver Line I								0%
Boston Silver Line II	X				X			77%
Boston Silver Line III	X							60%
Cleveland Euclid Corridor	X						X	50%
East Bay BRT (a)		(b)		X		X	X	TBD
Eugene Franklin EmX	X				X			80%
Eugene Pioneer Parkway (a)		X						80%
Hartford New Britain Busway (a)	X			X	X	X	X	80%
Kansas City MAX	X			X		X	X	80%
Kansas City Troost (a)			X					80%
Las Vegas MAX				X	X	X		82%
Las Vegas Downtown Corridor (a)	X							48%
Los Angeles Orange Line				X		X		6%
Los Angeles Metro Rapid (a)			X			X		77%
Pittsburgh West Busway	X					X		80%

Pittsburgh East Busway Extension							X	50%
Snohomish County Swift (a)					X		X	18%
(a) Project is still in planning stages, so budget numbers may change								
(b) Project sponsors anticipate pursuing Small Starts funds								

It is important to note the difficulty of obtaining exact figures for every funding contribution to a transit project. This is true even for completed projects. There are several reasons for this. First, tracking contributions from multiple funding sources in each fiscal year of a five to ten year project can be challenging. In addition, agencies may develop highly complex accounting systems to comply with federal funding rules, resulting in multiple budget breakdowns for a single project.

As a result, although this paper strives to provide the most accurate accounting possible, figures for operating systems should be considered approximate and figures for planned systems should be considered projected estimates.

#### *Boston Silver Line*

The Massachusetts Bay Area Transportation Authority (MBTA) is building a three-phase BRT system called the Silver Line. The first phase, the 2.3-mile Washington Street line, opened in 2002. It features:

- 1.75 miles of dedicated bus lanes
- 17 60-ft articulated CNG buses with Silver Line branding
- 14 enhanced passenger shelters, uniquely branded

This project included a building-face to building-face renovation along portions of the route, with utility re-location, new sidewalks and landscaping, and construction of a three-block long contraflow lane. Total project cost was \$110 million. This is one of the few BRT projects not to use any federal funds. The Massachusetts Highway Department paid for most of the road construction, which constituted about 75% of the project costs, because Washington Street is classified as a state highway and falls under the agency's jurisdiction. MBTA bond revenue covered the remaining costs.

Phase II of the Silver Line, the Waterfront service, opened in 2004. It features:

- One-mile of exclusive right-of-way through a tunnel connected to a subway terminal
- Three above-ground routes, from 1.6 to 3.5 miles long
- Two new underground stations and several above-ground passenger shelters
- Automatic fare collection gates
- 34 60-ft dual-mode (electric and diesel) vehicles

The project cost approximately \$618 million, the most expensive BRT project built to date, due to the extensive underground construction. This was a New Starts project, receiving about 53% in Section 5309 funding. MBTA also secured a \$150 million formula grant, for a total of about

80% federal funding. Remaining costs were paid by MBTA bonding revenue (6). Because the Silver Line serves Logan Airport, the airport authority reimbursed the MBTA for about \$13 million in vehicle and fare collections costs.

Phase III will connect these two services via a one-mile tunnel. Once on the surface, buses will travel along contraflow lanes before entering the Washington Street bus lanes. MBTA's goal is to complete the project by 2016. The project cost is currently estimated at \$1.17 billion. MBTA is seeking New Starts funding of 60% of the project budget (*conversation with Andrew Brennan*).

#### *Cleveland Euclid Corridor Transportation Project*

The Greater Cleveland Regional Transit Authority (GCRTA) is building a 9.3 -mile BRT corridor along Euclid Avenue. The Euclid Corridor BRT is one of the few fully integrated BRT lines being built in the U.S. The project includes:

- an exclusive, two-lane median busway for 5.7 miles, exclusive curb side lanes for 2.3 miles and mixed-traffic curbside lanes for 1.3 miles
- traffic signal priority
- 36 passenger stations shelters featuring level boarding
- real time passenger information
- off-board fare collection
- 20 62-foot hybrid buses with multiple door entry on both the right and left sides

