CONTAINER/TRAILER ON FLATCAR IN INTERMODAL SERVICE ON MONTANA'S RAILWAY MAINLINES

FHWA/MT-08-009/8191

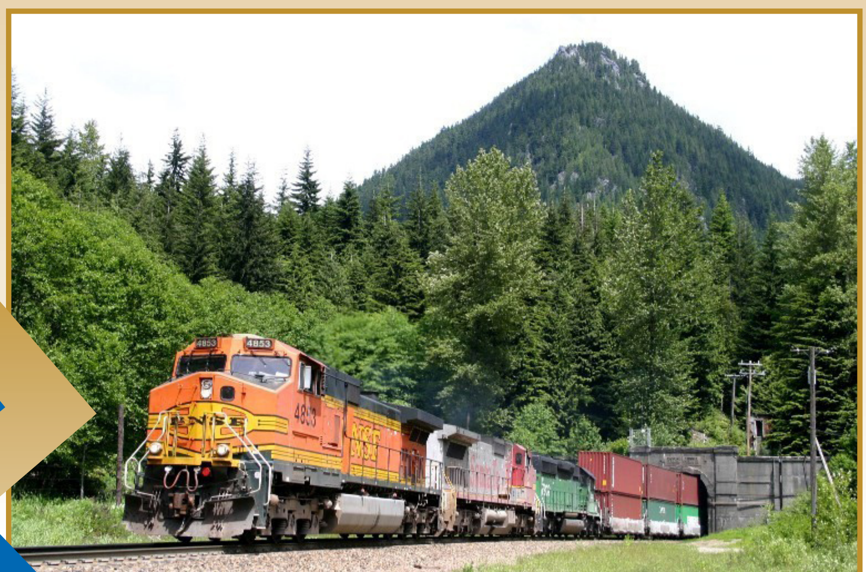
Final Report

prepared for
THE STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION

in cooperation with
THE U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

November 2008

prepared by
Prime Focus LLC
Western Transportation Institute



RESEARCH PROGRAMS

Montana Department of Transportation
serving you with pride

Container/Trailer on Flatcar in Intermodal Service on Montana's Railway Mainlines

By

Prime Focus LLC
and
Western Transportation Institute
College of Engineering
Montana State University

A report prepared for the

Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena MT 59620-1001

October 2008

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. FHWA/MT-08-009/8191	**2. Government Accession No.**	**3. Recipient's Catalog No.**
4. Title and Subtitle Container/Trailer on Flatcar in Intermodal Service on Montana's Railway Mainlines	**5. Report Date** October 2008 **6. Performing Organization Code**	
7. Author(s) Prime Focus LLC Western Transportation Institute	**8. Performing Organization Report No.**	
9. Performing Organization Name and Address Prime Focus LLC 918 Fox River Drive DePere, WI 54115	**10. Work Unit No.** **11. Contract or Grant No.** MDT Project # - 8191 MDT Contract # - 308128	
12. Sponsoring Agency Name and Address Research Programs Montana Department of Transportation 2701 Prospect Avenue PO Box 201001 Helena MT 59620-1001	**13. Type of Report and Period Covered** Final Report June 2007-March 2008 **14. Sponsoring Agency Code** 5401	

15. Supplementary Notes

Research performed in cooperation with the Montana Department of Transportation and the US Department of Transportation, Federal Highway Administration. This report can be found at http://www.mdt.mt.gov/research/docs/research_proj/flatcars/final_report.pdf

16. Abstract

The objective of this study was to investigate the feasibility of intermodal freight service in Montana with respect to the potential demand for such service, obstacles to its implementation, and incentives that might be appropriate to promote it. Study activities consisted of a) review of relevant research and existing intermodal operations; b) survey of potential users relative to their needs and degree of interest in intermodal service; c) interviews with the various stakeholders involved in providing such service; d) network-level assessment of container demand across the state; e) identification of programs that support establishing intermodal service; and finally, f) assessment of the overall feasibility of establishing more extensive intermodal service than is currently available in the state. It was generally concluded that at the estimated level of container demand statewide, establishing container service would be difficult within the intermodal operations model currently being used by rail carriers. That being said, economic and logistics conditions do change, which could result in new intermodal service opportunities.

17. Key Words Intermodal, High capacity cars, Intermodal Transportation, Intermodal Terminals, Freight Traffic, Routes	**18. Distribution Statement** Unrestricted. This document is available through the National Technical Information Service, Springfield, VA 21161.

19. Security Classify. (of this report)	**20. Security Classify. (of this page)**	**21. No. of Pages**	**22. Price**
Unclassified	Unclassified	167	

DISCLAIMER

DISCLAIMER STATEMENT

This document is disseminated under the sponsorship of the Montana Department of Transportation and the United States Department of Transportation in the interest of information exchange. The State of Montana and the United States Government assume no liability of its contents or use thereof.

The contents of this report reflect the views of the authors, who are responsible for the facts and accuracy of the data presented herein based on information provided to them from industry experts and published data sources. The contents do not necessarily reflect the official policies of the Montana Department of Transportation or the United States Department of Transportation.

The State of Montana and the United States Government do not endorse products of manufacturers. Trademarks or manufacturers' names appear herein only because they are considered essential to the object of this document.

This report does not constitute a standard, specification, or regulation.

ALTERNATIVE FORMAT STATEMENT

MDT attempts to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call (406) 444-7693, TTY (800) 335-7592, or Montana Relay at 711.

ACKNOWLEDGEMENTS

The study team would like to acknowledge the helpful support of the Burlington Northern Santa Fe Railway, Montana Rail Link, Union Pacific Railroad, as well as trucking companies, intermodal marketing companies, the Intermodal Technical Research Panel assembled by Montana Department of Transportation and, last but not least, the users and stakeholders who provided valuable input and suggestions for establishing intermodal rail service for Montana shippers.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The intermodal business model has changed since the recent surge in energy costs and the growth in global trade. The new intermodal business model for Class I railroads envisions dedicated point-to-point trains with 250 containers per train. It includes terminals where trains can pull in from the mainline at track speed, separate the power and turn the locomotives around to pull a staged train, loaded and ready to move in the opposite direction. The containers in this intermodal model are often owned by third-party carriers, which may be ocean carriers, highway carriers or intermodal marketing companies. While shipment volumes to and from Montana do not quite fit this model of full dedicated daily trains to and from port cities, certain freight volumes that users in Montana and Alberta have may be attractive to carriers and rail service providers. During the time frame of this study (June 2007–April 2008), the state of the U.S. economy weakened, world grain shortages were exacerbated by drought and crop disease, and fuel costs spiked sharply. These critical factors have made the analysis more interesting and the opportunity more compelling as rail and ocean capacity fluctuate. Other non-traditional intermodal services and terminals have been launched in this new environment and may provide a model for the Montana Department of Transportation. One fact is clear—no carrier or railroad is willing to shoulder the entire investment cost of a terminal or subsidize a train start for less than trainload volumes.

To investigate the viability of intermodal rail service in Montana, researchers began by surveying users, stakeholders and asset owners in Montana and Alberta who are currently operating on North American transportation networks, using Class I railroads and Interstate Highway systems. Montana is located at the crossroads of two congressionally designated "High Priority Corridors." The "Canamex Corridor" begins in Nogales, Arizona, and connects Arizona, Nevada, Utah, Idaho and Montana to the Canadian border. The "Camino Real Corridor" connects El Paso, Texas, New Mexico, Colorado, Wyoming and Montana to the Canadian border. A third corridor, although not congressionally designated, is supported by multi-state planning efforts and connects trading partners between Chicago, Illinois, and Seattle, Washington, and beyond. This corridor passes through Montana along Interstate 90/94, connecting regional and international economic activities, and is known as the "North/West Passage Corridor." This corridor connects the upper Great Plains and northern tier states of Minnesota, North Dakota, Montana, Idaho and Washington with intelligent transportation information and simplified permitting processes to facilitate freight movement. All of these corridors help facilitate trade volumes that have resulted from the North American Free Trade Agreement, and they intersect in Montana and could potentially feed a centralized intermodal freight terminal in the state.

When companies were asked about intermodal rail freight service, approximately one-third said they no longer use intermodal (after facilities were closed), approximately one-third were interested in learning more about intermodal (as a means to reduce transportation costs), and the remaining one-third were using intermodal for domestic and international shipments (via other intermodal facilities). Users reported moving intermodal freight over Billings, Spokane, Calgary and Seattle railroad terminals. Fifty-nine percent of those surveyed indicated that if intermodal service was available they would use it for export shipments. Fifty-two percent of those surveyed indicated that if import intermodal service was available for Montana terminals they would use the service. The container type most requested for export intermodal shipments was a 20-ft ocean container. Fifty-two percent of those surveyed indicated they would use intermodal service even if it was only available with a reduced schedule, (less than five days per week) to or from West Coast ports.

While providing useful insights into the specific needs of individual companies and industries for containerized freight service, the survey response was limited, and it did not fully capture the potential demand for intermodal service interest across the state. Therefore, to obtain a more comprehensive (but less detailed) assessment of potential container demand, publicly available trade statistics were tabulated by region of the state to identify where load centers might be located. Based on this effort, it is estimated that Montana could potentially containerize 17,000 shipments annually if rail rates, service, and ocean carrier boxes and vessel slot capacity remain available. This assumes also that the development of an intermodal terminal can be funded by users or regional stakeholders. Based on public data, the majority of these shipments would be agriculture and forest products, which account would account for 12,400 and 3,600 shipments, or "TEU" (twenty-foot equivalent units), per year, respectively. These would be distantly followed by mining and manufacturing products (600 and 100 TEU/yr, respectively). The majority of these shipments are destined for export through Pacific Northwest ports (12,000 TEU/yr), which provide a potential volume closely approaching one 230-unit container train per week, with train departures weekly over an annual period. As potential shipments were further identified by region of origin within the state, the greatest potential demand for containers is in the Northeast, North Central, and Northwestern portions of the state (5,800; 4,200; and 3,200 TEU/yr, respectively) along the US Highway 2 corridor, which parallels the Burlington Northern Santa Fe (BNSF) intermodal mainline. Montana is geographically a very large state and the distance between these markets to aggregate all potential 12,000 TEUs into one terminal location would be a significant challenge.

With a BNSF recommended intermodal model assuming weekly, dedicated (point-to-point) trains with 250 containers per train, potential container terminal sites were evaluated in the various regions around the state. Using as criteria the volume of potential container demand by region, highway access, and class and characteristics of rail access, three sites emerged for further consideration: Shelby, Butte–Silver Bow, and Billings. The Port of Northern Montana in Shelby and the Port of Montana in Butte–Silver Bow previously offered intermodal container- and trailer-on-flatcar service (TOFC); this service was terminated at both locations within the past four years. Today, the only remaining intermodal service in the state is provided by BNSF on a limited basis into Billings.

When the sites of Shelby, Billings and Butte–Silver Bow were further evaluated in the context of rail intermodal business models and the current potential volume of containerized demand, all three sites fell below the volume threshold desired by BNSF. With 4,000 TEU/yr estimated in the immediate area of Shelby, distantly followed by 1,000 and 500 TEU/yr, respectively, in Billings and Butte–Silver Bow, it would be difficult to justify a new intermodal terminal. In discussions conducted with BNSF as part of this project, the railroad indicated a willingness to investigate restoring regular intermodal service in Billings if 250 containers per week were available. This volume equates to 13,000 TEU/yr, which exceeds the total container demand estimated for this immediate region of the state (approximately 1,000 TEU/yr), and approaches the demand for the entire state (17,000 TEU/yr).

The above comments notwithstanding, rail business practices and shipper interests can and do change over time, and with the specific situation encountered. If it is possible to work out these rail business model issues, the Montana stakeholders surveyed in this project favor tax credits and public–private partnership programs to aid in accomplishing the goal of restoring intermodal service in Montana. This report contains case studies and literature reviews of similar market areas and opportunities. North Dakota and Minnesota are pioneering non-traditional intermodal operations. To be successful in launching new services a strong user commitment must be coordinated with a willing Class I railroad and stakeholders willing to invest private funds to establish new facilities.

1. INTRODUCTION

1.1. Background

Intermodal service as defined by the American Association of Railroads is defined as the movement of goods in shipping containers or truck trailers by rail cars from origin to destination. This investigation was directed toward the movement of intermodal trailers or containers on Montana's mainline railroads, which would include the Burlington Northern Santa Fe Railway (BNSF) and the Union Pacific Railroad (UP).

The Intermodal Association of North America (IANA) hosts a Rail Intermodal Terminal Directory that lists 81 U.S. cities with intermodal terminals (Figure 1). Some cities such as Chicago have multiple intermodal terminals. Canada and Mexico have 19 cities with intermodal facilities.

Figure 1: IANA Intermodal Terminal Map (IANA 2008a).

Intermodal service has a long, rich history. Although the movement of trailers and containers in rail service began in the 1930s, it wasn't until the 1950s when Class I railroads[1] began in earnest

---

[1] American Association of Railroads currently defines a Class I railroad as one having an operating revenue exceeding $346.8 million, up from $255.9 million in the 1990s. There are currently seven Class 1 railroads in the United States. There were 40 Class 1 railroads operating in the United States in 1980, when the revenue threshold was $67 million. AAR attributes the consolidation to a number of factors, including mergers and inflation.

to recognize this mode of transportation. Today, according to the Association of American Railroads, intermodal service represents 22 percent of railroad revenue in North America.

Presented below is background information on various aspects of intermodal services and operations, starting with a description of some of the physical equipment used in providing this service, and followed by observations on the terminal structure that supports such service. It concludes with an overview of the business models followed by Class I carriers in offering this service nationally and in Montana.

1.1.1. Typical Intermodal Trailer, Container and Lift Equipment

Intermodal equipment has evolved over time as terminals have grown and specialized based on function and location. Earlier use of the trailer-on-flatcar (TOFC) configuration, shown in Figure 2, has given way to a preference for containers that are compatible with ocean-going vessel transport. While the wheeled trailer model allowed for a quick transition from rail mode to highway mode, the rail economics of double stack container trains and the growth in volume of goods shipped internationally has made the container model more attractive to rail companies.

Figure 2: Trailer on Flat Car (ICWP 2008).

Containers are better suited for intermodal shipment because they can be stacked on a railcar, at a terminal and on board ship. Figure 3 shows a 20-ft international container stacked at a terminal.

Figure 3: Stacked 20-ft Containers (ICWP 2008).

In Figure 4 a 20-ft ocean container is shown on a chassis so that it can be moved to a location for loading or unloading.

Figure 4: 20-ft Container on Chassis (ICWP 2008).

Figure 5 shows three containers loaded on a rail car. Two 20-ft containers are on the bottom of the stack; the top container is a 40-ft international box.

Figure 5: Containers Stacked on a Rail Car (ICWP 2008).

Intermodal lift equipment has changed over time and varies by the function of the intermodal terminal and the number of lifts performed. Lift equipment is categorized in various ways—one of which is based on how the equipment approaches the train. There are side loaders, reach loaders and top stackers. In Figure 6 a side-load, bottom-pick machine is shown lifting an intermodal trailer. Similar equipment has been in use at the Port of Montana in Butte–Silver Bow, and at the Port of Northern Montana in Shelby.

Figure 6: Side-load, Bottom-pick Loader (CH2M Hill 2008).

A top-load, top-pick gantry loader is shown in Figure 7. This equipment operates on a fixed footprint and loads and unloads containers to a train that have been staged by a yard hostler. This type of equipment is used at large, high-volume facilities.

Figure 7: Top-Load, Top-Pick Gantry (CH2M Hill 2008).

The efficiency of shipping goods and commodities by container rather than by TOFC can be seen in Figure 8, which shows the on-dock rail terminal at the Port of Tacoma where trains pull directly into the ocean terminal and containers are staged for direct loading to the vessel.

Figure 8: Port of Tacoma On-dock Rail Terminal (CH2M Hill 2008).

1.1.2. Terminal Closures

In the 1990s there were more than 300 intermodal terminals served by 14 Class I railroads (Official Intermodal Guide 2001). During the late 1990s, as a result of a number of Class I rail mergers and the split of Conrail, the intermodal industry began to view intermodal service differently. In an effort to improve on-time performance and transit time between large markets such as Chicago and New York, Class I railroads began to rationalize their intermodal networks. This often resulted in the closure of intermediate, low-volume terminals. An industry rule of thumb considered terminals with less than 20,000 lifts per year to be potential locations for closure. Many carriers made efforts to incent freight from smaller terminals to move to other locations in the network. Some of these efforts were successful and, due to competitive factors, others were not. Carriers have also shed terminals located on secondary lines or located on spurs off of the primary intermodal train routes. Canadian National discontinued service to the Green Bay, Wisconsin, intermodal facility shortly after it purchased Wisconsin Central, due in-part to low traffic volume and also because Green Bay was not located on its primary intermodal train service network.

Within the last ten years Montana had three active intermodal terminals within the state. These facilities were located in Billings, Butte–Silver Bow, and Shelby. The Shelby terminal was closed in 2002. Intermodal service to Butte–Silver Bow was also discontinued about the same time, although the transload operation still survives. Transload in this context is defined as a facility where product is trucked to or from regional customers and loaded to or from railcar equipment. This is often done because regional users don't have rail access or their shipment volume is too low to justify direct rail service.

Since 2000, approximately 20 intermodal terminals have been closed in North America due to insufficient volumes or for other train network considerations. Among these were facilities in Stevens Point, Wisconsin; Oklahoma City and Tulsa, Oklahoma; Little Rock, Arkansas; and Remington, Indiana. Some intermodal terminals have been closed because demand was greater than the facility capabilities. In these cases much of the business moved to new facilities. A number of smaller terminals in Chicago have been closed and business has been shifted to large Intermodal Integrated Logistics facilities such as the BNSF Logistics Park terminal in Joliet, Illinois, and the UP's Global 3 Logistics Park in Rochelle, Illinois.

1.1.3. Intermodal Business Models for Class I Carriers in Montana

Since 1957 intermodal volumes have grown dramatically (Figure 9) for three primary reasons: growth in containerized import cargo, improved doublestack train economics and shared equipment ownership, and improved service and market reach, which has allowed truckload and intermodal marketing companies to develop a reliable market niche.

International trade volumes have grown as U.S. companies have off-shored and outsourced manufacturing. Improved information and communication systems have helped support this international growth. Railroads have benefited as ocean carrier vessel sharing agreements and load centering strategies have created a large and steady flow of container traffic.

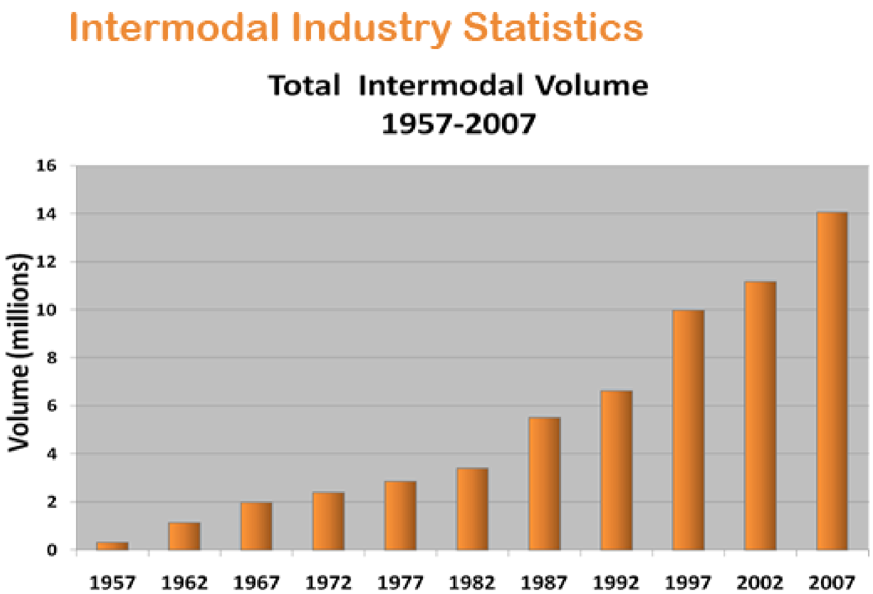


Figure 9: 50-Year Intermodal Volume (IANA 2008b).

Equipment size and ownership standards have changed in recent years for two primary reasons. Railroads have cleared primary intermodal routes to accommodate doublestack trains (20 ft, 6 in heights). This allows trains to move nearly twice as many containers on the same length train, which improves railroad economics. For a number of years the intermodal industry struggled with equipment size and ownership standards. Today there is a clear preference for container traffic, with non-rail-owned 20-ft or 40-ft international and 53-ft domestic containers the preferred sizes. Railcar fleets must be managed to accommodate the container sizes. Domestic trailers require a different railcar and are more costly for railroads to handle. Thus, there has been a significant shift over the past several years in intermodal equipment, away from trailers and to containers, as shown in Figure 10. In light of this situation, this investigation was focused on containers as opposed to trailers on flat cars.

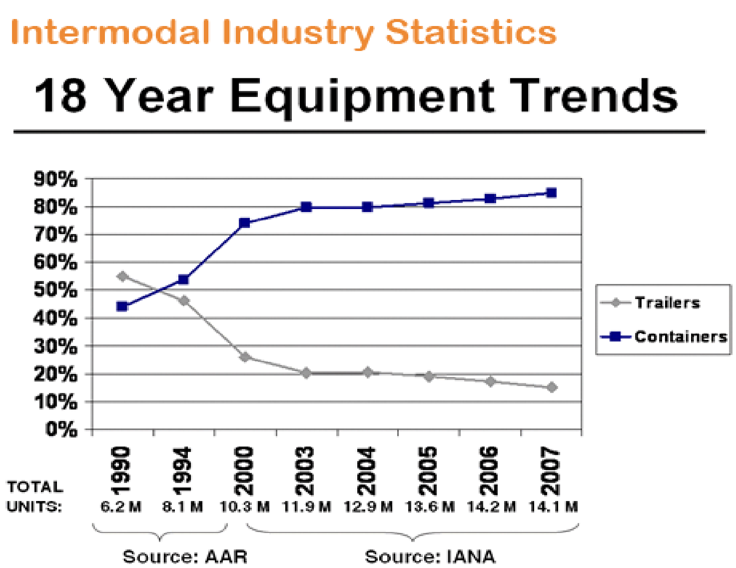


Figure 10: 18-Year Equipment Trends (IANA 2008c).

1.1.3.1. Burlington Northern Santa Fe

BNSF is a $15.3 billion dollar company and operates the nation's largest intermodal railroad. One of five core business units, the intermodal division represents the largest revenue segment (Figure 11) and is part of the company's Consumer Products business segment.

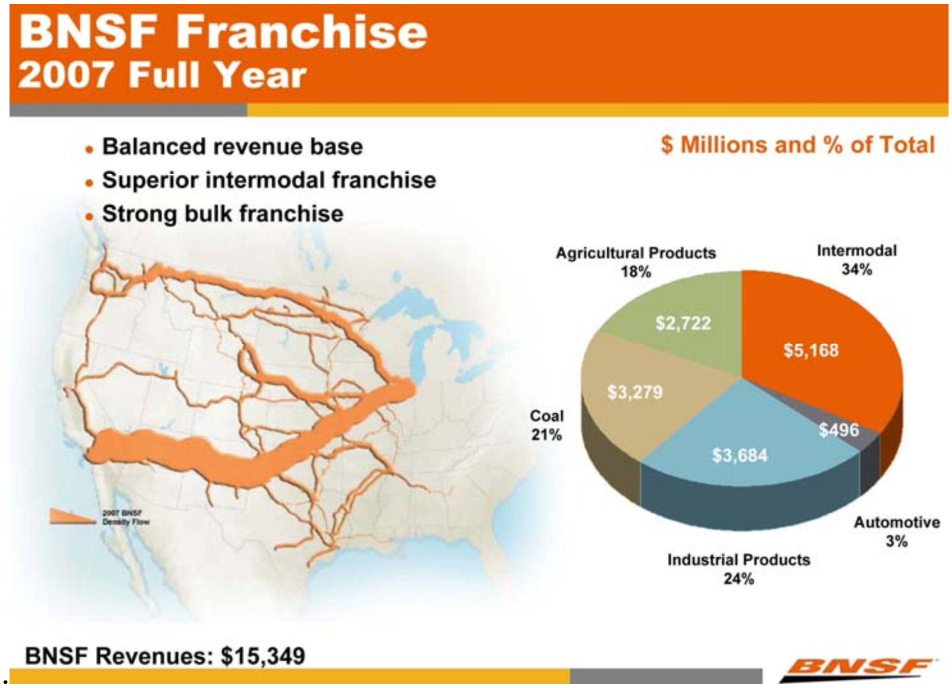


Figure 11: BNSF 2007 Revenue and Franchise Routes (BNSF 2008a).

The company operates 33 major intermodal hubs across its 32,000-mile system, which spans 28 states and two Canadian provinces (BNSF 2008a). Figure 12 shows the BNSF intermodal terminal network in the United States.

The BNSF intermodal business has three primary product lines. International intermodal transports ocean containers from steamship companies such as Maersk, Hyundai and others across the system and accounts for approximately 46 percent of the consumer products division revenue. The automotive business unit amounts to about 9 percent of the consumer products revenues and consists of finished vehicles and automotive parts. Domestic intermodal consists of truckload, intermodal marketing companies (IMC) shipments, and expedited less-than-truckload (LTL) traffic. The domestic market segment generates about 45 percent of the consumer products revenue. BNSF has recently adopted a policy whereby it does not own or provide container equipment for intermodal shipments. This means that in order to make an intermodal shipment, freight must move in equipment owned or leased by a carrier, IMC, or other intermediary.

This policy has had a direct impact on users in Billings, Montana. Many of the intermodal shippers who use the Billings terminal are LTL shippers. After the BNSF policy toward equipment ownership changed, several users were unable to justify equipment investments to continue using this rail service.

Figure 12: BNSF Intermodal Terminals (BNSF 2007).

