

# Strategic Freight Transportation Analysis

## Rail Line Investment Alternatives Resulting From Abandonment: A Case Study of Moses Lake, WA

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**SFTA Research Report # 9**

**July 2003**

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Pullman, Washington 99164-6210

## **SFTA Research Reports: Background and Purpose**

This is the ninth of a series of reports prepared from the Strategic Freight Transportation Analysis (SFTA) study. SFTA is a six year comprehensive research and implementation analysis that will provide information (data and direction) for local, state and national investments and decisions designed to achieve the goal of seamless transportation.

The overall SFTA scope includes the following goals and objectives:

- Improving knowledge about freight corridors.
- Assessing the operations of roadways, rail systems, ports and barges – freight choke points.
- Analyze modal cost structures and competitive mode shares.
- Assess potential economic development opportunities.
- Conduct case studies of public/private transportation costs.
- Evaluate the opportunity for public/private partnerships.

The five specific work tasks identified for SFTA are:

- Work Task 1 - Scoping of Full Project
- Work Task 2 - Statewide Origin and Destination Truck Survey
- Work Task 3 - Shortline Railroad Economic Analysis
- Work Task 4 - Strategic Resources Access Road Network (Critical State and Local Integrated Network)
- Work Task 5 - Adaptive Research Management

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Or go to the following Web Address:

[www.sfta.wsu.edu](http://www.sfta.wsu.edu)

## **DISCLAIMER**

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Washington State Department of Transportation. This report does not constitute a standard, specification or regulation.

## **PREVIOUS SFTA REPORTS NOW AVAILABLE**

1. Casavant, Kenneth L. and Eric L. Jessup. "SFTA Full Scope of Work." SFTA Research Report Number 1. December 2002.
2. Clark, Michael L., Eric L. Jessup and Kenneth L. Casavant. "Freight Truck Origin and Destination Study: Methods, Procedures and Data Dictionary." SFTA Research Report Number 2. December 2002.
3. Casavant, Kenneth L. and Eric L. Jessup. "Value of Modal Competition for Transportation of Washington Fresh Fruits and Vegetables." SFTA Research Report Number 3. December 2002.
4. Ripplinger, Toby, Kenneth L. Casavant and Eric L. Jessup. "Transportation Usage of the Washington Wine Industry." SFTA Research Report Number 4. May 2003.
5. Clark, Michael L., Eric L. Jessup and Kenneth L. Casavant. "Dynamics of Wheat and Barley Shipments on Haul Roads to and from Grain Warehouses in Washington State." SFTA Research Report Number 5. September 2003.
6. Casavant, Kenneth L., Eric L. Jessup, and Joe Poire. "An Assessment of the Current Situation of the Palouse River and Coulee City Railroad and the Future Role of the Port of Whitman County." SFTA Research Report Number 6. September 2003.
7. Tolliver, Denver, Eric L. Jessup, and Kenneth L. Casavant. "New Techniques for Estimating Impacts of Rail Line Abandonment on Highways in Washington." SFTA Research Report Number 7. September 2003.
8. Tolliver, Denver, Eric L. Jessup, and Kenneth L. Casavant. "Implications of Rail Line Abandonment on Shipper costs in Eastern Washington." SFTA Research Report Number 8. September 2003.

# **Rail Line Investment Alternatives Resulting from Abandonment: A Case Study of Moses Lake, WA**

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# **Rail Line Investment Alternatives Resulting from Abandonment: A Case Study of Moses Lake, WA**

## **EXECUTIVE SUMMARY**

Many small towns and communities have been impacted in recent years from abandonment of rail lines which have historically provided freight service to industrial parks and businesses supporting the local and regional economy. This analysis focuses on one town in central Washington which investigated multiple alternatives to maintaining rail service and evaluates the impact of differing alternatives to construction cost estimates and communities.

The city of Moses Lake, Washington, population 16,000, has historically maintained steady economic progress, largely as a result of the balanced transportation services available in the area, including air, rail and highway access. However, the transportation landscape may soon change as the regional short line railroad company, Columbia Basin Railroad Company, considers abandonment of rail lines in and near the Moses Lake industrial and economic community.

The specific rail line under consideration stretches from Wheeler (just east of town), south to McDonald before heading west and north back through town to the Grant County International Airport. The abandonment would likely occur in two phases, with the section of rail line north of downtown Moses Lake (beyond the scrap metal/junk museum) being abandoned in Phase I and the remaining section between downtown Moses Lake and McDonald being abandoned in Phase II.

The impact of such abandonment is varied and complicated. It eliminates a short run unprofitable situation for the railroad. However, investment in new rail line or rehabilitation of the existing line through downtown Moses Lake is also complicated. The railroad is reluctant to invest due to low traffic while businesses that rely on the railroad service are likewise reluctant to locate where the service might be abandoned, creating a catch twenty-two.

Further complicating this situation is the inconvenient and inefficient path through downtown Moses Lake; future economic and residential growth is not very compatible with multiple trains moving through the downtown area several times each day, creating significant safety and inconvenience issue for local residents, as well as a barrier to downtown retail and commercial redevelopment. Yet, maintaining rail service to the two industrial corridors in Moses Lake (along Wheeler Road and the Grant County International Airport) is paramount to future economic growth, especially given the existing industrial facilities that add to the marketability of Moses Lake for industry and commerce.

The general purpose of this study was to investigate alternative investment options that would move the rail line but would maintain rail access to the Grant County International Airport and surrounding industrial areas. In achieving this goal stakeholders were identified, options were

inventoried, costs were determined, attributes for alternatives were developed and funding investigated.

Data on the perspectives and potential impact to key stakeholders were obtained from personal interviews with local businesses and community organizations. Geographical data were obtained which covered the entire transportation system in the area; specific information related to the location and value of individual land parcels was obtained from the Grant County Assessor/GIS Office. Construction cost estimates were derived from previous studies and discussions with railroad cost experts in the industry.

Numerous stakeholders were identified in the course of this study. The overriding theme is a desire for the continued economic development of Moses Lake and its surrounding area, with an accompanying increase in the quality of life for its inhabitants. Development efforts are seen in both commercial/tourism emphasis in the downtown area and the heavy commercial/industrial firms in the surrounding area and industrial parks.

Stakeholders receiving specific attention in the report are the Vision 20/20 Community Development Committee, commercial developments, industrial parks/zones, directly impacted firms, and potential long-term developments. Impacts from the loss and/or the relocation of the line occur both in the short and long term and also vary as to how certain or speculative they may be. Potential developments included Boeing 7E7 prospects, a heavy amphibious defense vehicle assembly site, SpacePort Washington, an ethanol plant and propane distribution expansion prospects.

Rail line rehabilitation cost estimates were developed for both construction of new lines and line rehabilitation using existing right-of-ways. . Construction cost estimates used in the study were \$750,000 per mile for line rehabilitation costs and \$1,300,000 for new line construction.

Right-of-way investment costs were developed assuming only the 100 feet right-of-way is purchased, and also if the entire parcel of land touched by the right-of-way had to be purchased, giving a conservative but reasonable lower estimate and a maximum possible cost estimate, for planning purposes.

Seven specific scenarios were deemed most feasible/probable, given the issues of construction cost, community impact, physical or political barriers, purchase price of right-of-way and future economic growth. Ideally, the optimal scenario would minimize construction costs, purchase price of right-of-way and impact to local residents while maximizing the potential for future industrial and business growth opportunities. The chosen scenarios, presented in significant detail in the body of the report were:

- Scenario 1: Wheeler via Road 3.5
- Scenario 2: Wheeler via Road 6.5
- Scenario 3: Wheeler via Road 8.5
- Scenario 4: Wheeler via Road 9.5
- Scenario 5: Wheeler via Gloyd
- Scenario 6: Adrian via Gloyd



- Scenario 7: Soap Lake via Cross Country route

These scenarios are summarized below, ranked by attractiveness as to rail construction costs, right of way purchase, combined construction cost and right of way purchase, community impact/safety and economic growth/potential. Construction costs over the scenarios range from \$9.09 million to \$23.05 million. Purchase of right-of-way ranged from \$120,000 to \$312,000 if just the 100 feet of right-of-way are purchased, and from about \$3.8 million to \$8.8 million if the entire parcel had to be purchased. Number of road crossings necessary for each scenario ranged from 4 to 13, though it should be remembered that elimination of the McDonald to Grant County International Airport would result in 19 fewer at grade crossings.

**Figure 1: Ranking of All Scenarios Across Different Evaluative Criteria**

Ranking of All Scenarios Across Different Evaluative Criteria

	<b>Scenario Ranking</b>						
	<i>Least Preferred</i> ..... <i>Most Preferred</i>						
<b>Rail Construction Costs</b>	<i>Highest Cost</i> ..... <i>Least Cost</i>						
Scenario	7	6	5	4	3	2	1
<b>Right-of-Way Purchase</b>	<i>Highest Cost</i> ..... <i>Least Cost</i>						
Scenario	5	3	4	6	7	1	2
<b>Combined Construction Cost &amp; Right-of-way Purchase</b>	<i>Highest Cost</i> ..... <i>Least Cost</i>						
Scenario	5	3	4	6	7	1	2
<b>Community Impact / Safety</b>	<i>Large Number</i> ..... <i>Small Number</i> <i>Road Crossings</i> ..... <i>Road Crossings</i>						
Scenario	4	3	5	2	6	7	1
<b>Economic Growth / Potential</b>	<i>Least Likely Movement Toward</i> ..... <i>Most Likely Movement Toward</i> <i>Connecting Adrian-Wheeler</i> ..... <i>Connecting Adrian-Wheeler</i>						
Scenario	1	7	2	3	4	5	6

There is no clear and obvious choice for selecting a scenario that excels in all dimensions and criteria. Each alternative has varying degrees of positive and negative attributes, depending upon the criteria used. For example, the option that leads to the greatest likelihood of future industrial and economic growth from new businesses and companies locating in the Port of Moses Lake is scenario six, followed by scenario five and four. Or, if minimizing expected construction cost is the objective, then scenario one is the obvious choice, followed by scenario two and three.

Finally, attention was paid to the potential partnership of local entities and the Washington State Department of Transportation regarding SR 17 improvements, as well as determining alternative funding sources that might be available.

## **Selected Study Findings**

- If possible, abandonment of the rail line should be avoided until the chosen relocation option is on its way to final completion. The impact on existing businesses and potential economic development is too great to lose rail service now.
- Reasonable alternatives for the successful relocation of the rail line do exist. These options vary in attractiveness, depending on the attributes being considered.
- The specific option to be chosen depends on the objective of the analysis or the weighting of the differing attributes. The decision is one that needs to be made by the community and local leaders.
- The WSDOT improvement project on SR 17 offers potential opportunity for private/public partnerships. Savings of up to \$300,000, by avoiding a crossing, could conceivably be made available to the relocation project funding.
- Several sources of funds exist that reflect the fact that the benefits of transportation improvements accrue to a combination of public and private individuals and entities. Potentially available sources include: federal programs based on formula or competitive grants, state grant and loan programs, port purchase and grants, county purchases and assistance, state/local agency Railroad Crossing Improvement Program, Congressional “earmarks” from federal discretionary funds and private railroad firm investment. The region and stakeholders should be working at all levels and with all sources to determine eligibility and increase priority for the funding.