The project involves a complete re-build along a portion of Euclid Avenue, with roadway reconstruction, pedestrian zone enhancements, upgraded street lighting, re-designed crosswalks, and landscaping. The project also includes development of a 2.3-mile transit zone on parallel arteries. (10)

The Euclid Corridor project was one of the earliest New Starts BRT projects, entering the program "pipeline" in 1996. Currently, it is scheduled to open in 2008. Total project cost under the Sect. 5309 grant is \$168.4 million (\$25 million per mile), with New Starts providing \$82.2 million. However, GCRTA reports that about \$50 million in related projects costs are not included in the New Starts budget. This was done to ensure the project met FTA's cost effectiveness rating. Off-budget items include many of the streetscape improvements such as high-end sidewalk treatments, landscaping and public art. Other major off-budget items are the city's approximately \$20 million upgrade of vaults, water and sewer lines along the renovated corridor, and \$20 million from the state DOT's capital fund for roadway improvements. This off-budget arrangement is unusual as other BRT projects typically use local maintenance expenditures to achieve the required non-federal cost share. For this project, the required 50% local share came from GCRTA, the City of Cleveland, the Ohio Department of Transportation and NOACA, the region's MPO.

GCRTA is not currently planning any additional "New Starts" BRT projects. The agency reports that it is unlikely to undertake another BRT project of the size of Euclid Corridor project soon. It would more likely consider upgrading bus corridors by adding some BRT features. (*Conversation with Joseph Calabrese*)

*East Bay BRT*

AC Transit is proposing to build a 15 to 17 mile BRT line along the East Bay's most heavily trafficked corridor, with 24,000 AC Transit riders per day. The East Bay BRT project would operate 60-ft articulated buses along exclusive median bus lanes, with passenger shelters, real time passenger information, off-board fare collection and transit signal priority. The DEIS was recently completed, and the public review process completed on July 3, 2007. AC Transit hopes to select the locally preferred alternative by 2008, begin construction in 2009, and launch the service by 2011.

The East Bay BRT Build Alternatives proposed in the DEIS are estimated to cost between \$310 and \$400 million, or about \$20 to \$23 million per mile. AC Transit has already secured \$102 million in funding commitments. These include \$85 million from local bridge toll receipts and a county sales tax. The agency notes that local transit tax measures tend to pass fairly easily in the Bay Area. Other funding commitments include \$9.4 million from a county congestion management agency, which disburses funds from a state fuel tax and flexible fund programs, and \$2 million in federal Sect. 5309 bus funds. (11)

AC Transit plans to pursue a Small Starts grant, which will require reducing the cost of the project to meet the \$250 million limit. The agency reports that they have not pursued New Starts funding because the local MPO is concerned that the program is over prescribed and prefers to use New Starts funding exclusively for local rail initiatives. With the introduction of Small Starts, the MPO has pledged its support for the East Bay BRT project's pursuit of a federal grant under this new funding category. (*Conversation with Jim Gleich*)

*Eugene EmX*

The Lane Transit District in Eugene, Oregon operates the four-mile Franklin Corridor EmX. The service features:

- exclusive single and dual bus lanes on about 60% of the route
- eight covered stations, in the busway center and on the left street-side
- near-level boarding and manual precision docking
- green space along busway
- six 60-foot hybrid-electric buses, with multiple doors on the left and right sides
- traffic signal priority and queue jump lanes

The EmX cost about \$25 million to build, or \$6.25 million per mile. Like the Cleveland Euclid Corridor, the EmX had a fairly long implementation time. In the mid-1990s, the LTD board explored light rail to meet the area's long-term transportation needs, but rejected it as too costly. Instead, the board committed to implementing a system of BRT corridors, and planning for the EmX began in 1998. The service opened in January 2007.

LTD used federal funds for 80% of the project budget. The agency secured two Section 5309 New Starts earmarks for over \$13 million and used \$6.7 million in formula funds for non-vehicle expenses.

LTD provided the local share from its capital program, which is funded by a dedicated portion of the local payroll tax. During the 1990s economic boom, LTD was able to set aside about \$1-2 million per year from its capital fund into a reserve fund for the EmX.