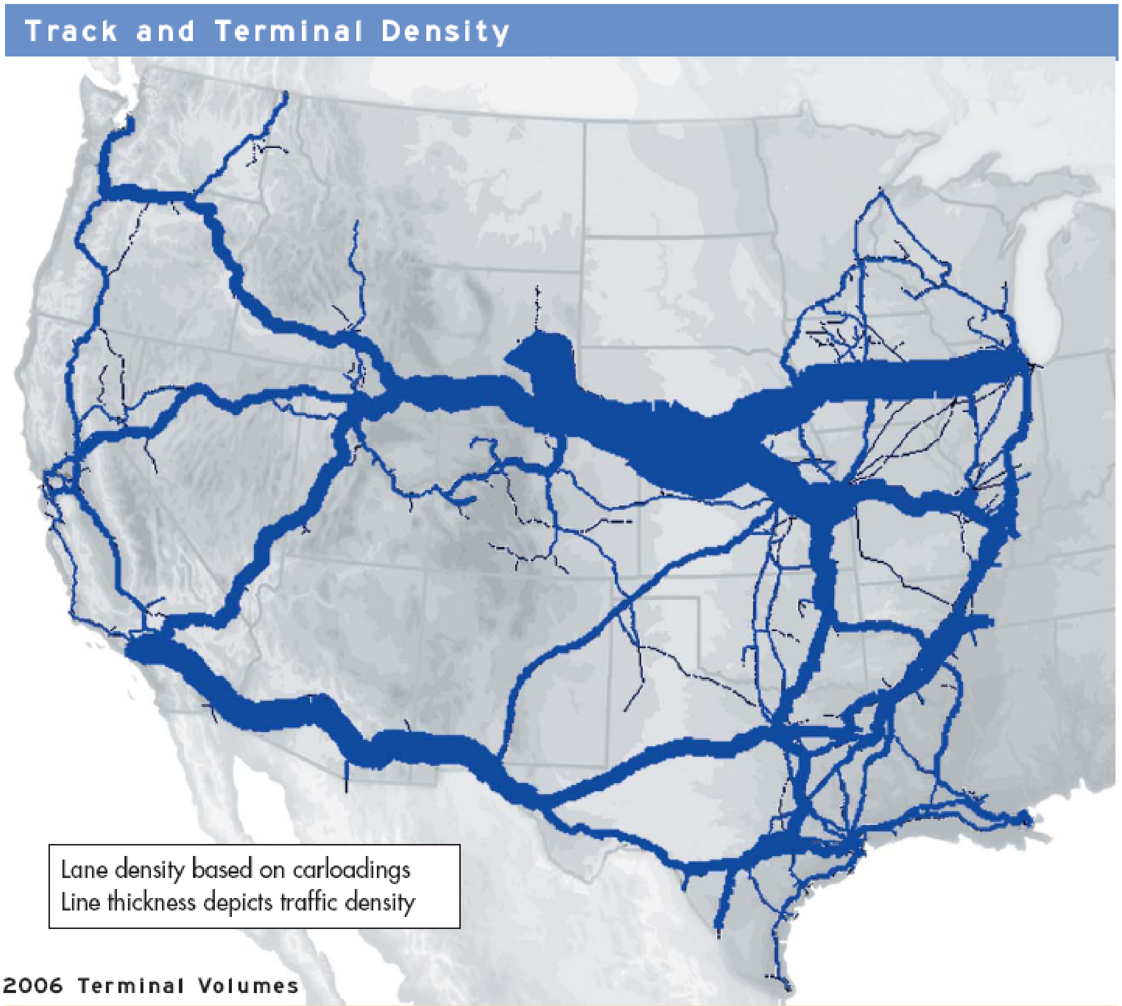
The desired BNSF intermodal business model is to build fully dedicated trains between two intermodal point pairs. In many markets the density of both domestic and international volume allows them to achieve this goal. Table 1 shows the annual lift volume of the top intermodal hub terminals within its system.

Table 1: 2007 Intermodal Facilities Lift Volumes (BNSF 2008b).

Intermodal Facilities	Lifts
Hobart Yard (Los Angeles, California)	1,243,000
Logistics Park (Chicago, Illinois)	755,000
Corwith Yard (Chicago, Illinois)	739,000
Willow Springs (Illinois)	636,000
Alliance (Fort Worth, Texas)	567,000
Cicero (Illinois)	517,000
San Bernardino (California)	500,000
Argentine (Kansas City, Kansas)	369,000
Seattle International Gateway (Seattle, Washington)	305,000
Memphis (Tennessee)	284,000

1.1.3.2. Union Pacific

The UP railroad has a small presence in Montana. Figure 13 shows the line density of this rail network and the number of annual intermodal lifts at key terminals. Access for Montana shippers to Pacific Northwest ports on the UP would be circuitous in comparison to the BNSF or highway routes.



Major Classification Yards	Average Daily Volume/Cars	Major Intermodal Terminals	Annual Lifts
North Platte	2,900	ICTF (Los Angeles)	725,000
Proviso (Chicago)	1,700	Marion (Memphis)	406,000
North Little Rock	1,600	East Los Angeles	329,000
Englewood (Houston)	1,400	Global I (Chicago)	321,000
Roseville	1,400	Global II (Chicago)	297,000
Livonia	1,400	Dallas	284,000
Pine Bluff	1,300	Oakland	268,000
West Colton	1,300	Yard Center (Chicago)	248,000
Fort Worth	1,300	Seattle	238,000
Neff (Kansas City)	1,000	Englewood (Houston)	206,000

Figure 13: Union Pacific Rail Network and Terminal Lift Volumes 2006 (UP 2006).

Figure 14 shows the intermodal terminals on the UP rail network as of 2006. Union Pacific serves the Port of Montana at Butte–Silver Bow, but does not have intermodal service to this location. The UP has surplus container equipment in the Denver and Salt Lake City markets but to access southern Montana this equipment would have to be moved on a manifest train (a scheduled merchandise freight train) north from Pocatello, Idaho. Users would have to pay to reposition empty containers from these two surplus markets. Outbound shipments, loaded in Montana, would have to move to Los Angeles for export. The rail miles to accomplish this movement (empty inbound from Denver for 784 miles or 411 empty miles from Salt Lake City to Butte–Silver Bow, and 1,544 loaded miles to Los Angeles) would not be cost competitive.

Figure 14: Union Pacific Intermodal Terminal Network 2006 (UP 2006).

The UP's 2006 revenue was $51.5 billion, which was generated from a network of 51,596 track miles. The intermodal business on the UP represents approximately 19 percent of the 2006 commodity revenue and is composed of three segments. The largest segment is international, which accounted for 64 percent of the total intermodal units in 2006. Domestic accounted for 32 percent of the total volume, and premium traffic represented 4 percent of the total units. The company announced a strategy to limit domestic volume growth to allow it to increase other more profitable market segments. In 2006, international revenues grew 21 percent on a volume growth of 10 percent (UP 2006).

1.2. Project Overview

The request for proposal identified Montana's primary interest as providing intermodal service for export agricultural products. On the surface, all the elements would appear to be in place—rail service connecting Montana grain growing regions to deep water international ports, a frequent flow of trains carrying empty international equipment along a corridor that parallels State Highway 2 across the state, three intermodal sites (two no longer in service), and high crop production for an extended period in which world drought has increased the demand for wheat and barley. The primary objective was to assess whether intermodal rail service could be economically viable between Montana and the Pacific Northwest ports, and if there was enough shipper demand and intermodal rail and ocean capacity to reinstate the service.

The process began with the development of a survey of interest that was distributed in June and July of 2007. Phone interviews were conducted in September and October of 2007. Printed surveys were mailed to potential Canadian shippers in November and December. Follow-up phone calls and additional inquiries were made to identify interest during the first quarter of 2008. Users were identified based on publicly available information from organizations and agencies such as the Chamber of Commerce, Montana Grain Exchange, Montana Elevator Operators, and past users of intermodal sites no longer operational.

While informative, the survey results were not perceived to fully capture the potential demand for containerized freight service in Montana. While providing useful insights into the specific needs of individual companies and/or industries for containerized freight service, the survey response was sparse. Therefore, to obtain a more comprehensive (though less detailed) assessment of potential container demand, publicly available trade statistics were tabulated by region of the state to identify where potential load centers might be located.

Equipment and port operators were also interviewed, and motor carriers and intermodal marketing companies and ocean carriers were contacted about their interest in re-establishing intermodal service. The BNSF, UP, Canadian National (CN), Canadian Pacific (CP) and Montana Rail Link (MRL) railroads were interviewed about their level of interest.

The three sites across the state that currently have intermodal service, or that have had it in the past—Shelby, Butte–Silver Bow, and Billings—were also visited. Data on location, size, physical attributes, and past and present activity were collected. Information was also collected about efforts to establish intermodal terminals and service at other locations around the country under conditions similar to those in Montana, including identification of incentives and partnering opportunities that would facilitate establishing such services and facilities.

Finally, based on the information and input described above, observations and recommendations were formulated on re-establishing intermodal freight service in Montana.

2. TASKS

2.1. Literature Review

Coincident with the dramatic increase in containerized freight shipments over the past several years, considerable research has been conducted on behalf of various public agencies on (or in areas pertinent to) the issue of providing access to containerized rail service for the various constituencies and geographic regions they serve. Published results from selected research efforts are summarized below. Those efforts include:

- Montana Rail Freight Competition Study,
- North Dakota Regional Intermodal Freight Project,
- Washington State Rail Plan,
- Upper Great Plains Transportation Institute Intermodal Research,
- National Surface Transportation Policy and Revenue Study Commission Plan,
- Alberta Containerized Intermodal Freight Analysis, and
- The Use of Containers in Canada.

In many cases, these summaries are accompanied by additional information and insights pertinent to this study that are related to the reviewed material. Additional studies of similar style and content (not explicitly summarized herein) include the Assessment of Overseas Container Service Issues and Opportunities for Saskatchewan Exporters (DDC Consulting Services Inc. 2004) and the Northern BC Container Terminal Opportunity Study (Satwinder et al. 2006).

2.1.1. Rail Freight Competition Study

In October of 2004, a rail freight competition study was prepared for the State of Montana and the Governor's Office of Economic Development. The study noted that after railroad mergers in the past few decades, one Class I carrier dominates the rail carrier network in Montana.

At that time (2002 data) the report noted that Montana shipped roughly 37 million tons of freight via rail, 30 million tons consisted of coal and petroleum. Grain and agriculture amounted to 3 million tons, lumber and wood products accounted for approximately 2 million tons and "other" products such as rock and glass comprised the final 2 million tons of freight.

The study analyzed waybill sample rates for various commodities and determined that wheat rail rates were higher than in other states where more rail competition exists. It also estimated that in 1997, Montana shippers originated 54 million tons by truck (more than 2.3 million container equivalents) and 41 million tons by rail. In order to drive down single-car handling costs, a trend toward shipment consolidation has been underway to create economies of scale. The report identifies the growing impact of shuttle trains over the past decade. Shuttle trains have improved carrier productivity by dedicating 110 railcars and locomotives to a service that loads or unloads train sets rapidly and efficiently, and connects Montana growers to Pacific Northwest ports. Shuttle facilities gather regional crop production and create critical mass and density for the railroad. Eleven grain storage facilities in Montana handle approximately 46 percent of Montana's wheat shipments. The report concluded that "Montana's railroad problems are only partly a result of the absence of rail competition."

Since the rail freight competition study was completed, railroads have continued to fine tune their business models by reducing track miles on low-density line segments and focusing on improving rail freight density using unit (shuttle) train efficiencies where possible.

Given the truck vs. rail mode split identified in this study and the fact that barely half of the grain (46 percent) moved over high-volume, highly efficient shuttle operations, the team expected to find users who might find value in re-establishing intermodal operations. With the increase in global trade, many former Montana intermodal service providers felt the opportunity to reload empty container equipment passing through Montana should be explored. Public and private partnership studies in other states such as North Dakota indicated a potential market for containerized export grain from Montana. It was difficult to ascertain the specific number of empty containers currently moving across Montana to West Coast ports. International containers are owned or leased by ocean carriers and only move in lanes designated by the equipment owners where rail rates exist. Empty containers move on BNSF under confidential contract authorities, and the actual number of empties moving across Montana is proprietary information.

Figure 15 illustrates the Class I railroad progress in increasing freight density over existing infrastructure. Figure 16 illustrates the Class I railroad network showing levels of service by rail corridors. The narrow lines indicate acceptable levels of rail service, the light thicker line segments denote increasing volumes, the darker thick lines indicate congestion, which may limit service performance. For westbound intermodal shippers from Montana only two potential choke points were identified, including portions of Idaho rail infrastructure (BNSF) and access to the Port of Tacoma, on an otherwise healthy network. Intermodal trains typically move along the northern tier rail corridor in Washington State. The Cascade tunnel is another potential bottleneck and is nearing daily train capacity limitations. The yellow portion highlights coal volume increases in Southeastern Montana.

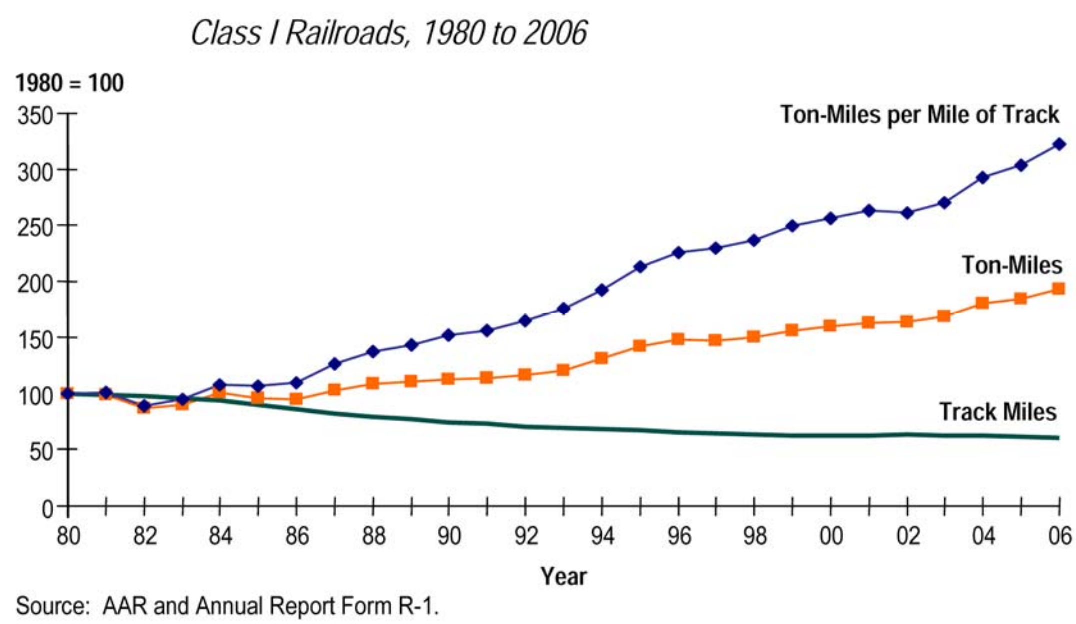


Figure 15: Rail Freight Ton-Miles and Track Miles (AAR 2007).

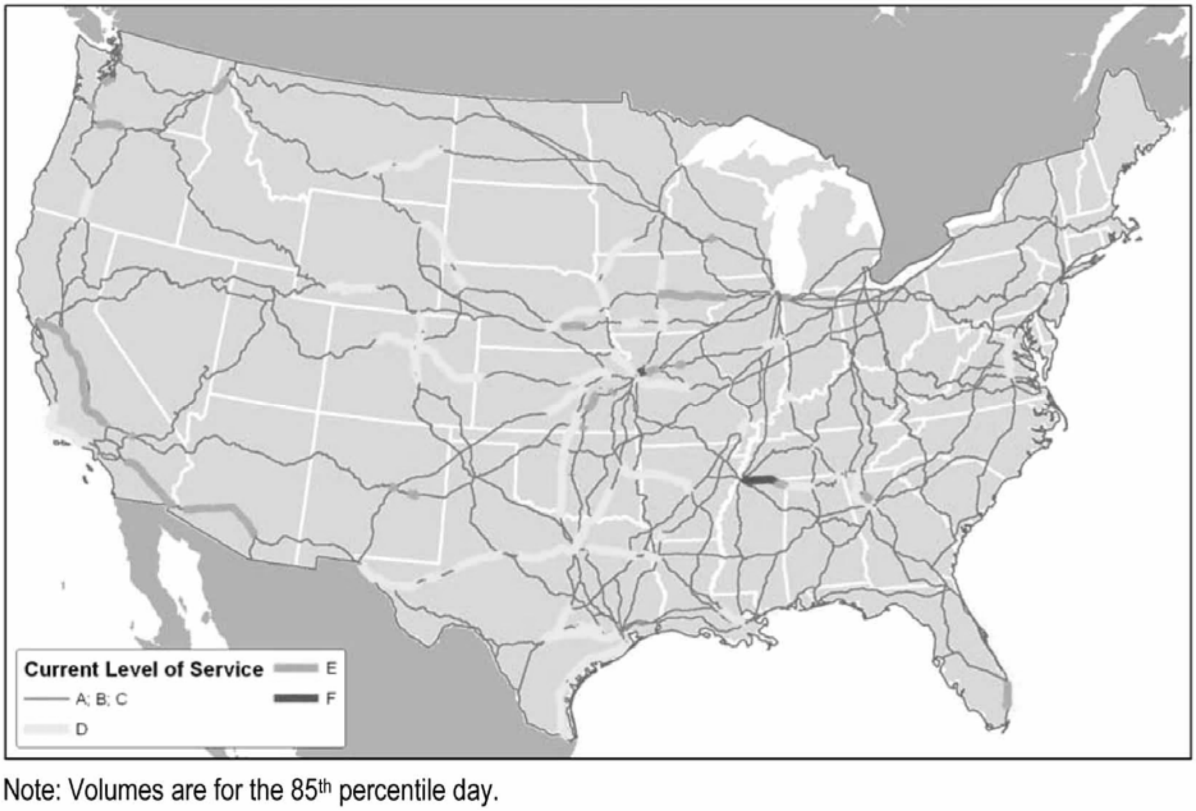
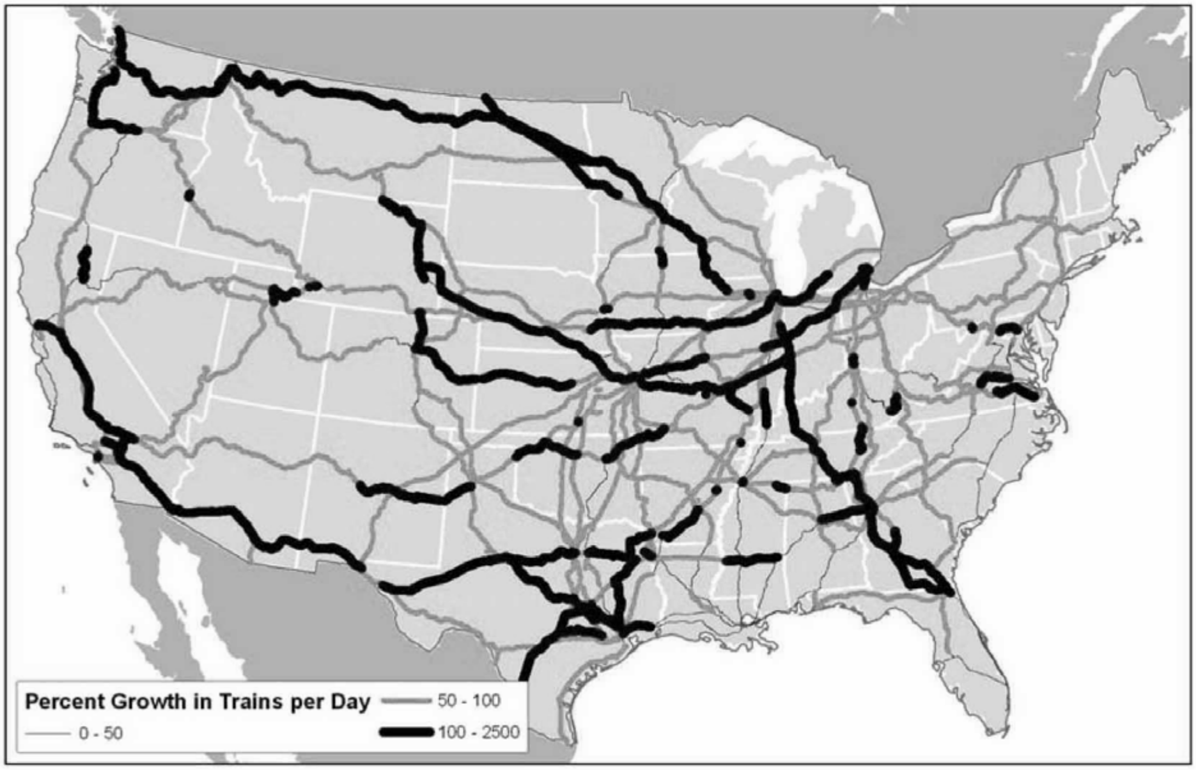


Figure 16: Current Train Volumes Compared to Current Train Capacity (AAR 2007).

Figure 17 projects the estimated train volume growth along the primary rail network. It is not surprising to see train growth projections along the same corridors that showed low levels of congestion in Figure 16.



Note: Volumes are for the 85th percentile day.

Figure 17: Percentage Growth in Trains per Day from 2005 to 2035 by Primary Rail Corridor (AAR 2007).

To accommodate the projected rail freight growth, network improvements will need to be made. Figure 18 shows the rail lines that are targeted for capacity improvements to increase freight handling activities. In several case studies that will be discussed later in this report, when these improvements are made, partnerships that can improve intermodal service can also be considered. In New Mexico and in North Dakota such cooperative plans are being explored.

One idea the study team had was to identify locations where new capacity was being added to accommodate fueling operations, crew changes or train inspection points today, to see if the opportunity to pick up intermodal shipments at these locations might be feasible. A second possibility was that moving intermodal freight on the Montana Rail Link might be an alternative for Montana shippers, yet Figure 18 illustrates that while Montana Rail Link may have capacity to move freight in Montana, line segments to the west in Idaho and Washington will need improvement to meet the level of demand projected by 2035. The map below illustrates where future corridor congestion might occur. The thin lines indicate the lowest level of congestion change between now and 2035 while the thicker and darker lines indicate progressive increases in rail traffic and congestion.

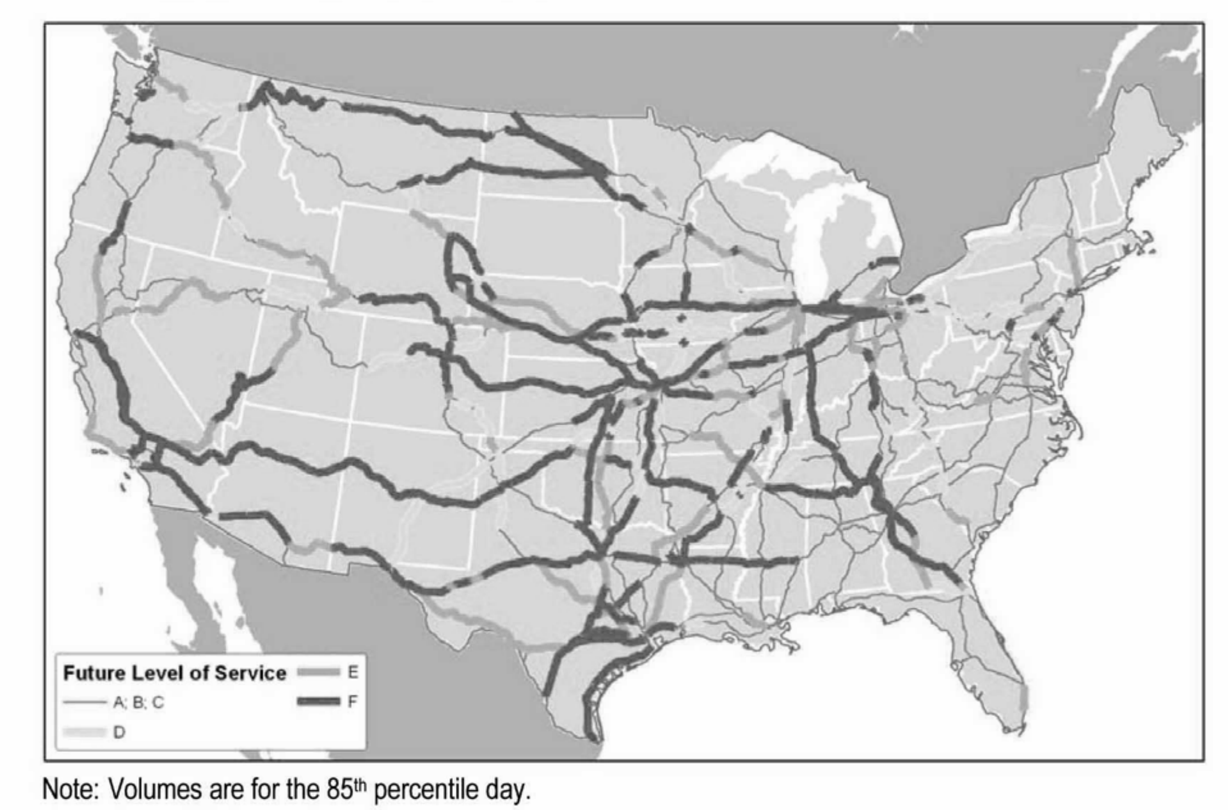


Figure 18: Future Corridor Volumes Compared to Current Corridor Capacity (AAR 2007).

2.1.2. North Dakota Regional Intermodal Freight Project

In 2006, the North Dakota Department of Transportation and the cities of Minot and Fargo created the Regional Intermodal Co-Service Coordinating Board (RICCB). A study commissioned by this group in the spring of 2006 on the feasibility of a regional co-load intermodal freight facility provided background on containerized rail transportation and the increasing importance of these services for agricultural products (Wilbur Smith Associates 2007). The report also identified the requirements of the marketplace and service providers, as well as potential demand for improved intermodal service in the region. The focus of the study was to help shippers of containerized agricultural products access export markets via West Coast ports.

In 2007 the intermodal facility in Fargo (ND)–Dilworth (MN) handled 4,360 twenty-foot-equivalent units (TEU). Based on user interest, the potential volume for the new joint-service operation, combining freight shipments from Fargo–Dilworth and Minot (ND), is projected to approach 51,814 TEU per year. By 2010 containerized agricultural shipments in this co-service operation are anticipated to grow 39 percent and approach 72,090 TEU per year.

Factors critical to the success of the facility include 1) the willingness of users to accept weekly train service for each origin, 2) international equipment availability, 3) reasonable empty repositioning rates, and 4) competitive rail and ocean transportation rates.

Site preparation is underway for a multi-modal facility with an anticipated opening in the fall of 2008. The facility will be built near a proposed value-added agricultural park and Minot Milling, a food processing company. The property was purchased from BNSF and authorized by the Minot City Council. A grant of $1.5 million was received from the U.S. Commerce Department and the Economic Development Administration to assist with land acquisition, utilities and road access to the initial 180-acre location. The new intermodal terminal site will accommodate 100-110 railcars for container loading. It is anticipated that users within a 150-mile radius of the facility will find it competitive when shipping product to the West Coast. According to Jay Fisher, the intermodal task force chairman, the rail facility will require approximately 10 acres and is estimated to cost $5 million to construct. Additional funding sources for the facility include the Minot Area Development Council, the City of Minot, Souris Basin Planning Council and the state of North Dakota. A business investor is expected to assume a pivotal role in operating and marketing the new facility. North Dakota Governor John Hoeven commented that this project has been in the works since early 2000.