## **INTRODUCTION / BACKGROUND**

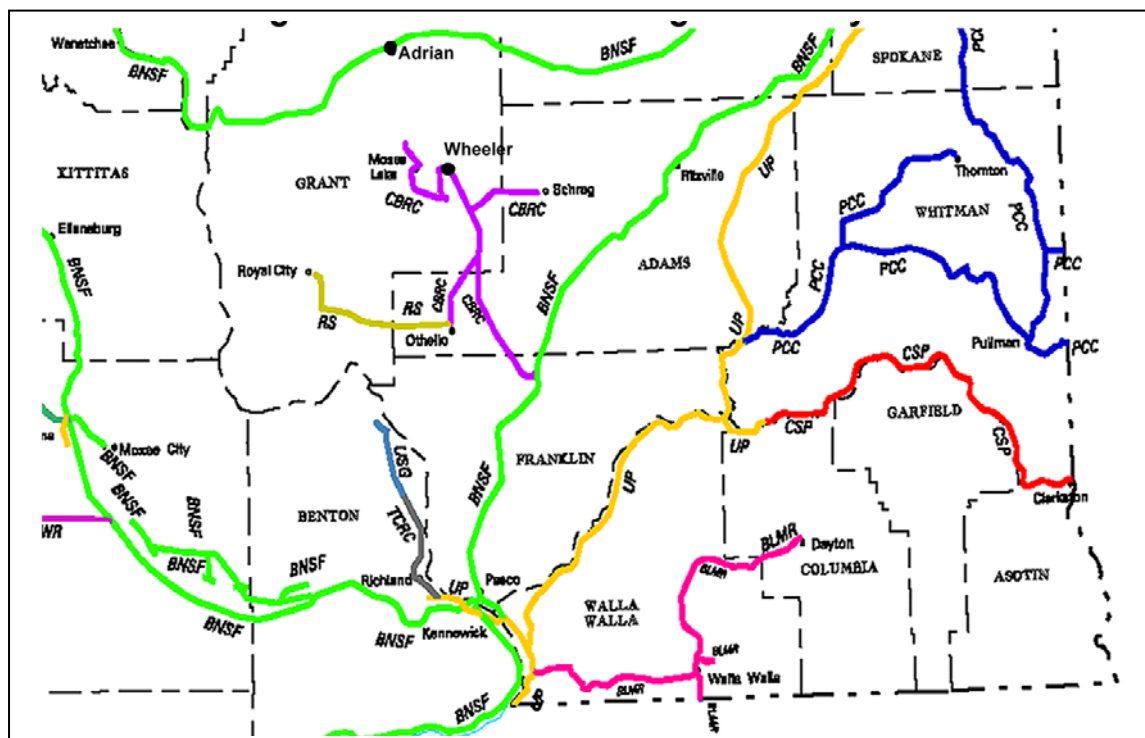
Many small towns and communities have been impacted in recent years from abandonment of rail lines which have historically provided freight service to industrial parks and businesses supporting the local and regional economy. This analysis focuses on one town in central Washington which investigated multiple alternatives to maintaining rail service and evaluates the impact of differing alternatives to construction cost estimates and communities.

The city of Moses Lake, Washington, population 16,000, has historically maintained steady economic progress, largely as a result of the balanced transportation services available in the area, including air, rail and highway access. However, the transportation landscape may soon change as the regional short line railroad company, Columbia Basin Railroad Company, considers abandonment of rail lines in and near the Moses Lake industrial and economic community. This decision is the result of two economic forces, increased cost of operation and maintenance on the older, dilapidated rail line and the diminishing available revenues from rail traffic utilizing the rail line. Rail line abandonment has significantly altered the transportation landscape, both nationally and across the state, resulting in the current eastern Washington rail network, as illustrated in Figure 2.

The specific rail line under consideration stretches from Wheeler (just east of town), south to McDonald before heading west and north back through town to the Grant County Industrial Airport (between 8 and 12 miles, depending on the abandonment scenario). The most likely abandonment is between McDonald and the Grant County Industrial Airport, given the minimal traffic and relative dilapidated condition of this segment of rail line (Figure 3). However, this would most likely occur in a two phase abandonment situation, with the section of rail line north of downtown Moses Lake (beyond the scrap metal / junk museum) being abandoned in Phase I and the remaining section between downtown Moses Lake and McDonald being abandoned in Phase II. This segment has the least amount of rail traffic, followed with the McDonald - downtown rail segment. However, eliminating rail access to the Grant County International Airport and industrial property could have significant impacts on local businesses, transportation interests, the regional economy and future growth considerations.

The decision to abandon a section of rail line is often the result of marginal economic analysis, where marginal costs exceed marginal revenue and therefore creates a short-run unprofitable situation for the railroad operator and ultimately the decision to abandon. However, investment in new rail line or rehabilitation of existing line in this situation, as it applies on the existing rail line extending through downtown Moses Lake, is a complicated decision from the perspective of the railroad, existing and potential industries utilizing rail service, the port district and the city. The railroad is reluctant to invest resources to rehabilitate the line unless a minimal volume of rail traffic or potential exists for justifying the investment. However, businesses which rely upon dependable rail service are likewise reluctant to locate in an area where service may be abandoned, creating a catch twenty-two between the railroad and the business who rely on the railroad.

**Figure 2: Eastern Washington Rail System**

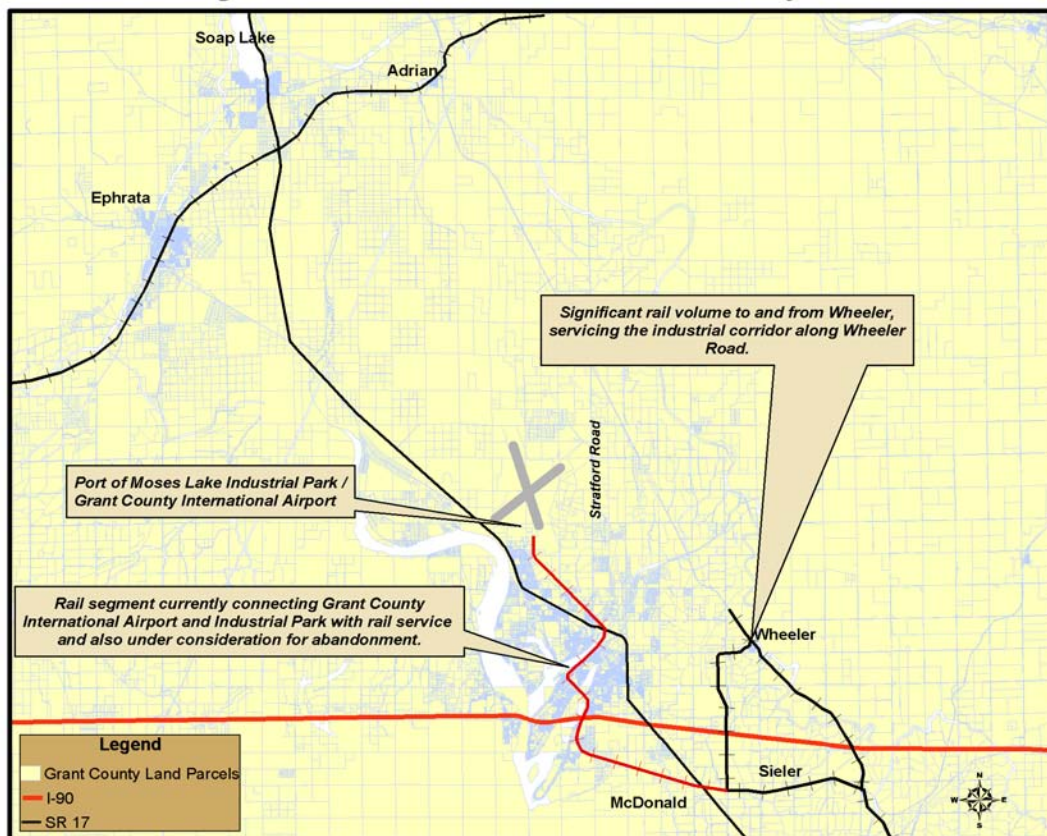


Complicating this situation is the inconvenient and inefficient path through downtown Moses Lake which the existing rail line currently traverses to connect the industrial park at the Grant County International Airport to rail service. Future economic and residential growth is not very compatible with multiple trains moving through the downtown area multiple times every day, creating significant safety and inconvenience issues for local residents. Examination of the land-use classification for Moses Lake in Figure 4 reveals the two primary areas of heavy-industrial land-use; one along the Wheeler road and one near the airport (indicated in red).

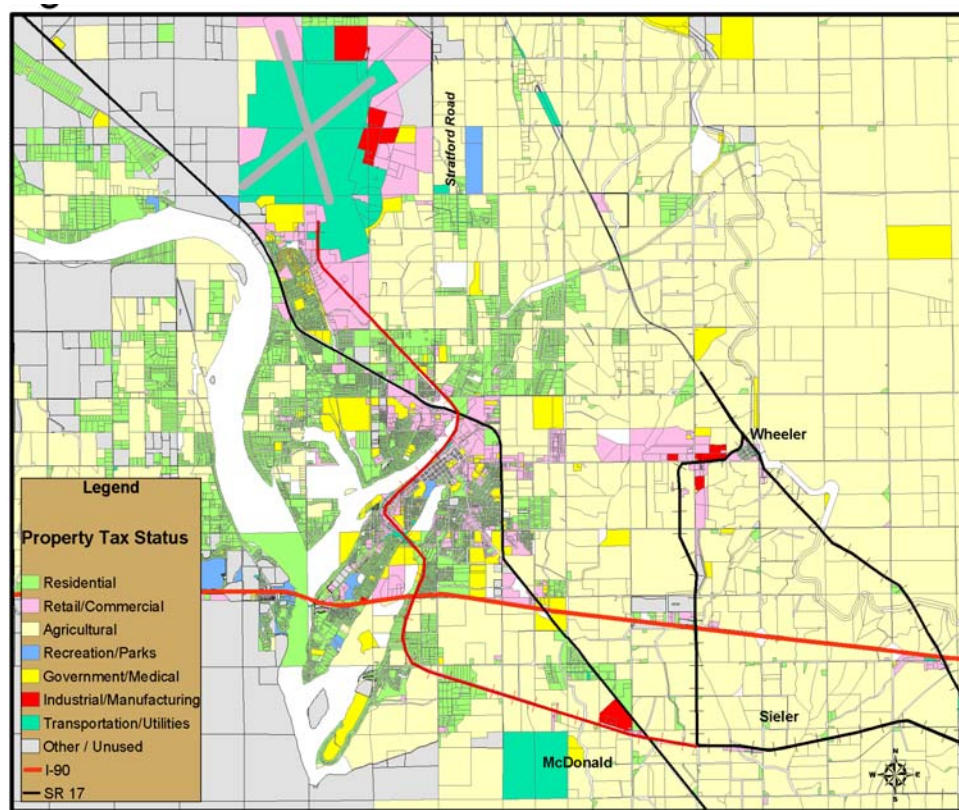
Maintaining rail service to the two industrial corridors in Moses Lake (along Wheeler Road and the Grant County International Airport) is paramount to future economic growth, especially given the existing industrial facilities and infrastructure that adds to the marketability of Moses Lake for industry and commerce.

The purpose of this research effort is to investigate the different available options and the impact each approach will have on different stakeholder interests. This analysis may then be utilized for proactive measures by the stakeholders.

**Figure 3. Moses Lake Study Area**



**Figure 4. Moses Lake Land Use Classifications**



## **OBJECTIVES**

The general purpose of this study is to investigate alternative investment options surrounding rail access to the Grant County International Airport and surrounding industrial areas. Specific objectives are to:

- i. Identifying stakeholders and private parties impacted from abandonment and/or infrastructure investment alternatives.
- ii. Inventory and review alternative options for rail access, illustrating and detailing pros and cons of each approach.
- iii. Examine infrastructure investment requirements and funding alternatives for different options.
- iv. Present private and social costs/benefits.



## **SCOPE OF WORK / WORK TASKS:**

To achieve the above objectives the following work tasks were identified.

