Washington State Short Line Rail Inventory and Needs Assessment

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WASHINGTON STATE SHORT LINE RAIL INVENTORY AND NEEDS ASSESSMENT

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16. ABSTRACT:

The recently completed State Rail Plan for the state of Washington identified several key issues facing the state's rail system. Among these key issues are abandonment, port access and competitive needs of the ports and local production regions, as well as intermodal connectivity. Nearly 2000 miles of rail line had been abandoned in Washington State before the late 1990's, and another 70 have been abandoned since. Many of these miles included were a result of the Class I railroads stepping away from their less profitable lines. These same actions by the Class I railroads also generated opportunity for the creation of many of the state's short-line railroads on branch and light density lines. The rail system grew smaller during the 1980s and 1990s, and many of the state short lines were not upgraded to meet the standards and conditions required for modern freight rail load limits (286,000 pounds per car). Further investment is needed should the state or owner seek new or improved operations. This study found that more than 55 percent (740 miles) of all short line miles within Washington are not able to efficiently handle 286,000 pound rail cars. Overcoming this deficiency and bringing the state's short line system to Class II operating status could require infrastructure investments of approximately $610 million. This need exceeds the current funding support offered by the state, even if considered over a 20 year horizon with private industry and/or local jurisdictions providing significant match. Three short line case studies in this report help identify the societal benefits associated with a functioning short line system within the state's dynamic transportation network. These case studies, along with information about the attributes that contribute to the success or failure of investments in load centers, illustrate the benefits of state investment in the short line railroad system.

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Introduction

The Washington State Short Line Rail Inventory and Needs Assessment study provides a framework for a data-based evaluation of the condition and capital needs of the entire short line rail system within the state. The Washington State Legislature in ESSB 6001 Section 222 directed the Washington State Department of Transportation (WSDOT) to provide a report assessing the current conditions and needs of the short line railroads by June 30, 2015.

This study was a collaborative effort between WSDOT and researchers with the Freight Policy Transportation Institute (FPTI) at Washington State University (WSU). The research team is very appreciative of the input and advice and feedback from a group of expert reviewers composed of short line operators, owners and rail-dependent industry representatives.

Washington State Short Line System

Short line railroads are those lines that fall below regional railroad classification, are at least 350 miles and/or have revenue above $37 million but less than Class I standards, as well as all switching and terminal railroads. Washington State has nearly 1,400 miles of short lines, in both private and public sector ownership.

The configuration of the short line system in Washington and throughout the nation is largely a result of the 1980 Staggers Act that deregulated the railroad industry and allowed the Class I railroads [Burlington Northern-Santa Fe (BNSF) and Union Pacific (UP) in Washington] more freedom to take on cost reduction strategies. A major component of these strategies was the sale or lease of line segments that were of low or no profit to the railroads. These sales and leases lead to the creation of just over 450 short line railroads throughout the country. Twenty-two such lines remain in Washington today. These 22 lines serve a multitude of functions throughout the state. They often serve as first and last mile segments of longer rail transports, making them a vital component of the economic wellbeing of the regional economies in which they operate. In 2011, short lines were involved in 28 percent of all rail shipments nationwide.

The 2014 'Washington State Rail Plan' and 'Washington State Freight Mobility System Plan' identified important issues facing the state's short line rail system. Key among them is the lack of historic investment to adequately maintain and improve the system. The lack of recent investment is compounded by over twenty years of inattention to maintenance needs when the lines were owned by the Class I railroads. Recognizing that quantifying the scope of these investment needs is a critical component of maintaining a viable system, the Legislature directed WSDOT to inventory and assess the magnitude of short line infrastructure lagging behind current industry standards for efficient operations.

Responding to the legislative request, this report provides:

1. A high-level inventory of existing infrastructure conditions on short line railroads in Washington;
2. Detailed preliminary estimate of the total investment needed to bring the system up to modern industry standards;
3. Case studies highlighting the role short line railroads and regional transload centers play within the state's regional economies;
4. Review of funding strategies employed by other states to support short line rail roads.

Inventory of Current Conditions

There are two significant railroad industry trends facing the short line system, and they are largely driven by the efficiency needs of the Class I rail lines. First, the industry standard has moved towards use of 286,000 pound railcars over that of smaller 263,000-pound cars. The larger railcars reduce capital, fuel and other costs to railroads and generate economic savings. To maintain compatibility with the Class I lines, many short lines must be upgraded to handle the larger cars. This capability comes from a combination of rail, tie, and ballast quality in addition to bridge structural sufficiency. Failing to meet the mainline railroads' heavier 286,000 pound rail car standard will make portions of the state's short line system obsolete and unavailable to the state's shippers and citizens.

Dated Infrastructure

Many line miles in the state are attempting to get by with "19th century railroad infrastructure to respond to 21st century industry demands."

- Short line study survey respondent

Second, Class I rail lines have made important productivity gains from economies of size in the operation of unit trains, 110 or more cars, as well as shuttle trains of 50 cars or more. These gains have resulted in shuttle or unit trains comprising a majority of rail movements for many agricultural and other products. In order to receive competitive rates, the mainline railroads require shippers and/or the short lines they use to increase loading capacity in their transload and storage facilities, or add more siding to build longer trains.

To assess the current conditions and infrastructure needs of the state's short line railroads, researchers at WSU, working with WSDOT, completed in-depth interviews with the short line rail owners and operators who manage 19 of the 22 short lines in the state and found that:

- Much of the existing short line rail system in Washington State does not meet the state's current or future capacity and velocity needs for efficient operations. Productivity and safety of the system suffers from long-deferred maintenance. For example over 55 percent, more than 700 miles, of these short lines' rail road miles are less than 112 pound rail, the recommended weight to efficiently operate 286,000 pound railcars. One quarter of short line miles has a rail weight of 90-pounds or less. 90-pound rail is frequently considered a minimum rail weight that may operate 286,000 pound cars, though at a much slower speed and with increased rate of wear;
- Twelve respondents were prepared to fully articulate their most pressing infrastructure needs to maintain rail operations in the survey. These respondents identified over $140 million in pressing need, of which nearly $76 million directly related to the condition of the rail, ties and ballast.
- Bridges constituted another significant need by the respondents; however, many expressed uncertainty as to the overall need for bridge replacement. This uncertainty is a reflection of new Federal Railroad Administration (FRA) compliance guidelines that must be met by September of 2017. These guidelines will require reporting on the load rating, safe operating weight, and condition of all bridges. At that time a more accurate estimate of bridge rehabilitation or replacement needs will be available throughout the state.

- All but two respondents, one jointly owned by the Class I railroads and the other a publicly owned line, said that their current revenues are not sufficient to fully overcome the backlog of deferred maintenance on their lines.

Needs Assessment

As the future viability of many short lines, or segments of them, is dependent upon their ability to adequately meet the needs of the Class I lines to which they connect, namely 286,000 pound capability, this report assesses need based on the track conditions necessary for such railcars. This study additionally establishes an operational speed goal that meets FRA Class II standards of 25 mph. While this report provides the owners' estimate of the system wide investment needs to bring the short lines up to these standards, further engineering analysis and communication with owners and operators will be necessary to develop capital investment strategies that meet the state's and WSDOT's practical design and least cost planning principles.

This study successfully gathered data on rail conditions for 19 of the 22 lines in the state. Based on this information the overall infrastructure investment need for more than 700 miles is approximately $610,000,000. Breaking the estimates down by public and private lines and by track and bridge components, Table ES-1 displays where the bulk of investment is needed. Despite being just over half of the total short line miles in the state, track needs on publicly owned lines comprise more than two-thirds of the investment needs. While solid data on track conditions was available on 19 of the 22 lines, only 10 short lines were able to quantify needs for the rehabilitation or replacement of bridges. The remaining 12 lines' bridge costs were estimated based on rates found in the reporting lines. As such, bridge cost estimates should be considered a broad estimate.

Table ES-1. Reported Infrastructure Needs on Short Line Miles

	Track	Bridges
Total Identified Need (Publicly Owned)	$429,047,868	$56,414,912
Total Identified Need (Privately Owned)	$102,922,721	$21,838,613
Total Identified Need	$531,970,590	$78,253,525
Grand Total		**$610,224,115**

Study Findings and Conclusions

Washington state law (RCW 47.76) has directed WSDOT to provide grants and loans to improve the short line rail system. The state policies authorizing these programs recognize that the short line system has the potential to generate significant social benefits. The study's analysis of several of these benefits (congestion and roadway damage relief) in three case studies on the Pend Oreille Valley Railroad, the Columbia Basin Railroad, and Tacoma Rail, show that they generate social benefits in excess of $11 million dollars annually. These public benefits are in addition to the significant private costs saved by the industries using the lines, industries that may otherwise lose significant market share if they had to solely rely on more expensive truck movements.

While many short line operators reported satisfaction with the state programs that support short line railroads, the Freight Rail Investment Bank (FRIB) and the Freight Rail Assistance Program (FRAP), several smaller lines said that they are not able to compete for funds on a statewide level with larger lines with larger customer bases. They do not have staff resources to adequately develop the proposals necessary to win the grant awards. Although the program intent is to serve all short lines, the smaller lines are not able to take advantage of the programs.

FRIB – The state loan program used to fund small capital rail projects with at least 20 percent match. There was $5 million for eligible projects in 2013-2015.

FRAP – State grant program that uses legislatively-approved criteria to award rail assistance to public or private short lines. The state provided $2.75 million in grants in 2013-2015.

Opportunities exist to improve upon the state's role in supporting short line rail roads that create and sustain regional economic growth. These opportunities include:

- Expand the funding levels of the state FRIB and FRAP programs so that more eligible projects may be funded. Delays in remedying deferred maintenance increases the overall total cost of necessary improvements. An annual public investment range of $7.6 million to $22.9 million would be required, assuming public support for 25 percent of the

investment needs over a 20 year period. These numbers assume the upgrade of all line miles, thus actual investment may be lower based on the line miles deemed viable for upgrade by further economic and engineering evaluations;

- Provide WSDOT increased flexibility within the programs in the weighting of grant criteria to better meet the needs of owners and operators in a manner consistent with Legislative policy direction;
- Add funds for small planning grants to the FRAP ($200,000 per biennium) that would allow short line owners, operators, and their industry and municipal partners with limited resources to fully evaluate the opportunities and needs on their lines. This will enable the lines to develop stronger and more competitive arguments for grants from FRAP, and local and federal funding sources, thus increasing the impact of the state's support.

In addition to the funding opportunities already present in the state and the recommendation to expand those sources, a review of other state programs revealed several other mechanisms that should be considered for further evaluation and potential implementation in Washington.

- **Rail Transportation Assistance Program (RTAP):** Used in Pennsylvania, the RTAP assists in the development of line items within a capital budget bill for construction projects.
- **Transportation Equity Fund:** Used in Tennessee, a transportation equity fund may be implemented as a separate grant program or as a method to increase the funding availability to programs like FRAP. The equity fund is funded through fuel sales tax paid by aeronautics, railroads, and towboats.
- **Tax Credits:** Though not a direct funding mechanism, multiple states have a variety of tax credit options to provide further incentives for both the lines and firms locating on the lines for economic development in relation to their short line system.
- **Lottery Bond-Based Initiatives:** In line with the program developed in Oregon, *Connect*Oregon, such programs serve to bolster the availability of funds for new programs or to increase the funds available from FRAP.

Finally, the short line owners and operators themselves could be well served by a common state short line industry association that would keep them abreast of the potential for partnerships.

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Introduction

What is the Study's Purpose?

The Washington State Short Line Rail Inventory and Needs Assessment Study provides the first data-based evaluation of the condition and capital needs of the state's entire short-line system (Table 1). The Washington State Legislature directed the Washington State Department of Transportation (WSDOT) to provide a preliminary and final report on the short line railroads in ESSB 6001 Section 222 in 2014: *"$150,000 of the multimodal transportation account—state appropriation is provided solely for the department to develop an inventory of short line rail infrastructure that can be used to support a data-driven approach to identifying system needs. The department shall work with short line rail owners and operators within the state, provide status updates periodically to the joint transportation committee, submit a progress report of its findings to the transportation committees of the legislature and the office of financial management by December 15, 2014, submit a preliminary report of key findings and recommendations to the transportation committees of the legislature and the office of financial management by March 1, 2015, and submit a final report to the transportation committees of the legislature and the office of financial management by June 30, 2015.*" WSDOT presented the initial findings of the study to the Joint Transportation Committee of the Washington State Legislature on December 11, 2014, and submitted a preliminary report with the same information in early 2015[1].

The American Association of Railroads (AAR) classifies short line railroads as those local rail lines that fall below regional railroad classification (at least 350 miles and/or revenue above $37 million but less than Class I standards) as well as all switching and terminal railroads. These short lines frequently serve as the first and last miles of a rail transit.

[1] http://www.wsdot.wa.gov/publications/fulltext/LegReports/ShortlineRailStudyPreliminaryReport.pdf

Table 1. Washington State Short Line Railroads and Line Length (miles).

Publicly Owned	Total Length	Privately Owned	Total Length
Palouse River & Coulee City RR		**Great Northwest RR**	77
Cheney to Coulee City	108	**Columbia Basin RR**	74
Marshall to Idaho State Line	83	**Central Washington RR**	58
Palouse to Idaho State Line	4	**Meeker Southern**	5
Hooper Junction to Colfax	52	**Ballard Terminal**	3
Winona to Thornton	32	**Cascade & Columbia RR**	131
Colfax to Pullman	19	**Puget Sound & Pacific**	108
Tacoma Rail	204	**Kennewick Terminal**	2
Pend Oreille Valley Railroad	61	**Longview Switching Co.**	8
Port of Columbia	38	**Mount Vernon Terminal Railway**	1
Clark County	33	**Columbia & Cowlitz RR**	9
Chehalis Central RR	1	**Kettle Falls International Rail**	124
Royal Slope RR	18		
Yakima Central Railway	22		
Eastside Community Rail	16		
Tri Cities & Olympia RR	31		
Puget Sound & Pacific (US Navy Owned)	25		
Total Public Length		**746**	
Total Private Length		**600**	
Total Short Line Length		**1346**	

The 2014 Washington State Rail Plan identified, via a needs assessment, important issues facing the state's rail system. The key issues facing short line railroads include the lack of investment to maintain and improve the system particularly on low-volume short line rail road segments, the need to access ports and support the competitive needs of the state's ports, and the lack of intermodal connectors to serve freight-dependent industries.

There are 22 short line railroads in Washington State. Three of the branch lines, the Central Washington (CW), Pleasant Valley (PV) Hooper, and the Palouse and Lewiston (P&L), combine to form the state-owned Palouse River and Coulee City (PCC) Railroad. The short lines connect

to the Class I railroads serving the state: BNSF Railway and Union Pacific Railroad as shown in Figure 1.

Short line railroads provide first mile connectivity between rural agricultural and timber/wood products production areas and the main line rail transcontinental networks so that Washington State farmers, manufacturers and other sectors have access to national and global markets. The state's short lines also serve advanced manufacturing sectors in the movement of both raw materials and finished goods. In addition several of the state's deep-water and inland ports rely on short line railroads to transport both state and national exported goods, and bring imports in and keep them moving onto their final destination. The report considers the short line railroads in line with standards set forth by both the American Association of Railroads (AAR) and the federal Surface Transportation Board (STB).

This final report of the Washington State Short Line Inventory and Needs Assessment Study developed new information that may be used to guide policy development and public investment decisions. Highlights of this report are

- High-level inventory of short line railroads in Washington State and their existing infrastructure conditions, with a detailed statewide needs assessment to develop an efficient 286,000 pound capable short line rail system in Washington State. This preliminary estimate is based on track and bridge conditions recorded on each line's track charts and bridge plans, or through interviews with the lines' operators. For any non-reporting lines, the estimates were produced based on publicly available information about the line as well as statewide average rail conditions.
- Definition of 'state of good repair' and existing gaps to state of good repair.
- Three detailed case studies of operating lines and the role they play in their regional economies. The case studies include the manner in which the line competes with, or complements, other modes such as truck or barge, and the likely effects if the line is unable to compete with alternative modes. There will be impacts on regional industries currently using the short line as well as local residents. There are potential roadway

effects should freight rail be restricted or eliminated and more trucks serve the area's industry sectors.

- Additional case studies focused on load centers illustrating the on-the-ground conditions and regional attributes that would favor expansion or development of a new short line rail loading facility.
- Discussion of other states' funding and/or financial incentive programs to maintain and improve short line railroads.
- Programmatic funding options.

Figure 1: Washington State Rail Network

Why are Short Line Railroads in their Current Condition?

The configuration of the current U.S. short line rail system was heavily influenced by the 1980 Staggers Rail Act. The Staggers Act deregulated the railroad industry and allowed Class I railroads to adopt cost reduction strategies through the sale or lease of no- or low-profit, low-density rail lines. This action led to the creation of 227 short line railroads nationwide from 1980 -1989, and an additional 229 in the 1990s.[2] Many of those lines were subsequently leased, purchased, or otherwise obtained by various private or public entities to maintain their operation for the benefit of the local region and industry sectors. Short line railroads are located throughout the state and connect a variety of regional production to the mainline rail system. [3] Even in the 1990s many of these lines were in a state of neglect and in need of significant repair to catch up with the back log of deferred maintenance that had occurred under the mainline railroads' ownership. These Short Line and Regional railroads control 31percent of track miles, nationwide, as of 2012[4].