2.1.3. Washington State Rail Plan

Montana exports pass through the state of Washington to access desired Pacific Northwest gateways. The map in Figure 19 shows the three primary rail corridors and their current capacity. Two of the three routes to the Pacific Northwest ports are cleared for double-stack container traffic. BNSF's preferred operating plan is to handle the container trains on the Cascade route (top line). Stampede Pass is the central route over the Cascade Mountains; this route is not cleared for double-stack traffic. The Columbia River Gorge route (southern corridor) is primarily for carload traffic. Pasco, Washington, is the primary classification yard (i.e., a yard for sorting cars and building carload trains according to their movement requirements) for Pacific Northwest traffic on the BNSF system. Due to growing import traffic, some container trains are now routed along this southern corridor.

In December of 2006 the Washington State Rail Plan (WSTC 2006) was delivered to the legislature with the intention of answering the key question: "Should the state continue to participate in the freight and passenger rail system and, if so, how can it most effectively achieve public benefits?" The report went on to document how the economic vitality of the state requires a robust rail system and documented where the rail network was nearing or exceeding capacity. Many jobs in the state of Washington depend upon a strong railroad network. Along the Interstate 5 corridor, where the westernmost north–south rail line is located, freight and passenger traffic must share infrastructure.

The report also notes that the railroad business model in Washington State is "primarily driven by national-level needs and competition. The needs of Washington State businesses and communities are just one part and not the largest part of the railroads' funding considerations."

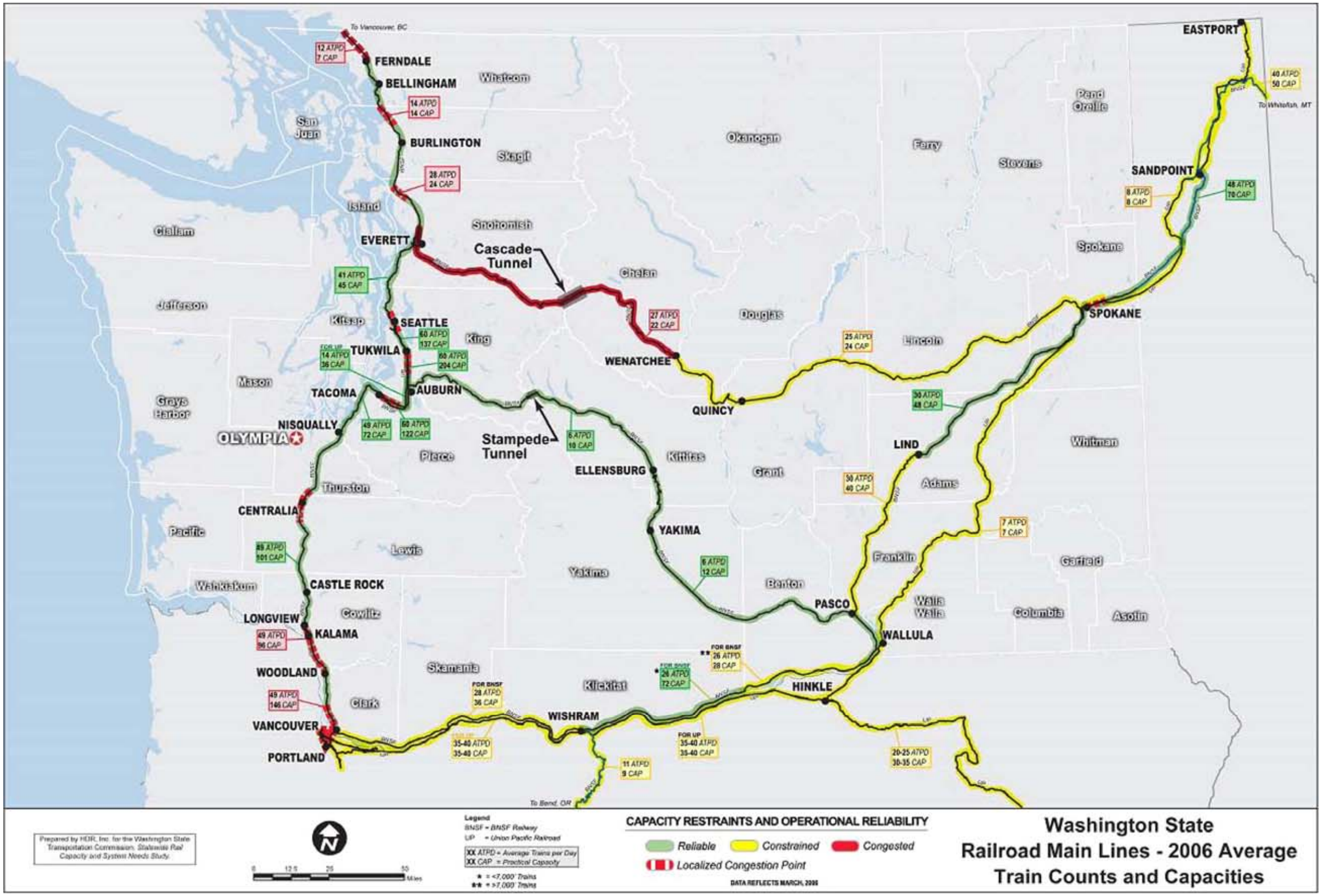


Figure 19: Washington State Rail System Mainline Capacity, 2006 (WSTC 2006).

The State rail plan goes on to recommend six policies:

- Washington State should continue to participate in the preservation and improvement of both the freight and passenger rail transportation system where there are public benefits to Washington State, its businesses, and its communities.
- The State should base its decisions to participate in projects, programs and other rail initiatives on a systematic assessment and comparison of benefits and costs across users and across modes.
- Where the State determines there are sufficient public benefits to justify public participation in the preservation and improvement of the rail transportation system, actions should be guided by the following general principles:
    - emphasize operations and non-financial participation in projects before capital investment;
    - preserve and encourage competition;
    - target actions to encourage private investment that advances Washington State economic development goals;
    - leverage state participation by allocating cost responsibility among beneficiaries; and
    - require projects to have viable business plans.
- The State should designate a single entity to coordinate and direct the State's participation in the preservation and improvement of the rail transportation system. This entity should have the authority to negotiate directly with the railroads.
- The State should take an active role in influencing and shaping the development of national rail policies and programs. The State should also develop a multi-state coalition to address rail system needs across the Pacific Northwest.
- The State should implement the asset management plan developed as part of this study to govern investment and management decisions for state-owned rail assets.

Washington State has also helped fund an inland intermodal terminal in Quincy, Washington, as a relief mechanism for Pacific Coast port congestion, and as a means to connect rural agricultural interests to international container capacity. This development will be further described in a later section of this report.

Table 2 quantifies the number of projected trains that would move along the northern corridor, which is the primary intermodal route. By 2025 the average number of trains per day will double.

Table 2: Comparison of Mainline Rail Capacity with Current and Projected Operations (Trains per Day) (WSTC 2006).

	Current Operations			Projected 2025 Operations		
Mainline Segment	Estimated Sustainable Cap.	Ave. Trains/Day	Peak Trains/Day	Estimated Sustainable Cap.	Ave. Trains/Day	Peak Trains/Day
Stevens Pass	28	23	25	28	46	51
Stampede Pass	20	6	7	20	16	18
Blaine to Everett	18	14	15	30	21	23
Everett to Seattle	50	45	50	100	84	92
Seattle to Tacoma	100	85	94	200	189	208
Tacoma to Kalama	60	45	50	120	80	88
Kalama to Longview	80	52	57	160	94	103

BST Associates. *2004 Marine Cargo Forecast:* Original source: MainLine Management and HDR, Inc. (Page 115). Includes passenger trains.

2.1.4. Upper Great Plains Intermodal Research

The Upper Great Plains Transportation Institute (UGPTI) has conducted several research projects to investigate the viability of intermodal freight terminals in North Dakota. Some have focused on the containerization of agricultural products (e.g., Berwick, et al 2002) and others have focused on facility location, design and cost (e.g., Berwick 2007).

Agricultural products that lend themselves to containerization include soybeans, sunflowers, pulses, Identity-Preserved (IP) wheat, hay or feed, distiller's grain and meat. Agricultural producers who are interested in differentiating their product from the typical commodity crop typically move product in smaller shipments, with just-in-time deliveries, and often to smaller customers who may not have the ability to receive a railcar. These smaller, differentiated shipments often lead to higher margins and increased returns for the producer. When producers can genetically modify crops or certify that specific crops meet exacting criteria, users can often skip several manufacturing steps, which creates increased value for both producers and processors.

UGPTI has surveyed a number of intermodal facilities in rural areas and has also conducted surveys for the American Short Line Railroad Association. It has concluded that the following criteria are critical to the success of any proposed facility:

- Volume—There must be enough freight activity to provide a return on investment for the terminal and a financial incentive for the railroad to serve the location.
- Balance—Equipment balance is necessary to improve asset velocity and reduce empty repositioning expense.
- Access to Class I intermodal network—Not all rail routes carry intermodal traffic. Access to the intermodal network is essential. Typically, intermodal terminals are at least 250 miles apart from one another if they are located on the same rail carrier.

- Ancillary service—Terminals, especially in rural markets, often rely on the provision of other required services or functions to survive. Examples might include crew change locations, train inspection points or refueling stations.
- Stakeholder commitment—To support terminals today users must be committed to supporting the terminal with volume. Equipment owners are playing an increasingly important role in terminal justification, especially given the trend toward private equipment ownership. This means that equipment providers such as motor carriers, intermodal marketing companies and ocean carriers must all have an interest in supporting the terminal and regional marketplace with their assets. Communities are beginning to step into the intermodal terminal development arena as public and private partnerships become more popular. Economic development agencies often see intermodal terminals and freight hubs as a job creation opportunity. Neighbors and neighborhoods have played an ever- increasing role in site selection and land use policy. It takes a coordinated and committed community with strong leadership and years of patience to foster a successful intermodal rail terminal development. Few new facilities have moved from concept to operation in less than five years.

UGPTI notes that 4 percent of U.S. exported grain was shipped in containers in 2005. Of all the U.S. grain shipped to Asia, 5 percent was containerized. Taiwan received almost 40 percent of the exported containerized grain in the first five months of 2006. As the number of food safety and contamination issues increase, the need for a chain of custody for food products favors containerization.

Intermodal rail service in North Dakota has been difficult to maintain. As in the trucking industry, where the saying goes that every load starts with an empty, in a rural area like North Dakota or Montana there is more outbound demand than inbound containers arriving. Therefore finding equipment to load is one of the most difficult challenges in the supply chain. In North Dakota, empty equipment was typically brought in from Minneapolis, Winnipeg (Manitoba) or Regina (Saskatchewan). Drayage rates from the Twin Cities to eastern North Dakota were often close to $700. The high demand for empty containers in the Twin Cities often makes them hard to find. When empty containers are moved by rail to the intermodal terminal in Dilworth, Minnesota, the rail rates coupled with the local truck movement were often higher than a truck movement from the Twin Cities.

In conclusion, UGPTI finds the development of intermodal terminals in rural markets is difficult. Equipment must be balanced or the cost of the service will not be competitive. Volume is critical as intermodal is a business based on market density. Cooperation is often needed on a multi-jurisdictional basis due to the size of a typical intermodal market catchment area (+ or - 150 miles). New terminals require third party capital to build and support a facility. No terminal can be successful unless the railroads and the equipment owners are committed to the market or opportunity.

As reported in a commodity flow study provided by the Federal Highway Administration (FHWA), North Dakota originated 88 million tons of products in 1997. Applying the national average of intermodal conversion to this base number and subsequently adjusting the results in light of the amount of raw agricultural commodities and coal produced in North Dakota, UGPTI estimated that North Dakota could originate nearly 24,500 TEU if equipment was available (Berwick et al. 2002).

2.1.5. National Surface Transportation Policy and Revenue Study Commission

A bipartisan National Surface Transportation Policy and Revenue Study Commission (NASTRAC) released a comprehensive plan (NASTRAC 2008) in January 2008 to increase investment, expand services, repair infrastructure, demand accountability and refocus federal transportation programs, while maintaining a strong federal role in surface transportation. The report notes that while policy changes are needed, they are not enough on their own to produce the transportation system needed to support 21st Century economic growth projections, international competitiveness and the social well-being of the nation.

Key recommendations in the report, titled "Transportation for Tomorrow," include:

- Investment of $225 billion annually from all sources (federal, state, local and private) for the next 50 years to upgrade and advance the surface transportation system so that it will be capable of sustaining strong economic growth;
- Accelerate project delivery of major transportation projects;
- Retain a strong federal role in transportation with a focus on outcome-based, performance-driven programs, supported by a cost vs. benefit prioritization process;
- Streamline the current library of transportation programs to ten transportation programs focused on national interest; and
- Create a new National Surface Transportation Commission to perform two principal planning and financial functions. NASTRAC would oversee the strategic planning efforts for each of the program areas and would establish the cost to finance the plans along with a mechanism to fund the projects, subject to Congressional veto.

The new program structure recommended by the commission includes:

- Rebuilding America: A National Asset Management Program,
- Freight Transportation: A Program to Enhance U.S. Global Competitiveness,
- Congestion Relief: A Program for Improved Metropolitan Mobility,
- Saving Lives: A National Safe Mobility Program,
- Connecting America: A National Access Program for Smaller Cities and Rural Areas,
- Intercity Passenger Rail: A Program to Serve High-Growth Corridors by Rail,
- Environmental Stewardship: Transportation Investment Program to Support a Healthy Environment,
- Energy Security: A Program to Accelerate the Development of Environmentally Friendly Replacement Fuels,
- Federal Lands: A Program for Providing Public Access, and
- Research, Development & Technology: A Coherent Transportation Research Program for the Nation.

In reviewing these recommendations and programs, there are several potential bright spots for Montana. First and foremost, a national freight policy to address system freight issues will recognize freight movement and the economic impact of network access, particularly for rural America. Second, it envisions a programmatic approach to fund freight programs and potentially provide incentives for private investment, and a standardized return-on-investment methodology to evaluate public and private partnership projects between railroads and state, local and federal interests. The National Rail Freight Infrastructure Capacity and Investment Study released in September 2007 estimated a shortfall of $39 billion in Class I capital investments needed to meet 2035 volume demand.

2.1.6. The Use of Containers in Canada

The first phase of a two-phase study on container use in Canada was recently completed for Transport Canada (Marinova Consulting 2006). The objective of this study was to characterize the "flow and use" of containers across the country, with one focus being western Canada and the Prairie Provinces. One motivation for the study was that a significant volume of empty marine containers was perceived to be moving around the country, and that this situation represented a "lost" transportation opportunity to connect companies with certain export markets. Findings of the study that are pertinent to this effort include:

- There is a significant imbalance in trade relative to high-value goods being imported to the United States from Asia and Europe, versus low-value exports of bulk goods and raw materials back to these countries.
- Thirty percent of the containers moving across western Canada to Vancouver in 2005 were empty.
- There are many economic and logistical problems associated with shipping bulk products in containers.

More specifically relative to the Prairie Provinces, observations from the study include:

- Specialty grain producers (believed to be one possible significant source of container demand in Montana) favor 20-ft containers, while the container industry prefers 40- to 45-ft containers.
- Specialty crops are not conducive to unit train operations preferred by rail service providers.
- Similar to the situation in the United States, many container lines apparently would prefer to ship an empty container rather than risk damage to a container transporting low-value cargo or risk increasing container cycle time.
- There may be a "disconnect" in the exact origin of the goods being imported from Asia and the destination of the goods to be exported to Asia.
- Approximately 34,000 TEU of agricultural products move from Alberta and Saskatchewan to Vancouver each year (21,000 and 13,000 TEU/yr, respectively).

Phase II of the study (if conducted) is intended to more thoroughly investigate the issues and opportunities identified in Phase I.

2.1.7. Alberta Containerized Intermodal Freight Analysis

GTS Group and Activation Analysis completed an exploratory study on containerized intermodal freight in Alberta, Canada, in 2004. The objective of the study, commissioned by Alberta Transport, included determining the effectiveness of intermodal transportation service in Alberta and stimulating general discussion of policy and issues that may impact this effectiveness. Data for the study was collected by interviewing 28 service providers and 40 shippers.

Key observations from the study include:

- Products typically transported in containers via the intermodal system out of Alberta are machinery and parts, chemicals, forestry and wood products, and agricultural and food products.
- Products typically transported in containers via the intermodal system into Alberta are consumer goods, raw materials, machinery and equipment, parts, and packing materials.
- Companies located near the Edmonton and Calgary rail intermodal terminals are more likely to use intermodal. Distance from these terminals, lack of rail intermodal services into outlying regions, high truck drayage costs, and the lack of available containers deter intermodal use by plants located outside of Alberta’s two major cities.
- Steamship lines are becoming reluctant to keep inventories of containers inland because of high opportunity cost.
- There is a trend, particularly with large shippers, to transload cargo into containers at the port, rather than source loading them on site in Alberta due to the intermodal service not being competitive in the regions and a lack of empty containers.
- The requirement for on-time performance and “just-in-time delivery” encourages trucking freight to the ports for transloading.
- The inland portion of international intermodal services used by Alberta shippers will likely decline unless truck costs increase relative to intermodal.

The study recommended among other things that Alberta commence policy discussions with adjacent British Columbia on the development of a national transportation plan, and that additional research be done on several issues, including how port operations influence container operations in Alberta, the cost vs. benefit implications of offering improved intermodal service outside of Alberta’s dominant population centers of Edmonton and Calgary, and the characteristics (capacity and economics) of truck and rail transportation services across Alberta.

2.2. Case Studies

2.2.1. Port of Quincy, Washington

The Port of Quincy is a 320-acre site located near Quincy, a town of 5,400 people in Central Washington just off of Interstate 90 on the BNSF main line (Figure 20). One of the original visions for this terminal was to provide an inland staging facility for international cargo. The terminal is centrally located with access to many of the state’s agricultural areas that produce export crops.

Figure 20: Washington State Rail System Map, with Port of Quincy (Port of Quincy 2006).

The terminal opened in 2005 and is managed by a port commission with a mission to stimulate growth and prosperity for the region. A board of three commissioners was tasked with responsibility for inland port strategic planning, policy development and operations. Some $840,000 in grants and low interest loans were secured, along with $5 million for capital projects.

The operation model for this site included a third-party rail operator (Northwest Container Services), which purchased line haul transportation service (a locomotive and crew) from BNSF and provided the terminal services and well cars to move the international containers to ports in the Pacific Northwest. Northwest Container Services had been operating on Class I railroads for several years. It initially began business by shuttling empty containers between deepwater terminals. The company had similar short haul shuttle operations between Pasco, Tacoma and Seattle, Washington, and Boardman, Eugene and Portland, Oregon. Northwest Container Services was sold to a California waste management firm and ended its relationship with the Port of Quincy in 2005. This business model did not materialize as anticipated, and a new business strategy and business plan was developed.

At the Port of Quincy today, a cold storage facility, Columbia Colstor, anchors the business park and is adjacent to the terminal (Figure 21). Colstor has over 218,000 square feet of storage space and a refrigerated rail dock. Today, Alliance Shippers and Rail Logistics (based in Kansas City) loads refrigerated intermodal shipments of fruits and vegetables in Quincy for shipment eastbound to Chicago. Containers are then reloaded in Chicago with frozen meats for export. Although the original terminal vision was to support West Coast traffic, with a new business base and rail operator have shifted their focus to eastern markets, which produce better rail economics for the carrier.

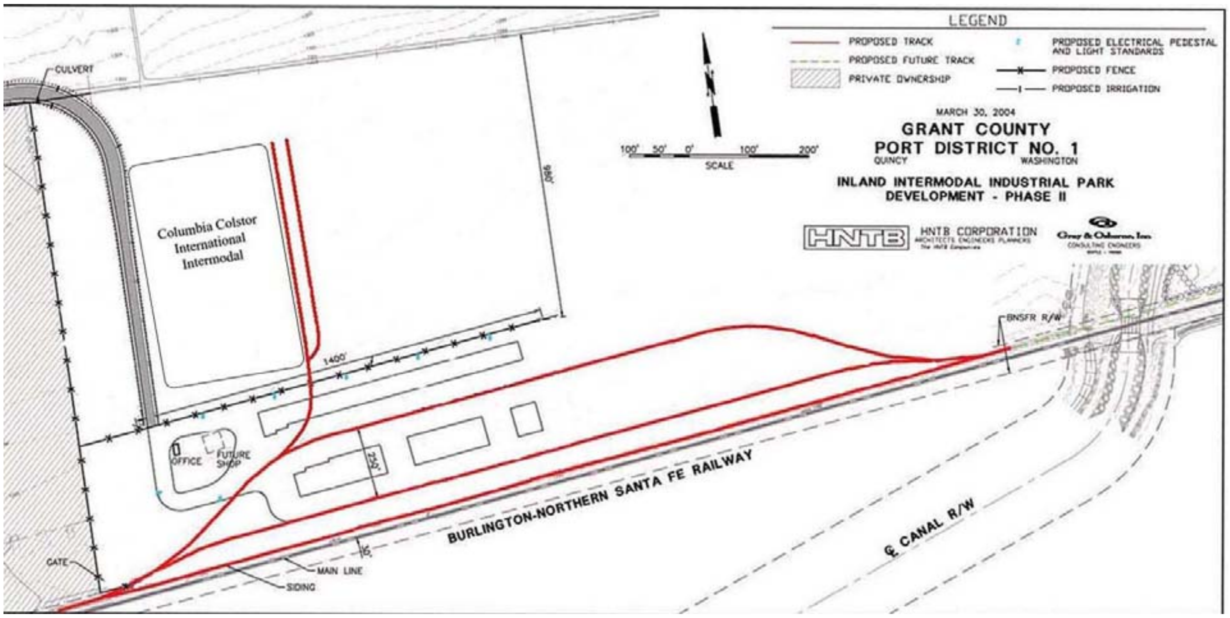


Figure 21: Port of Quincy Terminal Layout (Port of Quincy 2006)

2.2.2. North Dakota Multimodal Efforts

The State of North Dakota has been actively engaged in trying to expand intermodal service for the past seven years. Several studies have been completed assessing the feasibility of the expansion of rail service for each of the three largest population areas: Bismarck, Minot and Fargo. Based on 2003 U.S. Census reports, Fargo is the largest city, with 91,484 residents, Bismarck's population is 56,344, and Minot has 35,424 residents.

2.2.2.1. Bismarck Development Efforts

Bismarck is home to Bobcat (formerly Melrose), a manufacturer of skid steer loaders, mini-excavators, utility vehicles and attachments. The company needed global access for inbound parts and export products, and after several years of investigation and planning, a transload operation was established. Construction of the Northern Plains Commerce Centre was begun in 2006 (Figure 22) and is operated by Memphis-based Mallory Alexander International Logistics. This facility is located on the BNSF but not on its primary intermodal route, which has resulted in more of a carload focus. While intermodal containers can be loaded at this site, the intermodal service was presented as a temporary measure until the rail yard could be completed. The resulting development will feature bulk transfer of products from truck to rail carload service, with access to the BNSF Premier Transload network. The project cost was projected to be $25 million. The funding was a combination of contributions from the city of Bismarck, U.S. Department of Transportation, North Dakota Department of Transportation, the Economic Development Administration, and the Bismarck Vision Fund.

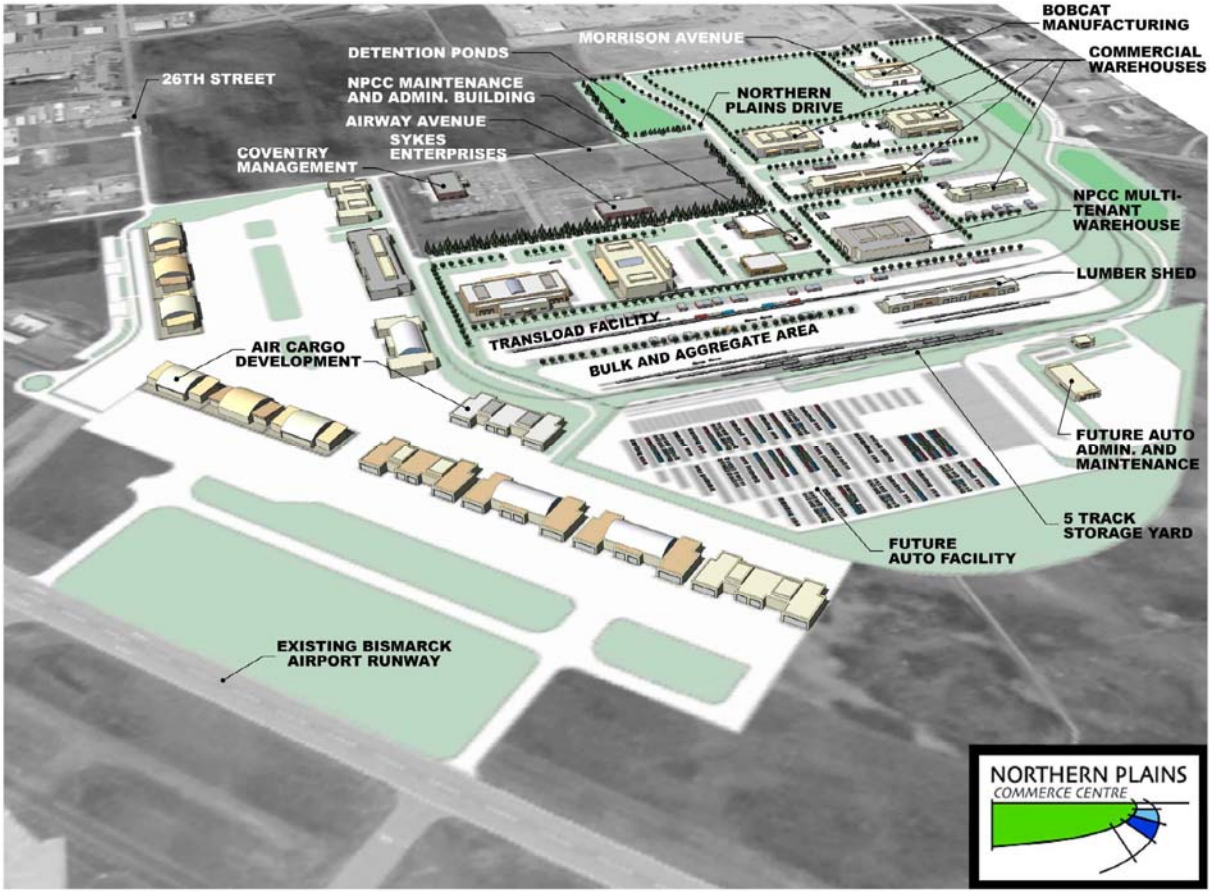


Figure 22: Northern Plains Commerce Centre (NPCC 2006).

