



Passenger Rail Technology



Light Rail Transit (LRT)

LRT is an electrically-powered, two-rail technology capable of providing a broad range of passenger capacities, and operating as single vehicles or in short trains on a variety of alignment types. LRT is more than a vehicle technology. It is a mode combining vehicle technology very similar to that of streetcars, but operating primarily on a partially controlled right-of-way and typically at higher speeds and passenger loadings

- Proven technology in the United States and internationally
- Cannot operate jointly with freight rail
- Average operating speed – street running -20 mph separate R/W up to 55 mph
- Typical station spacing ½ mile to 1 mile
- More typically implemented in areas of higher development density



Heavy Rail Transit

Heavy Rail Transit typically referred to as a “subway,” is an electric railway with the capacity for a heavy volume of traffic. It is characterized by high speed and rapid acceleration passenger rail cars operating singly or in multicar trains on fixed rails; separated right-of-way from which all other vehicular and foot traffic are excluded; sophisticated signaling, and high platform loading

- Technology exists in major metropolitan cities and is well proven
- Heavy rail is not compatible with other transit modes in the Minneapolis and St. Paul area
- Requires completely segregated right-of-way along entire length
- Normal station spacing for such systems ranges from ½ mile to 5 miles
- Used to serve very dense populations and corridors with ridership over 50,000 passengers per day



Commuter Rail

Commuter Rail is an urban passenger train service that travels moderate distances (local) between a central city and adjacent suburbs or long-haul (regional) passenger service between cities which operates on existing freight tracks. It does not include heavy rail (subway) service or light rail service. Commuter rail service may be either locomotive-hauled or self-propelled, and is characterized by reduced fair multitrip tickets, specific station-to-station fares, and usually only one or two stations in the central business district. It also is known as “suburban rail” and may cross the geographical boundaries of a state

- Implemented in many U.S. cities, uses technology common to existing U.S. rail system
- Northstar commuter rail design will open the fall of 2009 and will connect with Hiawatha LRT in Minneapolis
- Typical station spacing is 2 to 7 miles
- Average operating speeds 18 to 55 mph
- Compatible with existing development



Conventional Intercity Rail

Traditional intercity passenger rail services of more than 100 miles with as little as one to as many as 7–12 daily frequencies; may or may not have strong potential for future high-speed rail service. Top speeds of up to 79 miles per hour to as high as 90 miles per hour generally on shared track. Intended to provide travel options and to develop the passenger rail market for further development in the future

- Implemented in many U.S. cities, uses technology common to existing U.S. rail system.
- Amtrak is common carrier
- Shares track with freight railroads
- Top speeds up to 79 mph
- Current service through Twin Cities, connecting Chicago and Seattle/Portland



High Speed Rail (HSR)

High Speed Rail service has the characteristics of intercity rail service which operates primarily on a dedicated guideway or track not used by freight. HSR serves densely traveled corridors at speeds higher than conventional intercity rail. Typical station spacing is 10 miles. Incremental HSR development is being considered to include –

- Emerging HSR. Developing corridors of 100–500 miles, with strong potential for future HSR Regional and/or Express service. Top speeds of up to 90–110 mph on primarily shared track
- HSR – Regional. Relatively frequent service between major and moderate population centers 100–500 miles apart, with some intermediate stops. Top speeds of 110–150 mph, grade-separated, with some dedicated and some shared track
- HSR – Express. Frequent, express service between major population centers 200–600 miles apart, with few intermediate stops. Top speeds of at least 150 mph on completely grade-separated, dedicated rights-of-way