Short Lines Find a Significant Role Following the Staggers Rail Act

Prior to the passage of the Staggers Rail Act, short line and regional railroads accounted for "1 percent of ton-miles, owned only 4 percent of the track, and employed only 6 percent of the rail industry's labor force."[1] As of 2011, these numbers are 6 percent, about a third, and 10 percent, respectively.

Prior to the passage of the Staggers Rail Act, short line and regional railroads accounted for "1percent of ton-miles, owned only percent of the track, and employed only 6percent of the rail industry's labor force."[5] As of 2011, these numbers are 6 percent, about a third, and 10 percent, respectively. Short lines are vital to the national rail network. In 2012, short lines moved a combined total of 8

[2] Babcock, M.W., and Sanderson, J. 2004. *Should Short line Railroads Upgrade Their Systems to Handle Heavy Axle Load Cars? A Kansas Case Study.*
[3] http://www.wsdot.wa.gov/NR/rdonlyres/AFF740F6-20F2-4C85-8569-F107E5B649D8/0/StateFreightRailPlan.pdf
[4] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 12.
[5] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 12.

million carloads to 12,000 facilities in 49 of the 50 US states.[6] In general, short line railroads serve as the first mile and last mile for their customer's transportation needs. In many instances, rail customers connect to Class I lines through a short line or regional railroad. In 2011short line and regional railroads were involved with 28 percent of all rail shipments in the U.S..[7]

Additionally, short lines are deeply integrated in the communities in which they serve. In 2012, they contributed a total of $900 million dollars in federal, state, and local taxes.[8] However, this is not their only contribution. The Railroad-Shipper Transportation Advisory Council[9] lists a number of areas where investment in rail can produce public benefits:

- Improving the safety of rail operations;
- Avoiding greater capital costs in rural road networks;
- Reducing highway congestion and enhancing highway safety;
- Reducing airborne contaminants;
- Enhancing competitiveness and employment in rural areas;
- Preserving rail segments for current and future passenger/transit use.

Regional railroads, as defined by the Association of American Railroads (AAR), are line-haul railroads operating at least 350 miles of road and/or earning revenue between $37 million and the Class I revenue minimum threshold. The AAR identifies two categories of short line railroads:

- Local railroads are line-haul railroads below the regional criteria.
- Switching & terminal railroads have several defining characteristics, including those that are either jointly owned by two railroads for the purpose of transferring cars between railroads or operate solely within a facility or group of facilities.

[6] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 5.
[7] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 20.
[8] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 6.
[9] Railroad-Shipper Transportation Advisory Council. Washington DC. White Paper III.

All switching and terminal carriers regardless of revenue level are Class III carriers. The Surface Transportation Board (STB) also provides a precise revenue-based definition of categories of U.S. railroads. The STB's accounting regulations group rail carriers into three classes for purposes of accounting and reporting (49 CFR Part 1201 Subpart A):

- Class I: Carriers with annual carrier operating revenues of $467.0 million* or more
- Class II: Carriers with annual carrier operating revenues of less than $467.0 million* but in excess of $37.4 million*
- Class III: Carriers with annual carrier operating revenues of $37.4 million* or less, and all switching and terminal companies regardless of operating revenues.

* These threshold figures are adjusted annually for inflation using the base year of 1991.

The ownership structure of short line railroads in the U.S. and Washington State varies. Nationwide, roughly 50 percent are controlled by holding companies; *Genesee and Wyoming* is the largest such company. Individual private owners, public entities, shipper groups, and Class Is and groups of Class I railroads[10] also own short line railroads.

Modern Requirements for Short Line Railroads

Compounding the need to recover from deferred maintenance, the U.S. industry standard for freight rail cars on the mainline system has moved beyond the use of lighter, 263,000-pound railcars to heavier and more efficient 286,000 pound railcars; some in the industry anticipate a further movement to even larger, 315,000-pound railcars. Many short lines are unable or underequipped to efficiently, sustainably, and safely handle these car sizes at sufficient operating speeds. This standardization continues to put pressure on the short line system, as the main line railroads require them to become 286,000 pound compatible to receive competitive rates. Since the Staggers Act enabled mainline railroads to pursue strategies to increase productivity, there has been a steady migration from 263,000-pound cars capable of carrying 100 tons, to 286,000 pound cars capable of carrying 111 tons. The recent *Summary of Class II and Class III Railroad Capital Needs and Funding Sources* report to Congress by the FRA compared the adoption of 286,000 pound cars to that of the ubiquity of the 53-foot truck trailers on US

[10] AAR, 2014. *Railroad Ten-Year Trends, 2003-2012.*

highways. This movement came on the heels of multiple studies within the rail industry suggesting a reduction in operating costs rendered by the heavier cars. Savings are realized in:

- Capital costs (fewer cars needed to move a fixed volume of traffic)
- Fuel costs (reduced tare weight means an improved ratio of net load to gross weight)
- Crew costs (fewer car trips may permit a reduction in the number of trains operated)
- Locomotive costs (if train net load can be increased within the same gross train weight, there is more revenue for the same locomotive mileage)[11]

286,000 pound cars may reduce operating costs per ton-mile by nine percent compared to 263,000 pound cars.[12] However, in order to make the transition in car weight, a more robust track infrastructure is needed along with capable bridges; this is not currently met by many short lines. As of 2010, only 57 percent of short line miles in the U.S. were capable of carrying 286,000 pound cars.[13] The 286,000 pound transition has left many of those unable to handle the heavier cars at a distinct disadvantage. Incompatible lines face the real threat of an inability to offer competitive rates necessary to prevent use of trucks for the first or last mile of movements that would have previously been performed by the short line railroad. Dependent upon other operating and market characteristics, this may entice entire movement to be conducted by truck, the necessity to truck a short distance then load onto the mainline, or even lose an entire customer market if transport then becomes too expensive. The Upper Great Plains Transportation Institute identified the economic benefits of short line operations, including increased economic development opportunities, as increased local business volume, decreased highway maintenance costs, decreased highway user costs, and decreased shipper costs in a 2002 study[14]. AASHTO notes that the ability to transition to the heavier cars comes at a substantial price tag (average of

[11] ZETA-TECH Associates, 2000. *An Estimation of the Investment in Track and Structures Needed to Handle 129,844 kg (286,000 lb.) Rail Cars on Short Line Railroads.*
[12] Casavant, K., and Tolliver, D. 2001. *Impacts of Heavy Axle Loads on Light Density Lines in the State of Washington.* Report submitted to the Washington State Department of Transportation,
[13] American Short line and Regional Railroad Association, 2012. *Short line Regional Railroad Facts and Figures.*
[14] Bitzan, J., Tolliver, D., Benson, D. 2002. *Small Railroads – Investment Needs, Financial Options, and Public Benefits.* Upper Great Plains Transportation Institute, North Dakota State University.

$92,000 per mile)[15], one often untenable by an individual short line railroad owner.[16] In the absence of an effective short line system, many of these private and social benefits may be foregone.

One of the more prominent consequences of diverting short line rail traffic to truck is damage to roads. The Federal Highway Administrating has sought to estimate road damage cost as a function of truck weight. They estimated that light single-unit trucks (< 25,000 pounds), pay 150 percent of their road use costs while the heaviest tractor-trailer combination trucks (>100,000 pounds), pay only 50 percent of their road costs.[17] Recently, it has been determined that truck-axle weight is not the only important factor in assessing road damage. Based on the National Pavement Cost Model, some types of pavement deterioration, a doubling of the axle load generates 15 to 20 times as much damage; however, for other types of deterioration, doubling the load only doubles the damage. Currently, heavy trucks do not pay the true cost of damage to state and county roads. [18]

For the state of Washington, the number of annual truck equivalents of carloads handled by all the short line and regional railroads is estimated at 427,000.[19] The damage from diverting all short line rail traffic to truck is estimated at $19 million annually. Not only would roads become congested and deteriorate, but safety would decrease. The number of fatalities per billion ton-miles for trucking is more than nine times greater when compared to rail.[20]

[15] American Association of State Highway and Transportation officials, *The Ten Year Needs of Short Line and Regional Railroads,* December 1999.
[16] UGPTI, 2002. *Small Railroads – Investment Needs Financial Options, and Public Benefits.* North Dakota State University.
[17] Federal Highway Administration. 1997. "1997 Federal Highway Cost Allocation Study."
[18] Federal Highway Administration. "The Heavy Vehicle Use Tax: Funding Our Nation's Highway Programs and Leveling the Playing Field."
[19] American Short Line and Regional Rail Association. 2014. "Short Line and Regional Railroad Facts and Figures." Page 53.
[20] Federal Railroad Administration. 2010. "National Rail Plan: Moving Forward, A Progress Report."

The Performance Goal: Washington State Short Lines Handle 286,000 Pound Rail Cars

Freight and Goods Transportation System (FGTS): Railroad Classification

R1 = More than 5 Million Tons per Year
R2 = 1-5 Million Tons per Year
R3 =0.5-1 Million Tons per Year
R4 =100,000 – 500,000 Tons per Year
R5 = Less than 100,000 Tons per Year

In recognition of the business imperative for many short line railroads to adopt the 286,000 pound standard, this report defines the ability to effectively and safely operate 286,000 pound cars at 25 miles (Class 2) per hour (Table 2) as the primary benchmark of state of good repair for the backbone short line system. Not every segment of every short line railroad needs to meet this standard, however if they do not, they must often develop alternate strategies to interchange heavier rail cars to the mainline network. Achieving and maintaining this condition depends on several line components, including rail weight (e.g. 112 pound), tie condition, ballast, bridges, and crossings. This report identifies and summarizes the needs throughout Washington's short line system. The report identifies both a complete transition in the short line network to 286,000 pound rail, as well as a breakdown of those rated R-3 to R-1(those lines with at least 500,000 tons), thus providing a range within the performance goal.

Table 2. Federal Railroad Administration (FRA) Speed Guidelines by Track Type.

Track Type	Freight	Passenger
Excepted	<10 mph	not allowed
Class 1	10 mph	15 mph
Class 2	25 mph	30 mph
Class 3	40 mph	60 mph
Class 4	60 mph	80 mph
Class 5	80 mph	90 mph
Class 6	110 mph	
Class 7	125 mph	
Class 8	160 mph	
Class 9	200 mph	

For the backbone short line rail system the study will examine the following condition requirements:

- Track at FRA Class II status (sustained operations at 25 mile per hour); and
- Capable of handling 286,000 pound rail cars

In order to meet these condition requirements, several track components are to be analyzed, in addition to bridges. Track components include rail, ties and ballast. These three components all work together to provide the needed support for rail traffic and in some cases the conditions of two components may make up for one weaker component. For example, a good ballast section and tie condition may allow 286,000 pound car operations with a lighter rail section of less than 100 pounds per yard.

Rail- A rail weight of 112 pounds per yard or greater is identified as the objective to meet the above standard. Rail of less than 90 pounds per yard is inadequate for 286,000 pound loads, even with good support conditions. At the desired operating speed of 25 miles per hour, heavier rail is required due to increased dynamic forces, so that even 100 pounds per yard. rail becomes marginal.

- 286,000 pound cars impose wheel loads of 36,000 pounds on the rail. Rail less than 90 pounds per yard will be stressed beyond its bending strength by these loads and will be permanently deformed.
- 90 pound rail is adequate only at low speeds and with good support (tie and ballast) condition.[21]

Ties - A tie replacement rate of 25 percent needed to meet the above standard. Tie condition is measured by the number of good ties in a section of rail (typically 23 ties in 39 feet). FRA standards for Class II track state that there only need to be 8 effective ties in a 39-foot section. This is an example of why FRA track standards are not maintenance standards, but minimum standards. Typically, rail operations at 10 mph (Class I) across track with less than 16 effective

[21] ZETA-TECH Associates, 2000. *An Estimation of the Investment in Track and Structures Needed to Handle 129,844 kg (286,000 lb.) Rail Cars on Short Line Railroads.* p 6.

ties (66 percent) in 39 feet is not desirable. By replacing 25 percent of ties, a short line can establish a tie condition which safely allows operations at 25 mph.

Ballast - An application rate of 1056 tons per mile is identified as the objective to meet the above standard. This represents approximately four inches of ballast under the ties. When combined with rail and tie replacement, this provides a solid track section capable of sustained operations at 25 mph with 286,000 pound rail cars.

Bridges - Bridge replacement costs are typically represented in dollars per track foot ($/T.F.). Given the information gathered thus far for this study, a more general figure for both bridge replacement and bridge rehabilitation have been determined. These costs were arrived at by averaging bridge lengths over a large short line rail system and applying a $/T.F figure for both rehabilitation ($1,500/T.F.) and replacement ($7,400/T.F.). Only a portion of respondents were able to sufficiently provide reliable information regarding the adequacy of their bridges to handle the 286,000 pound rail cars. Based on these reporting lines, we estimate that 30 percent of system wide bridges will require rehabilitation, while 15 percent will require replacement. Rehabilitation costs represent replacement of stringers with new 10-foot by 18-foot members and replacement of deck ties and some substructure elements.

Cost Calculations

Each line under consideration has been assessed based on operator/owner revealed needs, either as stated individually, or as determined by shared track and bridge information through Track Charts and Bridge Maintenance Plans. Table 3 provides a generalized costs estimate of the associated components necessary to achieve the FRA Class II and 286,000 pound capable standards. For non-reporting lines, infrastructure costs and needs are estimated in the report. The portion of the remaining lines in need of improvement to satisfy the above requirements will be established based on averages of track miles and bridges not compatible with 286,000 pound cars as reported by other short lines in the state.

Based on reporting lines and estimates generated for those non-reporting lines, the total system need is estimated at over $610 million. These values include those heaviest of volume lines (R-1)

down to the lightest volume lines (R-5) that carry less than 100,000 tons annually. Restricting our estimates to just those lines who are rated R-3 to R-1, the investment need is reduced to an estimated $320 million.

Table 3. Infrastructure Investment Needs on Washington's Short Line System to Achieve 286,000 pound, Class 2 Suitability.

Item	Unit	Unit Cost	Quantity	Cost
Rail Replacement	Track Foot	$90	3,920,278	$352,825,051
Joint Rehabilitation	Each	$30	201,040	$6,085,909
Crosstie Replacement	Each	$90	575,420	$51,787,768
Ballast Distribution	Ton	$25	784,056	$19,601,392
Surface Line and Dress	Track Foot	$3	3,920,278	$10,721,471
Ditching	Track Foot	$6	3,920,278	$21,561,531
Bridge Rehabilitation	Each	$125,000	160	$19,958,764
Bridge Replacement	Each	$550,000	87	$48,087,780
Total				**$530,629,665**
Misc. Items, Sales Tax, Mobilization	**Lump Sum**	**15%**		**$79,594,450**
Projected Total				**$610,224,115**

The total infrastructure investment needs may be broken down by ownership to better understand where the needs exist within the state's short line system. Public entities (state, counties, ports, and US Navy) own just over half of the short line miles, 746 miles. The remainder, 600 miles, are owned by private parties. However, more than two-thirds of the estimated investment need is on publicly owned lines (Tables 4 and 5).

Table 4. Infrastructure Investment Needs on Washington's Publicly Owned Short Line System to Achieve 286,000 pound, Class 2 Suitability.

Item	Unit	Unit Cost	Quantity	Cost
Rail Replacement	Track Foot	$90	3,161,805	$284,562,415
Joint Rehabilitation	Each	$30	162,144	$4,908,441
Crosstie Replacement	Each	$90	464,091	$41,768,158
Ballast Distribution	Ton	$25	632,361	$15,809,023
Surface Line and Dress	Track Foot	$3	3,161,805	$8,647,140
Ditching	Track Foot	$6	3,161,805	$17,389,925
Bridge Rehabilitation	Each	$125,000	118	$14,757,771
Bridge Replacement	Each	$550,000	62	$34,298,675
Total				**$422,141,548**
Misc Items, Sales Tax, Mobilization	Lump Sum	15%		**$63,321,232**
Projected Total				**$485,462,780.54**

Table 5. Infrastructure Investment Needs on Washington's Privately Owned Short Line System to Achieve 286,000 pound, Class 2 Suitability.

Item	Unit	Unit Cost	Quantity	Cost
Rail Replacement	Track Foot	$90	758,474	$68,262,635
Joint Rehabilitation	Each	$30	38,896	$1,177,468
Crosstie Replacement	Each	$90	111,329	$10,019,610
Ballast Distribution	Ton	$25	151,695	$3,792,369
Surface Line and Dress	Track Foot	$3	758,474	$2,074,331
Ditching	Track Foot	$6	758,474	$4,171,605
Bridge Rehabilitation	Each	$125,000	42	$5,200,993
Bridge Replacement	Each	$550,000	25	$13,789,105
Total				**$108,488,117**
Misc Items, Sales Tax, Mobilization	Lump Sum	15%		**$16,273,218**
Projected Total				**$124,761,334**

Additional Infrastructure Needs

While the ability to efficiently move 286,000 pound cars along their tracks is a significant consideration for short line railroad's future viability, it is not the only infrastructure issue. As many short lines serve a first and/or last mile function for longer freight rail movements, two other key characteristics (depending upon short line function) also are generated based on interactions with the Class I railroad system.

First, full unit trains are preferred by main line railroads as they are the most productive use of their locomotives and workforce. A unit train is typically 110 cars long, though may vary, and all cars

Beyond 286,000 pounds?