2.2.2.2. Minot Development Efforts

Minot is located on the BNSF main intermodal corridor and has a classification yard that was originally used by the Great Northern Railroad. In the late 1980s and early 1990s, many classification yards were repurposed to support intermodal terminal operations. Examples of such repurposing are the CSX 59th Street terminal in Chicago and the Wisconsin Central's Neenah terminal in Neenah. There are numerous other examples across the nation. In 2006 Minot commissioned a study to investigate the feasibility of a shared-use facility on BNSF's main intermodal route. The broad purpose of this facility was to provide expansion opportunity for the "landlocked" intermodal terminal located in Dilworth, Minnesota, which serves the Fargo area, and provides pulse crop users and others in Minot access to an intermodal site.

The Minot intermodal site is approximately 180 acres, in an agricultural complex of 400 acres (Figure 23). State Department of Transportation Director Dave Sprynczynatyk said, "With BNSF planning for a major refueling site in Minot and contemplating putting a car repair facility there also, we felt it was the perfect opportunity for an intermodal facility" (Weixel 2006). The Minot City Council had previously approved $500,000 to purchase land from the BNSF for the facility. The Canadian Pacific also has access to this region, but this location is not on its intermodal route. The U.S. Commerce Department's Economic Development Administration presented a $1.5 million grant to the Minot Development Corporation for the establishment of this rail-to-truck intermodal park. The grant was intended to assist with land acquisition, construction of streets, water and sewage services and other infrastructure improvements. The development (now expected to be operational in the latter part of 2008) is anticipated to create a minimum of 55 new jobs and attract $62 million in private-sector funding (Weixel 2006). This site will eventually accommodate 100- to 110-car trains, which will haul containers to the West Coast for export. It is anticipated that 19,704 containers per year could be shipped from Minot and another 32,110 (Wilbur Smith Associates 2007) could come from the Fargo–Dilworth region. According to Roger Ward, board member of the North Dakota Regional Intermodal Co-Service Coordination Board, there are more than 17 international destinations that users want to connect to, which is more than any one ocean carrier can provide competitive services for.

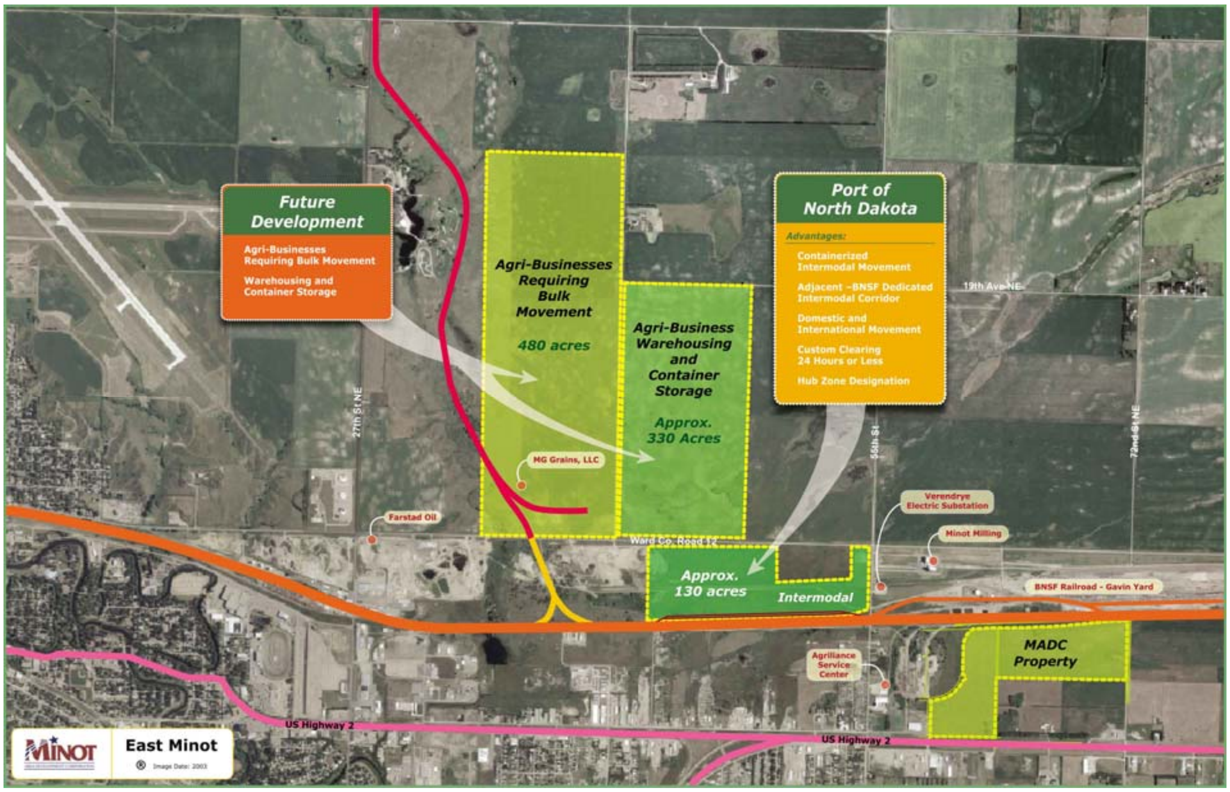


Figure 23: Minot Value-Added Agricultural Complex (MADC 2008).

2.2.3. North Star Intermodal Terminal

The North Star intermodal terminal is located approximately 130 miles west of Minneapolis and is unique in that it is served by a short-line railroad, the Twin Cities Western. The operation is also unique in that it is using new RailRunner intermodal equipment with a new system called Terminal Anywhere technology. No cranes or lift equipment is needed to load containers based on a uniquely designed rail bogie that links the trailers for rail movement (Figure 24). This system shuttles containers between a loading facility in Montevideo, Minnesota, and the Canadian Pacific's intermodal terminal in Minneapolis. In partnership with Hapag-Lloyd Container Lines shipments will move to international destinations via Canadian ports.

Figure 24: RailRunner Equipment Now Used at the North Star Intermodal Terminal in Minnesota (RailRunner 2008).

The regularly scheduled service, with a 24-hour turn time, is tailored for ethanol shippers who are exporting Distiller's Dried Grains (DDGs) and to growers of identity-preserved food-grade soybeans, wheat products and other specialty grains. The catchment area for this new service extends 150 miles to connect users in North and South Dakota, Minnesota, and Iowa to export markets in Asia and Europe.

DDGs are produced at a rate of 1.8 lbs of mash for every gallon of ethanol. Ethanol producers in the upper Great Plains were forecast to produce 4,400,000 metric tons of DDGs in 2007, of which 12–15 percent was to be exported. North Star's scheduled container service will also allow farmers to commit specific acreage to overseas customers at higher prices. Identity-preserved wheat suppliers responding to international shipper demands can provide just-in-time inventory, based on the user requirements of amino acid content and other attributes required by the customers. North Star officials estimate that this service could eventually handle 330,000 metric tons of food-grade soybeans and 340,000 metric tons of value-added wheat products. In 2007, 3,158 containers moved in this service (Railway Age 2008).

2.2.4. Joliet Ag Reload Operations

According to the Chicago Metropolitan Agency for Planning (CMAP 2008), the Chicago region would qualify as the world's third largest port and the largest U.S. facility measured by the number of container lifts performed annually. The BNSF facility in Joliet (Figure 25), southwest of the city of Chicago, performed nearly 1 million lifts in 2007 and is on a growth track to handle 6 to 7 percent compound annual container growth at this location. The UP facility in Rochelle, Illinois, (about 75 miles west of Chicago) with a stated capacity of 750,000 annual units per year is also contributing to the regional volume of international containers available for reload. There are 19 intermodal facilities in the northeastern Illinois intermodal complex that handle international containers.

Figure 25: Joliet Intermodal Complex (KACOT 2007).

In a report commissioned by the city of Rochelle, Illinois, it was noted that China loads 75 percent of the world's containers, and it buys 40 percent of U.S. soybean and soybean meal exports (Ennes et al. 2006). Investments are being made by the largest transloaders (Scoular and Delong) to increase capacity to allow them each to load 100 containers per day.

The system of grain inspection can be slow and it may take up to five days for a certified grade inspection to be final, by which time the container may already be on the train and moving. Any problem with product quality can be difficult to correct, and payment from the overseas buyer is often based upon the certified product grade. Jerry Sroja, Midwest equipment manager for Maersk, said they began to receive export bookings for agricultural products from this facility in 2003. Shortly thereafter export shipments began moving from Kansas City, Kan., and Columbus, Ohio. The company has looked for other locations to replicate the process but a supply of empties has not been available (Ennes et al. 2006).

Overweight containers can be difficult to handle. While 75 percent of the state's highways allow federal bridge formula weights, the remaining 25 percent, along with virtually all the county and township roads and city streets, allow only state bridge formula weights. Local roads may be designated at local option.

A number of steps are involved in the loading process (Figure 26). Containers are picked up from the rail yard. The equipment is inspected for any contamination or debris. A high speed conveyor system moves the grain from the unload bin to the container. A barrier is placed at the end of the container to avoid spillage during loading and when the container is opened by the end user. The barrier is made of industrial cardboard, steel pipe and lashing, and is built up while the equipment is being loaded. The loading process starts at the front of the box and the conveyer is pulled backwards to assure a relatively level and balanced distribution of the product. For DDGs, Scoular is able to load one 40-ft box in ten minutes. From its Channahon facility workers can pick up a container at the BNSF Elwood yard, load the container, and return it to BNSF for loading to the train in one hour. Containers are loaded to 53,000 lbs due to a number of highway, rail and ocean carrier restrictions. At this facility Scoular loads upwards of 300 containers of bulk agricultural products per day.

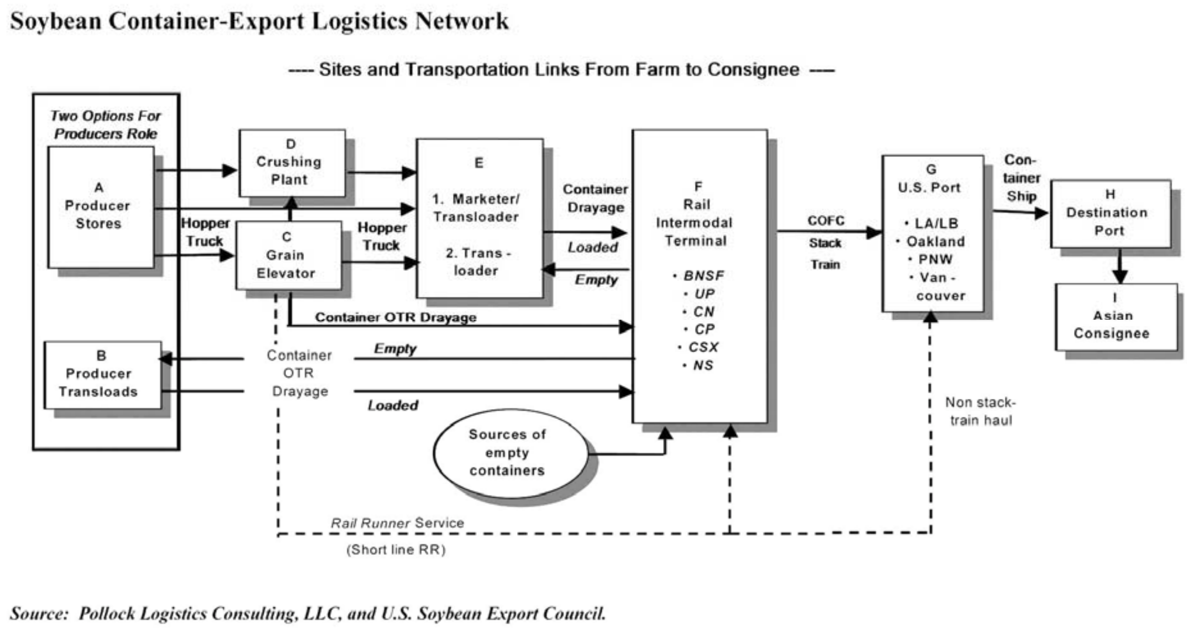


Figure 26: Joliet Container Freight Chain (Ennes et al. 2006).

2.3. Stakeholder Perspectives

To identify user interest a survey was developed to capture potential volumes eligible for intermodal container service, trade lanes, equipment and carrier preferences, rates and possible incentives.

2.3.1. Survey of Potential Users

In June a survey was designed to identify potential users, their intermodal service needs and experience, rail access preferences, truck rate, and input on potential carrier incentives to reestablish service. The survey tool was reviewed by the Intermodal Technical Research Panel selected by Montana Department of Transportation to oversee technical aspects of the program. The survey was tested and then distributed by email linked to the surveymonkey.com website. A list of importers and exporters was developed by compiling names from the Montana World Trade Center, the Montana Chamber of Commerce and the Montana Department of Agriculture. A group of 663 potential contacts, which included former users was identified. The contacts were filtered to focus on active freight shippers by region. Every company with an email address was included on an email distribution list and was invited to complete the survey. A group of 153 potential users were sent personal invitations to participate in the survey.

Regional development authorities were identified, and a link to the survey was distributed to members via a listserv. Twelve regional development and three trade association listserv distribution programs were included. The survey process was initiated in July 2007, with a follow up reminder in late August.

The Port of Northern Montana and the Port of Montana were both contacted to share any potential shipper contact information for users who may have interest in the re-establishment of an intermodal terminal. These contacts were included in the survey process.

Ten users responded to the personal email invitation and eighteen users responded to the listserv distribution program.

In October the research team determined that due to the low response rate a hard copy mailing would be needed. This effort began with the original list of 663 potential contacts. This list was carefully scrutinized and reduced to 250 potential contacts, who were then called to further gauge their appropriateness and interest in receiving a survey. After this process was completed, surveys were mailed to 64 companies, generally directed to a specific individual within the company determined during the telephone contact. This effort resulted in an additional 11 surveys being returned. Twenty phone interviews were conducted in an effort to improve input.

In November and early December the Canadian dollar was gaining strength relative to the U.S. currency. This resulted in a significant change in freight flows across the border. Canadian users were having difficulty accessing equipment in Alberta. To identify potential Canadian users, a second survey was developed to target Canadian shippers who had previously used the Shelby, Montana, intermodal terminal to see if interest remained. This survey was mailed to potential and former users of the Shelby terminal. Only 6 percent of these were returned, yet these qualified users represented some important freight opportunities and offered useful perspectives.

2.3.1.1. U.S. Surveys

The survey was broken up into seven sections covering general information on the nature of the respondents' business and transportation needs, any past experience and future interest they might have with intermodal shipping, their current use of truck and rail services, and their opinion on public and private incentives to promote increased intermodal service in Montana. The full survey is presented in the Appendix of this report. A total of 21 completed surveys were received, and the results are discussed below.

Section 1: User Profile. The first section of the survey provided background and contact information in case there were questions. Forty-one percent of the respondents represented manufacturing interests, followed by 22 percent who identified themselves as representing agriculture, 11 percent represented transportation interests and "others" included mining, lumber, consumer products, economic development and professional services. Those who responded were primarily domestic shippers with activities in the Western and Midwestern United States, although several responses indicated inbound shipments from Europe, Asia and South America. When asked about outbound activities, more international locations were identified in Canada, Europe and Asia, but the majority of the destinations noted were domestic. When asked about annual transportation budgets, 44 percent said their budgets were more than 5 percent of the total cost of goods sold. For domestic transportation, 55 percent of those surveyed spent less than $200,000 per year, yet 10 percent spent $1 million or more on domestic transportation. When asked about global transportation freight spending, 64 percent said they spent less than $200,000 per year and about 10 percent spent over $1 million for global freight services.

When users were asked to indicate what portion of their total transportation budget was spent on each mode, truck and LTL truck dominated. Only 15 percent of the users surveyed spent more than 15 percent on rail and rail intermodal service. Users indicated that changes in supply chain vendors or customers (29 percent) and/or cost savings (29 percent) would cause them to look at mode changes. Service improvements or a new service offering may lead to mode changes up to 31 percent of the time. Montana users by and large control the mode of transportation for inbound and outbound shipments. Third party logistics activities dictate mode changes less than 6 percent of the time. Roughly half of the users report average inbound length of haul at less than 700 miles. On the outbound average length of haul, 61 percent of the users reported that the average distance is greater than 700 miles. When asked about supply chain visibility, or their ability to know where a shipment is, those with shorter average length of haul reported better visibility. Given the large use of truck and LTL shipment modes, it is expected that this visibility would be high.

Section 2: Intermodal Service. When asked about intermodal service, approximately one-third said they no longer use intermodal, approximately one-third were interested in learning more about intermodal, and the remaining one-third were using intermodal for domestic and international shipments. Users reported moving freight over Billings, Spokane, Calgary and Seattle terminals. Fifty-nine percent of those surveyed indicated that if intermodal service was available they would use it for export shipments. Fifty-two percent of those surveyed indicated that if import intermodal service was available for Montana terminals they would use the service. The container type most requested for export intermodal shipments was a 20-ft ocean container. Fifty-two percent of those surveyed indicated they would use intermodal service even if it was available less than five days per week to or from West Coast ports. When asked about ocean carrier preference, Cosco and Hapag Lloyd were the most popular choices, closely followed by OOCL, Hyundai, Maersk and China Shipping. Less requested lines included APL, Evergreen, Matson, Hanjin, MOL and Yang Ming.

Section 3: General Railroad Information. This section explored access issues. Eighty-four percent of those surveyed said they felt Montana needs more rail access. One commented that rail access should include passenger and excursion trains. Ninety-one percent of those who responded said the State of Montana should be more actively involved in the location and/or the development of freight transportation facilities. Seventy percent of those who replied to the survey did not have a rail siding or direct access to rail. When asked if users would consider using a rail consolidation service or transload center, 74 percent indicated that they would consider it if it was cost effective. Three users indicated they are using facilities in Shelby and Butte–Silver Bow.

Sections 4 and 5: Rail and Trucking Information. Information from the survey about terminal location preference and trucking capacity is explained later in this report.

Section 6: This section asked questions about local, state and/or federal incentives for developing intermodal service. The first question asked what types of incentive(s) might be needed to re-establish rail intermodal service in Montana. Responses included:

- Tax credits and/or tax credits linked to volume commitment,

- Cost savings sufficient to justify changing mode of shipment,
- Commitment from state to revitalize rural communities,
- Help with initial cost and equipment availability,
- Better transportation rates and great service, and
- Terminals located near business hubs.

The second question asked participants about types of federal incentives that could be offered to restore intermodal service for Montana users. Thirty-eight percent said tax credits should be considered, 30 percent said that loans should be available to help fund development costs, and 22 percent indicated that federal grants should be made available to help restore service.

The same group of respondents was asked what types of state incentives should be offered to restore intermodal service to Montana. Thirty-two percent said economic development tools and funds should be used to cover highway and utility access expense. Twenty-one percent said tax credits could be used to help make funds available to cover development costs, and another 21 percent said loans should be made available to help fund development costs.

The final incentive question asked what types of private incentives should be offered to mainline railways to help restore service. Fifty-eight percent responded that public and private partnerships should be explored to help offset development costs. Twenty-eight percent said that user contracts should be established to guarantee business volumes.

Most Montanans surveyed said they feel that any potential intermodal site development must first be based upon a sound business model. There was concern that if an initial startup was subsidized yet was not sustainable over time, any funds spent in this area would have been wasted. Others voiced a need to have any rail subsidies earned for Montana freight projects, should be reinvested in the state to support local Montana facilities and operations.

Section 7: More Information. Respondents were given the opportunity to generally comment about rail transportation and to suggest other entities that should be contacted about this study.

2.3.1.2. Canadian Surveys

Of 134 surveys sent to Canadians, eight were returned completed. Of those, seven represented intermodal users who were shipping primarily to and from North American locations. Today these users ship via the Calgary intermodal terminal, but a location in Montana would save drayage cost and time. One of the users who responded was located in Lethbridge, Alberta, and had 65–75 container loads per week that could move over a northern Montana intermodal facility if one existed. This shipper exports products to China, Japan, Korea and Russia.

2.3.2. Stakeholder Interviews

2.3.2.1. Metropolitan Planning Organizations

Montana has three metropolitan planning organizations (MPOs) responsible for regional planning. These MPOs are located in Billings, Great Falls and Missoula. Websites were reviewed for transportation plan activities and documents. Contact with the transportation offices was made to gather potential survey candidates.

2.3.2.2. Regional Economic Development Organizations

The following Chambers of Commerce across the state were asked to inform their members about the project and the survey using their email distribution lists:

- Billings Chamber of Commerce,
- Missoula Chamber of Commerce,
- Kalispell Chamber of Commerce,
- Great Falls Area Chamber of Commerce,
- Bozeman Area Chamber of Commerce,
- Helena Area Chamber of Commerce,
- Bitterroot Valley Chamber of Commerce,
- Butte–Silver Bow Chamber of Commerce,
- Polson Chamber of Commerce,
- Libby Chamber of Commerce,
- Miles City Chamber of Commerce, and
- Shelby Area Chamber of Commerce.

Additionally, the same request was made of 23 economic development organizations across the state.

2.3.2.3. Shippers and Trade Associations

The following trade associations were contacted about potential survey distribution candidates, and the names they returned were added to the direct email list to receive personal invitations to participate:

- Montana Grain Growers Association,
- Montana Wood Products Association,
- Montana Mining Association,
- National Grain and Feed Association,
- Montana Grain Elevator Association, and
- Northern Pulse Growers Association.

Given the poor response to the surveys, individual users were contacted who had a current or previous relationship with the Port of Montana, the Port of Northern Montana or Billings Intermodal terminal. Shippers provided confidential insights about their business interests and needs. Their comments are summarized below:

- Lack of Equipment—With the BNSF policy to no longer provide pooled use containers or trailers for domestic loads, the lack of available equipment is a barrier to intermodal service. Repositioning cost to bring empty equipment to the region is prohibitive. Ocean carriers have also begun to restrict equipment from leaving immediate terminal areas. For Montana, this means that ocean carriers calling Seattle or Portland restrict the movement of containers to near dock users. Historically, equipment made empty in the Midwest moved through Montana empty to return to Asia for the next load. Today with the soft dollar and the emergence of containerized grain operations in the Midwest, few carriers will allow empty equipment to come to Montana for export loads. These carriers are loading empties in Illinois for export.

- Business Shifts—Shippers that previously used intermodal service have found alternative modes to reach end markets, or have moved production to other regions.
- Eastbound and Southbound Service is Non-existent—There are intermodal freight users who would like to ship to domestic markets east of Montana but no service exists or is proposed. Chicago, Denver and Minneapolis markets were mentioned by users, but no service is currently available in those lanes.
- Mode Efficiency—Grain shippers must load four containers to move the equivalent amount of product that can be moved in one railcar. Export grain must be certified. Loading containers means that four certifications must be made compared to one certification for a railcar. There are significant rail efficiencies when moving grain in shuttle train lots.
- Perception that Container Shipping is More Expensive—The cost of loading containerized shipments is perceived to be high given the fact that no loading system has been identified in Montana, although several grain elevator operators said they could load containers if demand for this service existed. Loading containers requires additional handling than what's required for bulk rail or ship movements.
- No Shortage of Alternative Capacity—Truck capacity is available and is a reliable alternative for moving product to West Coast ports. Those that use shuttle train operations seem reluctant to change to a more labor intensive loading process.

2.3.2.4. Railroads

The railroads were contacted about re-introducing westbound intermodal service for Montana users. A trip to BNSF headquarters was made and representatives from the intermodal, grain, government affairs and the international business units were present. This group offered to support a pilot project if the following conditions could be met:

- Train Service—One train per week, which would move from the current Billings intermodal terminal to a single destination in Washington State. The Seattle International Gateway (SIG) Terminal was mentioned as the likely destination. This single train would move in a dedicated westbound service between two point pairs.
- Equipment Ownership—Each train would consist of one international container provider or asset owner to simplify train operations and terminal handling activities.
- Volume—Two hundred fifty units per week in each direction between Washington and Montana terminals would be required.
- Rate Structure—Rates for this rail service would be provided to the equipment owner (ocean carrier) who is the current railroad contract holder.

Representatives from the Union Pacific (UP) were interviewed. They had interest in the market but their concern was that the carrier's circuitous route would add more than 500 miles to a container movement from Butte–Silver Bow to Southern California ports. UP has a minor presence in Montana with only one rail lane connecting to the Port of Montana terminal in Butte–Silver Bow. Figure 27 shows UP's rail network and intermodal terminal locations. Empty containers moving in this network are available in Denver and Salt Lake City. Repositioning this equipment to the Port of Montana would be costly and would require travel across secondary rail lines in manifest train service to the final destination. UP estimated that it would cost at least $500 to reposition a 40-ft container from Salt Lake City to Butte–Silver Bow. If loaded export containers moved on UP, they would prefer to handle this cargo via Southern California ports to balance equipment and train operations. The number of land miles for this trip would not be competitive for Montana users compared to either truck or other rail options.

