Transit Technologies Worksheet

A Review of Transit Technology Specifications

1. Heavy Rail Transit
2. Commuter Rail Transit
3. Light Rail Transit
4. Modern Streetcar
5. Heritage Trolley
6. Dedicated Lane BRT
7. Express Bus

Photo credits from left to right

1. answers.com
2. newrecruit.com
3. lightrail.com
4. APTA Heritagetrolley.org
5. APTA Heritagetrolley.org
6. sfcta.org
7. thetransitcoalition.us
8. infilldenver.com

Heavy Rail Transit

Definition:
The term heavy rail refers to a mode of transportation that is defined less by its vehicle weight than by its complexity and operational rigidity. Heavy rail systems typically consist of steel-wheeled, electric powered vehicles operating in trains of two or more cars on a fully grade-separated right-of-way. (FTA)

Example Cities:
Washington DC (Metro)
San Francisco (BART)
New York (MTA)
Boston (MBTA)
Chicago (CTA)

Projected Costs per Mile
$50-$250 Million

High System Cost:
$558 Million (Estimated)
San Francisco Central Subway

Low System Costs:
$73.12 Million (Estimated)
Chicago Blue Line Rebuild

Service Type:
Regional, Urban

Operating Speed:
50-80 MPH

Station Type:
Station, Platform

Distance Between Stations:
Urban Core >1 mile
Periphery 1-5 miles

Service Frequency:
5-10 Minutes (Peak)

Alignment:
Separate Right of Way

Right of Way Width:
25-33 Feet

Turning Radius:
330 Feet

Vehicle Length:
40-70 Feet per car
Up to 10 car trains

Typical Power Source:
Electric

FRA Compliant: (Able to run on tracks with freight trains)
No

Photo: New York City Subway
From: Answers.com

Commuter Rail Transit

Definition:
Commuter Rail is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs.

Example Cities:
Boston (MBTA)
New Jersey (NJT)
New York (Long Island RR)
Dallas – Fort Worth (TRE)
San Jose – San Francisco (CalTrain)

Projected Costs per Mile
$3-$25 Million*

High System Cost:
$16.57 (Estimated)
Chicago Southwest Corridor Commuter Rail

Low System Costs:
$1.2 Million
Nashville

Service Type:
Regional, Intraurban

Operating Speed:
30-60 MPH

Station Type:
Station, Platform

Distance Between Stations:
2-5 Miles

Service Frequency:
20-30 Minutes

Alignment:
Generally built on existing tracks at grade street crossings

Right of Way Width:
37+ Feet

Turning Radius:
140-460 Feet

Vehicle Length:
150-500 Feet
Engine and Coaches

Typical Power Source:
Diesel

FRA Compliant:
Yes

Photo: Caltrain, San Fransisco Peninsula
From: newrecruit.com
Stephen DesRoches

RECONNECTINGAMERICA

Light Rail Transit

Definition:
The term light rail refers more to this mode's relative simplicity and operational flexibility than to actual vehicle weight or cost. With an overhead power supply, light rail systems can operate in mixed traffic and widely ranging alignment configurations. (FTA)

Example Cities:
Denver
Minneapolis
Dallas
Houston
Salt Lake City

Projected Costs per Mile
$20-$60 Million ($56)^

High System Cost:
$65 Million
Los Angeles Gold Line (2003)

Low System Costs:
$34 Million
Houston (2004)

Service Type:
Regional, Urban

Operating Speed:
20-60 MPH

Station Type:
Sidewalk Sign, Station, Platform

Distance Between Stations:
~1 Mile

Service Frequency:
5-30 Minutes

Alignment:
Aligned center or side of street corridor on separate right of way

Right of Way Width:
19-33 Feet (Double Track)
11-13 Feet (Single Track)

Turning Radius:
50-100 Feet

Vehicle Length:
50-80 Feet per car and up to 4 car trains

Typical Power Source:
Electric

FRA Compliant:
No

^ This includes estimates and figures for Complete Systems in Final Design, Under Construction, or completed after 2003 that do not include tunneling <http://www.lightrail.com/LRTSystems.htm>

Photo: Hudson Bergen LRT
From: transitpicsgallery.com

Modern Streetcar

Definition:
The U.S. term streetcar is generic to most forms of common carrier rail transit that runs or has run on streets, providing a local service and picking up and discharging passengers at any street corner, unless otherwise marked.

