



Bus Rapid Transit Demonstration Program

Status Report

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**Office of Research, Demonstration and Innovation
Office of Mobility Innovation
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Bus Rapid Transit Demonstration Program Status Report

This document is the first status report of the Bus Rapid Transit (BRT) Demonstration Program. The purpose of this status report is to provide basic information about the BRT Program, describe current activities and accomplishments. The paper closes by providing some insights for future consideration or work items.

Introduction

The phrase, *bus rapid transit*, will seem to be an oxymoron to most Americans. The vision most people have of urban bus service is that of a slow, lumbering vehicle caught up in congestion and slowed by traffic signals, stopping every few blocks for passengers who board one by one. Passengers paying fares with a combination of coins and bills, and climbing three steps from the curb to the bus floor further slow the boarding process. Slow travel via bus transit, the dispersed origins and destinations of suburban travel and suburban sprawl beyond the reach of transit service are why fewer than 5% percent of Americans use public transit for urban travel. The Federal Transit Administration (FTA) believes that does not have to be the case and is now engaged in an effort to speed up bus service and have named this concept Bus Rapid Transit. The main goals of the *Bus Rapid Transit Demonstration Program* are to:

1. Provide better bus service for existing riders,
2. Attract more riders to improved service,
3. Improve the efficiency of operations for transit providers,
4. Demonstrate that Bus Rapid Transit could be an effective lower cost alternative to expensive new rail transit,
5. Validate that Bus Rapid Transit and compact, pedestrian-oriented land use are mutually supportive,
6. Change the perception of bus transit by the transit industry, local officials and the public, and
7. Leverage BRT to develop and foster the introduction of innovative technological improvements into transit revenue service.

What is Bus Rapid Transit?

Bus Rapid Transit is a flexible form of rapid transit that combines transit stations, vehicles, services, running way, and ITS elements into an integrated system appropriate to the market it serves and its physical environment. BRT can use vehicles that may be driver-steered, guided mechanically or electronically. A great advantage is that it can be incrementally implemented in a variety of environments, from totally dedicated to transit (surface, elevated, underground) or mixed with other traffic on streets and highways.

This definition is considered a general working definition of BRT. FTA is presently working with the consortium members to develop a consensus definition of BRT.

Characteristics of Bus Rapid Transit

Buses now travel on average at only around 60 percent of the speeds of automobiles and other private vehicles using the same streets due to the cumulative effects of traffic congestion, traffic signals, and passenger boarding. Moreover, compared to rail systems, the advantageous flexibility and decentralization of bus operations also result in a lack of system visibility that contributes to public perceptions of complexity, disorganization, unreliability and lack of permanence.

Low-cost investments in infrastructure, equipment, operational improvements, and technology can provide the foundation for bus rapid transit systems that substantially upgrade bus system performance. Conceived as an integrated, well-defined and comprehensible system, bus rapid transit could provide for significantly faster operating speeds, greater service reliability, and increased convenience, matching the quality of rail transit when implemented in appropriate settings.

It is believed that the combination of several elements will provide significantly improved bus speed (up to 50% faster) and reliability:

- *Exclusive lanes* – to reduce congestion delay
- *Traffic signal preference* – to reduce signal delay
- *Low floor buses & high boarding platforms* – to reduce boarding delay
- *Pre-paid or electronic fare collection* – to reduce fare collection delay
- *Limited stops* – to increase average speed

The massive traffic congestion caused in part by 35 million more people and 22 million new jobs added during the last decade has propelled many communities to seek Federal funding for transit improvements. The queue of applications for New Start funding cannot be satisfied for many years.

Bus systems provide a versatile form of public transportation with the flexibility to serve a variety of access needs and an unlimited range of locations throughout a metropolitan area. Because buses travel on urban roadways, infrastructure investments needed to support bus service can be substantially lower than the capital costs required for rail systems. As a result, bus service can be implemented cost-effectively on routes where ridership may not be sufficient or where the capital investment may not be available to implement rail systems. The Bus Rapid Transit Demonstration Program seeks to show at least in part that BRT can be an effective lower cost choice to costly rail options. By reducing bus travel time, bus rapid transit will also save existing passengers millions of person-hours and improve transit providers' operating efficiency by an amount proportional to the increase in bus speed. This will allow transit operators to provide additional service without more expense.

Bus Rapid Transit can be most effective when integrated within a broader planning framework encompassing land use policies, zoning regulations, and economic and community development. Bus Rapid Transit and compact, pedestrian-oriented land use development is mutually supportive. The clustering of development has the additional benefit of conserving land and promoting the vitality of neighborhoods and urban commercial centers.

Beginnings

Senior FTA officials began searching for ways to improve bus speed and reliability in 1996. This was spurred by the recognition that the nation was facing years of serious congestion and increased demand for funds for new transit facilities to provide for the increased population, jobs, and travel. FTA staff was able to describe abstractly the necessary characteristics for fast bus travel and Curitiba, Brazil was identified as a perfect paradigm possessing all of the abstractly modeled features. A delegation of FTA, DOT and congressional officials traveled to Curitiba in May 1997 and returned with a profoundly altered sense of what was possible. FTA then embarked on a program to research, demonstrate and document fast bus service. The name given to the concept was Bus Rapid Transit or BRT. The goal was to demonstrate BRT and promote its widespread adoption in the United States. FTA began the development of the Bus Rapid Transit Demonstration Program in small steps designed to increase the transit industry's awareness of Bus Rapid Transit as a means to improve transit service:

- October 1997 – An informal meeting of transit industry representatives at the Annual Meeting of the American Public Transportation Association in New York
- January 1998 – A “Bus Rapid Transit Forum” at DOT headquarters in Washington. A former Curitiba official offered a presentation of Bus Rapid Transit as applied in Curitiba.