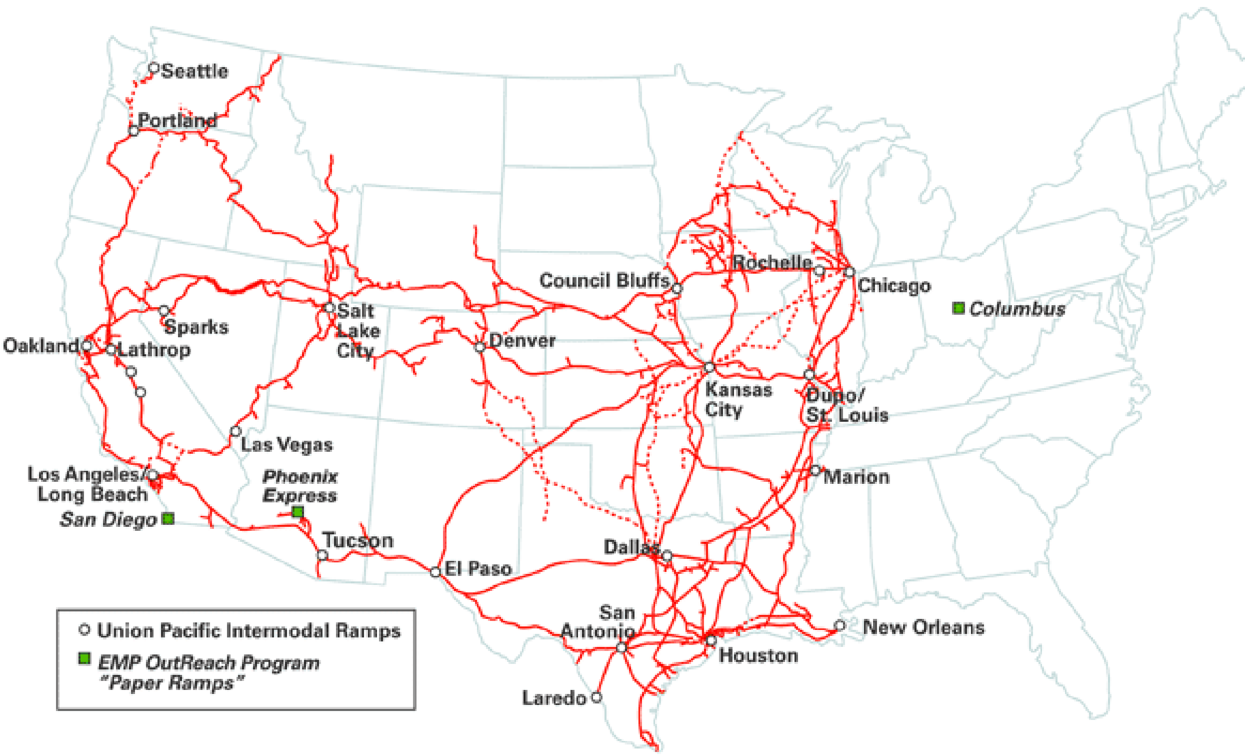


Figure 27: Union Pacific Intermodal Terminals (UP 2008).

Canadian National (CN) representatives were interviewed about their ability to support Montana users over the Calgary terminal. CN has a worldwide logistics division that offers a product called CN Direct. This trucking service connects users within 500 miles of existing rail terminals and moves 1,250 loads per day. It employs 900 drivers and has over 6,000 chassis to support this business. Figure 28 illustrates where these extended services are offered. The idea of supporting a paper ramp in Shelby was suggested. A paper ramp is a terminal that allows drivers to drop off and pick up equipment for railroad movement at a location that is not physically connected to the rail network. The railroad then moves these loads to or from its terminal to make scheduled train departures and arrivals. The issue of reliable border-crossing times and circuitous miles between users and the Calgary terminal were the primary concerns.

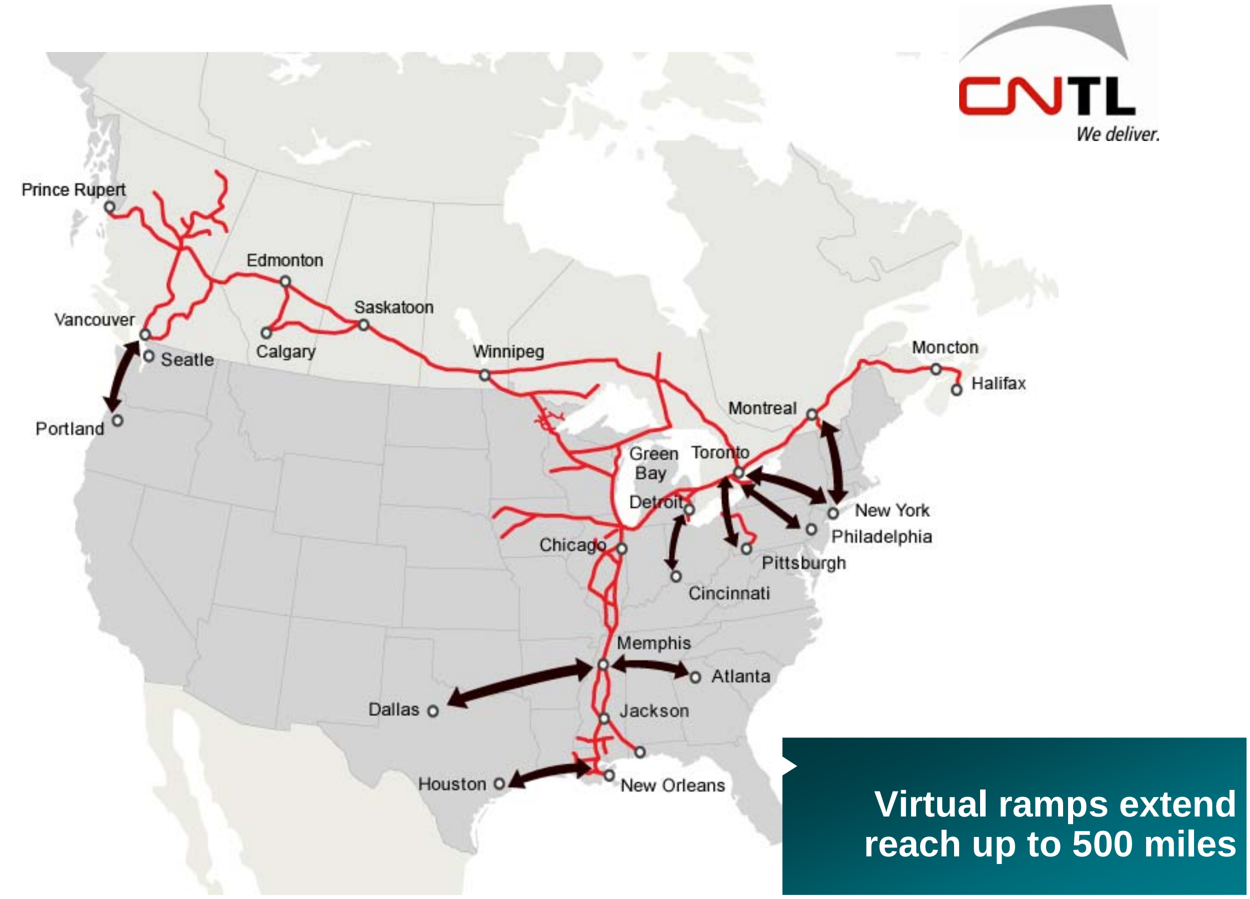


Figure 28: Canadian National Intermodal Network (CN Intermodal 2008).

The Canadian Pacific railroad was contacted about potential service for Montana users. It was determined that based on its intermodal network and the number of drayage miles to access its intermodal terminal locations for westbound export shipments, the out-of-route mileage to support Montana users would not be competitive. Figure 29 illustrates the Canadian Pacific rail network, including partner-owned lines.

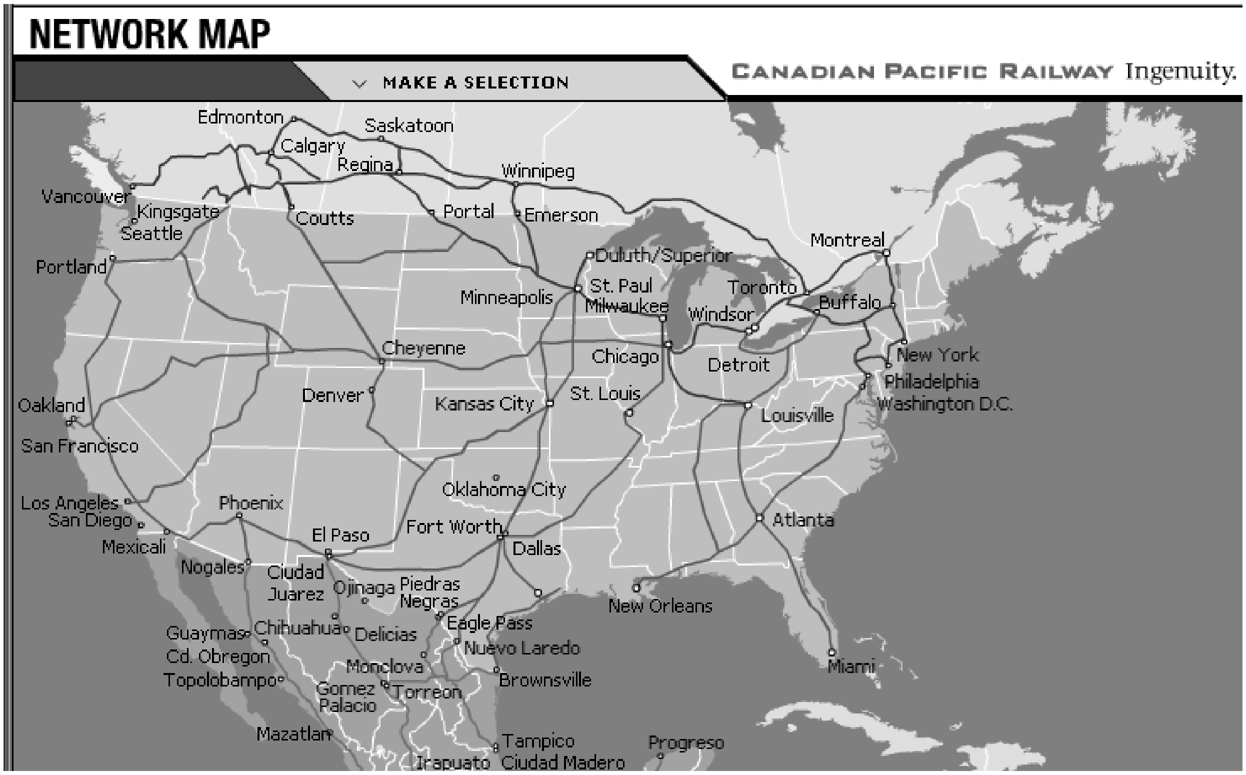


Figure 29: Canadian Pacific Intermodal Network (CP 2008).

Montana Rail Link (MRL) is a Class II carrier and was technically outside the scope of this study, but given the geography it serves, it was decided to contact the company about its potential interest in intermodal service. Figure 30 shows the rail routes MRL operates. MRL connects to BNSF in Billings and Spokane and its agreement does not include handling intermodal freight to or from Montana shippers. In its own intermodal investigations the company was never able to identify enough volume to justify the capital investments needed to support intermodal service. According to Howard Nash, Executive Director of Marketing, MRL sees a large imbalance of freight in its region, with consumer products moving inbound and little containerized freight moving outbound. It has explored loading talc in "super sacs" (an industrial bag capable of loading up to 4,000 lbs or up to 100 cubic feet of industrial product), but could not come up with a cost-competitive service for this business. Another barrier identified was the lack of a willing international equipment provider.

Figure 30: Montana Rail Link Map (MRL 2008).

2.3.2.5. Intermediaries

Intermodal freight services are wholesaled to intermediaries who then coordinate the truck pick-up and delivery services and arrange rates and equipment to match shipper's freight characteristics and transportation needs. The following intermediaries have a presence in Montana but primarily support truck brokerage activities. Some own or lease their own fleet of domestic containers. All have access to railroad intermodal rates and arrange for local truck delivery service.

- Landstar Logistics,
- Excel Logistics.
- Hub Group Inc.,
- Twin Modal, and
- J. B. Hunt.

Each of these intermediaries had some level of interest in the proposed re-establishment of intermodal service, provided that the rail rates were competitive and that a base of balanced business was available. The first consideration for this group of intermediaries was equipment availability. Based on the current level of rail intermodal service in the state, the primary product that these companies provide in Montana is truck brokerage. BNSF no longer provides domestic containers for intermediaries to load so contract holders must have their own source of equipment. Some intermediaries have their own domestic intermodal containers, but without an active terminal with service connected to West Coast ports, they have deployed their assets in other lanes with better balance and higher levels of use. Many of these service providers have limited the lanes and the terminals that they support in order to improve their network profitability. If a terminal with service was re-established in Montana, several of these users expressed interest in facilitating shipper needs if rates were competitive. One intermediary has domestic 48-ft equipment that could be dedicated to this service if the business was committed on a longer term basis and service was reliable. The drawback to this option was the ability to load grain in larger (53') domestic containers and still meet highway truck size and weight restrictions.

Each company has certain internal business metrics that drive their business process, including asset turn days, empty miles and profitability. The primary concern raised by these companies was access to an available pool of international (20' and 40') containers for loading. If train service runs only once a week, the asset cycle time would not be as attractive as other markets with more frequent service. It was also noted that it would be hard for only one intermediary to devote a single fleet of assets to this lane due to other current business commitments.

2.3.2.6. Ocean Carriers

Ocean carriers were contacted to identify interest in supporting a weekly train service between Montana and the Pacific Northwest ports. The vessel operators indicated that this proposal would have been more interesting five years ago when empty equipment was plentiful. Today, carriers want load-load operations and railroads have instituted significant rate increases, as much as 30 percent in some markets. Many ocean carriers are discouraging inland container movements because of excessive dwell time in some inland markets. Cosco management has limited inland movements because demand in Asia is so strong, it wants to turn boxes quickly once they land in the United States so that they can be returned to Asia for their next load.

K-Line's Seattle sales executive Amy Whitlow indicated the company uses the UP rail service. It has moved talc for export in the past. K-Line indicated that it has no equipment close to this market in Montana and given recent rail rate increases and empty restrictions, they would not be able to realize a load-load operation in Montana. APL, like K-Line, uses the UP rail network. APL executive Chris Fricker was contacted and indicated that the UP has no rail rate agreement with BNSF to access intermodal terminals in Montana.

Maersk has developed a policy to keep its boxes close to the ports that it serves, and now disallows shipments beyond roughly a 200-mile radius of the ports or inland terminals it supports. Figure 31 shows the inland reach Maersk will allow for containers entering the United States via Seattle or Tacoma. The states shaded light blue represent Maersk's market territory for international container equipment which enters the U.S. via the PNW ports and moves to Chicago, Illinois. Maersk closed inland terminals in Kansas City, Minneapolis, Denver, Omaha and St. Louis within the past year. Historically, many export containers were dispatched from customers who received freight in or around the Chicago area. This large, reliable source of equipment used to be readily available, but due to the shifting trade balance resulting from the softness in the U.S. dollar, many exporters are making use of this equipment to ship higher value export products. Secondarily grain exporters have developed container loading operations near larger intermodal terminals in Illinois which is able to reload just about every empty container available.

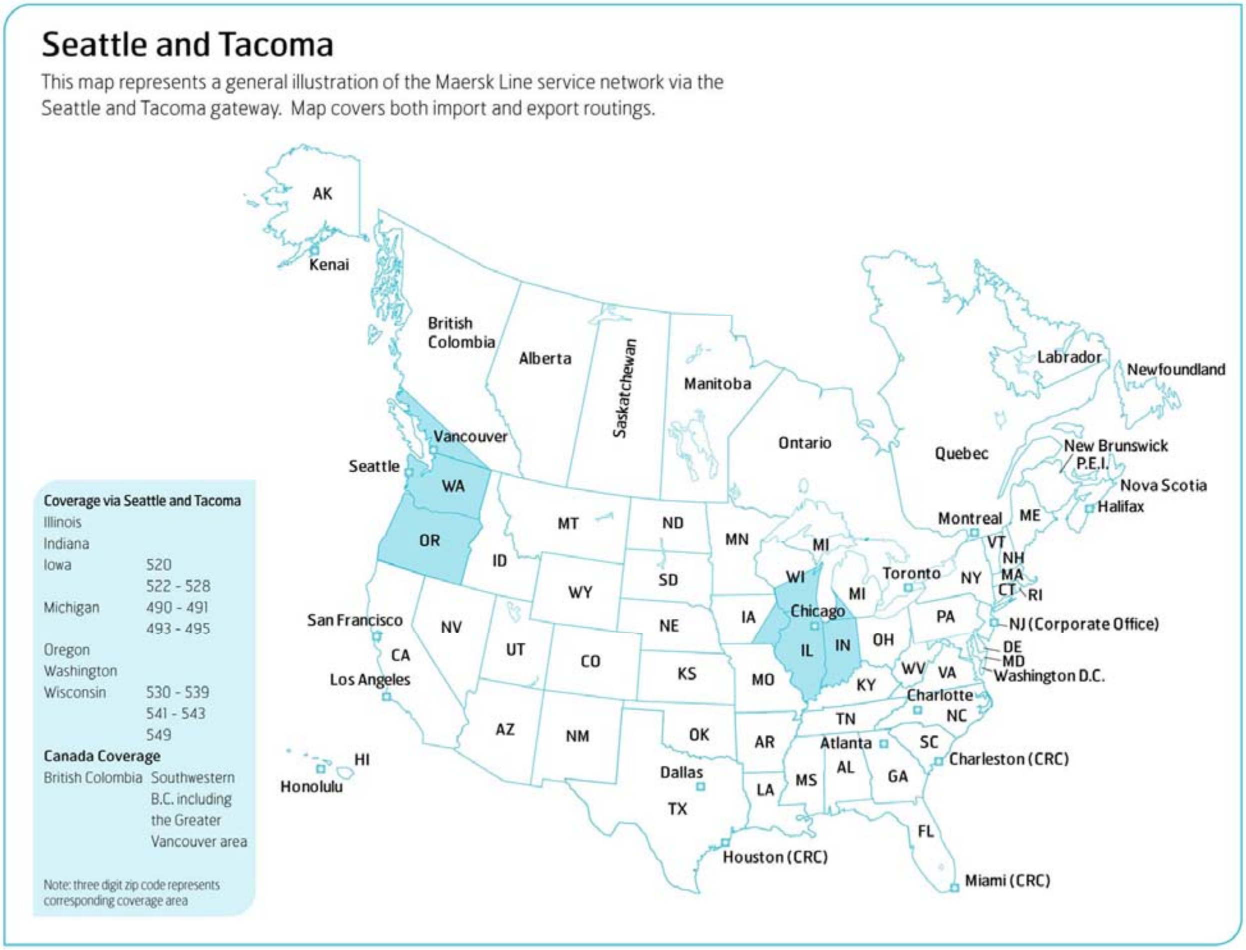


Figure 31: Maersk Inland Intermodal network (Maersk Line 2008).

Some ocean carriers indicated that, while they could not support a dedicated train to and from Montana, they may be able to support ten to twenty-five 20- or 40-ft containers. Rates are quoted only to contract holders and were unavailable to the research team. K-Line would commit to 10 boxes per week if product was transloaded in Washington State. MOL indicated it could handle up to 10 containers per week if freight was trucked to the port area. NYK, OOCL, Hapag Lloyd and Hyundai were also contacted and indicated limited capability to handle traffic if it could be loaded in Washington State. Evergreen was contacted and explained it has shifted much of its Asia-to-Midwest cargo to the Southern California port complexes due to rail rate increases between Tacoma and Chicago.

2.3.2.7. Truckload Carriers

In September of 2007, a presentation regarding this study was made to the Montana Motor Carriers Association at its annual meeting in Billings. The group discussion that followed provided insight into other intermodal operations that used to be available across the state. Survey information was distributed to the attendees. Eighteen trucking companies were identified and requested to participate in the survey (a list of these companies is provided in the Appendix. A link to the survey was also provided to the members by the association. Few had equipment they would commit to intermodal rail service. Several had been involved in drayage operations. Without a fleet of pooled intermodal equipment these users were not able to make the necessary equipment investment to participate at the minimum level required by the railroad.

2.4. Network-level Container Demand Assessment

Two approaches were used in assessing the demand for intermodal container service in Montana. As previously reported, surveys were sent to individual companies in Montana requesting information on their specific needs for intermodal service. While this approach offered useful, detailed insights on such needs, it was limited by the survey response rate (less than 10 percent in this case) and the quality of the responses received. To some extent, the response rate was influenced by the justifiable reticence of some companies regarding detailed information on their operations that could possibly compromise their competitiveness. Despite assurances of confidentiality, this situation remains a concern in Montana, where, due to the small population of the state, only a few companies may be active in any given industry.

In light of the issues mentioned above regarding the “micro” approach to identifying the demand for intermodal container service in Montana, a more broad-based “macro” approach was also used. Following the “macro” approach, intermodal needs were estimated across entire industries based on the nature of the industry, published data on the related commodity flows, and published information on general transportation trends within that industry. The advantage of this approach is that it was better able to capture all of the economic activity in an industry within the state. The disadvantage of this approach is that it may not well reflect specific transportation choices of actual companies in Montana (although in at least one situation—mining—some information was available to confirm the more broad-based analysis).

2.4.1. Methodology

To implement the “macro” approach to investigating the potential demand for intermodal container service in Montana, the analysis was ordered around potential demand by a) sector of the economy, b) nature of trading partner (domestic versus international), and c) direction of commodity flow (origin versus destination in Montana). This analysis and its results are described in detail below. The level of detail with which various flows are presented varies by commodity and nature of movement, in a direct reflection of the level of detail presented in the available data. Efforts were made to uniformly report commodity flows by region within the state. Figure 32 shows the regional divisions that were selected for use, which correspond to the regional breakdown used by the National Agricultural Statistics Service to report information on the state’s agricultural production.

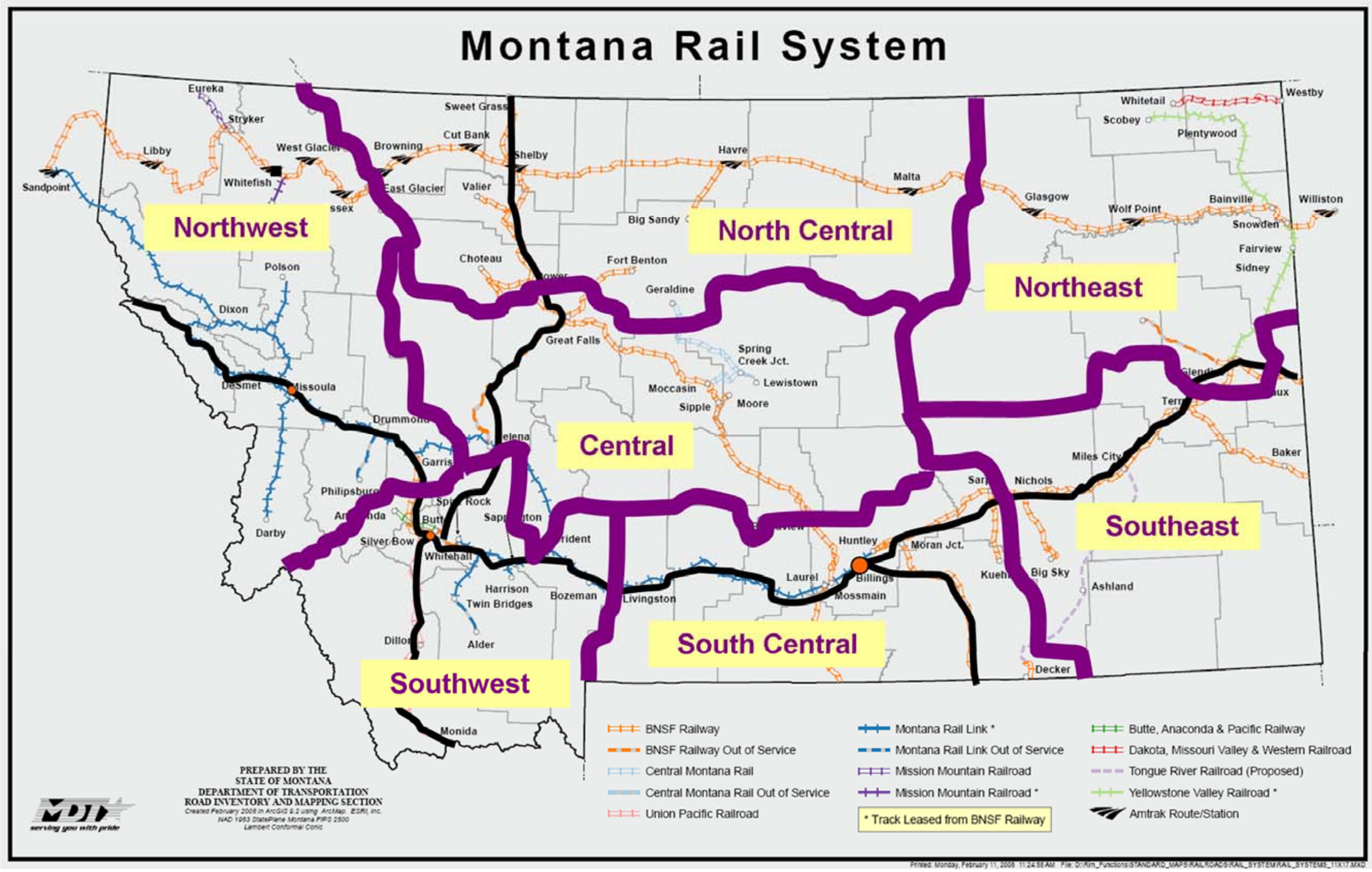


Figure 32: Geographic Regions Used in Container Demand Analysis.

The time frame over which to evaluate commodity flows was problematic. Compilation of economic statistics takes time, so while "up-to-the-minute" information is desirable, it is not always available, particularly at the level of detail sought in this analysis. As various kinds of information were being collected, the year 2005 emerged as the most current year that had generally available data sufficiently detailed to support this analysis. Economic activity can be highly variable from year to year, particularly in a natural resource driven economy like that of Montana. In this situation, using long-term averages could be more desirable than using information from a single year. It was discovered, however, that finding successive years of data broken down in compatible formats was often difficult. Rather than sacrificing the detail available in some of these data sets, the decision was made to generally work with a single year of information.

In performing an analysis of this kind, economic activity and associated transportation demand can be viewed in a variety of contexts. For the purposes of this study, the decision was made to break down the analysis based on major areas of economic activity as identified by their associated gross domestic product (GDP) (see Table 3).

Table 3: Montana's Economy, Percent of GDP by Industry (adapted from U.S. Department of Commerce, undated).

Industry	Percent of GDP
Agriculture	4.3
Mining	4.8
Utilities	3.5
Construction	6.7
Manufacturing	4.6
Wholesale trade	5.5
Retail trade	7.2
Transportation	4.3
Information	2.9
Finance and insurance	4.9
Real estate	11.8
Professional and technical services	4.7
Health care and social assistance	9.0
Government	16.2
Misc	9.5

A final step in these analyses was to infer potential demand for container service from the quantity of commodity being shipped. This final calculation was accomplished based on information available from a variety of sources on current trends in containerization of commodities. Generally, two distinct trends were seen based on the nature of a commodity's origin or destination—i.e., international or domestic. In the international arena, containers were found to be used for a large proportion of intermodal shipments and their use was found to be increasing at a substantial rate (58 percent of all intermodal shipments and increasing at 11 percent per year (Intermodal Association of North America 2005)). Conversely, in the domestic arena, container use was found to account for a smaller proportion of all shipments and to be only nominally increasing (23 percent of all intermodal shipments and increasing at less than one percent per year). In general, more documentation appeared to be available on the characteristics of containerized freight movements in international markets as opposed to domestic. Note that trailers on flat cars accounted for less than 20 percent of all intermodal shipments in 2005, with their use actually decreasing relative to 2004. Therefore, the decision was made to focus the following analyses simply on containers.

