



Max BRT, Las Vegas, NV

# Bus Rapid Transit

## A GUIDE TO EVALUATE THE FEASIBILITY OF BUS RAPID TRANSIT



Metro Orange Line, Los Angeles, CA



C-Tran, Vancouver, WA



# Introduction and Purpose

Bus Rapid Transit (BRT) is a transit option that is flexible in implementation and can be designed to fit a variety of local conditions along routes with relatively high levels of activity, density, and demand for trips throughout the day. By investing in roadway, right-of-way, intersection, and signal improvements, BRT service can provide improved travel speeds, reliability, and quality of transit service. BRT can help local jurisdictions and transit operators offer their customers sustainable transportation options that facilitate the safe, convenient, affordable, and efficient movement of people. However, BRT is not always the “best” solution. Implementing or expanding commuter bus service, express bus, and new local bus routes or improving the existing bus service could be more appropriate options for local jurisdictions and transit agencies to explore when deciding how best to meet their transportation needs.

The Maryland Department of Transportation (MDOT) produced this guide to provide local jurisdictions, transit agencies, and other stakeholders an outline of how to make careful and informed decisions about BRT. This guide also is intended as a resource to help local jurisdictions and transit agencies better understand how to assess BRT as a locally-owned and -operated facility and how to best work with the State.

As local agencies assess the viability of BRT, they should collaborate with MDOT Maryland Transit Administration (MDOT MTA) and MDOT State Highway Administration (MDOT SHA). At MDOT’s discretion, these business units can provide technical advice and assistance with coordination and evaluation, best practices, and possible financing strategies. The project’s characteristics will determine MDOT’s level of engagement.



EmX, Eugene, OR

MDOT encourages local jurisdictions and transit operators to carefully consider whether BRT can be an effective solution to their transportation needs. This guide was written to provide a greater understanding of the factors involved when evaluating the feasibility of BRT in local jurisdictions as well as the additional considerations if a need for State or federal funding or other resources is expected to successfully implement the service. This guide will provide information on:

- land use and transit service characteristics supportive of BRT;
- BRT’s scalability and the influence different BRT elements have on system performance;
- opportunities for phasing BRT elements into service;
- roles and responsibilities of project partners; and
- methods for examining BRT feasibility at the corridor and project level.

BRT projects have been successfully implemented in many cities in the United States (US) as diverse as Eugene, Oregon; Cleveland, Ohio; Aspen, Colorado; Boston, Massachusetts; and several large and small cities in Southern California. BRT as a transit mode has been supported by the Federal Transit Administration (FTA) since 1998. The information contained in the following pages reflects best practices in research and implementation nationwide.



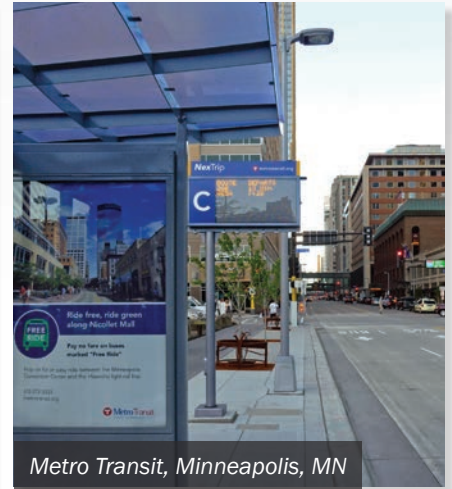
R-Line, Providence, RI



EmX, Eugene, OR



Metro Orange Line, Los Angeles, CA



Metro Transit, Minneapolis, MN

## Where Is BRT Appropriate?

One of the major strengths of BRT as a transit mode, as shown increasingly throughout the US and around the world, is its high degree of scalability. BRT can address a broad range of mobility and development challenges in a variety of conditions. Accordingly, BRT should be thought of as a menu of options to select from, tailored to the conditions and challenges in a given corridor. However, there are some general land use and transit service characteristics that are favorable to the implementation of BRT.

### Land Use Characteristics

BRT is appropriate for multi-nodal corridors that:

- generate intermediate trips throughout the day and
- have a transit-supportive development pattern including:
  - » concentrations of density and/or mixed-use development (activity centers) and
  - » a walkable environment.

Comparatively, corridors that support longer end-to-end trips or trips only in peak periods may be better suited for express or commuter bus.



Metro Rapid, Los Angeles, CA

### BRT Service Characteristics<sup>1</sup>

The FTA currently defines BRT as a bus system that meets the following criteria:

- ideally, at least some of the route operating in a lane dedicated for transit use during peak periods;
- defined stations that are accessible for persons with disabilities, offer shelter from the weather, and provide information on schedules and routes;
- intersection signal priority through congested intersections and/or queue jump lanes in areas without a dedicated guideway;
- at least a 14-hour span of service on weekdays and a 10-hour span of service on weekends with a minimum of 10-minute headways in the peak and 15-minute headways in the off-peak period on weekdays and 30-minute headways on weekends; and
- a separate and consistent brand to easily identify stations and vehicles.

<sup>1</sup> US Department of Transportation/Federal Transit Administration. (June 2016). *Final Interim Policy Guidance Federal Transit Administration Capital Investment Grant Program*. Washington, DC.

[https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST\\_Updated\\_Interim\\_Policy\\_Guidance\\_June%20\\_2016.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FAST_Updated_Interim_Policy_Guidance_June%20_2016.pdf)

# BRT Elements and Performance

BRT uses a variety of elements to improve travel speed, reliability, and quality of transit services by investing in roadway, right-of-way, intersection, and traffic signal improvements to speed-up service. The primary challenge for local jurisdictions and transit agencies considering BRT is selecting an appropriate set of design and operational elements that fulfill the project’s objectives and whose costs can be reasonably justified when considering the planned service level and expected ridership.

