

Rail Alternatives in the I-5 Trade Corridor

**Background presentation for the
I-5 Partnership Task Force**

June 26, 2001

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Presentation Outline

- Rail 101
 - a. Background
 - b. Rail System Capacity Issues
 - c. Types of Rail Service
- Review of the RTC Commuter Rail Study
- I-5 Partnership Rail Capacity Analysis

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1. Rail 101

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a. Background

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Current Situation in NW Corridor

- Rail lines are owned by private railroads.
- Portland/Vancouver region has the highest concentration of rail activity in Oregon, with 75% of state's rail traffic either originating, terminating, or passing through the area.
- The region contains four major rail yards, and numerous lesser yards and port terminals.
- The region's rail system serves the state's largest collection of industrial customers.

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Current Situation in NW Corridor (Continued)

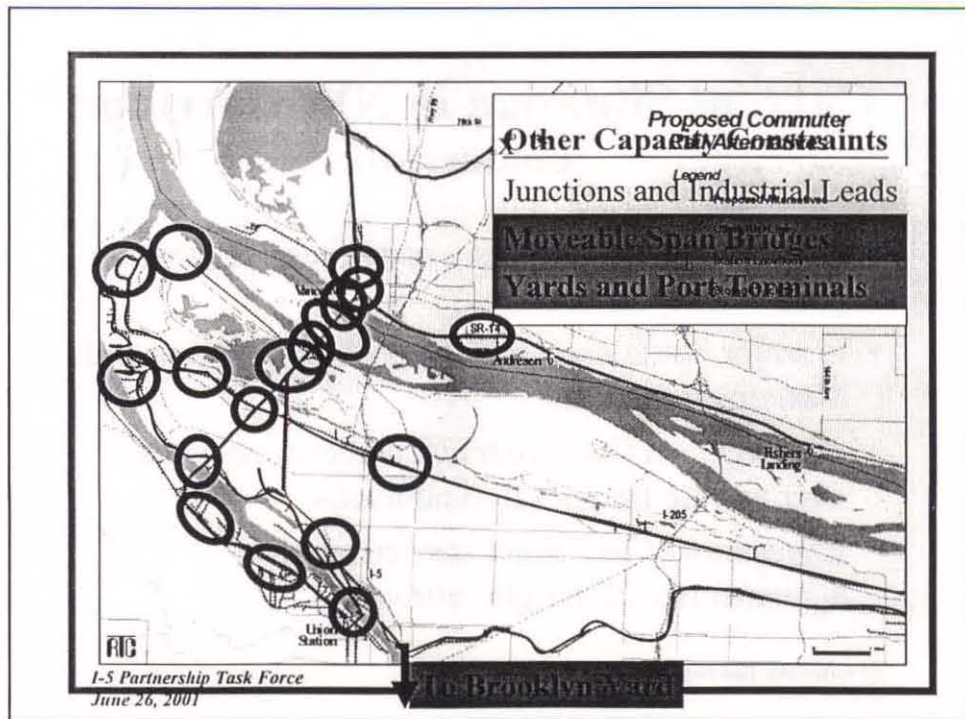
- The rail system accesses a major deep draft ocean port.
- A major bottle neck is between Union Station and Vancouver Station.
- Passenger service (Amtrak/Cascades) operates over private freight rail road tracks.
- Expansion of passenger service requires agreements with freight railroads.

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BNSF and UP Systems in Portland/Vancouver

- 63 freight trains and 10 Amtrak trains per day cross the BNSF bridge
- Freight trains projected to reach 90 per day in 20 years.
- Passenger service projected to reach 26 per day.

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b. Capacity and freight interference issues

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Capacity:

- The number of trains that can operate over a track segment or network in a given amount of time

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Summary of Capacity Principles

- Safety First
- Passenger trains have priority over freight (usually)
- Freight railroads (BNSF and UP) operate their systems to preserve freight capacity
- Traffic control systems operate to prevent collisions and preserve capacity.