Bus Rapid Transit Demonstration Program

The Bus Rapid Transit Demonstration Program was established and funded in 1998 by the Transportation Equity Act for the 21st Century TEA-21). The BRT Program is a wide-ranging effort to:

- Research and develop the BRT concept,
- Provide technical support to cities and transit agencies,
- Demonstrate bus rapid transit in actual practice,
- Evaluate bus rapid transit demonstration projects,
- Disseminate information about BRT, and
- Assist localities to plan and deploy BRT

The remainder of this document describes the various elements of the Bus Rapid Transit Demonstration Program, funding, progress, early findings and future plans and issues.

Federal Register Announcement and Project Selection

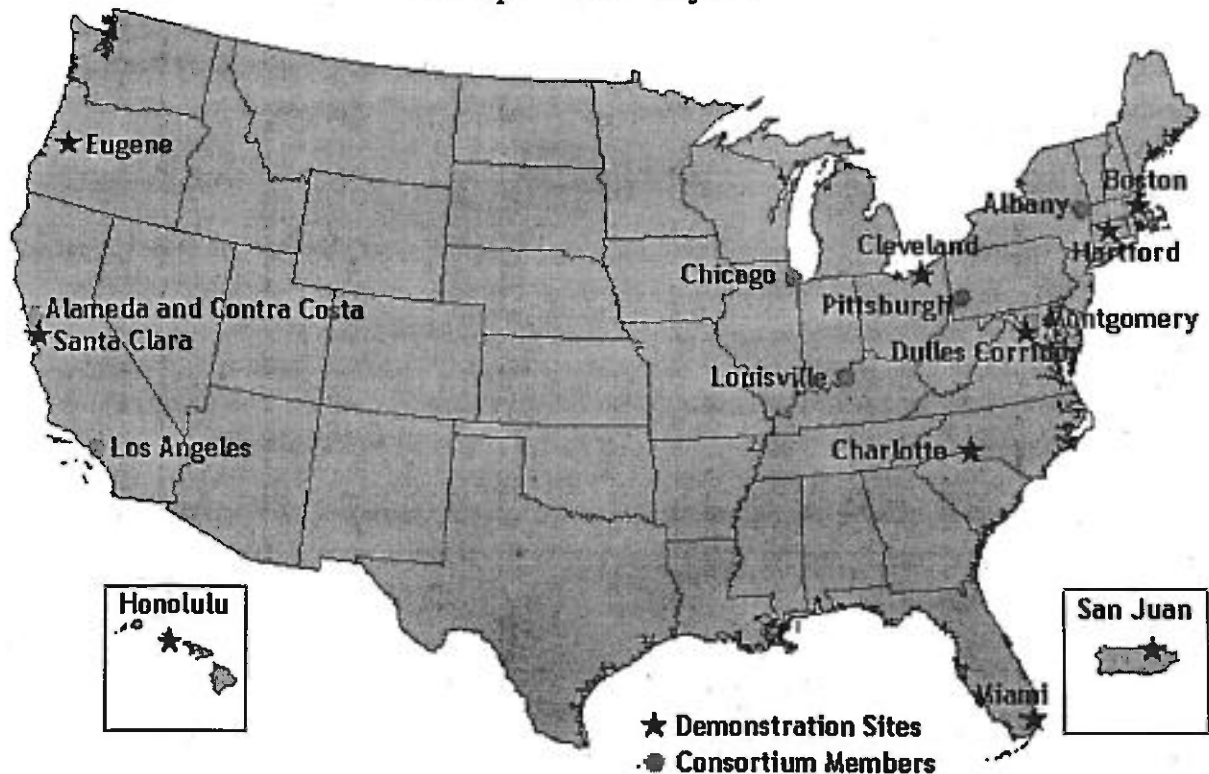
A Notice in the Federal Register in December 1998 announced the formal beginning of the Bus Rapid Transit Demonstration Program and solicited participation. The Federal Register notice described the Bus Rapid Transit concept, demonstration program and selection criteria. Seventeen projects were selected to participate in the BRT Program in June 1999 – ten as “demonstration” projects and seven as other members of the BRT Consortium. Los Angeles, not originally a demonstration project has been elevated to the demonstration category because of local efforts to develop bus ways and exclusive bus lanes. The seventeen projects are described in detail in the table, “Bus Rapid Transit Demonstration Program Projects” in Appendix A and shown in Figure 1.

Bus Rapid Transit Consortium

The *BRT Consortium* (all 17 participants) was organized by FTA to be the focus for technical assistance to the program participants. BRT Program participants benefit from a variety of technical assistance: workshops, scanning tours, peer-to-peer advice, exchange of information and voluntary formation of mutually beneficial relationships amongst members. The seventeen projects are categorized by the type of project and estimated start of operations as shown in the table, “Summary of Bus Rapid Transit Projects by Type and Start of Operations” in Appendix B.