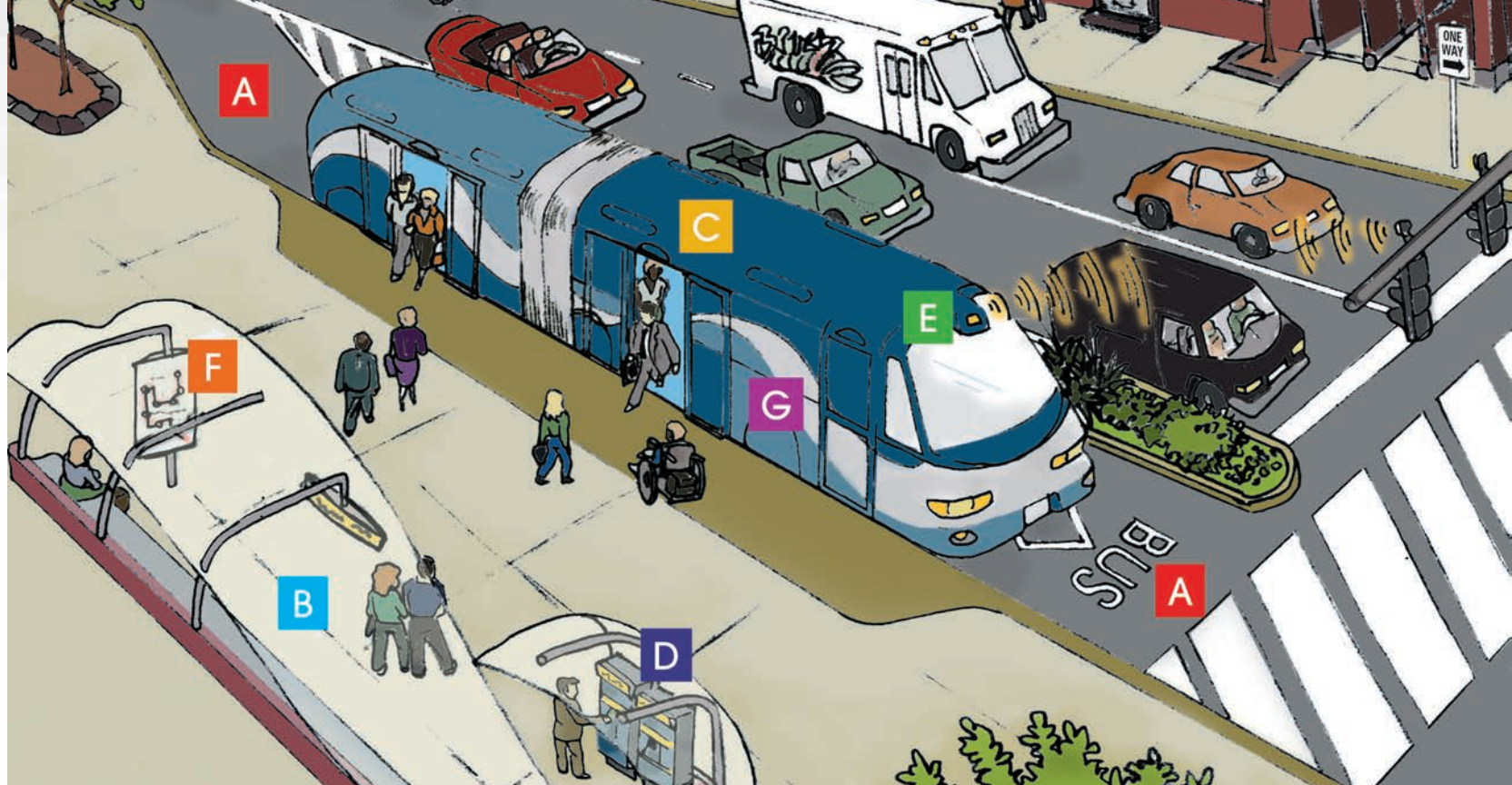
Although individual BRT projects can select different infrastructure and service elements, the desired outcome is the same—improved customer satisfaction, while increasing the number of people that can be carried within a corridor.

Improved customer satisfaction can be accomplished by:

- reducing travel times for transit users;
- improving trip reliability;
- enhancing system recognition and wayfinding through system branding, image, and identity;
- improving safety and security;
- using vehicles that maximize capacity while maintaining customer comfort; and
- improving transit connections and providing more direct service.

BRT system performance and the service’s provision of improved customer satisfaction are based on the selected combination of BRT elements. Each BRT element influences different aspects of the system’s performance. The combination of elements enhances the BRT system’s ability to attract more riders.

Influence of BRT Elements on Transit System Performance			
BRT Elements	Travel Time Savings	Reliability	Capacity
<b>Running Way</b>			
Running Way Location	✓	✓	✓
Level of Transit Priority	✓	✓	
Running Way Guidance	✓	✓	
<b>Stations</b>			
Station Location & Type	✓		✓
Platform Layout	✓	✓	✓
Passing Capacity	✓	✓	
<b>Vehicles</b>			
Vehicle Configuration	✓		✓
Passenger Circulation Enhancement		✓	✓
<b>Fare Collection</b>			
Fare Collection Process	✓	✓	
Fare Media/Payment Options	✓		
<b>Intelligent Transportation Systems</b>			
Vehicle Prioritization	✓	✓	
Intelligent Vehicle Systems	✓	✓	
Passenger Information Systems		✓	
<b>Service Plans</b>			
Span of Service		✓	
Frequency of Service		✓	
Station Spacing	✓	✓	



**A Running Way** – The most significant element in determining speed and reliability of BRT services is the running way (the lane in which the vehicle travels). It can be made up of dedicated lanes, queue jump lanes (short dedicated lanes at intersections that allow the BRT vehicles to “jump” ahead of auto traffic), separated facilities, and mixed traffic operation. The more the BRT’s running way is separated from general traffic, the better the service is able to control its speed and reliability. Running way design can have a significant impact on the image and identity of the system.