Example Cities:
Portland
Seattle (Design Phase)
Washington DC (Under Construction)

Projected Costs per Mile
$10-$25 Million

High System Cost:
$23.7 Million
Portland

Low System Costs:
*

Service Type:
Urban Circulator

Operating Speed:
8-12 MPH

Station Type:
Sidewalk Sign, Station, Platform

Distance Between Stations:
0.25 Miles

Service Frequency:
8-15 Minutes

Alignment:
In Street with traffic, no grade separation

Right of Way Width:
19-24 (Double Track)
11-13 (Single Track)

Turning Radius:
40-80 Feet

Vehicle Length:
35-60 Feet

Typical Power Source:
Electric

FRA Compliant:
No

* Modern Streetcar and Light Rail systems are often lumped in with road and utility reconstruction increasing the costs. Low cost systems are viable however there are no examples at the moment

Photo: Portland Streetcar
From: railwaypreservation.com

Heritage Trolley

Definition:
The terms Heritage Trolley and Vintage Trolley are used to describe modern use of trolleys of a design dating from roughly 1900 to 1950. The terms can be used to refer either to a replica car that more or less accurately reproduces a trolley from the first half of the 20th century, or to an original preserved car restored to accurate or nearly accurate standards. (APTA)

Example Cities:
New Orleans
Memphis
Little Rock
Kenosha
Galveston

Projected Costs per Mile
$2-$12 Million

High System Cost:
$12 Million
Charlotte

Low System Costs:
$2.5 Million
Kenosha, Wi

Service Type:
Urban Circulator

Operating Speed:
8-12 MPH

Station Type:
Sidewalk Sign, Station, Platform

Distance Between Stations:
0.25 Miles

Service Frequency:
8-15 Minutes

Alignment:
In Street with traffic, no grade separation

Right of Way Width:
19-24 (Double Track)
11-13 (Single Track)

Turning Radius:
40-50 Feet

Vehicle Length:
35-50 Feet

Typical Power Source:
Electric

FRA Compliant:
No

Photo: San Francisco F Line
From: APTA Heritagetrolley.org

Dedicated Lane BRT

Definition:
Bus rapid transit (BRT) is a relatively new umbrella term for urban mass transportation services utilizing buses to perform premium services on existing roadways or dedicated rights-of-way.

Example Cities:
Boston
Pittsburgh
Cleveland
Eugene

Projected Costs per Mile
$4-$40 Million

High System Cost:
$55 Million
Pittsburgh West Busway

Low System Costs:
$6.25 Million
Los Angeles San Bernadino Freeway HOV Busway

Service Type:
Regional, Urban

Operating Speed:
8-12 MPH

Station Type:
Sidewalk Sign, Station, Platform

Distance Between Stations:
0.25-2 Miles

Service Frequency:
8-20 Minutes

Alignment:
HOV lanes or separated right of way in median or on curb

Right of Way Width:
12 (Pittsburg Single)
28 (Pittsburg Double)

Turning Radius:
40-70 Feet

Vehicle Length:
30 -50 Feet

Typical Power Source:
Diesel, Electric

FRA Compliant:
N/A

Photo: Proposed Van Ness BRT
From: sfcta.org

Express Bus

Definition:
An Express bus is a bus service that is intended to run faster than normal bus lines. These buses usually run between the downtown sections of cities and the more residential Suburbs or Outer Boroughs.

Example Cities:
Any City with a Bus System

Projected Costs per Mile
$1-$2 Million

Service Type:
Regional, Urban

Operating Speed:
15-19 MPH

Station Type:
Sidewalk Sign, Platform

Distance Between Stations:
Limited stops along normal bus routes

Service Frequency:
10-20 Minutes

Alignment:
In Street with traffic

Right of Way Width:
Street Width

Turning Radius:
33-46 Feet

Vehicle Length:
30-50 Feet

Typical Power Source:
Diesel

FRA Compliant:
N/A

Photo: Maple Grove Minnesota Express Bus
From: www.ci.maple-grove.mn.us/administration/transit

Contact Us

Data Sources:

APTA HeritageTrolley.org
TCRP 90 - Bus Rapid Transit
Lightrail.com
DART Technology Review Report
'Future Transport in Cities'
- Brian Richards
'Urban Public Transportation - Systems and Technology'
- Vukan R. Vuchic

Reconnecting America
436 14th Street Suite 1005
Oakland, CA 94612
(510) 268-8602