Short line railroads must meet the mainline rail industry standard for the 286,000 pound cars to efficiently connect to them.

Some signs point to the adoption of even heavier, 315,000 pound cars in the future. While some mainline railroads do currently accommodate the heavier 315,000 pound cars, there is little indication that an overall change in the standard car size is imminent.

If and when a shift towards heavier cars occurs, lines that do not meet the 286,000 pound standard will further run the risk of becoming obsolete.

possess a common origin and destination. The 286,000 pound cars are capable of handling 111 tons, thus a 110 car train could move more than 12,200 tons; the equivalent of roughly 500 trucks. Many short line railroads and/or their industry partners are investing in facilities with the capacity to originate or terminate long trains. A recent Washington example of this effort may be seen in the McCoy Multi-car Loading Facility. Class I railroads have developed specific guidelines for such projects. A major limiting factor of the ability of a line to originate or terminate a unit train is the distance between grade crossings, and the ability of the line to not block roadways for extended periods. The location of grade crossings is affected by local land use and transportation plans. Initiatives should be undertaken that seek to increase grade separation and otherwise provide for longer sections of track for short lines to originate and terminate unit trains.

Second, and frequently related, the interchange condition between short line and Class I must be of effective size, configuration and gradient between lines. Short line railroads are making efforts to meet the efficiency and throughput standards sought by the main line carriers; however, these come at considerable financial burden to the lines, a burden many are not capable of adequately addressing on their own.

What are the Results of the Survey of Washington State Short Line Rail Operators?

WSU and WSDOT conducted a survey of the state's short line operators and/or owners from late 2014 through early 2015. The survey was designed to help state officials understand the operating conditions of the lines and the strengths, weaknesses, and needs for continued successful operation from the owner/operator perspective. This report contains information collected from 19 of the state's short line railroads that represent 86 percent of the total short line miles (1217 of approximately 1400) in the state. The survey showed that in excess of 315 of these miles are currently operating with less than 90-pound rail that is often nearly a century old, and more than 740 miles of the line possess rail weight of less than 112 pounds.

WSU researchers developed a questionnaire (see Appendix A) and sent it to the 22 short lines currently operating in the state. The survey provides a snapshot of the lines' conditions and system needs as perceived by operators and/or owners of the lines. The survey asked 36 questions in four topic areas:

1. Background information on the line: ownership structure, length of ownership, annual revenue over the last five years.
2. Rail infrastructure conditions: length of the line, other trackage rights, service type, capacity and volume, commodities moved, infrastructure restricting movement.
3. Rail infrastructure investment needs: needed capital improvements, maintenance plans, funding sufficiency for maintenance needs, and participation in the Freight Rail Assistance Program (FRAP) and the Freight Rail Investment Bank (FRIB).
4. Regional economic role and future plans: employment level; shipper utilization of the lines, or lack of it; identified strengths and weaknesses; and perceived regional impact of the line.

Results of the Short Line Railroad Survey: Background Information

Short line operations in Washington State possess a diversity of ownership structures and operating characteristics. Structures vary from public ownership (eight respondents), to

privately held operations (seven respondents), to publicly traded holding companies (three respondents), and a joint ownership by the region's two Class I's (one respondent).

Both the business function and the industries served by the short lines are highly dependent upon the region in which they operate. Functions reported by the respondents include[22]:

- Shipper to Class I Railroad, Class I Railroad to Shipper;
- Class I to Class I Railroad;
- Class I Railroad to Columbia/Snake River, River to Class I;
- Handling for Class I Railroads;
- Switching or Interchange for Class I Railroads;
- Car storage for major regional shippers;

Most of the responding lines have some level of interaction with at least one of the region's two Class I railroads. Rural operations tend to be highly focused on single commodities or industry groups such as lumber and other wood products or wheat, and the products that support them. The urban and port-based lines carry a higher volume and diversity of products, which are included in case studies in this report.

Results of the Short Line Railroad Survey: Infrastructure Conditions

Within the needs contained in Table 3 previously shown, marked differences begin to unfold in relation to rail conditions, and sufficiency for heavier 286,000 pound cars. Largely, these issues involve rural lines that serve limited industries and have lower shipment volumes.

One respondent said that he is using "19th century railroad infrastructure to respond to 21st century industry demands." Lower operational speeds based on track condition are a prevalent concern, as is either the ability to run 286,000 pound cars. At least one respondent indicated that despite being able to run 286,000 pound cars on their line, they are concerned with the toll they take on their line; the referenced line is minimally

[22] See Appendix for Survey Instrument.

capable of the movements. While rail as light as 90 pounds can handle the heavier cars if their ties and ballast are in good condition, they must do so at slow speeds (10-25 mph). This does however increase the rate of wear on the rail due to deflection, the up and down movement of the track.

As the Class I lines now use unit trains for most moves, they may call for short lines to provide the ability to originate or terminate a 110-car train. As this does not uniformly apply across all short lines, the survey asked owners and operators whether the ability to originate or terminate unit trains constrained their business. While no respondents indicated significant limitations to their operation as a result of a lack of 110-car capacity, several indicated that they need to expand to do so efficiently. Such expansion is frequently difficult as it requires significant space for siding or loop track.

Another concern to multiple respondents is the condition of their interchange to Class I lines. The interchange is not only physical constraints on the short line, but all physical and operational on the class I. Reported issues arise from multiple sources:

- Business growth has maxed out the capacity of the current interchange track;
- Inadequate size and configuration of terminal on either side of the switch;
- Significant gradient at the interchange;
- Class I configuration allowance for short lines to come onto Class I facilities/yards and efficiently interchange; Short lines may be "held out" for long wait periods;
- Availability of switch crews and time to switch which may hold op line movement.

Results of the Short Line Railroad Survey: Infrastructure Investment Needs

Respondents were asked to provide their primary capital needs to ensure continued, successful operations. Twelve of the 18 operators provided very detailed responses. Ties and rail replacement were the top two needs identified, with total estimated costs of $25.5 million and $43.2 million dollars, respectively. The full identified major needs of the 12 respondents exceed

$140 million, most of which has not been addressed due to the companies' lack of adequate funding for capital projects.

Table 6 below summarizes the responses of the 12 respondents who answered the question to a level sufficient to generate a cost estimate. Significant portions of the identified needs demonstrate potential for correlation with the recommended 286,000 pound capability. Several other respondents identified needs, but provided no cost estimate of those needs. These are identified in Table 7.

Table 6. Short Line Railroads Identified Infrastructure Needs* (12 respondents).

Category	Identified Funding Need	
Ties, Main Line	$	25,519,954
Ties, Switching	$	144,722
Rail Replacement	$	43,153,109
Surfacing and Ballast	$	6,744,500
Road Crossing Rehabilitation	$	3,717,373
Tracks	$	319,955
Track Realignment	$	17,000,000
Structures (Bridge and culvert)	$	5,500,906
Structures (non-bridge)	$	100,000
MOW Equipment and Tools	$	760,500
Rail Yard Reconstruction	$	20,000,000
Interchange Improvement	$	2,000,000
Signaling	$	80,000
Undercut	$	950,000
Drainage	$	700,000
Other Undefined costs	$	14,250,000
Total Identified Need	$	140,941,019

* Note: These cost estimates do not coincide with the 286,000 pound car capability calculations identified in the previous section. Table 6 numbers represent self-reported capital needs by the respondents.

Table 7. Respondent Identified Infrastructure Qualitative Needs.

Category
Interchange - Upgrades and Relocation
Creation of New Line Segment
Industrial Park Siding
Elimination of At-Grade Crossings on US 97
Safety Signaling

The short lines maintenance and infrastructure needs largely fall outside of respondents' ability to self-fund from earned revenue. Only two of the respondents[23] said that their identified needs are in their current maintenance plan and that they have funding for the identified needs. Other respondents said that they cannot adequately fund their identified needs with current and anticipated revenue. Several said they have the ability to keep the line at the current levels without any ability for upgrades or improvements.

Respondents were asked to identify funding sources they have sought out, both at the state level and from other sources, and comment on their success in securing these funds. They said that:

- Of those that have successfully taken advantage of either the Washington State Freight Rail Assistance Program (FRAP) or the Freight Rail Investment Bank (FRIB), most were pleased with the WSDOT performance and interaction and expressed the desire for increased funding availability. One respondent who has received WSDOT funding said that the reimbursement process is overly slow and hampers their ability to garner quality bids from reputable bidders.
- Smaller and more rural lines said that they had:
    - Difficultly in demonstrating competitiveness with such a small operation under the public funding guidelines;

[23] One of these two is a publicly owned line, while the other is directly supported by the Class I lines.

- Application requirements are frustrating as they appear to focus on large lines in urban areas (the criteria include reducing high-volume traffic delays, and emissions) that are not necessarily of concern or importance to rural carriers. The point system seems unfair to rural lines and other federal funding is also intimidating – cannot hire a $20,000-plus grant writer for a small chance at funds.
- The lack of ability to successfully acquire grants is due in part to an inability to demonstrate the short line's capacity for job creation. The job creation potential associated with their proposed improvements is uncertain given the current inability to garner new customers due to slow track conditions.

- If the back log of deferred maintenance could be addressed, then annual maintenance program would be sufficient.
- Four lines indicated they have sought federal funding, some in the form of TIGER grants. Since 2010, only two rail based projects in Washington have received funding through the TIGER program.
  - The North Spokane Corridor Railroad Realignment received $10 million in the 2012 competition. This project moved 7.5 miles of rail in support of the US 395 North Spokane Corridor;
  - The Tacoma Trestle Replacement received $10 million in the 2013 competition. This award helped to replace a 100-yr old single-track wooden trestle and bridge with a double track structure. This not only passenger rail service, but also adds to the freight capacity on the Tacoma Rail line.

Results of the Short Line Railroad Survey: Regional Economic Role and Future Plans

Short lines throughout the state perform multiple functions within the larger transportation system. When asked to describe competition for freight customers within their regions, 12 of the 19 respondents said that truck carriers were a major competitor. The competitive nature between short line railroads and truck operations serves to lower rates for shippers in the area. When shippers use freight rail instead of trucks, some truck volume may be removed from roadways, thereby reducing the damages of heavy loads.

Short line railroads provide flexibility and transportation options to shippers and receivers making access to them desirable to companies expanding or considering locating in Washington State.

When asked to describe their lines' major weaknesses, the majority centered on infrastructure needs and limitations. In their words:

- Interchange efficiency and cooperation with Class I is of major concern;
    - Includes perceived lack of priority for manifest carload shippers by the Class I lines;
- Deferred maintenance by previous owner is a large hurdle;
- Time will deteriorate the line to a point where it cannot be maintained to an operation level without a large infusion of cash;
- Track infrastructure in need of rehabilitation;
- Interchange is in need of an upgrade;
- Need seed capital to invest in the rail and then the land use will follow; however, lines have difficulty justifying the capital needs absent a present business level, creating a Catch-22 dilemma;
- Woefully inadequate infrastructure.

In response to their acknowledged weaknesses, respondents followed up with suggestions of the improvements in service that would most benefit their customers. Responses focused on needed improvement of infrastructure including heavier rail and tie programs, transload facility development, and interchange conditions. They also want operational gains such as reduction in dwell times, increased frequency of service, and improved interaction with Class I carriers.

Short Line Railroad Funding Programs

Many short line railroads in Washington face a significant backlog of deferred maintenance but do not earn enough revenue to address it. Recognizing these shortcomings, the federal government and many states have implemented a variety of strategies, critical to growth and survival of the industry, to aid short line operations in their efforts to improve and further develop their infrastructure. In October 2014 the FRA delivered a report to Congress outlining the capital needs and funding sources of Class II and Class III railroads nationwide.[24]

Overview of Federal Funding Strategies

RRIF - Since 1998, the Railroad Rehabilitation and Improvement Financing (RRIF) program has provided nearly $700 million in loans to Class II and III railroads. RRIF originated with the Transportation Equity Act for the 21st Century (TEA-21) [25] and subsequently amended by the Safe Accountable, Flexible and Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU)[26] in 2005, as well as the Rail Safety Improvement Act of 2008[27]. The acts provided loan opportunities to improve or rehabilitate intermodal facilities and rail equipment. Within the $3.5 billion ceiling established by TEA-21, $1 billion was direct toward lines other than Class I. SAFETEA-LU increased the loan ceiling to $35 billion, with $7 billion reserved for freight carriers other than Class I lines. Twenty Seven Class II or III railroads have taken advantage of the loan program since 2002, including one Washington railroad, the Columbia Basin Railroad.

TIGER Grants – In 2009, President Obama signed the American Recovery and Reinvestment Act of 2009 (ARRA)[28] commonly known under the designated title of the Transportation Investment Generating Economic Recovery (TIGER). With an objective to invest in and

[24] US Department of Transportation – Federal Railroad Administration (2014). Summary of Class II and III Railroad Needs and Funding Sources: A Report to Congress.
[25] Pub. L. No. 105-178, Transportation Equity Act for the 21st Century, Section 7203 (112 Stat. 471), enacted June 9, 1998.
[26] Pub. L. No. 109-59, Safe Accountable, Flexible and Efficient Transportation Equity Act: a Legacy of Users, Section 9003 (119 Stat. 1921), enacted August 10, 2005.
[27] Pub. L. No. 110-432, Rail Safety Improvement Act of 2008, Sec. 701(e) (122 Stat. 4906), enacted October 16, 2008.
[28] Pub. L. No. 111-5, American Recovery and Reinvestment Act of 2009, (123 Stat. 203-205), enacted February 17, 2009.

modernize the nation's transportation network, TIGER has competitively provided these grants to recipients throughout the transportation system, including over $270 million going to Short Line railroads. These TIGER funds are typically used to leverage other funding opportunities for larger projects than may have otherwise been available.

Short Line Railroad Tax Credit – Commonly known as *45G*[29], the short line railroad tax credit originated in 2004 legislation to enable and encourage private investment in rail line rehabilitation. Similar to programs found in states like Kentucky (see below) the 45G program is a federal income tax credit for up to 50 percent of track maintenance and qualified infrastructure expenditures. The credit is allowable up to the product of $3,500 by the sum of the number of miles of railroad track owned or leased and the number of miles assigned to the taxpayer by a Class II or III railroad.

How Do Other States Support Their Short Line Railroads?

This study reviewed a number of methods used by other states to finance or provide financial support to short lines so that they are able to maintain safe and efficient operations. These states have developed funding sources to implement policies that recognize the value of the short line system in supporting regional economies. Many states offer some level of support for one or more of these strategies. State support for short line railroad investment and infrastructure improvement typically takes on two major forms: grant and/or loan programs, and tax based incentives and benefits. The study found the following state support mechanisms.

Loan and Grant Programs – Typically managed by a state's Transportation Department or Economic Development Commissions, loan and grant based programs found throughout the U.S. center on providing support for maintenance, construction and rehabilitation, with some also allowing for purchase and/or preservation for future use. Where programs are competitively based, applicants are charged with quantification of the benefits stemming from investment. Benefits are typically manifested in job creation and industry support, environmental performance, and truck diversion; all are indicators of regional economic performance.[30,31] Many

[29] http://www.law.cornell.edu/uscode/text/26/45G

[30] DOT/FRA, 2014. *Summary of Class II and Class III Railroad Capital Needs and Funding Sources: A Report to Congress.*

states identify the necessity for benefit-cost ratios in excess of one, unless the project is deemed a system critical link (e.g. NJ[32]). The range of assistance portions offered by the state varies. Table 8 below highlights 10 state programs and the associated matching needs.

Table 8. Sample State Funding Programs and Necessary Match or State Contribution.