**B Stations** – The spacing and configuration of stations can improve travel time and reduce dwell time, the amount of time needed to allow passengers to board and alight the vehicle.

**C Vehicles** – Vehicle size, aisle width, seating arrangements, and floor height, along with the size, number, and arrangement of doors, influence system capacity, dwell times, and passenger comfort.

**D Fare Collection** – Speeding up fare collection either through proof-of-payment fare policies, off-board fare collection, or cashless fare media, such as a smart card, provides increased passenger convenience, reliability, and travel times because dwell times are reduced.

**E Intelligent Transportation Systems (ITS)** – ITS can improve travel times, reliability, and safety and security. Automatic Vehicle Location (AVL) systems allows for real-time operation management of vehicle spacing and can provide real-time next bus arrival information to passengers, which improves passengers’ perceptions of system reliability. Traffic Signal Priority (TSP) systems reduce the time stopped at intersections. Closed-circuit television (CCTV) cameras and call buttons increase safety and security.

**F Service Plans** – How a BRT route is structured can have a significant impact on travel time, reliability, connectivity, and ease of access. The provider should strive to develop service plans that offer: simple, easy-to-understand routes; direct, no-transfer rides to multiple destinations; and a span and frequency of service that reduces the need for a timetable. The service plan is a policy document that describes how the transit service operates. At a stop, the information conveyed in the service plan is depicted through maps and timetables.

**G Branding** – The visual identity of the service on its vehicles, stations, signage, schedules, etc. conveys a cohesive BRT system and communicates the value of the system. When the system’s identity and image are easily recognized throughout the service area, it can improve the perception of accessibility.

# A Variety of BRT Options

Depending on the combination of system elements selected, the BRT service will fall along a spectrum of system configurations. At one end of the spectrum is BRT “lite,” which uses combinations of system elements whose cost is in the lower end of the spectrum. At a minimum, BRT “lite” typically includes the following elements:

- transit signal priority at strategic intersections;
- real-time information provided to passengers on vehicle status;
- distinctive vehicles with low floor boarding; and
- branding specific to the BRT system.

These combined attributes have proven to offer measurable travel time savings when compared to local bus service along the same route.

At the other end of the spectrum is full BRT, which incorporates most or all of the system elements. In addition to elements that typically comprise BRT “lite” systems, full BRT systems typically:

- have exclusive BRT running ways for a majority of its route length;
- have enhanced stations with various amenities such as seating, passenger information displays, and off-board fare ticket machines; and
- operate with high-capacity BRT vehicles (for example, 60-foot articulated buses with increased capacity and BRT-branded design).

Between BRT “lite” and full BRT is a full set of element attributes that are applied depending on the characteristics of the corridor and priorities of the implementing agency. This range of applications could be considered hybrid BRT, which typically has a higher level of attributes, including vehicles operating in dedicated running ways for a portion of the route or advanced fare collection systems. It is important to note that hybrid BRT also could consist of a combination of solutions that best fit within the communities along a longer corridor, with full BRT in some segments and BRT “lite” in other segments.

It may not be possible to implement full BRT at the onset even if that is the final desired outcome. However, to improve transit service reliability and add capacity along a corridor, a transit agency could program some BRT elements in the short term while planning a more comprehensive BRT service as a longer term goal. There are systems nationally (Los Angeles and others) that have successfully followed this implementation method.

	BRT “Lite”	Full BRT <sup>1</sup>
Running Ways <sup>2</sup>	<ul style="list-style-type: none"> <li>● Shared lanes in mixed traffic</li> <li>● Some preferential treatments, e.g., “queue jumps” at intersections</li> </ul>	<ul style="list-style-type: none"> <li>● Dedicated running ways, exclusive bus lanes</li> <li>● Distinctive pavement treatment</li> <li>● HOV drop ramps</li> </ul>
Stations <sup>2</sup>	<ul style="list-style-type: none"> <li>● Improved shelter</li> <li>● Special signage</li> <li>● Transfer centers</li> </ul>	<ul style="list-style-type: none"> <li>● Level boarding and alighting</li> <li>● “Branded” and consistent with appearance of BRT vehicles</li> <li>● High-quality, attractive, functional amenities</li> </ul>
Vehicles <sup>2</sup>	<ul style="list-style-type: none"> <li>● Exterior and interior aesthetics</li> <li>● Enhanced ride and comfort</li> <li>● Low-floor</li> <li>● Low-emissions</li> <li>● Sleek styling</li> </ul>	<ul style="list-style-type: none"> <li>● Easy-to-board (level with platform)</li> <li>● Multiple-door boarding and alighting</li> <li>● “Branded” exteriors that are distinctive and consistent with appearance of stations</li> <li>● High capacity</li> <li>● Pleasant interior conveniences</li> <li>● Low or zero emissions</li> </ul>
Fare Collection <sup>2</sup>	<ul style="list-style-type: none"> <li>● Increase prepaid fare sales</li> </ul>	<ul style="list-style-type: none"> <li>● Off-vehicle fare collection</li> <li>● Emphasis on prepaid fares</li> </ul>
ITS <sup>2</sup>	<ul style="list-style-type: none"> <li>● Automated vehicle location (AVL)</li> <li>● Bus priority at traffic signals</li> <li>● Real-time passenger information at stations</li> </ul>	<ul style="list-style-type: none"> <li>● Real-time “next bus” arrival information signs at stations</li> <li>● “Next stop” signs on board buses</li> <li>● Smart fare payment media and technology</li> <li>● Traffic signal prioritization</li> <li>● Traffic management and automated guidance features for precision operations and docking</li> </ul>
Service Plans <sup>2</sup>	<ul style="list-style-type: none"> <li>● Improved frequency</li> <li>● Integrated regional coordination</li> <li>● Extended station/stop spacing</li> <li>● Simple route structures</li> </ul>	<ul style="list-style-type: none"> <li>● Frequent all-day service</li> <li>● Short headways (10 minutes or better)</li> <li>● Wide station stop spacing</li> <li>● Simple route layout</li> <li>● Convenient transfers</li> <li>● Station locations coordinated with land-use plans</li> <li>● Service to major activity centers</li> </ul>

