

National Bus Rapid Transit Institute – Strategic Plan

1. Introduction

In 2005, the National Bus Rapid Transit Institute (NBRTI) received a congressional earmark of \$7,000,000 as part of the passing of the TEA-LU legislation. This earmark equates to \$1,750,000 per annum from FY-06 to FY-09. A “Scope of Work” document was subsequently prepared to identify core NBRTI activities over the duration of the grant, and milestones for FY-06. The aim of this “Strategic Plan” document is to build on the FY-06 “Scope of Work” to provide a strategic long-term framework for the activities of the NBRTI over the duration of the grant.

2. The NBRTI – Strategic Program Objectives

The NBRTI has a wide range of responsibilities and is involved in a variety of different activities. These can be condensed into three central program objectives associated with four core program areas.

TABLE 1 – Strategic Program Objectives and Core Program Areas

Objective	Core Program Areas
Further the understanding of the BRT mode	Research and Demonstration Program
Support BRT Initiatives in the U.S	Technical Assistance / Support
Facilitate BRT information exchange	Clearinghouse / Information Exchange

The following diagram illustrates how these three core program areas interact.

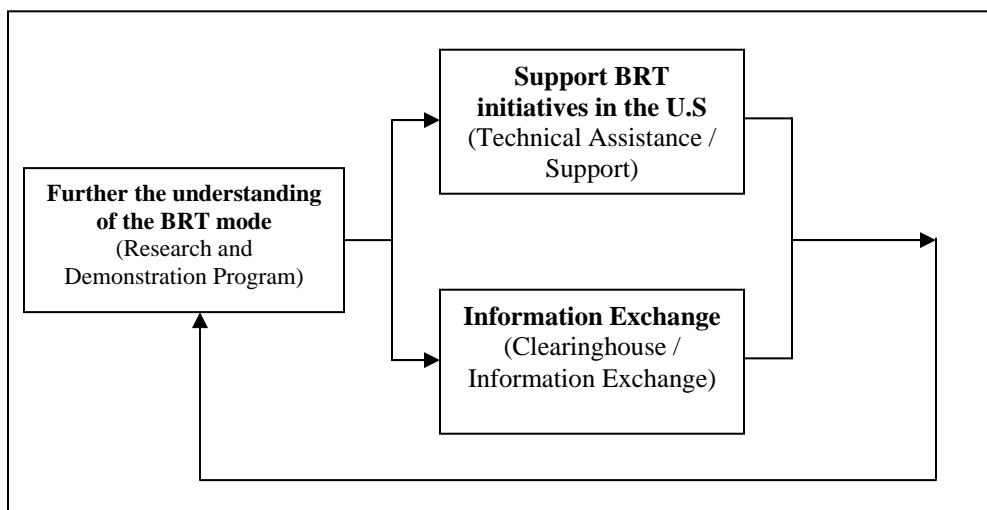


FIGURE 1 – Interaction of Strategic Program Objectives

As a research organization, the NBRTI's core strength lies in furthering the understanding of the BRT mode. This knowledge base comes from the existing body of BRT research, supplemented by ongoing research and targeted demonstrations by the NBRTI and other organizations. Through national and international outreach, this knowledge can be used to educate, inform, and raise awareness of the BRT mode, and to assist organizations planning the introduction of BRT projects. These activities ultimately add to the body of knowledge - thus, an ongoing "feedback loop" is established.

3. Organizational Structure

The NBRTI team currently consists of a Program Director, assisted by five research faculty members, a program assistant, a webmaster, and several students. It is proposed that the activities of the NBRTI team are overseen by the FTA and an NBRTI Advisory Board, formed by invited members of the BRT community. Figure 2 illustrates this proposed organizational structure.

