

Oregon Department of Transportation – Rail Division



Oregon Rail Study Appendix H
Summary of Commuter Rail Studies
Completed in Oregon Since 1997

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December 2008

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Introduction

As Oregon's population increases, so has interest in new and expanded rail service. Rail service includes freight, inter-city passenger and commuter rail services. All of these services typically run on the same privately owned infrastructure, unlike light rail which tends to have its own dedicated track. This report focuses on commuter rail, which typically transports people traveling to and from work usually between suburban and downtown business district areas.

In order to study commuter rail opportunities in Oregon, it's important to first understand the work already completed on the topic. Since 1997, six studies examined adding commuter rail service to the following four corridors:

- Ashland to Medford, 2001
- Yamhill County to Portland, 1998 & 2008
- Wilsonville to Beaverton, 1997
- Vancouver (WA) to Portland, 1999 & 2006

To best understand the scope and findings of each study, this report first outlines issues to consider when evaluating commuter rail. Then each study is compared against this generic set of issues. This comparison is not intended to assess the quality of the studies but rather to provide context for what was examined and what was not. This information will allow the Oregon Department of Transportation (ODOT) and others to determine next steps for future studies in these corridors without duplicating existing research, and to provide guidance to agencies in future feasibility studies.

Issues to Consider When Evaluating Commuter Rail

Based on a review of several commuter rail feasibility studies around the United States¹, listed below is a summary of issues to consider when adding commuter service to a freight rail line. Study sponsors may choose not to examine each issue detailed in this list for a variety of reasons including budget and schedule. However a full examination of these issues will provide a reasonable understanding of the advantages and disadvantages of adding commuter rail service.

Railroad Outreach

Transportation plans and studies often include stakeholder outreach which may include government agencies, interest groups, and the business community. However, in a commuter rail study, contacting the railroad company(ies) owning

¹ Sources include: BNSF Eastside Commuter Rail Feasibility Study, PSRC, Seattle, WA (<http://psrc.org/projects/bnsf/index.htm>), Commuter Rail Feasibility Study, Dane County, WI. (<http://www.co.dane.wi.us/rail/crfs/final/html/index.html>), Regional Commuter Rail Feasibility Study, Mid-America Regional Council, Kansas City, MO (<http://www.marc.org/Transportation/commuterrail/index.htm>), Commuter Rail Feasibility Study, Regional Transportation Council, Vancouver, WA (<http://www.rtc.wa.gov/Studies/Archive/overviews/crail.over.htm>), Kankakee County Commuter Rail Feasibility Study, Kankakee County, IL (<http://planning.k3county.net/pdf/Rail/Brochure%20r5.pdf>).

the line deserves special attention. Unlike a road or most transit projects, commuter rail operates on privately owned infrastructure. The railroads have the sole decision-making power regarding the use and operation of their rail corridors. Therefore it is best to involve the railroad early in the discussion.

Data Collection

A good inventory of existing condition of the rail line infrastructure and its surrounding landscape is needed to identify physical and operational issues that commuter rail service may present. Data collection may include analyzing the line characteristics including the condition of the track, available right-of-way, and physical features such as crossings, bridges and wetlands that could constrain the ability to expand or improve track capacity. It is also a good idea to work with the state and local land use agencies to determine land use issues including both opportunities and conflicts that commuter rail service could present.

Operating Plan Assumptions

In order to assess the future feasibility, some assumptions must be made including station location, train equipment performance, and schedule. These factors are used to estimate the number of trains per day and level of service to be used in calculating ridership estimates. The operating plan should also outline who will potentially operate the service.

Data Analysis

Prepare a ridership estimate for future years using a recognized and commonly used modeling tool. These estimates should identify demand by workday, time of day, origin-destination, parking needs, bus service needs, and diversion from adjacent transportation facilities.

In addition to ridership estimates, capacity of the rail alignment must also be analyzed. A capacity analysis, which can be conducted using either sophisticated rail operations software packages or string-line diagrams, is intended to identify delays and safety conflicts in the commuter or freight rail systems based on current and future train schedules. This analysis is used to measure the total amount of train delay. The analysis identifies where constraints will likely occur and tests the ability for improvements to overcome delays.