The proposed second line, the Pioneer Parkway, is one of the first projects awarded funding under the Small Starts program. FTA will cover 80% of the project costs, and LTD has received a commitment from the state for lottery bond funding. (*Conversation with Mark Pangborn*)

#### *Hartford-New Britain Busway*

The Connecticut Department of Transportation is planning to build a dedicated busway, which will serve as an alternative to the I-84 freeway, the region's most congested highway. The proposed project features:

- a 9.4-mile, two-lane busway built on an abandoned railroad right-of-way and on shared right-of-way with Amtrak
- up to 12 stations, some enhanced passenger shelters, and some fully enclosed buildings
- ten 40-foot buses, ten 30-foot buses and ten 60-foot articulated buses (other buses will use the facility, but will be the incremental new fleet purchases)
- five small park and ride lots

This is one of the biggest BRT projects ever planned in the US, with an estimated capital cost as of July 2006 of \$458 million, or \$48.8 million per mile. The majority of the budget is busway construction costs. For such a big-budget capital project, New Starts was the most likely funding source, and, in January 2000, the project became one of early BRT projects in the New Starts program. Construction is anticipated to start in late 2008 or early 2009, with a service launch date of 2012.

New Starts is providing \$275 million, or 60% of the current budget. Connecticut DOT aggregated an additional \$92 million from several federal sources over nine fiscal years, including Sect. 5309 fixed guideway modernization funds, which are almost exclusively used to fund rail, and STP and CMAQ funding from the highway program. State funding was allocated in the state's biannual appropriations. The agency reports that this short-term funding mechanism made it a challenge to demonstrate the long-term financial commitment required by New Starts. (4)

Connecticut DOT is currently planning two new BRT corridors with significantly lower infrastructure costs. One would use existing HOV lanes, while the other is a rapid bus service that runs on city streets. (*Conversation with Michael Sanders*)

#### *Kansas City Area Transportation Authority*

The Kansas City Area Transportation Authority (KCATA) operates the Metro Area Express or "MAX" rapid bus line along a nine-mile route along Main Street. The service features:

- exclusive bus lanes during peak hours for about 3.5 miles
- traffic signal priority at 31 intersections
- 44 MAX-branded passenger shelters

- real-time passenger information
- 13 40-ft low-floor buses, with distinctive MAX branding and BRT styling
- on-board fare collection

Planning for the MAX began in 2001, after voters rejected a ballot initiative for a sales tax to fund a 23.8-mile, \$793 million light rail system. The light rail plan had determined that, should LRT not be fundable, BRT service would be the next priority. The service opened in July 2005, just four years after planning started.

Capital costs were approximately \$21 million, or \$2.3 million per mile. The MAX was funded primarily through a series of earmarks in the federal transportation budget, awarded on an annual basis. KCATA reports that it chose to scale back the project slightly rather than pursue an additional earmark in FY'06.

Half of the earmarked funding came through the FTA's Bus Program. KCATA also received earmarks of RABA funds, and began project planning with a small New Starts earmark originally secured for the light rail proposal. Since the New Starts funding was well under \$25 million, the MAX project was exempted from the full evaluation and rating process.

The city and KCATA provided the required local funding. The city contributed about \$4 million for street re-paving and traffic signal priority. These contracts were awarded and managed directly by the city in keeping with an agreement between KCATA and the City.

KCATA is currently planning to build a nine-mile rapid bus line on Troost Avenue. This project is one of the first to secure funding under the new Very Small Starts program. Total capital costs are estimated at \$30.73 million. FTA has committed to providing 80%, or \$24.8 million, with the remainder coming from a local sales tax dedicated for transit. The Troost Corridor BRT has already entered into project development and is expected to open in late 2009. (4)

KCATA's bus programs face a funding challenge due to voter approval in 2006 of a citizen-led referendum to build a 27-mile light rail system. The referendum directed that a local sales tax currently allocated for bus operations be diverted to pay for the light rail project beginning in April 2009. The agency is evaluating the reasonableness of the rail plan and is currently working to secure an alternate funding source for its bus service. (*Conversation with Mark Huffer*)

