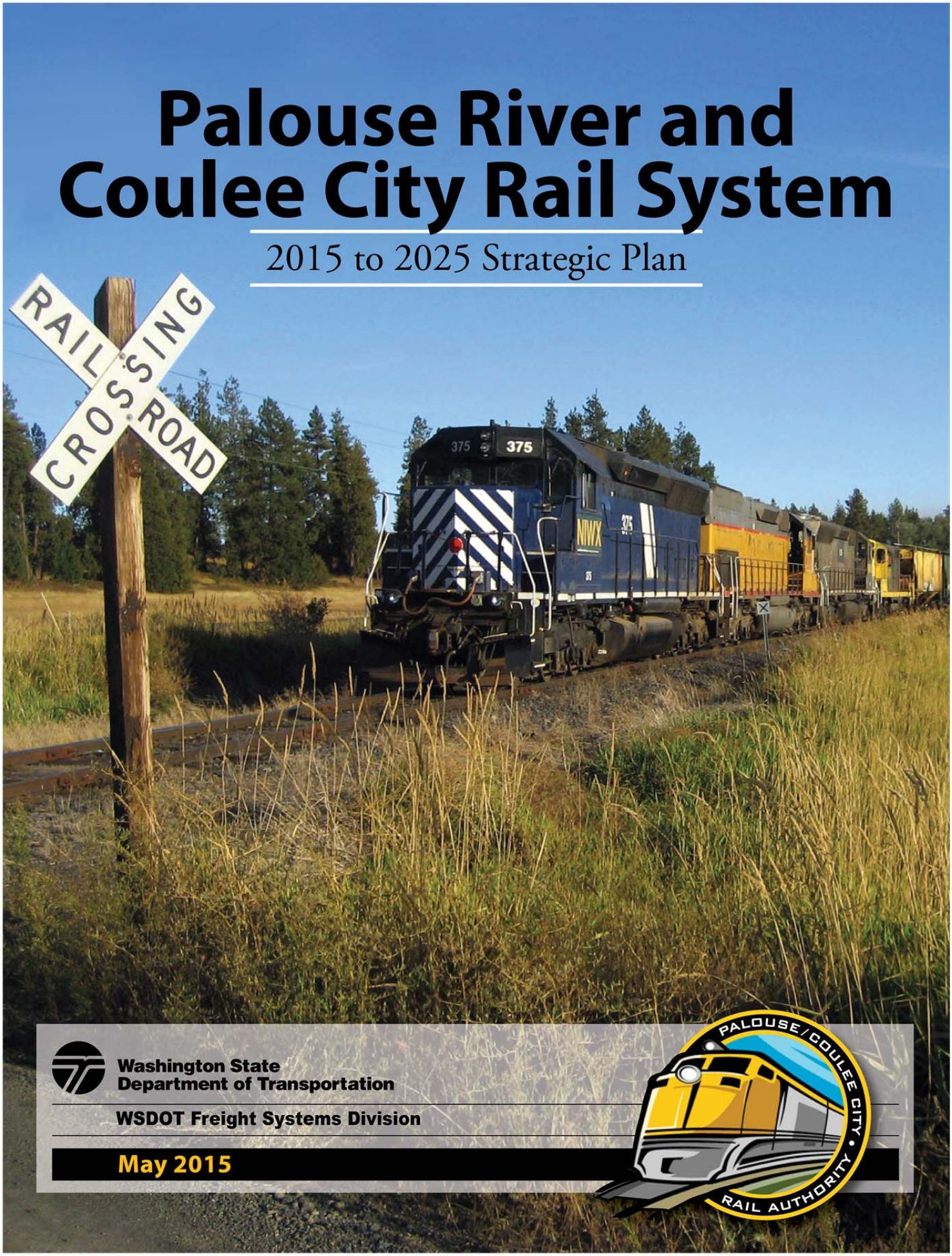
Palouse River and Coulee City Rail System

2015 to 2025 Strategic Plan



Washington State Department of Transportation

WSDOT Freight Systems Division

May 2015

PALOUSE/COULEE CITY RAIL AUTHORITY

Washington State Department of Transportation

Lynn Peterson
Secretary of Transportation

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May 11, 2015

The mission of the Washington State Department of Transportation (WSDOT) is to provide and support safe, reliable and cost-effective transportation options to improve livable communities and economic vitality for people and businesses. The Palouse River and Coulee City (PCC) Rail System in eastern Washington is part of WSDOT's strategy to support cost-effective freight transportation alternatives for our state's farmers and other shippers to access global markets.

WSDOT worked in close partnership with the PCC Rail Authority, the PCC rail operators and the BNSF Railway, shippers and goods receivers, and many other stakeholders to develop the first PCC Rail System Strategic Plan. The plan provides the public outreach and the data-based analysis to support implementing and funding priority strategies for the PCC short line railroad.

The PCC Strategic Plan outlines the vision and goals for the rail system and identifies operational improvements, policy changes, and infrastructure projects that will ensure the system continues to enhance the economic competitiveness of Washington State. The plan has three key goals:

- Safe operations
- Efficient operations
- Economic development

WSDOT received public comments indicating strong support for the PCC Plan and a desire to move forward with its recommendations. We thank everyone involved in the development of the plan, and look forward to working with them and with you to preserve and make needed improvements to this important link to the national freight rail network and global markets.

Sincerely,

Lynn Peterson, Secretary
Washington State Department of Transportation

May 27, 2015

Lynn Peterson
Secretary of Transportation
Washington State Department of Transportation Olympia, WA
98504

Secretary Peterson:

On behalf of the Palouse River and Coulee City Rail Authority, we would like to congratulate the Washington State Department of Transportation on the completion of The Palouse River and Coulee City Rail System 2015 to 2025 Strategic Plan.

This multi-year process has included stakeholders representing shortline rail in Eastern Washington. As a result, it reflects the importance of freight rail movement and the need to invest in a state-owned shortline system that will continue to support our state's economy.

The PCC Rail Authority is the intergovernmental entity with a role in the management and oversight of the business and economic development elements of the PCC System
The recommendations in the plan reflect and demonstrate the importance of the Rail Authority and WSDOT working together to support freight issues in Washington State.

Although the Strategic Plan is complete, we view this plan as a first step to guide future investments. The PCC Rail Authority is looking forward to a continued partnership with WSDOT as the Strategic Plan is updated and future investments are planned.

Rob Coffman

Rob Coffman, Member
Lincoln County Commissioner

Richard Stevens

Richard Stevens, Member
Grant County Commissioner

Chad W. Coles

Chad Coles, Assistant County Engineer, Spokane County for
Todd Mielke, Spokane County Commissioner

Tom Kammerzell, Member
Port of Whitman County Commissioner

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EXECUTIVE SUMMARY

The Palouse River and Coulee City rail system is owned by Washington State, managed by WSDOT, and operated by private industry. The PCC rail system connects Eastern Washington to the larger freight transportation system and to global gateways enabling access to international markets, an economic benefit for our state. A single freight train can replace several hundred trucks, benefitting Washington State by reduced wear and tear on local roadways and highways, improved transportation safety, and reduced air pollution.

The purpose of this plan is to outline the vision and goals for the PCC rail system and to communicate what policies and projects are needed to achieve the goals. The plan is focused around three key system goals: safe operations, efficient operations, and economic development.

WSDOT and the PCC Rail Authority have worked in partnership to develop this plan. Workshops were held with representatives from rail operating companies, local governments, economic development authorities, major railroads, and shippers. These conversations helped to identify the strengths, weaknesses, opportunities, and threats of the system. Strategies, summarized below, are categorized within Infrastructure, Operational, and Policy groups.

This plan has identified and prioritized $58 million in infrastructure projects:

1. Advance priority projects to increase the capability of handling 286,000-pound rail cars;
2. Rehabilitate track located in moderate and sharp curves in order to allow for increased speeds;
3. Identify and replace defective rail through integrity testing.

Table E1: System Capital Needs

286k lb. Capacity Projects	Description		Cost
CW Cheney to Geiger	Replace rail and rehabilitate track		$7,337,000
P&L Marshall to McCoy	Replace 11 bridges and repair 4 bridges		$5,988,000
Total	Total Cost		$13,325,000
Track Rehabilitation in Curves	**Total Track Miles Rehabilitated**	**Rail Miles Replaced (incl. in total miles)**	**Cost**
CW	16.1	16.1	$15,920,000
P&L/WIM	20.2	5.2	$9,020,000
Hooper	9.3	6.7	$7,260,000
PV	10.8	6.6	$7,520,000
Total	56.4	34.6	$39,720,000
Replace Defective Rail			**Cost**
System wide Allowance	Estimated initial defective rail replacement		$5,000,000*
TOTAL (in 2015 Dollars)	Total Capital Project Need		$58,045,000

*Actual amount to be determined based on implementation of an advanced rail inspection program. The plan recommends that $5 million in funding be in place to purchase new and/or repurposed rail before beginning the integrity inspection program. This will ensure that adequate materials are available within the short time period (30 to 90 days) that the FRA allows the operator to complete remedial action for defects identified through the inspection process.

To support the PCC capital program, the plan recommends that WSDOT add advanced techniques to our existing rail inspection programs to pinpoint deficiencies that are not detected through visual inspection alone. The department will inspect load ratings for the bridges by 2017. The plan recommends programs to address maintenance and preservation, tie replacement, and grade crossing rehabilitation. It recommends that rail materials be repurposed, when possible, from other sources to replace substandard rail. The plan recommends that PCC shippers partner with the rail operators to bridge the funding gap that exists in maintenance and preservation.

This plan has also identified several operational strategies to enhance efficiencies. WSDOT will work with partners to improve terms to future operating leases, encourage operators to pursue minimum railcar orders, ensure access to major railroads and river terminals, and strategically consider rail service needs on all segments of the system. The plan recommends that WSDOT establish private crossing agreements, establish industrial track agreements, and evaluate the state Grain Train Program.

Lastly, the plan identified several policy improvement strategies that include working with regional organizations to develop an economic development strategy, and to prioritize and preserve adjacent lands through comprehensive planning and sale of non-essential property. WSDOT will determine criteria for private acquisition of the system consistent with public interest, and update rail benefit methodology to get an accurate understanding the public benefits of the system. To monitor performance of the system, WSDOT will develop and report on performance measures (Safe Operations, Efficient Operations, and Pursue Economic Development). To address the funding gap, WSDOT will pursue alternate funding opportunities.

The economic vitality of Washington State requires a robust rail system capable of providing its agricultural economies with competitive access to North American and overseas international markets. Addressing the infrastructure, operational, and policy issues will ensure the PCC rail system remains a valuable asset for the Washington State economy.

The PCC rail system benefits Washington State in many ways. Because it reduces demand for trucking, it reduces roadway congestion, reduces roadway and bridge maintenance and construction costs, reduces greenhouse gas emissions, reduces shipping costs for its users, and improves roadway safety. Moreover, the PCC rail system currently has capacity to handle additional diversion of freight from roadways in Washington State.

WSDOT is responsible for managing the overall multimodal transportation systems in Washington State. The PCC rail system helps WSDOT reach its goals of modal integration and environmental stewardship by providing an important alternate mode for freight transportation. For the system to be competitive, strategic investments are needed, along with operational changes, and policy improvements.

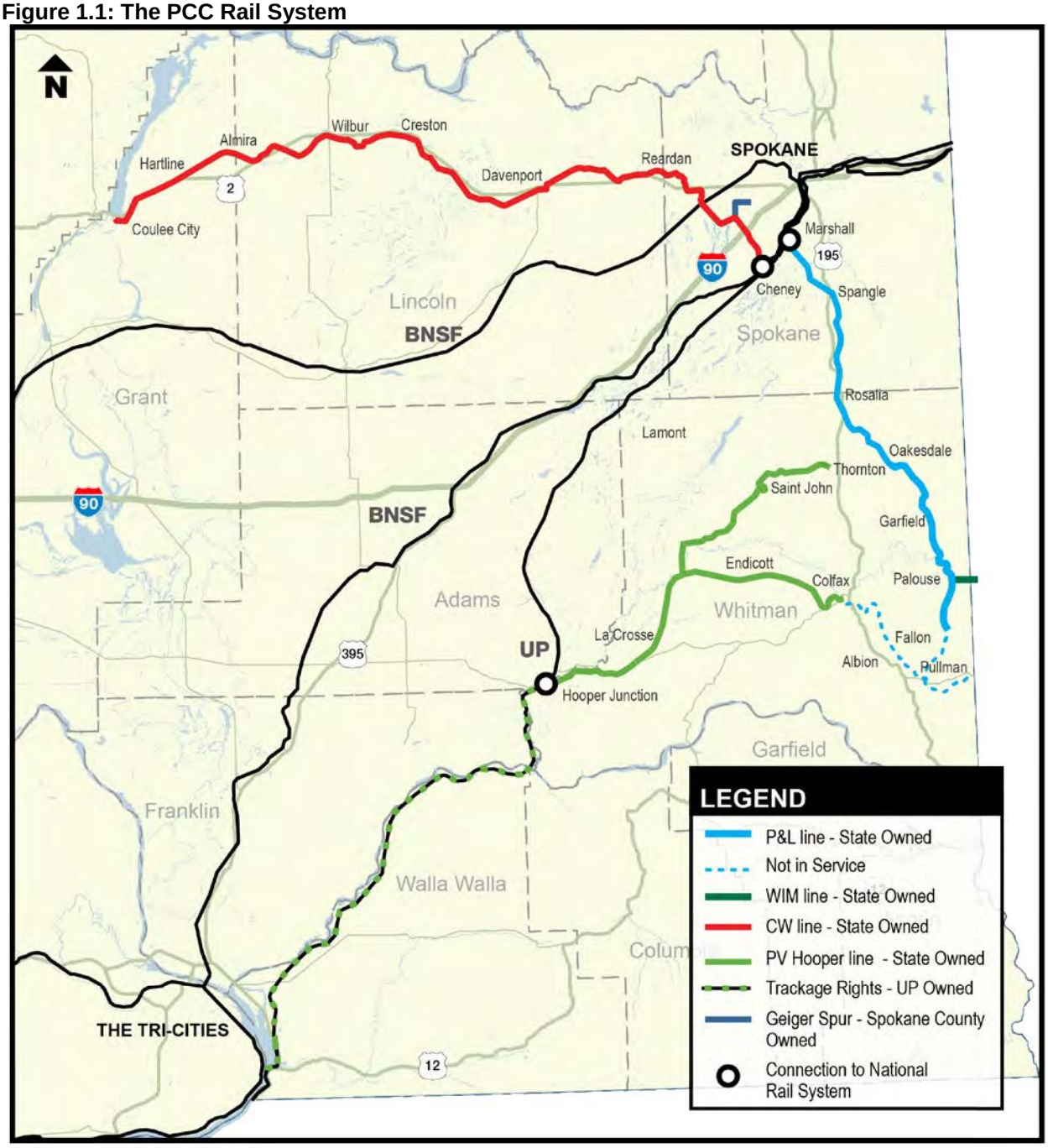
The plan has identified $58 million of capital project needs. Funding will be necessary to implement strategies to maintain and improve infrastructure on the PCC rail system. Operational and policy strategies can be achieved within the timeframe for this plan. Coordination with all PCC rail system partners is critical to the ongoing success of the system. WSDOT and the PCC Rail Authority will work with all PCC partners and stakeholders to advance the strategies identified in this plan.

CHAPTER 1: INTRODUCTION

SYSTEM EXTENT

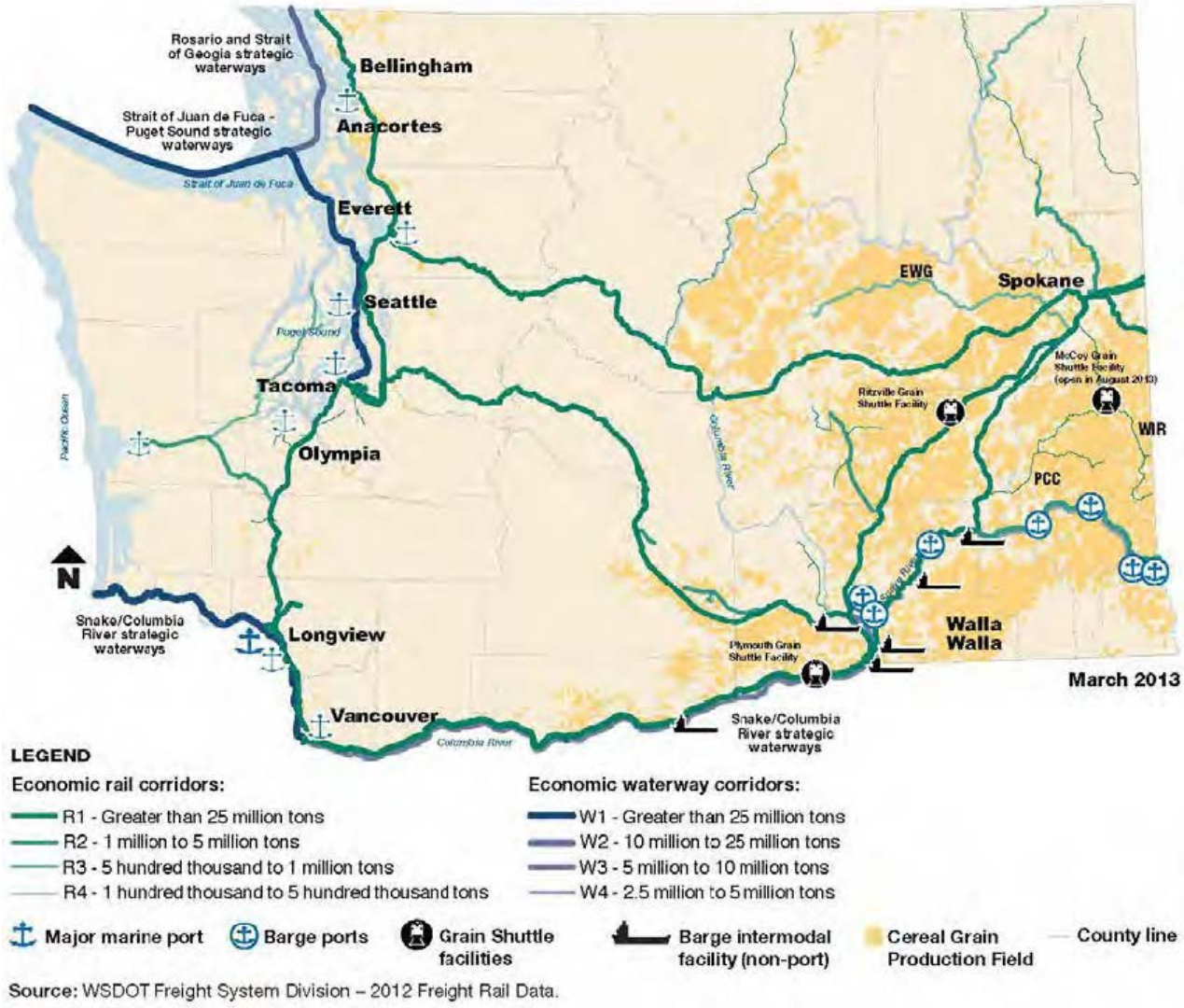
The Palouse River and Coulee City rail system is the longest short line freight rail system in Washington State, at 297 miles in length. The PCC rail system consists of three branches, as shown in Figure 1.1: The CW branch, the P&L branch, and the PV Hooper branch. The system spans the five Eastern Washington counties of Grant, Lincoln, Spokane, Adams and Whitman. The state completed the purchase of the PCC in 2007 for $15.5 million and currently owns the three branch lines.

Figure 1.1: The PCC Rail System



The economic vitality of Washington State requires a robust rail system capable of providing its businesses, ports, and farms with competitive access to North American and overseas international markets. The pressure on the rail system will increase in the coming decades. Between 2005 and 2025, the output of the Washington State economy (measured as gross state product) is expected to grow at an average of 3.5 percent per year. The total freight tonnage moved over the rail system is expected to double over the next 20 years in Washington State. More specifically, short line railroads provide low-cost transportation to manufacturers across the State and to shippers in the agricultural communities of eastern and central Washington, enabling these shippers to compete in world markets. By shifting freight from truck to the PCC rail system, the state benefits by reduced wear and tear on local roadways and highways, improved safety, and reduced air pollution. Figure 1.2 shows how the PCC rail system connects Eastern Washington to the larger transportation system and to global gateways enabling access to international markets.

Figure 1.2: PCC Rail System Connectivity



Source: WSDOT Freight System Division – 2012 Freight Rail Data.

System Goals

In partnership with operators and the PCC Rail Authority, WSDOT has established the following system-wide goals for the PCC, detailed below: Safe Operations; Efficient Operations; and, Economic Development.

Safe Operations

PCC Rail Operator's number one priority every day is to operate safely. Every employee has a responsibility to minimize risk of injury or damage to personal property by maintaining a safe working environment. Hand-in-hand with operating safely is constant need to identify and improve infrastructure, some of which has been in service for many years. WSDOT partners with PCC operators to prioritize and rehabilitate the most strategic parts of the PCC. The targets identified for the goal of Safe Operations are to reduce derailments system-wide to zero. In addition, PCC Operators must promptly clear all crossing defects issued by the Washington Utilities and Transportation Commission.

Efficient Operations

Much of the PCC still operates at a maximum speed of 10 miles-per-hour or less. While the slow speeds are intended to ensure operations are safe, they do not provide the efficiency necessary for operators to minimize operating costs and invest more revenue into improving the track infrastructure. Some sections of the PCC would benefit from being able to carry modern railcars that weigh 286,000 pounds when fully loaded. This efficiency would ensure farmers are paying the lowest cost possible when transporting their crops to market. WSDOT will measure the percentage of track miles that are capable of maintaining 25 mile-per-hour operations on a year-around basis. This Plan proposes several projects that will allow for the full utilization of modern rail equipment on strategically important sections of the PCC.

Economic Development

For the PCC Rail System to become self-sustaining, the system must grow the number of customers that use rail service. This will require all stakeholders working together to identifying new commodities to be hauled and new partnerships targeting new business along the PCC. WSDOT will identify and market state-owned property that is essential for growing sustainable rail service.

Partners in the PCC Rail System

The Palouse River Coulee City Rail Authority

The PCC Rail Authority is an intergovernmental entity with responsibility for the management and oversight for the business and economic development elements of operating leases on the PCC rail lines. It is composed of a Commissioner from each county (Grant, Spokane, and Lincoln) and a Commissioner from the Port of Whitman County. The counties signed an interlocal agreement in March of 2008 to form the PCC Rail Authority in response to funding legislation.

The Rail Authority periodically gauges general rail customer satisfaction, collaborates with customers and railroads to improve service and resolve problems and monitors service provision to customers for compliance with operating lease provisions relating to business and economic development.

Washington State Department of Transportation

As the steward of the statewide multimodal transportation system, the Washington State Department of Transportation is responsible for ensuring that people and goods move safely and efficiently. In addition to building, maintaining, and operating the state highway system, WSDOT also works in partnership with others to maintain and improve local roads, railroads and airports, as well as to support

alternatives to driving, such as public transportation, bicycles and pedestrian programs. As the owner of the PCC rail system, WSDOT oversees operator compliance with regulatory requirements and activities associated with railroad infrastructure. It works closely with the PCC Rail Authority to oversee the business and economic development aspects of the operating leases. WSDOT also develops and administers the capital projects for rehabilitating the lines.