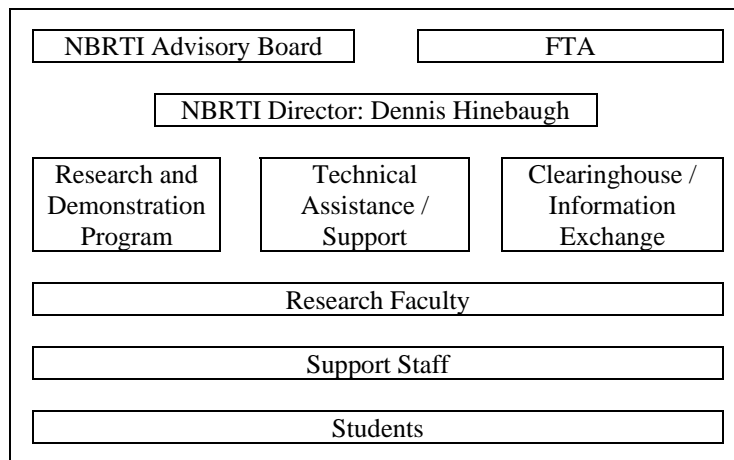


FIGURE 2 – Proposed Organizational Structure

4. The Research and Demonstration Program

While some significant U.S based research projects have been completed (e.g. TCRP Report 90 and the *Characteristics of Bus Rapid Transit for Decision-Making (CBRT)*), the BRT concept is still relatively new to the United States. BRT originated in Latin America and there is still a degree of uncertainty about the mode's long-term performance and impacts in the lower-density, higher income urban environments of the developed world. An added level of complexity stems from the multitude of different BRT element combinations that exist. If BRT is to succeed in the U.S, decision-makers and those responsible for implementing BRT projects need a working knowledge of what BRT is, what it is capable of achieving, how much it will cost, and what its impacts will be. This can only be achieved through a research program that addresses outstanding

research questions and provides practitioners with the knowledge they need to make informed decisions.

4.1 Research

The central document for the U.S approach to BRT is the *CBRT*. This is intended to be a “living document” that is updated at regular intervals to keep pace with developments in the field. Therefore, it is recommended that the themes of the Research Program are structured around the *CBRT* document.

TABLE 2 – Research Program Themes

Themes	Elements	Performance	Benefits
Key Research Questions	What is BRT?	What can it do?	What are its impacts?
Research topic areas	<ul style="list-style-type: none"> - Runningways - Vehicles - Stations - Fare collection - ITS - Service planning - <i>Marketing and Branding</i> 	<ul style="list-style-type: none"> - Travel time - Reliability - Safety and security - Capacity - <i>Comparisons to other rapid transit modes</i> - <i>Modeling</i> - <i>Network Design</i> 	<ul style="list-style-type: none"> - Ridership - Capital cost effectiveness - Operating cost efficiency - Land use / economic impacts - Environmental impacts - Identity and image

* **FY-06 Research topics shown in bold**

** *Example topics not explicitly included as chapter headings in CBRT '04.*

At the beginning of each financial year a research project evaluation and selection process will be conducted to assess the progress of ongoing research and identify the most appropriate new projects to initiate. The process for the selection of new projects will begin by soliciting research project ideas from the BRT community, which will then be evaluated by the NBRTI Advisory Board, the FTA, and NBRTI staff to determine suitability under the following criteria:

- Impact (assessed level of study value)
- Applicability (usefulness to BRT community at-large)
- Staff research expertise
- Time constraints
- Cost constraints

Key research questions include:

- How do individual BRT system components impact system performance?
- How do different component combinations impact system performance?
- (Thus) What BRT component combinations should be recommended under different cost constraints and performance targets?
- In what ways does BRT differ from other rapid transit modes? Under which circumstances should BRT be recommended?

- How should BRT be integrated into city-wide or region-wide transit systems?
- What impact can BRT be expected to have on urban form and/or economic development? How and why does this differ from other rapid transit modes?
- How can BRT projects be modeled so that their impacts can be accurately predicted?

As the research studies are completed, the project reports become “companion” documents supporting the central *CBRT* document. Summarized research findings from each study may also be added to the *CBRT* as necessary. Thus, the *CBRT* document acts as both the central resource for determining the selection of new research projects, as well as providing a synthesis of completed research within the wider context of BRT implementation in the U.S. Successive updates may therefore continually enhance the comprehensiveness of the *CBRT* document.