Findings from the capacity analysis are used to design and estimate capital costs for necessary track improvement to maximize capacity. These may include rehabilitation or installation of new track, ballast, stations and park-and-rides, bridges, signaling systems, or road/rail crossing modifications. Generally, improvements are designed to either reduce delay, such as sidings or double track, or to add infrastructure for the passenger service, including access to stations and maintenance facilities. Additional capital cost estimates needed include stations, maintenance facilities, and train equipment. Operating costs

such as labor, administration, insurance and maintenance associated with operating the passenger rail service should also be estimated.

Feasibility Assessment

Compare the costs to build and operate the commuter service to the benefits created from the service to generate a cost benefit analysis or return on investment analysis. Both the costs and the benefits are monetized over the life-cycle of the infrastructure investment. In addition to capital and operational costs, benefits should also be measured and should include factors like reduced highway maintenance and construction costs, improved travel time, economic impact to the area, reduced pollution, increased safety and reduced congestion.

A financing plan should be developed to identify possible funding sources and strategy for both initial and on-going capital and operating costs.

Finally, identify potentially fatal governance issues that need to be addressed and possible solutions. This may include land use issues to work out with local governments, operating issues to work out with the railroad, and safety issues to work out with the ODOT, Federal Transit Administration or Federal Railroad Administration.

Summary of Commuter Rail Studies

Each of the commuter rail studies discussed in this report differed in scope. Although none of the studies included an analysis of all the issues to consider from Section II, some were more detailed than others. In order to understand the information that has been gathered in context this section compares each study to the issues identified in Section II.

Ashland to Medford, 2001

Study Details

Study Title	Southern Oregon Commuter Rail Study
Route	45 miles between Ashland and Grants Pass on the existing CORP Siskiyou line
Sponsors	ODOT, Rogue Valley Council of Governments
Purpose	To determine whether commuter rail should be a part of the transportation network in Southern Oregon.

Issues Considered

Railroad Outreach	Not included
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DATA COLLECTION

Line Characteristics	Included analysis of track charts and some observation.
Land Use Issues	Some agency discussions but no detailed analysis.

OPERATING PLAN ASSUMPTIONS

Station Location	8 stations identified
Train Equipment	4 train sets
Schedule	Three levels of service were evaluated, with peak service every 30 minutes, for a total of 24 trains per day. Run times over the length of the route varied from 40 to 80 minutes.

DATA ANALYSIS

Ridership Estimates	475-820/day in 2001, no future forecast
Capacity Analysis	No detailed rail capacity study included. Some rail improvements to offset impacts of commuter rail operations were identified based on string line diagrams, visual inspections, and professional judgment.
Capital Costs	\$42.7-\$96.7 million
Operating Costs	\$3.9-\$8.1 million/year

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Commuter rail determined to be physically and operationally feasible but ridership was low.
Financing Plan	Not included
Governance Issues	Not included

Yamhill County to Portland, 1998

Study Details

Study Title	Yamhill County Commuter Rail Study
Route	Existing Union Pacific track, operated by Willamette & Pacific Railroad between McMinnville and Newberg and Portland & Western Railroad between Newberg and Milwaukie.
Sponsors	ODOT, Washington County, Clackamas County, Yamhill County, cities of McMinnville, Lafayette, Dundee, Newberg, Sherwood, Tualatin, Lake Oswego, and Milwaukie.
Purpose	Determine the cost and ridership potential of commuter rail service as a means to reduce congestion in the OR 99W and OR 18 corridors.

Issues Considered

Railroad Outreach	Not included
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DATA COLLECTION

Line Characteristics	Detailed field survey conducted.
Land Use Issues	Some agency discussions but no detailed study made.

OPERATING PLAN ASSUMPTIONS

Station Location	10-12 stations identified
Train Equipment	6 train sets
Schedule	5 inbound trips AM commute. 5 outbound trips PM commute. Every 30 minutes. Run time 46 minutes between Newberg and Milwaukie, and 68 minutes between McMinnville and Milwaukie.