Figure 1

Bus Rapid Transit Projects



Funding

The BRT Program activities have been carried out by Office of Research, Demonstration and Innovation staff and have been supported by Section 5314(a) research and demonstration funds. The annual Section 5314(a) funding for the BRT:

- FY 1998 - \$ 160,000
- FY 1999 - \$ 1,500,000
- FY 2000 - \$ 150,000 (prior year recovery)
- FY 2001 - \$ 898,980 (anticipated)
- FY 2002 - \$ 1,000,000 (Requested)

Grants and contracts under the BRT Program have gone to:

- Grants to ten demonstration sites (\$50,000 each):
 - Boston
 - Charlotte
 - Cleveland
 - Dulles Corridor
 - Eugene
 - Hartford
 - Honolulu
 - Miami
 - San Juan
 - Santa Clara
- Contracts for technical assistance, evaluation and other activities:
 - Volpe National Transportation Systems Center - \$280,000 (technical assistance and evaluation)
 - Booz, Allen & Hamilton - \$370,000 (technical assistance and evaluation)
 - Milligan & Company - \$150,000 (evaluation)
 - Mitretek - \$ 120,000 (BRT vehicle integration issues)(non-BRT funds)
 - California Partners for Advanced Transit and Highways (PATH) - \$200,000 (BRT evaluation tools and simulation)

Appendix C shows a complete history of the BRT funding including ancillary funding from other programs as well as the funding allocation for fiscal year 2001.

BRT Project Management

An internal FTA BRT project management committee, chaired by Bert Arrillaga, Chief Service Innovation Division has been set up to monitor, discuss and guide BRT program activities. This committee includes representatives from FTA's Budget, Program Management, and Planning offices as well as Research office staff assigned to monitor the individual demonstration sites. Committee meetings are open to Regional Office participation to maximize dissemination and understanding of the goals, objectives and activities of the BRT program. Individuals involved in BRT project management, both FTA staff and local contacts, are shown in Appendix D.

Evaluations of Demonstration Projects

A primary goal of the BRT Demonstration Program is to assess the demonstration projects through scientific evaluation. Only by carefully documenting and analyzing their effects and features will it be possible to determine which aspects of BRT are most effective in which contexts, that is, the type of service and facility offered, the level of transit demand, the size of the region, and other factors. Participants in the BRT Demonstration Program are required to assist the FTA in monitoring in detail the experiences of their BRT implementations, collecting data, and preparing evaluation reports to document developments. Key data will include total travel time, dwell time, ridership, costs, effects of BRT on other traffic, public reaction, etc. Such information together with the opportunity for transit planners to visit operating US BRT sites will facilitate the development of BRT at other locations in the US. To maximize the effectiveness of these demonstrations, a consistent, carefully structured approach to project evaluation has been set forth in specific evaluation guidelines prepared by the Volpe National Transportation Systems Center. Evaluations are underway for three operational BRT projects – Honolulu, Los Angeles and Pittsburgh. Some early results are available from these cities.

Honolulu

CityExpress!, Honolulu's prototype BRT project using specially marked vehicles, started in March 1999 on a 6.8 mile route between the Kalihi Transit Center and the University of Hawaii. Because of the tremendous public acceptance of the initial *CityExpress!* service, there have been several expansions of service – each with similar public approval. The initial *CityExpress!* route (now called Route A) has been extended to Waipahu for a total distance of 19.6 miles. In May 2000, BRT operation expanded with the introduction of *CountryExpress!* (now called Route C) operating along a 36-mile route between northwest Oahu and Ala Moana Center. In August 2000, *CityExpress!* Route B began operations along a 7-mile route between Kalihi Transit Center west of Pearl Harbor and Waikiki. Travel times have been reduced by 25% to 45% and the average weekday ridership of the BRT services has doubled although much of the *CityExpress!* ridership has been shifted from previous corridor service. Honolulu has also implemented bus traffic signal priority and real time passenger information systems in recent months. Leeward Oahu was converted from a radial to a hub and spoke system to provide more travel options to riders and make the system more efficient.

Los Angeles

Metro Rapid Bus, Los Angeles' BRT project began service in June 2000 on two routes:

- 16 miles of Ventura Boulevard in the San Fernando Valley from the Warner Center in the West Valley to the Universal City Red Line station, and
- 26 miles of Wilshire and Whittier Boulevards from Santa Monica through downtown Los Angeles to Montebello.

The *Metro Rapid Bus* services use a special fleet of distinctly painted and marked low floor buses operating frequent service on well-identified routes. *Rapid Bus* also has a

separate identity and logo. Metro Rapid operates on regular mixed traffic lanes but include traffic signal preference within the City of Los Angeles, limited stops, and low floors for fast boarding. MTA and Los Angeles City DOT have created the traffic signal preference feature jointly. These three features alone have significantly cut bus travel times by about 25% on both lines. Ridership on the two Rapid Bus services has followed suit. Boardings along the Ventura Boulevard corridor topped 19,000 per day, an increase of 41% over pre-Metro Rapid ridership. Boardings on the Ventura Boulevard Rapid Bus line reached 10,000 per day. The MTA Red Line subway was extended to North Hollywood on the same day as the start of the Rapid Bus service, so part of the observed increase is attributable to improved combined bus-rail travel times. Boardings on the new Wilshire/Whittier Metro Rapid line topped 56,000 per day, only 10% less than the MTA light rail Blue Line ridership. The Wilshire - Whittier total corridor boardings have exceeded 100,000 per day. This is a 27% increase over pre-Metro Rapid ridership. These existing ridership figures are the largest by far for any BRT project now or projected in the future. The City of Los Angeles reports that traffic signal priority for buses has increased average cross street vehicle travel times by only one second. The Los Angeles MTA Board of Directors has recently voted to expand Metro Rapid service to 22 corridors and to pursue implementation of exclusive lane BRT.