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Summary of Capacity Principles (Continued)

- Things that use up capacity include:
 - Speed and length of trains
 - Differing priorities
 - Many types of facilities in the same area
- Adding capacity may require:
 - Changes in operating practices
 - New investment in track, signals or other facilities

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Basic Capacity Issues

The Single Track



Sidings

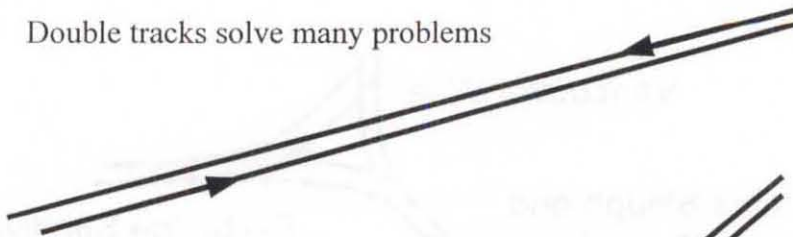


Affect of different train speeds

Affect of train lengths

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Double tracks solve many problems



The Crossover

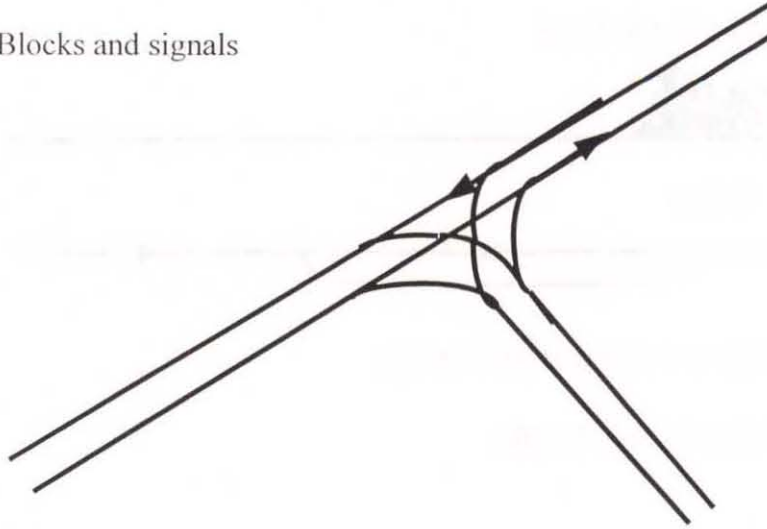
The Wye

The Wye with double tracks

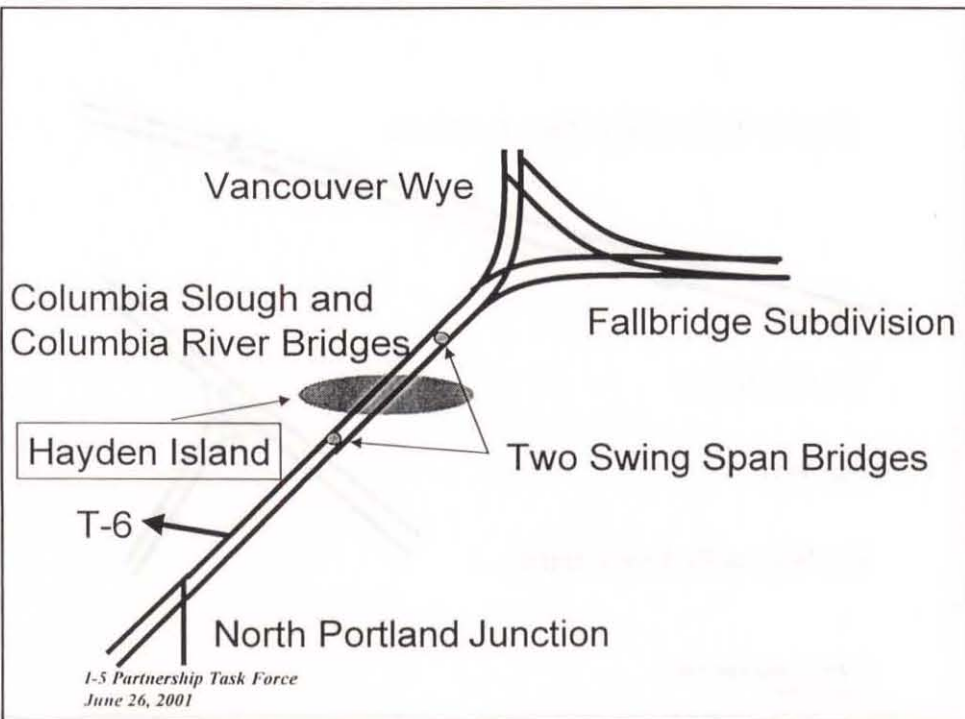


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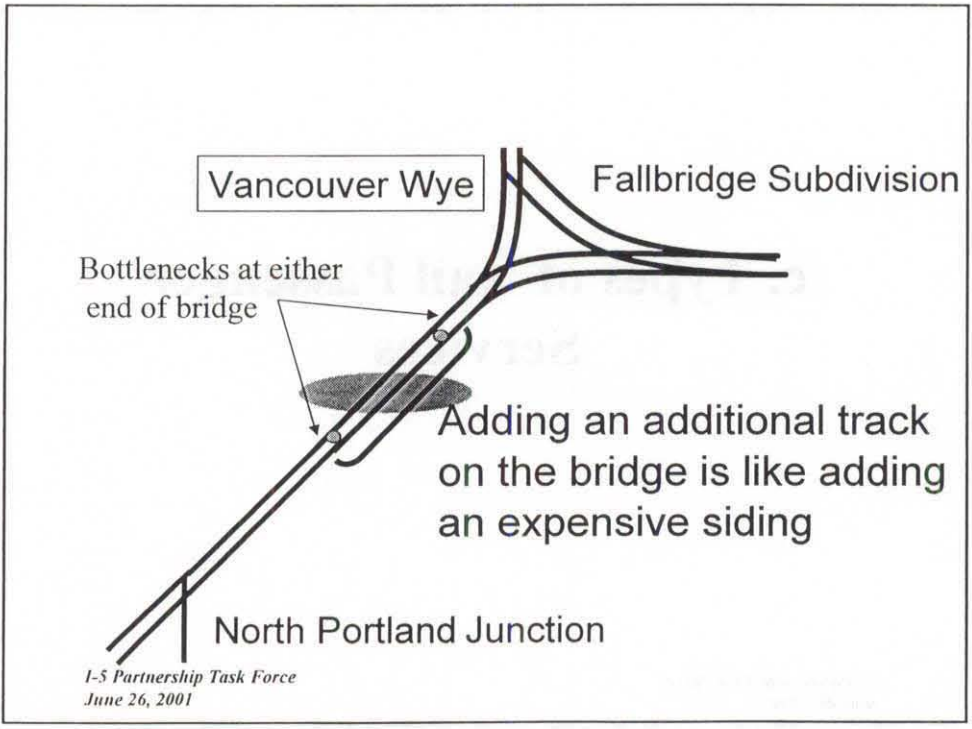
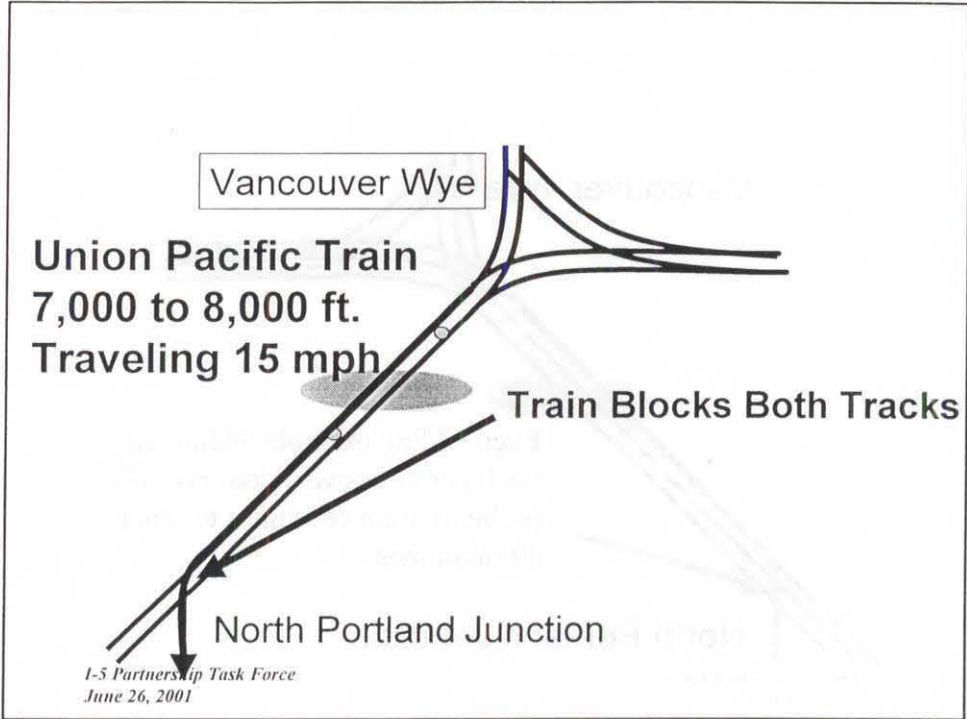
Blocks and signals