2.4.2. Potential Container Demand: Commodities and Products Originating in Montana

Referring to Table 3, the major sectors of Montana's economy that are expected to generate container demands to ship their production to out-of-state markets are agriculture, mining, and manufacturing. Furthermore, the largest industry within manufacturing is wood products (U.S. Department of Commerce, undated). The analysis of potential container demands for commodities and products originating in Montana that is presented below is organized around these industries (agriculture, wood products, mining, and manufacturing), and concludes with an aggregation of the results across these industries.

2.4.2.1. Agricultural Production

Agriculture is one of Montana's largest industries; producing commodities worth over $2 billion per year (see Table 4). The majority of the commodities produced are shipped out of state. Wheat, for example, is the largest commodity grown in the state, with Montana accounting for approximately 10 percent of the nation's total wheat production. In 2005, 81 percent of the state's inventory of 204 million bushels of wheat was shipped out of state (NASS 2006a). The overwhelming majority of Montana's crop production is shipped out of state by rail, while livestock generally is shipped by truck. In 2005, over 6 million tons of Montana's crop production was shipped by rail (American Association of Railroads 2005), including over 95 and 90 percent, respectively, of the wheat and barley that left the state (NASS 2006b). It is among these crop shipments (rather than the livestock shipments) that it was assumed a need and opportunity may exist for containerized transportation service, and the remainder of this discussion is focused in this direction.

Table 4: Agricultural Commodities Produced in Montana, 2006 (USDA Economic Research Service 2006).

Item	Value of Receipts (in thousands $)	Percent of State Total Farm Receipts	Percent of US value
1. Cattle and calves	1,117,144	47.6	2.3
2. Wheat	688,415	29.3	9.4
3. Barley	96,561	4.1	20.6
4. Hay	93,642	4.0	1.9
5. Sugar beets	51,778	2.2	4.3
Other	301,619	12.8	-
All commodities	2,349,159	100	-

Montana's crop production travels to both foreign and domestic markets. As previously mentioned, foreign export activity appears to be more thoroughly documented than domestic freight activity, so this discussion begins with foreign freight movements. The destination of approximately 50 percent of Montana’s crop production is foreign markets (USDA Economic Research Service 2006). A breakdown of this foreign trade is presented in Table 5. The greatest portion of this trade (80 percent by value) is wheat and wheat products.

Table 5: Agricultural Commodities Exported from Montana to Foreign Markets, 2006 (USDA Economic Research Service 2006).

Item	Rank Among States	Value (in thousands $)
1. Wheat and products	3	451,700
2. Feeds and fodders	18	39,600
3. Vegetables and preparations	17	39,600
4. Feed grains and products	28	23,400
Other	36	13,000
Total		567,000

Movement specifically of agricultural commodities to foreign countries through ports in the Pacific Northwest collectively represents the largest and best documented agricultural export activity in Montana. Such commodity movements also represent one of the largest potential demands for intermodal container service out of Montana. The primary agricultural commodities involved in this trade are wheat, barley, pulse crops and oilseeds. The estimated fraction of Montana’s production of these commodities that is shipped to and through Pacific Northwest ports is shown in Table 6, which also includes the attendant amount of these commodities estimated to originate from each region of the state. Referring to Table 6, wheat is overwhelmingly the largest agricultural commodity shipped to these ports, amounting to 3,152,822 US tons (55 percent of total state supply) in 2005. The other crops considered collectively make up only 248,983 US tons of freight annually.

Table 6: Estimated Annual Commodity Exports through Pacific Northwest Ports by Region of Origin.

Commodity	Percent Shipped to Pacific Northwest Ports	Amount (US tons)[+]							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
All Wheat	54.6%[a]	37,379	1,485,764	874,348	403,865	69,140	172,301	110,024	3,152,822
All Barley	12.2%[b]	1,845	68,389	10,386	15,887	5,572	10,714	1,985	114,778
All Pulse	59.0%[c]	-	11,741	109,445	1,991	620	3,570	4,292	131,659
All Oilseeds*	20.0%[d]	-	138	2,047	-	-	-	361	2,546

[+] calculated by multiplying total production for each region reported by the NASS (2006c) by the percentage in column two
[*] exclusive of Canola
[a] based on information published by the Montana Wheat and Barley Committee (2006)
[b] based on information published by the U.S. Grain Council (2006)
[c] based on information published by Janzen et al. (2006)
[d] based on information published by Johnson and Jimmerson (2003) for safflower

Relative to potential intermodal container demand, traditional bulk items such as these commodities are increasingly being shipped by container. Identity-preserved grains are an excellent example of this trend (Vachal and Reichert 2001). Based on national trends, it is estimated that at least 5, 5, 70, and 35 percent, respectively, of the wheat, barley, pulse crop and oilseed exports bound to ports in the Pacific Northwest from Montana would be containerized, if such service was available (Vachal and Reichert 2001; USDA 2007; Vachal et al 2003).

Based on these containerization rates and the quantity of commodities moving along this corridor as reported in Table 6, potential container demands to move Montana's agricultural crops to Pacific Northwest ports were calculated. The results of these calculations, expressed in TEU/year, are presented in Figure 33. In completing these calculations, it was simply assumed that the commodities being moved were weight limited in nature (i.e., weight capacity of the container would be reached before its volumetric capacity), and that the payload capacity of a TEU is 43,250 lbs. The bulk unit weight of these commodities typically is around 35 lbs/ft^3, which is consistent with the assumption that container capacity will be constrained by weight rather than by volume.

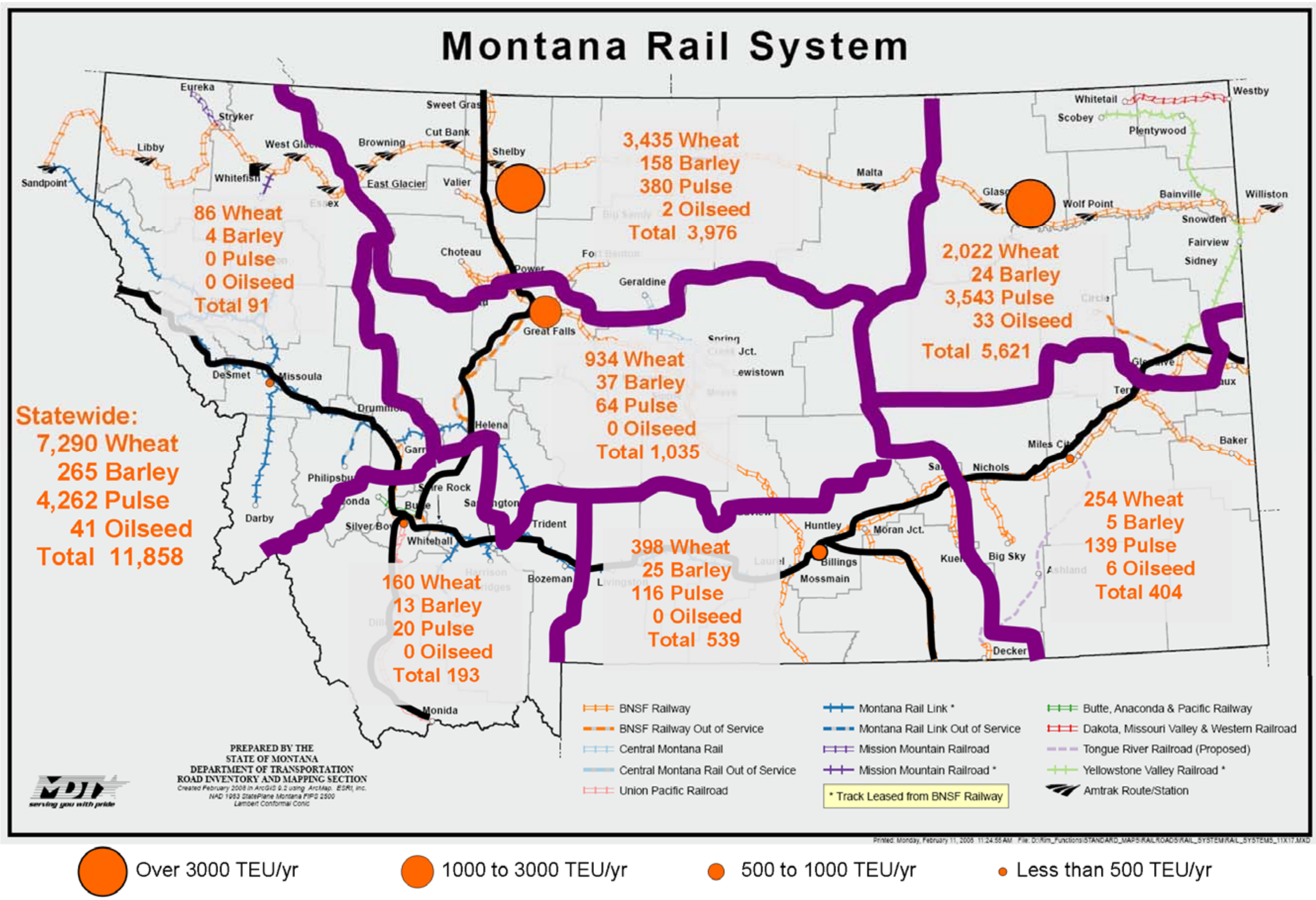


Figure 33: Summary of Potential Container Demand (TEU/yr) for Agricultural Commodities Moving Through Pacific Northwest Ports.

Referring to Figure 33, the total demand associated with agricultural exports through Pacific Northwest ports is estimated to be 11,858 TEU/yr. Note that these results are generally consistent with those determined in a study on container use in Canada, which estimated container demands of 21,000 and 13,000 TEU/yr, respectively, to ship agricultural commodities to Vancouver, Canada, from Alberta and Saskatchewan (Marinova Consulting 2006). The greatest projected container demand is for wheat (7,290 TEU/yr), followed by pulse (4,262 TEU/yr). Geographically, the greatest projected container demands are in the Northeast (5,621 TEU/yr) and North Central (3,976 TEU/yr) regions of the state, followed by the Central (1,035 TEU/yr) region.

The demand for transportation services for agricultural commodities historically has been seasonal in nature, with peak demand corresponding to the period following fall harvest. The exact nature of the seasonality in demand is difficult to capture as it is influenced by a myriad of factors, including the nature of the product (i.e., level of degradation in quality over time after harvest, if any), the availability of storage facilities, commodity prices, etc. Traditionally transportation demand for grain peaked from November through February at approximately twice the level of demand seen throughout the rest of the year (Vachal and Reichert 2001). Based on data on rail deliveries of grain to Pacific Northwest ports in 2003 and 2004, while significant variations are seen by month, these variations are no longer as closely tied to the traditional harvest season (USDA 2005). While grain shipments may decline in the summer and early fall months each year (e.g., June to September, or August to October), it is difficult to identify strong patterns in the time of peak shipments during the rest of the year.

Destinations by country for Montana crops that are exported through Pacific Northwest ports are given in Table 7. The indicated numbers of containers were calculated by multiplying the fraction of each commodity traveling to each country by the total TEU by commodity given in Figure 33. Referring to Table 7, the Philippines is the single largest destination of containers (2,802 TEU/yr), followed by Japan (2,542 TEU/yr) and Korea (1,458 TEU/yr).

Table 7: Estimated Annual Container Volume by Agricultural Commodity and Country of Destination.

Commodity	Destination	Percent of Pacific Northwest Exports	No. of TEU
Wheat[a]	Japan	33%	2,406
	Philippines	25%	1,822
	Korea	20%	1,458
	Taiwan	13%	948
	Other	9%	656
	All	100%	7,290
Barley[b]	Japan	44%	117
	Saudi Arabia	44%	117
	Taiwan	8%	21
	Other	4%	11
	All	100%	265
Pulse[c]	Spain	24%	1023
	Philippines	23%	980
	Ethiopia	20%	852
	India	15%	639
	Sudan	10%	426
	Pakistan	8%	341
	All	100%	4,262
Oilseeds[d]	Japan	46%	19
	Belgium	15%	6
	Netherlands	10%	4
	Germany	5%	2
	China	3%	1
	Other	21%	9
	All	100%	41

[a] based on information published for Montana by the World Organization of Resource Councils (2002)
[b] based on national information published by the U.S. Grain Council (2006)
[c] based on information published by Janzen et al. (2006) and World Port Source (2007)
[d] based on information published by Johnson and Jimmerson (2003) for safflower

Outside of the shipments to Pacific Northwest ports, the majority of the remainder of Montana's agricultural production is headed to domestic markets. Detailed information on domestic freight flows of Montana's agricultural commodities is sparse. While the Freight Analysis Framework (FAF) developed by FHWA (FHWA 2007) reports origin and destination data by state and commodity, data specifically for Montana's agricultural commodities was found to conflict with information available from other sources (notably, NASS), and therefore was only used for limited purposes in these analyses.

Approximately 25 percent of Montana's wheat and barley production is shipped to domestic markets, with the general destinations shown in Table 8. While the majority of domestic wheat shipments move west, the majority of domestic barley shipments move east. Specific domestic destinations for Montana's cereal grains (which primarily are wheat and barley) mentioned in FAF include Washington, Oregon, and California to the west, and North Dakota and Minnesota to the east. Almost no information was found in the literature on the disposition of Montana's pulse crop and oilseed production, outside of the information presented above on Pacific Northwest export activity. In the absence of such information, it was assumed that a) in-state consumption of pulse crops and oilseeds is low (say, 10 percent of total production), and b) 60 percent of these commodities move west and 40 percent move east (generally recognizing possible geographical advantages of western as opposed to eastern markets).

Table 8: Estimated Annual Shipments of Crop Commodities to Domestic Destinations.

Commodity	Domestic Destination	Percent of Commodity Shipped to Destination
All Wheat[a]	West	18%
	East	5%
	other/unknown	2%
All Barley[b]	West	4%
	East	18%
	other/unknown	5%
All Pulse[c]	West	12%
	East	8%
All Oilseeds[c]	West	42%
	East	28%

[a] based on information published by the NASS, 2006a, 2006b, 2007a
[b] based on information published by the NASS, 2006a, 2007a
[c] based on assumptions given in body of this report

Estimated commodity shipments to domestic markets to the west from each region of the state are given in Table 9. In deriving the values in Table 9, the amount of each commodity shipped west was simply assumed to be distributed across the state in proportion to its basic production by region. Relative to the amount of these commodities potentially shipped by container, only limited information was found on containerization rates for domestic freight shipments.

Table 9: Estimated Annual Shipments of Crop Commodities to Domestic Destinations—West

Commodity	Percent Shipped West to Domestic Destinations+	Amount (US tons)							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
All Wheat	18.0%	12,323	489,812	288,247	133,142	22,793	56,803	36,272	1,039,392
All Barley	4.0%	605	22,423	3,405	5,209	1,827	3,513	651	37,632
All Pulse	12.0%	–	2,388	22,260	405	126	726	873	26,778
All Oilseeds*	42.0%	–	2,116	6,529	–	–	–	758	9,403

* exclusive of Canola
+from Table 8
– indicates less than 500 acres harvested

Overall, at least twice as many movements appear to be containerized for international shipments relative to domestic shipments (Intermodal Association of North America 2005). Statistics from Canada for the year 2003, however, showed that approximately 8 to 10 percent of all the international freight handled was containerized, while only 0.5 to 1 percent of the domestic freight handled was containerized (Statistics Canada 2003). Based on this information, domestic containerization rates were assumed to be one-tenth of the rates used for international shipments. The annual number of TEU potentially required to move these commodities, shown in Figure 34, was simply calculated as the total weight of each commodity to be moved, divided by the payload capacity of a container (assuming the cargo is weight limited, and container capacity is 43,250 lbs).

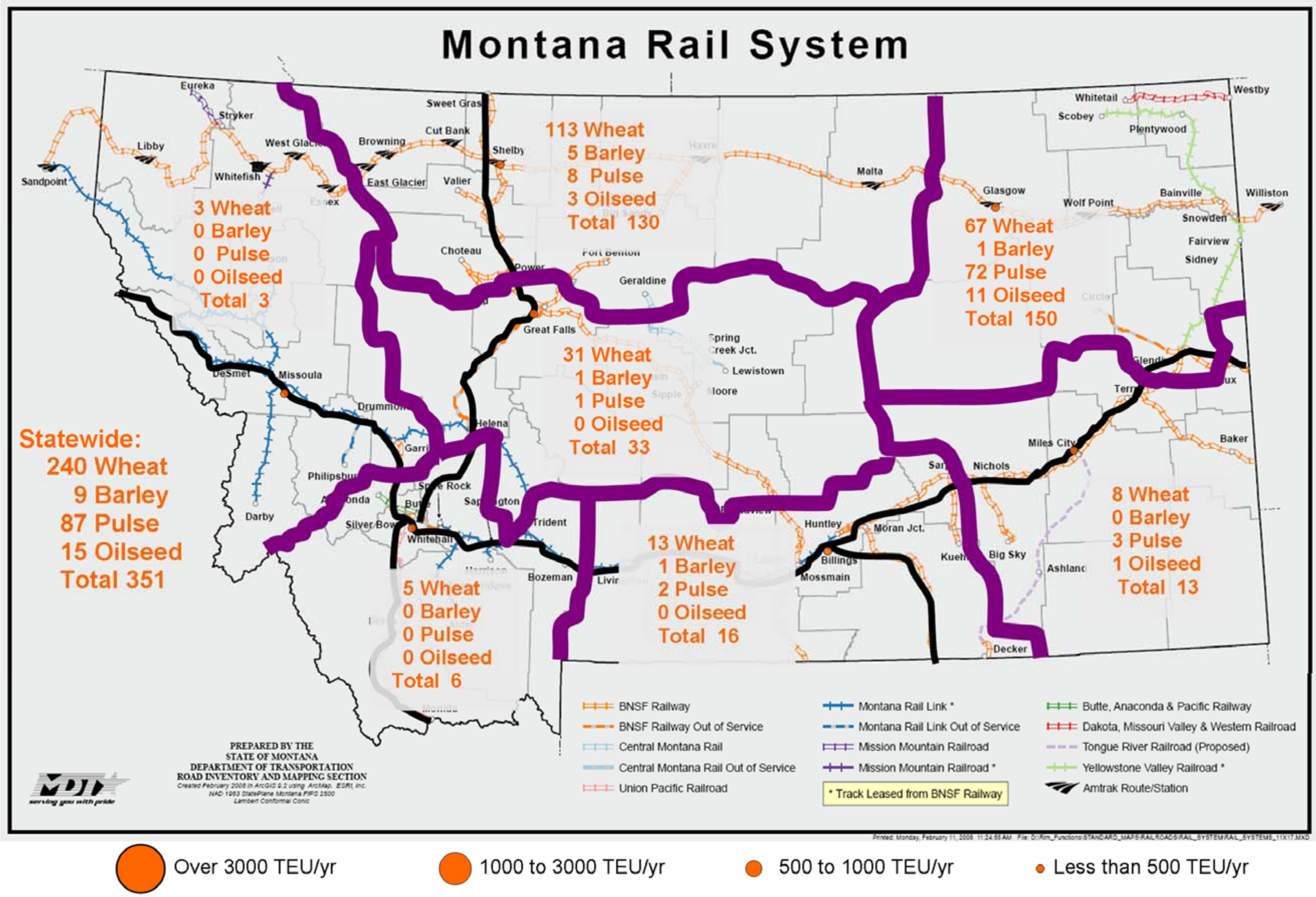


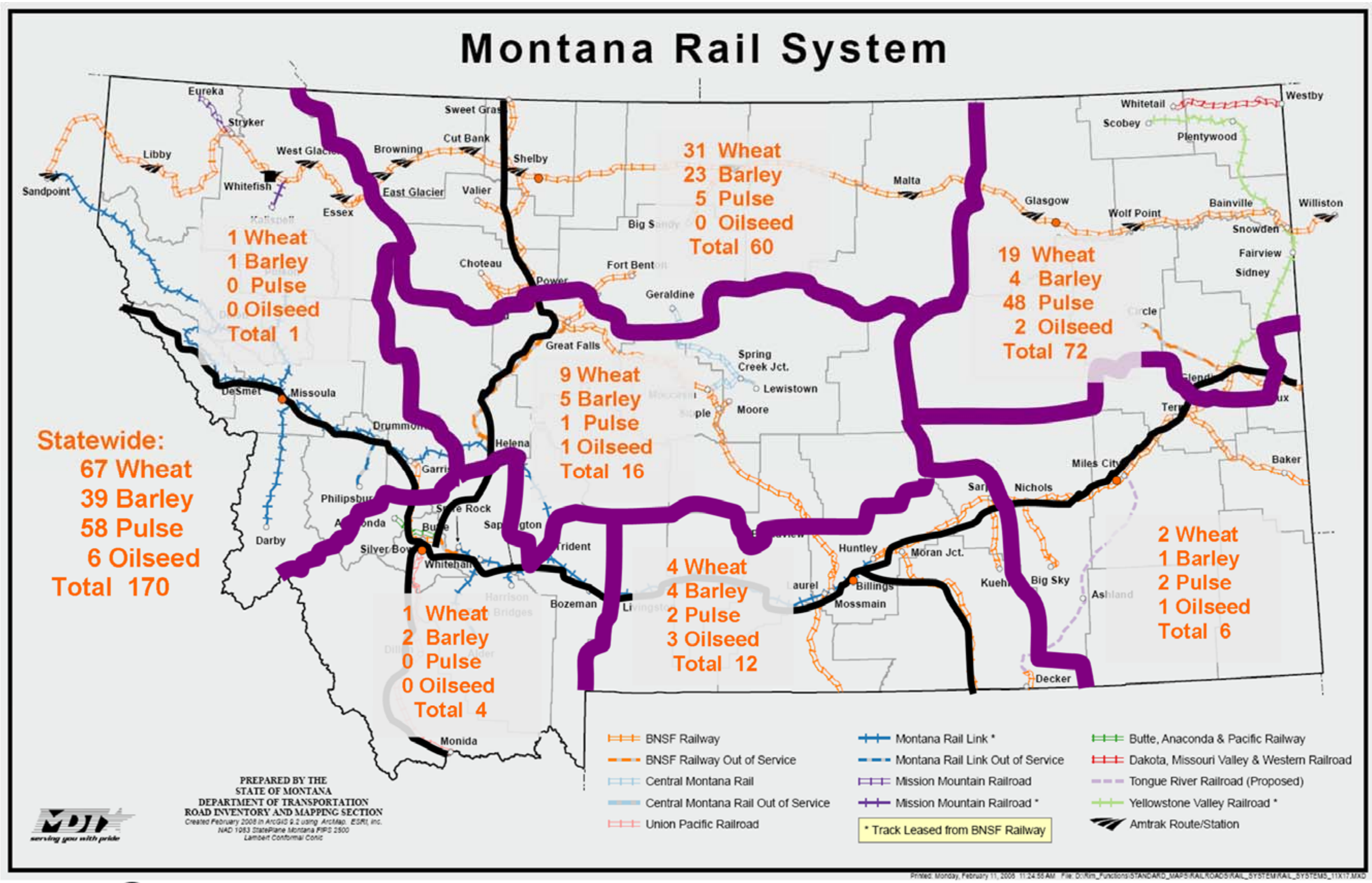
Figure 34: Summary of Potential Container Demand (TEU/yr) for Agricultural Commodities Moving to Domestic Markets to the West.

The results for similar calculations performed for estimated commodity shipments to the east from each region of the state are given in Table 10 and Figure 35.

Table 10: Estimated Annual Shipments of Crop Commodities to Domestic Destinations—East.

Commodity	Percent Shipped East to Domestic Destinations[+]	Amount (US tons)							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
All Wheat	5.0%	3,423	136,059	80,069	36,984	6,332	15,779	10,076	288,720
All Barley	18.0%	2,722	100,902	15,323	23,440	8,221	15,807	2,929	169,344
All Pulse	8.0%	–	1,592	14,840	270	84	484	582	17,852
All Oilseeds*	28.0%	–	–	1,148	434	–	1,694	630	3,906

[*] exclusive of Canola
[+] from Table 8
– indicates less than 500 acres harvested



Over 3000 TEU/yr · 1000 to 3000 TEU/yr · 500 to 1000 TEU/yr · Less than 500 TEU/yr

Figure 35: Summary of Potential Container Demand (TEU/yr) for Agricultural Commodities Moving to Domestic Markets to the East.

Referring to Figure 34 and Figure 35, total container demand associated with agricultural shipments to domestic markets is estimated to be 521 TEU/yr (specifically, 351 TEU/yr westbound, 170 TEU/yr eastbound). The relative distribution of container demand by commodity and region of the state are the same as observed for commodities exported to and through Pacific Northwest ports. That is, the greatest projected container demand is for wheat (307 TEU/yr), followed by pulse crops (144 TEU/yr). Geographically, the greatest projected container demands are in the Northeast (222 TEU/yr) and North Central (190 TEU/yr) regions of the state, followed by the Central (49 TEU/yr) region of the state.

2.4.2.2. Wood Products

The Montana forest products industry generates over a billion dollars per year in sales (NASS 2007b). In considering the following analysis of the transportation related activities of this industry, it is important to note that these activities do not appear to be as thoroughly documented as are the activities in the agricultural sector; thus, the analysis below involves more assumptions in its execution and the results are less detailed than for the analysis offered above on agricultural commodities. Correspondingly, while the results of this analysis are believed to be reasonably accurate at a regional level, care should be exercised in attempting to use them in any more detailed sense. In any event, using data available from a variety of sources, the estimate of forest product production by region of the state presented in Table 11 was developed for the year 2005. This breakdown by product and region of origin is specifically based on production levels by county for the year 1998 (Keegan et al. 2001) and for the entire state for the year 2001 (Barney and Worth 2001), adjusted to the year 2005 based on the change in annual total production in 2005 versus 1998 (Keegan and Morgan 2005). While the information presented in Table 11 is fairly detailed in appearance, it is important to note that the breakdown presented for the specific products from each region was generated by multiplying total wood product production for the region by the relative proportion of each product produced statewide.

Eighty-nine percent, by value, of the wood products produced in Montana were shipped to out-of-state destinations (Keegan et al. 2001). It was assumed, in the absence of any other information on the subject, that this same fraction of total wood product production by weight was shipped out of state. Note that 65 percent of the wood products shipped out of state moved by rail (AAR 2005).