- i. Interview task force members and stakeholder groups throughout the area including: representatives from the city, county, development district, transportation officials, railroad(s), and private businesses.
- ii. Inventory investment alternatives.
- iii. Determine investment costs of each alternative through review of prior studies and discussions with railroad companies and the Washington State Department of Transportation.
- iv. Identify and inventory potential funding sources for investment alternatives.
- v. Evaluate the relationship between rail availability and economic development.
- vi. Incorporate information related to the SR 17 development project and application of investment relief due to abandonment to the analysis of alternative investment scenarios.
- vii. Include benefits to the Washington State Department of Transportation as a result of reallocated investments (i.e. changed traffic patterns).
- viii. Write draft report for task force review and present draft report to Port of Moses Lake task force.
- ix. Write final report, incorporating input from task force review.
- x. Present Final Report to Port of Moses Lake task force.

## **DATA AND INFORMATION SOURCES**

Several different data and information sources were utilized in this analysis and research report. Primary data regarding the perspectives and potential impact to key stakeholders from rail line abandonment were obtained from personal interviews with local businessmen and community organizations. These interviews and discussions were organized and coordinated by officials from the Port of Moses Lake to offer a complete perspective from all impacted parties and organizations and also to gauge the importance of rail access and service, both historically and into the future, for different types of business or organizations. Among others, interviews and discussions were held with the following major firms or organizations.

- Columbia Basin Railroad
- Grant County Economic Development Council
- Vision 20/20 Community Development Committee

- Northern Energy
- ASPI Group
- Port of Moses Lake Commissioners and Officials

Geographical data were also obtained for evaluating the alternative scenarios for maintaining rail service to the Port of Moses Lake industrial park. These data included geographical information system (GIS) coverage of the complete transportation infrastructure for Grant County. This coverage included interstate, state and local highways, in addition to city streets for the entire Grant county area and was compiled from a combination of ESRI<sup>1</sup> data and TIGER<sup>2</sup> files.

Information related to the location and value of individual land parcels was obtained from the Grant County Assessor / GIS office. This data were also provided in GIS coverage format and include detailed information on acreage, unimproved value, improved value and appraised value of all land parcels in Grant County.

All GIS analysis was conducted using the software package Arc Info, produced by the Environmental Systems Research Institute (ESRI).

## **STAKEHOLDER IMPACTS**

In the course of this study numerous interested and active parties were identified in interviews, meeting and review of relevant organizational minutes and information. These parties were definitely stakeholders in this issue because they were going to experience either positive or negative impacts. These briefly indicated below are categorized by use of the railroad service or by the source of the interest shown as individuals or groups.

The overriding theme from the discussions is a desire for the continued economic development of Moses Lake and its surrounding area, with an accompanying increase in the quality of life for its inhabitants. Development efforts are seen in both commercial/tourism emphasis in the downtown area and the heavy commercial/industrial firms in the surrounding area and industrial parks. These efforts do not have to be in conflict with each other, depending on the timing and sequence of any rail abandonment and/or relocation. However, serious impacts on industrial sustainability or development could occur if rail to these areas is lost and service is disrupted without replacement and maintenance of solid, reliable rail access. It is critical to remember that the first step in economic development success is to maintain those firms and activities that exist in or around the city that currently contribute to the area's economic vitality and commercial appeal.

Stakeholders who are impacted include, among others, the following:

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<sup>1</sup> Environmental Systems Research Institute, Redlands, California.

<sup>2</sup> Topologically Integrated Geographic Encoding and Referencing system from the U.S. Census Bureau.

## **Vision 20/20 Community Development Committee**

A citizen led economic development group is Vision 2020. This group of local leaders strives to serve all of Moses Lake and works closely with the City Council and Merchants Association. The focus of this group is the downtown revitalization/redevelopment, an important element of which is the waterfront. One of the many projects envisioned and under consideration, the removal of the railroad and acquisition of the right-of-way was rated the highest importance (level 5) in a study done for the group. Such a project would open up or aid in developing the waterfront for a boardwalk, waterfront linear park, waterfront hike/bike trails, etc. It is apparent that the creative activities of this group would be will supported by the abandonment or relocation of the railroad.

### **Commercial Developments**

The development of businesses, not dependent on the railroad for their transportation needs, would gain as the new space opens up, the tourism and population increase and the general appealing quality of life in the community rises. The appeal of the downtown area can bring in retail shops, distribution centers on the fringe of town, and service providing firms such as restaurants and hotel/motel firms. While not a direct impact from the relocation of the rail line, such firms gain from the economic activity created by a successful downtown revitalization.

### **Industrial Parks/Zones**

Moses Lake's two primary industrial areas stand to be impacted the loss or disruption of rail service. These are the Grant County International Airport industrial area, and the Wheeler corridor industrial area. Grant County International Airport and Industrial Park provides service to many firms and individuals. However, the types of products that are commonly moved by rail do not lend themselves to movement by air. In fact, air-rail is the least common inter-modal movement witnessed in the transportation system. However, the Airport has available a 2,000 acre industrial park, with low cost readily available land. Communications fiber is available to the firms locating in the park and low-cost electricity and natural gas are available. Both existing and potential industrial or heavy commercial firms would stand to drastically lose if rail service is lost and not replaced by a relocation of the abandoned line.

The other major industrial area, zoned and available for development, is to the east of Moses Lake, generally west of Wheeler. Firms utilizing rail already exist in this area and the area is being actively promoted for future development. The types of firms that have, and could, express interest in the area often, and maybe always, include rail service in the list of "needs" when considering relocation or start up in an area. Such economic opportunities could be lost as rail service is restricted.

These industrial areas, and the services that they provide, took on an increase importance when the Growth Management Act was passed. It is extremely difficult to rezone areas to industrial use, thus putting a premium on existing areas of industrial zoning.



## **Direct Impacts on Firms**

If the rail line is abandoned from Wheeler west with no relocation, as suggested by the ownership of the Columbia Basin Railway Company, existing firms will be directly impacted. Whether the product is grain, salvage material or other bulk commodity, these firms will feel the impact of increased trucking costs, if they can afford to stay in business.

Another impact can be expected on those firms who do not lose rail service but may see their rates increased as the railway company strives to be profitable. While not directly related to the abandonment, the loss of traffic that contributes somewhat to overhead costs can make other rates increase to cover such overhead costs.

## **Potential Developments-Long Term**

### *Boeing 7E7 Prospects*

One development that could bring significant economic benefits to the Moses Lake area and will require rail service to the Grant County International Airport is the Boeing 7E7 Dreamliner assembly plant. After being specifically requested to be included in the state's proposal, Moses Lake is currently being considered for an assembly site for Boeing's long-distant, fuel-efficient, Dreamliner aircraft. Preparation for the presentation and answering the questions poised by Boeing in their request for proposal indicated the critical importance of rail service, and high quality rail service, being available. Loss of good rail service in the area could well affect Moses Lake chances of being the chosen site.

### *Heavy Amphibious Defense Vehicle Assembly Site*

Another possible development is a premier defense contract for amphibious defense vehicles, collected and assembled in the area north of Moses Lake. Expectations are the contract would require a capital investment of \$50 million and generate 350 jobs in the area. It is expected that around 1,000 vehicles, weighing 110,000 pounds would be assembled. Since the engines would come in as fully assembled units to be assembled with the bodies, the entire project would gain from, or only be feasible if, rail service was maintained or improved.

### *SpacePortWashington*

SpacePortWashington is a group and effort put together to initially respond to Lockheed Martin's VentureStar Program by evaluating the State as a low-cost alternative to space launch and recovery operations from inland bases. The findings were that the State does meet the needs to support a spaceport for the next generation of reusable launch vehicles (RLVs). Moses Lake and The Grant County International Airport is the leading site for such an activity in the state. The airport is already a certified landing alternative for NASA's Space Shuttle.

The magnitude of such an effort is truly mind boggling, with an overall net present value of net income to the state of over \$75 million. Initial construction is estimated to use over 2,000

workers when direct and indirect worker are counted. Continued operations in this project are estimated at a total of 1,500 workers, direct and indirect.

The overall need for freight service by rail was part of the analysis and is a contributing factor to the acceptability of the site for such a program.

### *Ethanol Plant*

A continuing interest exists in the development of an ethanol plant for Washington State. A strong interest, and announcement of the effort, was made by Spokane based Pacific Rim Ethanol who plans, subject to funding and final production agreements, to begin construction on a new \$122 million ethanol plant. The plant, located along the Wheeler industrial corridor, will distill wheat and barley to produce 40 million gallons of ethanol a year along with some alcohol, gluten and carbon dioxide. The plant would buy and transport about \$50 million worth of wheat, barley and dried distillers-grain from local growers. Such movements both into, depending on distance, and out of the plant are the type of bulk movements for which rail is most competitive.

### *Propane Distribution Expansion*

The Moses Lake and central Washington area has recently become a significant distribution center for propane and natural gas. This is primarily due to the availability of rail for bulk shipments into central Washington from northern Alberta and British Columbia, Canada, providing significant gains in transport efficiency that is then passed on to business and commercial customers via reduced rates. The propane and natural gas industry, and the ability for this energy source to compete with more traditional energy sources, is largely dependent on volume and economies of size. As a result, several large food processing and distribution warehouses in central Washington have converted to using propane for cooling/refrigeration.

Local and regional sales managers have indicated that investment in storage facilities would double if the company executives were confident that rail service would continue at the industrial park indefinitely. Information collected from personal interviews also revealed that the ability of propane to compete with other energy sources would cease without rail.

## **RAILROAD CONSTRUCTION/REHABILITATION COST ESTIMATES**

Cost calculations related to new construction or rail line rehabilitation can vary significantly depending on a variety of factors, including sub-grade condition, structural strength/quality of steel, type of ties, depth of ballast, amount of surfacing, and the number of turnouts. Several recent studies have estimated these costs for different rail line segments throughout the United States and provide an appropriate range per mile of projected construction costs to apply to each investment alternative being considered by the Port of Moses Lake. Rail line rehabilitation estimates are provided to differentiate between construction cost on the abandoned BN corridor between Adrian and Wheeler, and all other new line construction. These rehabilitation estimates include replacement of a large portion of steel and ties, utilizing an existing graded right-of-way;

while the abandoned BN corridor will require some minimal grade work, much of the old grade currently exists.

### **Powder River Basin Project**

The Dakota, Minnesota & Eastern Railroad (DM&E) received approval from the U.S. Surface Transportation Board in 1998 to extend rail lines and rehabilitate existing lines in the Powder River Basin coal fields in Wyoming and southwest South Dakota. This project included 262 miles of new line construction and rehabilitation on 597 miles of existing track to handle 315,000-pound coal cars. Construction costs for the Powder River Basin Project were estimated to be \$1.08 million<sup>3</sup> / mile on the 597 miles of rehabilitated line and \$1.8 million / mile on the new line construction. Itemized construction and rehabilitation standards on this line included:

- All 136-pound continuous welded rail rated for 316,000-pound cars.
- A minimum of 12 inches of ballast resting upon a minimum of 12 inches of sub-ballast.
- All new wood ties at 19.5 inches spacing (60% replacement rate on rehabilitated line).
- Maximum grade of 1.4 percent.
- Approximately 35-40 passing side tracks (sidings), 446 public grade crossings, and 3 grade separations.

### **ZETA-Tech Associates Study**

The American Short-Line and Regional Railroad Association (ASLRRA) sponsored a study in 2000 to collect detailed information on railroad conditions including track age and condition, rail type and weight, traffic volumes and operation speeds. ZETA-Tech Associates compiled detailed information on Class I and non-Class I rail operating conditions and line rehabilitation/replacement cost estimates. The questionnaire solicited information from each railroad pertaining to cost estimates each company utilized for budgeting track renewal and replacement. The question pertaining to cost estimates for track renewal and replacement did not provide specific construction and replacement standards. The cost estimates only require that the refurbished track meet a minimum of 115-pound rail and be capable of handling 286,000-pound cars.