Rail Line Operators

The operators provide railroad freight transportation service to the public based on the terms contained in the operating lease agreements. The State receives no direct compensation from the operators, but delegates all duties and obligations with relation to the use, repair, maintenance, existence, and operation of the rail line to the individual operators. The PCC rail system has three operators:

- Eastern Washington Gateway Railroad (EWGRR), operating the CW branch line
- Washington and Idaho Railway (WIR), operating the P&L branch line
- Palouse River and Coulee City Railroad, a subsidiary of WATCO Companies (WATCO), operating the PV Hooper branch line

Other Partners

WSDOT, the Rail Authority, and rail operators work collaboratively with local governments, economic development authorities, shippers, Transportation Planning Organizations, and Class I railroads to develop innovative and efficient operating and shipping methods and improvements in order to provide competitive rail service for the region's rail shipping community.

Relation to Plans and Policies

Results WSDOT

This plan is consistent with Results WSDOT, the Washington State Department of Transportation's overall strategic plan for 2014-2017, which provides the vision, mission, values, goals, priority outcomes, and strategies to guide the work of the agency. In particular, this plan aligns with GOAL 2 MODAL INTEGRATION, which seeks to optimize existing system capacity through better interconnectivity of all transportation modes.

A priority outcome of GOAL 2 is to align the operation of all modes in corridors to optimize throughput capacity to move people and freight. The PCC rail system provides an alternative to shipping freight by truck, thereby reducing demand on roads and highways in Eastern Washington. This provides for improvements to roadway capacity, pavement condition, and air quality due to a reduced dependence on trucking.

Another priority outcome of GOAL 2 is to improve coordination between transportation providers and modes that results in more seamless system operations. The PCC Strategic Plan identifies mode-specific strategies to address the infrastructure, operational, and policy issues facing the PCC rail system. These strategies will be integrated into WSDOT's multimodal planning processes, and be addressed in a collaborative approach with partners.

As part of WSDOT's Strategic Plan, Results WSDOT, the PCC Strategic Plan is focusing on improvements strategies that meet the department's Practical Solutions direction. Practical Solutions means WSDOT will employ both Least Cost Planning as well as Practical Design in an effort to find solutions that meet the needs of customers and stakeholders while also looking for innovative ways to deliver those

solutions in a more cost effective manner. This identifies strategies that will be pursued in an effort to reduce the overall cost of maintaining and preserving rail access along the PCC rail system.

Washington State Freight Mobility Plan

This plan is consistent with the direction outlined in the 2014 Washington State Freight Mobility Plan, the agency's overall plan for all freight transportation modes, and incorporates key points and findings from the 2013 Washington State Rail Plan. In particular, the freight plan calls for the following actions related to the PCC rail system:

> Emphasize preservation, maintenance, and optimization of existing rail system infrastructure as well as preservation of critical industrial lands served by rail. This can be achieved by working collaboratively with rail partners to assess short line rail needs, address rail needs in the most cost-effective manner possible, consider the stewardship and upkeep history of potential rail improvement projects, and consider strategic state interest when examining the impacts of the loss of rail infrastructure.
>
> Support economic development and access to industry, by identifying intermodal and multimodal connectors that provide first and last mile connectivity to businesses and locations that generate freight demand, and to preserve access to global markets by ensuring freight rail access to ports in Washington.
>
> Maintain track to provide for optimal efficiency, and alleviate other rail infrastructure and operational concerns when investing public funds in the state rail system by the use performance metrics, seeking out innovative funding and financing sources to leverage public funds, and by facilitating discussions about community concerns or questions about rail benefits and impacts.

CHAPTER 2: SYSTEM INVENTORY AND USE

AN IMPORTANT ASSET FOR WASHINGTON STATE

The current PCC rail system was once in private ownership. Between 1992 and 1996, the Union Pacific Railroad (UP) and BNSF Railway (BNSF) sold the rail lines to Watco Companies, Inc. (Watco), after deferring maintenance for many years because of economic viability issues. Watco found that shipping was insufficient to provide for the very large cost of reversing the years of deferred maintenance. Watco eventually indicated its intent to abandon the lines in 2004.

Faced with potentially losing an important component of the freight transportation system, agricultural growers in Eastern Washington asked that the state intervene to keep all of the lines operational to provide competitive shipping alternatives. The grain cooperatives expressed concern that truck-to-barge rates and truck to Ritzville rates would increase if the lines were not available to ship their product.

WSDOT indicated the lines may be of future importance for emerging industries such as biodiesel. If the lines were to leave state control, it would be challenging to protect them from abandonment. If abandoned, the right of way would be difficult and very costly to re-acquire. The closure of the lines would mean that traffic would be diverted to surface streets, with the potential for seasonal road closures, congestion, and increased maintenance costs.

Table 2.1: System Statistics

Inventory	Quantity
Main Track	296.9 miles
Side Track	31.6 miles
Curves	119 miles
Stations	48
Public Crossings	227
Private Crossings	179
Ties in Track (Mainline)	891,087
Bridges	157
Length of Bridges	12,067 feet

A 2004 WSDOT analysis showed that the PCC track purchase and rehabilitation project as viable, meeting the requirements of the Revised Code of Washington, provides economic and community benefits, and is strongly supported by eastern Washington communities. While the project involves some risk to the state, these risks are reasonable and manageable, given counterbalancing benefits to the eastern Washington communities served by the line. WSDOT's analysis also concluded that PCC ownership could generate almost twice as many public benefits as public costs. These benefits included:

- Shipper savings on transportation costs
- Jobs saved at rail-dependent industries
- Reduced future costs to repair wear and tear on state and local highways due to fewer annual truck trips (reduced vehicle miles traveled)

To save the PCC from abandonment, WSDOT purchased the rights-of-way and rail in the P & L branch and PV Hooper branch of the PCC in November 2004. Purchase of the CW branch and the remaining rights in the other two branches were completed in May 2007.

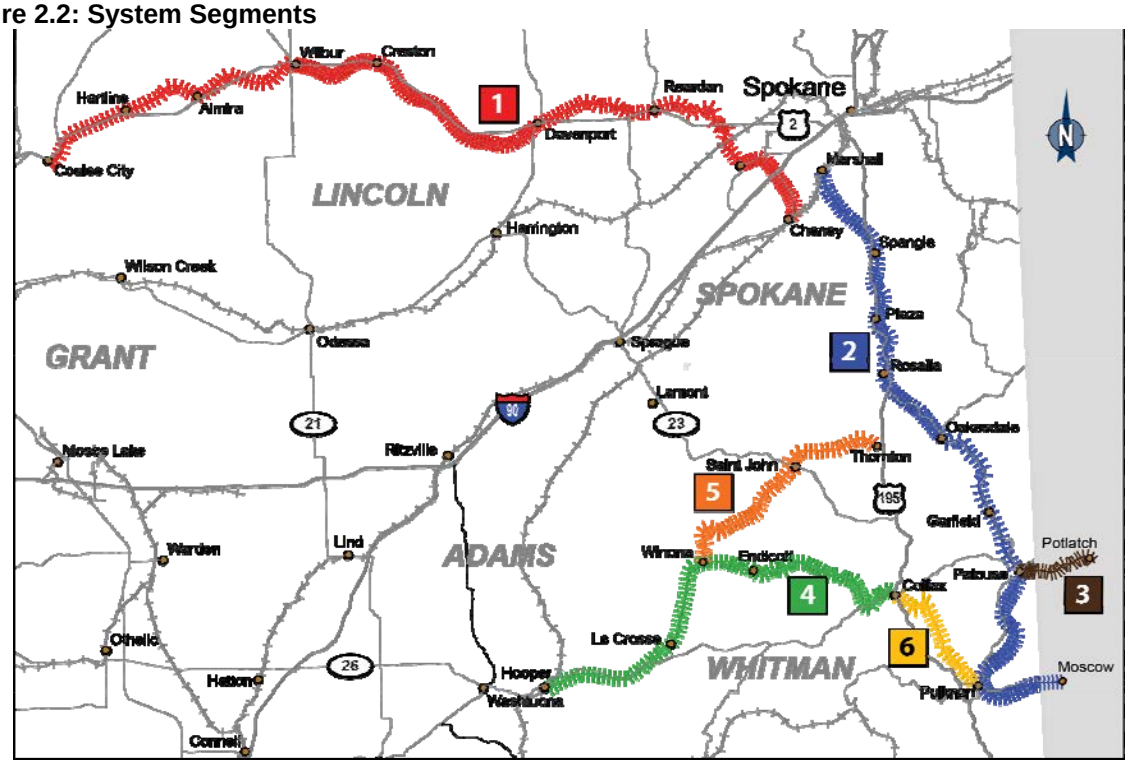
System Operation

The PCC rail system today is owned by the state of Washington and operated by private entities. The system consists of nearly 297 miles of mainline track and over 31 miles of side track, as shown in Table 2.1. The system is subdivided into six segments, as shown in Figure 2.2.

Table 2.1: System Segments

Segment	Subdivision	Miles	Operator
1	CW	107.8	EWGRR
2	P&L	83.1	WIR
3	WIM	3.7	WIR
4	Hooper	51.6	PCC
5	PV	31.7	PCC
6	Upper Hooper Sub	19.0	WIR
Total		296.9	

Figure 2.2: System Segments



The PCC rail system is segmented in this figure based on geographic location rather than operation. The segments are as follows:

- Segment 1: CW Subdivision is operated as a stand-alone line segment with a connection to BNSF at Cheney, WA and a line terminus at Coulee City, WA on the western end. The CW Subdivision was constructed between 1888 and 1890.

- Segment 2: P&L Subdivision begins outside of BNSF's yard at Marshall, WA and continues southeastward past the state line to Moscow, ID. WSDOT ownership of this branch ends at the Washington/Idaho State Line. The P&L Subdivision was constructed between 1886 and 1890.
- Segment 3: WIM Subdivision begins in Palouse, WA where it connects to the P&L and continues east to Potlatch, ID. The portion within Idaho is owned by WATCO Companies. The WIM Subdivision was constructed in 1905.
- Segment 4: Hooper Subdivision begins in Hooper, WA at a connection with the UP Railroad and continues east to Colfax, WA. The Hooper Subdivision was constructed between 1881 and 1883.
- Segment 5: PV Subdivision is a spur that begins in Winona, WA at a connection with the Hooper Subdivision and continues northeast to Thornton, WA. The PV Subdivision was constructed between1888 and 1889.
- Segment 6: Upper Hooper Subdivision begins in Colfax, WA and continues southeast where it connects with the P&L Subdivision in Pullman, WA. The Hooper Subdivision was constructed in 1885. A trestle just East of Colfax severed this connection in 2006; the trestle has not been reconstructed. After this fire the only access was from the P&L branch, this branch is now out of service.

Washington Grain Train

The Washington Grain Train Program serves over 5,000 cooperative members and farmers. In the early 1990s, a national shortage of rail hopper cars made it difficult and expensive for farmers in Washington State to get grain to market. To help alleviate this shortage of grain cars, the Washington State Energy Office and WSDOT used federal funds to purchase 29 used grain cars to carry wheat and barley from loading facilities in Eastern Washington to export facilities in western Washington and Oregon.

The Washington Grain Train began operations in 1994, as cars were dedicated in service along the Palouse River & Coulee City's Pleasant Valley branch. The program currently has 118 grain cars in the fleet (100 are owned by the state, and 18 are owned by the Port of Walla Walla). The UP, BNSF, and short line railroads in Washington State operate the cars and carry the grain to market. The Grain Train program and PCC System are strongly related. Of the 118 Grain Train cars, 89 operate on the PCC system. The EWG operates 29 cars on the CW branch and WATCO operates 60 cars on the PV Hooper branch.

The program receives no state funding; instead revenue received for use of the equipment maintains the equipment. In addition, revenue is used to purchase additional equipment and provides for a small amount of funding for maintenance of the PCC rail system. WSDOT partners with three port districts in the state: the Port of Walla Walla, the Port of Whitman County and the Port of Moses Lake. WSDOT oversees the program while the day-to-day management of the program is performed by the ports.

An Asset Supporting Private Industry

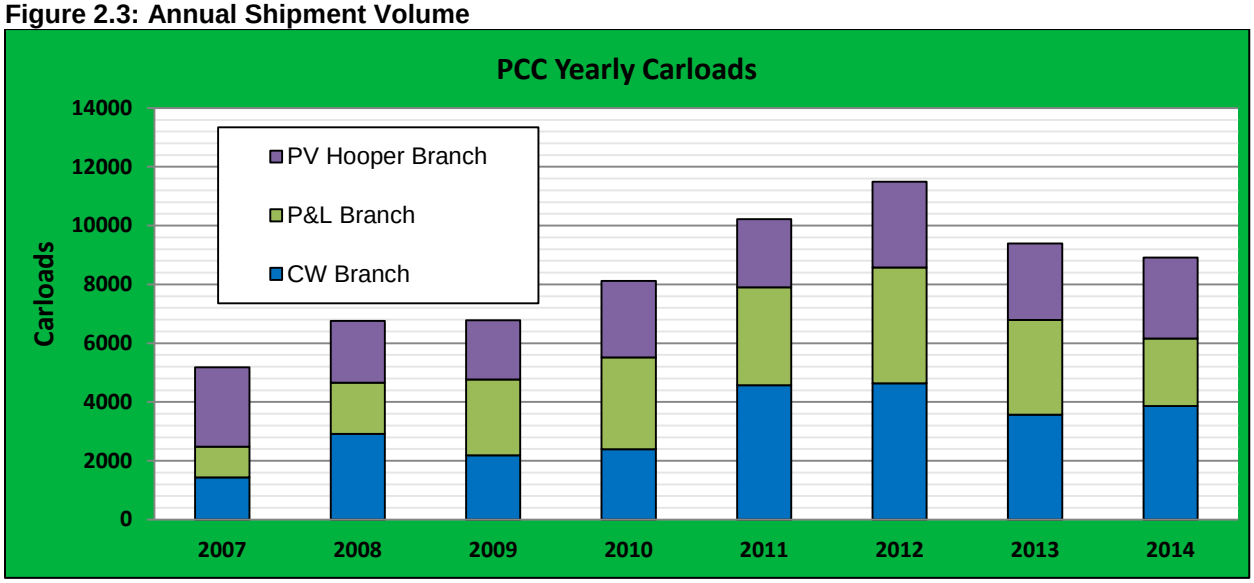
Shippers and farmers rely on the PCC rail system for access to larger transportation systems. The PCC was purchased by the state so that agricultural shippers could continue to have transportation options to access global markets. To access markets in the state and beyond its borders, all carloads on the PCC also travel on at least one of the major railroads in the state. The PCC interchanges with BNSF at Cheney and Marshall; the PCC interchanges with the UP at Hooper. PCC carloads also typically access the Columbia/Snake River System to transport grain from rural elevators along the PCC to river terminals, where grain is transferred to river barges and transported on the lower Columbia River for export.

Various commodities including wheat, barley, and lentil are shipped on the PCC rail system. In 2013, about 20 percent of Washington-grown wheat was shipped on the PCC. In that year, wheat was the second top commodity in dollar value ($1.18 billion) in the state. In 2012, the US Department of Agriculture census ranked Washington only second to California in the number of agriculture commodities produced, with Washington ranked number 4 in wheat production nationwide. In addition, the USDA reported that, "Washington's Whitman County produced more wheat than any other county in the United States and ranks number two nationally in barley production." (USDA, 2013). As such, the PCC serves as an important commercial corridor in eastern Washington, transporting nearly a million tons of cargo each year. It is essential to the local economy and its preservation and continued use is critical to shippers, manufacturers, and farmers in eastern Washington.

Overall, carloads of freight shipped on the system have more than doubled between 2007 and 2013. In that period, carload volume remained steady on the PV Hooper branch while it grew more than threefold on the CW branch and roughly threefold on the P&L branch. These increases in car loadings have increased wear and tear on the system, especially the bridges between Marshall and McCoy on the P&L branch and the lighter rail sections (less than 90 lb. capacity) on the CW branch. Figure 2.3 shows carloads have grown approximately from 5000 to 9000. Three previous years have experienced even higher volumes of railcars.

The Washington Grain Commission shows that statewide wheat production dropped from 167.8 million bushels in 2011 to 108.4 million bushels in 2014. One of the largest shippers on the PCC, Co-Ag, saw their harvest intake drop 23% for 2014 compared to 2013. Freight railcar prices also reached a peak in 2014, trading at nearly $6,000 per car, which equates to $1.60 per bushel. There were also many trades for freight railcars in the $4000 to $5,000 range or approximately $1.20 per bushel. Usual trade prices are $2000 to $3,000 per car, or approximately $0.70 per bushel. This pricing structure pushed bushels to other modes of transportation such as truck to barge. However it should be noted that this pricing does represent an extreme event driven by a lack of capacity and loss of velocity on the mainline railroads.

Figure 2.3: Annual Shipment Volume



Wheat and Barley Crop Production Volumes

One way to identify strategic rail segment improvements that will improve the PCC rail system efficiency and profitability as a whole is to identify and estimate the potential market area or potential areas of influence for crop productions and carload shipments along the existing rail lines. This methodology highlights system branches and segments that have the greatest opportunity for shipments, profit, and ultimately the best cost-benefit.

The primary commodity shipments on the PCC rail system are agricultural crops and agricultural products. The area of influence, the buffer area of 20 miles or more, was identified in past studies and updated during this study following producer and shipper feedback. The annual agricultural crop yield and production is more or less influenced by many factors including soil and weather conditions, crops yield per acre, and climate change. The area of influence represents a maximum or limited quantity of potential production and shipments for the respective segment regardless of any infrastructure improvements. For that, the crop yield within 10-, 15-, and 20-mile buffers along the rail lines was estimated, using Washington State Department of Agriculture crop data. This was done to evaluate strategically and efficiently the latent crop shipment available for the PCC and all other modes of transportation.

Because of the variability of the yearly crop production volumes, crop yield per acre, and crop selling price, this estimation is based on the 5-year average 2008 to 2012 crop yield per acre and crop selling price per bushel. Therefore, this estimate is based on the crop yield of 3245 pounds of barley per acre worth $231 and 3718 pounds of wheat per acre worth $399. Crops from Idaho areas within the buffer limit were not included. The peak of 11,493 carloads in the last seven years is far below the nearly 17,656 potential carloads within a 10-mile buffer area. The crop volumes within a 20-mile buffer are over 25,032 potential carloads. That means that there is the potential for increase carload if the PCC is a competitive alternative to other shipping options for crops. The system currently is operating below the optimal capacity for wheat shipments in Eastern Washington.

Table 2.4: PCC Crop Production Volumes Market Area

Buffer (miles)	Crop	Short Ton	Bushel	Product Value	Carloads	Truck
10	Barley	89,488	3,728,670	$12,740,674	1,113	3,107
	Wheat	1,662,617	55,420,580	$356,850,105	16,543	46,184
	Total	1,752,105	59,149,250	$369,590,779	17,656	49,291
15	Barley	105,533	4,397,227	$15,025,101	1,313	3,664
	Wheat	2,041,639	68,054,645	$438,200,160	20,315	56,712
	Total	2,147,173	72,451,872	$453,225,261	21,627	60,377
20	Barley	110,532	4,605,482	$15,736,696	1,375	3,838
	Wheat	2,377,509	79,250,316	$510,288,479	23,657	66,042
	Total	2,488,041	83,855,797	$526,025,175	25,032	69,880

Note: With a car estimated at 3350 bushel and a truck load at 1200 bushel and 72, 000 pounds. Source: WSDA and USDA

CW Branch Market Area

As shown in Table 2.5, a 10-mile buffer area around the CW branch is estimated to yield roughly 650,850 tons which is equivalent to 6,548 potential carloads of wheat and barley. This branch competes against other means of transportation, mostly trucks, and the peak of 3,942 carloads in the last seven years is far below the nearly 6,548 potential carloads potential within a 10-miles buffer market area. Moreover, that peak carload is only about a third of the crop volumes for the market area within a 20-mile buffer.

Table 2.5: CW Branch Crop Production Volumes Market Area

Buffer (miles)	Crop	Short Ton	Bushel	Product Value	Carloads	Truck
10	Barley	29,080	1,211,679	$4,140,247	362	1,010
	Wheat	621,770	20,725,669	$133,451,455	6,187	17,271
	Total	650,850	21,937,348	$137,591,702	6,548	18,281
15	Barley	38,971	1,623,797	$5,548,430	485	1,353
	Wheat	854,923	28,497,429	$183,493,396	8,507	23,748
	Total	893,894	30,121,225	$189,041,827	8,991	25,101
20	Barley	50,710	2,112,916	$7,219,728	631	1,761
	Wheat	1,144,788	38,159,601	$245,707,597	11,391	31,800
	Total	1,195,498	40,272,517	$252,927,325	12,022	33,560

P&L Branch Market Area

As shown in Table 2.6, the estimate for just a 10-mile buffer area around the P&L branch shows crop volumes for the P&L market area of 697,651 potential tons, which is equivalent to 7,055 potential carloads. That is higher than the WSU's 2009 wheat production volumes market area within a 10-mile buffer estimate. This branch competes against other means of transportation, and the peak of 4,635 carloads in the last seven years is far below the nearly 7,055 potential carloads within a 10-mile buffer area. The crop volumes within a 20-mile buffer are over 12,700 potential carloads. WSU's 2006 estimates state that "truck barge movement account for almost 40 percent of the movement" (WSU, 2006). That means that there is the potential for increase carload volume if this branch is a competitive alternative to other shipping options for crops.