4.2 Demonstration Program

Along with research, there may also be a need to conduct one or more projects that demonstrate a particular planning tool, implementation approach or technology that is not sufficiently addressed by ongoing research in the public or private sectors in the United States. The objective of such a demonstration program is to implement and test one or more BRT elements in an operational setting and collect performance and benefits data. The data could then be used to answer specific research questions, for example:

- What is the impact of a BRT approach on overall travel time, traffic congestion or emission levels?
- What are the lifecycle costs and measured benefits of a foreign technology not yet fully demonstrated in the United States?
- How does the implementation of a certain tool, technology or approach change overall BRT planning, implementation or operating practices?

Proposed Process:

One or more demonstration projects or sites may be selected in 2007 with input from NBRTI staff, the NBRTI Advisory Board, and FTA or through a public solicitation using the following criteria:

- 1) Schedule – The demonstration project(s) must be operational between 2007 and 2009 in order to evaluate and disseminate the data and lessons of the program during the life of the grant.
- 2) Impact – The demonstration project(s) would only include innovative approaches, technologies, or use of technologies within the realm of BRT that have not been widely accepted in the United States.
- 3) Applicability – The demonstration project(s) should illustrate one or more of the capabilities of BRT to maximize the applicability to other cities or areas of the country.
- 4) Cost – The cost and liability of the demonstration project(s) should be minimized to the extent possible and shared with the implementing agency and partners. The demonstration project(s) may include the following costs:

- a) Planning and design of BRT elements (but may not cover all associated R&D costs)
 - b) Capital and equipment costs (except for any restrictions on the use of the grant funds)
 - c) Installation and testing costs
 - d) Facilitation and evaluation costs
- 5) Commitment – The local commitment and financial viability of the overall project must be considered in order to minimize the risk of the project not being realized.
 - 6) Participation – The demonstration must afford a meaningful role for CUTR researchers in the overall project and allow for the collection of performance and benefits data.

Potential Partners:

NBRTI will strive to create partnerships with other programs and organizations, such as the ones below, as part of the demonstration program in order to share costs and maximize the opportunities for collaboration and success:

- 1) Transit Agencies – particularly those currently planning or implementing BRT including in Cleveland OH, Eugene OR, Orlando FL, Hillsborough County FL, Pinellas County FL, etc.
- 2) Other Research Programs/Demonstration Projects – for example, the FTA Congestion Mitigation Program, the Ohio State University public transportation pilot project, University of Minnesota ITS Institute, University of California Berkeley PATH, APTA Standards Program, and the FTA National Fuel Cell Bus Program.
- 3) Private Entities – particularly those involved in research and development of BRT elements and implementation.

Sample Projects under Consideration:

- 1) Running Ways – a guidance system (mechanical, optical, magnetic or otherwise) that would be suitable and acceptable to transit agencies and manufacturers in the United States
- 2) Stations – passenger amenities that improve the “permanence,” aesthetic quality, or utility of BRT stations (such as solar-powered lighting)
- 3) Vehicles – improved internal configurations or passenger securement devices
- 4) Fare Collection/System – developing standard specifications and testing an open and interoperable smart card system
- 5) Intelligent Transportation Systems (ITS)
 - a) Upgrading an existing signal system to include adaptive transit signal priority (TSP) that adjusts to real-time traffic conditions
 - b) Demonstrating transit applications of Vehicle-Infrastructure Integration (VII)
 - c) Applying guidance and vehicle assist technologies to improve lane-keeping and the use of bus lanes and shoulders
- 6) Service and Operations Planning - coordination of operations management and demand-responsive services to feed a BRT system

5. Technical Assistance / Support

The NBRTI plays a central role in supporting public sector agencies in the U.S that are considering BRT, and those with BRT initiatives already underway. Support is provided through the following activities:

5.1 Technical Assistance / Conference Support

The NBRTI is often called upon to make presentations and/or assist new systems considering BRT applications in their communities. This task involves presentations to boards or other governmental agencies at both the local and regional level, and/or meetings with agency staff to discuss technologies, options, implementation issues, etc. The NBRTI is also responsible for developing, leading and presenting at regional and national BRT conferences in association with industry partners including APTA, TRB, ITE, and ASCE. The NBRTI will draw from the experience of the BRT community to provide better assistance to interested transit agencies.