### *Las Vegas BRT*

The Las Vegas Metropolitan Area Express (MAX) opened in June 2004. The 7.8-mile line operates along one of the area's busiest bus routes. Built and operated by the Regional Transportation Commission of Southern Nevada (RTC), the service features:

- a dedicated transit lane for 4.5 miles
- ten articulated, 61-ft hybrid-electric buses, with multiple entry boarding
- 22 enhanced passenger shelters with level boarding
- off-board fare collection system
- traffic signal priority on ten intersections, one queue jumper intersection
- optical guiding systems, originally installed but no longer in use

Total capital costs for the MAX were \$21.26 million, or \$2.8 million per mile. The system's biggest funding sources were Section 5309 Bus program earmarks, used for vehicles and stations. RTC used CMAQ grants for vehicle procurement, while federal formula funds were spent mainly on stations, fare collection equipment and traffic signal technology. The project's local share, which accounts for only about 17% of the total budget, came from a sales tax that serves as the main local transit funding source. (6)

The RTC received two important contributions not shown in the budget. The Nevada Department of Transportation, which has control of North Las Vegas Boulevard, gave the RTC the right to convert the shoulder lanes to bus lanes. The City of North Las Vegas then paid for the re-striping of these lanes, through its maintenance program.

RTC is about to begin construction on the Downtown Connector, a 3.8-mile rapid transit line with 2.3 miles of exclusive BRT lanes scheduled to open in 2009. Capital costs are estimated to be \$52.28 million. RTC has already secured \$24.95 million in New Starts earmarks. Since the New Starts request is under \$25 million, the project is classified as "exempt", which means it will not be subject to the extensive New Starts oversight process. RTC is proposing to fund the balance of costs from a sales-tax backed Commercial Paper program established in December 2004. (*Conversation with RTC staff*)

#### *Los Angeles Metro Rapid and Orange Line*

The Los Angeles transit agency, Metro, operates the Orange Line, a full BRT, and Metro Rapid, a network of rapid bus lines.

Opened in October 2005, the Orange Line is one of the first full BRTs in the U.S. Orange Line features include:

- a 14-mile, two-lane dedicated busway
- traffic signal priority
- 14 passenger shelters
- ticket vending machines
- real-time passenger information
- 30 articulated, 60-foot CNG buses, with distinct branding
- eight miles of public pathways (pedestrian and bicycle)
- extensive landscaping along busway
- six park and ride lots

At the time it opened, the cost to build the Orange Line was approximately \$311 million, or \$22 million per mile. This amount did not include the 14<sup>th</sup> station and sixth parking lot, both built after the service was launched and bring the total to \$350 million. The Orange Line was built almost entirely with state and local funds. Metro was able to secure a small amount of federal bus capital and flexible funding for the vehicles and the fare collection equipment (3). (*Conversation with Gladys Lowe*)

*Metro Rapid:* The Metro Rapid program began operations in 2000 with two demonstration lines. Since then, 14 more routes have been launched. Metro Rapid:

- operates on city streets without exclusive bus lanes
- primarily uses conventional 40-ft CNG buses, with distinctive Metro Rapid branding
- has added a small number of 45-ft and 60-ft buses on heavy ridership routes
- features traffic signal priority at some intersections
- features enhanced bus shelters with unique Metro Rapid branding
- provides real-time passenger information at major stations
- uses on-board fare collection

The agency estimates that Metro Rapid infrastructure costs \$200,000 per mile, excluding the buses, which are funded through the agency's vehicle replacement budget. Metro Rapid's first 14 lines were paid for with annual CMAQ grants. (3) FTA has recommended \$16.6 million under the new Very Small Starts program to complete the Metro Rapid network. If awarded, these funds will replace CMAQ funding already allocated to this project (*email with Metro employee Gladys Lowe*). When completed in 2008, the program will operate 28 lines across a 450-mile network for a total capital infrastructure cost of just \$110 million (*conversation with Rex Gephart*).

#### *Pittsburgh Busways*

Pittsburgh's transit agency, the Port Authority, operates three dedicated busways. This discussion focuses on the two most recent projects, the West Busway and the Martin Luther King, Jr. East Busway Extension.