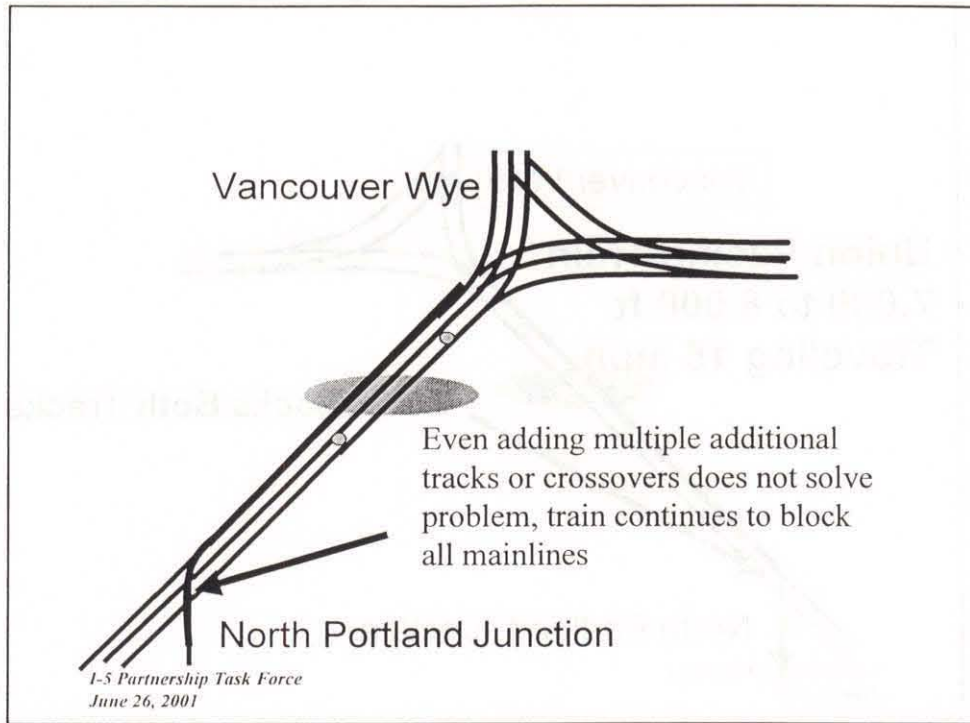


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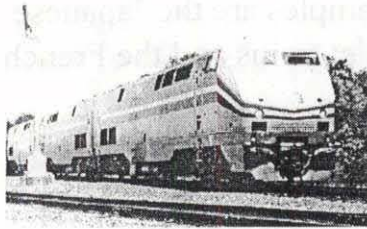




c. Types of Rail Passenger Services

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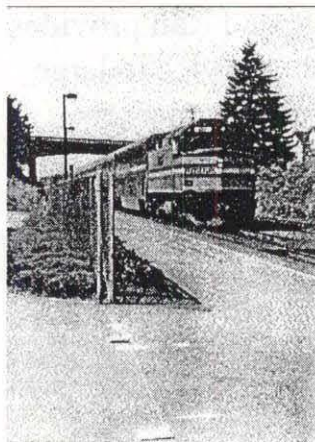
Conventional Intercity Passenger Rail Service Amtrak/Cascades



- Distinguishing features: Except in the Northeast Corridor, conventional trains over tracks owned by the freight railroads
- In Northeast Corridor speeds reach 125-150 mph over dedicated tracks
- Typical speeds up to 79 mph

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Amtrak/Cascades Market



- Intercity services for personal, business and recreational travel.
- Competes with air, intercity bus and autos.
- In the Northwest Corridor largest markets are Portland and Seattle with other service every 20 to 50 miles.
- Average trip lengths of 150-200 miles.

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High Speed Rail



- True high speed rail has speeds over 150 mph.
- Examples are the Japanese bullet trains and the French TGV
- Currently true high speed rail in the US is limited to areas of the Northeast Corridor.