Table 2.6: P&L Branch Crop Production Volumes Market Area

Buffer (miles)	Crop	Short Ton	Bushel	Product Value	Carloads	Truck
10	Barley	45,685	1,903,528	$6,504,259	568	1,586
	Wheat	651,966	21,732,206	$139,932,491	6,487	18,110
	Total	697,651	23,635,734	$146,436,751	7,055	19,696
15	Barley	67,564	2,815,162	$9,619,264	840	2,346
	Wheat	902,364	30,078,806	$193,675,799	8,979	25,066
	Total	969,928	32,893,968	$203,295,062	9,819	27,412
20	Barley	80,563	3,356,786	$11,469,967	1,002	2,797
	Wheat	1,178,025	39,267,488	$252,841,220	11,722	32,723
	Total	1,258,587	42,624,274	$264,311,187	12,724	35,520

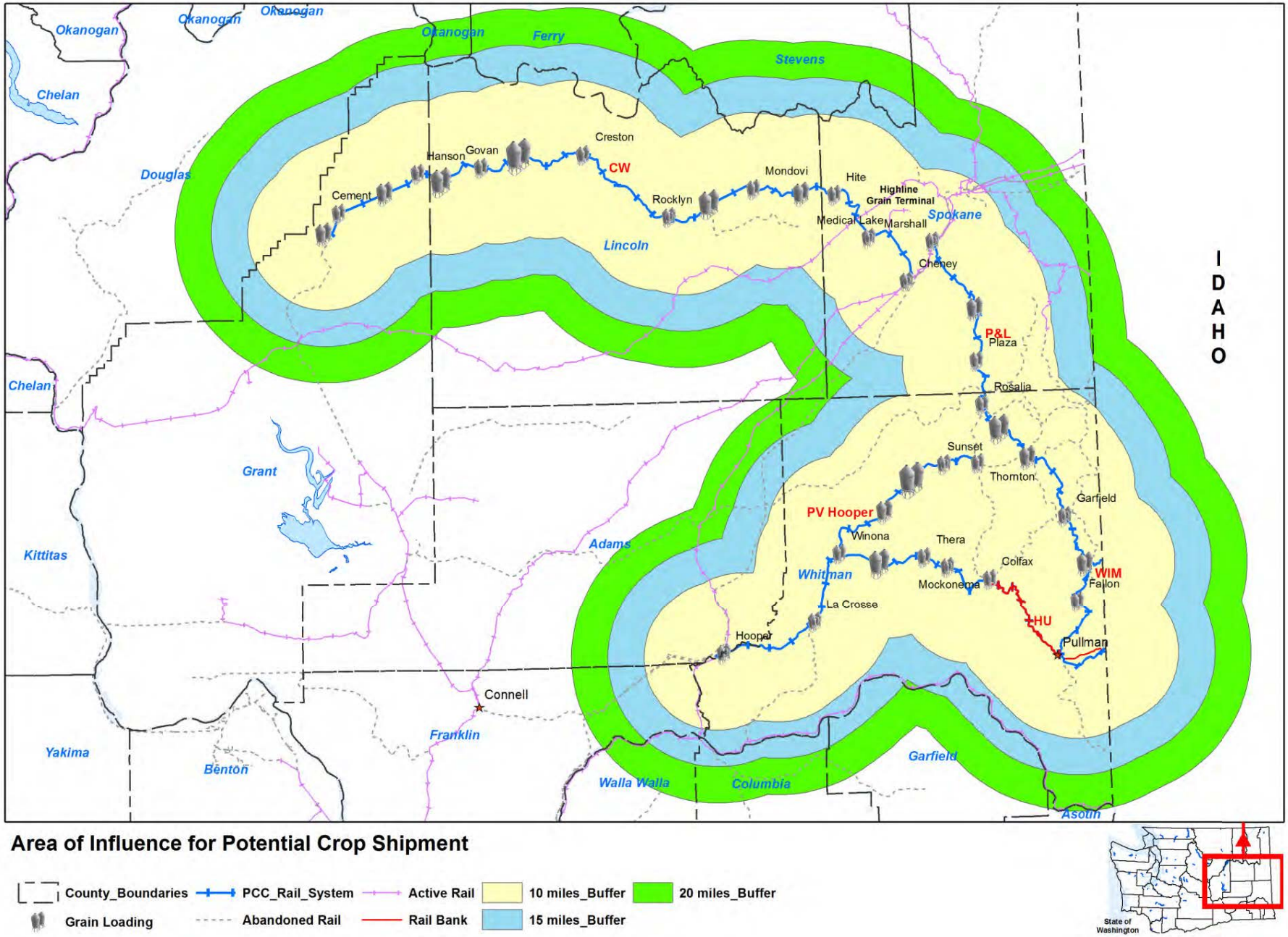
PV Hooper Branch Market Area

As shown in Table 2.7, the estimate for just a 10-mile buffer area around the PV Hooper branch shows crop volumes for the PV Hooper market area of 713,964 potential tons, which is equivalent to 7,203 potential carloads. That is higher than the WSU's 2006 wheat production volumes market area within a 10-mile buffer estimate. This branch competes against other means of transportation, and the peak of 2916 carloads in the last seven years is far below the nearly 7,203 potential carloads within a 10-mile buffer area. The crop volumes within a 20-mile buffer are over 13,100 potential carloads. WSU has estimated that "rail handles about 45 percent of the movement versus 55 percent for truck barge from that area" (WSU, 2009). That means that there is the potential for increase carload volume if the branch is a competitive alternative to other shipping options for crops.

Table 2.7: PV Hooper Branch Crop Production Volumes Market Area

Buffer (miles)	Crop	Short Ton	Bushel	Product Value	Carloads	Truck
10	Barley	39,908	1,662,833	$5,681,814	496	1,386
	Wheat	674,056	22,468,518	$144,673,564	6,707	18,724
	Total	713,964	24,131,350	$150,355,378	7,203	20,109
15	Barley	57,004	2,375,167	$8,115,824	709	1,979
	Wheat	989,821	32,994,027	$212,446,746	9,849	27,495
	Total	1,046,825	35,369,193	$220,562,569	10,558	29,474
20	Barley	69,240	2,885,003	$9,857,909	861	2,404
	Wheat	1,232,588	41,086,270	$264,552,262	12,265	34,239
	Total	1,301,828	43,971,273	$274,410,171	13,126	36,643

Figure 2.8: PCC Area of Influence



Area of Influence for Potential Crop Shipment

County_Boundaries | PCC_Rail_System | Active Rail | 10 miles_Buffer | 20 miles_Buffer

Grain Loading | Abandoned Rail | Rail Bank | 15 miles_Buffer

Figure 2.9: CW Branch Area of Influence

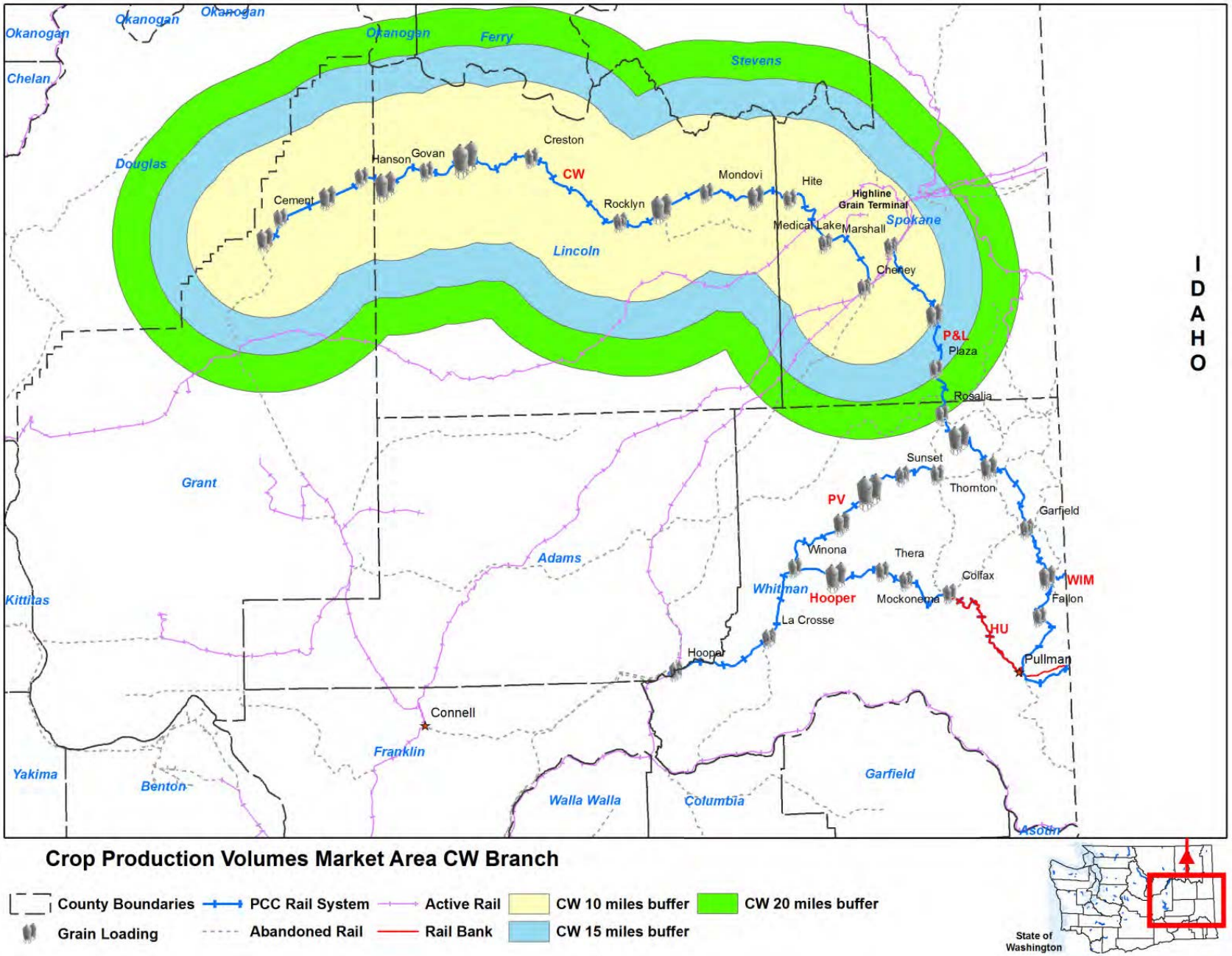


Figure 2.10: P&L Branch Area of Influence

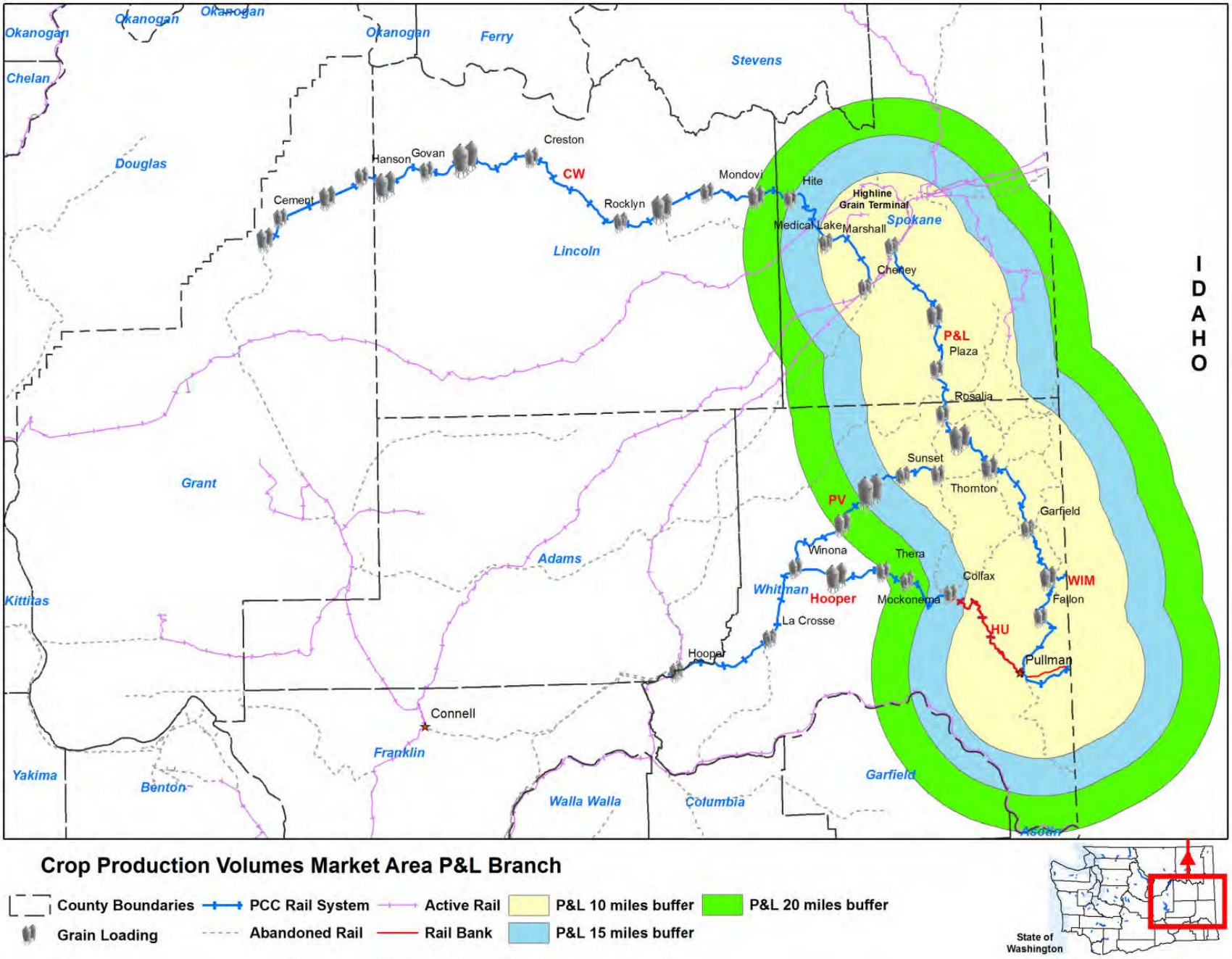
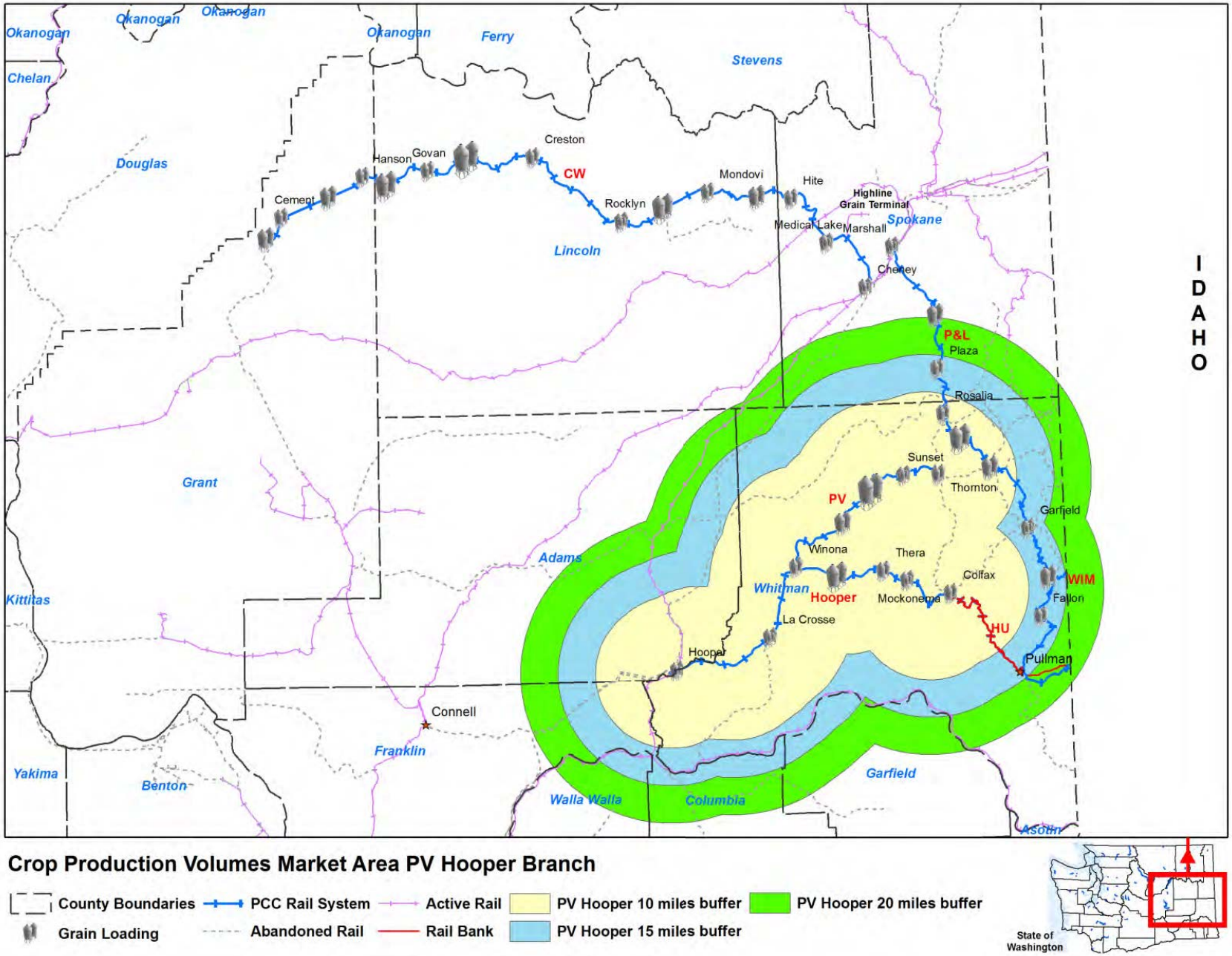


Figure 2.11: PV Hooper Branch Area of Influence



CHAPTER 3: SYSTEM CONDITION

The condition of the PCC rail system, categorized by major components, is described in this section. The *Guidelines for the Application of Asset Management in Railway Infrastructure Organizations*, developed by the International Union of Railways, defines three of the major railway infrastructure items as: Track and Track Bed (i.e., rail and track fittings; ties; ballast; subballast; and subgrade); Engineered Structures (e.g., bridges, culverts and other overpasses and tunnels); and Level Crossings (including the appliances to ensure the safety of road traffic). Thus, to understand the condition of the railroad, it is important to understand the condition of each of these major components, as detailed in this section.

SYSTEM CONDITION IN 2004

Before acquisition of the PCC, HDR Inc. was commissioned by WSDOT to assess the physical condition of the individual line segments, and to recommend improvements to ensure continuation of rail service on the PCC. HDR's task was to look at the physical condition of the track and bridges (but not crossings) and make rehabilitation recommendations based on three criteria:

- Sustainable 10 mph operations
- Sustainable 25 mph operations
- Sustainable 25 mph operations with heavier carloads (286,000-pound axle loads)

Because the evaluation was to consider a 10-year period, it was necessary to take the existing conditions and then estimate the rate of deterioration over the next ten years. The recommendations put forward for capital improvements were to be continuous over the next 10 years and it was expected that during the improvement period, and following the completion of the recommended improvements, normal maintenance would be provided. It was anticipated that these improvements along with a normal ongoing maintenance program would bring the PCC up to an acceptable and reliable condition that would keep the lines at their desired level of service for the foreseeable future. The following summarizes the condition of the PCC Railroad system in 2004, as presented in the *Evaluation of the PCC Railroad* (HDR, November 2003).

General Condition

In general, it was observed that the PCC rail system was in fair condition and had not deteriorated to the level that rehabilitation was no longer practical. By in large, the system was in good 10 mph condition. Rail ties were installed where they would do the most good and they were installed properly. The number of available employees and material was more of a concern. Two conditions that were observed to be somewhat less than desirable were the adjustment of turnouts and bridge maintenance. Several turnouts had points that if properly adjusted against their stock rails, would greatly prolong the life of the turnouts and reduce the risk of derailments. Bridge maintenance was spotty as well and this condition was most likely due to the lack of consistent bridge inspection coupled with an understanding of what bridge components are most critical.

Rail

In 2003, rail condition was not a concern for 10 mph operations. However, for 25 mph operations, several miles of very light rail need to be replaced with heavier rail (greater than 90 pounds). Very few loose or missing track bolts were observed and joints can be maintained with standard maintenance practices with the exception of a problematic joint bar area on the CW branch.

Crossties

For the most part, rail ties were in fair condition, although there was concern that the tie conditions would shift from primarily fair condition to poor within the next 10 to 15 years. It was noted that the failure or survival of railroads, like the PCC, is primarily based on the condition of its rail ties. Within 10 years, many miles of track were predicted to be out of service entirely or operating under excepted classification unless this trend was reversed.

Turnouts

The rail turnouts were generally in fair to good condition, but many need to be addressed in the near future for maximum salvage. The switch points need grounding and adjustments, while the frogs needed welding and grounding.

Line and Surface

The existing line and surface were fully adequate for 10 mph operations, while most line segments were fully adequate for 25 mph. Line and surface on the Colfax to Pullman segment has challenges and is expected to have continuing issues due to the underlying embankment condition, as the segment follows the banks of the Palouse River. The report recommended lining and surfacing this segment at least every 5 years and spot surfacing in between these cycles. On other segments, ballasting and surfacing was behind schedule. A rail tie program was recommended for speeds of 10 mph and for speeds of 25 mph, maintenance was recommended midway the tie program cycle.

Bridges

The assessment found bridges along the rail system were at or near the end of their useful service lives, and recommended addressing this issue. Most of the bridges are timber structures (12,943 lineal feet or 82 percent of all bridges) built 50 to 70 years ago with a useful design life of 75 years. The study predicted that within 20 years, the timber structures on the PCC will need to be replaced. It was recommended to increase bridge repair efforts and begin a replacement program that would target replacement of all timber bridges within 15 to 25 years.

Implementation of bridge repair, maintenance, renewal, and replacement programs were recommended to ensure that these structures remain serviceable within the next 10-year time frame. To accomplish this plan, the study recommended that the railroad operators hire a full time bridge supervisor/inspector to monitor, plan and oversee bridge conditions and make repairs as needed. The 286,000 pound upgrade is not practical until the tie condition; lighter rail sections and the timber structures have been adequately addressed. Operating 286,000 pound cars at 10 mph is possible, but doing so will still overstress the already marginal bridges and increases the likelihood of additional rail failures on the lighter rail sections.

Current System Condition

The condition of the system has continued to degrade over the last ten years. While traffic on the system doubled between 2007 and 2012, operator revenue and state funding have not been sufficient to hold conditions at the level they were in the 2003. The two HDR recommendations to step up bridge repairs and begin a bridge replacement program targeting replacement of all timber bridges within 15 to 25 years have not been implemented. Because ten years have passed since these recommendations, it can be assumed that a majority of the bridges on the system are within 5 to 15 years of the end of their useful design life. Tie and ballast condition has also degraded, but to a much lesser degree than bridges. Rail condition is very much like the bridges in that approximately 90 miles of rail on the system is nearing the end of it useful life and will likely need to be replaced within the next 10 to 20 years.

Rail

The PCC rail system is laid with many different types of rail, including many stretches of second-hand rail which has already been well-worn before it was installed in the various branches. Rail weights on the PCC vary from 60 pounds per yard to 133 pounds per yard. Rail with weights of less than 90 pounds per yard (90 lb. rail) are generally considered to be substandard for current branch line operations. These sections have less beam strength, are older and formed during less stringent steel mill practices, and are more prone to failure and breakage under traffic. For current branch line standards, 90 lb. rail and 100 lb. rail sections are considered adequate. In the recent past, the railroad industry considered 90 lb. rail as a standard for branch line and industry track. With the introduction of heavier carloads, 90 lb. rail has fallen out of favor and rail sections of 112, 115, and 119 lb. rail are now considered standard weight rail for most branch line operations. It is not just the weight of rail that is important in these considerations but the relative shape of the rail head and fillet area between the head and web that make the heavier sections of rail more desirable than the lighter and generally older sections. Table 3.1 shows the mileage of rail weights on the system. Approximately 30 percent (89.9 miles) of the system does not have adequate rail weight; another 44 percent (131.4 miles) of the system has rail weight considered below standard for branch line operations.

Table 3.1: Rail Weights

Rail Weight	60	70	75	85	90	100	112	115	119	131	132	133	Total
Miles	0.3	2.7	27.6	59.3	78.4	53.0	53.6	6.1	1.9	12.9	0	1.5	297

Conventional or jointed rail is found in standard lengths varying from 33 feet per rail to 39 feet per rail. For many years, 39-foot rail has been the industry standard and is the length the mills are almost entirely producing. The older rail sections were produced in 33-foot lengths and 36-foot lengths.

Welded rail or continuous welded rail has several 39-foot long rails welded together and is generally produced in lengths of 1,000 to 1,200 feet. If rails are 1,200 feet in length, there are 4.5 joints per side per mile. It has obvious advantages in that the joints are for the most part eliminated thereby providing a more even distribution of loads and considerably less maintenance. Continuous welded rail weighing 112 lb. or greater is the current industry standard for branch lines. The PCC has 40.3 miles of continuous welded rail, 31 miles of which is located on the northern portion of the P&L branch.