<sup>1</sup> The characteristics of full BRT in the United States may differ from those of international BRT systems. Refer to *Bus Rapid Transit Planning Guide (2007)* for international examples of full BRT, as described by the Institute for Transportation & Development Policy.

<sup>2</sup> Caltrans, *Bus Rapid Transit: A Handbook for Partners (2007)*

# Evaluating BRT Feasibility

MDOT encourages local project sponsors (the local jurisdictions' transportation, public works, planning, and/or transit agencies advocating for BRT projects) to carefully and critically assess whether BRT is an appropriate solution to their transportation needs.

The three-step process illustrated below is recommended to screen a potential BRT project's feasibility to determine whether it should be advanced for more detailed study and to assess whether MDOT should participate in the project. The evaluation process winnows possible projects into a smaller subset of projects that are suitable for advancement.

**Step 1:** Screen the corridor's potential to support BRT. Factors such as connectivity, land use, existing ridership, local support, and State and local priorities are key factors to consider when assessing a corridor's BRT potential.

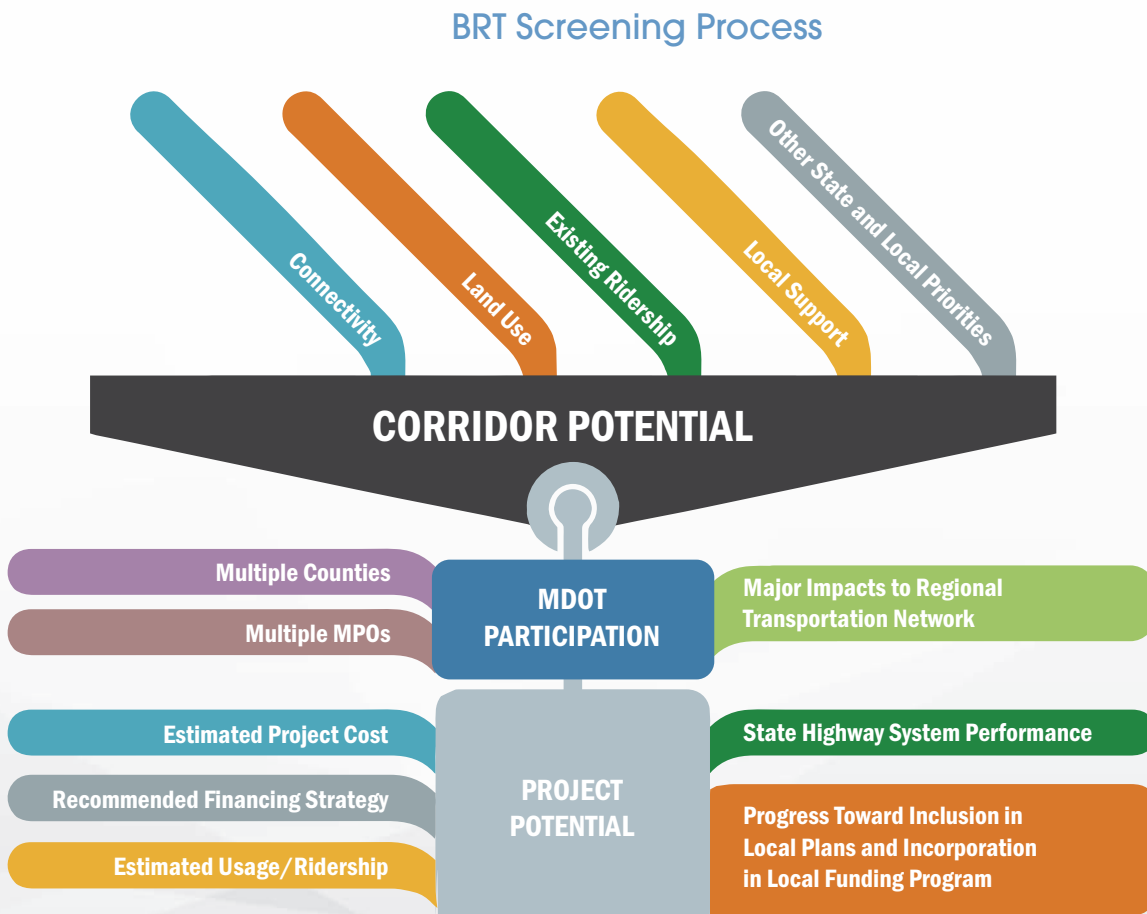
**Step 2:** Determine whether the corridor and possible project is eligible to be considered for MDOT participation. MDOT's decision to participate in a BRT corridor project is based on whether the project is expected to connect multiple jurisdictions in more than one county and have major impacts to the regional transportation network. A

determination of MDOT's involvement does not guarantee that a project will move forward, and a determination that MDOT will not be involved does not preclude the project from proceeding as a local project.