Three different Class I railroads provided track replacement cost estimates, ranging from \$516,066 to \$726,378 per mile of track, as illustrated in Table 1. These estimates assumed all construction occurred on a graded right-of-way with adequate quantities and quality of rail, ties, ballast/surfacing and turnouts to handle 286,000-pound rail cars.

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<sup>3</sup> This estimate does not include bridge replacement costs, construction of staging and marshaling yards and maintenance facilities.

**Table 1. Summary of Rail Construction / Rehabilitation Cost Estimates.**

<i>Study</i>	<i>Distance (miles)</i>	<b>\$ / mile</b>	
		<b>Line Rehabilitation Costs</b>	<b>New Line Construction Costs</b>
<b><i>Powder River Basin Project</i></b>	597 rehab. 262 new	\$1,081,465	\$1,864,290
<b><i>ZETA-Tech Associates Study</i></b>			
<b><i>RR1</i></b>	-	\$516,066	
<b><i>RR2</i></b>	-	\$575,643	
<b><i>RR3</i></b>	-	\$726,378	
<b><i>Iowa DOT Study</i></b>	1,400	\$262,385	
		<b>Wheeler-Adrian Portion</b>	<b>New Line Construction Costs</b>
<b><i>Port of Moses Lake Study Coefficients</i></b>		\$750,000	\$1,300,000

### **Iowa Department of Transportation Study**

The Iowa Department of Transportation (IDOT) conducted a study in 1998 to identify rail track within the state in need of restoration and rehabilitation necessary for long-term operation and performance. This study identified 1,400 miles of the state's branch-line network in need of rehabilitation. The IDOT study identified several structural requirements for all rehabilitated line, including:

- Replace any rail that is below 112-pound rating.
- All track must support 286,000-pound rail cars.
- Replace enough ties such that non-defective rate of ties is > 75%.
- Minimum of at least 6 inches of ballast.
- Replace all turnouts when rail is replaced.

The estimated upgrading cost for this study was \$262,385 per mile and represents the low end of the rehabilitation cost estimate spectrum. This is primarily due to the respectable condition of the existing branch-line network and the omission of any bridge rehabilitation costs.

Collectively, these studies provide an appropriate context from which to identify and compare potential rail line construction costs for each infrastructure investment alternative. This spectrum of estimates extends from the highest level construction specifications and standards of the Powder River Basin project (\$1.1 million / mile line rehabilitation and \$1.8 million / mile new line construction) to the opposite end with the Iowa Department of Transportation study (\$262,385 / mile line rehabilitation). The design requirements of the PRB project are not likely required for the rail traffic currently moving on the branch and main line rail network surrounding Moses Lake. The PRB project estimate also includes a large number of sidings, public grade crossings and grade separations that may not be applicable to the rail access alternatives currently under consideration by the Port of Moses Lake.

The line rehabilitation cost estimates from these earlier studies are likely lower than what would be required on the Wheeler-Adrian abandoned segment, given that some grade work would be required and all track components would need to be provided. The upgrade estimates provided above include a salvage value for replaced steel and ties, which would not be present on the Wheeler-Adrian segment.

Given the experiences from these earlier construction projects and research studies, and after consultation with freight rail specialists at the Upper Great Plains Transportation Institute, short-line rail owner/operators and academic researchers, two rail construction costs were chosen to reflect the geographical and operational circumstances in central Washington. The construction cost per mile to be applied to all Wheeler-Adrian segments will be \$750,000 and all new line construction is estimated to cost \$1.3 million.

## **INVENTORY OF INVESTMENT ALTERNATIVES**

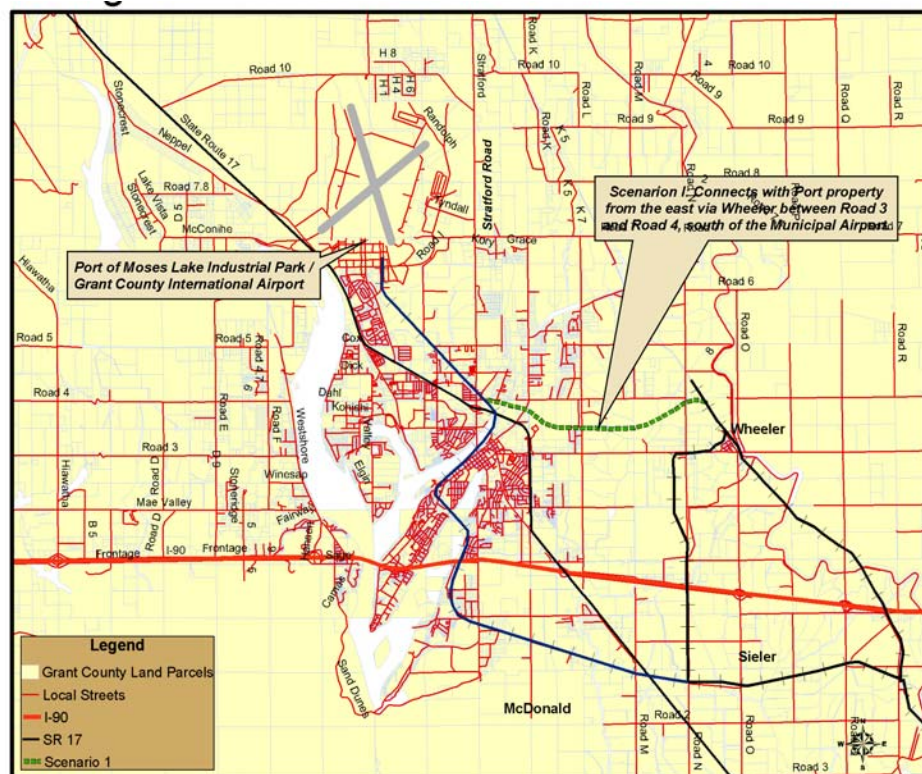
There are an infinite number of alternative rail routes that could be drawn that would maintain rail access and service to the Port of Moses Lake industrial park and Grant County International Airport. However, there are many issues to consider that immediately limit those options. Construction cost, community impact, physical or political barriers, purchase of right-of-way and future economic growth are dominant among these concerns to consider for each potential alternative. The seven specific scenarios considered in this analysis are those deemed most feasible/probable given these issues and concerns, in addition to the present geographical and physical infrastructure representing the transportation network (roads and highways) and residential development (land parcels). Ideally, the optimal scenario would minimize construction costs, purchase price of right-of-way and impact to local residents while maximizing the potential for future industrial and business growth opportunities.

Acquisition of the right-of-way upon which the rail line is to be constructed is estimated with two different approaches to offer a range of potential investment required. The first estimate assumes that each land parcel which intersects the proposed rail line would be purchased in its entirety at the appraised parcel value (including buildings and improvements on the land). The second right-of-way purchase estimate assumes that only 100 ft. (50 feet each side) of land would be required and thus places the appraised value per acre on each parcel and sums only the portion of each parcel that is within the 100 foot boundary. In reality, the true purchase value would be between these two estimates since the first approach vastly overestimates by including large parcels that wouldn't be necessary for construction and the second probably underestimates by assuming that landowners would be willing to sell only that portion of their land which would be needed for the 100 ft. of right-of-way. Of the two, the lower estimate is the more conservative but is probably closer to the final negotiated value of the land acquisition. However, seldom does the final negotiated value end up exactly at the appraised property value.

## Scenario I: Wheeler – Road 3.5

The shortest of the seven alternatives considered is scenario one, connecting directly to the existing rail line north of Wheeler and heading 4.98 miles westward to connect with the existing rail line immediately north of Parker Horn, and continuing another 3.49 miles along the existing track to the Grant County International Airport. The westward path of scenario four is between Wheeler Road and Road 4, by-passing the municipal airport at the south end of the air strip along Wheeler Road (Figure 5).

**Figure 5. Scenario I - Wheeler / Road 3.5**



This scenario also represents the least expensive option for estimated construction costs at \$9.09 million, as provided in Table 2. No rehabilitated track is reconstructed along the abandoned Wheeler – Adrian right-of-way, but instead a new line of track is constructed at \$1.3 million per mile for the 4.98 miles to the north end of Parker Horn.

Then the existing 3.49 miles to the airport is rehabilitated to maintain a consistent weight and load standard for all of scenario one. However, this scenario will require the construction of a bridge<sup>4</sup> at the north end of Parker Horn, increasing the projected construction cost beyond that presented here.

<sup>4</sup> Conversations with industry leaders reveal an estimated bridge construction cost range between \$3 and \$4 million. Actual cost estimates are not possible until the design and final length of the fill versus bridge length are determined.

**Table 2. Summary of Investment Costs and Impacts of Scenario I.**

<b>Criteria</b>	<b>Rehabilitation Costs</b>			<b>New Rail Line Costs</b>			<b>Total Construction Costs (\$million)</b>
	<b>Distance (miles)</b>	<b>\$/Mile</b>	<b>Total (\$million)</b>	<b>Distance (miles)</b>	<b>\$/Mile (\$million)</b>	<b>Total (\$million)</b>	
<b>Construction Costs</b>	3.49	\$750,000	\$2.62	4.98	\$1.3	\$6.47	\$9.09
	<b>Purchase Entire Parcel</b>					<b>Only Purchase 100 ft. Right-of-Way</b>	
	<b># of Parcels</b>	<b>Estimated Value</b>	<b>Acres</b>	<b>% Unimproved</b>	<b>% Improved</b>	<b>Estimated Value</b>	<b>Acres</b>
<b>Purchase of Right-of-way</b>	32	4,556,745	1,198	19%	81%	391,235	53
<b>Number of Roads Crossed</b>	4						
<b>Future Growth / Expansion Ranking</b>	Ranked lowest of the eight due to the fact that this scenario slices through an area with significant development and does not contribute toward extending or rehabilitating the abandoned Wheeler-Adrian rail line.						

This option would cross only thirty-two land parcels between Wheeler and the connection above Parker Horn, the fewest of all alternatives. The value of those thirty-two parcels is likewise considerably less than any other option, primarily due to the limited number of parcels impacted.

The total appraised value of all thirty-six land parcels is \$4.5 million, representing 1,198 acres. Eighty-one percent of this acreage is improved, the highest percentage of any alternative by a wide margin. However, if only that portion of each parcel which crosses the 100 ft. right-of-way is purchased, the investment required for purchase of the right-of-way drops to \$397,235, comprising 53 acres. Given the high proportion of improved land this scenario will likely be difficult to negotiate for purchase, purchase of the proposed right-of-way.

Scenario one also represents the least impact upon community traffic with only four road crossings, including Road N, Road L, Bell Road and the Broadway Extension. Also, there is minimal residential development along the proposed route of scenario one, making this alternative less intrusive to local community interests.

## **Scenario II: Wheeler – Road 6.5**

The second scenario follows a slightly different path than scenario one, extending north from Wheeler along the abandoned BNSF right-of-way until Road 6.5 where it heads west before making a southward “s” curve between Road 7 and Road 6 and continuing west to the industrial park on the southwestern point of the airport (Figure 6). This alternative presents several attractive features associated with cost of construction and right-of-way purchase. This alternative offers the second shortest distance to the port property, a total of 8.55 miles (3.12 miles on abandoned BNSF line, 5.43 on new line) for a total construction cost of \$9.4 million, as provided in Table 3. This option is \$.31 million more than scenario two, due directly to the greater distance.



