

## Transit System Technology

### Overview

The RTD FasTracks program is an integrated, multi-modal 12-year program to build 122 miles of new commuter rail and light rail, 18 miles of bus rapid transit, 21,000 new parking spaces at transit stations, and expand bus service throughout the eight-county district. The entire system will operate as an integrated network of the final transit technologies that are determined through the environmental process on each corridor, which are anticipated to include commuter rail, light rail, bus rapid transit and buses.

### RTD Transit Technology History

RTD began serving the Denver metro area's transit needs in 1973, with a comprehensive bus system. In 1994, RTD introduced light rail to the region. Two new technologies – commuter rail and bus rapid transit – will be introduced to the region as part of the RTD FasTracks program.

### RTD FasTracks Transit Technology



#### *Light Rail*

RTD's light rail is a passenger train powered by overhead electrical wires. It has a lighter frame than a traditional train, thus its name "light" rail. Because of its "lighter" size and turning radius, light rail has the ability to operate along crowded city streets and within tight urban corridors with frequent stops, where quick acceleration and deceleration are necessary.



#### *Commuter Rail*

Commuter rail is a passenger train that can be operated either by diesel fuel or electricity. This transit mode is used for local or regional service, typically of longer distances, operating between a central city and surrounding communities or activity centers. Commuter rail usually operates in an existing rail corridor along freight and/or passenger rail lines.



***Bus Rapid Transit***

Bus Rapid Transit, or BRT, allows buses to operate more like a rail system. BRT travels in separate roadway lanes and uses rail-like stations for loading and unloading passengers. The vehicles typically have more doors and are lower to the ground to allow rapid passenger loading and unloading.



***Streetcar Transit***

The modern streetcar is an electrified, lower capacity rail car that can easily operate among traffic on city streets. It is typically used in urban areas because it requires fewer property acquisitions and is compatible with other urban transit systems. The streetcar provides easy low-floor loading and unloading.

**Choosing A Commuter Rail Vehicle**

RTD has been analyzing different types of commuter rail technology to determine which is best for each corridor planned as commuter rail. RTD is making comparisons of characteristics such as noise, air quality and vibration. RTD is also considering the various functional elements of each type along with capital costs, operating costs, and maintenance requirements. RTD will use this evaluation along with public input to determine the technology that best meets the community’s needs.

**Commuter Rail Vehicle Types**



***Diesel Multiple Unit (DMU) –***  
Sleeker looking than a locomotive hauled train, a DMU is powered by a diesel motor rather than a locomotive.



***Electric Multiple Unit (EMU) –***  
The EMU is heavier than a light rail vehicle, but operates in the same way. It is powered by an overhead electrical system.

### AT A GLANCE: Commuter Rail and Light Rail

Technology	Seating Capacity	Maximum Vehicle Speed	Average Height	Average Width	Average Cost
Light Rail	64 seats	55 mph	10 feet	8 feet	\$45K - 55K/seat
Commuter Rail	100+ seats	79 mph	14 feet	10 feet	\$20K - 35K/seat

### Integrating Commuter Rail and Light Rail

Light rail and commuter rail serve different purposes in an integrated transit system.

*Light rail* is designed to serve more stations along a corridor where more stop-and-go operation is necessary. Light rail trains can make more stops, accelerate and decelerate more quickly to accommodate more frequent stops, and make tighter turns on city streets.

*Commuter rail* is designed to move more people for longer distances with fewer stops along the way. That is why commuter rail trains are able to travel at higher speeds and get passengers to their destination faster. Commuter rail vehicles are manufactured with a heavier structure to comply with the railroad industry’s standards since commuter rail typically operates within an existing railroad corridor. The interior is designed to provide a comfortable ride for longer distances.

For more information about the transit technology that will be part of the RTD FasTracks system, or to schedule a presentation, please call the RTD FasTracks PI Team at 303-299-6990.