Pittsburgh

The five-mile West Busway, built on a former Conrail right-of-way, opened in September 2000. Bus travel times for some routes have been cut in half from 52 minutes to 26 minutes. Eleven existing Port Authority bus routes were shifted to the Busway from their previous routings; one new bus route was initiated. Weekday ridership increased from 3,445 per day to 6,521 immediately upon the opening of the busway. As of April 2001, daily ridership was more than 7,000 and this with only 400 of the 2,700 projected park and ride spaces available.

The West Busway has superior shelters and station amenities such as maps, phones and lighting. The West Busway uses signal priority to facilitate the merge of buses from the busway onto congested streets during the AM peak period. Other traffic management techniques such curb realignments, signal technology and bypass lanes at stations permitting overtaking by express buses are used to speed bus flow.

The West Busway joins two other existing Pittsburgh area busways. The 4.3-mile South Busway opened in 1977 and shares portions of its right-of-way with the light rail system. The South Busway provides service between downtown Pittsburgh and many South Hills neighborhoods. Utilizing a joint light rail and bus tunnel, service is able to bypass congested traffic entering and exiting downtown Pittsburgh. Average weekday ridership on the South Busway is approximately 13,000. The 6.8-mile Martin Luther King, Jr. East Busway opened in 1983 and serves downtown Pittsburgh, the East End and eastern suburbs of Allegheny County with 36 routes providing express and local bus service. Average weekday ridership on the East Busway is nearly 30,000.

Bus Rapid Transit Deployment Strategy

The Bus Rapid Transit Demonstration Program seeks to use advanced technology to reduce bus travel times and to establish improved bus service as a viable alternative to

more expensive rail transit investments. The program includes research, testing, evaluation efforts, technical assistance and information sharing activities for the 17-site BRT Consortium and others including transit agencies, system suppliers, bus manufacturers, local government agencies, and academia interested in BRT. The Consortium members identified BRT vehicles as a high priority issue area to be addressed in the program.

A two-part BRT deployment strategy, involving a short-term vehicle element and a longer-term new starts funding element, is in place. The BRT Vehicle strategy will serve as the institutional underpinning for deployment of integrated and interoperable bus technologies focused on safety, service, performance and propulsion. This strategy is also aimed at addressing some of the procurement, standards and technology integration issues raised by transit industry officials in the October 2000 Bus Summit, and is instrumental to FTA's participation in the inter-departmental 21st Century Truck Initiative. The vehicle deployment element seeks to have a subset of the BRT Consortium acquiring BRT vehicles through some form of a standard procurement. The second part to the BRT deployment strategy is to have BRT projects recommended for new starts full funding grant agreements (FFGA). This includes meeting all new starts planning, project development and implementation requirements.

Several activities are underway to assist in implementing the two-part BRT Deployment strategy. FTA's Research and Demonstration Office is preparing a request for BRT vehicle funding for inclusion in the Bus Program portion of the FY 2002 and 2003 Budgets. On-site technical assistance is being provided to the BRT sites competing for new starts funding. The objective is to help improve their new starts ratings.

Two efforts are underway in support of BRT deployment:

- A short-term needs assessment to identify capital funding needs for BRT related bus capital projects, and
- A comprehensive BRT needs assessment document and tracking system

The most active BRT cities are being canvassed with regarding to their aggregate capital funding and technology needs in order to assist FTA to determine their near term funding requirements. FTA will then use this information to support FY 2002 budget requests. The short term needs assessment will be completed in February 2001.

FTA is developing a tool that will allow closer tracking of progress as well as challenges facing the BRT consortium members as they move their projects from concept to reality. This will support BRT projects as they move towards new starts, capital and other funding. Various areas of interest, including funding, preliminary design and engineering, technology deployment needs will be assessed and this information will be used to guide FTA efforts in support of BRT projects. The first version of the needs assessment will amplify these and other areas for each of the 17 cities. Once the initial assessment is complete, the information will then be transferred to a web-based tracking system. The consortium members as well as a limited number of FTA personnel will have access to

this password-protected system. Consortium members will be asked to update information on their project on a regular interval. FTA will assess changes in projects, funding needs and other areas of interest, and then utilize that information to provide technical assistance to BRT Consortium members. The web-based tracking system may also be expanded to include Consortium chat rooms, allow for electronic exchange of best practices, procurement info and other types of information exchange. The needs assessment tool will be tested by March 2001. The needs assessment process will be refined by the feedback of Consortium members before being finalized.

Research and Related Activities

Other FTA-funded research and development activities are being leveraged to support the BRT Program and vice-versa. These include:

BRT Research Institute: The feasibility of a BRT Research Institute is being studied. BRT could have a dramatic impact on bus operations in the United States. A BRT Research Institute that could undertake research and development in critical areas would help significantly in the dissemination and the deployment of BRT throughout the United States. The Institute could serve also as an international clearinghouse for information. The Institute could also pool resources from vehicle manufacturers to improve the ultimate production of high technology buses that would be attractive to the American market.