Figure 6. Scenario II - Wheeler / Road 6.5

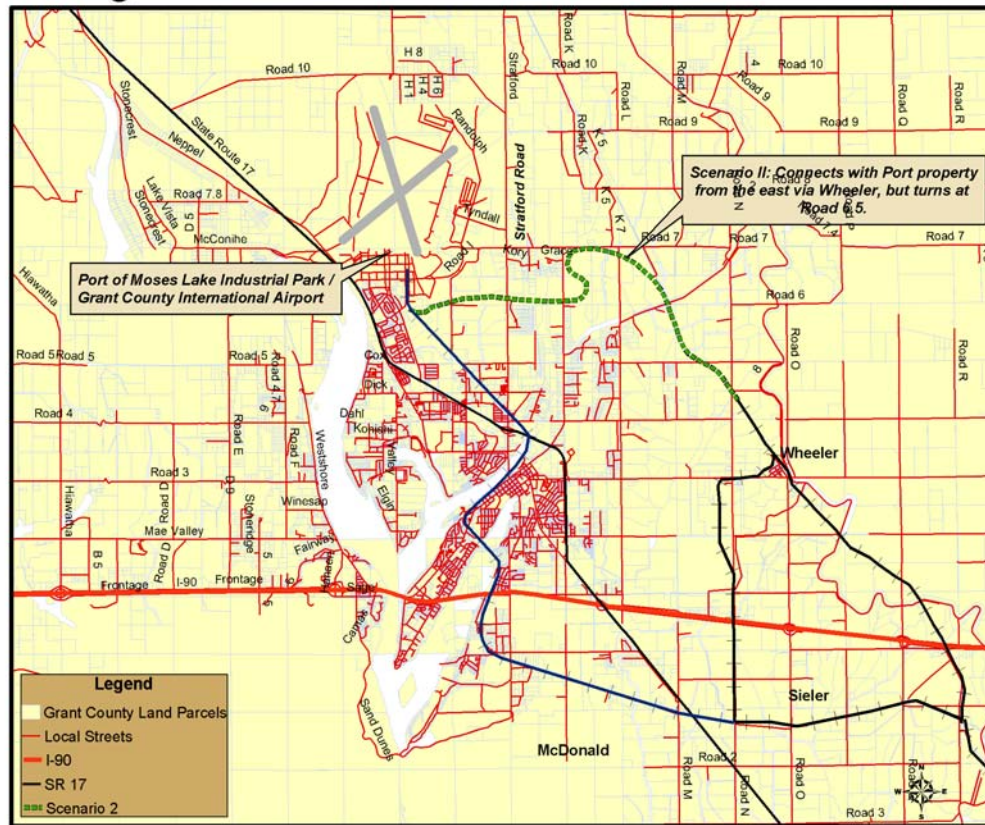


Table 3. Summary of Investment Costs and Impacts of Scenario II.

Criteria	Rehabilitation Costs			New Rail Line Costs			Total Construction Costs (\$million)
	Distance (miles)	\$/Mile	Total (\$million)	Distance (miles)	\$/Mile (\$million)	Total (\$million)	
Construction Costs	3.12	\$750,000	\$2.34	5.43	\$1,300,000	\$7.06	\$9.40
	Purchase Entire Parcel					Only Purchase 100 ft. Right-of-Way	
	# of Parcels	Estimated Value	Acres	% Unimproved	% Improved	Estimated Value	Acres
Purchase of Right-of-way	49	3,811,905	2,787	40%	60%	119,970	99
Number of Roads Crossed	8						
Future Growth / Expansion Ranking	Ranked third lowest of the eight due to the fact that this scenario also moves through an area with significant development and contributes very little toward extending or rehabilitating the abandoned Wheeler-Adrian rail line (3.12 miles).						

However, the most appealing aspect of this option is the lower investment dollars required to purchase the right-of-way, as compared to all other scenarios. A total of 49 parcels are crossed





**Table 4. Summary of Investment Costs and Impacts of Scenario III.**

<b>Criteria</b>	<b>Rehabilitation Costs</b>			<b>New Rail Line Costs</b>			<b>Total Construction Costs (\$million)</b>
	<b>Distance (miles)</b>	<b>\$/Mile</b>	<b>Total (\$million)</b>	<b>Distance (miles)</b>	<b>\$/Mile (\$million)</b>	<b>Total (\$million)</b>	
<b>Construction Costs</b>	6.00	\$750,000	\$4.50	5.79	\$1,300,000	\$7.53	\$12.03
	<b>Purchase Entire Parcel</b>					<b>Only Purchase 100 ft. Right-of-Way</b>	
	<b># of Parcels</b>	<b>Estimated Value</b>	<b>Acres</b>	<b>% Unimproved</b>	<b>% Improved</b>	<b>Estimated Value</b>	<b>Acres</b>
<b>Purchase of Right-of-way</b>	77	6,734,880	4,428	54%	46%	252,031	122
<b>Number of Roads Crossed</b>	13						
<b>Future Growth / Expansion Ranking</b>	Ranks in the middle of all seven options.						

However, purchase of right-of-way may be more difficult given the greater number of land parcels impacted, as compare with the first two scenarios. A total of 77 parcels are crossed with this alternative, 28 more than with the second scenario and 45 more than scenario one, as displayed in Table 4. If all 77 parcels are purchased at their appraised value, the required investment is \$6.73 million for the 4,428 acres. If only those portions of each parcel which intersect the 100 ft. right-of-way are purchased, \$252,031 is required, representing 122 acres of right-of-way.

Scenario three represents significant impact to residential communities and neighborhoods, crossing 13 streets or roads en route to the industrial park. This represents a sizeable impact to the local community and residential neighborhoods.

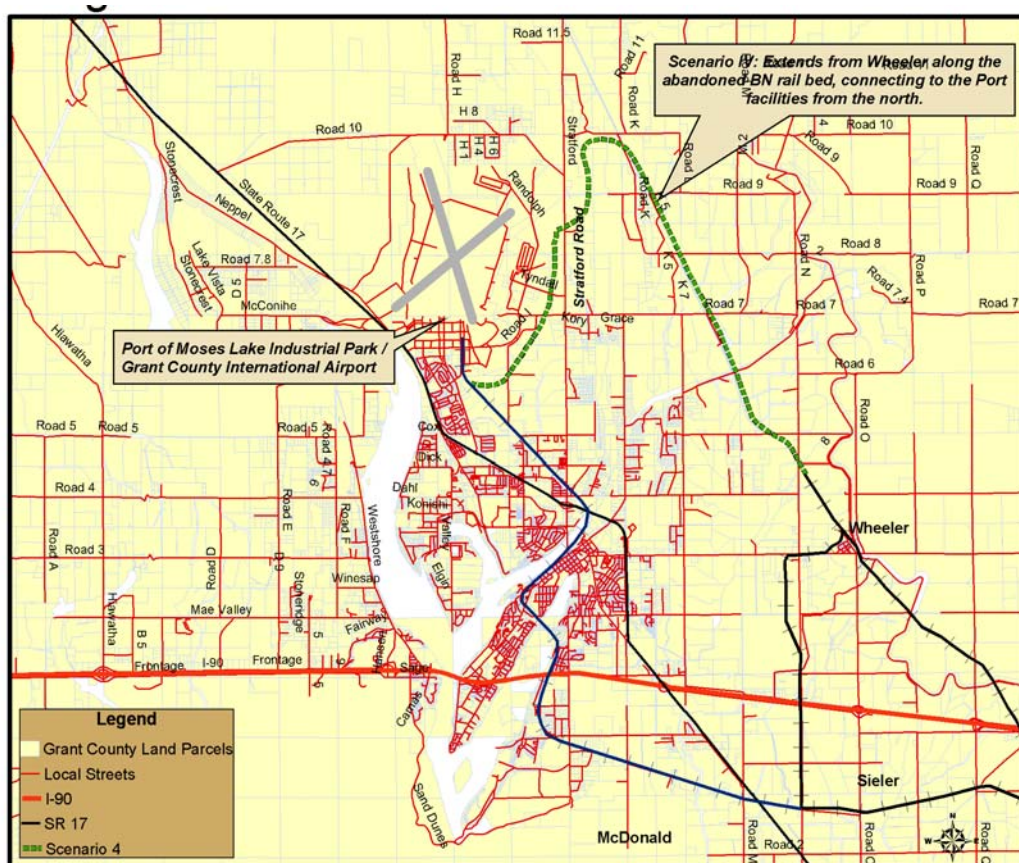
#### **Scenario IV: Wheeler – Road 9.5**

The fourth scenario begins northwest of Wheeler and connects to the Columbia Basin Railroad (CBRR) rail line north of Road 4 and to the east of Road N, as illustrated in Figure 8. This point also represents the beginning of the abandoned BNSF rail corridor moving northwest from Wheeler to Adrian. Scenario IV follows this abandoned right-of-way northwest until just south of Road 10 where it turns west and then due south before crossing Stratford Road and continuing south to the port property at the south-eastern edge of the Grant County International Airport.

In terms of planning for long run capacity, this scenario offers several advantages. First, it avoids much of the residential expansion west of the abandoned Wheeler-Adrian right-of-way and between Wheeler road and Road 7. Rail construction costs for the abandoned Wheeler-Adrian right-of-way would be considerably less per mile than a new line, given that most of the old rail bed is still intact and extending this portion of the abandoned line would increase likelihood of reconnecting with Adrian at some point in the future. Also, given that land-use this far north of the city is primarily agricultural based or unimproved land parcels, it will likely be

less expensive and contentious to acquire right-of-way as opposed to any scenarios that extends through the more developed areas west of Wheeler along Roads three, four or five.

**Figure 8. Scenario IV - Wheeler / Road 9.5**



Estimated construction costs along the abandoned BNSF right-of-way total \$5.24 million (6.98 miles at \$750,000 per mile) and \$7.93 million (6.1 miles at \$1.3 million per mile) for the new line portion from Road 9.5 to the port property for a total of \$13.17 million, as provided in Table 5. This places scenario four in the middle of the construction costs scale for all scenarios, with three of the remaining scenarios being more expensive and the three prior scenarios costing less.

Scenario four intersects 87 parcels along the 13.08 miles of proposed construction, as presented in Table 5. If every parcel is purchased at the current appraised value, the total investment cost is \$6.59 million, representing 4,453 acres. Almost half of these land parcels (46%) are classified as “improved”, indicating some degree of improvement or building has occurred on the land. If instead only the portion of the right-of-way which crosses each parcel is purchased, the investment cost drops to \$287,455 representing 140 acres.

**Table 5. Summary of Investment Costs and Impacts of Scenario IV.**

<b>Criteria</b>	<b>Rehabilitation Costs</b>			<b>New Rail Line Costs</b>			<b>Total Construction Costs (\$million)</b>
	<b>Distance (miles)</b>	<b>\$/Mile</b>	<b>Total (\$million)</b>	<b>Distance (miles)</b>	<b>\$/Mile (\$million)</b>	<b>Total (\$million)</b>	
<b>Construction Costs</b>	6.98	\$750,000	\$5.24	6.10	\$1,300,000	\$7.93	\$13.17
	<b>Purchase Entire Parcel</b>					<b>Only Purchase 100 ft. Right-of-Way</b>	
	<b># of Parcels</b>	<b>Estimated Value</b>	<b>Acres</b>	<b>% Unimproved</b>	<b>% Improved</b>	<b>Estimated Value</b>	<b>Acres</b>
<b>Purchase of Right-of-way</b>	87	6,592,695	4,453	54%	46%	287,455	140
<b>Number of Roads Crossed</b>	13						
<b>Future Growth / Expansion Ranking</b>	Ranks third best of all seven options, primarily due to the avoidance of the residential growth areas and the large proportion of reconstruction of the abandoned BNSF rail line.						

Even though this alternative by-passes much of the residential development in north central Moses Lake, there are 13 street or crossings along the proposed route, creating a significant impact on local residents.

### **Scenario V: Wheeler – Gloyd**

The fifth scenario maintains rail access to the Port of Moses Lake industrial property from the north via Gloyd, as illustrated in Figure 9.

This proposed route extends north from Wheeler along the abandoned BNSF right-of-way for 8.9 miles until making a southward turn at Gloyd and continuing for another 7.63 miles and connecting to the industrial property from the north. Rehabilitation of the .66 miles of track after connecting with the existing rail is included in this estimate, bringing the total rehabilitated track to 9.56 miles.

