

BRT

Bus Rapid Transit

OVERVIEW:

Bus Rapid Transit (BRT) uses rubber-tired buses operating in designated roadway lanes or on an exclusive facility to provide a higher capacity and more reliable system than ordinary bus transit. BRT is generally an express service with a limited number of stops. Unique shelter or station designs typically differentiate the service from other bus service. Bus rapid transit can also operate in mixed traffic lanes, using traffic signal priority, bypass lanes and other means to reduce vehicle delays and improve service quality.

BRT service can employ a wide variety of bus types, but special low-floor, articulated buses are often used. These buses provide more capacity, a smoother ride, and faster entry/exit times at stations. In some situations, a single bus can serve a local suburban route and then use the BRT facility for express service to downtown.

ADVANTAGES/DISADVANTAGES:

- + Lower capital cost than most rail technologies
- + Can be incrementally implemented from express bus service
- + Flexible routing and station spacing
- + Can combine line-haul and neighborhood service in one vehicle
- + Can operate at-grade without crossing protection
- + Can use various power sources
- Capacity is lower than rail systems
- Ride quality is lower than rail systems
- Labor costs generally higher than rail systems
- Can be delayed by traffic/cause traffic delays without exclusive facility
- Noise and emissions from diesel vehicles
- Perceived to be less permanent than rail systems



New Flyer diesel/electric hybrid vehicle in Eugene Oregon.
Source: Manitoba Vehicle Technology Centre



New Flyer DE60LF in use as a Cleveland BRT pilot bus.
Source: New Flyer



NABI 60 BRT vehicle on the Los Angeles Orange Line.
Source: NABI



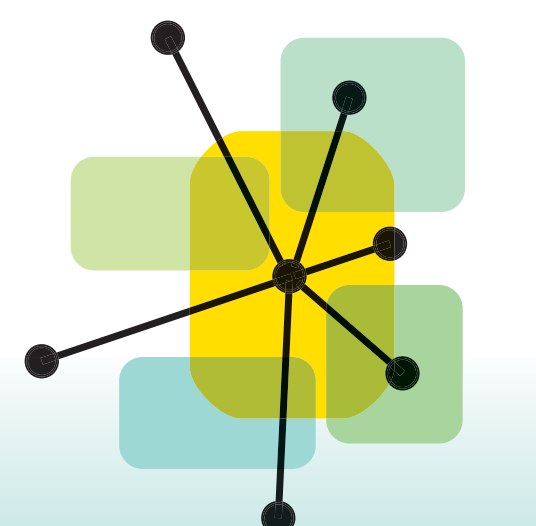
New Flyer BRT in Santa Clara, Ca.
Source: the-bus-stops-here.org



Gillig 41 BRT vehicle on the Kansas City MAX Line.
Source: Kansas City Area Transit Authority

TYPICAL CHARACTERISTICS:

Power:	Diesel or Diesel/Electric hybrid
Suspension:	Rubber tire on pavement
Length:	60 ft.
Type:	Low-floor articulated buses
Passenger Capacity:	60 seated, 100 total
Guideway:	Street running preferably in an exclusive lane or on separate facility. Can operate in mixed traffic lanes. At-grade crossings acceptable.
Station Spacing:	0.5 - 1.5 miles



CRT Commuter Rail Transit

OVERVIEW:

Commuter rail is an electric or diesel powered urban passenger railway service usually operating between a central city and adjacent suburbs. Commuter rail service is generally oriented to peak period work trips and usually has only one or two stations in the central business district. It is often operated on the same rail lines as intercity passenger or freight service.

Commuter rail service may use either locomotive hauled or self propelled railroad passenger cars. Diesel Multiple Unit (DMU) vehicles are a popular option for use on non-electrified track. These self-propelled units are lighter than locomotive-hauled cars and allow more flexibility in service operation. However, DMUs are less powerful than locomotive service and do not offer the same ride quality. DMU's that operate on freight lines must be Federal Railroad Administration (FRA) compliant.