State	Program	Funding/Assistance	Eligible Entities
Iowa	Highway-Railroad Grade Crossing Surface Repair Fund (Grant)	60% from state; 20% railroad; 20% road jurisdiction	Either a Private or Public Railroad, or other private user , Roadway Jurisdiction May Initiate Discussions and Application
Kansas	Kansas State Rail Service Improvement Fund (Loan)	70% loan; interest rate below prime	Railroad, Local Government, Port Authority, Shipper
Maine	Industrial Rail Access Program (Grant)	50% matching funds	Private Business, Railroad Companies, Municipalities, Counties, Non-Profits
New Jersey	New Jersey Freight Rail Assistance Program (Grant)	Ranges from 90% state funds with 10% match, to 50% state funds and 50% match	Public Agencies or Private Railroads
North Carolina	Rail Industrial Access Program (Grant)	50% from state	Local Governments, community Development Agencies, Railroad Companies, Industries
Tennessee	Short Line Railroad Rehabilitation Program (Grant)	80% from state fund;	Railroad Authorities
Virginia	The Rail Preservation Fund (Grant and Loan)	70% max from state	Department of Rail and Public Transportation can Develop Projects or Receive Applications
Wisconsin	Wisconsin Transportation Economic Assistance Program (Grant)	50% from state	Governing bodies, Private Business, and Consortiums
Wisconsin	Freight Rail Infrastructure Improvement Program (Loan)	100% loan	Public or Privately Owned Rail Lines
Wisconsin	Freight Rail Preservation Program (Grant)	80% from state	Local Government, Industry, and Railroads

[31] http://www.drpt.virginia.gov/studies/files/Appendix%20C%20Short line%20Tech%20Memo.pdf
[32] NJ DOT: http://www.state.nj.us/transportation/freight/rail/projects.shtm

Other example loan and grant programs include:

Oregon (*Connect*Oregon) - Using a **lottery bond-based initiative** available to public agencies, non-profit organizations, and private businesses with a guaranteed match, *Connect*Oregon is a flexible funding program aimed to increase transportation connectivity and thus reduce transportation costs and improve job access. The fund allows projects focused on maintenance, acquisition, capital improvement, among others venues. Applicants are ranked and selected based on the stated benefits and feasibility as determined by agency staff. Most recent funding availability totaled just over $40 million amongst 36 projects, with no limitations on the ask value by individual applicants.[33]

Florida (Strategic Intermodal System (SIS)) –Under a **grant system**, qualifying short line railroads in the state are eligible for a capacity improvement grant in which the state pays 75 percent of project costs. Grants require a 75/25 match. Funds are available for use on projects related to new lines, track upgrades, siding, capital improvements, as well as in intermodal facilities for investments geared towards rail transfer or staging areas. Funding availability is roughly $32 million annually.[34]

Idaho (Idaho Rural Economic Development and Integrated Freight Transportation Program (REDIFiT)) – Idaho's **Revolving Loan Program** permits eligible applicants (Class III, Class II, and Public Entities) to improve rail lines preserving local service, as well as activities aimed at the construction of loading/reloading facilities in efforts to support business and commerce activities. Fund availability totals roughly $5 million. Idaho uses eligibility standards that include financial commitment level and identified benefit cost ratios.[35]

Iowa (Railroad Revolving Loan and Grant Program (RRLGP) – Iowa's **Revolving Loan Program** provides zero-percent interest loans to eligible entities (cities, counties, rail users,

[33] ODOT: http://www.oregon.gov/ODOT/TD/TP/pages/connector.aspx
[34] Florida DOT: http://www.dot.state.fl.us/rail/plandevel.shtm
[35] ITD: http://www.agri.idaho.gov/Categories/Marketing/transportation.php

railroads, MPOs) for use in any rail facility except at-grade crossings surface repair and protection devices. Evaluation of applicants includes consideration of job creation, public and private benefits, total investment need (requires a 20 percent local contribution)[36].

Other States with Grant or Loan Programs: KS, OH, WI, IA, NH, NJ, KY, MI, MN, MS, MT, NJ, ND, OK, PA, VA, and WA.

***Tax based incentives* –** In addition to grant and loan programs, many states additionally provide tax based incentives in the form of exemptions, credits, and other relief or special status. While incentives such as those listed here do not directly support the funding of infrastructure development and the assistance with recovering from mounting deferred maintenance, they do free up some financial opportunity through reduced tax burden. As reported in the 2014 FRA report to congress, "the states of Connecticut, North Carolina, and Pennsylvania impose statewide gross earnings or receipt taxes on railroads rather than a property tax" (p.15). Massachusetts and New Jersey largely exempt railroads from property taxes.

[36] Iowa DOT: http://www.iowadot.gov/iowarail/assistance/rrlgp.htm

Table 9. Examples of State Short Line Funding Strategies.

Funding/Support Mechanism	Disbursement Strategy	Sample of States Using Mechanism
Tax Incentives	Credits	KY
	Exempt (e.g. Property Taxes)	NJ, CT, MA
Bonds	Lottery-Backed; Competitive	OR
	Competitive Grants; Obligated Allocations	NY, CA, NM, UT, VA, WI
Tax Collection (e.g. Real Property Transfer, Fuel, Sales, Rail Car Earnings, Car Rental)	Appropriated/Allocation Based on Prioritized and Assessed Need	TN, OH, OK, VA
	Local Authority Decisions (Competitive or Allocative Basis)	CA, FL
Revolving Loan Programs	Competitive	KS, OH, WI, IA, NH
General Funds	Annual Appropriation/Subsidy	NY, OK
Grants	Competitive	OH, WI, NJ

Several unique strategies of funding and support have been identified and are included for further discussion below.

Transportation Equity Fund[37] **-** Tennessee's Department of Transportation (TDOT) Office of Freight & Rail administers the Rail and Water Transportation Assistance Program, providing grants for track and bridge rehabilitation for Short line Railroad Authorities who have applied for and have been accepted into the Short line Railroad program. Funds are used for rail and track structure improvements, and to fund engineering services for the authorities. Using funds generated by the sales tax paid on fuel (7 percent) used by aeronautics, railroads, and towboats that have been placed in a designated Transportation Equity Fund. The railroad portion of this fund is granted to short line railroad authorities who are enabled by the legislature to preserve

[37] NOTE: Tennessee's program has currently been frozen as a result of a lawsuit filed by the Class I railroads. The Class I's contend that the tax is discriminatory. Payments to the short lines have been suspended pending the outcome of appeals. http://www.tennessean.com/story/money/2014/07/21/new-lawsuits-put-small-railroad-money-jeopardy/12964611/

and maintain essential rail transportation to communities threatened with abandonment or loss of rail service.

In each year, TDOT distributes the funds amongst the railroad authorities who may choose to use it at that time or bank the funds to aggregate with future years. Up to three years of funds may be retained. Allocations are based separately on track and bridge rehabilitation needs. Funding for the program began in 1988.

In their 2003 Rail plan, TDOT posed several Infrastructure Sustainability Questions aimed to reconsider the mechanisms by which projects are evaluated from eligibility. While the below discussions have yet to be implemented, these discussion are ongoing in Tennessee and elsewhere.

- At what point do normal business operations of a short line railroad yield sufficient revenues to permit the freight railroad owner/operator to continue to operate at a standard of performance acceptable to clients?
- Does need exist? Is the level of State infrastructure investment necessary to maintain economically viable railroad operations on a sustainable basis?
- At what point can a short line railroad maintain sustainable operations without further or continuing infrastructure investment by the state?

Acknowledging that state funds are highly limited, TDOT sought methods to identify the point or conditions under which a railroad authority is capable of sustainable railroad operations without further infrastructure investment by the state. One such method is a revenue-based approach outlining that when a railroad meets the revenue per ton-mile for national railroads, they would no longer be eligible for State-Funded rail rehabilitation. Questions however remained as to the ability of short line to ever achieve this standard. Thus, TDOT asked industry representatives for ideas. A major product of that question suggested a shift of the focus from the current objective of alleviating needs, as have been identified by the track and bridge needs assessment studies to a new objective of providing for the life cycle costs of track and bridge replacement with State funding participation.

Economic Development Tax Credit – The Kentucky Transportation Cabinet's *Railroad Assistance Funds* allows for a tax credit up to 100 percent of the Kentucky income Tax and Limited Liability Tax (imposed under KRS 141.020 or 141.040 and 141.0401) for Corporations, LLCs, Partnerships, Limited partnerships, Sole Proprietorships, Business Trusts or other entities in manufacturing, agribusiness, non-retail service, technology or national or regional headquarters operations. The credit applies to the construction and installation of railroad spurs as needed to connect Economic Development projects to existing railroads.

Additional tax programs in Kentucky include a nonrefundable tax credit for railroad improvement (50 percent Tax Credit) for Class II and III railroads or persons who transport using the facilities of a Class II or III railroad. The fund's objective is to aid in maintaining or improving roadbeds, bridges and related structures. The value of the credit may not exceed $3,500 multiplied by the number of eligible miles owned or leased or assigned for use by the taxpayer.

Lastly, a nonrefundable tax credit for railroad expansion or upgrade to accommodate transportation of fossil energy resources or biomass resources (25 percent Tax Credit) is also available to corporations using rail facilities who own fossil energy or biomass resources; or railway companies that serve such corporations. The 25 percent tax credit on expenditures related to the expansion or upgrading of railroad track, including roadbeds, bridges, and related track structures, to accommodate the transport of fossil energy resources or biomass resources. The credit is limited to $1 million aggregated amongst all taxpayers applying for the credit. If applications exceed the maximum value, applicants will be awarded a proportional fraction of the total allowable credit.

Three Regional Case Studies

The economic impacts of short line railroads vary substantially in different regions of the state. These differences are dependent on not only the types of sectors served by the line, but also the

geographic interaction of the line with other modes: truck and barge. This interaction produces modal competition, as well as a flexible freight transportation system that meets shippers' needs. The three cases were chosen to examine different operating conditions and geographic regions. The studies selected were the Pend Oreille Valley Railroad, Tacoma Rail, and the Columbia Basin Railroad.

The regional economic impacts of short line railroads vary substantially in different regions of the state. These differences are largely dependent upon the industries served by the line, and the geographic interaction of the line with other modes such as truck and barge. The economic impacts to be considered reflect those evaluated in prior studies by Casavant and Tolliver[38] as well as UGPTI[39]. The case studies will not only serve as the basis for specific funding recommendations, but also serve as an example of the need to accurately identify the benefits derived from access to short line railroads.

Pend Oreille Valley Railroad (POVA)

The POVA (Figure 2) is owned and operated by the Port of Pend Oreille. POVA owned tracks run from Metaline Falls to Newport (61 miles), and leases additional trackage from BNSF between Newport, Washington and Dover, Idaho (24 miles). Currently, miles 0-16 and all of the leased line are capable of handling 286,000 pound cars and meet FRA Class II specifications. The line beyond mile 16 is not capable of handling traffic at this time (in need of bridge inspections, ballasts and ties in order to handle freight).

[38] Casavant, K., and Tolliver, D. 2001. *Impacts of Heavy Axel Loads on Light Density Lines in the State of Washington.* Report submitted to the Washington State Department of Transportation,
[39] UGPTI, 2002. *Small Railroads – Investment Needs Financial Options, and Public Benefits.* North Dakota State University.

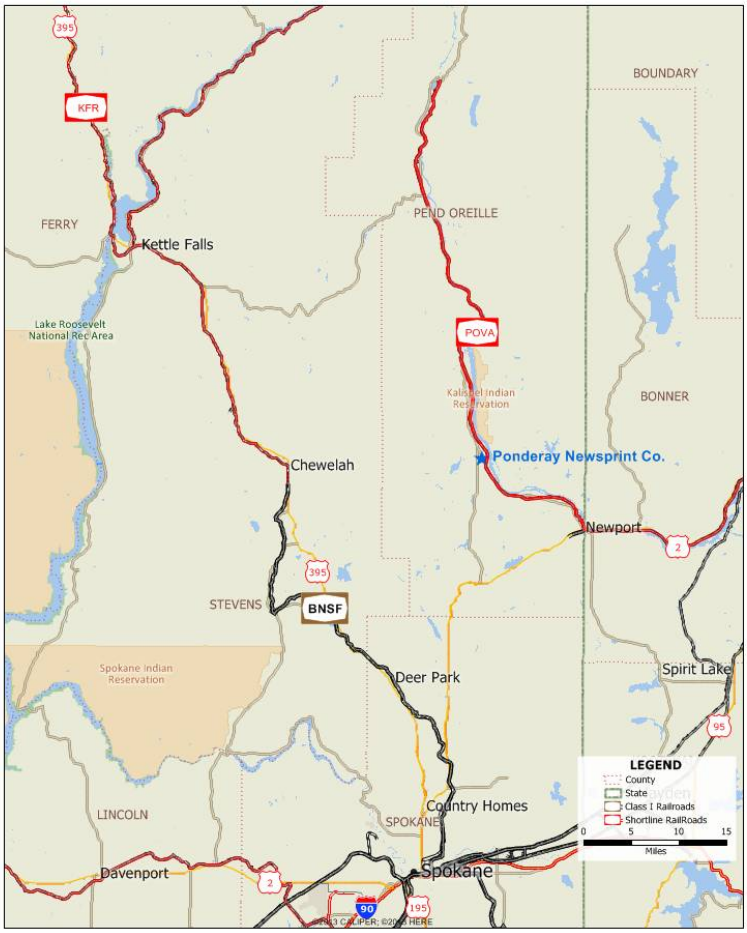

Figure 2: POVA Region of Operation

The Port of Pend Oreille is one of only a few Port Districts within Washington that does not collect a property tax, and the railroad operation is the main source of revenue for the Port. Revenues for the line have averaged around $2 million for the past five years (Table 10); however, in their survey responses, the Port anticipates that the economic conditions within the area will send revenues on the decline over the next few years.

Table 10. POVA Revenue 2009-2013.

2009	2010	2011	2012	2013
$ 1,789,329	$ 2,272,690	$ 1,825,506	$ 2,011,545	$ 1,966,374

POVA, like much of Pend Oreille County, finds itself lacking in economic diversity. The line once served multiple timber based mills and a cement facility. Tight economic conditions have all but closed the cement facility at Metaline Falls; only occasional storage operations are now conducted there in its large capacity silos. Further economic difficulties caused the closure and dismantling of the area's lumber mill at Ione. The sole remaining shipper on the line between Metaline Falls and Newport is located at Usk. *Ponderay Newsprint Company (PNC)* ships newsprint, and recycle paper and a few loads of chemicals per year by rail.[40] POVA has two additional main customers on its leased line in Idaho and a handful of small shippers leading into its connection with the BNSF near Sandpoint, Idaho.

Recent accounts demonstrate that nearly three percent of the county's employment is derived directly from the newsprint mill (Table 11) and this industry is one of the county's top employers. With respect to income, the importance of the mill to the county becomes even more noticeable. In consideration of the county's economic output, the paper mill industry accounts for nearly 17 percent of the total output, higher than any other single industry.

Table 11. Top 5 Pend Oreille County Employment Sectors (2010, IMPLAN data).

Industry Sector	Employment	Employee Compensation
State or Local Government	1,341	$65,970,310
Food and Beverages Places	361	$19,109,801
Private Household Operations	191	$1,306,546
Cattle Ranching Farming	120	$14,203
Paper Mills	120	$12,749,780
Other	2,245	$55,420,771
Total	**4,378**	**$154,571,411**

Roughly 30-40 percent of the product produced at the *PNC* leaves the region by rail beginning on the POVA line. Timber related industries, including newsprint dominate the line's activity, with lumber averaging 50 percent of carloads over the year, and newsprint another 38 percent (Table 12). Recall that the lumber activities are conducted on the leased line and originate near Newport, ID.

[40] http://www.povarr.com/

Table 12. Monthly (mm/yy) carloads moved on POVA between October of 2013 and September of 2014.

Commodity	10/13	11/13	12/13	1/14	2/14	3/14	4/14	5/14	6/14	7/14	8/14	9/14
Lumber	91	94	87	106	93	86	85	107	98	91	101	92
Newsprint	65	64	96	87	70	86	73	64	62	73	74	64
Bark	17	12	10	6	5	18	25	36	25	23	25	11
Poles	3	1	8	7	2	4	1	6	6	2	3	5
Clay	2	1	1	0	0	4	2	1	0	1	1	2
TOTAL	**178**	**172**	**202**	**206**	**170**	**198**	**186**	**214**	**191**	**190**	**204**	**174**

Transportation Alternatives

As previously described by the UGPTI[41], decreased highway maintenance costs, decreased highway user costs, and decreased shipper costs comprise a core group of economic impacts that may be realized from the efficient operation of short line railroads. Loss or reduction of functionality and economic competitiveness of POVA as a short line railroad would likely result in an increase in the cost of shipping products, resulting in a net loss of profit for the shippers. The POVA operator has indicated that a loss of the line could significantly increase the shipping costs of the *PNC* given its isolated location and subsequent truck-only option for transport. The margins in the newsprint business are already rather small and changes in shipping costs could jeopardize the mill's viability.

POVA's major customers each ship some portions of their products by truck and by rail. It should be expected that service to many of the longer haul markets is conducted by rail. For the state of Washington as a whole, the average distance wood products are shipped by rail is just over 1,800 miles, while truck shipments average roughly 166 miles. Similarly, the distance for rail shipments of pulp and paper products in the state average 1,328 miles, while for truck it is 161 miles.[42] These stark differences indicate the significant cost per ton-mile differences between truck (approximately 26.61 cents per ton-mile) and rail (approximately 2.24 cents per ton-mile) modes. The impact on transport costs, and thus economic viability of a market for the

[41] UGPTI, 2002. *Small Railroads – Investment Needs Financial Options, and Public Benefits.* North Dakota State University.
[42] 2007 Commodity Flow Survey.

line's customers becomes readily apparent, as we estimate the necessity for roughly four trucks (Table 13) for every carload recorded in Table 12 above.

Table 13. Rail Car Conversion to Truck Loads. Annually summed from Table 10 above.

Commodity	Total Carloads	Converted Truck Loads
Lumber	1131	4524
Newsprint	878	3512
Bark	213	852
Poles	48	192
Clay	15	60

If one were to consider the failure of POVA to remain sufficiently in operation, the costs to the shippers in either lost market opportunities or added transportation costs would be significant. Table 14 below considers two alternative example scenarios in addition to the current condition estimates. Each scenario assumes the commodities currently being transported (See Table 10 above for carloads) are still transported. Scenario (1) represents an estimate of the current transport costs, including the POVA segment and assuming each carload is 100 tons. Alternatively, without the opportunity to load onto rail at the production site, the commodities may need to be trucked to a Class I rail loading facility, about 45 miles, and then moved by rail from there (Scenario 2). This small truck segment for either commodity group adds $1-1.6 million dollars to the estimated transport costs, or roughly 30-40 percent. This value does not include the additional transfer costs to move from truck to rail.

