What is Bus Rapid Transit?

What is BRT?

“A flexible, high performance rapid transit mode that combines a variety of physical, operating and system elements into a permanently integrated system with a quality image and unique identity.”
The Problem

Buses stuck in traffic mean:

- Frustrated riders
- Longer trips
- More bus-traffic interactions
- More delay
- Lose ground every year
- Unreliable schedules
- More operating expense
- Wasted operating costs
- Detracts from quality
Provide a package that is:

**Faster**
- Transit Signal Priority
- Quicker Payment Options
- Stations = Limited Stops
- Focused Capital Improvements - LESS DELAY

**Distinctive**
- Special Design, Logo, and Color
- Unique Vehicle
- Stations (Not Stops)
- Unique Shelters and Station Designs

**Convenient**
- Good Frequency 7 days/week
- Stations @ Highest Use Locations

**Comfortable**
- Large Shelters
- Enhanced Bus Interiors
- Short Trips

**Easy To Use**
- Distinctive Sign
- Stands Out On System Map
- Strong and Visible Map and Schedule
- Obvious Stations
Traffic Signal Priority
Stations & Shelters

Simple Map with Stations

Is it understandable & legible?
Planning and Applications in the Region

- Frequent Service bus has some of the characteristics
  - Frequent
  - Transit Signal Priority, Queue jumps, etc.
  - Branded separately
  - Modest stop re-spacing
### Line 4

#### Locations

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Priority (more than Opticom)</td>
<td>21</td>
</tr>
<tr>
<td>e.g., signal timing adjustments except bus signs on right turn only lanes</td>
<td></td>
</tr>
<tr>
<td>lane restriping</td>
<td></td>
</tr>
<tr>
<td>Stop consolidations</td>
<td>55</td>
</tr>
<tr>
<td>New Stops planned (mostly single stops to replace two deleted stops)</td>
<td>12</td>
</tr>
<tr>
<td>Total fewer stops</td>
<td>43 (12% of line)</td>
</tr>
<tr>
<td>Amenities</td>
<td></td>
</tr>
<tr>
<td>e.g., shelters - 32</td>
<td>37 sites</td>
</tr>
<tr>
<td>benches - 4</td>
<td></td>
</tr>
<tr>
<td>schedule information - 2</td>
<td></td>
</tr>
<tr>
<td>lighting - 4</td>
<td></td>
</tr>
</tbody>
</table>
**Signal Changes**
- Signal Priority - Opticom
- Queue Jump Signal
- Queue Bypass Lane
- Signal Timing/Phasing Change

**Passenger Amenities**
- Install Bus Shelters
  - Standard
  - High capacity

**Operational Changes**
- Consolidate Bus Stops
- Relocate Bus Stops
- Streamline Routes
- Restrict Parking

**Physical Changes**
- Curb Extensions (Bus Bulbs)
- Low Floor Bus
- Exclusive Bus Lane
- Turning Restriction Exemption

**Signal Priority - Opticom**
- Sensors (for exact time and location)
- Computer (on bus)

**Queue Jump Signal**
- Avoid long queues by using right turn only lane
- No traffic conflicts as bus pulls back into travel lane
- Buses get ahead of traffic queue

**Right Turn Only Except Bus**
- Avoid long queues by using right turn only lane
- Less weaving in and out of right turn lane

**How?**

1. **Signal Priority - Opticom**
   - Bus gets green several seconds ahead of general traffic
   - If bus is on-time, signal is not affected
   - NOTE: System ALWAYS gives priority to fire engines and ambulances

2. **Queue Jump Signal**
   - Buses avoid queue by using right turn only lane
   - Buses serve stop without weaving or waiting to reenter traffic
   - Saves parking spaces
Applications in the Region

- Portland Mall (1978) is a busway and we added light rail

BAT lane on SE 82nd near Clackamas Town Center
End of BAT lane on SE 82nd Ave north of Clackamas TC

Applications in the Region

- PMLR Transitway
  - LightRail
  - Streetcar
  - Bus
- On the bridge
  - Pedestrians
  - Bicycles
Stations/Stops

Station

Enhanced Stop

Standard Stop

Source: Community Transit
Defined stations
Traffic signal priority for transit
Short headway bi-directional services for a substantial part of weekdays and weekend days
High Capacity Shelter at 5th & Salmon in downtown Portland
Vehicles
• 60-foot articulated bus
• Domestic manufacturer
• Hybrid-electric propulsion
• Doors on left and right side
• Bikes on board
Energy Source

Ride Quality – Same Vehicle, Routing Matters


http://www.commutrans.org/swift/
Ramp

Stowed Position

Deployed Position

Wheelchair securement

Forward facing and rear facing
Bikes – on board?

- Bikes use back door
- Designated, marked bike area
Transit Lanes
Viva Bus Rapid Transit (BRT)

Urban development fronts the street
Active pedestrian environment
Arterial road accommodates cyclists, mixed traffic, and BRT
Other systems to learn from…

Different Assumptions = Different Approach

RapidRide
- 6 lines – an entire system – within a few years
- Modular shelters – kit of parts – sizes vary
- Mix of stops and stations
- High ridership lines
- 100s of stops/stations
- Roadways vary dramatically from 7-lane highway to 2-lane neighborhood collector
- Mix of BAT lanes HOT/BAT lanes and GP
- Connections to Link, Sounder

Swift BRT
- Focus on a single line – more may come in future
- Permanent shelters – all the same substantial size
- All stations
- Highest ridership line
- 17 stations
- 4- to 7-lane highway
- Mix of BAT lanes and GP
- Connections to Sounder
<table>
<thead>
<tr>
<th>Cleveland HealthLine</th>
<th>Orange Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single line – newest major transit investment</td>
<td>Single line – unique opportunity with alignment. Considered LRT</td>
</tr>
<tr>
<td>Unique shelters</td>
<td>Permanent shelters – all the same substantial size</td>
</tr>
<tr>
<td>All stations</td>
<td>All stations</td>
</tr>
<tr>
<td>High ridership line with development potential</td>
<td>High ridership lines in vicinity</td>
</tr>
<tr>
<td>Less than two dozen stations</td>
<td>Less than two dozen stations</td>
</tr>
<tr>
<td>Roadways vary dramatically from 7-lane highway to 2-lane neighborhood collector</td>
<td>Exclusive rail right-of-way paved for buses</td>
</tr>
<tr>
<td>Almost all exclusive lane</td>
<td>Almost all exclusive right-of-way – separate from roadway</td>
</tr>
<tr>
<td>Connections to rest of high capacity network</td>
<td>Connection to Red Line subway and buses</td>
</tr>
</tbody>
</table>