**Step 3:** Assess the project's potential. This step evaluates the intended preliminary implementation approach for BRT in the corridor. It includes factors such as estimated project cost, recommended financing strategy, estimated ridership, State highway system performance impacts, and progress toward including the project in local planning and funding documents.

The local project sponsor takes the lead in conducting the first step of the screening process – assessment of corridor potential. The local project sponsor, working with MDOT, conducts the second step – assessment of MDOT involvement. Depending on the outcome of the second step, either MDOT or the local project sponsor leads the third step – assessment of project potential.

MDOT MTA staff is available to provide clarification on the screening process, suggest possible data sources, provide information on best practices, and discuss coordination with appropriate State agencies.



## Assessment of Corridor Potential

The corridor potential criteria helps the local project sponsor evaluate how appropriate the corridor is for BRT. The local project sponsor should document the connectivity the project will provide, whether the current and planned land use conditions are supportive of



rapid transit, the public support for the project, and the corridor's ability to contribute to other State and local issues deemed important.

These criteria provide an assessment of corridor feasibility based on indicators found in national literature, along with thresholds outlined by MDOT.

### Transportation Network Connectivity

The proposed BRT corridor should offer connections to other transit services because the interconnections enhance the overall multimodal network. The local project sponsor should identify the number of times the proposed corridor intersects with existing or near-term expansion of a rail, BRT, or bus network.

### Transit Supportive Land Use

The current or adopted future land use characteristics of the corridor should be supportive of rapid transit. The corridor should contain several nodes with an activity density (the sum of jobs and people per acre) of at least 25 and multiple activity areas capable of generating intermediate trips throughout the day. The development character of the nodes and activity areas should be transit supportive with: building entrances oriented toward the street, sidewalk, or other public area; street furniture, trees, and other pedestrian amenities; limited parking supply; and a mix of uses.

### Existing Ridership

Even though past transit performance is not a definite proxy for future ridership, looking at the corridor's current ridership can help justify the need for BRT service in the corridor. The local project sponsor should

calculate the number of daily weekday transit trips and annual transit trips in the corridor. If there are additional transit routes within ½ mile of the corridor, list the daily weekday and annual trips for those routes too.

### Local Support

Having local support is a key factor in project success. This support can be measured by identifying the official documents that express support for the corridor or project. Documents can include, but are not limited to, municipality/county council resolutions, an adopted comprehensive plan, and a recommendation in a previously conducted corridor study. Whenever possible, the local project sponsor should document the outreach activities associated with expressions of support for improved transit in the corridor. It is expected that the project will have clear support.

### Contribution to Other State and Local Priorities

The local project sponsor should document how BRT in the corridor would address State and local concerns such as congestion reduction, transit dependence, regional connectivity, climate change, priority development/funding areas, economic development potential, and State Smart Growth policies.

## Assessment of MDOT Involvement

In general, the planning, development, and operation of a BRT project is the responsibility of the local project sponsor. However, to the extent that resources allow, MDOT will participate in BRT projects under certain circumstances. The second step in evaluating BRT feasibility assesses whether it is appropriate for the State to be involved. Projects that would likely include MDOT participation are those that:

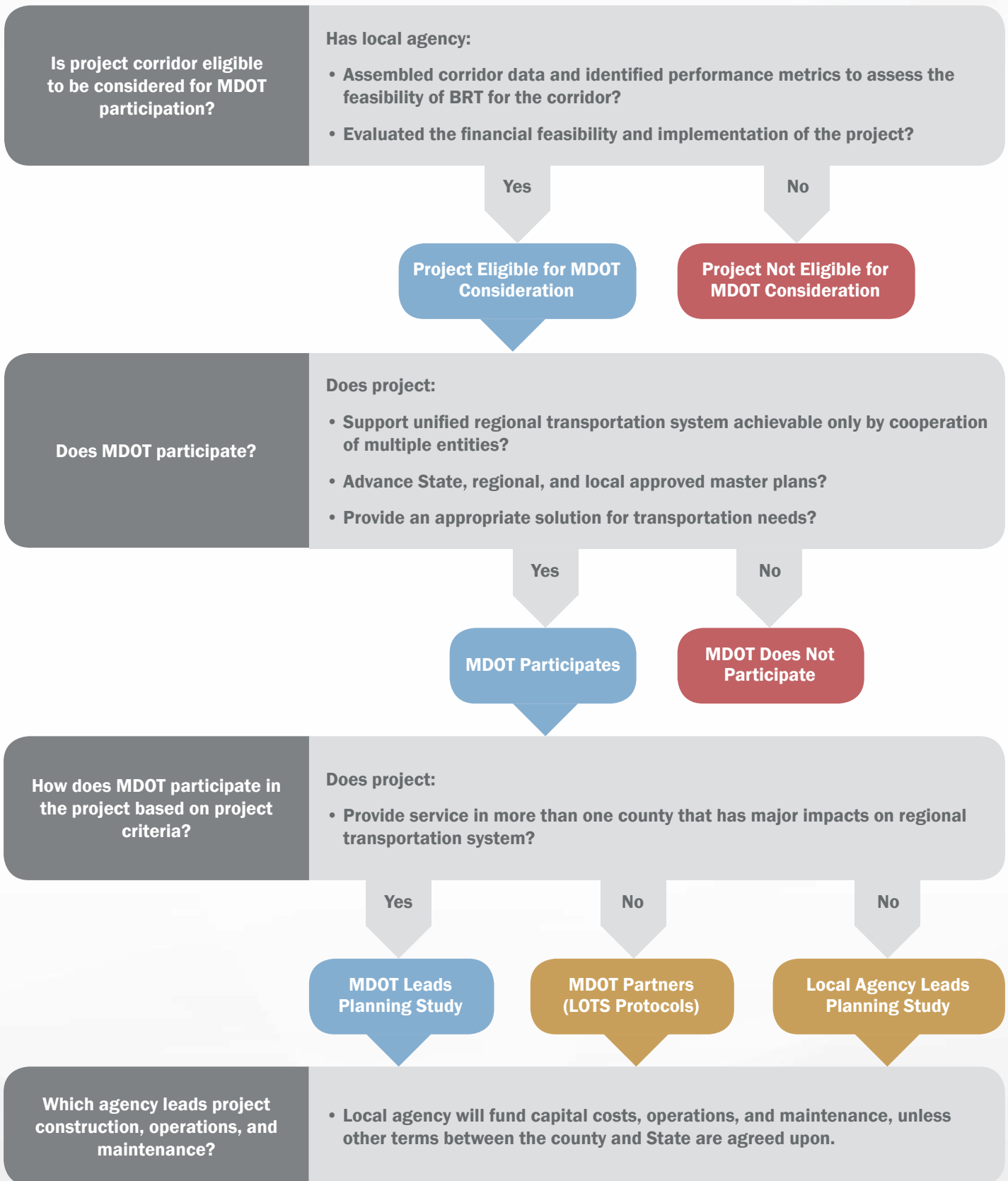
- support a unified regional transportation system achievable only by cooperation of multiple entities;
- involve multiple counties;
- advance State and/or regional master plans;
- provide an appropriate solution for transportation needs; and
- has major impacts on the regional transportation network.

Based on the information developed in step one – assessment of corridor potential – the local project sponsor should have an understanding of whether its project could include MDOT participation. If the local project sponsor believes that its project meets at least one of the above criteria it should discuss the project with MDOT.



## MDOT's Evaluation Process for Participation in a BRT Project

The flowchart below provides more detail on the process MDOT uses when evaluating its level of engagement on a BRT project.



## Assessment of Project Potential

The project screening criteria evaluate the project's financial feasibility and how the project could advance from planning through implementation. The assessment of project potential is a high-level estimation of project feasibility, designed to guide decision making on whether the project should be advanced for more detailed, project-planning level evaluation.

To aid in this assessment, the local project sponsor should:

- prepare a project description that details the BRT characteristics envisioned for the service;
- develop an estimated total project cost, including capital, operating, and maintenance;
- propose a financing strategy that includes a high-level implementation timeline;
- estimate usage/ridership;
- assess State highway performance (if appropriate); and
- demonstrate progress toward including the project in the county comprehensive plan, budget/capital program, and/or regional long range transportation plan.

## Project Description

The project should be described in sufficient detail to develop an estimated total project cost. At a minimum, the description should include the route length; the length and type of dedicated right-of-way; the length of mixed traffic running ways, intersection improvements, and transit priority treatments; the number and type of stations, passenger amenities including technology improvements such as real-time information; and required complete streets and environmental elements.

If the BRT project is proposed to be located on a State highway facility, the local project sponsor should involve MDOT SHA early in the evaluation process. MDOT's Complete Streets Policy "requires that all MDOT SHA staff and partners consider and incorporate complete streets criteria for all modes and types of transportation when developing or redeveloping our transportation system." If the proposed BRT project requires modification to a State highway, MDOT's design guidelines must be followed and inclusion of new complete street elements must be evaluated and included where deemed feasible. If the proposed BRT route is located on the National Highway System, the project must address federal performance-based planning requirements.



Max BRT, Las Vegas, NV



### Estimated Total Project Cost

The estimated total project cost is based on the project description and uses industry standards for unit costs. The estimate not only includes the physical components needed to operate the system, but any complete street and stormwater management improvements that are required if the roadway right-of-way is modified or there is an increase in paved surfaces. If the ridership estimate relies on a new feeder bus system, the estimated project cost (capital, operating, and maintenance) should include the cost of the proposed supporting feeder system.

The estimated total cost should include the capital, operating, and maintenance costs of the project. The local project sponsor will be responsible for all of the project's operating and maintenance costs, as well as the capital costs unless a cost-sharing agreement has been reached with the State.

### Proposed Financing Strategy

After an estimated project cost is developed, the local project sponsor should develop a preliminary strategy for financing the project. The proposed financing strategy should outline expected sources and timing for funding and demonstrate a significant local financial commitment to the project. The strategy also should include an estimate of the State, federal, and private sector financial commitment, if those sources are proposed. Please note that at least 40 percent of the capital costs would need to be covered by local and private partners. MDOT is developing a Transit Innovation Grant that may be pursued competitively to offset project costs and advance local and innovative transit projects.

### Estimated Usage/Ridership

Using industry estimating methods, the FTA's STOPS model, or an approved forecasting model, the local project sponsor develops a ridership estimate for the proposed

BRT service. The operating assumptions should be the same as those used to develop the estimated project cost and proposed financing strategy. MDOT MTA has invested in the development of a number of tools and has coordinated on multiple projects determining transit ridership and should be consulted in this process and be considered a technical resource.