Transportation Research Board Activities: The Transportation Research Board (TRB) manages The Transit Cooperative Research Program (TCRP). TCRP promotes transit operating effectiveness and efficiency by assisting the industry to develop and apply the latest in technology and operating techniques designed to improve mobility and accessibility. Two TCRP projects specifically in support of or related to the BRT Program are:

- TCRP Project A-23, Implementation Guidelines for Bus Rapid Transit, directly supports the BRT Program. This project will develop guidelines to show cities, transit agencies and other how to realize BRT projects and systems. The TCRP Steering Committee includes representatives from all the BRT demonstration projects.
- TCRP A-15, Transit Capacity and Quality of Service (TCQS), has developed a TCQS Manual to aid in planning, design and operations by the transit industry. The TCQS manual contains a wealth of empirical capacity and quality of service relationships. Additional work in this project will add more data specifically focusing on BRT operations.

The Transportation Research Board has also scheduled a Bus Rapid Transit Conference in Pittsburgh in August 2001. This conference is designed to acquaint others in the transportation field with the BRT concept and current BRT Program activities.

BRT Computer Simulation Effort: The Federal Transit Administration (FTA) is actively pursuing the development of simulation techniques in support of the Bus Rapid Transit (BRT) program.

- California Partners for Advanced Transit and Highways (PATH) is developing the SmartBRT computer simulation and visualization tool. FTA and Caltrans jointly fund this program. New technology and research will be an integral part of a methodology to describe and evaluate operational aspects of BRT concepts. Users can define any specific BRT concept, including locally tailored demand, physical facilities and bus configurations. Outputs will be measures of effectiveness defined by the user. The core tool will be a micro simulation complete with appropriate bus and infrastructure geometric libraries and high fidelity photo-realistic 3D graphics.
- Multisystems, Inc. was awarded a Small Business Innovation Research (SBIR) Phase I contract in 1999 titled "Bus Rapid Transit Simulation Model Research and Development". The Phase I feasibility research has been completed and a plan for developing a BRT simulation tool through a Phase II contract is under way. This effort will be designed to either complement the PATH research or provide simulation capabilities outside the primary focus of the PATH research.

Technical Assistance Activities

FTA offers an array of technical assistance to Consortium members and others such as the transit industry, cities and transit agencies interested in Bus Rapid Transit and the general public. The technical assistance activities are described below.

Workshops: FTA has to date mounted seven well-attended and well-received topical workshops designed to acquaint Consortium members with various aspects of Bus Rapid Transit, provide an opportunity for networking and exchange and to visit working and proposed BRT projects/sites. Workshop attendance has averaged 75 to 100 people. Additional workshops are planned. Proceedings have been or will be published for each past workshop.

Past Topical Workshops

<u>Date</u>	<u>Location</u>	<u>Subject</u>
August 1999	Washington, DC	Kick-Off of BRT Demonstration Program
October 1999	Orlando, FL	Vehicles (at APTA Annual Meeting)
February 2000	Honolulu, HI	Image & Marketing
May 2000	Miami, FL	Transit Operations, Traffic Engineering & Infrastructure
September 2000	San Francisco, Ca	Vehicle Design Workshop
September 2000	Oakland, Ca	MTC/NTI BRT Regional Workshop
April 2001	San Juan, PR	Fare collection

Planned Topical Workshops

June 2001	Miami, FL	ITS & Systems Integration (in conjunction with ITS America Annual Meeting; co-sponsored by ITS America)
August 2001	Pittsburgh, PA	TRB BRT Conference (sponsored by TRB)
September 2001	Washington, DC	Finance & Institutional Issues
November, 2001	New York, NY	New York Region BRT Workshop

Consortium Committees: Several voluntary committees of BRT Consortium members have been organized to address issues of common interest to the members. The committees focus on various aspects of Bus Rapid Transit. Committee members have participated in planning and organizing program events such as workshops and the BRT Vehicle and Design Competition. The committees and respective chairs are:

- Intelligent Transportation Systems, Frances Banerjee, City of Los Angeles
- Vehicles and Vehicle Procurement, Stefano Viggiano, Lane Transit District
- Transit Operations Traffic Engineering and Infrastructure, Ronald Tober, City of Charlotte
- Institutional and Finance Issues, Cheryl Soon, City and County of Honolulu, and
- Transit Supportive Land Use and Planning, Leo Bevon, Virginia Department of Rail and Public Transportation

Scanning Tours and Technology Sharing: Scanning tours will provide the opportunity for BRT Consortium members to visit other transit systems to inspect its BRT operations. Agencies in the process of developing and implementing their own projects will benefit from the experience gained by organizations further along in BRT development. "Lessons learned" were enhanced by the shared insights of consortium members participating in the site visit as a group. Published findings of each scanning tour are in preparation.

Past Scanning Tours

<u>Date</u>	<u>Location</u>	<u>Subject</u>
November 2000	Western Europe	BRT operations and vehicles
December 2000	Curitiba, Brazil	Curitiba BRT system & land use planning

Information Dissemination

Information about bus rapid transit and the BRT Program will be communicated to BRT Consortium members, other cities and transit agencies and others in a variety of ways:

BRT Web Site: The BRT web site can be accessed through the FTA web site (<http://www.fta.dot.gov/>). The web site has proven to be the best and fastest way to convey BRT information. This well organized site provides a wealth of information on existing as well as planned BRT implementations, current news relating to FTA's BRT Demonstration Program, information on completed and planned BRT workshops, scanning tours and Consortium activities, a reference guide introducing and explaining specific BRT features, BRT evaluation activities, a BRT discussion board and video clips simulating proposed, and the BRT projects.