Taking this a step further, the ability to fully move the commodities by truck is effectively cost prohibitive (Scenario 3), as the transportation costs are more than 10 fold their current rates. The prohibitive nature of this type of movement is further supported when considering the value of the commodities. In total, the wood products (lumber, bark, poles) have an estimated total value of $51 million, while the newsprint approaches $60 million.[43] Under Scenario 3,

[43] Estimates based on calculations derived from the 2007 Commodity Flow Survey for Washington (Table 5a). http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2007/states/washington/index.html

transportation costs exceed the value for wood products, and consume a substantial portion of the for pulp and paper products.

Table 14. Travel Cost Scenarios for transport diversion from rail to truck.

Commodity	Scenario (1) Total Estimated Cost of Movement by Rail	Scenario (2) Cost if Truck Rail Combination	Scenario (3) Cost if Moved Fully by Truck
Wood Products	$ 5,656,197	$ 7,273,158	$ 67,192,591
Pulp & Paper, Products	$ 2,611,804	$ 3,631,697	$ 31,026,834

Highway Maintenance Costs

In addition to the direct costs to the shippers utilizing the POVA short line, the potential diversion of rail to truck in the event of a total loss or relegation of the POVA to a non-competitive status impacts the maintenance costs in the region. Statewide, the American Short Line and Regional Railroad Association (ASLRRA) estimates that every carload moved on short lines saves $127.50 in reduced pavement damage.[44] Applying this value to the POVA line, the operation reduces highway pavement damage by $291,338. Alternatively, if consideration is only made for the potential damage due to the necessity to drive the roughly 45-mile round trip to the nearest feasible loading center, the damage may be a lower value of $139,842[45].

Additional observations made by the operator

- "Our 105 year old rail will not last forever, especially running 286 cars over it. Rail needs to be upgraded to at least 90 pound and preferably 125 pound."
- "Current revenue streams only allow for keeping the railroad at existing levels and does not allow for upgrading and improving the line."
- "Funding requests basically need to be made a couple years in advance; as a small short line our needs may not be known that far in advance. We also find the process

[44] ASLRRA, 2014 Facts & Figures Digital Edition.

[45] Value based on adjusted FHWA estimated value for pavement damage per mile for 80kip 5-axle Comb/Rural Interstate. The majority of diverted travel would be on state highways, and thus would face a higher damage rate. This value should be assumed to be low-end.

extremely frustrating. Look through application forms and you will find that many of the questions, and therefore points toward who gets funded, are based on how improvements help large cities reduce traffic delays, control emissions, etc. These questions, and the corresponding point system, are not fair to those of us who live in rural areas. Our services are just as important to our citizens, communities and shippers but we get penalized for living in a rural area. We operate 1950 model locomotives – we cannot compete with green issues and cannot afford to replace them. Small rural short lines collect freight which is added to the trains passing through the larger communities. Yet those short lines serving the larger communities and handling the larger trains get points to increase their chances on funding."

- "We have looked into Tiger Funding but we do not have grant writers on staff and hiring a professional for $20,000 for a "chance" at a grant is not feasible. Tiger funding also focuses on what can you do to help eliminate traffic congestion, how will you eliminate diesel fumes. We need to replace ties, 100-year old rail and repair bridges in order to stay in operation."

Closing Remarks on POVA

Despite the relatively low volumes observed on the POVA short line, the value to the region is not trivial. The commodities moved along this line are of significant importance to both Pend Oreille county and neighboring Idaho counties. As pointed out by the lines owner, the newsprint industry specifically, and pulp and paper more generally, is highly competitive and operates on slim of margins. The loss of quality rail service would apply a significant shock to roughly 30 percent of the Newsprint Company's market, thus substantially impacting its future viability. In a county where 17 percent of its output and 120 jobs are directly dependent upon the operation of the mill, such a shock would be substantial. Private costs to the shippers if rail service is eliminated, including the costs to the mill, exceed the most conservative estimate of $2.6 million (Table 14, scenario 2 minus scenario 1), while social costs due to highway maintenance ranges from $139,000 up to $291,000.

While the outlook of future customers utilizing the POVA line is uncertain, the economic competiveness of the region is dependent upon effective transportation networks that permit area industries to efficiently move the resources from rural production areas to the more urban marketplace. This line, in addition to its neighboring Kettle Falls International Railway significantly contributes to such efficiencies. In order to maintain such operations, careful crafting of collaborative efforts between owner, shipper, state and other entities should be considered as a component of the overall transportation network of the region.

Columbia Basin Railroad (CBR)

Columbia Basin Railroad is a privately held Short Line railroad operating in central Washington since 1986. As shown in Figure 3, the CBR operates in the greater Moses Lake area, with service moving southward and connecting to the BNSF line in Connell. This operating region draws goods primarily from the Grant and Adams county areas. The economic base of the region significantly revolves about agricultural production. Aside from state and local government employment, the agricultural sector makes up substantial portions of the local employment, led by grain farming and frozen food manufacturing (Table 15). Though not included in the figure below, fruit and vegetable farming are also top-10 employment sectors in the region. In fact, the agricultural and support sectors[46] make up 34 percent of the region's economic output.

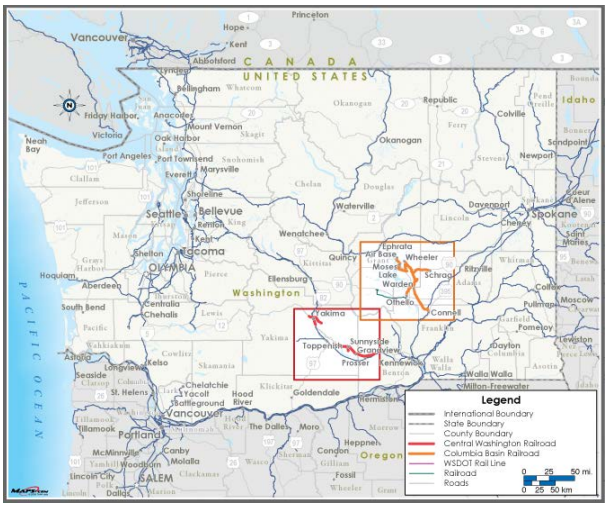

Figure 3: Columbia Basin Railroad Operating Region

[46] In decreasing order of output, the agriculture and support industry sectors include: Frozen Food Manufacturing, All Other Crop Farming, Fruit Farming, Vegetable and Melon Farming, Grain Farming, Dairy Cattle and Milk Production, Support activities for Agriculture and Forestry, Wineries.

Table 15. Top 5 Grant and Adams Counties Employment Sectors (2010, IMPLAN data).

Industry Sector	Employment	Labor Income
State or Local Government	7,568	$366,503,600
Grain Farming	2,858	$11,647860
Frozen Food Manufacturing	2,537	$129,417,700
Food Service and Drinking Places	2,275	$35,126,490
Support Activities for Agriculture	1,928	$53,074,380
Other	33,277	$1,404,893,245
Total	**50,443**	**$2,000,663,275**

According to a recent Washington State Freight and Goods Transportation System report published by the Washington State Department of Transportation (WSDOT), the Columbia Basin Railroad line from Connell, WA to Moses Lake/Wheeler, WA is shown as an "R2" Freight Rail Corridor, which handles 1 million to 5 million tons per year. In particular, the report from WSDOT shows the Columbia Basin Railroad as the busiest short line in Eastern Washington.

With the economic development that has been occurring in Grant County (i.e. Moses Lake, Wheeler and Warden) and Adams County (i.e. Schrag, Bruce and Othello) over the past few years, Columbia Basin Railroad has become one of the busiest short lines in Washington State, hauling over 10,000 carloads annually of various agricultural and industrial commodities and other cargo for 60 active rail shippers in the Columbia Basin. More importantly, the various shippers or companies that haul cargo on Columbia Basin Railroad employ nearly 7,000 people in Grant and Adams Counties.

In 2013, Columbia Basin Railroad began bringing 110-car unit trains of canola seed to Pacific Coast Canola's (PCC) crushing and oil refining facility at the Port of Warden in Washington State[47], which is the first commercial-scale canola seed crushing operation west of the Rocky Mountains. Stated Dale Pomeroy, Commissioner, Port of Warden, "Having the ability to bring in Unit Trains into Warden on the Columbia Basin Railroad line to service companies such as Pacific Coast Canola is helping to establish the Port of Warden as a key location in Eastern Washington to handle freight and it is pivotal for our economic development and will provide

[47] https://www.youtube.com/watch?v=SNZULa0Exik&feature=youtu.be

low cost options which are critical for companies to competitively ship their goods to and from Warden."

Columbia Basin Railroad also supports the Port of Moses Lake's *Northern Columbia Basin Railroad Project*, which is a critical economic development, job creation and freight mobility project in Washington State that will enhance and improve rail access to vital industries in the northern Columbia Basin area near Moses Lake, Washington. In particular, the Northern Columbia Basin Railroad Project will provide expanded freight rail service to the Moses Lake area, from the Wheeler Road Corridor across town to the Port of Moses Lake's Grant County International Airport Industrial Area. In addition, the project is integral to preserving existing manufacturing jobs and related investment in central Washington, while helping to bring new business opportunities, job creation and economic development to the region.

Furthermore, locations such as Bruce, WA and Schrag, WA in Adams County are becoming key agribusiness shipping hubs in eastern Washington in which products such as grain and fertilizer are being shipped by rail. Columbia Basin Railroad believes that these locations have tremendous potential for increased economic growth, and is working with Adams County and the Port of Othello on improving rail infrastructure at Schrag and Bruce, respectively.

In 2007 the Columbia Basin Railroad took advantage of the FRA's Railroad Rehabilitation and Improvement Financing (RRIF) program, receiving a $3 million loan to purchase 73 miles of track between Connell and Moses Lake that it had been leasing from BNSF. The purchase was made in an effort to increase efficiency and thus reduce costs and permit the upgrading of its track infrastructure to handle heavier loads. As may be expected by the industries identified above, the CBR primarily hauls agricultural products including wheat, soybean oil, frozen and packaged food, along with inputs to agricultural production such as fertilizers (Table 16).

Table 16. 2014 Columbia Basin Railroad Railcar Volume and Truck Equivalents.

Commodity Group	Carloads	Truckload Equivalent	Estimated Tons Moved
Food or Kindred Products (STCC 20)	3,999	15,996	399,900
Farm Products (STCC 01)	2,522	10,088	252,200
Chemicals or Allied Products (STCC 28)	1,513	6,052	151,300
Hazmat (STCC 49)	1,108	4,432	110,800
Pulp, Paper or Allied Products (STCC 26)	420	1,680	42,000
Non-Metallic Minerals (STCC 14)	283	1,132	28,300
Total*	**9,845**	**39,380**	**984,500**

* Two hundred and sixty three carloads of unidentified 'other' goods were also transported in 2014.
STCC – Standard Transportation Commodity Code.

While most, if not all of the CBR is capable of handling 286K cars, the line faces a need for track rehabilitation as well as a significant need for an interchange upgrade. The Great Northern Corridor Coalition (GNCC) has identified this Connell interchange amongst their list of necessary projects[48]. The interest by the GNCC in the status of the CBR line is but one of several entities expressing interest in improvement and expansion of the reach and connectivity of the line. Multiple TIGER grant applications have been sought, though not yet won, in relation to the operations of CBR. These include application by the WSDOT, and the Port of Moses Lake.

Transportation Alternatives

The Grant and Adams county region may be considered to have two ready modes of transportation, truck and rail, for its first stages of movement. Using the 2007 Commodity flow survey for Washington state, one can observe the ready differences in transport length between goods moving by truck and that by rail, with rail movements reaching a far wider market than that of truck (Table 15).

[48] http://greatnortherncorridor.org/pdf/members/techmemo5_final%20%20appendix%20g.pdf

Table 17. Average Travel Distances by Commodity Group for Washington State Products.

Commodity Group	Average Distance Moved by Rail	Average Distance Moved by Truck
Food or Kindred Products (STCC 20)	2,364	95
Farm Products (STCC 01)	520	69
Chemicals or Allied Products (STCC 28)*	800	128
Hazmats (STCC 49)	1,196	115
Pulp, Paper or Allied Products (STCC 26)	1,328	145
Non-Metallic Minerals (STCC 14)*	264	44

* Insufficient data for Washington specific movements, thus average distances represent a national average.

If one were to consider the numbers in Table 15 above as representative of the commodities being transported by the CBR, its importance as the first or last leg of a rail transport becomes considerable. The average distances moved by truck or rail are readily reflective of their relative costs – 26.61 cents per ton-mile for truck, and 2.24 cents per ton-mile for rail. Should a line such as the CBR become unusable by either line deterioration or the inability to meet the Class I railroad (BNSF) connection requirements, the shippers will bear significant private costs as they either face increased transportation costs or lost markets; a combination of the two is likely.

Table 18 below considers two alternative example scenarios in addition to the current condition estimates. Each scenario below assumes the commodities currently being transported (See Table 16 above for carload conversion) are still transported. Scenario (1) represents an estimate of the current transport costs including the CBR segment and assuming each carload is 100 tons. Alternatively, without the opportunity to load onto rail near the production site, the commodities may need to be trucked to a Class I rail loading facility, about 74 miles, and then moved by rail from there (Scenario 2). This small truck segment for either commodity group adds anywhere from 30 percent up to 3 times the transportation costs of the commodity groups identified. This value does not include the additional transfer costs to move from truck to rail. In addition to transfer costs, repeated handling of the cargo increases the likelihood of product damage, adding an additional cost.

Taking this a step further, the ability to fully move the commodities by truck is effectively cost prohibitive (Scenario 3), as the transportation costs are more than 10 fold their current rates.

Additionally, the trucking industry is already experiencing driver shortages. The prohibitive nature of this type of movement is further supported when considering the value of the commodities. For many of the commodities shown, the transport cost would be roughly 40-60 percent of the total estimated value of the goods.[49] Under Scenario 3, transportation costs greatly exceed the product value for non-metallic minerals.

Table 18. Travel Cost Scenarios for Transport Diversion From Rail to Truck.

Commodity	Total Estimated Value of Product Moved	Scenario (1) Total Estimated Cost of Movement by Rail	Scenario (2) Cost if Truck Rail Combination	Scenario (3) Cost if Moved Fully by Truck
Food or Kindred Products (STCC 20)	$624,843,750	$21,176,145	$28,387,861	$251,561,254
Farm Products (STCC 01)	$69,253,032	$2,937,626	$7,485,749	$34,897,418
Chemicals or Allied Products (STCC 28)	$71,177,775	$2,711,296	$5,439,809	$32,208,744
Hazmat (STCC 49)	$62,602,000	$2,968,376	$4,966,521	$35,262,720
Pulp, Paper or Allied Products (STCC 26)	$28,616,327	$1,249,382	$2,006,802	$14,841,994
Non-Metallic Minerals (STCC 14)	$485,182	$232,332	$742,688	$2,759,976
TOTAL	**$856,978,067**	**$31,275,157**	**$49,029,433**	**$371,532,106**

Highway Maintenance Costs

In addition to the direct, private costs to the shippers utilizing the CBR, the potential diversion of rail to truck would increase highway maintenance costs – and costs to society – if there is a total loss of CBR service or it is relegated to a non-competitive status. Statewide, the American Short Line and Regional Railroad Association (ASLRRA) estimate that every carload moved on short lines produces $127.50 in pavement damage savings.[50] Applying this value to the CBR line, the operation reduces highway pavement damage by $1,288,770. Alternatively, if consideration is

[49] Estimates based on calculations derived from the 2007 Commodity Flow Survey for Washington (Table 5a). http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/commodity_flow_survey/2007/states/washington/index.html

[50] ASLRRA, 2014 Facts & Figures Digital Edition.

only made for the potential damage due to the necessity to drive the roughly 148-mile round trip to the nearest feasible loading center, the damage may be a lower value of $990,801[51].

Closing Remarks on CBR

Much of the above discussion has centered about the capacity for a short line railroad to service the needs of the producing region within which it finds itself. However, the lines are not simply a location of origination. In 2013, Pacific Coast Canola began moving unit trains of canola into their processing facility in Warden, on the CBR line. Trains are loaded as far away as Milton, North Dakota (1,345 miles). At the facility, the plant can process 1,100 metric tons of canola seed, producing 40 million gallons of canola oil and 240,500 U.S. tons of canola meal.[52] While the facility is not fully train dependent, significant portions of both its inputs and outputs rely on effective rail service from the BNSF and CBR. Absent an effective CBR line, the facility and its 45-plus employees likely would have been located elsewhere, thus failing to produce the positive economic impact experienced in the region.

As previously noted, the loss of functionality or compatibility of the CBR greatly increases both private and social costs to Washington residents and shippers. On the private side, shippers could face additional costs in excess of $15 million, assuming those shippers are still able to maintain their current market venues. This value could grow if opportunities are lost. Socially, such a loss generates excess maintenance costs of more than a million dollars a year. Additional non-trivial social costs not accounted for here, include emissions and roadway safety.

[51] Value based on adjusted FHWA estimated value for pavement damage per mile for 80kip 5-axle Comb/Rural Interstate. The majority of diverted travel would be on state highways, and thus would face a higher damage rate. This value should be assumed to be low-end.