In an effort to extend the life of the rail, it is possible to change the orientation of the rails in curves, known as transposing the rail. This practice moves the inside rail on a curve to the position occupied by the outside rail, and vice versa. In so doing, the wheels and wheel flanges wear against surfaces that were formerly on the outside or field side of the track. However, this practice would likely only be worthwhile on rail heavier than 90 lbs., and would further only be worthwhile in curves where the outside of the rail was in good condition – there is only minimal value in transposing rails when the condition of the field side is nearly as bad as the condition of the running or gauge side. Since all of the heavy rail on the system is probably

Figure 3.2: Rail Deterioration

second hand (implying that the outside surface of the rail is already worn), transposing the rail may only be cost effective in a few locations.

Crossties

The condition of ties is one of the most critical issues for a branch line railroad because their function is so vital to the overall track structure, because they deteriorate relatively quickly if not well-cared for, and because there are so many of them to maintain. Railroad ties are generally the most immediate and potentially the most expensive maintenance item for short line railroads.

The use of the word crosstie and tie are synonymous. A tie has two functions. The first function is the transference of the vertical load or weight from the base of the rail unto the ballast section. The greater the number of good ties one has and the closer the spacing between those good ties, the more evenly the load is distributed to the ballast. If a tie provides no support, its neighbor must carry twice the load. The second function of a cross tie is to provide resistance to lateral forces. The contact between the wheel flange and the gauge face of the rail causes lateral forces that have a tendency to move the rail outward. The ties constrain this outward movement. This stresses the wood fibers in the tie plate area. The better the tie condition, the better is its ability to restrain these forces.

A typical creosote treated hardwood tie has a life expectancy between 30 and 70 years. This is primarily dependent upon weather, train traffic, speeds and maintenance practices. Most light density branch line ties have a life expectancy of approximately 50 years. Based on an evaluation by HDR in 2003 the tie condition of the PCC was as follows:

Figure 3.3: Ties on the CW Branch

Table 3.4: Crosstie Condition

Rating	Defective	Poor	Fair	Good	Excellent	Miles	Total Ties
Total	10%	14%	60%	12%	5%	297	920,390

Given a 50 year tie life and the total number of ties on the system, a yearly tie replacement of 18,408 needs to be achieved simply to maintain the current condition. If, based on the 2003 analysis, only the Defective and Poor ties were replaced, this would result in a total tie replacement of 24 percent of the total ties on the system or 227,388 ties. In the period since the 2003 analysis, the number of defective and poor ties has increased so that the number of ties needing replacement today is approximately 270,000.

Ballast and Subgrade

Railroad ballast is a crushed rock product, usually ranging in size from 0.75” to 2.5”. The surfaces or facets of the rock are intended to be flat with angular corners. This helps ballast particles interlock into a relatively rigid structure that can support and distribute the loads imposed by train wheels as those

wheel forces are directed downward through the rail and ties. Ballast also helps restrain the track laterally, both by virtue of its sheer weight piled-up at the ends of the ties, and also by the friction of the angular rock against the sides of the ties. Finally, the relatively large particle size for ballast ensures that water will drain readily out from the ballast.

Railroad ties would ideally be elevated approximately 8” to 12” above the subballast or subgrade on a layer of ballast; in addition, the ties would be fully surrounded by ballast with the top of the ballast matching the top of the ties. Again, ideally, the top layer of ballast would horizontally extend outward from the ends of the ties about 9” to 12” before sloping down toward the subballast. This shape of ballast is known as the ballast section, and is employed by railroads because it promotes efficient use of ballast (which is generally expensive), promotes good drainage for ties, provides sufficient ballast to distribute the loads from ties to the subballast or subgrade, and provides adequate ballast material to restrain the track from lateral movement.

By providing a 9” to 12” layer of ballast below the tie, but above the subballast or subgrade, there is sufficient place for water to drain away from the ties into adjacent drainage ditches. If this layer of ballast is surrounded on all sides by subgrade material or mud, then there is no place for the water to drain, and eventually the ballast will become contaminated with this material (known as becoming fouled), thus reducing the ability of the ballast to provide drainage and support.

Figure 3.5: Fouled Ballast on CW Branch

Subballast is an engineered material with specific gradation designed for the prevailing geotechnical conditions, depth of ballast, type of ties, and anticipated traffic demands (particularly gross weight on rail and annual gross tonnage). Subballast is generally used in modern track construction for lines carrying any significant tonnage because it provides a layer in addition to the ballast, which can distribute loads over the subgrade, and because when compacted, subballast acts to cap the subgrade, preventing fine soil particles from migrating up through the subgrade and fouling the ballast.

Historically, however, subballast was rarely used in railroad construction – this was particularly true at the time of construction of the PCC rail system in the late 1800s, since trains in those times were very, very light compared to modern trains, and because at that early date, ballast consisted of dirt from the surrounding ground heaped on the track. There was simply no need for subballast, especially where the native soils were generally sandy and had some ability to drain on their own.

Ballast conditions on the PCC are highly variable, but can generally be described in broad sections which have relatively consistent characteristics. Where the ballast is in good condition, little action is required, other than regular maintenance of the track surfacing. In general, the ballast is usually in good condition where the track is on an embankment, or where drainage has been consistently maintained. There are many locations where the quality of the ballast is good, but where pedestrian traffic has eroded the

ballast away from the ends of ties. In these areas, additional ballast should be added to provide adequate support for the ties and prevent a center-bound tie condition from developing. It would be common railroad practice to take actions to prevent such pedestrian activity, since it does represent an increased maintenance cost, as well as a potential liability.

Where the ballast is in fair condition, there is generally indication that it is becoming fouled with fine soil particles, silt, mud, or organic debris from overhanging trees. However, the amount of fouling has not reached a severe condition, yet. It may be possible to mitigate the conditions causing the fouling, and arrest the contamination to the ballast. Since the fouling has not reached a severe state, it may also be possible to reverse some of the fouling conditions. Generally, fair ballast can be found in areas along side-hill cuts or cuts where drainage ditches are present, but perhaps not of sufficient depth, or at grade crossings where, because of inadequate roadway drainage, contaminants from the roadway are washing onto the track.

Ballast that is in fair condition could be addressed in several manners. First, it is important to identify and mitigate the condition causing the ballast to be fouled. For example, if the track is pumping, a condition which causes fine soil particles to migrate upward from the subgrade, a typical solution would be to raise the track several inches on new ballast. This would stiffen the track structure, and mitigate the pumping condition.

In areas of poor ballast conditions, contaminants are not confined to the surface of the track, but rather extend downward into the ballast section and into the subgrade. These are much more difficult to mitigate, since the contaminants cannot simply be pushed away. And, in general, the root cause of the fouled ballast may be more difficult to address. Often, these conditions are found in areas where there are cuts on one or both sides of the tracks, but the cuts are of inadequate width to allow for a proper drainage ditch. The site geometry that encouraged construction of a cut of substandard width also tends to be associated with over-steepened walls of the cut. As a result, material erodes or sloughs off the walls of the cut and, with no drainage ditch to intercept debris, the material accumulates on the track, perhaps flowing for long distances between the rails.

The simplest way to address the ballast conditions in such situations is to raise the track and add more ballast, with the idea that the track can be raised high enough to get it above the material that is fouling the ballast and, by lifting the track higher, effectively create a drainage ditch. In some situations, this will be effective, but in other situations, particularly where the ballast has been fouled by fine soil particles or mud, this is a temporary fix, at best. Unless the track is raised significantly, approximately 9” to 12”, the fouled material will generally work its way upward through the new ballast due to the pumping action of the trains. This pumping action will be amplified by the poor subgrade (i.e., the old, fouled ballast), which provides a fundamentally weak foundation for the track.

Ballast categorized in very poor condition generally has been completely fouled by mud, to the point that mud may be over the tops of the ties. When conditions are this bad, there are few options. Attempts to raise the track and simply add ballast in an effort to get the track above the fouled ballast will almost certainly meet with defeat and rapid recurrence of the conditions. As before, the root cause of the problem must be addressed. But, in these cases, there may be few if any incremental improvements available, short of completely skeletonizing the track to a substantial depth below the ties, or even completely replacing the track in order to allow improvement of the subgrade conditions or installation of a layer of subballast to restore bearing capacity.

A detailed analysis of ballast conditions has not been performed. However, based on past track inspections, it is estimated that the ballast conditions on the PCC are mixed, as shown in Table 3.6. Ballast conditions are poor or very poor on 43 percent (127 miles) of the system.

Table 3.6: Ballast Condition

Rating	Very Poor	Poor	Fair	Good	Total
Miles	45	82	95	75	297

Subgrade conditions on the PCC also vary from good to very poor. The condition of the ballast and subgrade is one of the major factors preventing the PCC from being an all-weather facility. Similar to many of the local roadways in Eastern Washington, the PCC is subject to operating restrictions during periods of wet ground conditions. These restrictions are due to the fact that during the time that the PCC lines were constructed in the 1880s and 1890s, construction methods and anticipated train weights were not what they are today. While roadways are usually weight restricted during wet ground conditions, the PCC operators do this by restricting speeds. Speed restrictions do reduce the chance for derailments but do not alleviate damage to the infrastructure. Train operations during wet ground conditions increase wear and tear on the track components due to the increased amount of movement in the track as the train passes over a section. This movement stresses rail joints, ties and results in fouled ballast as particles migrate up from the subgrade to the ballast. Poor subgrade can only be addressed through complete reconstruction of the line and should be done in conjunction with detailed geotechnical information that dictates the level of subgrade compaction, use of geotextiles, and the depth of subballast and ballast based on current and anticipated future train loadings.

Bridges

Bridges represent an often-overlooked major component of railroad infrastructure costs. Most bridges today were constructed prior to the advent of diesel locomotives in the 1950s. Because the older bridges were built to support the heavy driver impacts of the steam locomotives, there was additional safety factor or cushion in the design of a typical bridge. Since then, average carloads have increased from 60 tons to 100 tons and trains have gotten longer. But because the bridges were overbuilt, they have provided more than adequate service life during the interim.

Figure 3.7: Typical Timber Trestle Bridge on P&L Branch

If there is a business need to increase the current standard car weight from 263,000-pound to 286,000-pound, the condition of the bridges is a significant factor. The ratings of most bridges on the PCC are not adequate to handle sustained traffic of 286,000 pound cars. Timber has a remarkable ability to absorb periodic over loading of its members but with repeated over stressing which you would see with a train of 286,000 pound cars the timber is likely to fail rapidly. Although 286,000-pound cars can be operated and bridges may continue to be serviceable under these conditions, it will certainly exacerbate the deterioration and failure of these structures.

Table 3.8: PCC Bridge Inventory

Branch	Number of Bridges	Bridge Length (ft.)
CW	20	833
P&L	77	3,965
WIM	0	0
Hooper	27	2,766
Hooper Sub	16	3,291
PV	17	1,212
Total	157	12,067

To date only 39 bridges on the P&L branch and 20 on the CW branch have been load rated. The remaining bridges on the system will be load rated before the Federal Railroad Administration compliance date of September 13, 2017. As an example of bridge conditions, of the 39 bridges that were load rated on the P&L branch, 18 have been recommended for replacement, 19 recommended for repairs/upgrade and two require no action based on 286,000 pound car loadings. Using a grant from the Department of Commerce, 8 of the 19 bridges recommended for repair/upgrade were addressed in 2014. The remaining bridges on the P&L between Marshall and the McCoy Grain Terminal are required to undergo inspections at a 3 month interval or more based on the operators observations. Also, the Bridge Management Plan states that the operating instructions of WIR will control operating over bridges and shall include provisions to restrict the movement of cars and locomotives whose weight or configuration exceed the nominal capacity of the bridges.

At-Grade Crossings

At-grade crossings are of two types, public or private. Public crossings are either gravel surface or paved roadways and may include active warning devices (flashers and gates). Crossing surfaces can be asphalt, wood plank, rubber panel or concrete panel. Private crossings tend to be used by a single landowner and tend to be gravel or dirt with an average width of 20 foot. Crossings by their very nature require additional maintenance due to upkeep and replacement of the flange-way material and due to shortened tie and rail life for the track through the crossing area. The Washington Utilities and Transportation Commission is required to inspect public at-grade highway-rail grade crossings on a periodic basis.

Figure 3.9: Typical Timber Plank Crossing on Hooper Branch

Public crossings condition on the PCC rail system is shown in Table 3.10. Crossings were assessed on both vehicle and train traffic safety, as well as crossing surface condition. High priority replacements were classified as such primarily due to the condition of the underlying cross ties. These have degraded to such a condition that the crossing planks can no longer be attached or lagged into the ties. Poor tie condition can result in a crossing sinking so that it presents a hazard to train traffic as well as road way traffic. In the case of asphalt surfaces, a high priority designation indicates the

asphalt requires complete replacement, with crosstie replacement a high possibility as well. Medium and Low priority crossings have these issues to a lesser degree, while crossings in good condition have been reconstructed within the last 8 years. Potential removals are crossings within sections that could be railbanked.

Table 3.10: At-Grade Public Crossing Condition

Branch	Public Crossings	Good Condition	High Priority Replacement	Medium Priority Replacement	Low Priority Replacement	Potential Removal
CW	95	36	6	18	35	0
P&L	69	11	4	15	39	10
Hooper	21	7	4	2	8	0
PV	18	3	3	4	8	0
Hooper Sub	18	1	1	6	10	13
WIM	6	3	1	1	1	0
Totals	227	61	19	46	101	23

The private crossing inventory on the PCC rail system is shown in Table 3.11. Private crossings differ from public crossings as private crossings are not monitored by the WUTC. Private crossings are typically a contractual matter between a private citizen or company that wishes to access private property by crossings the tracks and the railroad operator. On the PCC this contractual obligation is between the crossing owner and WSDOT. If the private crossing holder is dissatisfied with their crossing, the railroad operator will make the repairs, but the private crossing holder is financially responsible for the work.

Table 3.11: At-Grade Private Crossing Inventory

Branch	Private Crossings
CW	33
P&L	60
Hooper	33
PV	37
Hooper Sub	15
WIM	1
Total	179

Crossings with Active Warning Devices

The PCC rail system has 42 crossings with active warning devices. Of these, 22 have just flashing warning devices, and 20 have flashing devices plus crossing arms. The condition of the active warning devices is generally good. The operating railroads are required to maintain those systems and there are several sources of funding that allow for upgrades to circuitry, etc. to ensure proper operation.

Pending Grade Crossing Regulatory Requirements

The PCC must be compliant with 49 CFR (Code of Federal Regulations) Part 234 - Systems for Telephonic Notification of Unsafe Conditions at Highway-Rail and Pathway Grade Crossings. This rule requires certain railroads to establish and maintain systems that allow members of the public to call the railroads, using a toll-free telephone number, and report an emergency or other unsafe condition at highway-rail and pathway grade crossings. The rule refers to such a system as an Emergency Notification

System and it consists of the following components: the signs, placed at the grade crossing, that display the information necessary for the public to report an unsafe condition to the appropriate railroad; the method that the railroad uses to receive and process a telephone call reporting the unsafe condition; the remedial actions that the appropriate railroad or railroads take to address the report of the unsafe conditions; and the related recordkeeping conducted by the railroad. Compliance with this CFR shall occur by September 1, 2015.

The PCC must be compliant with 49 CFR Part 234 - National Highway-Rail Crossing Inventory Reporting Requirements. This regulation responds to the mandate of Section 204(a) of the Rail Safety Improvement Act of 2008 that requires railroads to report to, and periodically update information in, the U.S. DOT National Highway-Rail Crossing Inventory pertaining to highway-rail and pathway crossings. Some of the requirements of the rule are:

- Railroads must submit data for previously unreported highway-rail and pathway crossings no later than March 7, 2016.
- Railroads must submit data for new highway-rail and pathway crossings no later than six months after the crossing becomes operational (or no later than March 7, 2016 whichever occurs later).
- Railroads are required to update existing crossing data in the Crossing Inventory at least every three years.
- Railroads are required to report the sale of a crossing to the Crossing Inventory within three months of the date of sale.
- Railroads are required to report the closure of a highway-way or pathway crossing to the Crossing Inventory within three months.
- Class I railroads are required to electronically submit crossing data to the Crossing Inventory (all others may submit crossing data either electronically or in hard copy).

The Manual on Uniform Traffic Control Devices defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public travel. The MUTCD is published by the Federal Highway Administration under 23 CFR Part 655, Subpart F. It has been administered by the FHWA since 1971, and is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. It is updated periodically to accommodate the nation's changing transportation needs and address new safety technologies, traffic control tools and traffic management techniques.

Table 3.12: Compliant with MUTCD

MUTCD Section	Section Title	Specific Provision	Compliance Date
8B.03, 8B.04	Grade Crossing (Crossbuck) Signs and Supports	Retroreflective strip on crossbuck sign and support (see Paragraph 7 in Section 8B.03 and Paragraphs 15 and 18 in Section 8B.04)	31 Dec 2019
8B.04	Crossbuck Assemblies with YIELD or STOP Signs at Passive Grade Crossings	New requirement in the 2009 MUTCD for the use of STOP or YIELD signs with crossbuck signs at passive grade crossings	31 Dec 2019

Methodology to Determine Infrastructure Priorities

Project priorities were determined by relating the system performance measures of Safe Operations, Efficient Operations and the Pursuit of Economic Development with the systems conditions. The system conditions were further broken down into speed and weight restrictions, track classification, crossing defects, and track geometry to determine a level of utility. The baseline for track maintenance recommendations is the Federal Railroad Administration's Track Safety Standards. The Track Safety Standards provide minimum standards for track safety, which effectively establishes several levels, or Classes of track maintenance with corresponding maximum train speeds. For example, Class 1 track requires the lowest level of maintenance, but also allows only the lowest train speeds (10 mph maximum for freight trains), while Class 2 track allows higher train speeds (25 mph for freight trains) but also has stricter tolerances for maintenance. Thus, Class 2 track is more maintenance intensive than Class 1 track. Also, as shown in Table 3.13, freight and passenger train speed limits differ for the same Class of track.

Table 3.13: FRA Track Class and Speed

Track Class	Freight (mph)	Passenger (mph)
Excepted	10	N/A
1	10	15
2	25	30
3	40	60
4	60	80
5	80	90

The maintenance criteria set forth by the FRA are minimum criteria for each class of track and associated operating speed. Maintaining track only to the minimum criteria implies that, as soon as one of the many maintenance parameters falls below the FRA criteria, the track must be immediately repaired, or operated as the next lowest class of track. For example, if track were both operated and maintained at Class 1 levels, any defect that did not meet the criteria for Class 1 track would put the track into Excepted status or result in the track being removed from service. The WUTC staff usually tries to negotiate a remedy with the operator before issuing a formal order. If the condition of a grade crossing is so poor that a defect is issued, it has likely gone some time without any maintenance.

To measure the level of utility of a segment of track, several measures can be used. These include the number of miles where slow orders exist, miles with weight restrictions, bridge weight restrictions, the number of miles classified as excepted, and the number of crossing defects, all explained in detail below.

Speed Restrictions

The number of miles with speed restrictions, or miles of slow orders, is a relatively easy way to monitor track and some bridge conditions. The top speed on the PCC rail system is 25 mph. Within yard limits, at sharp curves, and on steep downgrades speeds can be permanently reduced for safe operation unrelated to track or bridge conditions. As such, any speed restrictions below 25 mph that are not caused by permanent safety issues can be considered a maintenance slow order. The operator is required by federal law to document these in their track bulletins or timetables as track, switch, and bridge conditions warrant. Slow orders will only be written up when absolutely necessary, doing so results in higher operating costs for the operator. Correspondingly, slow orders can vary from day to day and do not capture weight restrictions on the track or bridges, or the condition of road crossings.

Weight Restriction

The number of miles of weight restrictions is similar to the number of miles of slow orders. Generally, they are documented the same way as slow orders. They are usually a measure of bridge capacity, but can be imposed due to track condition as well. Each line segment has a maximum weight per car. The current national railroad trend is toward a maximum weight of 286,000 pounds per car. Only 53.9 miles of the PCC rail system are currently operated at this higher level. Similar to slow orders, weight restrictions will only be imposed by the operator when absolutely necessary as they result in higher operating costs for the operator and less competitive rates for customers.

Table 3.14: Speed and Weight Restrictions

Current Operating Conditions	CW	P&L	WIM	PV	Hooper	Hooper Sub	Total Miles	Percent of System
Class 2 track (25 mph)	106.8	72.0			51.6		230.4	77.6%
Class 1 track (10 mph)			3.7				3.7	1.2%
Excepted track	1.0			31.7			32.7	11.0%
Out of service		11.1				19.0	30.1	10.1%
Total	107.8	83.1	3.7	31.7	51.6	19.0	296.9	
Speed Restrictions (Slow Orders)	**CW**	**P&L**	**WIM**	**PV**	**Hooper**	**Hooper Sub**	**Total Miles**	**Percent of System**
Temporarily restricted track (10 mph or less)	93.0	51.1	2.7		5.6		152.4	51.3%
Permanently restricted track (10 mph or less)	12.7	18.6	1.0		8.8		41.1	13.8%
Weight Restrictions	**CW**	**P&L**	**WIM**	**PV**	**Hooper**	**Hooper Sub**	**Total Miles**	**Percent of System**
286,000 track	6.9	47.0					53.9	18.2%
263,000 track	100.9	36.1	3.7	31.7	51.6	19.0	243.0	81.8%

Current speed and weight restrictions on the PCC system are shown in Table 3.14. While an initial look at conditions seems encouraging in that over 77 percent of the system is rated at Class 2, a closer examination reveals that of the 230 miles of class 2 track, 152 of those miles (66 percent) are burdened with periodic temporary speed restrictions limiting operations to 10 mph.

Efforts to monitor track condition require the branch operators report any changes of track class, speed or weight restrictions and other operating guidelines to WSDOT upon implementation. Also, joint track inspections have been performed by the operator and WSDOT every 6 months at a minimum, typically in April and October. These joint inspections are performed over several days per branch and involve traversing the entire rail line and inspecting ballast, tie and rail condition as well as drainage. Operator input and documentation are also used to then determine the highest priority areas for rehabilitation.

Bridge Weight Restriction

The number of bridges with weight restrictions is measures separate from the number of miles of weight restrictions, as they are usually imposed on only a single bridge and only until repairs to the

bridge can be made. Generally, they are documented the same way as slow orders. They can take the form of a restriction on individual car or locomotive weights, requirement of empty idler cars between loaded cars or locomotives, limits on the train's total weight or a combination of all three. As with other restrictions, bridge restrictions will only be imposed when absolutely necessary as they result in higher operating costs for the operator and less competitive rates for customers.

Excepted Status

Sections of track in excepted status can be thought of as the lowest possible condition allowable for train operations. Operating restrictions may be in place, including: restricting the speed limit to 10 mph or less; or restricting the number of rail cars containing hazardous materials allowed on a section of track at a given time, as well as limiting their distance from bridges and railroad crossing. The decision to call for an excepted status is delegated to the operators, who will only impose these when absolutely necessary, as they result in higher operating costs and less competitive rates for customers.