Reports and Publications: FTA has issued a number of reports explaining BRT, the BRT Program, and specific program activities. These include:

Reports

Bus Rapid Transit Forum (January 1998)
Bus Rapid Transit Initiative (December 1998)
Issues in Bus Rapid Transit (December 1998)
Bus Rapid Transit Demonstration Program (December 1998)

Proceedings

Kick-off Workshop, August 3-4, 1999
Vehicle Issues Workshop, Orlando, FL, October, 1999
Image & Marketing Workshop, Honolulu, HI, February 8-9, 2000
Transit Operations, Traffic Engineering and Infrastructure Workshop, Miami, FL, May 15-16, 2000
MTC/NTI BRT Workshop, Oakland, CA, September 12, 2000
BRT Vehicle Design Workshop, San Francisco, CA, September 26-27, 2000 (at Annual APTA Conference)

Videos:

FTA also maintains a library of independently produced videos for distribution on request including:

Curitiba, a historical perspective by FTA of the development of the extensive Bus Rapid Transit system in Curitiba, Brazil (6:19).

Simple Solutions, with Edward James Olmos, a presentation describing the potential for BRT in Los Angeles (8:31).

Dulles Transportation Corridor Proposal, an overview of the BRT service that is being planned as the precursor to a light rail facility for the Dulles Corridor in Northern Virginia (10:25),

RIT-Integrated Transit Network, produced by Urbanizacao de Curitiba, S.A. (13:02).

Silver Line, produced by Massachusetts Bay Transportation Authority (12:48),

Bus Rapid Transit, Planning for our Future, produced by Lane Transit District, Eugene, OR (8:20).

Moving Montgomery County, An Introduction to Bus Rapid Transit, produced by Montgomery County, MD (11:48).

People's Planet, (Curitiba segment) produced by Cable News Network (11:18)

Dateline Around the World, (Curitiba segment) produced by NBC TV (11:19)

Professional Capacity Building

Professional capacity building is designed to increase the level of knowledge and capabilities of transit industry personnel. The National Transit Institute (NTI), funded by FTA, designs, develops, and conducts training in response to the needs of the FTA and the transit industry. NTI is involved in several activities to support BRT Professional Capacity Building:

- Past regional workshops in Newark, NJ and Oakland, CA
- BRT Fellows Workshop – assistance to BRT Consortium personnel to develop presentations
- Development of BRT training course curriculum
- On-site BRT workshops in BRT cities

BRT Vehicle and Design Competition

The office of Research, Demonstration and Innovation has launched a Bus Rapid Transit Vehicle and Design Competition. The competition is co-sponsored and managed by Calstart-Westart, a non-profit organization, dedicated to the creation of an advanced transportation technologies industry and related markets. The competition will challenge multi-disciplinary teams - industrial designers, planners, engineers, architects, artists, manufacturers, community groups - to envision innovative ways in which new bus

vehicles, transit sites and integrated support systems can be designed to best serve the future American community. Sixty-five teams registered to participate in Design Competition and 58 designs were submitted. Phase one of the competition is expected to yield by June 2001 new vehicle concepts to better serve the needs of Bus Rapid Transit and generally of the transit industry's bus operations.

A series of three information workshops were held in select cities at their request to provide information to local design teams in the Vehicle Design Competition.

BRT Vehicle Design Competition Information Workshops

<u>Date</u>	<u>Location</u>	<u>Sponsor</u>
January 31, 2001	Boston, MA	Massachusetts Bay Transportation Authority
February 7, 2001	Cleveland, OH	Greater Cleveland Regional Transit Authority
February 2001	Tampa, FL	University of South Florida

Several meetings were also held to review and discuss the BRT Vehicle Competition and submissions and to select winners:

<u>Date</u>	<u>Location</u>	<u>Subject</u>
March 5, 2001	Pasadena, CA	Evaluate Phase I submissions
March 12, 2001	Washington, DC	Review results of BRT Design Competition and Discuss Vehicle Strategy
March 14, 2001	Washington, DC	BRT Vehicle Design Meeting
June 14 & 15, 2001	Washington, DC	Select Designs for Awards
June 18, 2001	Washington, DC	Awards Ceremony

Participation and Interest by Others

Since the selection of BRT Program participants in June 1999, representatives of other cities and transit agencies seeking to participate in BRT Program activities have contacted FTA. These bodies symbolize a serious interest in bus rapid transit as a solution to local transportation problems and they could benefit from technical assistance activities of the BRT Program. The cities participating in the BRT Program activities or expressing interest in BRT include:

- Atlanta - attended workshop, scanning tour
- Las Vegas – attended workshop; has decided to implement BRT
- Minneapolis – attended scanning tour

- Houston – attended scanning tour
- Detroit – attended workshop
- Phoenix – has requested to join the BRT Consortium
- Orlando
- Clackamas County, OR (Portland Metropolitan Area)
- Sacramento
- Omaha
- Seattle
- Santa Barbara
- San Diego

Future Plans and Activities

As the BRT Program has matured and expanded, additional issues have surfaced for consideration:

The concept of improving the image of bus operations and to implement Bus Rapid Transit system has caught on throughout the United States and abroad. Operational and cost benefits are causing many communities to look at BRT as an alternative to service provision. Nation wide, BRT could have significant impact in our energy reduction effort. FTA could make a significant impact if the deployment of BRT demonstrations could be accelerated. Three possible ways of doing this are by obtaining direct funding for existing demonstration projects so that they do not have to compete for New Starts or Bus Discretionary funding, demonstrating certain elements of BRT in a short-term basis, and establishing deployment partnerships with cities and manufacturers.