DATA ANALYSIS

Ridership Estimates	1,580/day in 2015
Capacity Analysis	No detailed rail capacity study. Some rail improvements were identified based on string line diagrams, visual inspections, and professional judgment.
Capital Costs	\$112 million (1997 dollars)
Operating Costs	\$3 million/year (1997 dollars)

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Not included
Financing Plan	Not included
Governance Issues	Not included

Yamhill County to Portland, 2008

Study Details

Study Title	Yamhill County Commuter Rail Feasibility Study II
Route	22.9 miles between Newberg and Beaverton, 25.2 miles between Newberg and Lake Oswego, and new track alignment between Carlton and Forest Grove and a spur to Sherwood. Segment between Newberg and McMinnville studied in the earlier Yamhill County study was replaced with bus service timed to meet train schedules at the Newberg terminus.
Sponsors	Yamhill County
Purpose	Evaluate the potential ridership of a Yamhill County commuter rail service and complete a strategic assessment of the county rail system.

Issues Considered

Railroad Outreach	Not included
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DATA COLLECTION

Line Characteristics	Not included
Land Use Issues	Not included

OPERATING PLAN ASSUMPTIONS

Station Location	7 stations between Newberg and Beaverton, 6 stations between Newberg and Lake Oswego
Train Equipment	4 diesel multiple units
Schedule	Five inbound morning trains every 30 minutes; and five afternoon/evening outbound trains every 30 minutes.

DATA ANALYSIS

Ridership Estimates	880/day in 2008 and 1,540/day in 2028
Capacity Analysis	Not included
Capital Costs	Newberg to Beaverton \$73 million in 2008 dollars. Newberg to Lake Oswego \$98 million in 2008 dollars.
Operating Costs	\$2.5-\$3.9 million

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Not included
Financing Plan	Not included
Governance Issues	Not included

Wilsonville to Beaverton, 1997

Study Details

Study Title	Washington County Interurban Rail Study
Route	14.7 mile on existing Union Pacific Railroad and BNSF track
Sponsors	Washington County, cities of Beaverton, Tigard, Tualatin, Wilsonville and Sherwood.
Purpose	Evaluate commuter rail possibilities recognizing that no single mode of transportation can be expected to solve the pending problems...in the I-5/Highway 217 corridor

Issues Considered

Railroad Outreach	Not included (did significant outreach later during project development)
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DATA COLLECTION

Line Characteristics	Detailed field survey conducted.
Land Use Issues	Limited to identifying right of way for stations

OPERATING PLAN ASSUMPTIONS

Station Location	5 stations identified
Train Equipment	4 train sets
Schedule	Every 30 minutes during commute hours, 28 trains/day, 26-29 minute run time.

DATA ANALYSIS

Ridership Estimates	1,820 passengers in 2000 on an average weekday. Updated forecasts produced for the FTA Full Funding Grant Agreement indicate ridership levels between 3,000-4,000 passengers/day in 2020. A new in-street track segment along Lombard Street in Beaverton (where the tracks cross Farmington Road) to the Beaverton Transit Center would significantly enhance ridership potential.
Capacity Analysis	Commuter service would have negative impacts to freight rail operations without added capacity for commuter rail, including dedicated track and sophisticated signal equipment.
Capital Costs	\$104-\$203 million
Operating Costs	Not included

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Not included
Financing Plan	Not included
Governance Issues	Not included

Vancouver to Portland, 1999

Study Details

Study Title	Regional Transportation Council Commuter Rail Feasibility Study
Route	BNSF main line and Lewis & Clark Railroad in Clark County
Sponsors	Southwest Washington Regional Transportation Council at the request of the Clark County based Transportation Futures Committee
Purpose	To analyze commuter rail as a transportation alternative to I-5 between Clark County and Portland's Union Station

Issues Considered

Railroad Outreach	Extensive railroad outreach eventually led to railroad planning staff contributing their operations modeling expertise to the consultant team.
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DATA COLLECTION

Line Characteristics	Detailed field survey conducted.
Land Use Issues	Not included

OPERATING PLAN ASSUMPTIONS

Station Location	6 stations identified
Train Equipment	3 train sets
Schedule	Three different levels of service: 1) 8 trains/day between Rye Junction and Union Station, 2) 14 trains/day between Rye Junction and Union Station and 164 th Street and Union Station, and 3) 22 trains/day (10 between Rye Junction and Union Station and 12 between 164 th Street and Union Station).