[52] http://www.progressiverailroading.com/short_lines_regionals/news/Columbia-Basin-BNSF-begin-unit-train-moves-for-Washington-state-canola-oil-producer--38359

Tacoma Rail

Tacoma Rail is a municipally-owned, 204-mile short line railroad that is part of the City's Public Utilities Division. It is one of three city operating divisions, along with Tacoma Power and Tacoma Water. However, the rail division operates in a significantly different manner from other city departments in that it is governed by a public utility board and is 100 percent self-supported. All operating expenses are covered by the freight revenues from rail customers. Tacoma Rail is a cost of service operator and a net tax-payer to the city as eight percent of its gross earnings (total revenue has averaged just over $18 million in the last five years) are delivered to the City's general fund and it takes no taxpayer subsidies.[53] These conditions and operations make Tacoma Rail both an economic engine for the city and region, as well as a rather competitive player within the Port, increasing the overall attractiveness of the Port of Tacoma as a global actor.

Washington State is one of the most trade dependent states in the nation, making it a major actor in international trade. In 2014, exports originating in Washington totaled nearly $91 billion (5.6 percent of US total), while imports with a final destination in Washington surpassed $52 billion (2.2 percent of US total).[54] Together, the Ports of Seattle and Tacoma are the third largest container gateway in North America. In 2013, the Port of Tacoma itself ranked as the 10th highest volume container port in North America, with nearly 1.9 million TEUs ('twenty foot equivalent unit' cargo container) (Figure 4). Roughly 20.8 million short tons of cargo moved through the port. The Port of Tacoma and related activities supports 12,436 direct jobs, and more than 29,000 including indirect and induced employment. This activity additionally generates $3 billion in economic activity and $223 million in state and local taxes.[55]

[53] Tacoma Rail: http://www.mytpu.org/tacomarail/about/
[54] http://www.census.gov/foreign-trade/statistics/state/data/index.html
[55] http://portoftacoma.com/sites/default/files/POT_Presentation_EconomicImpacts.pdf

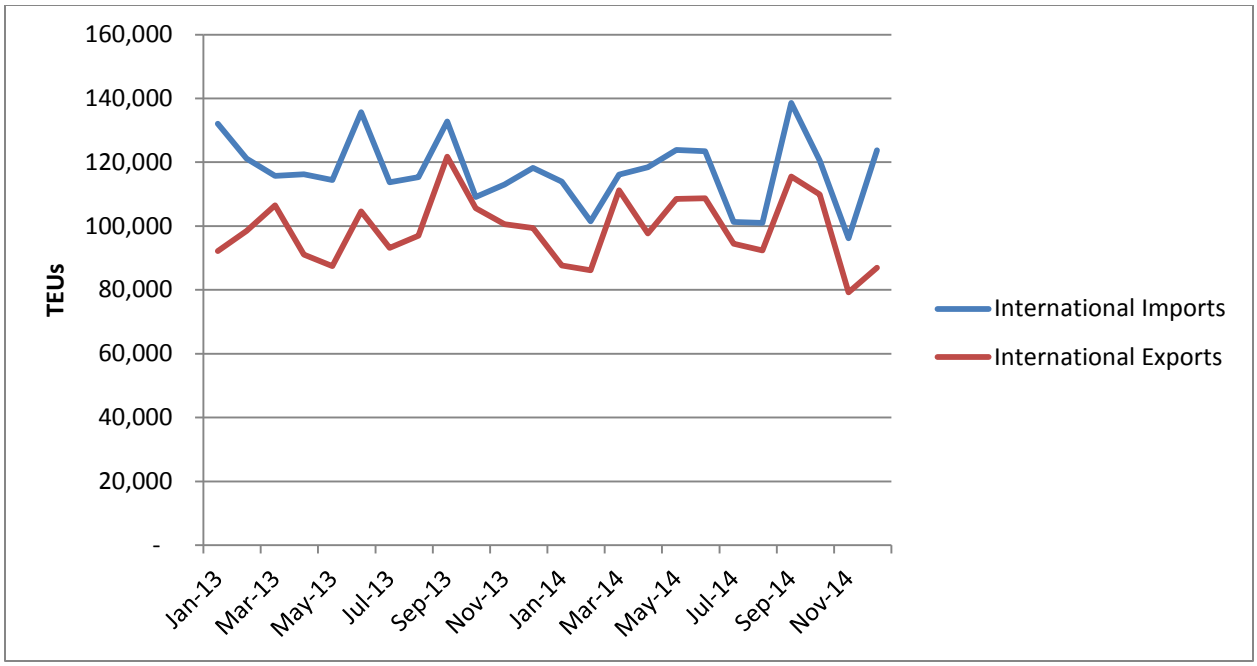

Figure 4. Port of Tacoma Monthly Combined Full and Empty, TEU Imports and Exports.

The ability of the Port to sustain such activities is directly dependent upon the efficiencies offered throughout the transportation system as goods enter and leave the port facilities. The Tidelands Division of Tacoma Rail is an integral part of that system, playing a service role to all four intermodal terminals within the Port (North Intermodal Yard, Pierce County Terminal, South Intermodal Yard, and Washington United Terminal) along with the Port's bulk break facilities. Additionally, the Division provides switching service for 40 industrial customers. These customers handle commodities ranging from food and forest products to automobiles and petroleum products.[56]

The line moves approximately 40 trains per week from 69 major customers with goods ranging from international intermodal, crude oil, automobiles, and chemicals, to frozen food (Table 19). As can be observed in the table below, Crude by rail has increasingly become a larger player on the line. In October of 2013, crude constituted 1,026 carloads (12 percent of the top five commodities), while in September of 2014 that value had risen to 1,820 carloads (18.5 percent of the top five commodities). The operators expect to see their annual revenues continue to increase

[56] https://www.mytpu.org/tacomarail/service-area/tidelands-division.htm

as the economy recovers and their traffic base diversifies away from international intermodal container cargo.

Table 19. Total Carloads Moved on Tacoma Rail Between October of 2013 and September of 2014.

Commodity	Carloads
International Intermodal*	191,056
Crude Oil	17,235
Automobiles	10,941
Chemicals	5,413
Frozen Food	3,844
Other	6,083
TOTAL	**234,572**

*Units for International Intermodal are platforms. One intermodal railcar can equal up to five platforms, each with its own capability to have double stacked containers.

Goods and containers for both import and export arrive and depart the Port of Tacoma by both rail and truck. The presence of rail within the port serves an integral function to effectively bring in or take out high volumes of cargo that would otherwise require movement by truck. The failure to maintain a functional rail presence in the port is one with massive private and social consequences for the region. Table 20 below highlights the estimated number of truckloads that would be required to move as much cargo as does Tacoma Rail.

Table 20. Tacoma Rail Railcar Volume and Truck Equivalents.

Commodity	Total Carloads	Conversion	Truckloads	Tons
International Intermodal*	191,056	1:2.2	420,417	8,408,340
Crude Oil	17,235	1:4	68,940	1,723,500
Automobiles**	10,941	1:2	21,882	547,050
Chemicals	5,413	1:4	21,652	541,300
Frozen Foods	3,844	1:4	15,376	384,400
Other	6,083	1:4	24,332	608,300
TOTAL	**234,572**		**572,599**	**12,212,890**

* Assume 44 tons per platform; ** Assume 14 cars per railcar, 7 per truck.

As identified in both of the previous case studies, rail and truck operations provide service and reach to very different markets. Table 21 below once again highlights these distinct differences.

The goods (based solely on the top five identified throughout this section) being moved by Tacoma Rail have an estimated total value in excess of $27 billion. Using ton-mile based estimates to move these goods over their averaged distances, the transport costs are $176.4 million (Table 22). Though certainly not a practical option, the cost to have moved these same goods to the same markets by truck would have exceeded $2.1 billion, or more than 11 times that of rail.

Table 21. Average Travel Distances by Commodity Group for Washington State Products.

Commodity Group	Average Distance Moved by Rail	Average Distance Moved by Truck
International Intermodal**	1,182*	178
Crude Oil***	900	27
Automobiles	1,588	290*
Chemicals	800*	128*
Frozen Food	2,364	95*

* Insufficient data for Washington specific movements, thus average distances represent a national average; ** *Mixed Freight* values used from Commodity flow Survey; *Fuel Oils* values used from Commodity Flow Survey; *** Average rail distance estimated by incoming trains specifically to Tacoma Rail.

Table 22. Travel Cost Scenarios for Transport Diversion from Rail to Truck.

Commodity	Total Estimated Value of Product Moved	Total Estimated Cost of Movement by Rail	Cost if Moved Fully by Truck
International Intermodal*	$ 18,844,726,579	$ 92,101,593	$ 1,094,117,585
Crude Oil	$ 1,478,137,318	$ 34,745,760	$ 412,761,015
Automobiles	$ 5,915,357,857	$ 19,459,225	$ 231,165,168
Chemicals	$ 254,649,899	$ 9,700,096	$ 115,231,944
Frozen Foods	$ 600,625,000	$ 20,355,364	$ 241,810,818
TOTAL	**$ 27,093,496,653**	**$ 176,362,038**	**$ 2,095,086,530**

*Evaluated as platform.

Social Cost

In addition to the direct, private costs to the shippers utilizing Tacoma Rail, the potential diversion of rail to truck in the event of a total loss or relegation of the line to a non-competitive status generates several social costs in the region. Unlike the other lines previously discussed, the Tacoma Rail line (particularly the Tidelands Division) is in a highly urbanized, industrial port area in which congestion is already a significant factor. Thus, social costs, in addition to the

potential for increased pavement damage, are real considerations. These additional social costs include congestion, crashes, air pollution, and noise impacts. The addition of more than 500,000 trucks could easily overwhelm the roadways, making the Port of Tacoma no longer an effective international port. Table 23 below highlights the estimated annual social cost that may be experienced absent an effectively operating Tacoma Rail line. The table provides a 20-40 mile range to depict the entirety of the urban area that must be traversed before reaching more open roadway. These social costs alone easily reach in excess of $10 million dollars[57]. The social costs do not cease at the urban boundary; however, the effects are concentrated within this area.

Table 23. Additional Social Costs Accrued as a Result of Rail to Truck Diversion.

Social Cost Category	Mile Radius 20	40
Estimated Pavement Savings	$ 6,413,109	$ 12,826,218
Congestion Impacts	$ 3,206,554	$ 6,413,109
Crash Impacts	$ 229,040	$ 458,079
Air Pollution Impacts	$ 687,119	$ 1,374,238
Noise Impacts	$ 458,079	$ 916,158
TOTAL	**$ 10,993,901**	**$ 21,987,802**

Closing Remarks on Tacoma Rail

Washington serves as a major gateway state connecting Asian trade flows to the U.S. economy, as well as Alaska to the Lower 48 states. More than 95 percent of U.S. cargo imports arrive by ship. West Coast ports, including Seattle/Tacoma, account for 75 percent of Asian imports. These imports are then connected to the U.S. intermodal system and are able to arrive at the U.S. East Coast in about 18 days start to finish.[58] The efficiency of such a system is highly dependent upon the ability to effectively move goods into and out of the ports without significant delay. The service provided by port-based rail lines such as Tacoma Rail enable such movements to

[57] Value based on adjusted FHWA estimated value for pavement damage per mile for 80kip 5-axle Comb/Rural Interstate. Cents per mile costs (2000 $): Pavement Damage = 40.9, Congestion = 20.06, Crash = 1.15, Air Pollution = 4.49, Noise Impacts = 3.04. All costs are adjusted to 2014 values.

[58] USDA-AMS. *Impact of Panama Canal Expansion on the U.S. Intermodal System. (January 2010).* Retrieved as of December 2011 from: http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5082003 .

occur, thus generating the economic impacts experienced by the region. Absent effective rail service that is adequately able to keep up with industry trends and requirements, the ports face increased congestion and other social costs reflective of an increased dependency on truck movement. The 18 day transit from Asian originating countries to the East Coast only beats out a Panama Canal based transit by a handful of days. These few days continue to make West Coast ports competitive. Delays caused by inefficiencies at any stage impact overall competiveness of Washington as a gateway, thus not only impacting our trade volume, but also our own producers' ability to compete in a global market place.

Regional Load Centers

Connectivity of the short line rail network to mainline railroads, truck and waterway corridors are vital to the success of Washington's freight transportation system. Washington State is readily characterized by a multifaceted freight transportation system with access to all major modes of freight movement, particularly truck, rail, and inland waterway. Such access provides for both modal competition and complementarities, thus keeping transportation rates low and accessible markets broad. As such, the availability and competition between these modes serve to provide efficient and market responsive service in the region. Efficient freight mobility balances the demand for transportation capacity and service with the quantity supplied for those services and capacities. In order to provision efficient mobility through a supply and demand relationship, an accurate assessment of transportation demand, as well as the costs and productivity of transportation services supplied must be developed.

Federal, state and local governments are increasingly tasked with improving freight mobility through operational improvements and new public or private infrastructure recognizing that the health and economic well-being of communities significantly depends upon transportation. Industry and economic development officials often seek to locate regional loading facilities near their communities as a means of improving the efficiency of the freight movements for their commodities and market outlets. Proposed public investment in such intermodal facilities raises two questions:

- Will the facility succeed in the private marketplace by generating a sustained return as a commercial investment?
- Is any public investment justified based on the public net benefits (often referred to by economists as externalities, both positive and negative) produced?

Many variables associated with the demand for such a facility and related infrastructure costs and the functions of such a facility are unknown and create risk and uncertainty. As states and regions seek to increase freight movement efficiencies and capture the economic gains associated with them, a consistent and viable process to evaluate the merits of an intermodal facility or

regional loading center is needed. Casavant et al.[59] developed such processes through an easy to implement criteria focused on intermodal truck-rail facilities. Casavant's criteria is designed to identify the relative importance of a set of attributes (Table 24) to an intermodal facility. Each attribute may be evaluated qualitatively as Critical, Necessary, Contributory, or Not Important.

[59] Casavant, K., Jessup, E., & Monet, A. (2004). Determining the Potential Economic Viability of Inter-Modal Truck-Rail facilities in Washington State. Report prepared for Washington State Transportation Commission and the Washington State Department of transportation. December 2004.

Table 24. Attributes That Contribute to the Viability of Regional Loading Centers.

Proximity To: (Proxy for Access)	Operational Attributes (Asset Efficiency)	Product Attributes	Public Characteristics
➢ Class I Railroad ➢ Short Line Rail with Class I Connection ➢ Major Interstate or Freight Corridor ➢ Population Center ➢ Deepwater and Inland Ports or Airport ➢ Major Production Points including agriculture and energy clusters ➢ Major Destination Markets ➢ Adequate Land/Space	➢ Need for Changing, Directing, and Dividing Cargo ➢ Distribution Efficiencies and first/last mile characteristics ➢ Capacity ➢ Degree of Automation ➢ Time to Build	➢ Commodity Mix ➢ Ratio of Transport Rate to Value of Product ➢ Demand Opportunities and Prospects	➢ Public/Private Partnership ➢ Magnitude of Public Participation ➢ Level of Working Relationship Between State and Private Agents ➢ Labor Availability and Training ➢ Tax and Zoning Initiatives ➢ Land use compatibility both in policy and available area

This study used these criteria to assess three agricultural regional load centers and discuss the attributes that led their strengths as well as any that contributed to a weakness.

Wheat and other dryland crops largely define the economy of Washington's southeast region. Meanwhile, the state's central regions are home to a robust tree-fruit industry. Both these regions export products internationally and domestically, and rely on the rail network.

The Wheat Supply Chain - The history of grain development in Washington has gone hand-in-hand with technological development and the evolution of transportation in the region. Whether it has been steam boats on the Snake River, railroads around the falls and rapids, or highway development, all have served to support the development of the highest density wheat producing county in the world – Whitman County.

We now witness the wheat industry's distribution system comprised of three modes: rail (both Class 1 and short line), trucks using the highway/county road system, barges using the waterway system, and intermodal facilities. The competition among, and capacity of, these modes has provided efficient and market responsive service in the region. Though a mature transportation system, continual development and adaptation is necessary to maintain the competitive advantage held by the region. Such adaptation requires ready flexibility to changing market conditions, demands, as well as changes to the transportation system itself – both planned and unforeseen. While geography is a major driver of the direction and modal usage within the wheat supply chain (Figure 5), those directional movements are not static. Case in point was the 2011 lock closure along the Columbia-Snake waterway in which all grain movement was halted for three months while repairs were made.[60] Typical movements along the waterway had to be adjusted either by time of movement or direction of movement onto other modes. The supply chain was able to effectively adjust. While the lock outage may be an anomaly within the movement of wheat in the region, the necessity to adjust to changing conditions is ever present. The deployment of new unit train loading facilities is one such change that has and is changing the spatial dynamics of wheat movement in the state.

