Transit Strategies

**TRANSIT PRIORITY**

Transit priority makes transit more attractive by making it faster and more reliable.

Transit service is most attractive when it is faster than or similar to driving speed. Various strategies can be put in place to give transit priority over private vehicular traffic. Transit priority strategies include:

- **Dedicated Transit Lanes**, including grade separated busways, exclusive curbside lanes, exclusive median lanes
- **Part-Time and Shared Lanes**, which include peak period-only bus lanes, lanes shared with select other modes, and the use of freeway shoulders
- **Intersection Priority**, including transit signal priority and queue jump lanes

Cities and agencies that have implemented transit priority strategies have seen significant improvements that make service more attractive to riders. These strategies are critical components of Bus Rapid Transit and Rapid Bus, but can also be implemented to enhance regular bus service by improving speed and reliability along important transit corridors and at chokepoints on important routes.

**Transit Priority Strategies**

**Transit Priority Elements**

**Dedicated Lanes**

There are three types of dedicated transit lanes: (1) fully grade-separated, (2) median, and (3) curbside. Over the length of a transit line, these three options are often used in combination.
Grade-Separated

In a similar manner as rail rapid transit, buses can operate in grade-separated busways that are completely separated from general traffic. In some cases, transit systems have converted former rail rights-of-way into busways. Examples include Hartford, CT’s CTfastrack, which is described below, and Pittsburgh’s three “busways.” In Los Angeles, the Silver Line was developed in a freeway right-of-way.

Pittsburgh’s East Busway

Median

Median lanes are located in the center of roadways, with stations also located along the median. Median lanes allow buses to avoid conflicts that curb-side travelling buses may face – for example, passenger drop-offs, commercial deliveries, and illegal parking. Traffic controls can protect or prohibit left turns by other vehicles, and designated crosswalks with clear signage and signals can let users safely reach the median bus stops.

Median Bus Lane and Stops
Curbside

Curbside lanes are located on arterials and other streets that serve general vehicular traffic. In addition to signage that advertises lanes as bus-only, exclusive bus lanes can be separated from general traffic by physical barriers, such as curbs or bollards, or by some other visual elements, such as painting the lanes red. Physical barriers prevent other cars from entering bus lanes, and striping treatments have been shown to effectively modify driver behavior, leading to increased compliance and lower levels of required enforcement.

Curbside Lane in New York City, NY

Curbside lanes are the most common approach to exclusive bus lanes, largely because they minimize impacts on left turning traffic. Many curbside bus lanes allow for use by other modes, such as bicycles and taxis. Curbside lanes typically allow use by general traffic for right turns, which makes them somewhat slower than median lanes.

Part-Time Bus Lanes

In many places, curbside lanes are used as bus lanes during peak periods. This is an approach that provides better service to transit riders at times when demand and traffic is heaviest and to provide parking to support local business during other periods.

Curb Lanes Used for Transit during Peak Periods and Parking at Other Times (Columbus, OH)
Freeway Shoulders

Many states have implemented policies that permit buses to operate on freeway shoulders in order to bypass congestion and maintain transit schedules. Bus on shoulder operation is a low-cost way to make freeway transit service faster and more reliable.

Freeway Shoulder Operation (Raleigh, NC)

Intersection Priority

Transit Signal Priority (TSP)

Traffic signals can be programmed to provide preferential treatment to buses at intersections, modifying standard signal times to ensure that buses have minimal delays. This can be done in two ways. The most common is to either extend a green light until an approaching bus passes through an intersection or shorten a red light to reduce the time a bus waits at an intersection. The second is to provide a separate signal phase for transit vehicles, usually to allow buses to shift lanes and to avoid conflicts with turning vehicles. RIPTA uses transit priority on the R-Line

Queue Jump Lanes:

Queue jump lanes are short transit-only lanes (or right-turn lanes shared with general traffic) that allow buses to bypass traffic at an intersection. These lanes are often combined with dedicated
transit signals, which give buses a green light in advance of vehicles in other lanes. This combination allows buses to jump ahead of general traffic, with minimal delay for other vehicles. In Providence, the R-Line uses queue jump lanes.