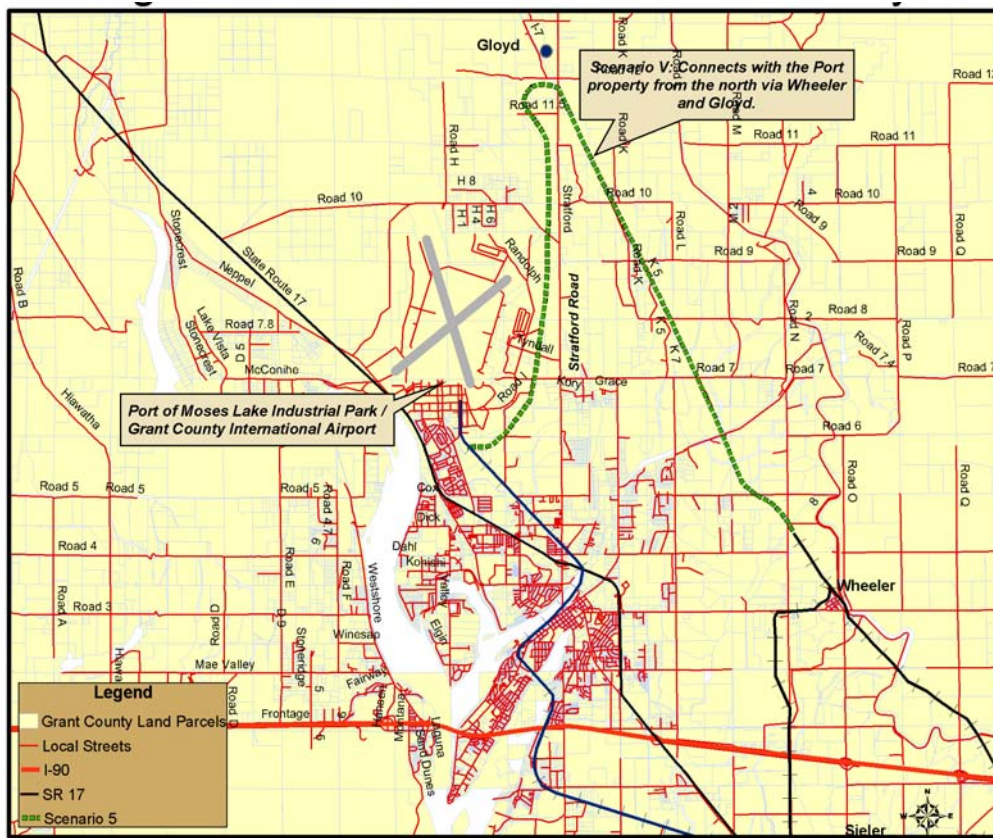
Estimated construction costs total \$17.09 million for scenario five, with \$7.17 million assigned to rehabilitation and \$7.63 million for the remainder from Gloyd to the industrial park, as provided in Table 6. This represents the third highest estimated construction cost across all seven scenarios, behind scenario seven and six.

Purchase of the right-of-way would require negotiation over 101 parcels that would be impacted along this proposed route. Assuming all 101 parcels are purchased without division, the required investment is \$8.7 million for all 5,705 acres. This represents the highest required investment for the right-of-way, primarily due to the large number of parcels which are crossed.

Assuming only that portion of each parcel necessary to construct the 100 ft. right-of-way is purchased the required investment is estimated at \$312,042 for 191 acres.



**Figure 9. Scenario V - Wheeler / Gloyd**



**Table 6. Summary of Investment Costs and Impacts of Scenario V.**

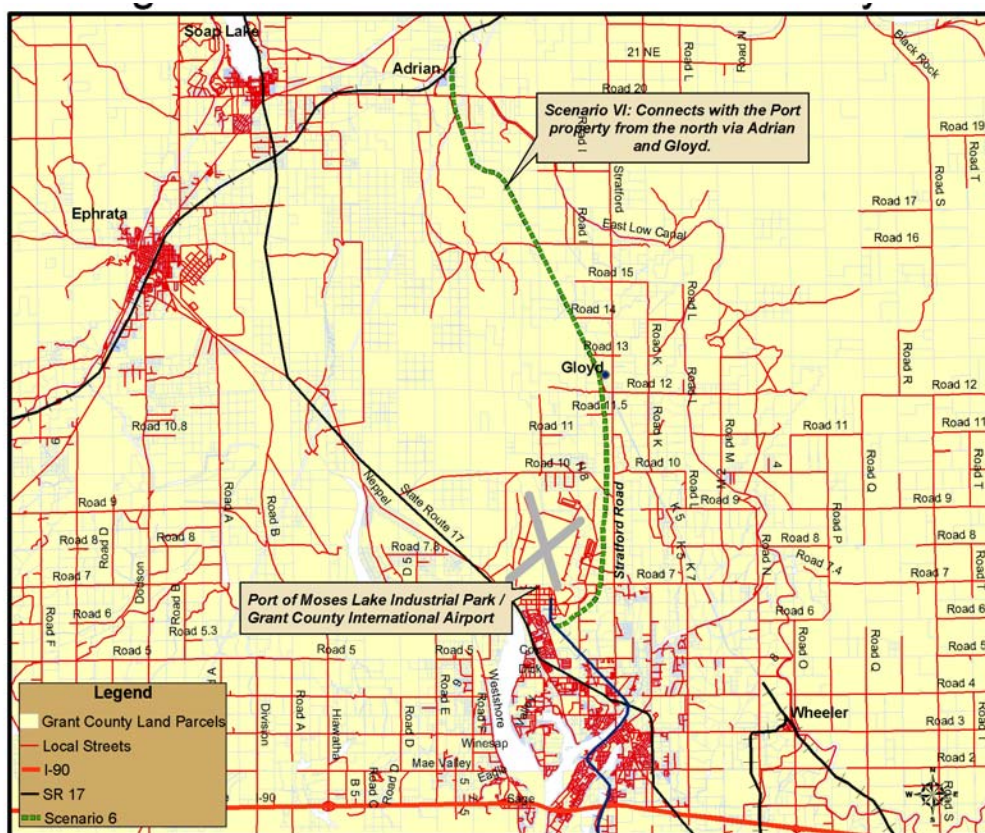
Criteria	Rehabilitation Costs			New Rail Line Costs			Total Construction Costs (\$million)
	Distance (miles)	\$/Mile	Total (\$million)	Distance (miles)	\$/Mile (\$million)	Total (\$million)	
Construction Costs	9.56	\$750,000	\$7.17	7.63	\$1,300,000	\$9.92	\$17.09
	Purchase Entire Parcel					Only Purchase 100 ft. Right-of-Way	
	# of Parcels	Estimated Value	Acres	% Unimproved	% Improved	Estimated Value	Acres
Purchase of Right-of-way	101	8,763,460	5,705	55%	45%	312,042	191
Number of Roads Crossed	13						
Future Growth / Expansion Ranking	Ranks second best of all seven options, primarily due to the avoidance of the residential growth areas and the larger proportion of reconstruction of the abandoned BNSF rail line.						

Comparable to scenarios three and four, scenario five intersects 13 roads throughout the proposed route, adding a substantial obstacle.

## Scenario VI: Adrian – Gloyd

The final two scenarios, six and seven, both connect the port property to the railroad mainline to the north (main line rail which runs between Ephrata, Soap Lake and Adrian area), but do not connect with the BNSF lines to the south at Wheeler or beyond. Scenario six begins at Adrian and continues southeast along the abandoned BNSF right-of-way for 9.54 miles until Gloyd is reached, where it turns due south for another 7.48 miles to the Port of Moses Lake industrial park (Figure 10).

**Figure 10. Scenario VI - Adrian / Gloyd**



The total estimated construction costs for this scenario is \$17.37 million, divided between the Adrian-Gloyd portion (\$7.16 million) and the Gloyd to industrial park segment (\$9.72 million), and rehabilitation of the rail track near the airport where the new line connects (\$490,000) as presented in Table 2. This scenario is the second highest construction cost estimate, behind scenario seven, both representing the greatest distance across all scenarios.

This scenario also crosses the greatest number of land parcels of any alternative with 120 parcels accounting for 7,310 acres. Eighty-four percent of this acreage is unimproved land, as indicated in Table 3. Purchasing all land parcels at the current appraised value would require \$6.3 million, whereas purchasing only the 100 ft. right-of-way from each parcel would require \$174,825 for the 217 acres.

Scenario six would require eight road crossings between Adrian and the industrial park, placing this alternative in the middle of other scenarios for number of road crossings. However, this alternative would be one of the least intrusive options in terms of community or residential impacts, since the proposed route avoids any residential neighborhoods or current developments.

**Table 7. Summary of Investment Costs and Impacts of Scenario VI.**

<b>Criteria</b>	<b>Rehabilitation Costs</b>			<b>New Rail Line Costs</b>			<b>Total Construction Costs (\$million)</b>
	<b>Distance (miles)</b>	<b>\$/Mile</b>	<b>Total (\$million)</b>	<b>Distance (miles)</b>	<b>\$/Mile (\$million)</b>	<b>Total (\$million)</b>	
<b>Construction Costs</b>	10.20	\$750,000	\$7.65	7.48	\$1,300,000	\$9.72	\$17.37
	<b>Purchase Entire Parcel</b>					<b>Only Purchase 100 ft. Right-of-Way</b>	
	<b># of Parcels</b>	<b>Estimated Value</b>	<b>Acres</b>	<b>% Unimproved</b>	<b>% Improved</b>	<b>Estimated Value</b>	<b>Acres</b>
<b>Purchase of Right-of-way</b>	120	6,331,430	7,310	84%	16%	174,825	217
<b>Number of Roads Crossed</b>	8						
<b>Future Growth / Expansion Ranking</b>	Ranks best of all seven options due to the avoidance of the residential growth areas and the largest proportion of reconstruction of the abandoned BNSF rail line.						

## Scenario VII: Soap Lake – Cross Country

The remaining scenario for maintaining rail access to the Port of Moses Lake industrial park does not utilize any segment of the abandoned rail right-of-way between Adrian and Wheeler, but rather connects to the railroad mainline near Soap Lake directly over a cross-country route. The proposed route for scenario seven is to connect to the mainline rail just south of Soap Lake, and then heads due southeast to the northern point of the Grant County Airport, before turning south to the industrial park at the southeastern point of the airport property. This alternative represents the greatest distance in miles, 17.38 miles of new construction and .66 miles of rehabilitation of the existing track near the airport for a total estimated construction cost of \$23.05 million, provided in Table 8. Likewise, this alternative is the most costly of all scenarios.

While this option represents the greatest distance, there are only 74 parcels impacted along the proposed route, mostly due to the undeveloped nature of the geography between Moses Lake and Soap Lake. These 74 land parcels are valued at \$6.27 million, representing 9,486 acres, the largest acreage of the seven alternatives. This acreage also exhibits the lowest proportion of improved land with over 90% of the land being unimproved acreage. The value of only the 100 ft. right-of-way for this scenario is \$191,851 on 220 acres.