[60] Refer to FPTI reports: 1, 2, 9, 10, and 12 for full details on industry response to the closure. http://www.fpti.wsu.edu/reports.htm

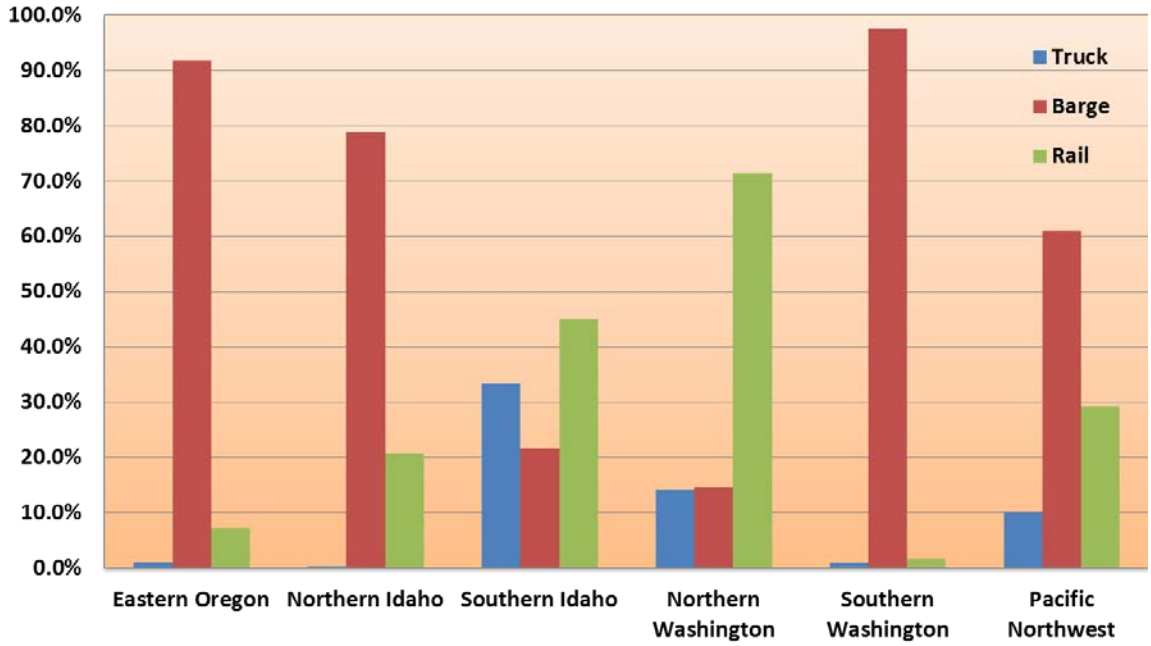

Figure 5. Typical Percentage of Wheat Shipped via Various Modes in the Pacific Northwest.

The initial multiple car (110 car unit strains or shorter 50 to 60 car shuttle trains) facility was located in Ritzville, Washington and significantly reshaped the landscape of grain flow in the region upon its introduction. The Ritzville facility immediately began to compete for grain volume that was previously shipped either truck-barge to the river and to a smaller degree with grain shipped on the PCC rail system. What Ritzville offered was lower rates, ample storage at critical times (between three and four million bushels, including outside storage), the ability to move large volumes of grain quickly, scale efficiencies, and a high degree of customer service (not charging for double handling, storage availability at harvest time, partially subsidized truck movements, etc.). As a result, the geographical market attraction zones around the Snake River and the short-line system compete with a market attraction zone surrounding Ritzville, Washington.

Figure 6. McCoy Grain Loading Facility.

A second multiple car loading facility with similar configuration has recently begun operation south of Spokane. The McCoy facility further affects the geographical landscape and direction of the grain flows. This site began major operations in 2013-2014 and is drawing from local elevators and on farm storage as well as serving a storage function for some movements from the Midwest. The McCoy facility lies on the Washington State owned P&L branch of the PCC short lines. Jointly funded (~$24 million) by two regional cooperatives, Pacific Northwest Farmers' Cooperative (PNW) and the Cooperative Agricultural Producers (Co-Ag), McCoy provides the combined 1,500 grower members an additional outlet and driver in getting their product on the market effectively. While on its surface McCoy Grain Terminal is a storage facility and significant hub in the movement of wheat on to the rail system, deeper it serves as a major marketing outlet for the region's growers. As a trading company, McCoy LLC is significantly oriented towards the export market. The capacity and movement flexibility created through McCoy allows the region's cooperatives and their farmers to meet the market needs and guaranteed delivery of product. How then does McCoy stack up to the attributes listed in Table 24? We highlight those considered to be most critical or necessary.

- ***Available Volume in Local Production Area:*** Whitman County is the highest density wheat producing county in the world providing ample product volume. Figure 7 highlights the density of wheat production in the region.

- ***Railroad Access:*** The McCoy facility lies on the P&L line of the PCC. This line links directly to the BNSF in Marshall. At the time of construction, proponents of the facility identified substantial need on the P&L line to ensure its adequacy to serve as a major loading facility. In 2013, the Port of Whitman County unsuccessfully sought TIGER-V funds to upgrade the P&L line such that capacity could adequately hold 286,000 pound cars. Bridges were of major concern in this application in order to sustainably handle the anticipated loads. Not only is rail access important in terms of moving the commodity to market, it also serves as a collection agent from the area elevators. Many of the country elevators along lines such as the PCC system have limited individual capacity and limited range from which they draw, typical 10-20 miles. However, the added capacity within the linked system offered by the McCoy facility adds power to the attractiveness and utility of the elevators on the system.
- ***Public-Private Partnerships:*** The ability of the McCoy facility to operate as planned requires a significant degree of public-private partnership. As the state owns the line on which the facility sits, state investment is needed and justified based on the social benefits from such a system. These benefits are generated through increased economic competitiveness of the region's producers and diversion of truck off the roadway. The McCoy facility certainly contributes to the reduction in roadway miles. The facility's managers estimate that:
  - Without the facility, 16.4 million bushels of wheat would be hauled an average of 75 miles from farm storage to Central Ferry. This movement requires nearly 20,000 trucks
  - With the facility, truck trips to nearby rail loading facilities increase, therefore the volume shipped by rail from storage to McCoy increases, and the number of trucks to McCoy increases (~25 miles), all acting to reduce total truck miles.
- ***Major Destination Markets:*** With more than 80 percent of its wheat exported annually, Washington's destination markets are vast, and intricately linked to the region's major export ports. The location and operating practices of McCoy LLC allows it to utilize both the Puget Sound ports and those reached by the Columbia-Snake system. This allowance is enabled via the partnerships established. In addition to the McCoy facility, McCoy LLC or its funding partners also have storage and access at Central Ferry, Almota and

Lewis-Clark terminals, thus providing ready access to the barge system. Through these multiple venues, McCoy is able to flexibly reach its destination markets with significant volume capacity at competitive prices.

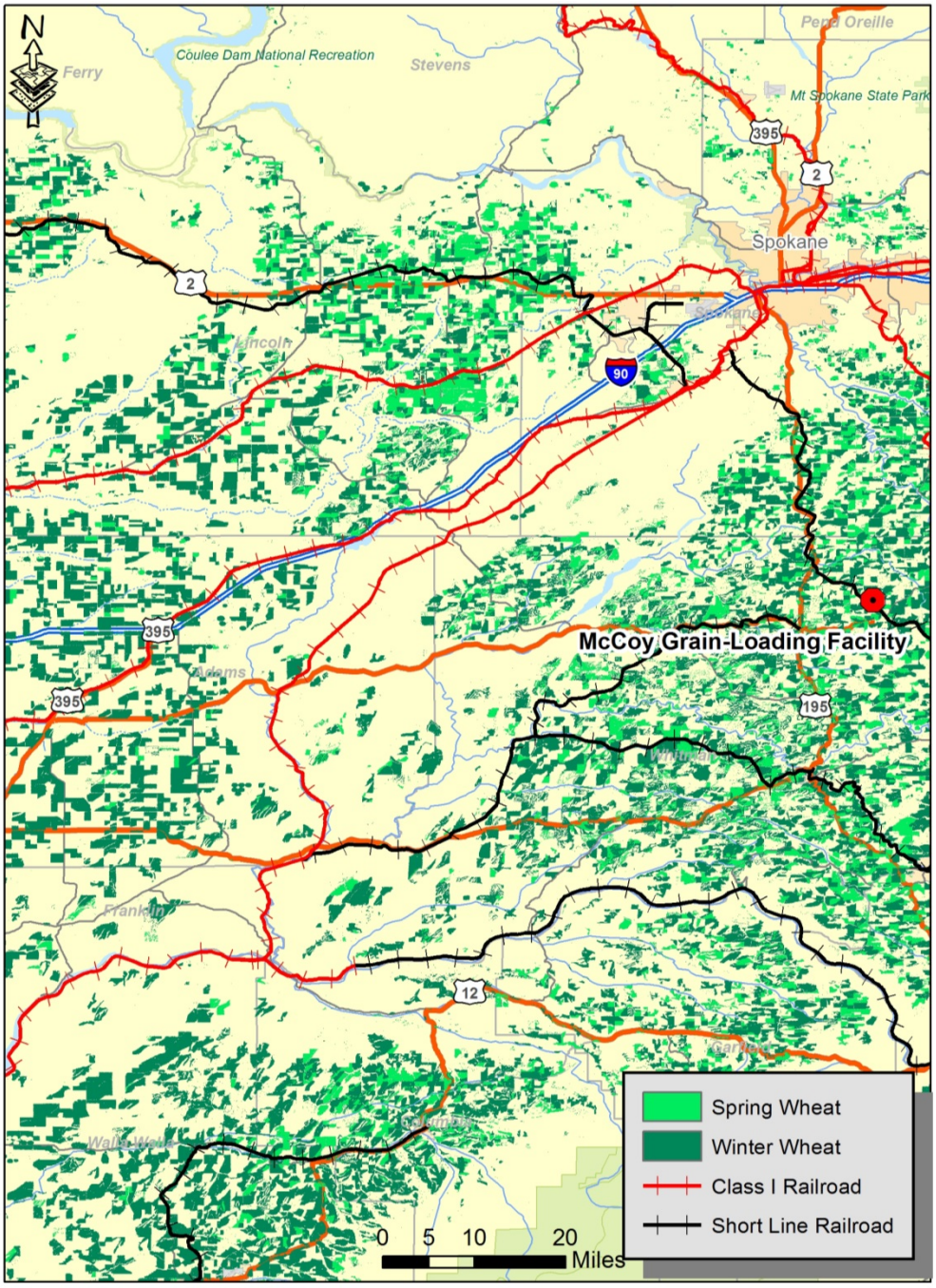

Figure 7. McCoy Grain Loading Facility located in the heart of Washington's major wheat production land and on a State Owned Short line (P&L line).

Distribution of Cold Goods - Unlike the wheat supply chain, much of Central Washington's production is in highly perishable products that frequently require cold and fast transportation. The perishability of these products makes them, and their producers, highly susceptible to delays and reliability concerns. As demand on the rail lines of the region expand, the ability to reliably get product onto the line is a paramount concern. Two private actors within the state exemplify the manner in which the attributes listed in Table 24 affect the viability of a loading center dealing in cold goods.

Cold Train & Railex **-** As of November of 2013, Washington-based producers of apples, pears, potatoes, carrots and cherries (among numerous others) were moving nearly 1,000 containers per month out of the Port of Quincy on the *Cold Train Express.* The *Cold Train,* as it is commonly referred, is an intermodal carrier transporting many Washington goods to Chicago, IL for further distribution about the broad market for Washington's agricultural products. Taking advantage of the reliability and on time percentage in excess of 90 percent found on the *Cold Train,* Washington producers were nearly guaranteed a 3-day transit time to Chicago, a significant boon for an industry whose products are highly perishable. However, as of August 2014, *Cold Train* has indefinitely ceased all movement. The 90 percent on time performance had drastically dropped to 5 percent according to *Cold Train* executives. A 5 percent on-time rate and an expected transit time of nearly six days cost Cold Train much of its perishable business. Producers were forced to find another, more reliable and potentially more costly mode to transport their 1,000 containers a month – via trucks.

While other refrigerated transport carriers remain confident in their continued performance and successful operations, lessons should be learned in the demise of *Cold Train. Railex,* one of the confidently operating carriers, attributes its continued success to its unit train operation. Unit trains are thus able to operate without the delays of intermittently adding and removing cars along the route. In recent years, the unit train has been exploding in popularity on Class I lines (e.g. BNSF) because the operations can run more efficiently and at a lower net cost. Unit train operation effectively increases the operating capacity of a line without increasing the infrastructure needs on the line. Non-unit trains, such as those utilized by *Cold Train,* consist of wagonload freight on a consignment basis.

In addition to cold chain movement of fresh goods, the *Railex* facility in Wallula recently opened a 5 million case wine storage facility on its site that is also able to directly load cold cars. This facility serves as a major distribution center for the *Chateau Ste. Michelle* winery. The distribution centers, both the new wine facility and the main loading center, take advantage of the efficiencies offered by both rail and truck, using it for both inbound and outbound freight. The main cold store facility can load 19 rail cars at a time. So what attribute has put *Railex* on the right track?

- ***Railroad Access:*** *Railex* lies directly on a Class I rail line (Union Pacific). Their ability to provide unit trains (typically 50-60 cars) directly on to the rail is a major contributor to success. The *Railex* facility has ample track on site to effectively prepare its trains for connection to the mainline (Figure 8).

Figure 8. Aerial View of Railex Facility in Wallula, WA. Loop Track Allows 19 Cars to Enter the Building on the Left for Loading. Photo from Google maps.

- ***Major Production Points:*** *Railex* lies within the heart of Washington's major agricultural zone. The efficiencies in travel and guaranteed temperature control allow the facility to ship produce from within a 350 mile radius to Chicago and beyond.
- ***Major Interstate or Freight Corridor:*** In addition to lying on a Class I rail line, Railex is able to take advantage of lying on a major highway connection route within the region, thus enabling it to take advantage of the collection efficiencies offered by truck freight.
- ***Commodity Mix:*** Agriculture is inherently seasonal, thus the ability to handle multiple commodities is a necessary component of a cold storage distribution center.

From a strictly functional standpoint, where *Railex* has succeeded and the *Cold Train* did not is largely in its ability to meet the changing needs of the mainline rail system, trending towards unit trains as demand for the capacity increases, and thus its ability to reliably deliver goods to their market destination.

In sum, the potential viability of a regional loading facility lies in its ability to generate the volume necessary to supply markets at a rate competitive or better than the existing infrastructure. While the attributes of such a facility may vary with purpose, several attributes stand independently of a facility's purpose. These include:

- Adequate Land / Space;
- Ability to meet the transportation needs of both the customer (reliability, speed, cost) and the carriers;
- Public Private Partnerships;
- Location relevant to market and to production area;
- Capacity;
- Gains made in efficiency over current distribution channels.

Study Findings

Inventory of Current Conditions

There are two significant railroad industry trends facing the short line system, and they are largely driven by the efficiency needs of the Class I rail lines. First, the industry standard has moved towards use of 286,000 pound railcars over that of smaller 263,000 pound cars. The larger railcars reduce capital, fuel and other costs to railroads and generate economic savings. To maintain compatibility with the Class I lines, many short lines must be upgraded to handle the larger cars. This capability comes from a combination of rail, tie, and ballast quality in addition to bridge structural sufficiency. Failing to meet the mainline railroads' heavier 286,000 pound rail car standard will make portions of the state's short line system obsolete and unavailable to the state's shippers and citizens.

Second, Class I rail lines have made important productivity gains from economies of size in the operation of unit trains, 110 or more cars, as well as shuttle trains of 50 cars or more. These gains have resulted in shuttle or unit trains comprising a majority of rail movements for many agricultural and other products. In order to receive competitive rates, the mainline railroads require shippers and/or the short lines they use to increase loading capacity in their transload and storage facilities, or add more siding to build longer trains.

To assess the current conditions and infrastructure needs of the state's short line railroads, researchers at WSU, working with WSDOT, completed in-depth interviews with the short line rail owners and operators who manage 19 of the 22 short lines in the state and found that:

- Much of the existing short line rail system in Washington State does not meet the state's current or future capacity and velocity needs for efficient operations. Productivity and safety of the system suffers from long-deferred maintenance. For example over 55 percent, more than 700 miles, of these short lines' rail road miles are less than 112 pound rail, the recommended weight to efficiently operate 286,000 pound railcars. One quarter of short line miles has a rail weight of 90-pounds or less. 90-pound rail is frequently

considered a minimum rail weight that may operate 286,000 pound cars, though at a much slower speed and with increased rate of wear;

- Twelve respondents were prepared to fully articulate their most pressing infrastructure needs to maintain rail operations in the survey. These respondents identified over $140 million in pressing need, of which nearly $76 million directly related to the condition of the rail, ties and ballast.
- Bridges constituted another significant need by the respondents; however, many expressed uncertainty as to the overall need for bridge replacement. This uncertainty is a reflection of new Federal Railroad Administration (FRA) compliance guidelines that must be met by September of 2017. These guidelines will require reporting on the load rating, safe operating weight, and condition of all bridges. At that time a more accurate estimate of bridge rehabilitation or replacement needs will be available throughout the state.
- All but two respondents, one jointly owned by the Class I railroads and the other a publicly owned line, said that their current revenues are not sufficient to fully overcome the backlog of deferred maintenance on their lines.

Needs Assessment

As the future viability of many short lines, or segments of them, is dependent upon their ability to adequately meet the needs of the Class I lines to which they connect, namely 286,000 pound capability, this report assessed need based on the track conditions necessary for such railcars. This study additionally established an operational speed goal that meets FRA Class II standards of 25 mph. While this report provides the owners' estimate of the system wide investment needs to bring the short lines up to these standards, further engineering analysis and communication with owners and operators will be necessary to develop capital investment strategies that meet the state's and WSDOT's practical design and least cost planning principles.

This study successfully gathered data on rail conditions for 19 of the 22 lines in the state. Based on this information the overall infrastructure investment need for more than 700 miles is approximately $610,000,000. Despite being just over half of the total short line miles in the state, track needs on publicly owned lines comprise more than two-thirds of the investment needs.