WUTC Defects

The number of defects at railroad crossings found during safety inspections is one way to measure the condition of public grade crossings. The Washington Utilities and Transportation Commission is required to inspect public at-grade highway-rail crossings on a periodic basis. The highest priority projects are those that have elements of all three system performance measures. For example, the performance measure of increasing the ability to handle 286,000-pound railcars under Efficient Operations can be achieved by rehabilitating or replacing bridges or rehabilitating track by installing heavier rail, tie replacement and the application of ballast.

Track Geometry

Track geometry describes the geometric relationship of the actual track components to an ideal condition. This is usually done with respect to an idealized horizontal frame of reference, known as alignment (which may be straight or curved), and an idealized vertical frame of reference, known as surface. These are crucial metrics, since increasing variations from the ideal situation will cause increasing levels of stress to be imposed on the track by passing trains. At some point, the level of stress can become so high that the track can no longer adequately guide the train, resulting in a derailment. These metrics are especially critical on curved track, since the natural tendency is for a train to attempt to travel in a straight line, while the track (the rails, ties, and ballast) is what exerts the necessary force to guide the train in a curved path, literally pushing the train sideways around the curve.

In an analysis of the *Life of Railroad Materials* (HDR, 2000), the effect of curves is demonstrated by the recommended service life for rail. The most common industry standard way of relating this is units of Million Gross Tons. MGT is determined by the number of loaded cars times a typical gross loading, plus the empty car making an opposite move on the segment, plus a locomotive allowance per number of loaded cars moved. For example, an average medium density main track on a Class 1 railroad carries about 40 MGT a year. While the PCC carries far less MGT, the rail condition is already substandard, consisting of either lighter rail sections no longer suitable for Class 1 operations or heavier rail sections that were used and replaced by the Class 1 railroads.

Table 3.15: Rail Service Life

Degree of Curvature	Rail Service Life (MGT)
Tangent	2,000
2	694
4	487
6	296
8	264
10	200

CHAPTER 4: FINANCIAL INVESTMENT

Funding for future rehabilitation is at this time uncertain. The PCC rail system has no dedicated public funding source and has therefore struggled with implementing programmatic capital solutions that improve the condition of the rail infrastructure. In addition, rail operators have limited financial resources and revenues from operations, only supporting the minimum levels of maintenance along the PCC. Limitations in funding and the competitive nature of what funding is available for publicly owned rail infrastructure have been discussed in detail in both the State Rail Plan and the State Freight Mobility Plan.

ORIGINAL PUBLIC PURCHASE

In 2003, WSDOT began acquiring the privately owned Palouse River and Coulee City Railroad. WSDOT completed the purchase of the P & L and Hooper branches in November 2004, paying $5.8 million. Purchase of the entire CW branch and additional property, and the operating rights in the other two branches was completed in 2007 for $9.7 million. The entire allocation for the PCC rail system totaled $27.7 million, from the following sources:

- 2003 Legislative Transportation Package (New & Used Vehicle Sales Tax) - $20.7 million
- 2005 Legislative Transportation Package - $7 million

HISTORIC PUBLIC INVESTMENT

Between 2008 and 2011, 10 separate construction contracts totaling $9.5 million were executed on the PCC rail system. Two rehabilitation contracts were executed on each branch as well as one system wide drainage and one system bridge rehabilitation contract. Also included were two contracts that installed fencing along the CW branch right of way. The rehabilitation, drainage and bridge contracts attempted to address only the most urgent repairs needed to keep the lines safely traversable and to meet or exceed minimum safety standard regulations in the near term.

In 2012, Washington State Department of Commerce provided $4 million for rehabilitation in order to increase speeds. These funds were utilized to remove sections of track from excepted status on the CW branch, rehabilitate bridges on the P&L branch, and address other maintenance concerns expressed by the operating railroads.

For the 2013-2015 biennium, WSDOT was allotted $2.88 million for the PCC. This funding was has been used to address grade crossing defects cited by the WUTC and perform track rehabilitation work on the P&L and PB Hooper branches.

ONGOING PUBLIC INVESTMENT

Funding for rail projects comes primarily through the state Multimodal Transportation Account. Additional sources of funding include the state Essential Rail Assistance Account and Federally-funded projects with a direct allocation.

State Multimodal Transportation Fund

Funding for the PCC rail system has come from the state Transportation Infrastructure Account, a result of transfer of funding from the Multimodal Transportation Fund. The Transportation Infrastructure Account is used for non-highway loans, grants, or other means of assistance, in equal portions to public or private entities building surface transportation facilities in the state and comes from transfer of funds

from the Multimodal Account. Legislative intent is that projects representing critical mobility or economic development needs and involving various transportation modes and jurisdictions receive top priority in the use of these funds. State revenue source comes from the Motor Vehicle Excise Tax, Retail Sales Taxes and Motor Vehicle Licenses. Current appropriations from this account have been direct allocations. Four programs are funded from the Transportation Infrastructure Account, as detailed below.

Individual Capital Projects

Identified priority projects reflect the departments proposed investments for consideration during legislative new revenue discussions. Only significant stand-alone mobility and economic initiative projects are specifically identified as line item projects. Maintenance, operations, safety, fish barrier removal, and preservation are shown programmatically.

Freight Rail Assistance Program

This grant program is available to both public and private sector rail applicants. Projects must pass certain evaluation criteria and be shown to maintain or improve the freight rail system in the state and benefit the state's interests. Projects have been identified for the funds available for 2015-17. In each of the past two bienniums, about 10 percent of requested funds were awarded grants.

Freight Rail Investment Bank Program

A loan program available to the public sector only (the state may not lend to the private sector). This program is intended for small projects or as a small part of a larger project, where state funds would enable the project to be completed. A 20 percent local match is required and the project must pass a cost/benefit analysis. Projects have been identified for 2015-17.

Palouse River and Coulee City Railroad

In the past, some direct appropriations have been made from this account to finance improvements to the PCC rail system. Legislation passed in 2011 allows funds collected from leases or sales of property on the PCC to be reinvested in the PCC. Revenue from these funds covers WSDOT's management of the PCC, but does not provide any significant funding for capital improvements.

The Essential Rail Assistance Account

This account is funded by repaid loans from past freight rail projects and is the account into which any excess funds from the grain train are deposited to fund the PCC rail system. The 2012 budget allows any funds collected through the grain train program, but deemed in excess of the needs of the grain train, to be invested in the PCC.

Federal Funding

Federal funding could come from direct allocations for specific freight rail projects through the Federal Railroad Administration or through Grant programs such as the Federal discretionary grant program Transportation Investment Generating Economic Recover (TIGER).

Ongoing Private Investment

Since 2007, private investments in facilities either on the PCC or that receive product from the system have totaled nearly $70 million. The following are examples of private investment in the PCC rail system.

McGregor

McGregor Company is the largest independent fertilizer company in the Pacific Northwest. It receives fertilizer shipments at Lacrosse, Oakesdale, Creston, and at its major receiving and manufacturing center

in Mockonema. In 2012 the McGregor Company transformed a defunct biodiesel plant in Creston from an environmental hazard into a clean, compliant agri-chemical facility utilizing rail to receive fertilizer inputs. This company is truly rail dependent, and would have to relocate if rail service terminated, which might affect the costs of shipments of fertilizers for farmers. Recent investments total over $4.2 million.

WhitGro

Whitgro Inc. is a cooperative owned by 400 members located in the heart of Whitman County. Whitgro is serviced by WATCO using the PV Hooper to move products to the Wallula Terminal near the junction of the Columbia and Snake Rivers. The Wallula Terminal is owned and operated by Northwest Grain Growers (NWGG). This partnership between Whitgro, NWGG and the State of Washington has allowed Whitgro to consistently ship close to 2,000 cars annually. WATCO has an agreement with the UPRR to operate across their tracks between the interchange with the PCC at Hooper to Wallula. This operation also utilizes 29 of the State Grain Train cars. Whitgro has invested nearly $1 million dollars in the last 5 years to their facilities in Endicott, St. John, Sunset and Willada and plans to increase this investment in the future to continue to improve rail loading capacity and efficiency.

Figure 4.1: WhitGro Facility in St. John

McCoy Grain Terminal

The McCoy Grain Terminal is a grain terminal and rail loading facility investment project between Rosalia and Oakesdale Washington. Pacific Northwest Farmers' Cooperative and Cooperative Agricultural Producers jointly funded the $24 million project. The facility can stockpile 3.7 million bushels of grain products and accommodate a 110-Car unit train operated by BSNF Railway. The facility began operations in the fall of 2013.

Palouse Grain Growers

The Palouse Grain Growers have been working to upgrade existing facilities to improve both safety and efficiency. In 2013, the facility was upgraded with a new dump shed and scale as well as a completely redesigned driveway layout. The improvements created a large truck turnaround that allows customers

using the facility to avoid the steep entrance on the south side of the property, and directs traffic to an improved access on SR 272. A new proposed project will include the construction of a new 56,000 bushel hopper bottom bin with a concrete foundation that will be fed by the existing grain bins and dumping facilities. The project will also install a new rail load-out conveyor, complete with an electric silo discharge gate, top fill rail load out spout, support towers, machinery truss and catwalk, and walkway with fold down ramp to access top of rail cars. Total investment is nearly $740,000.

Figure 4.2: Palouse Grain Growers Facility

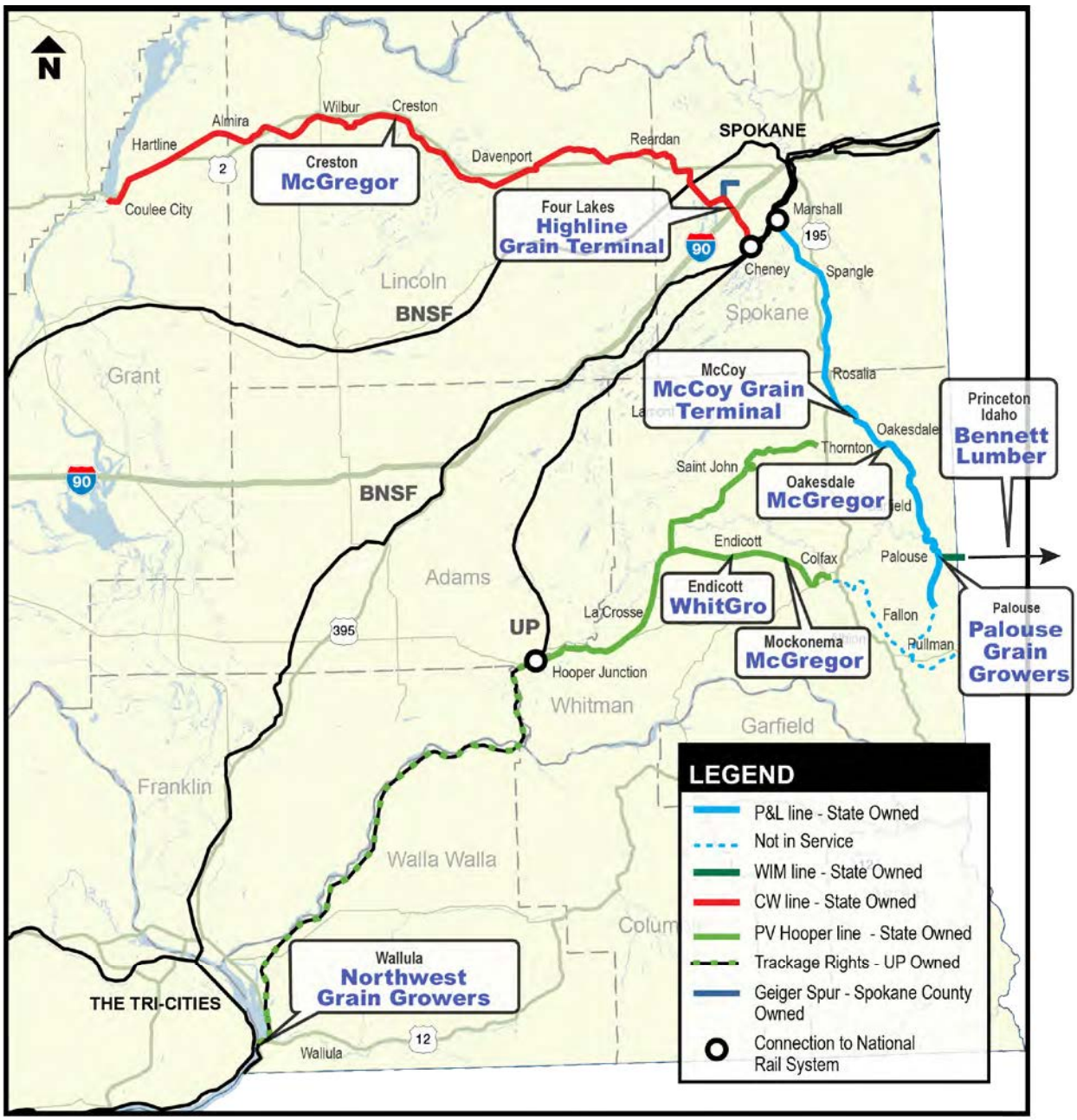
Bennett Lumber

Bennett Lumber is a family owned company founded in 1939. It is among the top 90 lumber producers in the nation, and their products are sold throughout the United States and Canada, as well as overseas. Total lumber production reaches 150 million board feet annually. This company has invested $930,000 to upgrade their rail load out facility at the Princeton mill in Idaho. The Princeton facility is served by the WIM branch of which the portion in Idaho is owned by WATCO. The Washington and Idaho Railway operates on the P&L branch and WIM and moves product from Bennett to the BNSF interchange at Marshall.

Highline Grain

Highline Grain, LLC is a $30 million grain terminal and rail loading facility investment project initiated near Four Lakes Washington by five-grain cooperatives: Almira Farmers Warehouse Co.; Central Washington Grain Growers; Davenport Union Warehouse Co.; Reardan Grain Growers Inc.; and Odessa Union Warehouse Cooperative. The Highline Grain Facility can stockpile 2 million bushels of grain products and accommodate a 110-Car unit train operated by BSNF Railway. The facility groundbreaking occurred in November 2014, and it is projected to begin operations by fall of 2015.

Figure 4.3: Private Investment Projects



Potential Financing Opportunities

Private Public-Partnerships

Successful public-private partnerships share financing between the public and private sectors. Typically, the private sector is incentive to participate in financing a project with low risk and there is a federal or state partner. To make this tool attractive to the private partners, incentives are offered such as guaranteed loans, tax credits, and possibly loan payment deferral until profits are achieved.

Value Capture Strategies

Value capture strategies afford governments or agencies the opportunity to dedicate to a particular project a portion of the increased revenue generated through assessments or fees based on the value expected to accrue as a result of the project. Some examples of value capture strategies include joint development, special assessment districts, tax increment financing, and development impact fees.

Joint Development

Joint development can take a variety of forms including: lease of land, air rights, space to a developer's sale of land, or joint construction of a rail facility or private development. Depending on the agreement, the public and private partners can share costs, revenues, and the financial risks associated with the development.

Special Assessment Financing

Special assessment districts are formal district where special taxes or fees are assessed because the properties are expected to see a projected benefit based on geographic proximity to the rail development. The revenues collected from the districts are then used to fund rail improvements.

Tax Increment Financing

Tax increment financing (TIF) is a public financing tool used by governmental entities to encourage development. In Washington, cities, counties, and port districts can initiate TIF projects. A TIF allows a local government to trap increased property tax revenue resulting from the growth of assessed value within a designated TIF area. This tax revenue services debt issued to finance public improvements that spur private development within an increment area. Unlike other tax increment laws around the country, Washington's TIF laws do not authorize the issuance of special revenue bonds that could be applied towards debt service on the development's indebtedness.

Development Impact Fees

Development impact fees are one-time assessments collected by local governments from developers. The fees are used to fund the costs of new and/or expanded infrastructure and services associated with the development.

Leveraging Right of Way

Leveraging railroad right of way to generate revenue is another potential tool to support funding rail infrastructure improvements. Sale of WSDOT Rail property is allowed by RCW. Any revenues generated from the sale are designated for maintenance of the PCC.

Railroad Rehabilitation and Improvement Financing Loans

The Railroad Rehabilitation and Improvement Financing program provides low-interest federal loans and loan guarantees to finance the development of railroad infrastructure including: acquiring, improving, or rehabilitating intermodal or rail equipment of facilities, including track, components of track, bridges, yards, buildings and shops; refinance outstanding debt incurred for the purposes listed above; and develop or establish new intermodal or railroad facilities. Railroads, rail freight shippers, state and local governments and government-sponsored authorities are eligible to apply for Railroad Rehabilitation and Improvement Financing loans.

Creative Financing Models

Commonwealth of Virginia

Rail Enhance Fund

This funding source provides dedicated state funding for acquiring, leasing and/or improving railways or railroad equipment, rolling stock, rights of way or facilities for freight and/or passenger rail transportation purposes whenever the Commonwealth Transportation Board determines that is for the good of a region of the Commonwealth or the Commonwealth as whole. The source of revenues for the Rail Enhancement Fund is a portion of the three percent vehicle rental tax and the interest earned on cash balances – a total of approximately $23.5 million in FY2008.

Rail Preservation Program for Short line Railroads

This fund provides state financial support to preserve, continue, and increase the productivity, safety, and efficiency of short line railway transportation logistics in Virginia. Through projects funded by the Rail Preservation Program, a freight rail transportation alternative is provided to businesses and industries in areas of the Commonwealth that otherwise would not have these options. This program has become a key component of the Commonwealth's efforts to attract and maintain business in Virginia. This fund receives a $3 million annual allocation of highway construction funds and the interest earned on cash balances to fund short line rail improvement projects.

Rail Industrial Access Fund

The fund provides financial support for projects that produce freight rail access to businesses in Virginia in collaboration with the Virginia Economic Development Partnership, County and Municipal Economic Development Departments, railroads and private industry. Currently, the fund is approved to serve as an incentive to encourage industrial or commercial development in the Commonwealth. Successful projects are expected to generate significant positive economic impacts. This funding source is expected to average $1.5 million per year for future years.

Bon Homme, South Dakota

Tax Increment Financing

Bon Homme County is considering the establishment of a tax increment financing district, or TIF, to help pay for the infrastructure needs that are a result of the proposed $30 million grain shuttle loading facility to be built by Dakota Plains Ag Center west of Tabor. The TIF district would use the new property taxes generated by the development to pay for public improvements in the project area. In the event the financing is not paid off by the end of the agreed term, the developer typically is responsible to cover the difference. When the TIF term ends, the new and higher property taxes that were used to pay off the financing are redirected to local taxing entities such as the county, city and school district.

Pennsylvania

Tax Increment Financing

In Pennsylvania, the Tax Increment Financing Guarantee Program is available to finance rail infrastructure improvements. The program was established to promote and stimulate the general economic welfare of regions and communities.

Rail Freight Properties Directory

The directory identifies properties located along the regional and short line railroads having potential to be served by rail. The directory is the result of collaboration between regional and short line railroads, economic development agencies, counties, municipalities, chambers of commerce, planning commissions, industrial real estate agents, property owners, and others. The directory serves to increase rail traffic base on short lines.

Tennessee

Transportation Equity Fund

TDOT distributes approximately $4.5 million a year to short line railroads to repair and maintain tracks. Tennessee collects more than $4 million a year in sales taxes paid on fuel used by aeronautics, railroads, and towboats. Those funds go into the Equity Fund, which is distributed among short line railroads.

CHAPTER 5: STRENGTHS

SHIPPERS AND FARMERS ARE USING THE SYSTEM

Upon the State of Washington purchasing the PCC rail system, farmers were actively searching for more cost effective transportation options to ship their products to market. Watco, the previous owner of the PCC, had implemented steep per car surcharges on the CW branch. Due to these surcharges, the CW branch was officially embargoed and saw no rail service for nearly a year before service was restored after the state selected EWG to operate the CW branch. Under EWG, the per-car surcharges decreased making shipping via rail more affordable to farmers.

High transportation rates in the form of per car surcharges were not the only obstacle for farmers wanting to use the PCC. A national grain car shortage that began in 2005 also impacted PCC shippers from gaining access to equipment to move wheat by rail. As the state finalized the purchase of the CW branch in 2007, access to grain cars remained tight. This is demonstrated by data on carloads shown in Figure 2.3. The CW and P&L branches, both reliant on BNSF for cars had low carload volumes, while shipments on the PV Hooper, which has access to the Washington Grain Train equipment, remained steady.

In 2011 and again in 2012, agricultural producers in Washington State experienced high crop yields, and unlike previous years, grain cars were readily available to move those crops to market. As a result of this increased availability of grain cars, carloads on the PCC more than doubled from their 2007 levels. This indicates that if farmers have access to rail equipment and the transportation cost to use it is competitive, farmers will use the PCC to ship products to market.

RAIL OPERATORS PROVIDE INNOVATIVE SOLUTIONS

One of the key influences in the growth in carloads between 2007 and 2011 was the ability of rail operators Watco (PV Hooper), Eastern Washington Gateway (CW) and Washington & Idaho (P&L) to effectively work with shippers and Class I railroads to reduce barriers to using the PCC and increase the draw area, or the physical distance where crops are actually grown in relation to the grain elevators located along the PCC.

For example, Watco has created a 90-car unit train service linking grain origination elevators along the PV Hooper with a barge loading terminal located on the Columbia River. The service is successful even though it draws from farmers with distances as short as 120 miles by road. Short distances like these are often much more cost effective via truck transport.

In early 2008, EWG began running 60-car Scoot Trains between grain origination elevators along the CW to the 110-car grain terminal in Ritzville, WA. These trains were designed to eliminate thousands of truckloads that moved between elevators along the CW and the Ritzville Terminal, some as close as 50 miles by truck. While the Scoot Trains were short-lived, they were instrumental in returning shippers to using the PCC and ultimately led to BNSF offering more competitive transportation rates directly from CW elevators.

Rail Use is an Economical Transportation Option

Users of rail transportation typically benefit from a cost structure that is over four times less expensive than transporting goods by truck. This is particularly true for heavy, bulk goods such as the agricultural commodities transported on the PCC. Other factors that impact transport cost and choice of transportation mode include the distance goods are shipped along and the ability to achieve the volume needed to ship 110-car unit trains. PCC shippers are typically exporting commodities through lower-Columbia River Ports and are therefore generally shipping short distances. However, the joint ventures among smaller cooperatives along the PCC have led to the ability to achieve volumes needed to ship 110-car unit trains and therefore, receive preferential pricing.

PCC shippers commonly reference a conservative cost savings of $0.05/bushel when they are able to ship by rail from grain origin elevators, such as those along the PCC. These savings will surely vary depending upon location, destination and variable costs such as fuel. Those shippers located on the PV Hooper may see savings less than this due to the fewer truck miles to reach alternative transportation options along the Columbia/Snake River, while shippers on the CW may benefit from cost savings that exceed $0.05/bushel due to longer truck hauls required to reach river terminals.

Nearly 30 million bushels of wheat were originated on the PCC in 2013. Using a conservative, average cost savings of $0.05/bushel means shippers on the PCC collectively saved $1.5 million in 2013.