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High Speed Rail Markets



- High Speed Rail provides intercity service to large metropolitan markets.
- Typically competes with airlines and intercity bus and autos.
- Typical trip lengths over 150 miles.

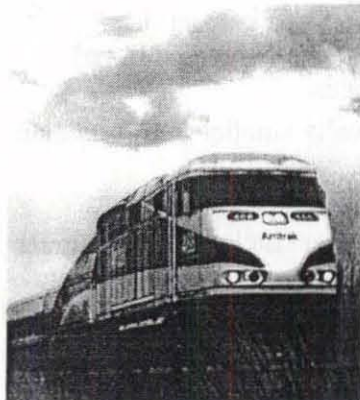
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High Speed Rail in the Northwest

- “Washington State High Speed Ground Transportation Study” identified alternatives between Portland and Seattle
- Found that most of the benefits of true High Speed rail were captured at speeds lower than 125 mph.
- At speeds of 185 mph ridership would double, but capital costs would be more than 10 times that of conventional 125 mph rail.

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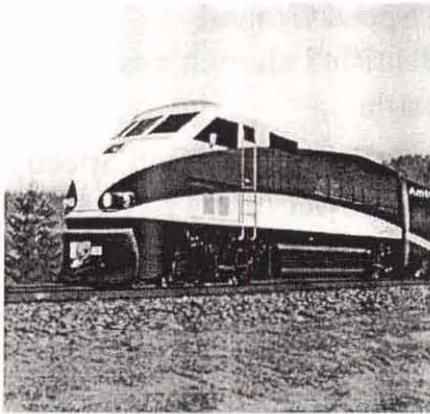
Pacific Northwest Rail Corridor Plan



- Both states have adopted passenger rail plans based on providing improvements to existing trackage.
- Plans are designed to achieve increased frequencies and higher speeds in conjunction with freight rail service.

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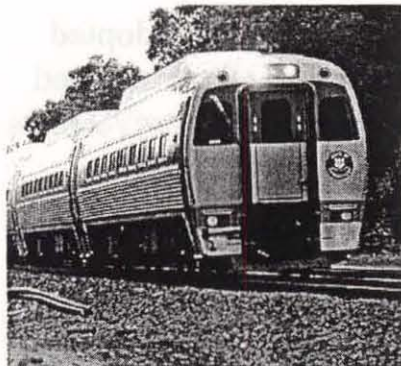
Pacific Northwest Rail Corridor Plan



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- Planning on incremental increases in service from current 4 roundtrips per day to 13 round trips per day between Portland and Seattle by 2018.
- Incremental increases in speeds – up to 110 mph.

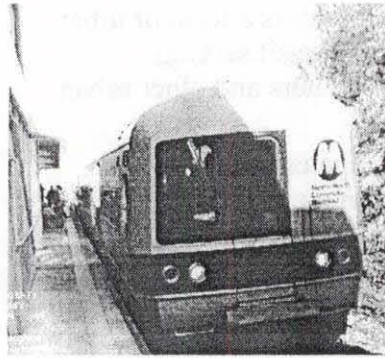
Commuter Rail



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- Urban/Suburban services provided over conventional railroads.
- Typically smaller train sets than intercity service.
- Current service in the Northwest includes the Sounder in Seattle and the West Coast Express in Vancouver, BC.
- Planned service from Wilsonville to Beaverton

Commuter Rail Market



- Commute and personal trips often at peak periods only
- Typically competes with urban transit services and automobiles.
- Operation over conventional tracks reduces costs, but limits market to existing track locations.
- Station spacing at 4 to 10 miles with commute distance longer than light rail.

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Light Rail



- MAX: Light weight electric powered vehicles operate in urban areas on dedicated tracks
- Speeds up to 55 mph with many stops
- Cannot mix with heavy rail
- Stations spaced at ½ mile to 3 miles.