Opened in 2000, the West Busway is a five-mile, two-lane dedicated bus roadway built along unused and active railroad rights-of-way. It widens to four lanes at stations to allow buses to pass other buses stopped at stations. A portion of the busway travels through a reconstructed railway tunnel. The East Busway is a two lane, bus-only roadway that runs adjacent to an operating railroad with moderate to heavy freight train volumes. A wall separates the railroad and busway. The 2.3-mile extension opened in 2003, bringing the total length to 9.1 miles. In addition to the dedicated busway, both projects feature:

- covered stations with some traveler information
- park and ride lots
- access by multiple bus lines (no busway-branded vehicles)
- downtown, mixed traffic operation, with some traffic light synchronization (12)

The East Busway Extension budget was \$68 million, or \$30 million per mile. The West Busway cost \$258 million, about \$52 million per mile.

The Port Authority does not have a dedicated funding source for transit capital projects. Because these projects entered the New Starts pipeline before FTA rules were changed, it was able to secure an 80% share from the New Starts program and federal highway funds to support the West Busway. Most of the non-federal share came from the Commonwealth of Pennsylvania.

The state and local share for the East Busway Extension was 50%, with the other half coming entirely from FTA sources.

Although the Port Authority considered proposals to develop BRT service in two additional corridors, it is currently experiencing significant funding restrictions. As a result, further consideration of new major investments is being deferred. In addition, without a local and/or state dedicated funding source, it can be a challenge to meet the current New Starts preference for 50% or greater non-federal share. (*Conversation with David Wohlwill*)

#### *Snohomish County -- Community Transit Swift BRT Corridor*

Community Transit in Snohomish County, Washington is building a BRT line along Highway 99 between the cities of Everett and Shoreline. Called the *Swift*, the service will operate on a 16.7-mile stretch of corridor that includes 7 miles of existing Business Access Transit lanes. The *Swift* will feature:

- 14 BRT-stylized, 60-ft buses, with distinct branding and multiple-door entry
- 26 uniquely-branded stations with shelters
- off board fare collection
- real time passenger information
- traffic signal priority

This corridor was selected in part because of traffic improvements already made along Highway 99, which include traffic signal priority and seven miles of transit-only lanes. Community Transit's goal is to design and build the project in just 2.5 years.

Projected capital costs are \$25 - 30 million, or \$1.5 – 1.8 million per mile. Because the agency did not conduct a formal Alternatives Analysis to select this project, it was not eligible for New Starts funding. Instead, state and local sources are supplying about 80% of the budget. It is expected that using state and local sources will help the project adhere to the aggressive timeline.

Community Transit is contributing half the project funds, using revenue it receives from a .9% sales tax dedicated for transit. According to Community Transit, the transit agency board is strongly committed to BRT and readily supported the allocation of agency funds.

The Washington State DOT awarded an Office of Transit Mobility grant to help pay for station construction and right-of-way acquisition beginning in the fall of 2007. Community Transit reports that there is strong competition for all regional funds and the BRT concept initially did not compete well when proposed several years ago. After hearing evidence of BRT's success in US applications, a recent CMAQ competition ranked the Swift BRT as its top funding priority.

Federal formula funds, earmarks, and a Puget Sound Regional Council grant help pay for buses and GPS technology. Community Transit is also working to partner with Everett Transit, which has jurisdiction over the northern end of the route. Everett Transit would contribute funding for stations in their jurisdiction.

Consideration is underway for future BRT corridors. Community Transit indicated that it would ensure that the next BRT project would be eligible for Small Starts funding, although the agency has not yet determined its preferred funding scheme. (*Conversation with June DeVoll*)

## **ANALYSIS AND CONCLUSIONS**

In reviewing these funding experiences, it is possible to draw some general conclusions about opportunities and challenges for funding BRT and rapid bus projects with current funding mechanisms. While this discussion is based in part on the insights and information provided by the interviewed agency representatives, the analysis represents this author's opinion, and not necessarily the opinions of the interview subjects.