Rail Use Provides Environmental Benefits

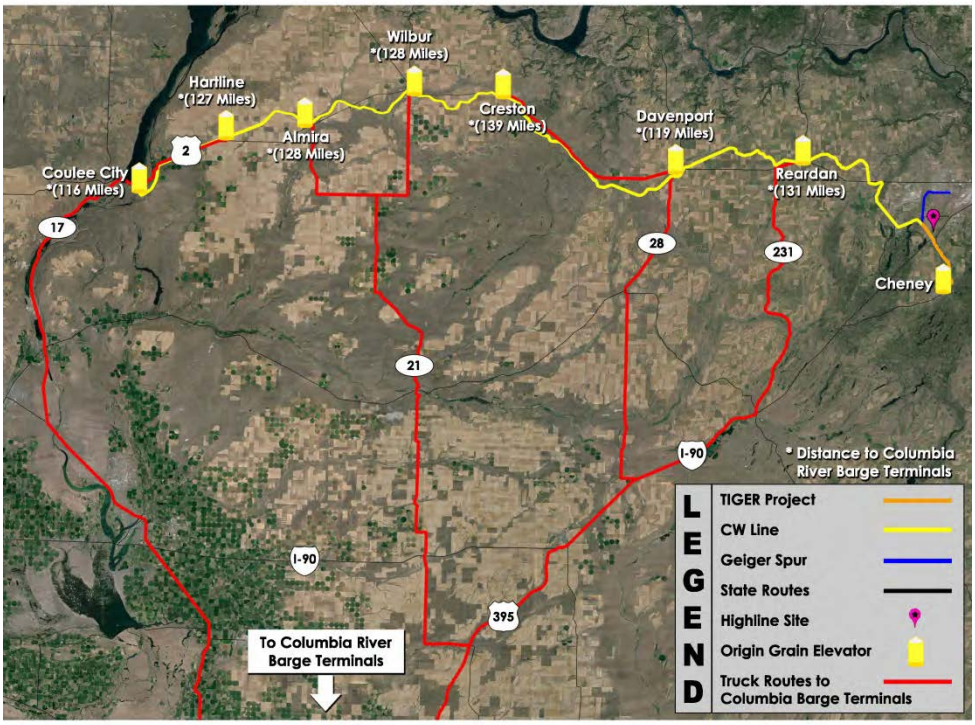
On average, trains are four times more fuel efficient than trucks. The benefits to the environment can be captured in terms of fewer truck miles travelled, resulting in lower greenhouse gas emissions. A single freight train can replace several hundred trucks. Movement of freight and goods by rail is considered the most green means of transporting freight over land because of the following benefits:

- One rail freight car can carry the equivalent of four truckloads
- One train can remove more than 280 trucks (the equivalent of 1,100 cars) from the highways
- Railroads consume almost one-third less fuel than trucks per ton-mile moved
- One rail car can carry a ton of cargo 480 miles on one gallon of fuel

The U.S. Environmental Protection Agency estimates that for every ton-mile, a typical truck emits roughly three times more nitrogen oxides and particulates than a locomotive. Related studies suggest that trucks emit six to 12 times more pollutants per ton-mile than do railroads, depending on the pollutant measured. According to the American Society of Mechanical Engineers, 2.5 million fewer tons of carbon dioxide would be emitted into the air annually if 10 percent of intercity freight now moving by highway were shifted to rail. As greenhouse gas, emissions are directly related to fuel consumption. Moving freight by rail instead of truck lowers greenhouse gas emissions by 75 percent.

In 2014, an application was submitted by WSDOT for the TIGER program, the extent of which is shown in Figure 5.1. Rehabilitation of the Cheney to Geiger Spur project on the CW branch would avoid an increase of over 47 million truck ton-miles and the release of over 2,786 tons of CO_2 in 2016. Over a 20-year benefit period, more than 96,000 tons of emitted CO_2 are avoided due to the completion of this project.

Figure 5.1: TIGER 2014 Project Extent



Rail Use Reduces Roadway Damage

In the US, short line railroads take the equivalent of nearly 33 million truckloads off the highways, saving the country more than $1.4 billion annually in highway repair costs. According to the American Short Line and Regional Railroad Association, if just 10 percent of the freight currently moved by truck is moved by rail, more than one billion gallons of fuel would be saved and greenhouse gas emissions would drop by 12 million tons.

Specific to the PCC, WSDOT's 2014 TIGER application project was to support operations of a planned grain terminal facility as well as other potential uses on the Geiger Spur. The analysis arrived at an annualized cost for avoided pavement damage of $1,960,106.

Road damage calculations from the *Palouse River and Coulee City Railroad Market Assessment* (Ken Casavant and Eric Jessup, 2006) are as follows:

- Total costs out over the life of the road shows the annual road damage costs of about $1.7 to 4.1 million per year, or an average of $2.9 million per year prevented by using the PCC
- Road damage and usage costs avoided by maintaining the CW line are estimated to be from $3.4 million to $11.5 million for state highways every 15-20 years. For the same period of time county roads, because of their lower level of construction, and the routes chosen by the trucks, are estimated to incur road expenditures of $21.7 million to over $50 million, in traffic related to the CW line. The range of total highway impacts from CW line abandonment is between $25.7 million and over $51.4 million, (or more, if extra reconstruction on certain county roads is necessary) identifying a significant benefit to the state and counties from maintaining the CW line.
- The total road impacts by elimination of the P&L line are estimated by Tolliver to be $3,530,000 in total ($2,980,000 for state highways and $550,000 on county roads). The road damage caused

by the loss of the PV Hooper line is less, $2,742,000 ($992,000 for state highways and $1,750,000 on county roads).

Rail Use Increases Safety with Reduced Truckloads

Diversion of truck traffic to rail reduces traffic on roadways, which provides for an improved operating environment for trucks and passenger vehicles for safer, faster, and more reliable travel. For example, in WSDOT's TIGER 2014 application, the safety benefits of the Highline Grain facility were calculated to be $220,000 per year. This figure represents reduced crashes by diverting truck traffic to rail transport.

Local Support for Freight Rail Access is High

Existing shippers have demonstrated long-term confidence in the sustainability of operations of the PCC rail system by investing significant capital into existing and new facilities located along the PCC. This trend is driven by a strong agricultural economy in the Pacific Northwest and particularly in Washington State. In addition, the region has added 30 million tons of export capacity and has become the dominant export region for US-grown agricultural products to Asia. The close proximity of Washington's wheat fields (which export 85 percent of their output) to the Ports of Portland, Vancouver, Longview and Kalama ensures a competitive advantage to agricultural producers in Washington State.

Shippers are natural beneficiaries of the state's investment to purchase and retain rail transportation in Eastern Washington. The primary benefit for shippers is realized by providing transportation options thereby increasing competition and thus reducing transportation costs. Additionally, local leaders, economic development organizations and residents in the region are quickly able to identify benefits the system brings to the region and to them personally. The competitiveness of freight rail dependent industries like agriculture, rely on access to rail transportation.

The cost to local economies, when an insufficient rail infrastructure is present, can be profound. A lack of rail infrastructure can threaten the many industries and the jobs that it supports by increasing transportation costs and decreasing business profitability. Economic development leaders know that if viable rail transportation is not maintained, certain manufacturing, logistics or trade businesses will never consider building, growing or relocating to the region. In fact, some may relocate all together in order to minimize their transportation costs.

Rail transportation is also environmentally friendlier than truck transportation. Residents recognize that every carload on the PCC means there are three or four fewer trucks traveling long distances on roads in Washington (the state benefits from this by decreasing wear and tear of roads). Over 100 stakeholders, leaders and residents participating in public meetings designed to provide input in this plan. The vast majority of those participants identified economic, environmental or social benefits that they personally benefit from by continued viability of rail transportation in the region.

CHAPTER 6: WEAKNESSES

MAINTENANCE HAS BEEN DEFERRED

WSDOT previously conducted a study on deferred maintenance on the PCC rail system (*Purchase and Rehabilitation of the Palouse River and Coulee City railroad Track*, 2004). The deferred maintenance issue was described as follows:

> *In the years since the PCC has been operating as a regional rail system, the deferred track maintenance situation which was inherited from the mainline railroads – the BNSF and UP – has worsened. Not only had the inherited maintenance backlog not been addressed, the financial performance of the line led WATCO to fund at best half the level of annual maintenance considered necessary within the industry: $3,100 per track-mile expended versus industry standards of $6,000 to $8,000.*

Deferred maintenance continues to be a problem since operations began again in 2007. The initial years of operation by the contract operators were spent trying to build up business that had gone almost entirely to trucking as a shipping option. During the last seven years, the operators have managed to perform only the most basic and essential maintenance activities. This has been due to the limitations imposed by low carloadings not producing sufficient revenue. As a result, the system has over a 20-year backlog of deferred maintenance.

OPERATION IS DEPENDENT UPON CLASS I RAILROAD OPERATIONS

Shippers and farmers rely on the PCC for access to rail transportation. However, it is also important to note that 100 percent of all carloads on the PCC also travel on at least one of the Class I railroads (BNSF and UP) from its origin, or to reach its destination. Current interchanges of the PCC with Class 1 railroads are shown in Figure 1.1, and are located at:

- Marshall, where the P&L branch meets the BNSF
- Cheney, where the CW branch meets the BNSF
- Hooper, where the PV Hooper branch meets the UP

Class I railroads provide grain cars and locomotives with access to distant markets that are important to agricultural producers in Washington. When there are enough locomotives and grain cars to meet demand (e.g., in 2011, 2012), the PCC is able to be a competitive option and will prosper. But when the Class I equipment becomes unavailable, expensive, or the service beyond the PCC is unreliable (e.g., in late 2013, and 2005 to 2007), all rail shippers suffer economically.

PUBLIC INFORMATION ON THE BENEFITS OF THE SYSTEM IS INSUFFICIENT

For the most part in the US, railroads are private, for-profit businesses that share information sparingly. There are many reasons for this, but most often it is to not only retain propriety competitive information about the railroad itself, but also to protect the data of its customers. Information about how effective a railroad is at meeting the needs of its customers or its ability to be competitive in any given market is closely held.

Railroads that are publicly held, like the PCC, have many of the same challenges. In addition to providing a valued option for shippers, the PCC must also achieve public benefits for Washington State. These

public benefits include improving safety, the environment and reducing overall maintenance costs of transportation infrastructure. Insufficient information is available to help residents and decision makers understand and quantify the benefits of rail transportation. It is believed that this lack of information and quantification of the public benefits may lead to insufficient public funding of these system needs.

Shipping Options Present Infrastructure Investment Challenges

Shippers enjoy the benefits of reduced transportation costs available by having access to the PCC. When transportation rates are competitive and grain cars are available shippers have demonstrated the commitment to take advantage of those benefits by driving PCC carloads to record levels. But when cheaper alternatives are available shippers can exercise their shipping options and utilize other modes. Because they are private entities, this ability to respond to price sensitivity and service availability is critical to being economically competitive and prosperous.

Improving competitive pricing and access to grain cars regardless of Class I availability would successfully minimize the need for shippers to consider alternatives to the PCC. Many shippers identified that investments they are making in new grain terminals are to ensure they are able to maintain competitive transportation costs regardless of external forces.

There is an intrinsic benefit of the PCC in its ability to provide an alternative transportation option for shippers. This alternative is only beneficial if it is maintained in such a manner that shippers can actually use it. Shippers provided feedback that they recognized there are alternative modes of transportation available to them. However, there was recognition that in order to continue to provide economically viable rail alternatives, businesses would also need to invest in rail infrastructure to maintain it as a viable shipping option.

Slow Speeds Result in Increased Operating Costs

The PCC rail system, while classified as a Class II Railway System, suffers from speed restrictions that in many cases limit speeds to no more than 10 mph. Speed restrictions result in increased operating costs for the rail branch operators mainly from the increased labor hours required to traverse the system. The Rail Safety Improvement Act of 2008 overhauled requirements for how much time certain freight railroad workers can spend on the job, referred to as hours of service. Changes included limiting the number of consecutive days on duty before rest is required, increasing minimum rest time from 8 to 10 hours, and requiring rest time to be undisturbed.

Slow speeds also result in higher operating costs through increased fuel usage. For example, if a train can approach an uphill grade at 25 MPH versus 10 MPH, there is less need to throttle up to traverse that grade and therefore increase fuel consumption. If the train is only moving at 10 MPH, throttling up becomes necessary much sooner. Fuel usage and equipment maintenance costs are also increased simply due to the fact that the locomotive is running for longer periods of time to traverse a distance at 10 MPH versus 25 MPH.

Commodities Shipped Are Not Diverse

The rail lines that make up the PCC rail system were built to transport wheat to market. The Palouse Region is one of the most productive wheat growing regions not only in the US but in the world. Being so dependent on one commodity, however, can lead to a challenging business environment for rail operators including: a high degree of seasonality to operations, susceptibility to big downturns or upswings in demand from year-to-year and an inability to rely on other revenue streams during the years crop yields are below average or worse.

CHAPTER 7: OPPORTUNITIES

ECONOMIC DEVELOPMENT OPPORTUNITIES ARE NUMEROUS

Washington State's decision to purchase the PCC rail system provided cities and towns within the influence area leverage to attract and pursue businesses that rely on rail transportation. The regional economy that is braced to realize gains continues to be the agricultural-based economy of Central Washington and the Palouse region. In this region, companies are looking for available land to develop, and land is available.

Companies Are Looking for Available Land

Companies are looking to take advantage of the favorable economics that rail transportation provides by expanding existing grain storage elevators or building completely new facilities adjacent to the PCC. Facilities that handle products and commodities other than grain have also expressed interest in building along the PCC. Large grain terminals such as the McCoy Terminal or the proposed Highline Grain Terminal are examples of newly built infrastructure that requires a significant amount of land, up to 20 acres are needed to build a rail loop. Other smaller elevators or facilities require a much smaller footprint by building one or more industrial rail tracks perpendicular to the existing rail right-of-way.

In addition to the McCoy and Highline facilities, perhaps the most advanced proposal is that of the Geiger Spur Transload Facility. The multi-use facility was studied by Spokane County and WSDOT in July 2007 and identified the purpose and need of the facility, its potential users as well as the regional economic benefits of such as facility. The need to improve PCC infrastructure to serve the proposed Geiger Spur Transload Facility was a focus of WSDOT's application to the Federal discretionary grant program Transportation Investment Generating Economic Recover (TIGER) in 2014. The grant proposal presented PCC infrastructure improvements that would enhance the system's ability to handle modern rail equipment between the new Geiger Spur connection and the CW connection with BNSF in Cheney, WA.

Public Property is Available for Economic Development

Along with the rail right-of-way, Washington State also acquired land parcels adjacent to the PCC rail system. In collaboration with the PCC Rail Authority and interested shippers, WSDOT is developing criteria that will prioritize the best use and potential opportunities of parcels currently not in use. The ultimate goal is to avail the prioritized parcels at fair market value to companies interested in using rail transportation.

WSDOT has identified potential available development sites in Reardan and Belmont. These sites have been identified due to their location, size of available parcels, proximity to other land uses and other benefits. These parcels play an important part in attracting new businesses or allowing existing businesses to expand, increasing the utilization of the PCC and therefore, the financial viability of the rail operations.

INCREASING VOLUME MAY LEAD TO PRIVATE OWNERSHIP

The state purchased the PCC to ensure that a transportation option important to farmers in Eastern Washington would be maintained. As shippers make investments in facilities served by the PCC, it is only natural to conclude that the increasing business generated by the new facilities could lead to an offer by a private business to purchase all or part of the rail system. While the rail system as a whole continues

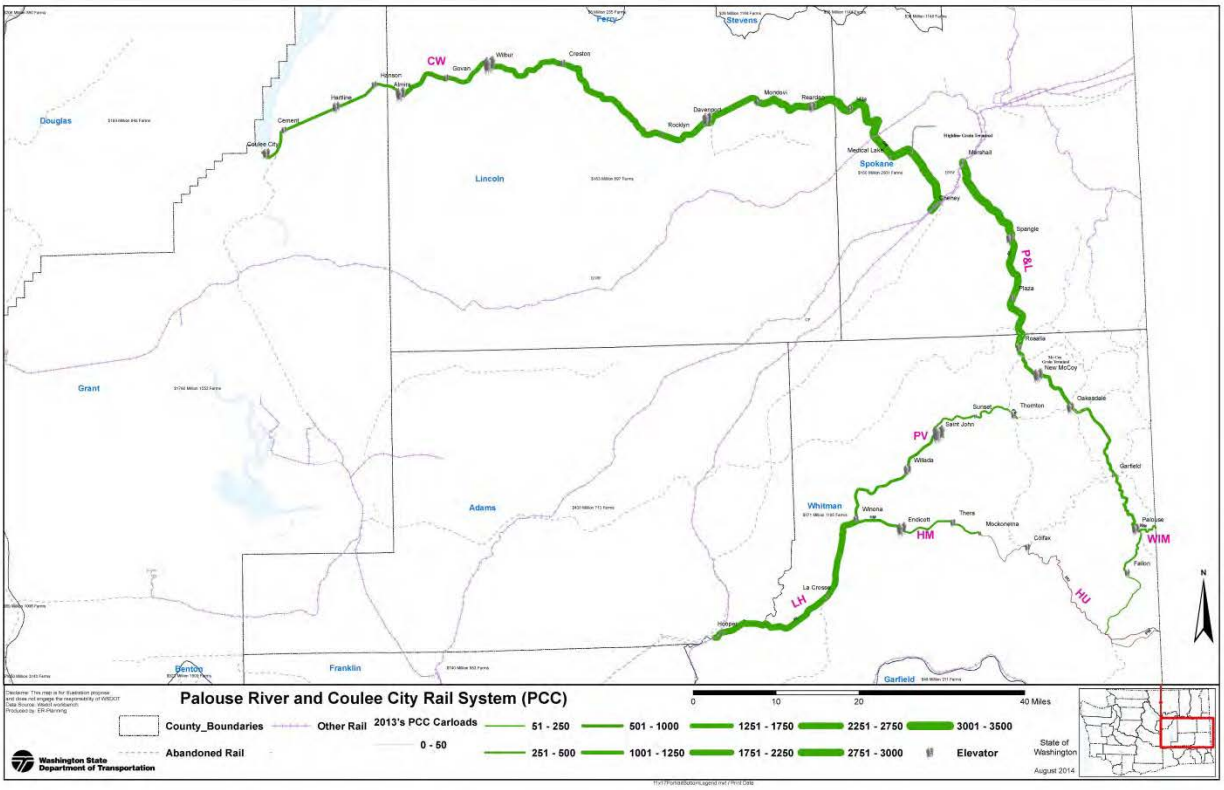
to need significant capital investment in order to support long-term operations, certain sections of the PCC, particularly those serving new or proposed grain terminals may have potential for rail operators whose business models are able to incorporate debt service on right-of-way acquisition.

Existing operations on each of the PCC branches include sections that generate higher carloads while other sections are significantly more marginal and may only generate a few hundred carloads per year or even less. Ensuring viable operations to all shippers has been a tenet of the system since the state acquired it. The issue of ongoing sustained operations of the PCC will need to be considered whenever the state considers an offer to purchase a portion of the PCC.

Size the PCC System Appropriately to Reduce Costs

Good stewardship of the state's infrastructure also requires WSDOT to consider discontinue rail service when it is not feasible or necessary. Such is the case for two sections of the PCC: a section from Colfax to Pullman; and a section from just north of Pullman on the P&L to just west of Moscow, ID (WSDOT owns the right-of-way up to the Washington/Idaho state line). These sections total 37.3 miles in length and have no industries currently using rail transportation. Figure 7.1 shows traffic density across the entire system, based on carloadings in 2013. The thicker lines carry the most carloads while the thinner lines carry the least amount.

Figure 7.1: Traffic Density



Any discontinuance of rail service should not be considered lightly. However, active rail lines continue to require regular inspection and maintenance which can be costly if no business is generated to justify the expense. These expenses include crossing and crossing signal maintenance, weed and brush control, ditch and stormwater maintenance, prescribed track and signal inspections, and any emergency storm/flood/fire repairs that may occur. In addition to reducing operator maintenance costs, existing

materials along sections of the PCC where service has been discontinued may be able to be repurposed and reused along other sections of the PCC, thus reducing maintenance and preservations costs.

Traditionally, private railroads would file for a Discontinuance of Service with the Surface Transportation Board (STB). This would alert businesses using rail service and other local interests that the railroad intends to terminate service and may pursue abandonment of right-of-way. This action would provide parties interested in preserving rail service an opportunity to petition to the STB to deny abandonment or to work with the existing operator to continue service or perhaps locate a new operator.

Because the State has already purchased the right-of-way with the intent to preserve rail service, both WSDOT and the PCC Rail Authority will work with local leaders and the regional Economic Development Council to identify a strategy that will pursue continued, viable rail transportation for the impacted cities, county, and region. If all parties involved cannot identify a viable plan forward for continued rail service, WSDOT could pursue several options for the right-of-way. The options are highlighted below.

Abandonment

Abandonment is a federal regulatory action that not only leads to the permanent termination of rail service, but also permanently terminates use of the right-of-way. Washington State lost over 30 percent of its rail right-of-way miles through abandonment, much of it during the 1970s and 1980s. While the state does not have a policy against abandonment, it is widely viewed that any further loss of rail infrastructure in the state would be detrimental to freight mobility and could negatively impact the continued viability of regional economies. The 2014 State Rail Plan goes into greater detail on the impacts abandonments have had in the state.

Railbanking

The National Trails System Act incorporated a provision that endorsed railbanking in 1983. Railbanking allows right-of-way rail corridors to be retained after viable rail service has ceased. The main purpose of railbanking is to ensure that, should it be necessary, rail service could be reinstated. While the state rarely has such an instrumental role in determining the fate of existing rail right-of-way, the 2014 State Rail Plan does recommend that WSDOT consider strategic state interests in determining whether a statewide policy is needed.

Repurposing Rail Materials Reduces System Costs

Opportunities to repurpose existing rail materials not currently in use may exist, and may reduce rehabilitation costs. In 2010 the Department of Energy (DOE) and Washington Closure Hanford contracted with a Utah-based rail salvage company to remove over 30 miles of unused rail in the Hanford Nuclear Reservation. The rail was tested and found to be free of contamination and will be used to replace rail infrastructure elsewhere. The rail materials were free, only costing the rail salvage company the cost to recover it from the Hanford site. DOE saved money by keeping the steel out of the Hanford landfill.

At its peak the Hanford Site had 158 miles of railroad right-of-way. Additional surplus rail infrastructure in the Hanford Site may be available in the future. The proximity to the PCC and the age and type of rail likely make it a perfect candidate to improve conditions on the PCC by improving the weight of rail as well as provide an inventory of rail that is available for use as existing rail is identified as defective.

Other opportunities to repurpose rail may occur from the North Spokane Corridor project, where a new freeway is being constructed partly through a BNSF rail yard in Hillyard, in northeast Spokane. Also, if

sections of the PCC are removed from service, the rail in those sections will be tested and may be utilized on other sections of the system. Opportunities to repurpose rail will be evaluated as they occur as part of a Least Cost Planning effort to evaluate their efficiency and cost effectiveness as part of the overall asset management plan for the PCC rail system.

Investments Are Made By Operators and the State

To address the large backlog of deferred maintenance needs on the PCC rail system, investments by both the line operators (i.e., EWGRR, WIR, WATCO), and the owner (i.e., WSDOT), are needed. While the operators are able to perform the most basic maintenance activities, larger scale track maintenance activities must still occur through WSDOT contracting efforts. This trend is likely to continue as the largest system needs, rail and bridge replacement, are looming capital needs. Given the large ongoing system needs, investments from shippers as well as operators and WSDOT will likely needed to maintain and improve the system to support long term operations.