5.2 Peer-to-Peer Program

The National Bus Rapid Transit Institute has developed a BRT Peer-2-Peer (BRT-P2P) program that can sponsor travel, communications, and associated costs for BRT peer experts to provide or gain knowledge regarding BRT. The BRT peer experts will be designated based on geography and specific technical expertise. The BRT-P2P program is envisioned to provide free, short-term technical assistance regarding BRT planning, design, funding, and operations to the transportation industry. The BRT-P2P program will operate in a similar fashion as the established ITS Peer-to-Peer program administered by the Intelligent Transportation Systems Joint Program Office, and sponsored by FTA, Federal Highway Administration (FHWA), and the Federal Motor Carrier Safety Administration (FMCSA).

5.3 Project Evaluations

The BRT Institute will conduct and/or assist in the evaluation of current and future BRT projects as they are completed through on-board surveys, performance evaluations, and development of “lessons learned” summaries. This includes assistance in developing and evaluating proposals and participation in technical advisory review committees. In conjunction with the creation of the “Small Starts” funding category, the NBRTI has developed procedures for the collection of “pre-BRT application” data to permit more accurate evaluation of BRT application impact.

5.4 Field Visits

NBRTI will organize up to four domestic field visits each year. Field visits are useful primarily in providing public and private sector professionals with experience of operational BRT systems. These field visits also provide the opportunity for transit professionals to establish relationships for the further dissemination of knowledge.

5.5 BRT Curriculum

The NBRTI is developing a teaching module to educate people in the rudiments of BRT. This teaching module is targeted at college level students, and is intended to be packaged such that the module can be taught without prior knowledge of BRT or public transit. The course will be provided in a full-day format, and in a smaller, part-day format.

5.6 Visual Simulation Tools

The NBRTI will develop visual simulations of BRT services and amenities to be used as educational tools at public workshops and forums. These visualizations will include generic simulations of queue jumps, transit signal priority, precision docking, bus operations within different running ways (exclusive, mixed traffic, separated, etc.), ITS technologies, facilities, fare technologies, and other beneficial scenarios.

6. Clearinghouse / Information Exchange

6.1 Stakeholders

While it is important to acquire knowledge of BRT and its capabilities, this knowledge will only be useful if it is disseminated to the different stakeholders that ultimately determine when and where BRT will be implemented. Such stakeholders include:

- *Decision-makers (politicians at local, state, and national level)*
Politicians ultimately decide whether BRT projects get implemented. They must be aware of the BRT concept, and have a basic understanding of what it is capable of achieving, what it will cost, and what its likely impacts will be. The relatively short time period from planning to construction to operation is a major political benefit.
- *Public sector professionals (transit planners, local, state and national government staff)*
Public sector professionals are ultimately responsible for overseeing the implementation and operation of BRT projects. They require a technical grounding in BRT system design and operation. Ability to plan the financial aspects of BRT projects will also be required, including an awareness of potential external funding sources.
- *Private sector professionals (consultants)*
Consultants are often tasked with designing and constructing BRT projects, and providing vehicles. Several U.S consultants already specialize in BRT, but the number of consultants with relevant expertise is relatively small.
- *Civic organizations*
Local and national organizations influence public and political opinion and need to be considered.
- *The General Public*
Public awareness of BRT as a rapid transit option is important. Many Americans have a negative perception of public transit and are not aware of the BRT mode. Building public awareness and support is also important to driving the political will for the introduction of BRT projects.

It is clear that there is a wide-range of different stakeholder groups, each requiring different kinds of information at different levels of detail. Thus, the key challenge is to identify the information needs of each group and package the information appropriately for maximum impact. Several different strategies will be employed to achieve this.

6.2 Domestic Conferences

Conferences are mainly targeted at disseminating technical information to public and private sector professionals, though these can also be used to attract political figures and raise the profile of BRT in the conference locale.