### State Highway System Performance

For BRT projects proposed to travel on State-owned and -maintained roadways, the local project sponsor should also assess the impact of the BRT project on highway performance. State highway performance includes, but is not limited to:

- person throughput by peak period;
- calculation of diverted trips (travel routes and modes);
- total peak period person trips served by mode;
- travel time savings per person and per mode type;
- mitigation of impacts to safety;
- mitigation of impacts to interstate system (IAPA);
- daily auto vehicle miles traveled (VMT) within studied region; and
- daily transit passenger miles traveled (PMT) within studied region.

The local project sponsor should discuss applicable and appropriate calculation methodologies with MDOT SHA.

### Local Commitment

The local project sponsor should demonstrate that local plans and policies are supportive of the project. Documentation could include the adopted comprehensive plan, the long range transportation plan, the capital improvement plan, the budget, a county's annual transportation priority letter, etc.

# Roles and Responsibilities of Potential Partners

The successful planning, implementation, and operation of a BRT project relies on many partners: the local project sponsor, the public, the metropolitan planning organization for the jurisdiction in which the project resides, MDOT and its business units, the Federal Transit Administration, elected officials and political champions, and the private business sector. Some partners are engaged throughout the entire life of the project. Some partners' involvement is associated with the project's phase. Other partners' type and timing of engagement depends on the project's scope, scale, and characteristics.

## Local Project Sponsor

The local project sponsor is the local jurisdiction or transit agency that is advocating for the BRT project. Local project sponsors are typically municipal or county government transportation, public works, or planning departments; a local transit agency; or some combination of the preceding.

Municipal/County transportation, public works, and planning agencies are responsible for developing land use and transportation plans and strategies to

accommodate population and employment growth and the efficient movement of people and goods. Providing new transportation options, including BRT service, would be a recommendation of the transportation, public works, or planning agencies that would be implemented by the local transit agency. These agencies, along with the transit agency, are often responsible for assessing BRT's feasibility and responding to any local-driven requirements.

The local transit agency is responsible for the planning, implementation, and operation of the BRT service, as well as associated systems and continued maintenance and safety activities. The transit agency is the face of the BRT/transit service and is responsible for providing good service and marketing the system.

In a growing number of cases nationally, transit agencies are contracting BRT service, which can include operations, maintenance, and marketing responsibilities, to private providers. In all cases, however, ultimate responsibility for the service remains with the public-sector transit agency.

Metrolinx, York Region Transit, Ontario, Canada



## Public

Since the intent of the BRT service is to provide improved transportation mobility to the public, the local project sponsor must work with community groups and other interested stakeholders to develop a project that provides the service they would find beneficial. Successful engagement informs and educates the public, offers the public opportunities to share their concerns and desires, provides opportunities to resolve conflicts, and ultimately gains the public's support for the project.

## Metropolitan Planning Organizations

If the project is located in an urban area, and depending on the MPO's work program, the MPO may be able to provide local project sponsors with information needed to assess BRT feasibility, technical assistance to prepare an evaluation of BRT feasibility, or funds for conducting a BRT planning study. For a BRT project to receive federal funding, it needs to be listed on the MPO's Transportation Improvement Program (TIP). If the project is not located in an urban area, then it needs to be listed in the Statewide Transportation Improvement Program (STIP).

## Maryland Department of Transportation

MDOT and two of its business units, the Maryland Transit Administration and the State Highway Administration, are advisors who can provide information on BRT best practices, possible financing strategies, and perspective on a project's context and how it could interact with and influence other State and local activities.

MDOT MTA is typically the lead MDOT business unit for BRT. MDOT MTA educates local governments and transit agencies about BRT development and implementation and assists with ridership estimating. If it is determined that a proposed BRT project is eligible for MDOT participation, MDOT MTA coordinates the evaluation process and manages project development.

### Implementing BRT: When, What, and Who

	Local Project Sponsor - Local Jurisdiction transportation, public works, and /or planning agency - Local transit agency	Public	Metropolitan Planning Organizations	Maryland Department of Transportation - Project eligible for participation - Project ineligible for participation	Federal Transit Administration	Elected Officials/Political Champions	Private Business Sector
<b>Concept Development</b> • Identify issues to be addressed • Evaluate current conditions and future needs/opportunities	● ★	○	●			○	○
<b>Preliminary Screening</b> • Determine preliminary corridor feasibility • Determine MDOT participation eligibility • Determine preliminary project feasibility	○ ★	○	○	● ●		○	
<b>Funding</b> • Develop preliminary financing strategy • Estimate local, State, federal, and private sector commitments	● ★		○	○ ○	○		○
<b>Planning</b> • Complete environmental review processes • Develop and review alternatives • Select preferred alternative • Determine operator • Adopt in fiscally constrained long range transportation plan	● ★ <sup>1</sup>	○	●	○ ★	●	○	○
<b>Design</b> • Identify sources and gain commitments for funding • Complete engineering and design • Initiate right-of-way preservation	★ ★	○		○ ●	●	○	○
<b>Construction</b> • Secure required rights of way • Install required equipment • Build necessary infrastructure	★ ○	○		○ ○	○		
<b>Operations</b> • Promote and initiate service • Monitor service performance	★	○		○ ○	○		

<sup>1</sup> If project is not eligible for MDOT participation.