Montana's wood products travel to both foreign and domestic markets. Unlike the agricultural commodities market, the majority of Montana's forest products are shipped to domestic markets. Less than 1 percent of Montana's forest products are transported to Pacific Northwest ports to be sent overseas. Nonetheless, and similar to the situation for agriculture, there is considerable information available on wood product export activity through Pacific Northwest ports, and it was still possible to develop a fairly detailed picture of the disposition of these products as they move from Montana, through Pacific Northwest ports, to their ultimate foreign destinations. The estimated quantities of forest products that move in this fashion by region of origin in Montana are listed in Table 12. The information presented in this table is based on the production estimates in Table 11, coupled with additional information on Pacific Northwest port movements reported by Keegan and his colleagues (2001).

Table 11: Estimated Annual Forest Product Production by Region of Origin (based on information from Keegan et al. 2001; Keegan and Morgan 2005; Barney and Worth 2001).

Forest Product	Amount (US tons)							
	Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
Lumber	812,771	0	0	114,221	28,856	21,642	22,844	1,000,334
Veneer	135,659	0	0	19,065	4,816	3,612	3,813	166,965
Pulp	53,940	0	0	7,580	1,915	1,436	1,516	66,388
Post	14,784	0	0	2,078	525	394	416	18,195
House Logs	10,753	0	0	1,511	382	286	302	13,235
Other	2,252	0	0	316	80	60	63	2,772

Table 12: Estimated Annual Forest Product Exports through Pacific Northwest Ports by Region of Origin (based on information from Keegan et al. 2001; Keegan and Morgan 2005; Barney and Worth 2001).

Forest Product	Percent Shipped to Pacific Northwest Ports	Amount (US tons)							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
Lumber	0.138%	1,124	0	0	158	40	30	32	1,384
Veneer	0.014%	19	0	0	3	1	1	1	23
Pulp	0.239%	129	0	0	18	5	3	4	158
Post	0.013%	2	0	0	0	0	0	0	2
House Logs	0.099%	11	0	0	2	0	0	0	13
Other	0.022%	1	0	0	0	0	0	0	1

A significant and increasing proportion of wood products shipped through Pacific Northwest ports is being containerized (Tacoma-Seattle OSC 2003), with the estimated containerized volume ranging between 38 and 87 percent of all wood products shipped, depending on the specific product being considered, the year, and the source of the information (see Table 13). Based on the values reported in Table 13 and with due consideration of their significant variability, the decision was made to broadly apply a containerization rate of 75 percent to lumber and veneer products, and a rate of 50 percent to all other products. The corresponding projected amount of each product that potentially would be containerized annually by region of origin if such service was available is presented in Table 14.

Table 13: Containerization Rates for Forest Products Shipped to the Pacific Northwest.

Forest Product	Percent Containerized by Source of Information			
	Tacoma–Seattle OSC (2003)		Vancouver Port Authority (2005)	Marinov Consulting (2006)
	1997	2002		
Lumber	58%	87%	64%	-
Plywood	56%	79%	-	-
Wood pulp	38%	57%	43%	50%
Paper/paperboard	93%[a]	97%[a]	-	-

[a] the source of these values (Tacoma–Seattle OSC 2003) indicated that they may not be representative of the industry

Table 14: Estimated Annual Containerized Forest Product Exports through Pacific Northwest Ports by Region of Origin.

Forest Product	Percent Containerized	Amount (US tons)							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
Lumber	75%	843	0	0	118	30	22	24	1,038
Veneer	75%	14	0	0	2	1	0	0	18
Pulp	50%	64	0	0	9	2	2	2	79
Post	50%	1	0	0	0	0	0	0	1
House Logs	50%	5	0	0	1	0	0	0	7
Other	50%	0	0	0	0	0	0	0	0

The potential containerized freight volumes reported in Table 14 that would move from various areas of the state to Pacific Northwest ports for export overseas have been converted to TEU in Figure 36 by assuming that the cargo by nature is weight limited, and that the payload capacity of a TEU is 43,250 lbs. The unit weights of these products appear to be in the range of 30 to 40 lbs/ft^3. At lower unit weights, container capacity starts to be restricted by volume rather than weight, and the assumption that weight controls capacity may result in a nominal under calculation of TEU.

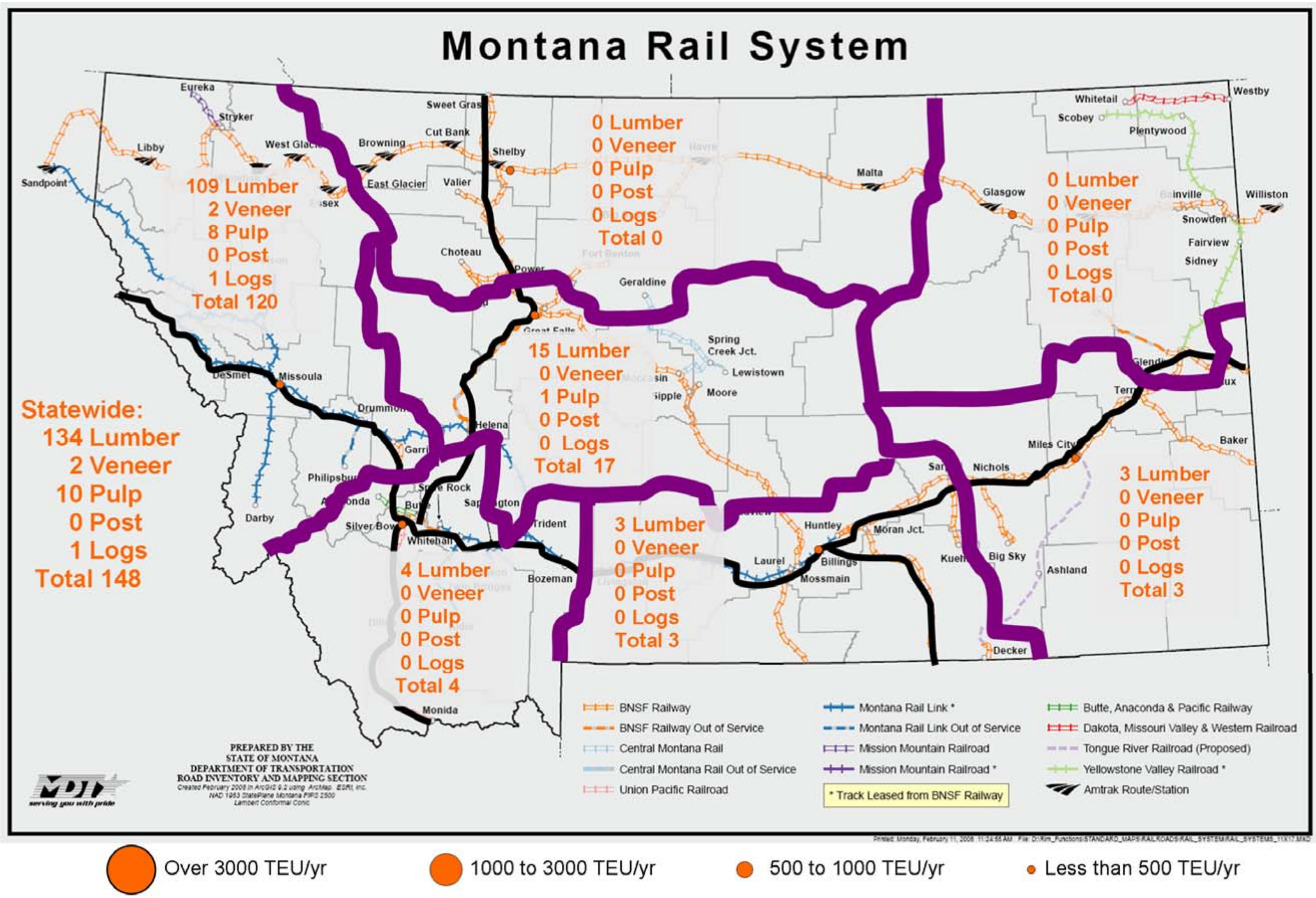


Figure 36: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Pacific Northwest Ports.

Referring to Figure 36, 148 TEU of wood products potentially would be shipped annually from Montana to Pacific Northwest ports for export overseas. The overwhelming majority of these shipments would be lumber (134 TEU/yr), distantly followed by pulp (10 TEU/yr), and the overwhelming majority of these shipments would originate in the Northwest part of the state (120 TEU/yr), distantly followed by the Central part of the state (17 TEU/yr). The only information found on the country of destination of these products is reported in Table 15. This information simply consists of the fraction of the total wood products shipped through Pacific Northwest ports that travel to various countries (with no breakdown by specific product). The majority of Montana's wood products that move through Pacific Northwest ports travel to Japan (75 percent). The remaining exports travel to a variety of countries (Table 15), with no single country receiving more than 10 percent of the total exports.

Table 15: Estimated Annual Container Volume by Country of Destination (based on information from Easton 2005).

Destination	Percent of Pacific Northwest Exports	No. of TEU
Japan	75%	40
Korea	10%	5
China	9%	5
Hong Kong	3%	1
Taiwan	3%	1

Estimated domestic shipments of Montana forest products from various regions of the state are given in Table 16. Recall that the primary markets for Montana's wood products are domestic rather than foreign. As was the case for wood product exports through Pacific Northwest ports, the information presented in Table 16 is based on basic production estimates presented in Table 11, coupled with additional information on domestic wood product movements presented by Keegan and his colleagues (2001). Potential container usage associated with these product movements was calculated based on estimates of domestic containerization rates for shipment by product type. As mentioned previously, containerization rates for domestic freight typically are lower than for international freight. In the absence of other data available on the subject (and as was done previously for agricultural commodities), containerization rates for domestic wood product shipments were estimated to be one-tenth of the international rates, based on information available on Canadian container shipments (Statistics Canada 2003). Note that a possible additional consideration for this analysis is that only 65 percent of wood products leaving the state move by rail. Some of the markets being served are sufficiently close to Montana that the products may be moved by truck rather than rail (e.g., Portland and Seattle in the Far West are approximately 750 miles from central Montana; Denver and Salt Lake City in the Rocky Mountain region are within 700 and 450 miles of central Montana, respectively). While ideally the volume of potential container movements to each regional destination would be appropriately adjusted based on these considerations, insufficient information was readily available to determine and apply this refinement to these analyses.

Table 16: Estimated Wood Product Shipments Annually to Domestic Markets by Region of Origin (based on information from Keegan et al. 2001; Keegan and Morgan 2005; Barney and Worth 2001).

Forest Product	Amount (US tons)							
	Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
Lumber	51,022	0	0	7,170	1,811	1,359	1,434	62,796
Veneer	8,516	0	0	1,197	302	227	239	10,481
Pulp	2,323	0	0	326	82	62	65	2,859
Post	399	0	0	56	14	11	11	492
House Logs	405	0	0	57	14	11	11	499
Other	101	0	0	14	4	3	3	124
Total	62,766	0	0	8,821	2,228	1,671	1,764	77,251

The annual number of TEU potentially involved in moving the products listed in Table 16 is presented in Figure 37. As was done for international shipments, the number of TEU required was simply calculated as the weight of product to be moved by container divided by the payload capacity of a container (assuming the cargo is weight limited, and container capacity is 43,250 lbs).

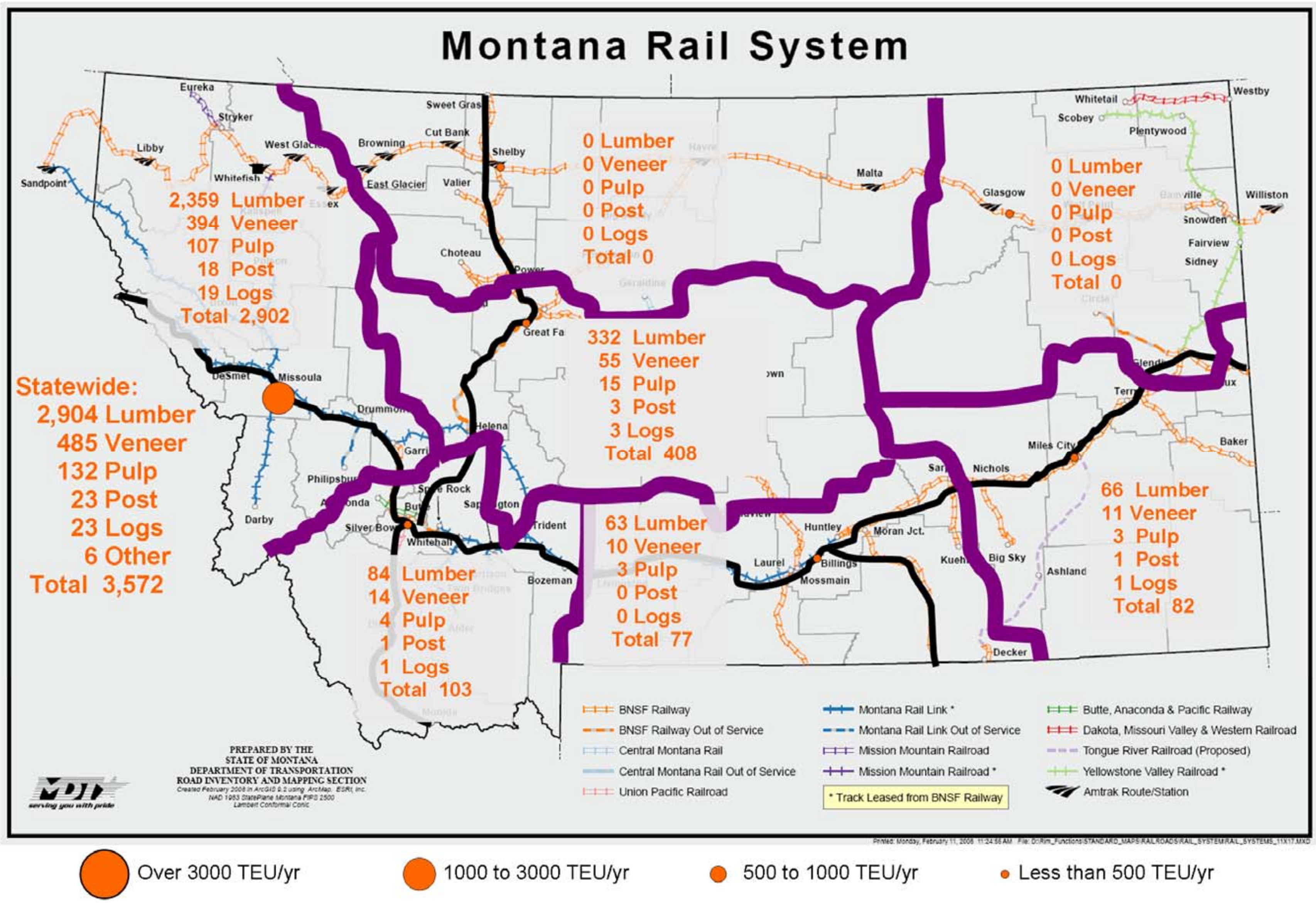


Figure 37: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Domestic Markets.

Referring to Figure 37, the greatest number of potential TEU for wood products originates in the Northwest region of the state (2,902 TEU/yr), distantly followed by the Central region (408 TEU/yr). Using the results in Figure 37 and information on the destination of domestic freight shipments by region of the country as determined by Keegan and his colleagues (2001), potential wood product TEU activity by origin in the state and destination across the country was determined (see Figure 38 through Figure 41). The primary domestic destinations for Montana’s wood products include the North Central, Southern, Rocky Mountain and Far West regions of the country (1,265; 911; 678; and 514 TEU/yr, respectively). As may be obvious, this pattern of shipments varies from year to year. Notably, for example, a significant increase in lumber shipments to the southeastern part of the country was observed following Hurricane Katrina.

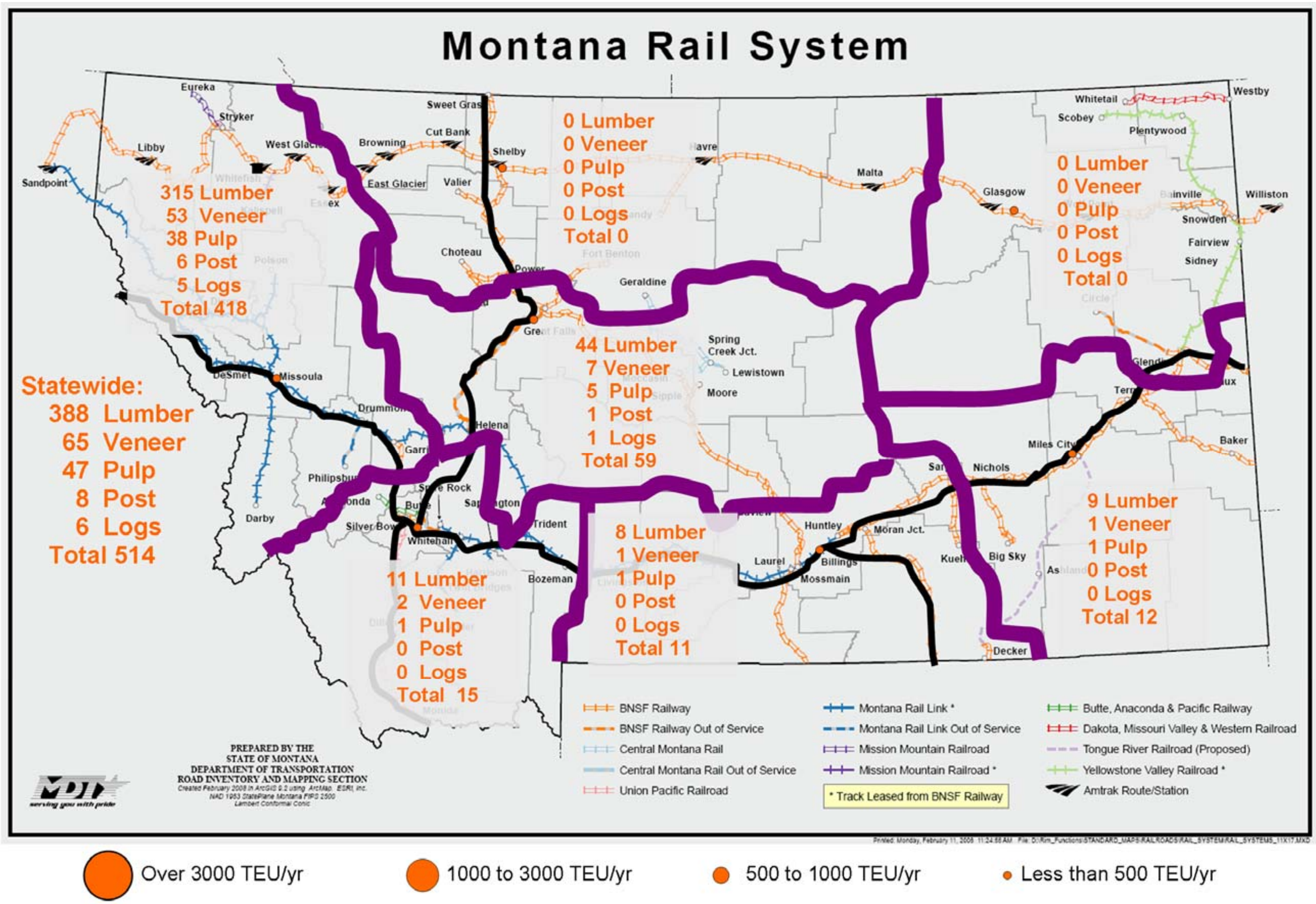


Figure 38: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Domestic Markets (Destinations to the West).

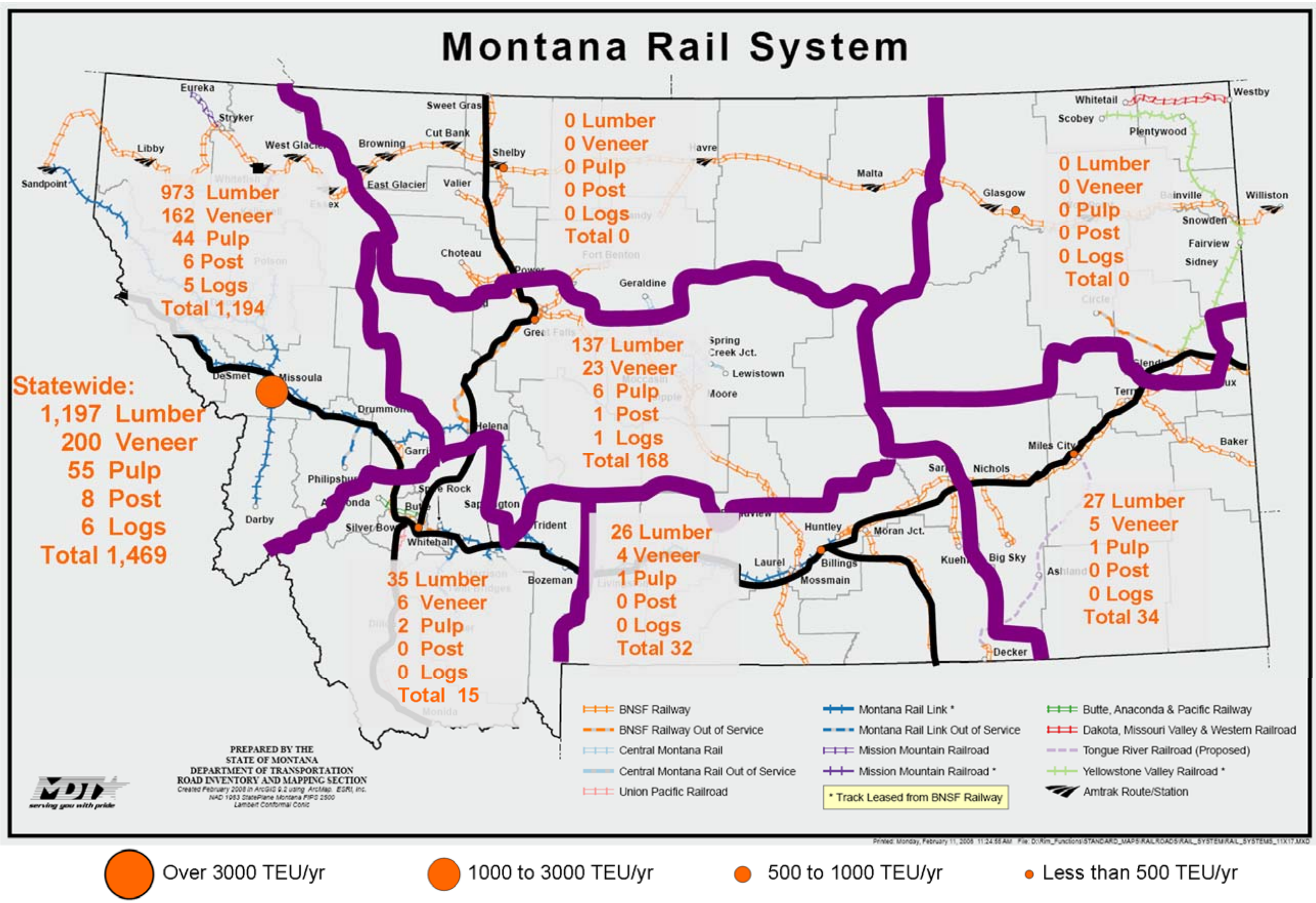


Figure 39: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Domestic Markets (Destinations to the East).

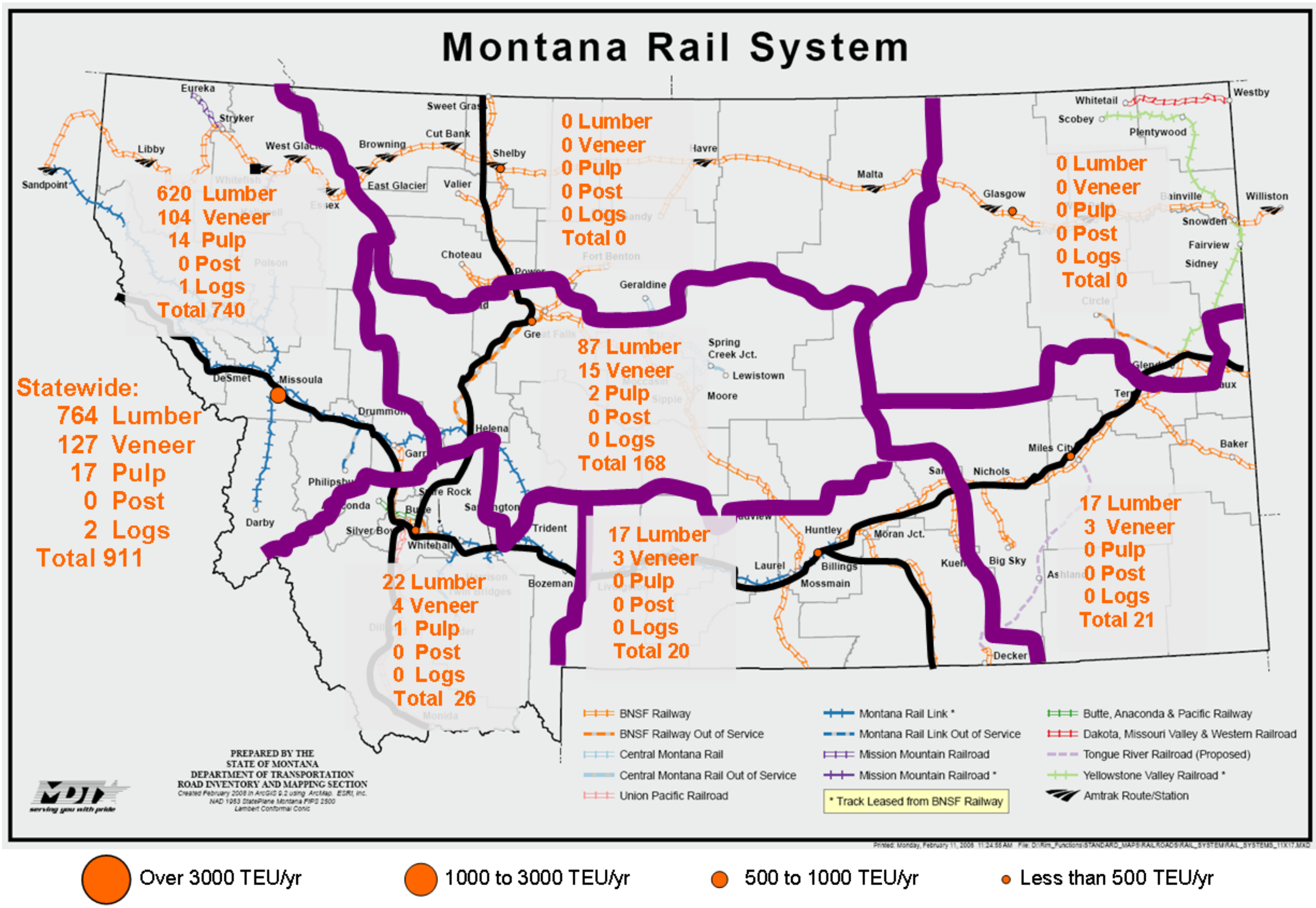


Figure 40: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Domestic Markets (Destinations to the Southeast).