While solid data on track conditions was available on 19 of the 22 lines, only 10 short lines were able to quantify needs for the rehabilitation or replacement of bridges. The remaining 12 lines' bridge costs for either rehabilitation or replacement were estimated based on rates found in the reporting lines. As such, bridge cost estimates should be considered a broad estimate. The estimate may be improved upon in late 2017 as all short lines will then be required by the FRA to have their bridges load rated.

Overcoming the backlog of deferred maintenance should not be considered a one-time investment, but rather an opportunity to engage in a systematic process of increasing the rate at which suitable operations are achieved. As such, Table 25 below highlights hypothetical annual public short line support based on a range of public portions (25 to 75 percent of total need). Under these scenarios, a 50 percent support would require a 50 percent match from the short line or their partners. The investment is broken into a 20 year investment plan.

Table 25. Annual Investment Need to Overcome Deferred Maintenance. Based on Hypothetical Public Portions.

Total Identified Need (Publicly Owned)			$ 485,462,781
Total Identified Need (Privately Owned)			$ 124,761,334
Total Identified Need			**$ 610,224,115**
	25%	**50%**	**75%**
Annual Public Investment (Publicly Owned)	$ 6,068,285	$ 12,136,570	$ 18,204,854
Annual Public Investment (Privately Owned)	$ 1,559,517	$ 3,119,033	$ 4,678,550
Total Annual Public Investment	**$ 7,627,801**	**$ 15,255,603**	**$ 22,883,404**

The values identified above should be considered a high end value, as it sums the need over all currently known active lines irrespective of future intent, or economics, of use. Careful analysis through Benefit-Cost Analyses (BCA) and other economic analyses should aide the state in directing investment towards those lines with suitable prospects for return on investment, both for the line and the public. These future investments should additionally hold true to WSDOT's efforts to implement practical design and least cost planning initiatives.

Improving Investment Outcome

Washington state law (RCW 47.76) directs WSDOT to provide grants and loans to improve the short line rail system. The state policies authorizing these programs recognize that the short line system has the potential to generate significant social benefits. The study's analysis of several of these benefits (congestion and roadway damage relief) in three case studies on the Pend Oreille Valley Railroad, the Columbia Basin Railroad, and Tacoma Rail, show that they generate social benefits in excess of $11 million dollars annually. These public benefits are in addition to the significant private costs saved by the industries using the lines, industries that may otherwise lose significant market share if they had to solely rely on more expensive truck movements.

While many short line operators reported satisfaction with the state programs that support short line railroads, the Freight Rail Investment Bank (FRIB) and the Freight Rail Assistance Program (FRAP), several smaller lines said that they are not able to compete for funds on a statewide level with larger lines with larger customer bases. They do not have staff resources to adequately develop the proposals necessary to win the grant awards. Although the program intent is to serve all short lines, the smaller lines are not able to take advantage of the programs.

Next steps should begin the process of developing a prioritization process for implementation. The processes in place to select FRIB and FRAP recipients provide a solid, and already established, starting point from which to begin that evaluation. Below, several additional considerations are provided that may aide in determining the value of improvement projects to achieve satisfactory structural conditions.

Modifications to the FRIB and FRAP programs

Washington's FRAP and FRIB programs are similar to many state programs found throughout the nation. The level of support within them nationwide is highly variable. The following sections highlight mechanisms within the current prioritization metrics to evaluate requests for support from public and private lines. This includes both a refinement of the BCA and creation of planning support to assist operators, owners or other interested parties in evaluating the merits of improvement to their lines.

The following adjustments are recommended for the FRAP and FRIB programs:

- **Total funding allocation increase:** The total monies currently available do not approach the amount needed on the system. Though the state should not be expected to provide the overwhelming funding for short line rail infrastructure, increased support by the state is justified based on the public benefit rendered from short line rail operations, namely:
  - Decreased congestion;
  - Decreased emissions;
  - Decreased capital costs on rural road maintenance and state highways;
  - Increased competitiveness for growth opportunities and employment needs in communities;
  - Preservation of the rail line for potential future use and economic development.

- **Benefit Cost Analysis (BCA) Refinement:** Each applicant for the grant and loan programs must be able to justify positive benefit-to-cost ratios in order to be considered for funding.
  - Owners and operators of smaller short line railroads said that the current BCA requirements are skewed in favor of larger lines that have: (1) Significant existing operations to bolster the benefits side of the calculation, and (2) Staff capacity (in time and ability) to accurately and fully enumerate the benefits of their proposed project. See *Short Line Planning Support* section for more detailed recommendation.
  - Provide WSDOT increased flexibility within the programs in the weighting of grant criteria to better meet the needs of owners and operators in a manner consistent with legislative policy direction.
  - Standardization and updating of input values for the applications (e.g. standard social benefit or cost calculations such as those used in the case studies). A consistent set of standard inputs should be assigned for use by the applicants and be made readily available for their use. These input standards will minimize the evaluative work required by WSDOT staff following application submission and provide the applicants with a transparent assessment of how their project is being

tabulated. Additionally, applicants may be assured that other applicants are using similar numbers.

- Development of a mechanism to incorporate the non-freight generated benefits that may accrue as a result of the infrastructure. These non-freight benefits include those as a result of alternative line uses, including commuter rail or scenic/tourism based rail excursions. Compounded with freight benefits, these additional inclusions may turn an otherwise marginal project into a valuable investment.

Short Line Planning Support

Operational size of the state's short line system varies significantly. Small and rural short lines with limited staff and available funds for technical assistance find themselves short on ability to successfully compete for additional funding support from the state or other supporting agencies. To aid these lines in developing stronger applications for programs like FRAP or FRIB, we recommend the development of short line planning grants. These small grants may be a subset of the FRAP program or in addition to it. Planning grants of $25,000 to $50,000 would enable these lines to obtain technical support to generate a stronger assessment of the line's need and produce a fuller argument for project funding. The directives and goals of such planning grants should include:

- Proposal acceptance from short line owners, operators, or private and public organizations directly invested in the development of the rail line or associated infrastructure to aid in the determination of the need and feasibility of the line for continued or expanded economic development in the operating region;
- The primary goal of the planning grants should be to generate feasibility studies on or in relation to the qualified short line rail. This shall include the feasibility of: expansion, rehabilitation, marketing operations, attraction of new rail associated facilities (e.g. loading or reloading);
- Secondarily, the planning funding allows the identification of potential partners within the operating region;
- Planning support for the short lines and their partners should not be limited to simply what is currently on the line; rather, the intent of the planning should be focused on a

bottom-up planning mechanism by taking into account the economic development opportunities of the region in conjunction with the short line and complementary modes of transportation. These efforts thus necessarily involve the economic potential of the surrounding land base zoning opportunities.

- The recipients of the planning grants should be strongly encouraged to turn the generated feasibility studies into infrastructure based grants or loans where the results of the study dictate.

Absent sufficient capacity to fully evaluate the economic conditions surrounding their lines, small/rural owners and operators find themselves in a catch-22 state. Several survey respondents identified their situation in which they face difficulty attracting new customers to their region and line due to the insufficient track conditions. Simultaneously, they find themselves unable to adequately obtain infrastructure support due to the present inability to demonstrate enough positive returns to justify the investment.

The addition of planning grants to the available funding schemes offered with state support should allow a thorough evaluation of the potential attractiveness of the line. Such evaluations should expand beyond BCA and include measures of the potential economic impacts of an investment in this line. When appropriately conducted, an economic impact study will reveal an expectation of the job creation potential and output generation as a result of the line as compared to the state in which an investment in line upgrade is not conducted. Further, an exploration within the planning activities should identify potential alternatives to line improvement and their subsequent economic impacts. Such alternatives may include, but are not limited to line abandonment (or conversion to trails) and alternative investment in road maintenance for the highway and local road infrastructure in the area that will carry the additional freight.

Implementation of other funding/support programs

In addition to the funding opportunities already present in the state and the recommendation to expand those sources, the review of other state programs revealed several other mechanisms that should be considered for further evaluation and potential implementation in Washington. Most notable mechanisms include:

- Rail Transportation Assistance Program (RTAP)
- Transportation Equity Fund
- Tax Credits
- Lottery Bond-Based Initiatives

Institutional Capacity Building

Currently, 14 of the state's short lines are members of the American Short Line and Regional Railroad Association (ASLRRA). While the ASLRRA is certainly a valuable association for the short lines of Washington State, many of the line owners and operators would be well served by a state level short line association. Such an association would allow the lines to keep abreast of the opportunities that exist within the state and the potential for partnerships. This association would not only serve the short lines, but also be a host for connecting with like interested parties. Primary functions of such an association would be:

- Keep members abreast of regulatory changes or opportunities occurring within Washington:
  - For example, requirements of Positive Train Control.
- Provide a clearinghouse for funding avenues from sources, including but not limited to Washington Department of Transportation, Washington Department of Commerce, Freight Mobility Strategic Investment Board:
  - The WSDOT is but one source of transportation related funding in the state. For example, the *Community and Economic Revitalization Board*[61], provides local public entities and recognized tribal governments with both planning grants and grants or loans for public infrastructure to support future business development.
- Collect and maintain a database of railway conditions throughout the state.
- Connect short line owners and operators with valuable resources necessary for their successful applications for funding.

[61] http://www.commerce.wa.gov/commissions/CommunityEconomicRevitalizationBoard/Pages/default.aspx

Conclusions

In evaluating when and where to invest in short line support to overcome deferred maintenance the following considerations should be applied:

1. Does the short line or public sector applicant for the state's freight rail grant programs possess the institutional capacity to fully quantify the potential to generate positive net benefits and generate positive economic impacts to the region, as measured in jobs and economic output?
2. In the event that the applicant does not currently possess the capacity for such demonstration, they should be encouraged to seek out planning support through either the recommended planning grants or other funding programs (e.g. CERB) that promotes the generation of economic development opportunities.
3. Upon completion of the planning process, short line owners/operators should reevaluate, in coordination with the state, the feasibility of moving forward with infrastructure investment. Where positive net economic benefits and impacts may now be demonstrated, effort should be focused on the development of competitive and fundable projects. These projects should include low-dollar projects that may generate a real benefit to a small line. The benefits may be difficult to identify for a singular project; however, their cumulative effects may be additive with other smaller projects, each at low cost. Together, the small projects may conform with practical design intentions by ensuring that the intended benefits of one project are not hampered by limitations elsewhere.
4. Where such benefits and impacts are demonstrated to be positive, consideration should be taken to identify the applicant's need and rationale for state support. Is the level of state investment necessary to maintain economically viable railroad operations on a sustainable basis? A primary goal of state support in overcoming deferred maintenance should be the promotion of the lines to the point that they may be self-sustaining within a continued maintenance program, while producing significant public benefits.
5. Where planning efforts fail to yield sufficient basis in terms of net benefits and impacts for continued infrastructure investment, owners and operators should be encouraged to work with the state, WSDOT and other agencies, to identify an alternative path forward

with the line or other infrastructure investment that may yield positive economic benefits.

Appendix A

Instructions: Please answer each question to the best of your knowledge. Answers may be supplied by clicking on the red text or table cell. If a question does not apply to you, please indicate so by responding "NA". Thank you.

Respondent Background Information

1. What is the name of the Short line for which you are responding to this survey?
   Enter Response Here.

2. Are you the owner or the operator of the railroad identified above?

   ☐I am the owner of the railroad
   ☐I am the operator of the railroad
   ☐I both own and operate the railroad

3. Please identify the ownership structure of the identified railroad (e.g. holding company, public, single private, etc.).
   Enter Response Here.

4. How long has this line been under the current ownership and structure?
   Select from Drop Down

5. How long has this line operated as a short line railroad?
   Select From Drop Down

6. Please describe the means by which you came to own this railroad (e.g. acquired after Class I Abandonment, private purchase)?
   Enter Response Here.

7. What was the total revenue generated on this line in each of the last 5 years? Enter one value in each box

	2009	2010	2011	2012	2013
Total Revenue	$	$	$	$	$

8. Do you expect that the revenues reported in the previous question will increase, decrease, or remain the same over the next 5 years? Please explain.
   Enter Response Here.

Rail Infrastructure Conditions

We would now like to ask you a series of questions pertaining to the infrastructure and operating characteristics of the line identified in 1 above.

9. What is the total length of railroad ***you own or operate*** on this line (to the nearest mile)?
Enter Response Here.

10. Does this line operate (possess trackage rights) on any additional lines? *Please indicate the name of the line and the number of miles operated.*
Enter Response Here.

11. Are there any discontinuities in ownership or operation along the line in which you operate? (e.g. do you have any breaks in ownership along your railroad?) *If yes, please indicate the name of the other owner(s) and the length of their segment.*
Enter Response Here.

12. Please indicate the number of each of the following items below, as they occur on your line:

    a. Bridges Enter Response Here.
    b. At-grade crossings Enter Response Here.
    c. Tunnels Enter Response Here.

13. Please briefly describe the type of services your short line is engaged in (i.e. shipper to destination, shipper to class I, shipper to river, intermodal connector, other)
Enter Response Here.

14. What is the frequency of your service (trains per week)? Enter Response Here.

15. Please identify up to the top 5 commodities moved by your short line in the following table. Please identify the commodity in the cells labeled Comm 1-5 and fill in the carloads per month by commodity beginning in October of 2013.

	10/13	11/13	12/13	1/14	2/14	3/14	4/14	5/14	6/14	7/14	8/14	9/14
Comm 1	-	-	-	-	-	-	-	-	-	-	-	-
Comm 2	-	-	-	-	-	-	-	-	-	-	-	-
Comm 3	-	-	-	-	-	-	-	-	-	-	-	-
Comm 4	-	-	-	-	-	-	-	-	-	-	-	-
Comm 5	-	-	-	-	-	-	-	-	-	-	-	-

16. Based on your track and equipment *capacity*, how much of the above commodities could you move in total:

    a. Carloads per month Enter Response Here.
    b. Trains per day (or week) Enter Response Here.

17. How many major customers (shippers) does your line currently serve?
Enter Response Here.

18. Please describe the current infrastructure characteristics, by segment or subdivision if able and applicable?

    a. FRA Track Class (miles)
    Enter Response Here.

    b. Jointed or Welded Rail (miles)
    Enter Response Here.

    c. Rail Weight (miles)
    Enter Response Here.

    d. Rail Age
    Enter Response Here.

    e. Structure Sufficiency (capable of handling 286,000 pound cars)
    Enter Response Here.

19. Is your business actually constrained by any of the following factors (please describe):

    a. Slow speeds due to track/tie condition
    Enter Response Here.

    b. Bridges or other infrastructure not capable of handling 286,000 pound cars
    Enter Response Here.

    c. Capacity to originate or terminate 110-car trains
    Enter Response Here.

    d. Class I interchange condition
    Enter Response Here.

    e. Car and/or Engine Availability
    Enter Response Here.

    f. Other (please describe)
    Enter Response Here.

20. Does your line possess any other at-risk infrastructure, such as sections of significant grade or curvature that requires unusually high degree of maintenance or inspection?
    Enter Response Here.

Rail Infrastructure Investment (Needs)

We would now like to ask you a series of questions pertaining to the infrastructure investment that has or is currently being sought for this line.

21. What capital improvements to your railroad would be most beneficial to continued rail operations? *Please provide a ranking and estimated cost of those improvements.*
Enter Response Here.

22. Does your current maintenance plan address the improvements identified in the previous question?
Enter Response Here.

23. Please discuss any of the above improvements you have had to forego do to a lack of funding.
Enter Response Here.

24. How are you currently financing infrastructure improvements to your railroad? *Please identify by type (i.e. normalized maintenance, transportation trust funds, federal funds, revenue).*
Enter Response Here.

25. Have you ever sought funding from WSDOT through either the **Freight Rail Assistance Program** or the **Freight Rail Investment Bank**? If no, why not? If yes, please describe your experience as it pertains to the RFP process, approval process, WSDOT assistance during delivery, and the reimbursement process.
Enter Response Here.

26. If you answered yes to #25, please tell us how the programs met your needs overall and what improvements could be made to the programs.
Enter Response Here.

27. Are there other funding sources that you have sought, but have been unable to successfully obtain? *Please list.*
Enter Response Here.

Regional Economic Role and Future Plans

In this final set of questions, we would like to understand how you view your line's economic position and contribution to your region's economy:

28. How many workers do you currently employ?

    a. Full time. Enter Response Here.
    b. Part time. Enter Response Here.

29. Are there shippers in your operating area that could use your railroad but do not? If so, do you feel that there are operating characteristics of your rail line that influence their decision not to?
Enter Response Here.

30. How much would your business increase if those potential customers used your railroad?
Enter Response Here.

31. Please describe the nature of the competition your line faces for customers. For example, do you directly compete with other short lines, Class I rail lines, or truck transport?
Enter Response Here.

32. How would you describe the strengths of your short line?
Enter Response Here.

33. How would you describe your short line's weaknesses? How are you attempting to address these weaknesses?
Enter Response Here.

34. What other changes or improvements in your short line's service would you like to see that would benefit your customers? *Please elaborate on how these would benefit the customer.*
Enter Response Here.

35. Are there scenarios in which you could envision abandonment of your railroad, or specific line segments?
Enter Response Here.

36. In your opinion, what would be the regional impact to your region if you line was abandoned? (e.g. jobs lost, customers or other industries impacted)
Enter Response Here.