6.3 NBRTI Website

The primary purpose of the NBRTI website (www.nbrti.org) is to serve as a clearinghouse for all current BRT-related information, providing information on ongoing BRT research and the status of BRT projects throughout the country. Through this clearinghouse the NBRTI will help interested parties retrieve general BRT information, as well as information on the progress of the BRT projects in the U.S and worldwide. The website will also provide information on current affairs in the world of BRT, and details of upcoming events of interest to the BRT community such as conference, workshops, and scanning tours.

6.4 Newsletters / Brochures

The NBRTI currently publishes a quarterly newsletter (BRT Quarterly) to provide information on current news and events relating to BRT. The newsletter has a wide distribution (over 300 subscribers) both within the U.S and internationally.

Information brochures will also be developed and distributed periodically to key audiences.

6.5 Journal Sponsorship

The Journal of Public Transportation is a quarterly, international journal containing original research and case studies associated with various forms of public transportation and related transportation and policy issues. Every two years, the NBRTI will sponsor a special BRT edition in the Journal of Public Transportation.

6.6 International Information Exchange

Much of the current BRT knowledge comes from other countries, particularly in Latin America and Europe, where the BRT concept has been developed, tested, and refined over a number of years. As new system proposals emerge around the world, as new technologies and strategies are developed, and as potential business opportunities arise, the international participation of the U.S BRT community becomes increasingly important. The NBRTI clearly has a major role to play in representing the U.S BRT industry abroad, and developing and maintaining international relationships. This will be addressed through the following strategies.

6.6.1 International Conferences

Conferences provide a good opportunity to develop international relationships, either through inviting high profile BRT advocates from other countries to attend and speak at

conferences in the U.S, or through sending NBRTI personnel to participate in BRT conferences abroad. Sponsoring or co-sponsoring conferences in other countries is also a proactive way to raise the profile of BRT in the U.S and forge international relationships.

6.6.2 International Field Visits

The NBRTI has organized international field visits to Europe and Australasia in recent years. These facilitate in-depth observation of other countries’ approach to BRT. High-profile political figures can be invited on such tours to show decision-makers what can be achieved and to improve the political awareness of the BRT mode. One or two international field visits are planned for each year of the grant.

7. Progress Monitoring

Some tasks are ongoing while others operate over finite periods of time. The following table summarizes how the various activities will be monitored.

TABLE 3 – Progress Monitoring

Core Program Areas	Activities	Monitoring Type	Milestones	Deliverables
Research Program	Research	Project Specific	Deliverables (in scope), Incorporation into CBRT	- Quarterly Progress Reports - Tech memos, Draft and Final reports
	Demonstration Projects	Project Specific	Deliverables (in scope), Incorporation into CBRT	- Quarterly Progress Reports - Draft and Final reports
	Technical Assistance / Conference Support	Ongoing	Annual Review	N / A
Technical Support / Assistance	Peer-to-Peer Program	Ongoing	Annual Review	- Annual Summary Report
	Project Evaluations	Project Specific	Deliverables (in scope)	- Quarterly Progress Reports - Tech memos, Draft and Final reports
	Domestic Field Visits	Project Specific	Tour Execution	- Summary Report of each tour - Collected materials added to website
	BRT Curriculum	Project Specific	Curriculum development Class Execution	- Lesson plan - Presentation materials
	Visual Simulation Tools	Project Specific	Progress Reports	- Completed visual simulations tools
	Domestic Conferences	Project Specific	Conference Execution	- Proceedings?
	NBRTI website	Ongoing	Website Overhaul	- Updated website
Clearinghouse / Information Exchange	Newsletter / Brochures	Ongoing	Newsletter Production Brochure Production	- Quarterly newsletters - Brochures
	Journal Sponsorship	Ongoing	Journal Production	- Published journal every two years
	International Conferences	Project Specific	Conference Execution	- Proceedings?
	International Field Visits	Project Specific	Tour Execution	- Summary Report of each tour - Collected materials added to website