★ Lead Partner    ● Coordinating Partner    ○ Supporting Partner

It is MDOT SHA's role, as a technical resource, to work with the partners to ensure the BRT project is in compliance with State guidelines and policies for design and highway system performance. If a BRT project is anticipated to travel on a State road and in feasibility assessment step two — assessment of MDOT involvement — the project is found to be eligible for MDOT involvement, MDOT SHA should be engaged in the planning process.

## Federal Transit Administration

Two of the most popular federal funding sources BRT projects can compete for are FTA's New Starts/Small Starts program and discretionary grant programs such as USDOT's TIGER grant process. For transit-related TIGER grants, FTA provides evaluation assistance. Funding for New Starts/Small Starts and TIGER is discretionary. This means that the amount of available funding can vary year to year or not be offered at all. Local project sponsors should not depend on federal funding being available for their projects.

## Elected Officials/Political Champions

Elected officials advance projects by approving them as part of their jurisdictions' budgets, putting them in their transportation funding priority letters to MDOT (if seeking State and/or federal funding), or by advocating for their implementation. They also can serve as project champions, generating support among their constituents and other stakeholders.

## Private Business Sector

Improved access and mobility for customers, employees, and residents can make business and land owners BRT project supporters. Their support can take many forms ranging from advocating for project funding at the local, State, and federal level to providing financial support or participating in the funding and maintenance of station facilities.

Along a BRT corridor, there are typically four kinds of business and land owners who are able to influence and impact BRT:

- business owners who anticipate that BRT service will provide their customers and employees with improved mobility and will increase the business's market area and attract new customers;
- business owners who worry the service will make it harder for customers to arrive if design decisions impact parking or traffic along the corridor;
- property owners who see the arrival of improved transit service as a contributor to the attractiveness and demand for residential or commercial development along the corridor and who would be willing to help fund a portion of the construction or operation/maintenance of the system through various means; and
- property owners who would not fund the service, but whose development decisions for land adjacent to the corridor would significantly affect ridership.

As the demand for local, federal, and State transportation funding becomes more pronounced, innovative funding sources for designing, constructing, and operating the proposed service can gain importance and help address



identified funding shortfalls. For example, this can include new or non-traditional sources of revenue such as new institutional arrangements between public and private entities including the use of private financing through public-private partnerships and competitive grant programs. A BRT program could take advantage of these sources as a way to deliver the service more quickly than it could if relying only on traditional funding sources.

## Next Steps

Even if a BRT project is eligible for MDOT participation, MDOT's decision to participate will be made alongside decisions for other statewide transportation project priorities as part of the normal Consolidated Transportation Program (CTP) process. The type and scale of State participation will depend on several factors including the magnitude, viability, and merit of the proposed project; whether the project travels along State highways; whether the project is regional; and whether federal funds will be sought.

Since the State's resources are limited, it is not possible to participate in every worthwhile and useful project. Regardless of the State's decision about participating in a given year, if the local project sponsor believes in the project, it should continue to advocate for it. Advocating for a project could include:

- conducting studies to refine project details;
- revising land-use plans and zoning ordinances to increase development intensity along the corridor;
- encouraging local project champions to promote the project;
- identifying first steps and early action items that can bring BRT elements — in any form — to the corridor;
- identifying and securing local or other funds to implement part or all of the project; and
- implementing sections or parts of the system it can afford in a logical manner.

BRT can be the best transit resource for the right corridors. Other transit corridors may be best served by other transit options including: commuter, express, or improved local services. The outcome of any process considering enhanced transit options should be focused on finding the solution(s) that fits best for the individual



jurisdiction; MDOT is committed to working with communities to find the right solutions. As part of MDOT's commitment to local jurisdictions, a competitive, State-funded Transit Innovation Grant is under development to help advance innovative transit projects toward completion.

## Further Reading

- **Bus Rapid Transit Recommended Practice Program**  
American Public Transportation Association, Washington, DC  
<http://www.apta.com/resources/standards/bus/Pages/default.aspx>
- **TCRP Report 118: Bus Rapid Transit Practitioner's Guide**  
Transportation Research Board, Washington, D.C., 2007  
[http://www.tcrponline.org/PDFDocuments/TCRP\\_RPT\\_118.pdf](http://www.tcrponline.org/PDFDocuments/TCRP_RPT_118.pdf)
- **TCRP Report 90: Bus Rapid Transit, Volume 2: Implementation Guidelines**  
Transportation Research Board, Washington, D.C., 2003  
[http://www.tcrponline.org/PDFDocuments/TCRP\\_RPT\\_90v2.pdf](http://www.tcrponline.org/PDFDocuments/TCRP_RPT_90v2.pdf)
- **Characteristics of Bus Rapid Transit for Decision-Making (CBRT)**  
National Bus Rapid Transit Institute, Center for Urban Transportation Research, University of South Florida, Tampa, FL, 2009  
<http://www.nbrti.org/CBRT.html>



Max BRT, Las Vegas, NV



**Boyd K. Rutherford**  
Lt. Governor



**Larry Hogan**  
Governor



**Pete K. Rahn**  
Secretary of  
Transportation

## **MDOT** MARYLAND DEPARTMENT OF TRANSPORTATION



7201 Corporate Center Drive, Hanover, Maryland 21076  
Local 410.865.1000 • Toll Free 1.888.713.1414 • Maryland Relay TTY 1.800.735.2258

*This document can be found at [mdot.maryland.gov/brt](http://mdot.maryland.gov/brt)  
and is available in alternative formats upon request.*

Metro Orange Line, Los Angeles, CA



EmX, Eugene, OR



HealthLine, Cleveland, OH