Vehicle manufacturers will no doubt be aware of the results of the BRT vehicle design competition. This may have an impact on the design of future BRT vehicles for the American market. Similarly, FTA will continue to make transit agencies aware of vehicle available for purchase and deployment. Web based communications will be considered to acquaint the transit agencies to BRT vehicles available in the market place.

Most BRT projects need New Start or Bus Discretionary funds for deployment. Often BRT sites do not know whether they should pursue New Start fund or Bus Discretionary funding. The comprehensive New Starts Process requires a high degree of technical expertise. Technical Assistance will be provided to BRT sites that need help with the New Start funding process.

National and local marketing campaigns strategy should be developed to improve the image of bus operations in the United States.

FTA will work with the transit community to develop a consensus definition of BRT.

There is a need to develop credible documentations of the costs of a variety of BRT operations. Such a guidebook would help local communities in deciding the extent of BRT operations for their communities.

Simulations are quite helpful for analyzing alternative BRT scenarios. Technical assistance to transit agencies and cities may need to be provided to use simulation to develop and refine their operational plans.

A BRT Research and Clearinghouse Institute could gather national and international information on BRT and undertake research to aid implementation efforts. A consortium of communities, transit agencies, manufacturers, and advocacy groups such the W. Alton Jones Foundation could pool funds to make this Institute a reality.

Some of the demonstration sites have already begun deployment of BRT projects and the remainder will do so over the next several years. Additional funds will be needed to support their implementation plans and to collect data for evaluations that will permit others to learn about the results.

Other cities have expressed interest in BRT and the BRT Program. Additional funds would be well utilized to support BRT technical assistance activities for these cities and to develop, plan, implement and evaluate their BRT projects.

Appendix A

Bus Rapid Transit Demonstration Program Projects

Bus Rapid Transit Consortium Projects				
City	Sponsor	Description	Schedule	Budget
Boston, MA	Massachusetts Bay Transportation Authority (MBTA)	The Silver Line project consists of locally funded exclusive lanes on Washington Street (Phase 1, Section B) (under construction and opening in 2003) connected to two tunnel sections: 1. South Boston Piers to Logan Airport (Phase 1, Section A)(in FFGA)(under construction and opening in 2003), and 2. Downtown Boston (Phase 2)(in Preliminary Engineering)(2008). The Silver Line will have direct transfers to MBTA's Red, Orange and Green lines and permit much faster service to Logan Airport.	Phase 1: 2003; Phase 2: 2008	Phase 1: \$601 M; Phase 2: \$364M
Charlotte, NC	City of Charlotte	Independence Corridor. This project includes an exclusive busway in the median of Independence Boulevard. Approximately 2.6 miles of the busway already exists. Phase 2 will add one additional mile in 2004 and Phase 3 will potentially have a total of 13.5 miles after 2006. A corridor study is underway.	Phase 2: 2004; Phase 3: 2006	\$13M
Cleveland, OH	Greater Cleveland Regional Transit Authority	GCRTA proposes to rebuild a five-mile section of Euclid Avenue by 2003 to provide for exclusive transit lanes, landscaping, transit shelters, street furniture, etc. The exclusive lanes will carry a fleet of new low-floor articulated dual mode buses. This project is now in final design.	2003	\$220M
Dulles Corridor, VA	Virginia Department of Rail & Public Transportation	This project, in preliminary engineering, is part of a multi-year, multi-phase effort to bring Metrorail to the corridor. The Bus Rapid Transit project phase (2003) would be an intermediate phase to the ultimate Metrorail phase (2010). Bus Rapid Transit would operate on the congestion-free Dulles Airport Access Road and use median stations built for the Metrorail extension.	2003	\$280M
Eugene-Springfield, OR	Lane Transit District	A 10-mile East-West pilot corridor from east Springfield to west Eugene. LTD proposes to use exclusive lanes in a variety of configurations, limited stops, proof-of-payment fare collection, low-floor guided buses, feeder services, park and ride, and ITS technologies. Phase 1, downtown Eugene to downtown Springfield is scheduled for 2002 and funded through the Bus Capital Program and has been approved for implementation. Phase 2 is scheduled in 2004. LTD is expected to pursue New Starts funding for Phase 2 and subsequent phases.	Phase 1: 2002; Phase 2: 2004	\$15M
Hartford, CT	Connecticut Department of Transportation	A nine-mile, 12-station, two-lane exclusive busway is to be built on active and inactive rail rights-of-way and open in 2003. There will be five intermediate points of access. Project is in preliminary engineering.	2003	\$80M