ADVANTAGES/DISADVANTAGES:

- + Lower capital & operating costs than other rail modes
- + Well-suited for longer suburban trips
- + Additional grade crossing protection not needed
- + Does not require electrification
- + Can use existing freight rail lines
- + Better ride quality & higher speeds than light rail
- Does not serve short trips well
- Noise and emissions from diesel vehicles
- Potential schedule conflicts with freight rail lines



Colorado Railcar DMU in South Florida.
Source: Colorado Railcar



Front Runner diesel locomotives in Salt Lake City.
Source: HNTB



Colorado Railcar used for testing by the Florida D.O.T.
Source: Colorado Railcar



Music City Star diesel locomotive in Nashville, Tennessee
Source: HNTB



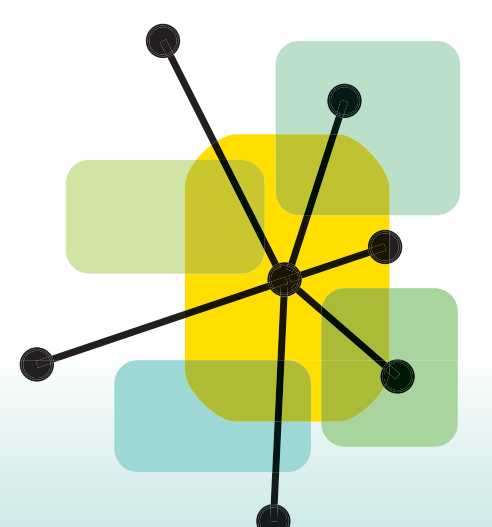
Passengers boarding a Colorado Railcar DMU.
Source: Colorado Railcar



Riders boarding Sounder Commuter Rail in Washington
Source: Sound Transit

TYPICAL CHARACTERISTICS:

Power:	Electric or diesel locomotive or FRA compliant self powered vehicle
Suspension:	Steel wheel on steel rail
Length:	170 ft.
Type:	Locomotive plus one to ten passenger cars or self powered coupled pair (DMU)
Passenger Capacity:	140 seated, 200 total (bi-level passengers), 196 seated, 300 total (DMU pair)
Guideway:	Exclusive railroad right of way, at-grade crossing acceptable
Station Spacing:	4-7 miles



LRT Electric Light Rail Transit

OVERVIEW:

Electric Light Rail Transit uses lightweight passenger rail cars on fixed rails, operating singly or in short trains. Light rail vehicles typically draw power from an overhead electric line via a trolley or pantograph. Light rail transit lines are not usually separated from other traffic for any extent, and light rail vehicles often run alongside auto and pedestrian traffic. Streetcars and trolleys are similar modes. Due to their lighter weight and shorter axle spacing, light rail vehicles often have a harsher ride quality than heavy rail or commuter rail vehicles.

Light rail vehicles are typically prohibited from operating on intercity freight and passenger rail lines due to their lightweight construction. These vehicles are not as crashworthy as heavier vehicles, and grade crossings should be equipped with active warning lights and quad gates where light rail operates at high speeds.

ADVANTAGES/DISADVANTAGES:

- + Can operate in on-street environment without grade separation
- + Higher capacity than bus systems
- + Flexibility for downtown and suburban environment
- + Electric powered vehicles have little noise and no emissions
- Requires installation of overhead electric catenary
- Cannot use existing rail freight lines due to safety considerations
- Requires active gates and warning lights at high speed crossings
- Higher operating cost than bus or commuter rail



Bombardier Flexity LRT vehicle on Minneapolis's Hiawatha line.
Source: Bombardier Transportation



Siemens Desiro ET LRT vehicle.
Source: Siemens Transportation



Bombardier Flexity on the Hiawatha line.
Source: Bombardier Transportation



Siemens Desiro EMG 312 vehicle.
Source: Siemens Transportation



Bombardier Flexity LRT vehicle in Cologne.
Source: Bombardier Transportation



Siemens Desiro vehicle.
Source: Siemens Transportation

TYPICAL CHARACTERISTICS:

Power:	Electric with overhead catenary
Suspension:	Steel wheel on steel rail
Length:	94 ft.
Consist:	Coupled pair
Passenger Capacity:	70 seated, 250 total
Guideway:	Street-running in exclusive lane or median or on separate facility. At-grade crossings acceptable.
Station Spacing:	0.5 - 1.5 miles