Transit Emphasis Corridors

Transit Emphasis Corridors are corridors with high volumes of transit service where priority is given to transit and a high level of transit amenities are provided. In some cases, transit emphasis corridors are transit “malls” where vehicular traffic is limited entirely. Two examples are Minneapolis’s Nicollet Mall and Denver’s 16th Street Mall.

Minneapolis Nicollet Mall

Denver 16th Street Mall

Much more common, however, are Transit Emphasis Corridors that emphasize transit service but do not exclude other traffic. The Downtown Transit Connector that RIPTA is now
constructing between Rhode Island Hospital and Providence Station (and which is described in more detail below) is the best local example. Other examples include Portland’s Transit Mall, which is a one-way pair that dedicates two lanes to transit and one lane to other traffic, San Francisco’s Market Street, which is open to all traffic but heavily emphasizes transit, and Minneapolis’ Marq2 Corridor that uses contraflow bus lanes on two parallel streets in downtown.

Portland, OR Transit Mall

San Francisco’s Market Street

Transit Emphasis Corridors also typically include more significant and higher quality stop facilities, which helps to make transit service more comfortable. In effect, they allow regular bus routes to operate in the same manner and with the same amenities as BRT through important corridors.
Transit Priority Examples

CTfastrack, Hartford, CT

CTfastrack is an example of using a railroad right-of-way to develop high quality bus service that provides complete transit priority.

CTfastrack is a combination of local and express services that operate via a grade-separated transit corridor that runs 9.4 mile miles between New Britain and Hartford, CT. Along its southern half, the line was constructed within an abandoned rail right-of-way, and along its northern half, it operates alongside an active rail line where Amtrak and commuter rail operates. In downtown Hartford, buses exit the busway and then provide local circulation. The corridor is used by eight routes that serve all stations and four express routes that serve only some stations. All routes operate along the busway to downtown Hartford, and then along on-street loops within downtown that provide local circulation. Major elements include:

- **Grade-separated right-of-way**
- **Frequent service** that provides service every 10 minutes or less during peak periods
- **High-quality vehicles with level boarding**
- **Pre-paid fare collection** to minimize boarding delays
- **Integrated fare systems**, allowing free or discounted transfers between routes
- **High quality bus stations** with Transit-Oriented Development (TOD) in nearby areas
- **Integration other transportation modes**, including pedestrian and bicycle facilities, taxi services, intercity bus, rail transit and other transportation services.

CTfastrack Services
Cleveland’s HealthLine is an example of a high quality BRT line that provides transit priority in a number of different ways.

Cleveland’s HealthLine is the most full-featured BRT line in the United States and uses a combination of median and curbside lanes. In downtown, where ridership is heaviest, service operates in the center of Euclid Avenue with median bus lanes and high level center platforms that provide for level boarding. Outside of downtown, service operates in curbside lanes. The line also features transit signal priority.

One fairly unique feature of the line (at least in the United States) is that it uses buses with doors on both sides. This provides for left side boarding and alighting at the center stations and more traditional right side boarding and alighting at curbside stations.
Providence Downtown Transit Connector, Providence, RI

RIPTA is now constructing its first Transit Emphasis Corridor.

RIPTA is now constructing the “Downtown Transit Connector,” or DTC, which is a Transit Emphasis Corridor that will run 1.4 miles from the hospital district south of downtown to Providence Station at the northern edge of downtown.

Rendering of Providence Downtown Transit Connector

Major features of the corridor will include:

- **Curbside bus lanes** along most of its length
- **Six stops** spaced approximately 1.4 mile apart
- **Transit signal priority**
- **High quality stations** designed with rider comfort and community placemaking in mind
- **Pedestrian improvements**
- **A unique look and branding** for the facility

The DTC will be the major north-south corridor for bus service through downtown Providence and will be served by eight bus routes that together will provide service approximately every five minutes.
Part Time Bus Lanes, Boston, MA

Boston and neighboring communities have begun implementing AM peak bus lanes that use parking lanes as bus lanes.