Honolulu, HI	City and County of Honolulu	CityExpress!, Phase 1 of Honolulu's BRT project, which started in March 1999, is a limited stop service overlayed on current local service routes running in whole or in part along the same alignment, with additional transit priority measures and improved express service stations to be added in subsequent phases. Travel times on a 12.6 mile route were cut from one hour and twenty minutes to 45 minutes. Average weekday ridership has quadrupled from 2500 to 10,000. Phase 2 (In-Town BRT) and Phase 3 (Regional BRT) of Honolulu project are under consideration by FTA to initiate New Starts preliminary engineering.	Phase 1: 1999 Phase 2: 2004 Phase 3: 2008	Phase 1: \$4M Phase 2: \$264M Phase 3: \$239M
Los Angeles, CA	Los Angeles County Metropolitan Transportation Authority (LACMTA) & Los Angeles City Department of Transportation	Rapid Bus, Los Angeles' initial phase BRT project was implemented in June 2000 on two corridors: Ventura and Wilshire/Whittier Boulevards. The Rapid Bus services operate on regular mixed traffic lanes but includes traffic signal preference within the City of Los Angeles, limited stops, and low floors for fast boarding. Travel time has been cut by 25% and patronage has increased by 25% to 40%. Los Angeles is also seeking FTA New Starts funding for a Wilshire Boulevard BRT project with exclusive lanes and is following FTA's New Starts process for a BRT project with exclusive lanes in the San Fernando Valley corridor.	Phase I Rapid Bus: 2000	\$15M
Miami, FL	Miami-Dade Transit Agency	MDTA proposes to extend their existing 8.5 mile South Miami-Dade Busway another 11.5 miles to Florida City by 2003. The additional section would have 22 new stations. The project is in preliminary engineering.	2003	\$88M
San Juan, PR	Puerto Rico Highway and Transportation Authority	Fast shuttle bus service operating over HOV lanes on the new 2.5-mile Rio Hondo Connector linking the Bayamon Tren Urbano Station and the Rio Hondo Tren Urbano Plaza. The project will also include seamless fare collection with Tren Urbano, traffic signal preference, and other ITS technologies. This FFGA project is under construction and is expected to be operational in 2002.	2002	\$2M
Santa Clara, CA	Santa Clara Valley Transportation Authority (SCVTA)	The line 22 corridor is approximately 27 miles long and serves six Silicon Valley cities. Line 22 has a running time of over two hours. SCVTA plans to reduce travel times by 25% by route modifications, infrastructure, traffic signal preference, queue jump lanes, fare prepayment, low-floor-articulated buses, and ITS technologies. The project is expected to be operational in 2002.	2002	\$33M
Pittsburgh, PA	Port Authority of Allegheny County	The five-mile West or Airport Busway opened to service in September 2000. Bus travel times have been cut from 52 minutes to 26 minutes. Weekday ridership has doubled from 3500 to 7000.	2000	\$322M

Albany, NY	Capital District Transportation Authority	The "Best Bus" will operate on five miles of New York Route 5 between the downtowns of Albany and Schenectady. Project features traffic signal preference, infrastructure, and queue jump lanes will save ten minutes.	2002	\$5M
Chicago, IL	Chicago Transit Authority	The X49 Western Avenue Express began operation in December 1998. The X49 uses limited stops to cut travel time by 25%. Ridership has increased by 17%.	1998	\$1M
Montgomery County, MD	Montgomery County, MD	The six mile Viers Mill Road priority project will include route modifications, queue jump lanes, shoulder operations and ITS technologies.	2002	\$6M
Oakland, CA	Alameda-Contra Costa Transit District	The 16 mile San Pablo corridor runs through six East Bay cities and includes a variety of bus priority improvements and vehicle and station design improvements to cut running and dwell time.	2002	\$28M

Appendix B

**Summary of BRT Projects
By Type and Start of Operations**

Summary of Bus Rapid Transit Projects by Type and Start of Operations						
Project Type	Year					
	1999	2000	2001	2002	2003	2004 or Later
Busway	Dulles >>	Pittsburgh		San Juan	Hartford Miami	
Arterial						
Limited Stop	Honolulu >	Chicago Los Angeles >		Santa Clara		
With Exclusive Lanes				Boston >> Charlotte >>		Eugene >> Cleveland Louisville >>
Without Exclusive Lanes				AC Transit Albany Montgomery Co., MD		

> = Additional Phases in Later Years

Appendix C

.BRT Funding History

BRT FUNDING HISTORY

	1998	1999	2000	2001
BRT Budget				
BRT Demo Sites				
Boston		50,000		
Charlotte		50,000		
Cleveland		50,000		50,000
Dulles Corridor		50,000		
Eugene		50,000		50,000
Hartford		50,000		
Honolulu		50,000		50,000
Miami		50,000		50,000
San Juan		50,000		
Santa Clara		50,000		
Los Angeles				100,000*
Pittsburgh				50,000
Puerto Rico				50,000
Contractors				
Volpe	160,000	280,000		100,000
Booz-Allen		370,000		250,000
Milligan & Co.		150,000		
PATH		200,000		100,000
BRT Institute				98,980
Univ S. FL				50,000
BRT FUNDS	\$160,000	\$1,500,000	\$150,000*	\$898,980
Other BRT Funding				
Mitretek		\$120,000	\$50,000*	50,000
Univ S. FL		100,000		
TOTAL	\$160,000	\$1,720,000	\$200,000	\$948,980

* Prior year recovery applied to LA in 2001 and Mitretek in 2000

Appendix D

BRT Project Contacts

Project	Local Project Contact	FTA Headquarters Contact	Planning Contacts	Policy Contacts	GM Contacts	FTA Regional Office Contacts
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