Six roads are crossed with this scenario, the second fewest of all scenarios behind scenario one with only four road crossings. This option should also present the least safety and convenience impact upon residential and development interests, given that no residential activity is occurring

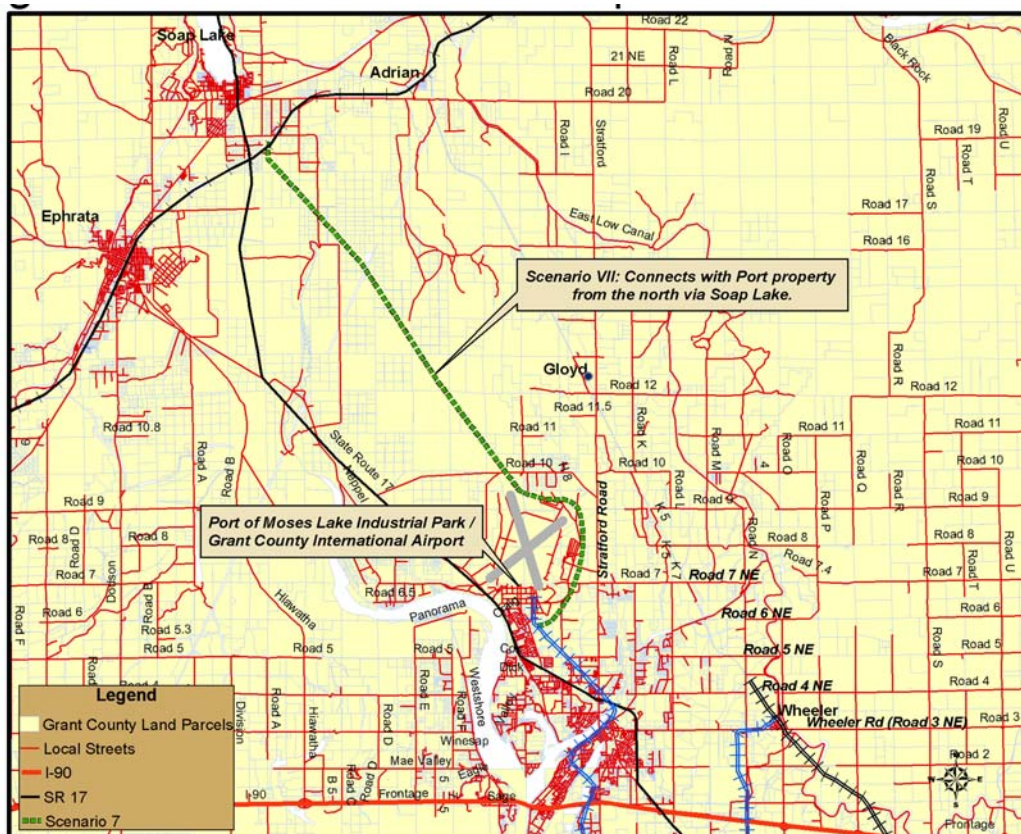


northeast of the Grant County International Airport to Soap Lake. However, both scenarios six and seven limit the operational efficiency of the railroad for southward shipments into and out of Wheeler, since no connection to Wheeler is made.

**Table 8. Summary of Investment Costs and Impacts of Scenario VII.**

Criteria	Rehabilitation Costs			New Rail Line Costs			Total Construction Costs (\$million)
	Distance (miles)	\$/Mile	Total (\$million)	Distance (miles)	\$/Mile (\$million)	Total (\$million)	
<b>Construction Costs</b>	.66	\$750,000	\$.459	17.38	\$1,300,000	\$22.59	\$23.05
	Purchase Entire Parcel					Only Purchase 100 ft. Right-of-Way	
	# of Parcels	Estimated Value	Acres	% Unimproved	% Improved	Estimated Value	Acres
<b>Purchase of Right-of-way</b>	74	6,271,065	9,486	91%	9%	191,851	220
<b>Number of Roads Crossed</b>	6						
<b>Future Growth / Expansion Ranking</b>	Ranks second to last of all seven options primarily due to zero reconstruction of the abandoned BNSF rail line.						

**Figure 11. Scenario VII - Soap Lake / Cross-Country**





## Summary

There is no clear and obvious choice for selecting a scenario that excels in all dimensions and criteria. Each alternative has varying degrees of positive and negative attributes, depending upon the criteria which are used. A summary of these rankings for each scenario across different evaluative criteria is provided in Tables 9, 10, 11 and 12.

Depending on which criteria is most important in the decision making process, different scenarios appear more or less appealing. If minimizing expected construction cost is the most important criteria, then scenario one is the obvious choice, followed by scenario two and three. The ranking on construction costs is primarily a function of distance, and scenario one only requires 4.98 miles of new rail line construction and 3.49 miles of rehabilitation. However, if we also consider the cost of purchasing the right-of-way, scenario two suddenly moves to the top of the ranking, as the least expensive alternative.

**Table 9. Rail Line Construction Costs for Each Scenario.**

<b>Scenario</b>	<b>Rehabilitation Portion</b>			<b>New Line Portion</b>			<b>Total</b>
	<b>Distance (miles)</b>	<b>\$/Mile</b>	<b>Total (\$million)</b>	<b>Distance (miles)</b>	<b>Cost/Mile</b>	<b>Total (\$million)</b>	<b>Total Cost (\$ million)</b>
<b>1</b>	3.49	\$750,000	\$2.62	4.98	\$1,300,000	\$6.47	\$9.09
<b>2</b>	3.12	\$750,000	\$2.34	5.43	\$1,300,000	\$7.06	\$9.40
<b>3</b>	6.00	\$750,000	\$4.50	5.79	\$1,300,000	\$7.53	\$12.03
<b>4</b>	6.98	\$750,000	\$5.24	6.10	\$1,300,000	\$7.93	\$13.17
<b>5</b>	9.56	\$750,000	\$7.17	7.63	\$1,300,000	\$9.92	\$17.09
<b>6</b>	10.20	\$750,000	\$7.65	7.48	\$1,300,000	\$9.72	\$17.37
<b>7</b>	.66	\$750,000	\$.459	17.38	\$1,300,000	\$22.59	\$23.05

**Table 10. Number of Parcels, Acreage, Appraised Value for Each Scenario.**

<b>Scenario</b>	<b># of Parcels</b>	<b>Purchase Entire Parcel</b>				<b>Purchase 100 ft. Right-of-Way Only</b>	
		<b>Appraised Value</b>	<b>Acreage</b>	<b>% Un-Improved Acres</b>	<b>% Improved Acres</b>	<b>Appraised Value</b>	<b>Acreage</b>
<b>1</b>	32	4,556,745	1,198	19%	81%	391,235	53
<b>2</b>	49	3,811,905	2,787	40%	60%	119,970	99
<b>3</b>	77	6,734,880	4,428	54%	46%	252,031	122
<b>4</b>	87	6,592,695	4,453	54%	46%	287,455	140
<b>5</b>	101	8,763,460	5,705	55%	45%	312,042	191
<b>6</b>	120	6,331,430	7,310	84%	16%	174,825	217
<b>7</b>	74	6,271,065	9,486	91%	9%	191,851	220

**Table 11. Roads Impacted from Each Scenario.**

	<b>Scenario</b>						
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>Highways / Streets Crossed with Each Scenario</b>	Road N	Road N	Road N	Road N	Road N	Road 20	Road 18.5
	Road L	Road 4.5	Road 4.5	Road 4.5	Road 4.5	Road 16	Road 10
	Bell Rd.	Road 5	Road 5	Road 5	Road 5	Road 12	Walker Rd.
	Broadway Ext.	Road 5.6	Road 5.6	Road 5.6	Road 5.6	Road 11.5	Tyndall Rd.
		Road L	Road 7	Road 7	Road 7	Road 10	Road 7
		Road K	Road 8	Road 8	Road 8	Tyndall Rd.	Road I
		Stratford Rd.	Road K-5	Road K-5	Road 9	Road 7	
		Road I	Road K-3	Road 9	Road 10	Road I	
			Road K	Road K	Stratford Rd.		
			Stratford Rd.	Stratford Rd.	Road 10		
			Tyndall Rd.	Tyndall Rd.	Tyndall Rd.		
			Road 7	Road 7	Road 7		
			Road I	Road I	Road I		
<b>Total Number of Streets/Roads</b>	<b>4</b>	<b>8</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>8</b>	<b>6</b>
Note: Abandonment of rail line from McDonald to the Grant County International Airport would result in elimination of 19 at-grade or graded road crossings.							

**Table 12. Ranking of All Scenarios Across Different Evaluative Criteria**

	<b>Scenario Ranking</b>						
	<b><i>Least Preferred</i>.....<i>Most Preferred</i></b>						
<b>Rail Construction Costs</b>	<b><i>Highest Cost</i>.....<i>Least Cost</i></b>						
Scenario	7	6	5	4	3	2	1
<b>Right-of-Way Purchase</b>	<b><i>Highest Cost</i>.....<i>Least Cost</i></b>						
Scenario	5	3	4	6	7	1	2
<b>Combined Construction Cost &amp; Right-of-way Purchase</b>	<b><i>Highest Cost</i>.....<i>Least Cost</i></b>						
Scenario	5	3	4	6	7	1	2
<b>Community Impact / Safety</b>	<b><i>Large Number Road Crossings</i>.....<i>Small Number Road Crossings</i></b>						
Scenario	4	3	5	2	6	7	1
<b>Economic Growth / Potential</b>	<b><i>Least Likely Movement Toward Connecting Adrian-Wheeler</i>.....<i>Most Likely Movement Toward Connecting Adrian-Wheeler</i></b>						
Scenario	1	7	2	3	4	5	6

If minimizing the impact to local residents and communities is the primary objective, then scenario one leads the rankings followed by scenarios seven and six. This is primarily due to the minimal number of roads that would be crossed with each of these scenarios, leading to reduced opportunities for accidents (safety) and traffic blockage (convenience) during periods of rail shipments. Also, each of these scenarios avoids the residential growth areas, especially scenarios six and seven which approach the industrial park from the north. The scenarios leading to the

greatest community impact are scenarios four, three and five with each requiring thirteen road crossings.

The option which leads to the greatest likelihood of future industrial and economic growth from new businesses and companies locating in the Port of Moses Lake is scenario six, followed by scenario five and four. The determining factor for this ranking is the degree to which the abandoned Wheeler-Adrian rail line is reconstructed and scenario six re-establishes the largest portion of this abandoned rail corridor. Reconnecting this north-south corridor would improve operational efficiency of the railroads servicing the Port of Moses Lake area and increase the freight shipping attractiveness to prospective business.

One alternative, that combines portions of scenario five and six, would allow complete restoration of the abandoned Wheeler-Adrian line in addition to access to the Grant County International Airport. This option (which could be viewed as the eighth scenario) would include rehabilitation of line from Wheeler to Gloyd (9.56 miles), Adrian to Gloyd (10.2 miles) and Gloyd to the airport (7.48 miles) at a total construction cost of \$26.54 million. This option would allow the greatest operational flexibility by the short-line railroad operator, with the connection of the northern and southern mainline rail to the west side of the state.

**Table 13. Ranking of All Scenarios Across Different Evaluative Criteria**

	Scenario (Rank of 1 <sup>st</sup> is most preferred.....to 7 <sup>th</sup> as least preferred)						
	1	2	3	4	5	6	7
<b>Rail Construction Costs</b>							
Ranking	1st	2nd	3rd	4th	5th	6th	7 <sup>th</sup>
<b>Right-of-Way Purchase</b>							
Ranking	2 <sup>nd</sup>	1st	6th	5th	7th	4th	3rd
<b>Combined Construction Cost &amp; Right-of-way Purchase</b>							
Ranking	2 <sup>nd</sup>	1st	6th	5th	7th	4th	3rd
<b>Community Impact / Safety</b>							
Ranking	1 <sup>st</sup>	4th	6th	7 <sup>th</sup>	5th	3rd	2nd
<b>Economic Growth / Potential</b>							
Ranking	7th	5th	4th	3rd	2nd	1st	6 <sup>th</sup>

## SR 17 PARTNERSHIP / IMPLICATIONS

One area of interaction between the transportation system and the urban area around Moses Lake involves the proposed reconstruction of SR 17, from Pioneer Way to Stratford Road. This project offers the possibility of a partnership and creation of mutual benefits to the State and Moses Lake.

## **Situation**

Under this project, a three mile segment of SR 17 will be expanded from two to four lanes. It is currently the only two-lane segment between I-90 and the Grant County International Airport. It is expected that this project will reduce shipping time and improve access for freight, while also generating a less congested and safer highway for all passenger cars and trucks.