Additional PCC Rail Authority Staff Can Provide Solutions

As the PCC Rail Authority was established to manage and oversee the business and economic development elements of operating leases on the PCC rail lines, there is opportunity to ensure the Authority is adequately funded and resource supported to fulfill the Legislature's expectations. For instance with minimal financing, current RTPO resources that are typically leveraged to support a regional economic development organization could also be leveraged to provide Authority staff support. A minimal operational budget that provides for staff support would assist the Authority with implementing the following prescribed responsibilities:

- Periodically gauge general rail customer satisfaction. This could include but is not limited to surveys, quarterly meetings, and similar items/activities
- Collaborate with customers and railroads to improve service and resolve problems
- Monitor service provision to customers for compliance with operating lease provisions relating to business and economic development
- Recommend railroad operator requests to change service levels to WSDOT. The recommendations include quantifiable input on customer service, market conditions, customer needs, and any other basis for the request. WSDOT is responsible for making the final decision on the request
- Oversee the railroads' preparation of the Annual Operating Plans required by the leases to the extent they relate to business and economic development. Oversight in this context means reviewing submitted plans and making recommendations to the railroads and the WSDOT regarding only the Current Status Report and Annual Service Plan elements of the Annual Operating Plan
- Serve as a conduit for economic development utilizing the three branches of the former Palouse River and Coulee City Railroad Lines. This includes individual members of the PCC Rail Authority working with their respective Associate Development Offices and/or Economic Development Councils and the Department of Community Trade and Economic Development to promote economic development and identify funding sources. The PCC Rail Authority may also submit grant applications for public funding
- Maintain communications with WSDOT and the railroads
- Meet regularly to accomplish the above tasks, beyond the current quarterly meetings with WSDOT to share information, coordinate activities, and discuss common issues

CHAPTER 8: THREATS

MAINLINE RAILROADS MAY LIMIT SHORT LINE ACCESS

The PCC was purchased by the state so that agricultural shippers could continue to have transportation options to access global markets. However, congestion caused by increasing intrastate train traffic on mainline railroads BNSF and UP has led to concerns about how the PCC is positioned in the long term strategy for both BNSF and UP. Furthermore, reduced velocity on the mainline railroads has led to the prioritized use of grain cars on longer distance trips from the Midwest. Many factors affect the decision of which mode farmers in Washington State utilize to ship their products to market. This has resulted in Washington-grown wheat to shift to a combination of truck and barge transportation and decreased use of the PCC over the past two years. Concerns about how the PCC is positioned in the long term strategy for both BNSF and UP were identified at all of the public meetings during the development of this plan.

Market Based Transportation Pricing Result in Short line Revenue Shortfalls

BNSF and UP offer the most competitive rates to shippers that can most efficiently load and expedite the movement of grain. This straightforward strategy usually requires significant investment by shippers in facilities that can collect and store enough grain but also process that grain quickly and facilitate trains as large as 110-cars on and off of the Class 1 railroad quickly.

Typically facilities that can achieve this are located directly along a BNSF or UP line. Market-driven, negotiated rates are set based on costs incurred by the mainline railroad in moving that grain from its origin to its destination. When a short line railroad is involved in a portion of the movement, the short line must agree on a rate of reimbursement for its portion of the shipment. BNSF collects the rate from the shipper and then distributes to the short line its portion.

The picture becomes increasingly complex as shippers continually assess how their transportation costs compare, not only between multiple modes (e.g., rail vs. truck/barge), but to those of nearby competitors as well. Additionally, the truck/barge system has a significant part of its costs borne by the public. As a result, short line operators along the PCC have little influence in pricing. They must focus on maintaining a low cost structure by operating safely and efficiently.

What is overlooked in the scenario described above is an increasing financial need to maintain the rail infrastructure of the PCC. Due to the competitive situation described above, PCC operators are constrained in the rates they can charge and are often not able charge a rate that allows them to adequately maintain the rail infrastructure. While increased carloads on the system allows more revenue to be allocated to maintenance needs, the increasing demand also requires increased levels of maintenance. This sets up a perpetual funding gap for the maintenance of the PCC that is more acute in years where fewer carloads use the system.

Interstate Rail Traffic on Mainline Railroads is Increasing

Another factor influencing pricing is a projected increase in rail traffic on mainline rail corridors in Washington State. The Washington State Rail Plan advised that train volume would double over the next 20 years. In addition to this, a shift in the sourcing of crude oil for the five oil refineries in Washington State has accounted for up to 18 trains per week along BNSF rail lines in Washington.

Delays in Washington State have not been significant, but train traffic using BNSF's Great Northern Corridor through Montana and North Dakota experienced significant delays in 2013-2014. These delays were due to unprecedented amount of volume increases across a broad group of commodities in addition to challenging operating conditions. Since every shipment on the PCC either originates or terminates off the short line, access to the mainline railroads networks is imperative to the shippers on the PCC. These delays, coupled with the anticipated significant growth in train traffic, have led to concerns about the long-term commitment of BNSF and UP to continue to competitively price and efficiently serve shippers in Washington State.

For its part, BNSF has spent $235 million on maintenance and new infrastructure in Washington in 2014. Much of this investment has been focused on adding new main track between Spokane and Pasco. BNSF's investment in Washington State includes $125 million in 2013 and $100 million in 2012. In addition, UP has invested more than $85 million in Washington State over the past five years. These include improvements between Tacoma and Seattle and added passing track capacity on its corridor between Hinkle, Oregon and Spokane.

Availability of Grain Car Equipment is Limited

Because the shippers along the PCC are mostly dependent upon the BNSF for grain cars, delays along the BNSF mainlines have affected both the availability and cost of grain cars for shippers in Washington State. This was a significant factor in the downturn in carloads on the PCC in 2013 and continues to affect operations along the PCC through 2014.

Mainline railroads provide access to grain cars through a program that includes a secondary market for those cars. This program is intended to make sure grain cars are used for the best possible purpose at all times. In times of normal demand, cars are available for no cost (other than the transportation or tariff cost) or even at a small discount. When demand for grain cars is high and there is a tight supply, shippers may pay extra for access to cars.

A similar issue is competition from barging. Because shippers in parts of Washington State have direct access to the Columbia/Snake River System, costs associated with access to grain cars often exceeds the cost to use a combination of truck and barge to move wheat to export. The availability of alternative transportation options ensures agricultural producers can transport crops at low costs. However, when shippers exercise this option, it affects the financial stability of railroad operators and reduces revenue that is needed for maintenance of the system.

Funding Uncertainty May Affect Development Opportunities

During the development of this plan, many shippers expressed concern with the lack of sustained public funding for the PCC. Desires to invest in existing and new facilities that depend on sustained operations of the PCC is paramount to private investment dollars, particularly if those dollars are leveraged or hinge on private financing.

Shippers that have invested private funding into facilities describe the investment as a leap of faith, questioning whether the state will continue to fund investments in the PCC to maintain the current level of service, let alone to make improvements in the service. While large shippers have determined the reward is greater than the risk, smaller shippers, or those currently not shipping on the PCC continue to be undecided or even pessimistic in the long-term prognosis of PCC operations. If operational viability is going to be achieved these concerns will need to be overcome.

Potential for Catastrophic Events Creates Risk

The *Climate Impacts Vulnerability Assessment* Report (WSDOT, November 2011) states on the PCC System, the CW and PV Hooper branches specifically are vulnerable to fire primarily due to the wooden timber trestle bridges on the branches. These trestles are constructed with creosote timber and would be difficult to extinguish if they begin to burn. Figure 8.1 shows the timber trestle bridge just east of Colfax which caught fire in 2006. This structure has not been reconstructed. If a similar incident occurred on a more heavily used section of the system, it could result in a complete shutdown of a branch until reconstruction of the bridge could occur.

Figure 8.1: Trestle Fire

The PCC is in a region susceptible to natural disasters such as floods and fires. In March 2014, widespread flooding occurred in portions of Whitman County and Southern Spokane County. One portion of the PCC on the PV Hooper was out of service for a week as the rail operator, Watco, repaired affected bridges and fixed washouts. The finals cost for repairs exceeded $300,000 system wide. Due to the immediate need to complete repairs in a timely manner, most were completed by the rail operators themselves. While these repairs were mostly minor, they impacted the PCC by diverting funds the operators would have used for other needs along the system.

CHAPTER 9: STRATEGIES

All PCC partners play a role in maintaining and improving the PCC rail system. Strategies have been identified, and are categorized within Infrastructure, Operational, and Policy groups. Priorities were determined based on collaboration with public stakeholders and system users such as operators and shippers in order to gain a better understanding of what is important to the stakeholders and what is realistic to achieve. Infrastructure improvement strategies, in particular, are based on achieving maximum results with limited funding as well as phased solutions to address critical needs, such as rail replacement. The Infrastructure Improvements identified are not financially constrained and do not tie to any specific revenue scenario.

INFRASTRUCTURE IMPROVEMENTS

As stated in Chapter 4, the PCC rail system does not have a dedicated public funding mechanism, and it was in poor condition when the state purchased the line. Rail operators with limited financial resources are contractually responsible for infrastructure maintenance. Because maintenance and improvement are funded by revenues from operations, only minimum levels of improvement are occurring along the system. This plan identified system needs in a fiscally-unconstrained approach. The plan recommends $58 million in state funding over the next 10 years to overcome existing deficient conditions and make improvements. This plan recommends establishing an advanced inspection program to identify and prioritize defective rail on the PCC. The final infrastructure need is to inspect and load rate bridges along the PCC and establish a programmatic response to prioritize additional capital requirements that will result from those bridge inspections. Table 9.1 summarizes the infrastructure needs identified for the next 10 years.

Table 9.1: System Capital Needs

286k lb. Capacity Projects	Description		Cost
CW Cheney to Geiger	Replace rail and rehabilitate track		$7,337,000
P&L Marshall to McCoy	Replace 11 bridges and repair 4 bridges		$5,988,000
Total	Total Cost		$13,325,000
Track Rehabilitation in Curves	**Total Track Miles Rehabilitated**	**Rail Miles Replaced (incl. in total miles)**	**Cost**
CW	16.1	16.1	$15,920,000
P&L/WIM	20.2	5.2	$9,020,000
Hooper	9.3	6.7	$7,260,000
PV	10.8	6.6	$7,520,000
Total	56.4	34.6	$39,720,000
Replace Defective Rail			**Cost**
System wide Allowance	Estimated initial defective rail replacement		$5,000,000*
TOTAL (in 2015 Dollars)	Total Capital Project Need		$58,045,000

*Actual amount to be determined based on implementation of an advanced rail inspection program. The plan recommends that $5 million in funding be in place to purchase new and/or repurposed rail before beginning the integrity inspection program. This will ensure that adequate materials are available within the short time period (30 to 90 days) that the FRA allows the operator to complete remedial action for defects identified through the inspection process.

Advance Priority Projects to Increase 286,000-Pound Railcar Capability

WSDOT has identified two projects that would increase the capacity of the strategic sections of the PCC to be able to handle railcars weighing up to 286,000 pounds. These projects are considered a priority for WSDOT and will be the first to be allocated funding should it become available.

The CW branch from Cheney to Geiger Junction consists of rail from 85 lb. to 115 lb. with ties, ballast and drainage in fair condition. A proposed project focuses on track rehabilitation for sustained 286,000 pound car operations by replacing the following: rail weight less than 112 lb.; 40 percent of crossties; ballast and surfaces; lines and dresses the track and re-establishes ditches and replaces drainage pipes.

The P&L branch between Marshall and McCoy currently has 112 lb. continuous welded rail in good condition. The weakness of this section of track is the ability of the existing bridges to support sustained 286,000 operations. A proposed P&L Marshall to McCoy project focuses on bridge replacement and repair for sustained 286,000-pound car operations. The project replaces 11 bridges and repairs four bridges, and brings this section of track up to a standard of good repair.

Rehabilitate Track in the Curves

Another component of the recommended capital program focuses on improving all components of rail infrastructure in one of the most critical sections of track, which is through curved track. Track geometry has a large effect on the required level of maintenance required for a section of rail line. The forces on track in curves generate stresses that tangent sections to not endure, so that all components of track, rail, ties and ballast, need to be in better condition on curves than in tangent track. This required condition of the track components increases in conjunction with the degree of curve, so that the sharper the curve, the better condition the track components need to be. Track components in curves that are in marginal condition increase maintenance efforts as well as the risk of derailment.

The rehabilitation plan in Table 9.1 above address these issues by replacing rail that is less than 112 lb. in curves greater than 2 degrees, replacing 25 percent of ties in those curves, placing ballast, surfacing lining and dressing and ensuring proper cross level.

Replacing rail that is less than 112 lb. in curves will also provide a benefit in that any rail in good condition can be relayed in tangent sections of track as replacement for either defective or light rail.

Identify and Replace Defective Rail through Rail Integrity Testing

The single most important asset to the railroad industry is the rail, and historically the primary concern of the railroad companies is the probability of rail flaw development, broken rails, and subsequent derailments. Inspection of rail is performed visually through the weekly track inspection by the road master; however, other types of defects are not usually visible until failure occurs. One of the most important practices for the reduction of broken rail is the nondestructive inspection processes used by the railroad industry. These include several technologies and methods that are in use in the railroad industry today with the objective of obtaining full life potential of the rail section. Various types of defects can compromise rail integrity. These can be divided in to transverse and longitudinal defects.

Longitudinal defects include the following: vertical split head; horizontal split head; head and web separation; piped rail; split web; bolt hole crack; broken base; flattened head; and damaged rail.

Transverse defects include the following: transverse fissure; compound fissure; detail fracture; engine burn fracture; defective weld; and ordinary break.

Much of the rail on the PCC was manufactured before the development of the control-cooled process of rail manufacturing from 1936 to 1938. Rail manufactured before this process is prone to transverse fissuring in the rail head. A transverse fissure is a progressive crosswise fracture originating from a nucleus located inside the head, spreading outward as a smooth, bright or dark, round or oval surface substantially at a right angle to the length of the rail. The transverse fissure is dangerous because: it tends to occur in several places across the same rail; failure almost always occurs before defect becomes visible; and, service failure is usually a complete break of the rail across head, web, and base.

Integrity testing as well as replacement of sections of defective rail will be performed by the rail line operators. The plan recommends that $5 million in funding be in place to purchase new and/or repurposed rail before beginning the integrity inspection program. This will ensure that adequate materials are available within the short time period (30 to 90 days) that the FRA allows the operator to complete remedial action for defects identified through the inspection process. Operators will be required to both adjust operating speeds and correct defects within a specified time in order to remain in compliance with the FRA.

Further recommendations will propose least cost solutions such as using rail from the 37.6 miles of the PCC recommended for rail banking or rail removed by rail replacement projects. A detailed inventory and assessment of the rail condition, including an update of track charts, is recommended. This assessment would provide a reasonable basis for prioritizing a rail maintenance program. A highly detailed inventory could be performed with the assistance of a rail inspection contractor, which includes identification of rail types, rail wear parameters, and even a search for internal defects in rail and joint bars. An inspection and inventory is recommended, especially in light of the rail wear conditions on the System. If performed at regular intervals, such inspections can be used as a predictive tool to anticipate rail wear and schedule rail replacement.

Inventory, Load Rate, and Prioritize Bridges

Bridge load ratings and a comprehensive inventory including condition reports based on annual inspections should be used as a critical component to prioritize future bridge rehabilitation or replacement. Most of the bridges on the PCC were constructed of treated timber stringers on treated timber 5 pile bents. They were constructed in the 1930s through the 1960s, with the earliest being constructed in 1899 and the latest in 1976. These bridges were well constructed to Class I Railroad bridge standards. Their life expectancy is approximately 75 years, which would indicate that most will require significant rehabilitation or replacement within the next 20 years. It is possible to prolong replacement of these structures through judiciously replacing and strengthening component members of the bridge, but the fact remains that significant costs can be expected as the PCC's bridges continue to age.

The FRA has established safety requirements for railroad bridges. The final rule requires track owners to implement Bridge Management Programs, which include annual inspections of railroad bridges, and an annual audit of the program. The final rule also requires track owners to know the safe load capacity of bridges and to conduct special inspections if the weather or other conditions warrant such inspections. To date only 39 bridges on the P&L branch and 20 bridges on the CW branch have been load rated. The remaining bridges on the system will be load rated before the FRA compliance date of September 13, 2017. Railroad operators will conduct load ratings of all bridges by 2017.

Once the load ratings have been completed, WSDOT will work with PCC operators to develop a Bridge Condition Assessment and a remediation plan that will prioritize and address bridge conditions on the PCC.

Address Ongoing Maintenance and Preservation Needs

WSDOT will work with operators and shippers to address ongoing maintenance needs. As discussed in this plan, PCC rail operators are able to address only a portion of maintenance needs on the PCC but do not currently generate enough revenue to cover all maintenance and preservation elements like track surfacing, grade crossing reconstruction and bridge maintenance. Several reasons cause this funding shortfall but fluctuating business due in part to availability of grain cars is one of the most significant factors. When railcar supply becomes tight, costs to receive those cars becomes prohibitively expensive, driving shippers to shift from rail to truck and barge to reach markets.

Increasingly, shippers are able to benefit during times of high grain car demand by trading or selling use of the rail equipment to other shippers that are in need of that equipment and therefore, willing to pay a higher rate for access to the cars. This is done through a secondary market that is intended to prioritize railcar equipment availability to those willing to pay for it. Because shippers in Washington State can reach barge terminals on the Columbia/Snake River inexpensively, they may choose to sell access to rail equipment they previously intended to use. This practice leads to lost business and revenue for PCC operators and ultimately a preservation maintenance gap for the PCC system.

As the primary beneficiaries of the PCC, shippers should partner with operators to better address preservation and maintenance needs of the system. By contributing funding to an annual tie replacement program, as an example, shippers could not only increase the efficiency of the system, they could also reduce the possibility of service disruption due to worsening track conditions.

Table 9.2 below highlights the typical system needs along with annualized costs and the sections below provide more detail about each component of a maintenance and preservation program.

Table 9.2: Annual System Needs – Maintenance & Preservation

Needs	CW	P&L/WIM	Hooper	PV	TOTALS
Gap for Ongoing Maintenance	$136,550	$134,000	$65,000	$40,000	$375,550
Tie Replacement	$763,406	$749,243	$365,415	$224,490	$2,102,554
Grade Crossing Replacement	$49,167	$65,000	$11,667	$12,500	$138,333
TOTAL (in 2015 Dollars)	$949,167	$948,243	$442,082	$276,990	$2,616,438

As with any piece of infrastructure, the PCC has a need for on-going maintenance. On-going maintenance activities include weekly inspections of the track and monthly inspections of the grade crossing signals as required by the Federal Railroad Administration, as well as the regular types of activities that a small maintenance crew (section gang) would be expected to handle over the course of a year. These include:

- Weekly track inspection, requiring two person-days
- A track crew to perform minor maintenance tasks, such as:
    - Isolated (spot) tie replacements in trouble areas
    - Spot track surfacing
    - Replacing damaged or missing signage and access control (fences, etc.)
    - Tightening bolts at joints

  - Re-filling flange lubricators
  - Adjusting turnouts
  - Performing minor ditching
  - Performing minor vegetation control at trouble spots and at grade crossings
  - Repairing track maintenance equipment
- Monthly crossing signal inspection by a contract signal maintainer for each crossing with an active warning device
- Signal maintainers responding to trouble calls for grade crossing signals
- Replacing back-up power supply batteries at several crossings each year
- Managing vegetation along the right of way, including application of pre-emergent herbicide and spot post emergent herbicide application as needed

Preservation maintenance activities include those that would produce results lasting longer than one year. This type of work is sometimes referred to as capitalized maintenance. This work includes activities where economies of scale could be realized if small increments of work were done together, as a group, by an outside contractor. For example, tie replacement, rather than occurring in small increments every year, might be most economical if performed in a somewhat larger increment every two or three years. Rail replacement is another example of such an activity. Prioritizing the work would need to be done on a location-by-location basis. These include:

- Tie replacement
- Track surfacing
- Grade crossing reconstruction
- Grade crossing signal replacement
- Culvert replacement
- Bridge maintenance

While the railroads current levels of business typically allow the performance of the on-going maintenance activities, the performance of the preservation maintenance activities is based on fluctuating yearly revenues, mostly due to changes in annual wheat harvests and pricing. The construction of the shuttle terminals on the CW and P&L branch will hopefully improve price structures and shipping efficiencies so that carloads will increase. Increased carloads will provide the operators additional funds to increase their level of preservation maintenance. Until such time the increased use of the system is also increasing wear and tear and degrading system condition and reliability. Thus, additional preservation maintenance funds are needed to make up for this shortfall. Based on experience this shortfall is approximately $0.4 million per year and includes allowances for, ballast placement, surface line and dress, turnout replacement, culvert replacement, ditching and signal replacement. This deficit will increase if the tie and crossing programs are not adopted.

Initiate an Annual Tie Replacement Program

An average of 18,408 ties need to be replaced per year to keep up with a tie life of 50 years. In the seven years of WSDOT ownership, there have been 28,327 ties installed as part of contract work and approximately 59,000 ties installed by operators. These 87,327 ties, compared to a replacement need of 128,856, results in a deficit of 41,529 ties needing replacement. In 2003, HDR performed a tie assessment of the PCC and noted that 10 percent of ties were defective and 14 percent were in poor condition. As shown by the replacement rate over the last seven years, that condition has continued to deteriorate. Given the continued degradation of tie condition since 2003, an assumption of 122,500 defective ties (13 percent) is reasonable. An annual tie program should address the 18,408 annual tie replacement as well as the defective ties. Over a ten year period, such a program would provide for the

replacement of 306,580 ties or approximately 30,000 ties per year. If performed by the branch operators, the cost of such a program would be approximately $2,000,000 to $2,200,000 per year.

Improve At-Grade Crossings

Public at-grade road/rail crossings should be addressed in an annual reconstruction program. While crossing surface repairs can be made to improve the traveled way, eventually the underlying ties will no longer hold the crossing timber surface or hold gage if the crossing is in a curve. In areas of poor subgrade or drainage, a crossing may sink and present a problem for train operations. Any of these conditions will dictate the need for reconstruction.

While the cost to reconstruct a crossing can vary greatly, a cost of $25,000 is representative of a typical crossing reconstruction. This includes excavation below the ties to ensure proper drainage, placing new ballast and cross ties, potential rail replacement if rail sections are less than 100 lb., and new crossing surface planks or asphalt.

With an assumed life of 30 years and 227 total crossings on the system, this equals approximately 7 to 8 crossings per year at a cost of $175,000 to $200,000 per year. Based on current conditions, 19 crossings are high priority replacements and should be addressed within the next 2 years. There are also 23 crossings identified as potential removals, in that they are sections of the system proposed for rail banking. There would be a cost to re-establish the roadway surface after track removal, but his would be minor compared to the cost for reconstruction.

The PCC rail system will be compliant with 49 CFR Part 234 - National Highway-Rail Crossing Inventory Reporting Requirements. This regulation requires railroads to report to, and periodically update information in, the U.S. DOT National Highway-Rail Crossing Inventory pertaining to highway-rail and pathway crossings. Specifically, WSDOT will: submit data for previously unreported highway-rail and pathway crossings; submit data for new highway-rail and pathway crossings; and, update existing crossing data in the Crossing Inventory at least every three years.