DATA ANALYSIS

Ridership Estimates	1,000-1,200/day in 2003, 2,000-2,400/day in 2017.
Capacity Analysis	Detailed capacity analysis conducted using Dispatch Planning Model software.
Capital Costs	\$37-750 million
Operating Costs	\$2.7-\$4.1 million/year

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Qualitative assessment determined that commuter rail over existing BNSF track would not produce benefits in line with the cost to construct and operate the service.
Financing Plan	Not included
Governance Issues	Determination was made about use of both BNSF RR and Lewis & Clark RR.

Vancouver to Portland, 2006

Study Details

Study Title	Columbia River Crossing Alternatives Analysis
Route	Existing BNSF track from Vancouver to Union Station
Sponsors	Federal Highway Administration, Federal Transit Administration, Washington State Department of Transportation, ODOT, Southwest Washington Regional Transportation Council, Metro, Clark County Public Transportation Benefit Area, and Tri-County Metropolitan Transportation District
Purpose	To determine whether commuter rail is a reasonable modal option for transportation circulation in the "CRC influence area."

Issues Considered

Railroad Outreach	Not included
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DATA COLLECTION

Line Characteristics	Used info from 1999 study.
Land Use Issues	Not included

OPERATING PLAN ASSUMPTIONS

Station Location	Not included
Train Equipment	Not included
Schedule	Not included

DATA ANALYSIS

Ridership Estimates	Not included
Capacity Analysis	Not included
Capital Costs	\$1.5-\$1.7 billion
Operating Costs	Between \$55 and \$90 per train-mile (not aggregated).

FEASIBILITY ASSESSMENT

Cost Benefit Analysis/ Return on Investment Analysis	Determined that benefits to costs of commuter rail was not as favorable as other modes.
Financing Plan	Not included
Governance Issues	Not included

Figure 1: Issues Addressed in Commuter Rail Studies

	Ashland to Medford 2001	Yamhill County to Portland 1998	Yamhill County to Portland 2008	Wilsonville to Beaverton 1997	Vancouver to Portland 1999	Vancouver to Portland 2006
Railroad Outreach					X	
DATA COLLECTION						
Line Characteristics	X	X		X	X	X
Land Use Issues	X			X		
OPERATING PLAN ASSUMPTIONS						
Station Location	X	X	X	X	X	
Train Equipment	X	X	X	X	X	
Schedule	X	X	X	X	X	
DATA ANALYSIS						
Ridership Estimates	X	X	X	X	X	
Capacity Analysis				X	X	
Capital Costs	X	X	X	X	X	X
Operating Costs	X	X	X		X	X
FEASIBILITY ASSESSMENT						
Cost Benefit Analysis/ Return on Investment Analysis	X				X	X
Financing Plan						
Governance Issues					X	

Conclusion

It is no surprise to learn that local jurisdictions have examined commuter rail projects at different depths. Although no study included every issue outlined in Section II, one issue worth highlighting is the need to communicate with the railroad companies. Though it is understandable that not every study will cover every issue due to cost or time constraints, railroad outreach should always be considered. Without the cooperation of the railroad company, projects do not have a chance of moving forward because, in the end, the infrastructure is theirs to decide how to use.

In addition to providing an overview of the studies recently completed, this report may be helpful to local governments in deciding which issues should be included in future studies. Also, The Transportation Research Board is currently undertaking a process to develop “best practices” guidelines for commuter rail studies which is expected to be completed later in 2009. That effort will be valuable to further understand issues to consider and models to use when assessing commuter rail projects in the future.

Figure 2: Commuter Rail Studies in Oregon