Expanding this segment of SR 17 to four lanes, according to WSDOT web site information, was recommended in a 1997 study. The project will cross major intersections at Nelson Road, Wheeler Road and Broadway Avenue in Moses Lake, as well as the railroad crossing near Stratford Road. A new bridge will also be constructed across Parker Horn of Moses Lake.

Improving freight mobility is critical because there are 900 acres of industrial property and over 2,000 acres located at the airport three miles north of the project and 350 additional acres of industrial property located just east of the project in the Wheeler Industrial Corridor. Such property availability portends continued economic growth in the area.

## **Benefits**

Benefits are available from both the SR 17 project and a partnership between the State and the railroad relocation effort. Freight mobility aids access to markets and efficient consolidation of needed parts for assembly. The competitive position of the region, city and airport are enhanced as freight mobility is improved.

The project will also include community enhancement. A noise wall will be constructed between Nelson Road and Wheeler Road. This will help protect about 50 existing and other future homes, a school and a park from existing and increasing highway noise.

The extent of congestion and safety relief is evident. WSDOT, through its computer modeling efforts, has estimated that if this project is not built, traffic congestion will average 4 hours per day with an average afternoon travel speed of 15 mph by 2020. By comparison, if the project is built, there would be no hours of congestion in 2010 and only 1 hour of congestion in 2020, with the average afternoon travel speeds in 2010 and 2020 of 42 and 39 mph, respectively. The current congested hours per day is 3 hours with an average afternoon travel speed of 30 mph.

An opportunity exists to save State dollars that would have to be spent on the railroad crossing and invest those dollars into the partial funding of the railroad relocation activity. The current estimated cost of the SR 17 project is \$14,260,000, with only \$1,660,000 currently funded. The existing funding from the current law budget is being used to purchase right of way over the next year or two.

The crossing and curve straightening near the railroad crossing is estimated to cost \$250,000 to \$300,000. If the railroad was relocated and the crossing wasn't necessary, these saved monies could be reasonably made available to the railroad relocation project. In such a partnership, an at-grade crossing, with attendant congestion and safety improvements, would be eliminated and increased assistance will be available for the relocation effort.

The situation should be monitored since there are no monies identified for this road project at this time; it is not in the recently passed 10 year budget. However, supplemental budgets with project additions and deletions can be expected each year.

## **FUNDING ALTERNATIVES/POSSIBILITIES**

Benefits of transportation improvements accrue to a combination of public and private individuals and entities. Several sources of funds exist that reflect both those public and private interests. These are listed here and discussed briefly below. These sources vary in restrictions as to use of funds, the amount of matching funds from other agencies that are required, whether funds are given as a loan or grant, and are often limited in magnitude. Therefore, the competition for these funds is very intense and a sense of “waiting our turn” is often witnessed as railroad assistance is sought. Potentially available sources include:

- Federal programs based on formula or competitive grants
- State grant and loan programs
- Port purchase and grants
- County purchases and assistance
- State/Local agency Railroad Crossing Improvement Program
- Congressional “earmarks” from Federal Discretionary Funds
- Private railroad firm investment

### **Federal Funding Sources**

#### *Local Rail Freight Assistance Program*

This program provided federal funds to states on a matching basis for both rail planning and project implementation purposes on those lines that fit the eligibility standards.

Line eligibility is based on lines that have been abandoned, lines with discontinued service and lines carrying less than 5 million gross ton-miles per mile (MGTM/M) per year. Minimum standards are that the line has to have transported more than 20 carloads per mile in the previous year, or a contract exists that guarantees at least 40 carloads per mile in each of the first 2 years of operation after completion of the assistance project. Further, a requirement is that implementation of the assistance project will result in a ratio of benefits to costs greater than one.

Under the abandonment criterion, several of the options considered in this proposal utilize lines that appear to qualify under this criterion. Existing rights of way of abandoned lines may have been converted to other uses but reclamation appears feasible. According to the Washington State Department of Transportation, all of the lines under consideration in this study carry less than 5 MGTM/M, thus under this criterion, they would be eligible for consideration for assistance.

Various uses of federal assistance are available depending on the status and condition of the rail line. Funds can be used under the categories of acquisition assistance, rehabilitation and improvement assistance and rail facility construction assistance. Acquisition assistance provides funds for acquisition of a rail line, or other rail property, by purchase, lease, or some other type of control as appropriate for existing or future freight rail service.

Funding in the rehabilitation category is provided to replace or upgrade facilities to the extent necessary to permit adequate and efficient rail freight service. Only those lines transporting less than 5 MGTM/M are eligible for this type of assistance, which includes all the lines under evaluation in this study. These same lines are potentially eligible for construction assistance for rail facilities. New connections between two or more existing lines, intermodal freight terminals, sidings, and relocation of existing lines are eligible for this form of assistance. Again, examination of the various options under consideration in this study indicates many would fall under this category and meet the requirements.

#### *Railroad Rehabilitation and Improvement Financing Program-*

This program was established under the Transportation Equity Act for the 21st Century (TEA-21). Its function is to provide direct loans and guarantees. The funding can be used to 1) acquire, improve or rehabilitate inter-modal or rail equipment or facilities including track, components of track, bridges, yards, buildings and shops, 2) refinance outstanding debt incurred for the purposes just mentioned and 3) develop or establish new inter-modal or railroad facilities. The purposes and prior projects funded under this loan program indicate it would not be easily applicable to the rail relocation decision under consideration in this study.

#### *Transportation Infrastructure Finance and Innovation Act of 1998 (TIFA)-*

Under this program various forms of credit assistance are provided for surface transportation projects of national significance. Again, these credit sources do not seem applicable to the issue at hand.

#### *Railroad/Highway Crossing Program-*

Since 1998 there has been some funding for the State/Local Agency Railroad Crossing Improvement Program. The total level of funding for the program has run about \$4-8 million per year, with the federal funding amount being limited to \$250,000 per crossing improvement. This program is designed to fund safety improvements which may include elimination of grade crossings, to reduce the number of fatalities, injuries and crashes at public grade crossings. Relocation of the rail line under consideration would have the advantage of eliminating an at-

grade crossing across SR 17, so at least preliminarily such a funding source should be investigated.

Some non USDOT funds could be sought from various programs in Economic Development Commission and related sources.

### **State Funding Sources**

Washington State Department of Transportation is the principal public action agency for rail freight in the state. The Freight Rail Program has various goals; several that are relevant for this relocation issue are to “preserve and enhance service on branch lines, promote continued service on light density lines and preserve essential lines threatened with abandonment”.

To achieve these goals, WSDOT has facilitated at least 17 rail acquisition and rehabilitation projects, as identified in their rail plan update. Expenditures totaled \$11.8 million; \$4.6 million came from state-funded accounts, the remainder from federal and local sources.

In 1983, the legislature established the Essential Rail Assistance Account (ERAA). Funds in this account could be loaned to counties, first-class cities, county rail districts and port districts for acquiring, maintaining, and improving branch lines or operating railroad equipment to preserve existing freight rail service.

In 1995 the legislature broadened the focus of the WSDOT Freight Rail Program to include not only the light density lines and rail corridor preservation, but also mainline congestion and port access. Loans and grants are, therefore, made to support light density rail lines, improve rail access to ports and preserve or restore rail corridors and infrastructure. It is apparent that these goals and purposes match nicely the relocation project under examination in this study.

WSDOT can provide loans for essential rail projects (including locomotives and rolling stock) on private property or grants and loans for essential rail projects on public property. Examples of projects that WSDOT has funded in the earlier efforts are provided here to indicate those types of projects that meet WSDOT and the State’s criteria and were competitively successful. Some of those are:

- Grays Harbor Loop Track, where the Port of Grays Harbor received a \$2 million grant to construct the desired 7,200-foot loop.
- Meeker to McMillan, Puyallup area, where Pierce County received a loan for general track rehabilitation, rail siding construction and acquisition of a locomotive and battery, after purchasing of the right of way by the county.
- Rehabilitating 53 miles of line from Frederickson to Morton, where the existing short line received a grant from WSDOT to rehabilitate the line.

- Rail line Extension to Yakama Nation Sawmill, where the WSDOT aided in the purchase of a locomotive, and rehabilitation of the line’s track and bridges, including a spur track into a new mill site.
- Rehabilitation of Light Density Lines in Lincoln and Whitman Counties, where a loan from WSDOT supported drainage work, replacement of over 14,000 defective railroad ties and addition of over 29,000 tons of crushed rock to stabilize the road bed.
- Port of Olympia, where increases in railroad track capacity were needed.
- Palouse River and Coulee City Line, where a loan was provided to recover from the deferred maintenance of the BNSF prior to its sale.
- Lewis & Clark Railway Acquisition/Rehabilitation, where Clark County used monies from WSDOT to repair flood damage on a recently acquired line from the BNSF.
- Port of Whitman County, where loans helped acquisition of two locomotives and funding of maintenance-of-way equipment to be leased by the Port to the Blue Mountain Railroad, a portion of the Palouse River and Coulee City Railroad.

The Department of Commerce, Trade and Economic Department in the State also sometimes has some limited funds for projects related to the benefits identified in this report.

### **Port Purchases and Grants**

The primary purpose of a port district, according to the Washington Ports Association, is to promote economic development, using legislative broad authority to achieve that development by building and/or operating airports, railroads, industrial development enterprises and even promoting tourism. As indicated by the projects presented above, various ports have been active in railroad projects.

To undertake those activities ports have available a series of powers provided by the legislature’s RCWs, including:

- Provide facilities for all forms of transfer...such as rail...facilities ...(RCW 53.08.20 and others)
- Levy property taxes, subject to constitutional limitation and buy and sell or build properties to finance district operation (RCW 53.36.020)
- Exercise the right of eminent domain (RCW 53.25.190)
- Make cooperative agreements with other ports, local or state governmental bodies, thereby providing better services at lower costs (RCW 29.34.010)



- Acquire, construct, lease and operate rail services, equipment and facilities inside or outside of the district (RCW 53.08.290)

Thus ports have the right and opportunity to participate in freight rail projects and, depending on the local port decision, may be sources of funding and other economic development support. CERB (Community Economic Revitalization Board) funds from the state could be a source of some initial funding.

### **County Purchases and Grants**

The projects presented above indicate how counties, with their concern for local economic development and economic conditions, have been active in purchase and operation of some short lines. In many cases they have been partners in multiple funding efforts for differing projects.

### **New Potential Federal Opportunities**

Several other alternatives, with varying probabilities of success, are potentially available. The Port of Moses Lake has submitted an earmark application to TEA-3 (Nex-Tea) Federal funding through Congressman Doc Hastings for assistance. Phase I request was for support in moving the railroad from Wheeler to Grant County International Airport in the magnitude of \$7 million. Significant to several of the options under consideration in this study is a Port of Moses Lake Phase II request for \$18 million to connect Moses Lake to the BNSF mainline at Adrian (Ephrata). Such funding may have incurred an increase in its potential success due to the current open discussion of Boeing location decisions.

At the Congressional level there is an additional possibility offered by recent proposed federal legislation, referred to currently as the Lott-Kerry amendment, which was approved at the Senate Commerce, with similar legislation being passed by the House Transportation and Industries Committee. The votes were nearly unanimous with bipartisan support. This legislation seeks to move rail lines out of cities and villages and currently is funded at \$350 million a year (80-20 match) over the next four years. WSDOT Rail office personnel suggest there is a good possibility for accessing these funds for this proposal, since the proposed wording favors small projects with large impact.

### **Private Railroad Firm Investment**

The most obvious source of investment funds for such projects comes from those who gain from the project. Private railroads commonly work with the other fund providers in putting together a package that achieves both private and public goals. These packages increase the competitiveness of the grant and funding requests.