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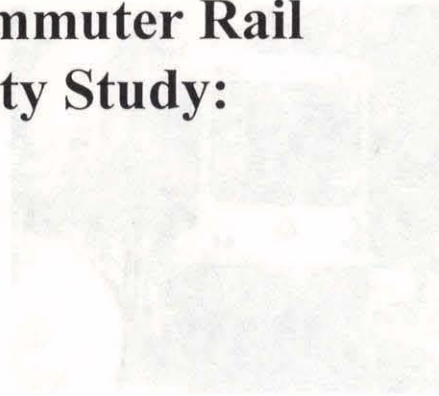
Light Rail Markets



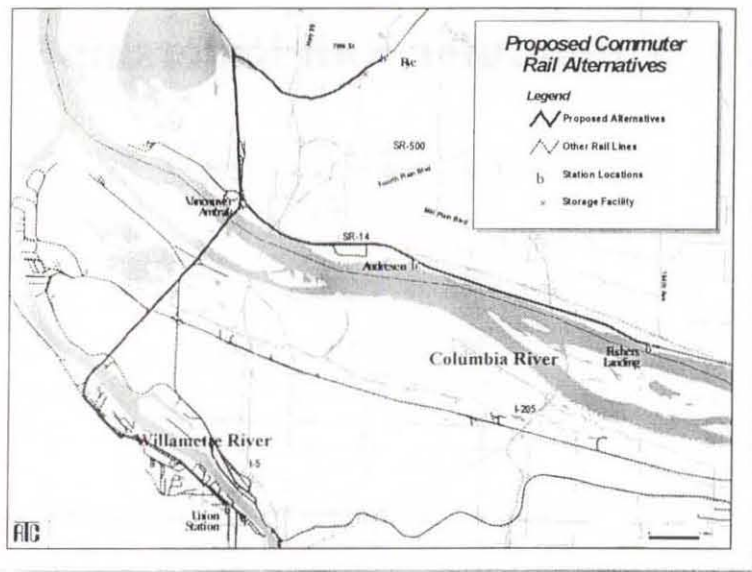
- Light rail is a form of urban mass transit serving commuters and other urban trips
- Competes with buses, commuter rail and automobiles
- Need for separate tracks and right of way increases costs but allows service to be tailored to the market.

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3. RTC Commuter Rail Feasibility Study:



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Commuter Rail Service Alternatives

All Day Peak Direction Trips

Alternative	<i>Between Rye and Union Station</i>	<i>Between Fisher's Landing and Union Station</i>
Low	6	0
Medium	4	4
High	6	6

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Commuter Rail Ridership*

	<i>Low</i>	<i>Medium</i>	<i>High</i>
2003	1,036	1,063	1,182
2017	2,062	2,113	2,336

*2017 Metropolitan Transportation Plan highway projects and limited commuter bus service assumed

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Commuter Rail Costs*

<i>Alternative</i>	<i>Capital Costs</i>	<i>Operating Costs</i>	<i>Cost per Rider</i>
Low	\$36.6 M	\$2.7 M/ year	\$10.02
Medium	\$53.1 M	\$3.3 M/ year	\$11.94
High	\$430 M - \$750 M	\$4.1 M/ year	\$13.34

All Alternatives Require Dedicated Alignment in 2017

*1998 dollars

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Commuter Rail Study Findings

The corridor is severely constrained in terms of how much rail service growth it can support without major capital investment.

Capacity constraints in this corridor need to be discussed further, given projected growth of rail freight traffic and plans for greatly increased intercity passenger service.

A commuter rail-only system should not be studied further due to the high capital cost of rail improvements to accommodate it.

If major rail investment is necessary to support future intercity passenger and freight rail growth, then the concept of a commuter rail service could be revisited.

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4. I-5 Partnership Rail Capacity Analysis

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I-5 Partnership Rail Capacity Analysis Rail Study Elements

- Develop rail traffic forecasts
 - Existing traffic
 - Projected freight growth
 - Projected intercity passenger growth (Amtrak & Cascades service)
 - Potential commuter rail service, between Portland and Vancouver
- Identify capacity needs in the I-5 Corridor for freight and passenger rail service;
- Recommend short-term and long-term (10 - 20 years) improvements in rail capacity needed to accommodate the forecast rail traffic.

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Analyze Capacity Constraints and Develop Recommendations on Improvement Alternatives

- Determine capacity gains achievable from operational improvements.
- Determine what and when major capacity improvements are needed to accommodate projected freight rail and passenger rail demand.
- Assess compatibility of major improvements for eventual High Speed Rail service in the Portland/Vancouver area.

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Develop Recommendations on Financing

- Analyze potential funding sources for accomplishing the improvements
- Develop methodology to apportion costs between the private railroads and the public for improvements

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