### *New Starts: Rail or BRT?*

New Starts was created before the concept of rubber-tired rapid transit became well known in the US. There is a sense, therefore, that the evaluation and oversight process are designed for rail projects. This can have several ramifications. First, as has been discussed, the fixed guideway requirement means that BRT projects cannot include significant non-exclusive guideway service. While FTA has shown flexibility in funding BRT projects with only some exclusive-guideway operation, it is unlikely that a BRT service that runs on city streets would qualify for New Starts. This excludes meritorious projects like Metro Rapid, which averages 464,589 weekday boardings in 15 corridors, and encourages cities to make transit choices that are technology based rather than performance based. It may also have the unintended effect of discouraging flexible BRT systems designs that take advantage of the ability to operate outside a fixed guideway to provide broader coverage and more single-seat service.

Second, the oversight process is designed to ensure the safety and efficacy of rail, its associated infrastructure and operations. These safety contingency systems are not necessarily applicable to bus-based transit and can be overly burdensome to incorporate into a BRT operation. This may inadvertently stifle innovative and creative BRT design.

Overall, there is a continued perception that New Starts is intended to fund rail projects. This perception is reinforced by the new Small Starts program, which is clearly geared toward BRT, rapid bus and streetcar projects. This is problematic because of the huge discrepancy in funding levels for these two programs.

### *The New Starts/Small Starts Process.*

In general, it appears that the projects that are implemented the fastest are those that do not use federal funds – and in particular, do not use New Starts funding. This diminishes one of the key benefits of BRT: that it can be planned and implemented quickly compared to other major infrastructure projects. Lengthy project timelines and unpredictable delays may also discourage creative partnerships with developers, who may not be willing to commit to a project with a long and uncertain timeframe.

The lengthy, complex New Starts process may also discourage small- and medium-sized agencies that do not have experience with major capital projects. BRT is particularly appealing for small- and medium-sized cities that cannot support or justify the significant costs of building

light rail. Unfortunately, transit agencies in these cities may not have the financial and staff resources needed to shepherd a BRT project through the New Starts process.

The New Starts process may also indirectly discourage agencies from building more substantial BRTs by giving them an incentive to develop low-cost projects that qualify for Small Starts funding. While it is important to promote cost effective transit projects and responsible use of federal tax dollars, it is also important to give the best BRT systems, with dedicated guideways and substantial stations, an opportunity to compete for funding

#### *The Small Starts Opportunity*

The transit industry response to the Small and Very Small Starts program seems generally positive, with 12 projects applying in the FY'08 funding cycle. FTA has received praise for its commitment to enacting a streamlined process for Small Starts. However, there is still uncertainty about the new program policies, and questions remain about whether the Small Starts program will be significantly easier than New Starts. The Very Small Starts seems to hold great appeal as a truly fast and easy funding mechanism.

#### *Other Funding Mechanisms*

Many projects incorporated city and state infrastructure improvements in their project budget. This highlights an advantage for funding BRT projects that operate on mixed-use streets, as street improvements and traffic infrastructure upgrades may be counted as local share. These arrangements do require transit agencies to cede some control over the project implementation, and it is important to develop and maintain good partnerships with local infrastructure agencies.

Several agencies used annual transportation earmarks to fund their projects. This option is mainly viable for low-cost projects. The benefit of this funding mechanism is that an agency avoids the lengthy New Starts process, speeding project implementation. However, this funding mechanism carries a high level of uncertainty since the funding is only secured on a year-to-year basis. By contrast, a New Starts grant provides a commitment to a total project budget. A transit agency may need to downgrade its project if it becomes too difficult to secure additional funding through the annual appropriations process.

#### *Conclusions*

There is increasing enthusiasm about, and interest in, using BRT or rapid bus to meet long-term transportation goals. Recent studies on BRT funding had highlighted some challenges faced by cities looking to fund a BRT or rapid bus project. A review of the current state of BRT funding suggests that funding opportunities for BRT have improved over the last few years, and several agencies have successfully navigated the funding challenge to create high-performing BRTs. However, there are still some artificial barriers to BRT funding, particularly in the Section 5309 program that will continue to challenge transit agencies. These funding issues will prevent the US communities from realizing the full benefits of BRT if they are not addressed.

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