In addition, the PCC rail system will be compliant with 23 CFR Part 655, Subpart F, pertaining to the MUTCD. Administered by the FHWA since 1971, the MUTCD is a compilation of national standards for all traffic control devices, including road markings, highway signs, and traffic signals. Specifically, WSDOT will be in compliance with regulations for retroreflective strip on crossbuck signs and supports, and with new requirements for the use of STOP or YIELD signs with crossbuck signs at passive grade crossings.

Improve Ballast and Subgrade Information

A more detailed analysis of ballast and subgrade conditions on the system is needed to develop a specific inventory of where poor and very poor sections exist. After the inventory has been done, sections can be prioritized for rehabilitation based on strategic importance, and cost estimates can be developed for each section. Ballast rehabilitation should be typically performed in conjunction with tie and/or rail replacement and can be accomplished by undercutting or for very poor sections, may require removal and reconstruction of the entire railroad section. As an immediate step, analysis will ensure these sections have proper drainage and ditching so that conditions can be stabilized.
WSDOT will work with operators to establish a detailed analysis of ballast and subgrade conditions on the system.

Repurpose Rail Materials from Other Sources

Opportunities to repurpose existing rail materials not currently in use may exist, and may reduce rehabilitation costs. At its peak the Hanford Site had 158 miles of railroad right-of-way. Additional

surplus rail infrastructure in the Hanford Site may be available in the future. The proximity to the PCC and the age and type of rail likely make it a perfect candidate to improve conditions on the PCC by improving the weight of rail as well as provide an inventory of rail that is available for use as existing rail is identified as defective.

Other opportunities to repurpose rail may occur from the North Spokane Corridor project, where a new freeway is being constructed partly through a BNSF rail yard in Hillyard, in northeast Spokane. Also, if sections of the PCC are removed from service, the rail in those sections will be tested and if either utilized on other sections of the system or scrapped.

Replace Substandard Rail

Beyond this plan's timeframe, 90 miles of rail lighter than 90 lb. are in need of replacement. These light rail sections are considered substandard by current operating standards and rail car weights. For example, the PV branch is currently restricted to 10 mph due to the presence of 27.4 miles of 75 lb. rail on this 31.7 mile branch. Also, the CW branch has 52.6 miles of 85 lb. rail on this 107.8 mile branch.

WSDOT will work with the Rail Authority, operators and shippers to develop a plan to replace sections of rail lighter than 90 lbs. These rail sections are nearing the end of their practical life and prevent the rail operations at Class 2 speeds and increase the risk of derailments due to rail failure. If this replacement program is spread out over a period of 10 years, the annual cost is approximately $2.8 million. If the system capital needs in Table 9.1 are initiated and strategic railbanking is pursued, this need can be deferred since surplus rail will be generated from those activities. However, the ultimate need to perform this rail replacement remains.

Table 9.3: Annual Light Rail Replacement Needs

Needs	CW	P&L/WIM	Hooper	PV	TOTALS
Rail Replacement (years 10 through 20 in 2015 Dollars)	$1,892,056	$88,102	$0	$879,310	$2,859,7468

The cost of rail and associated fittings, being comprised entirely of steel, is highly responsive to domestic and international market conditions for steel products and scrap, which must be kept in mind when evaluating railroad maintenance costing and the specific scheduling of rail purchases. To economize on material costs for rail, replacement second hand rail would be a viable option for the type of operations necessary on the PCC rail system.

Operational Improvements

Improve Terms to Operating Leases

When the state acquired the PCC, it needed to implement contracts that enabled existing and new operators to maintain or start operations quickly. In addition, service had already been suspended on portions of the PCC calling into question the continued viability of operations. As a result, the state pursued short-term, 5 year operating lease contracts, which allowed the operating parties to terminate the agreement if shippers did not return to using rail transportation.

Most capital investments have long depreciation schedules and useful life that exceeds 25 years (e.g., crossties have a 40-year useful life). Providing the certainty of a 15-, 20-, or even 25-year lease term will allow operators an ability to monetize the lease to access credit based on the projected revenue the operator will generate over the life of the agreement. That credit could be used to make immediate

improvements to PCC infrastructure, purchase more efficient equipment or held to offset operating losses in lean years.

In addition to managing the business relations between the state and the operator, several key components of the Operating Leases were designed to sustain an operator during the critical first years of their business. As operators have been successful in generating adequate business to cover operating expenses it is an appropriate time to review the agreements and implement changes that will allow for long term needs of the rail system to be addressed.

WSDOT will pursue improved terms to operating leases with PCC branch operators. When implementing changes to operating leases, WSDOT will benchmark other public ownership models. WSDOT will also work with existing operators to understand implications of all changes that will be considered.

Evaluate the Grain Train Program

When BNSF began experiencing train delays along the Northern Corridor in late 2013, access to railcars for wheat and barley shippers in Washington State (who generally rely on equipment from BNSF) became nearly impossible and much more expensive when it was available. Shippers reported unfilled car orders, cars arriving weeks after they were ordered and a secondary market, meant to ensure best use of rail equipment, resulted in the cost to ship crops to market by rail for farmers in Washington State to double or even triple.

Grain cooperatives that have had access to cars in the Grain Train program have not had the same challenges. While the state-owned cars may take longer to get to their destination, due to congestion, they continue to be available. This has resulted in those grain shippers which haven't used Grain Train cars in the past to inquire about the program.

WSDOT will evaluate the Grain Train program to identify opportunities to improve service. WSDOT will partner with port districts to develop a plan for the future management of the Grain Train program. The plan will evaluate the effectiveness of the program to date and identify ways to increase operational flexibility to allow more shippers access to the program. The plan will also address long term needs of the program, including potential growth and modernization of the car fleet and a sustainable equipment replacement plan.

Maintain Direct Access to River Terminals

A critical link in the efficient movement of grain from the PV Hooper branch of the PCC is a Trackage Rights Agreement negotiated between Watco and UP. This agreement allows Watco to transport grain directly from grain elevators along the PCC to river terminals, where grain is transferred to river barges that haul freight along the Columbia/Snake River System for export. To achieve this unique supply chain, Watco operates over UP tracks between Hooper Junction and Wallula, WA.

Intrastate rail traffic continues to grow in Washington State and UP's eastern Washington rail corridor between Spokane, WA and Hinkle, OR is not immune to that growth. If UP were to terminate or not renew their Trackage Rights Agreement with Watco it would terminate the current rail-to-barge supply chain and likely lead shippers to shift to using truck to reach river terminals.

WSDOT supports maintaining direct rail access to grain terminals located along the Columbia/Snake River System. Termination of the Trackage Rights and the shift to truck transport would make continued operations of the PV Hooper branch unsustainable. It would also terminate a transportation option for

shippers in the southern Palouse Region that may lead to increased transportation costs and lead to increased costs to maintain local roads in order to support the increased truck transport in the region. WSDOT will work with Watco and the host railroad (UP) to ensure Watco continues to have direct access to river terminals critical to serving farmers in the southern-most region of the Palouse.

Strategically Consider Rail Banking and Abandonment

The plan has identified approximately 37 miles (from Colfax to Pullman, WA and from Fallon, WA to the Washington/Idaho State line) of the PCC where there are no current customers and limited potential for economic development. The PCC Rail Authority and WSDOT will work with local leaders to determine if access to this segment of the PCC is strategically important for the local and regional economy. Coordinated planning will focus on evaluation of the potential need to develop an economic strategy aimed at retaining rail service in the region, and what actionable steps can be taken to increase the viability of the rail lines.

If the outcome shows that there is no need for continued rail service, WSDOT will follow the federally-required Surface Transportation Board (STB) process to determine future uses of the section, with input from stakeholders. The STB provides two options: railbanking, and abandonment of the right-of-way. Railbanking allows the right-of-way corridor to be preserved for future rail use, while abandonment terminates the rail corridor along with any land easements that may have been granted in the creation of the rail corridor. Both abandonment and railbanking terminate an operator's obligation to provide common carrier rail service and are governed by federal laws (CFR Title 49, part 1152 and 16 USC 1247 (d), respectively).

The PCC Strategic Plan strategies are focused on providing freight rail service and reducing operating and maintenance costs of the state-owned rail system.

Pursue Minimum Railcar Orders

Many factors can influence how many railcars shippers are able to or willing to transport on the PCC in any given year. Market prices, equipment availability and the cost of that equipment, as well as crop acreage and the yield of the crop, are a few of the variables that can fluctuate annually. Some are even more volatile and can fluctuate daily. A best practice that has helped operators to plan for peaks and valleys in operations and cash flow has been the establishment of a minimum annual carload volume. This not only helps with financial viability of the operator, it also assures that rail equipment and railroad locomotives are available when they are needed. In addition, it is also imperative to ensure operators are able to meet their annual maintenance obligations to the state. PCC Rail Operators would benefit by pursuing minimum annual carloads from shippers. WSDOT will encourage PCC operators to pursue guaranteed minimum shipments from their customers.

Establish Private Crossing Agreements

When WSDOT purchased the PCC, it acquired all past legal and contractual agreements for the operations and use of the right-of-way. In some cases, over 100 years' worth of agreements, amendments, right-of-way easements and property leases, some of which are documented and some that are not. One type of agreement that was not provided to WSDOT when it purchased the PCC was a comprehensive list of active private crossings or the agreements that govern such crossings. Private crossings are a type of easement across the railroad right-of-way that is often used by private landowners as a means to access land that is adjacent to the rail line.

In an effort to document, and in most cases update, both the state's and landowner's rights and responsibilities related to the use of an existing private crossing or the establishment of a new private

crossing, WSDOT will establish Private Rail Crossing Agreements for all private crossings that cross the PCC. WSDOT will follow state law and evaluate best practices when establishing criteria for establishment of new private crossings.

Establish Industrial Track Agreements

Similar to the use of private crossings of the PCC, agreements for the use and maintenance of industrial track have not been carried forward from previous owners of the PCC. Therefore, WSDOT will establish agreements with all shippers that are the sole user of rail spur track located at their facility. Agreements will clarify use of the infrastructure, and define liability, maintenance requirements, and insurance requirements. WSDOT will consider the following criteria when establishing a policy for industrial track:

- Existence of current agreements
- Primary user of the track or track segment in question
- Rail operator/shipper use (storage of railcars or existing operations)
- Accessibility to property that is available for development by a business intending to need rail service
- Land ownership

WSDOT will evaluate best practice and consider past and present operating conditions when finalizing policy criteria and creating agreement terms.

Ensure Access to Major Railroads

WSDOT supports the goal of enabling PCC operators and shippers to have access to both Class I railroads. A common theme provided by stakeholders was unease about the reliance operators and shippers have on both BNSF and UP, and how much the success of their businesses depends on continued access to reliable and affordable rail transportation. Specifically, shippers cite increasing rail traffic traveling into or through Washington State along the Class I railroad mainlines and are concerned if BNSF and UP will prioritize that freight over freight from agricultural shippers in Washington. Also, if increasing demand for rail transportation will cause a spike in the cost to transport by rail, leaving investments in existing or new facilities will be unnecessarily risky or even worthless.

All shippers located on the PCC are captive to one of the Class I railroads. Rail transportation is part of a complicated global supply chain that is an important part of reaching destinations and ultimately customers, whether they are in Washington State or across the globe. While the phenomenon is not uncommon, captive shippers may pay higher rates, may suffer with poor or unreliable service and short line rail operators often are very limited in the solutions they can provide to offset these issues.

Agricultural producers in Washington State do have transportation options. Many grain cooperatives have invested in terminal facilities that provide them access to barge transportation along the Columbia/Snake River system. This helps if shippers are exporting their commodities oversees but is not very useful for those looking to ship to or receive from domestic markets.

Shippers on the PCC would benefit by having access to both BNSF and UP to ship and receive railcars. This could be pursued through a number of potential avenues that could include operational changes or capital investments to allow physical connections to be made. One such option was considered in a December 2007 study that looked at alternatives to replacing a bridge that had burned between Colfax and Pullman, WA. The destruction of this bridge permanently severed the P&L and PV Hooper subdivisions and the ability for shippers on each of those branches to reach the Class I connection on the

other. This bridge was never rebuilt because a business case that justified the cost to do so could not be identified.

This continues to also be the case for pursuing joint access to BNSF and UP. No current shipper has identified demand to justify the effort or expense. As businesses locate or expand along the PCC, or as Class I service offerings or marketing programs change, there may be a greater need to provide for a connection to both BNSF and UP. WSDOT will evaluate and, if feasible, pursue joint access to a portion or all of the PCC.

Policy Improvements

Determine Criteria for Private Acquisition

Private investment into facilities along the PCC has led to increasing carloads on the system. While WSDOT has not received an offer to purchase or acquire any portion of the PCC, it is conceivable that continued increasing carloads could lead to a viable business plan that includes acquisition costs associated with the purchase of rail right-of-way. But if local interests consider rail infrastructure unnecessary or not strategically important to economic growth, WSDOT will proceed to permanently cease operations on those sections of rail through either abandonment or railbanking.

The legislature has provided authority and guidance to WSDOT on the potential disposition of the PCC (RCW 47.76.280-300). What is not provided, are criteria needed to evaluate if the proposed sale is consistent with public interest. WSDOT and the PCC Rail Authority will develop criteria when considering the sale of all or portions of the PCC right-of-way, including: the potential viability of the proposed private operation, the intended service plan under the new ownership, and how the sale would affect portions of the PCC that may remain in state ownership.

Update Rail Benefit Methodology

Avoided road maintenance, along with the safety of fewer truck trips on roads in Washington State, continues to be two of the primary public benefits associated with moving freight by rail. Originally analyzed in 2003 by North Dakota State University's Upper Great Plains Transportation Institute and then again by Washington State University in 2006, wear and tear on highways and county roads in Eastern Washington was analyzed in the event rail traffic ceased and grain shipments shifted to trucks. The benefits were estimated to be between $4.2 million to $4.8 million annually. To get an accurate understanding the public benefits of the PCC rail system, and to communicate those benefits, an updated analysis of these benefits should be performed. WSDOT will update the cost of road maintenance avoided due to continued operation of the PCC.

Pursue Alternative Funding

Innovative financing options are increasingly becoming an attractive option to advance infrastructure projects. As federal and state budgets continue to shrink and municipal bonding costs rise, states and local governments are turning to federal credit programs, public-private partnerships, and value-capture methods to finance transportation projects. Typically, these tools are used to finance highways and public transportation projects. There may be opportunities to use these tools to fund publicly owned short line rail infrastructure improvements. Some advocates believe there is greater opportunity for private sector financing in the development and construction of rail projects with less reliance on public funds.

One way to increase the likelihood of business development along the PCC is through improved coordination with regional, county and city leaders in which the PCC operates. These leaders have a vested interest in increasing business along the PCC which not only helps to improve the viability of the PCC rail system, but also increases economic viability throughout the region. WSDOT will explore opportunities for funding the PCC rail system, as identified in the Opportunities section.

Create an Economic Development Strategy

PCC Rail Authority, PCC Rail Operators and WSDOT will partner with regional Economic Development Councils to not only amplify the importance of viable rail operations within their region but to identify industry sectors that should be targeted based upon rail capability in the region. Better coordination will not only provide more information about rail transportation's capability to the economic experts in the region, it will also establish relationships that will allow for identification, development and execution of opportunities more quickly and therefore have a greater chance of success.

Prioritize and Preserve Adjacent Land Use

Another tool that would encourage appropriate business development along rail corridors is to establish or update allowable land uses within zoning designations for property that is adjacent to the PCC. There are several specific strategies to achieve this goal, including comprehensive planning and sale of land.

Comprehensive Planning

Update County Comprehensive Plans to link adjacent land to rail corridors as development opportunities and preserve it accordingly. The four counties served by the PCC have comprehensive plans that recognize the importance of rail transportation as a vital asset to the region. Furthermore, most of these plans recognize that conflicts in land use exist and recommend strategies to minimize that occurrence. What is typically absent from these plans is the fact that developable land adjacent to rail corridors is finite and that the ability to pursue new business opportunities along these lands is critical to the viability of today's short line railroad, including the PCC Rail System operators. As elected officials from counties served by the PCC, PCC Rail Authority members can talk the lead in conversations to educate and improve current land use planning guidance within the counties that they serve. One successful example of this occurred in Clark County Washington which amended its comprehensive plan to include a Railroad Industrial Zoning Districts to preserve property and spur development along the county-owned rail corridor. County leaders formed a Railroad Resource Work Group to develop recommendations.

Sale of Non-Essential Property

Identify, prioritize, and sell state-owned land adjacent to the PCC to future rail shippers. When the state purchased the PCC it also acquired some property adjacent to the right-of-way in towns and cities that the PCC travels through. Some of the property is leased to shippers and adjacent landowners. The parcels vary in size and shape and also in their ability to provide new rail-dependent businesses an ability to locate and grow. WSDOT has categorized adjacent property not currently in use and has identified parcels (or groupings of parcels) that would be an ideal location for businesses looking to locate. WSDOT will work with rail operators, the PCC Rail Authority and local and regional economic development associations to identify and market property to those businesses needing rail transportation services.

Develop and Report on Performance Measures

Performance reporting is a high priority at WSDOT. Six statewide transportation policy goals guide the planning, investment, and operation of the multimodal transportation system in Washington State. Those policy goals include: Safety, Preservation; Mobility, Environment, Stewardship, and Economic

Vitality. To more fully integrate the PCC rail system into the agency's multimodal planning activities, performance measures should be developed to link with these goals. WSDOT will develop and report on PCC rail system performance measures such as:

Safe Operations

- Reduce the number of derailments along the system
- Improve the safety and surface condition of at-grade road/rail crossings

Efficient Operations

- Increase the ability to safely support sustained operations at train speeds up to 25 mph
- Increase the capability of strategically significant sections of the system to be able to handle modern railcars that weigh 286,000 pounds

Pursue Economic Development

- Diversify customers and commodities, and increase the number of shippers using the system through strategic property sales/leases and greater partnerships with economic development organizations and local leadership

CHAPTER 10: PLAN DEVELOPMENT AND IMPLEMENTATION

PLAN DEVELOPMENT

This Palouse River and Coulee City Rail System 2015 to 2025 Strategic Plan is the result of a strong partnership between WSDOT and the PCC Rail Authority. Planning workshops were held in 2014 in Spokane, Ephrata and Clarkston with rail operators, the three Regional Transportation Planning Organizations within the PCC rail system area of influence, shippers, rail industry experts, and the community at large. Numerous participants helped identify issues in a Strength, Weakness, Opportunity, and Threat analysis process in 2014, a key component of this plan.

One of the primary benefits of the SWOT analysis is the collaborative process in identifying and evaluating strengths, weaknesses, opportunities, and threats of a particular project or business. SWOT analysis is a key element used in strategic planning, and the process typically involves the diverse stakeholders, as represented in the PCC Strategic Plan SWOT Analysis. The end goal is to preserve and strengthen the existing assets; identify, amplify, and take advantage of the opportunities; and to overcome the weaknesses and threats, if possible.

The SWOT Analysis was performed during workshops with various public and private stakeholders. The workshops were coordinated and/or hosted by the three respective Regional Transportation Planning Organizations within the PCC rail system area of influence and community: Quad-County RTPO in Ephrata; Spokane Regional Transportation Council in Spokane; and Palouse RTPO in Clarkston. More than 70 stakeholders representing varying interests, organizations, and public agencies attended the workshops, including:

- PCC rail system operators
- PCC rail system shippers
- Farmers
- BNSF Railway
- Port of Whitman
- Quad-County RTPO
- SRTC Metropolitan Planning Organization/RTPO
- Palouse RTPO
- Community members

During the workshop the attendees were presented the history and current PCC rail system conditions, and the strategies and policy basis of this Strategic Plan with key deliverables. The presentation emphasized the changing economics of moving wheat in Eastern Washington and the need for a plan that highlights the benefits and needs of the system. After the presentation, participants were provided informational handouts and facilitated through the SWOT analysis workshop. The workshop feedback was captured and reviewed during the analysis process and participants were provided an opportunity to provide additional feedback via email or a feedback form.

Figure 10.1: PCC Workshop at Spokane Regional Transportation Council (November 13, 2014)

Draft Plan Public Review and Comment

WSDOT and the PCC Rail Authority provided opportunity for public review and comment on the Draft Strategic Plan. The plan was available for online review and comment, and an open house meeting was held in Davenport on March 18, 2015. Public comments were accepted March 2, 2015 through April 2, 2015. More than 85 individuals commented, representing themselves or organizations in which they are leaders or members. A summary of the comments received is provided below.

WSDOT received appreciation for the plan and the opportunity to provide comments and suggestions on the development of the final plan. The PCC system as a whole is well appreciated, and one comment stated "I applaud WSDOT's far sightedness in acquiring the PCC Rail System in the first place, to ensure rail access to Palouse area grain shippers". WSDOT is committed to continued operations of the PCC rail system. It is a proven benefit to the multimodal transportation system in Washington State.

Several comments relate to maintenance and upgrading the system, including the section between Colfax and Pullman. This was the preferred strategy over railbanking or abandonment from several commenters. One commenter wrote "We definitely need to upgrade and continue use of these lines. They are very important to the general transportation needs of the State of Washington and especially the needs of the local communities". Another comment stated "We oppose closing any railroad lines servicing agricultural areas if such closure would adversely affect the public good (roads, highways, etc.), agricultural producers in the area, or commodity shipments". WSDOT will continue to maintain and enhance the PCC rail system. Improvements to the PCC rail system are dependent upon funding availability.

A majority of the comments related to railbanking and abandonment of under-utilized sections of track on the system. In particular, the section between Colfax and Pullman received mixed opinions. Some comments were in favor of abandonment of this section, and turning over or selling off the rail property into private ownership. One commenter wrote "Given the current financial situation of the state and given the responsibility the State has to be fiscally responsible to the tax payers I feel any improvements and upgrades to the PCC system need to be done only in situations that will result in high profitability or use." Other comments favored putting the rail property into a railbank, which would stay in public ownership and would be used for future rail use or other interim public use such as a trail, or as a right-of-way for public utilities. One response alone included signatures of 992 local residents who signed a petition favoring railbanking. Another commenter wrote "I oppose abandonment, as the line is public property that should continue to be held for public use". WSDOT has not yet determined what action to take on this section of rail property. As a result of the comments received, edits were made to the plan in the Opportunities and Strategies chapters to clarify the options and to refine strategies.

IMPLEMENTATION

The PCC rail system benefits Washington State in many ways. Because it reduces demand for trucking, it reduces roadway congestion, reduces roadway and bridge maintenance and construction costs, reduces greenhouse gas emissions, reduces shipping costs for its users, and improves roadway safety. Moreover, the PCC rail system currently has capacity to handle additional diversion of freight from roadways in Washington State.

WSDOT is responsible for managing the overall multimodal transportation systems in Washington State. The PCC rail system helps WSDOT reach its goals of modal integration and environmental stewardship by providing this alternate mode for freight transportation. For the system to be competitive, strategic investments are needed, along with operational changes and policy improvements.

This plan prioritizes over $58 million of capital project needs. Defined operational and policy strategies may be achieved within the plan's timeframe. Coordination with all PCC rail system partners is critical to the ongoing success of the system, and WSDOT and the PCC Rail Authority will work with all PCC partners and stakeholders to advance the strategies identified in this plan.