As in the Providence metro area, many of Greater Boston’s most heavily utilized bus routes operate on two lanes roads with parking that do not have sufficient space for full-time dedicated bus lanes. To address this constraint and still provide some priority to bus service, many communities have begun implementing AM peak bus lanes in which parking lanes are used as bus lanes. The AM peak-only characteristic is due to lower demand for on-street during the AM peak before businesses open, and the much higher demand for on-street parking in the PM peak.
The first part-time bus lane was implemented in Everett, MA as a pilot project that was quickly made permanent when its success became immediately apparent. There are now three of these types of bus lanes, with the additional two also implemented following successful pilot projects. All three of the bus lanes can also be used by bicyclists. A video of one of the pilot project that was conducted on Washington Street in Roslindale that shows before and after conditions can be viewed at: https://youtu.be/gldZKdd52g.

**Potential Transit Priority in Rhode Island**

At present, transit priority in Rhode Island is limited to transit signal priority on the R-Line and a few very short sections of bus-only roadways in the vicinity of Kennedy Plaza. RIPTA is preparing to extend transit signal priority to new locations on other routes, and as described above, is constructing the DTC, which will have a number of transit priority measures.
Looking forward, transit priority will become more important and there will be a significant number of opportunities to make existing and new bus services faster and more efficient through the use of transit priority, as shown in the following table.

<table>
<thead>
<tr>
<th></th>
<th>Exclusive Bus Lanes¹</th>
<th>Shared Bus Lanes²</th>
<th>Transit Signal Priority</th>
<th>Queue Jump Lanes</th>
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<tbody>
<tr>
<td><strong>New Busway Services in Railroad or Freeway Rights-of-Way</strong></td>
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<td><strong>Upgrades of Local Routes to Rapid Bus</strong></td>
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<tr>
<td><strong>Upgrades of Local Routes to BRT</strong></td>
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<tr>
<td><strong>Bus on Shoulder</strong></td>
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<td>✓</td>
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</tbody>
</table>

In more detail:

- New “busway” services could potentially be developed in abandoned or underutilized railroad rights-of-way. However, the market analysis indicates insufficient demand along most corridors. One possible exception could be the Newport Secondary on Aquidneck Island, which could be used for the southern portion of service between Newport, Fall River, and Providence. However, this line is still used for limited tourist-oriented rail services.
- There are many opportunities to upgrade Providence metro area local bus routes to Rapid Bus and possibly BRT. Potential routes and corridors are shown on the next page.

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¹ Dedicated lanes that would be restricted to buses.
² Lanes that would be shared with other uses. These could include freeway managed lanes and the use of bus lanes by bicyclists and taxis.
## Potential Rapid Bus Corridors

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Existing Routes</th>
<th>Existing Daily Boardings</th>
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<tbody>
<tr>
<td>Hope Street</td>
<td>1 Hope/Eddy</td>
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<tr>
<td>Douglas Avenue</td>
<td>50 Douglas</td>
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<td>Chalkstone Avenue</td>
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<td>Manton Avenue</td>
<td>27 Broadway/Manton</td>
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<td>Hartford Avenue</td>
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<td>Dyer Street</td>
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<td>Eddy Street</td>
<td>1 Hope/Eddy</td>
<td>3,964</td>
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<tr>
<td>Crosstown Rapid</td>
<td>New Service</td>
<td>-</td>
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</tbody>
</table>

Data Sources: RIPTA, RIDOT, RI Statewide Planning

**Potential Rapid Bus Network**
- Potential Rapid Bus Corridors
- Active Railroads
- MBTA Commuter Rail
- Bus Transit Center
- Commuter Rail Station
- Amtrak Station
• The DTC will provide excellent transit priority for north-south service through downtown. An east-west Transit Emphasis Corridor, for example, between Olneyville Square and East Providence via College Hill could provide similar benefits for routes that operate from the east and west.

• There are many opportunities for the development of part-time bus lanes that use parking lanes, at least in the AM peak. Major opportunities would be along the same routes that have potential for Rapid Bus service (as shown in the map on the previous page).

• There are also many opportunities for the development of express bus on shoulder service. These opportunities are described in more detail in the Bus on Shoulder strategy paper.

• Finally, although additional work will be required to identify specific locations, it is certain that there are many opportunities for bus priority measures at many locations where there are traffic chokepoints.