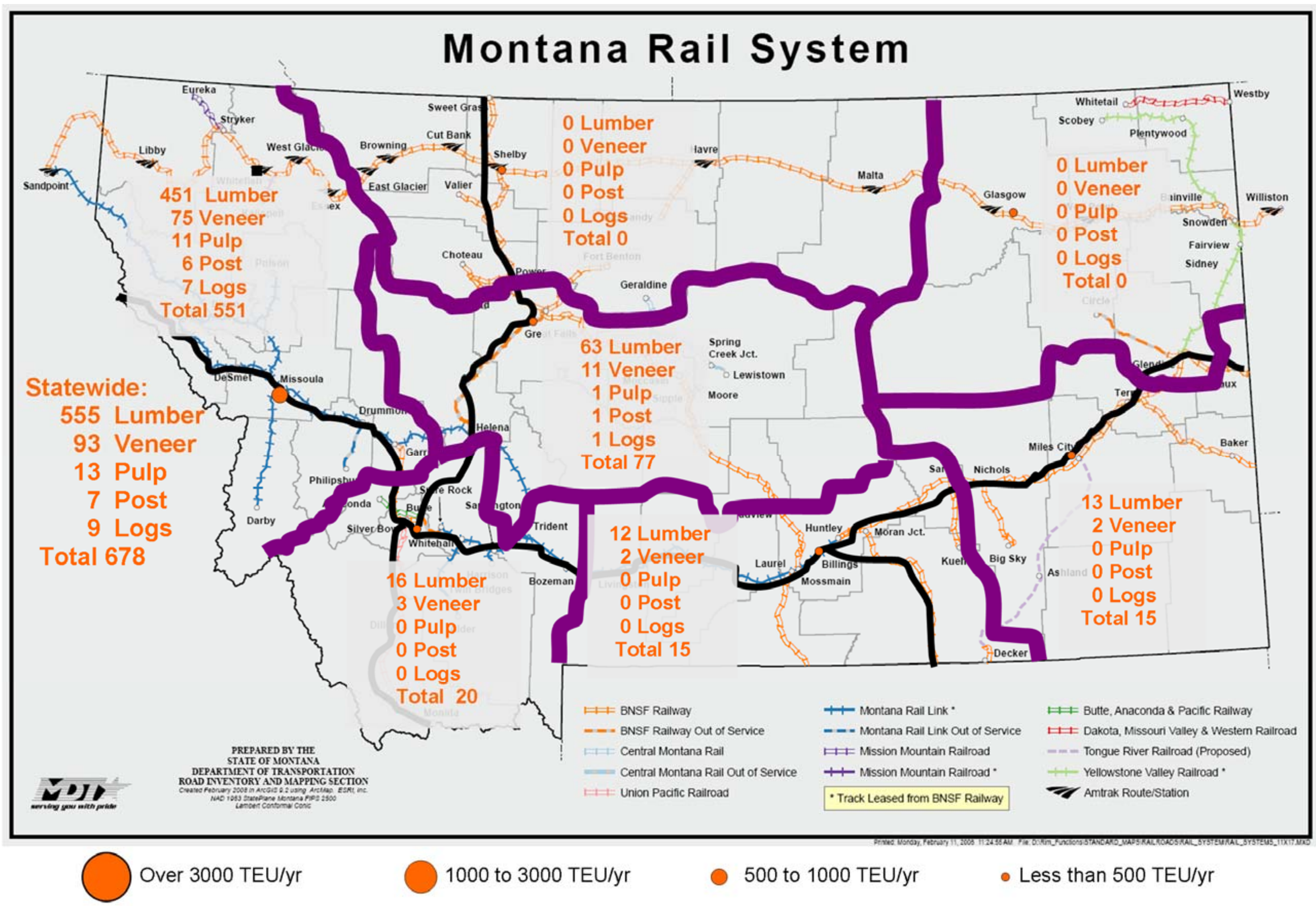


Figure 41: Summary of Potential Container Demand (TEU/yr) for Wood Products Originating in Montana Destined for Domestic Markets (Destinations in the Rocky Mountains).

2.4.2.3. Mining

Another major sector of Montana’s economy that could contribute to potential demand for containerized freight service is mining. In the year 2005, the value of Montana’s mine production exceeded $1 billion (Moore Economics 2007). Coal accounted for $390 million of this production (Moore Economics 2007), with the remainder made up of molybdenum, copper, platinum, palladium, silver, gold, talc, and other minerals (United States Geological Survey 2007a). For many of these commodities, a relatively small number of companies are involved in their production. As a result, only limited quantitative information is available in public databases on mining production by commodity and region of the state, as such information could incidentally disclose proprietary information on the operations of specific companies. Further complicating the situation is the apparent complexity of the mineral commodities market in general, perhaps as typified by the situation wherein the United States is both a substantial exporter and importer of many of these commodities, which additionally are available in many forms (e.g., based on degree of processing and grade). Nonetheless, based on information contained in the United States Geological Survey’s mineral publications (notably, Mineral Yearbooks (2007a) and Mineral Production Summaries (2007b)), the estimates of commodity production by region of the state presented in Table 17 were determined. Omitted from Table 17 are commodities not expected to be containerized to any degree (i.e., coal and copper concentrate), and commodities for which insufficient data was available to estimate production levels (i.e., silver and molybdenum).

Table 17: Estimated Annual Mine Output by Region of Origin (based on information from the United States Geological Survey, 2007a, 2007b).

Commodity		Amount							
		Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
Clays									
	bentonite (metric tons)	0	0	0	0	0	0	106,000	106,000
Precious metals									
	gold (kg)	W	0	0	W	3,900	0	0	3,900
	palladium (kg)	0	0	0	0	0	13,300	0	13,300
	platinum (kg)	0	0	0	0	0	3,920	0	3,920
Non-precious metals									
	zinc (metric tons)	0	0	0	0	0	12,500	0	12,500
Other									
	talc (metric tons)	0	0	0	0	321,000	0	0	321,000
W=Withheld to avoid disclosing company proprietary data									

Almost all of Montana's mining production is shipped out of state. As was done previously for agricultural commodities and wood products, the disposition of Montana's mine production was evaluated separately for foreign versus domestic markets, although in both cases, even the most general data by specific commodity and destination was sparse. In this case, sufficient information was found to estimate foreign versus domestic shipments for only two mineral commodities—bentonite and talc (see Table 18).

Table 18: Annual Bentonite and Talc Shipments, Foreign vs. Domestic Destinations (based on information from the United States Geological Survey, 2007a, 2007b).

Commodity	Foreign Exports (US tons)	Domestic Shipments (US tons)
Bentonite	20,988	95,612
Talc	81,213	271,887

Talc is mined and processed in the Southwest region of the state, while bentonite is primarily mined and processed in the Southeast region of the state. The primary foreign destination for both these commodities as reported by the United States Geological Survey is Canada (see Table 19), although some of these shipments may actually simply pass through Canadian ports on their way overseas. Whether these commodities travel by rail, and their potential for containerization, depends on their specific destination.

Table 19: Annual Bentonite and Talc Exports, Country of Destination (based on information from the United States Geological Survey, 2007a, 2007b).

Commodity	Country	Percent of Total Exports
Bentonite	Canada	40%
	Japan	17%
	Saudi Arabia	6%
	Other	37%
	Total	100%
Talc	Canada	47%
	Mexico	11%
	Belgium	5%
	Japan	3%
	Other	34%
	Total	100%

Once again, the information available in this regard lacked the detail required to factor it into this analysis. Thus, a containerization rate of 6 percent was estimated for both of these commodities when shipped internationally. This rate is based on containerization rates reported in Canada in 2003 for commodities of this type (Statistics Canada 2003), with due consideration of the increase in containerization rates over time (i.e., from 2003 to 2005). As has been done previously, assuming a weight-constrained product and a container capacity of 43,250 pounds, the potential container demands for international shipment of these two commodities, bentonite and talc, is 58 and 225 TEU/yr, respectively. Based on the various foreign destinations for these two commodities given in Table 19, it was assumed that 6 and 37 percent, respectively, of foreign talc and bentonite exports move from Montana through Pacific Northwest ports. The resulting potential container demands for this freight (once again, assuming a 6 percent containerization rate), are 21 and 13 TEU/yr for bentonite and talc, respectively. Alternatively, reviewing information from the United States International Trade Commission (2008) on commodity flows by port, it was estimated that up to 40 percent of Montana talc exported to foreign countries could move through Pacific Northwest ports. At a 6 percent containerization rate, this freight flow corresponds to 90 TEU/yr, and the decision was made to move ahead with this value (as opposed to the 13 TEU/yr estimated above).

Delineating the domestic destinations of Montana's mineral commodities by specific location and magnitude was generally not possible based on the information available in the public domain. Relative to commodities for which containerization was believed to be viable, and for which at least some data was available (i.e., bentonite and talc), it was thought that some inferences on destination could possibly be drawn based on commodity use. In the case of bentonite and talc, their uses are sufficiently diverse, from processed foods to industrial plastics, that this approach yielded little insight into their probable domestic destinations. Based on information in FAF (FHWA 2007) for nonmetallic mineral shipments originating in Montana, it was concluded that shipments to eastern and western destinations are approximately equal in magnitude, that travel distances generally exceed 700 miles, and that 80 percent of the shipments move by rail (note that, once again, some discrepancies were seen between the information reported in FAF and that obtained from other sources). Based on these observations, and in keeping with the relatively general nature of this analysis of mine commodity shipments out of Montana, the decision was made to simply assume shipments to eastern and western markets were equal in magnitude. As done previously, the potential container demand related to these shipments was calculated by assuming a containerization rate equal to one-tenth of the international rate, in accordance with Canadian experience with containerized versus non-containerized freight movements in international versus domestic markets. Using this analysis, potential container demands for shipping bentonite and talc were found to be 230 and 1,259 TEU/yr, respectively.

The results of these analyses for the estimated demand for containers to ship talc out of Montana are generally consistent with the actual demand for this service experienced at the Port of Montana before container service was suspended at this facility. That is, up to 80 containers of talc were shipped out of the Port of Montana each month when container service was available at this facility, out of a total volume of 600 to 800 containers per year (Paul 2007). These analyses found the potential demand for westbound export containers to be approximately 141 TEU/yr. As mentioned previously, these analyses are based on relatively sparse information in public databases, coupled with general trends in containerization rates by industry and commodity. In this context, the results obtained are of the same order of magnitude as actually observed in practice. That being said, this comparison also illustrates how the results of the commodity- and industry-level analyses conducted herein vary relative to the actual practice for a particular terminal and specific freight flow.

2.4.2.4. Manufactured Goods

The value of the goods generated by the manufacturing sector of Montana's economy exceeded $1 billion in 2005 (U.S. Department of Commerce, undated). In general, the output from this sector of the economy is distinctly different from the natural resource sectors discussed thus far, specifically with respect to value-to-weight ratio of this output. As may be obvious, the value-to-weight ratio of manufactured goods tends to be substantially higher than that for natural-resource-based commodities, and correspondingly a greater percentage of such goods currently are shipped by truck relative to rail. Based on data from FAF, for example, 70 percent of the goods manufactured in Montana that are shipped to domestic markets move by truck. That being said, Montana still is a long way from many of the major markets for its manufactured goods, which contributes to an increased attractiveness of using rail as opposed to truck in moving these goods.

Somewhat similar to the situation for the mining sector of the economy, and unlike the situation for agriculture and wood products, little detailed information on the specific type and destination of Montana's manufactured products was found in the literature or public databases. As was done previously, this analysis is formatted around two primary freight movements, foreign and domestic, with the greatest level of detail associated specifically with freight movements to and through Pacific Northwest ports. Furthermore, and perhaps in light of their relatively high value and low weight, more information appeared to be available on the monetary value rather than the weight of Montana's manufactured goods. To take advantage of this situation, the weight of the goods being shipped was estimated from their value using an average value per unit weight of $3.50 per pound. This factor was estimated using coincident information on value and weight reported in FAF for movements specifically of Montana's manufactured goods.

Following the methodology described above, an estimated 64,000 tons of goods manufactured in Montana were exported to foreign countries in 2005, assuming a value of these exports of $446 million (adapted from information compiled by the Minneapolis Federal Reserve Bank 2007; WISERTrade (undated)). Little definitive information was found on the source of these products by geographic location within the state. In this regard, the 2002 Census of Economic Activity (U.S. Census Bureau 2005) did produce some information on the distribution of manufacturing activity across the major communities in the state. This information was used to prorate the estimated 64,000 tons of manufacturing exports in 2005 to various regions in the state, and the results of this analysis are reported in Table 20.

Table 20: Estimated Manufactured Goods Shipped Out of State Annually.

Destination	Amount (US tons)							
	Northwest	North Central	Northeast	Central	Southwest	South Central	Southeast	All Montana
All Foreign[a]	18,189	0	0	6,033	7,005	32,488	0	63,714
Exported through PNW	5,778	0	0	1,916	2,225	10,320	0	20,239
All Domestic[b]	213,821	0	0	70,917	82,349	381,913	0	749,000
Domestic East	106,911	0	0	35,458	41,174	190,957	0	374,500
Domestic West	106,911	0	0	35,458	41,174	190,957	0	374,500
Total	232,010	0	0	76,949	89,354	414,401	0	812,714

[a] based on information from the Minneapolis Federal Reserve Bank (2007) and WISERTrade (undated)
[b] based on information from FAF (FHWA 2007)

Potential container demands associated with the foreign export traffic presented in Table 20 were estimated using a containerization rate of 10 percent, which is the rate observed in Canada for similar commodity movements (Statistics Canada 2003). The resulting container estimates are presented in Figure 42.

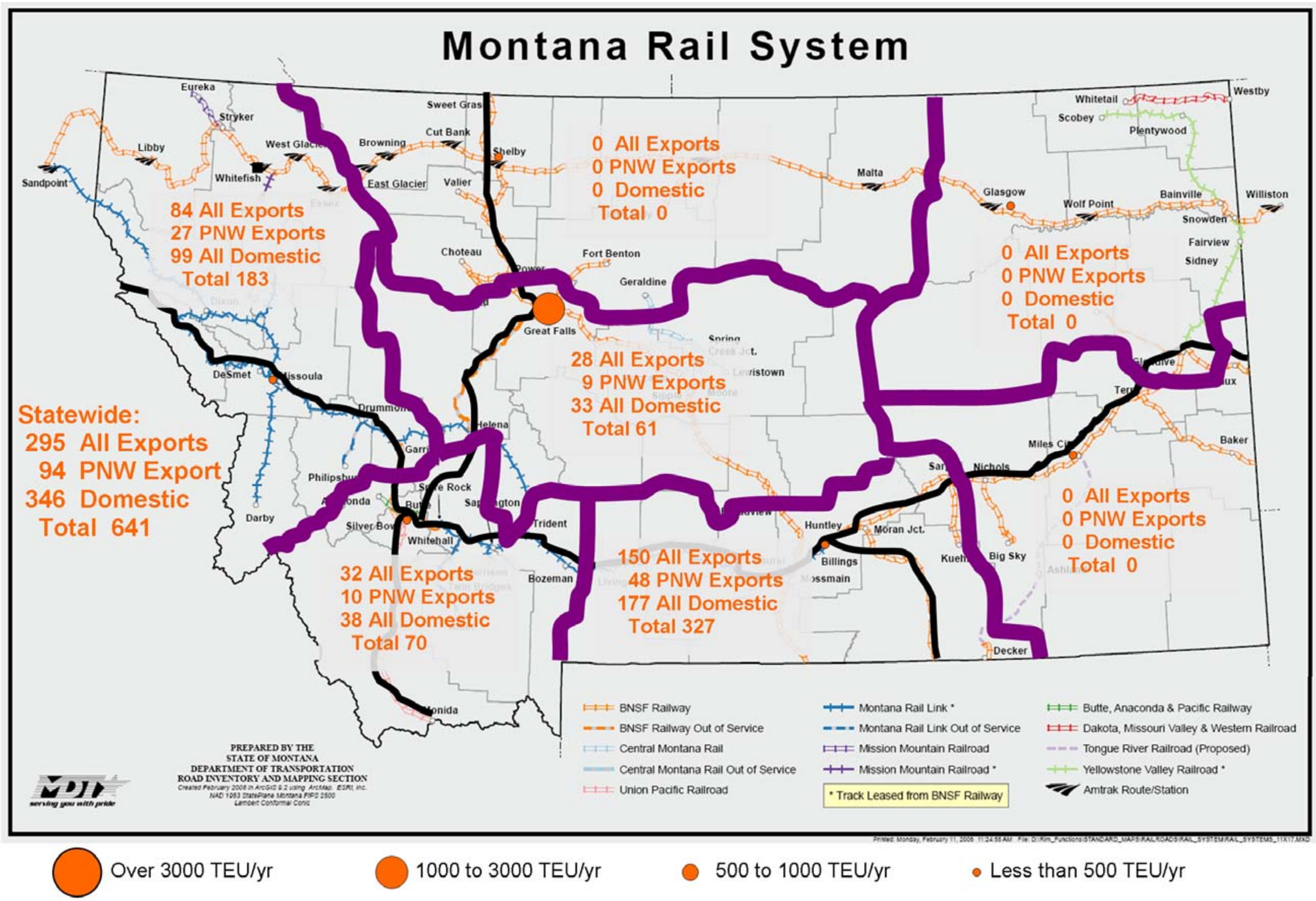


Figure 42: Summary of Potential Container Demand (TEU/yr) for Manufactured Goods.

The greatest potential container demand is from the South Central region of the state (150 TEU/yr), followed by the Northwest region (84 TEU/yr), and then more distantly by the Southwest and Central areas of the state (32 and 28 TEU/yr, respectively). Thirty-two percent of these containers were further estimated to move specifically through Pacific Northwest ports, based on the reported destination of Montana's foreign exports by country (i.e., based on relative shipments specifically to countries in Asia, Africa, or the Middle East, as identified in information compiled by the Minneapolis Federal Reserve Bank (2007)). Specific container volumes associated with this movement of manufactured goods through these ports (still assuming a containerization rate of 10 percent) are also reported in Figure 42. Potential container volumes by selected country of destination are further reported in Table 21. These values were determined by multiplying the potential container volumes in Figure 42 by the relative fraction of Montana's manufactured goods shipped to each country (based on the value of these goods).

Table 21: Estimated Annual Container Volume by Country of Destination (based on information from the Minneapolis Federal Reserve Bank (2005) and WISERTrade (undated)).

Destination	Percent of PNW Exports	No. of TEU
Asian NIEs[a]	40%	38
Japan	33%	31
China	16%	15
Southeast Asia	6%	6
Other	5%	5
Total	100%	94

[a]Asian Newly Industrialized Economies (NIEs) include Hong Kong, Singapore, Taiwan, South Korea

An estimated 740,000 tons of manufactured products were shipped annually from Montana to domestic destinations around the country (see Table 20). The best available source of information on the amount and destination of these shipments appeared to be FAF. The origin of these shipments by region of the state was estimated once again using information on the relative amount of manufacturing activity by community reported in the 2002 Census of Economic Activity (U.S. Census Bureau 2005). Potential container demands associated with the shipment of these products, presented in Figure 42, were estimated from the information in Table 20 assuming a containerization rate of 1 percent (a value equal to one-tenth of that used for international shipments). Overall, domestic demand for containers was estimated to be 346 containers per year (see Figure 42), with approximately one-half of this demand originating in the South Central region of the state (177 TEU/yr).

In light of the uncertainties in, and sparseness of, the data available on domestic movement of Montana's manufactured goods, only a broad analysis of the destination of these shipments was conducted. In reviewing the FAF data, it appears that markets for Montana's manufactured products are geographically diverse, with shipments moving toward populated regions of the country to both the west and east of Montana. The decision was made to split these shipments equally between east and west, resulting in an estimated 173 TEU moving each way each year.

2.4.2.5. Aggregation of Results

Considered collectively, this macro analysis identified a total of 16,781 potential container shipments originating annually in Montana. This figure agrees well with a gross estimate of container demand arrived at independently based on a freight study conducted by Berwick (2001) for North Dakota. In that study, a potential demand of 24,500 containers was estimated annually statewide based on an average containerized freight rate nationally, the tonnage of freight originating in North Dakota each year, and due consideration of the specific nature of the freight originating in North Dakota. Starting with the results of the North Dakota analysis, and with further consideration of the differences in the volume and nature of the freight originating in Montana, the corresponding potential demand annually in Montana would be 15,900 containers.

The results of the analyses performed above on potential container shipments originating in Montana from the various sectors of the economy can be aggregated in numerous ways. In Figure 43, annual container volumes by region of the state and economic sector of origin are tabulated independent of their destination. Referring to Figure 43, relative to economic sector, the majority of the potential container traffic in Montana was found to be agriculture- and forest-related products (12,379 and 3,625 TEU/yr, respectively), distantly followed by manufacturing and mining (641 and 136 TEU/yr, respectively).

From a geographical perspective, the greatest potential demand for containers is in the Northeast, North Central and Northwest regions of the state (5,843; 4,165; and 3,223 TEU/yr, respectively). The smallest potential demand for containers is in the Southwest, Southeast, and South Central regions of the state (466, 553, and 972 TEU/yr, respectively).

In the context of contemporary intermodal practice, the representation of potential container demand presented in Figure 43 may be of limited use, as this practice involves unit trains moving between specific terminals.

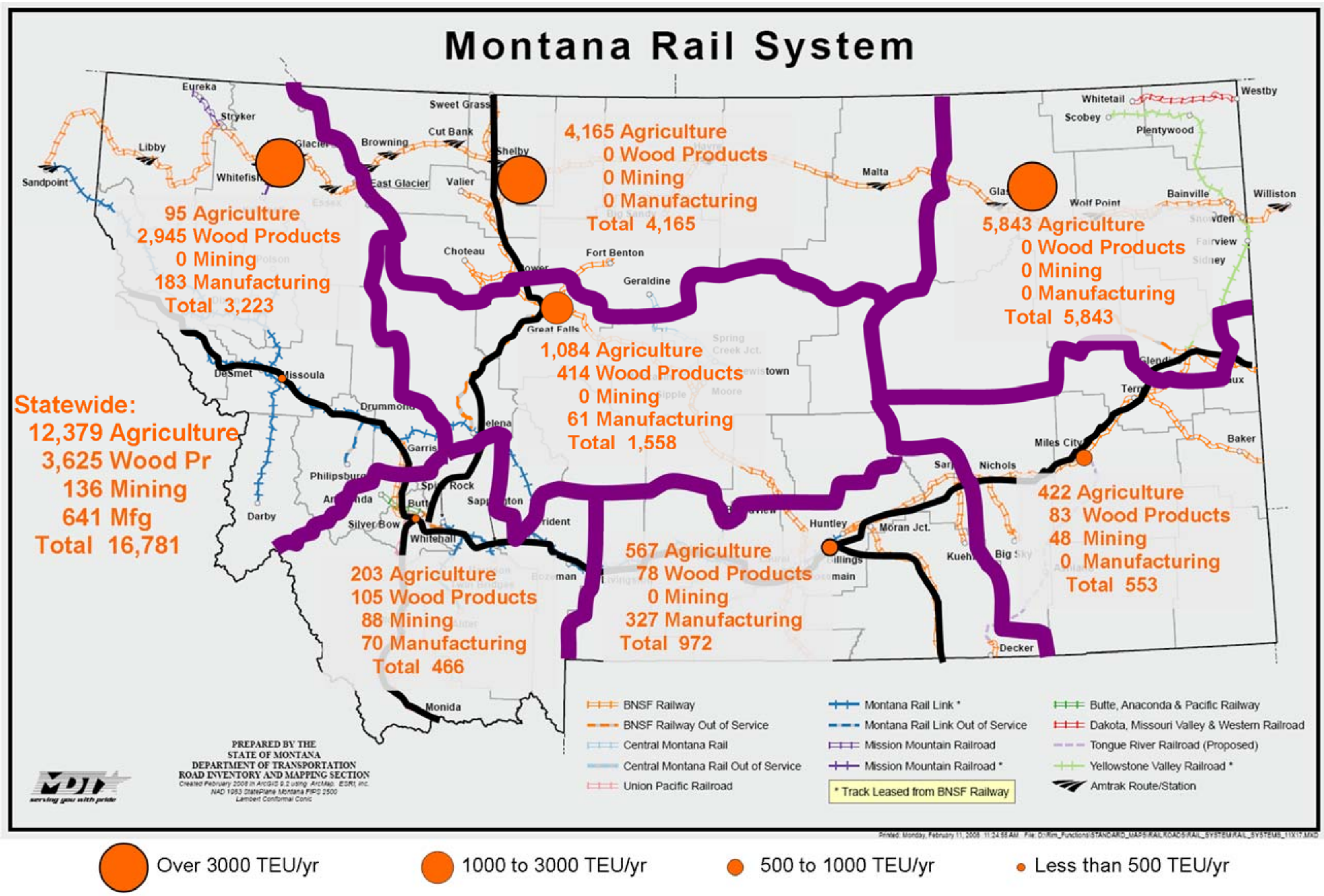


Figure 43: Summary of Potential Container Demand (TEU/yr) from Shipments Originating in Montana, All Destinations.

Thus, to better assess potential demand in the context of this practice, potential annual container volumes need to be refined by destination as well as region of origin within the state. This level of refinement was offered above, as possible, for each sector of the economy; these results are collectively presented for all sectors of the economy in Figure 44 through Figure 47 for shipments from Montana to Pacific Northwest ports, to all domestic markets, domestic markets to the west, and domestic markets to the east, respectively. An additional consideration in assessing potential container volumes originating in Montana is the availability of empty containers to be filled and shipped out of the state. This consideration is one of the factors driving the initial focus of these results on westbound container movements, and more specifically on container traffic moving through Pacific Northwest ports. That is, as previously mentioned, a number of empty containers are thought to be moving through the state from east to west, specifically on their way back to Pacific Rim countries for reloading. This source of empty containers is important, as only a relatively small number of containers are expected to be available for reload that enter the state specifically with commodities or goods for Montana (see discussion below).

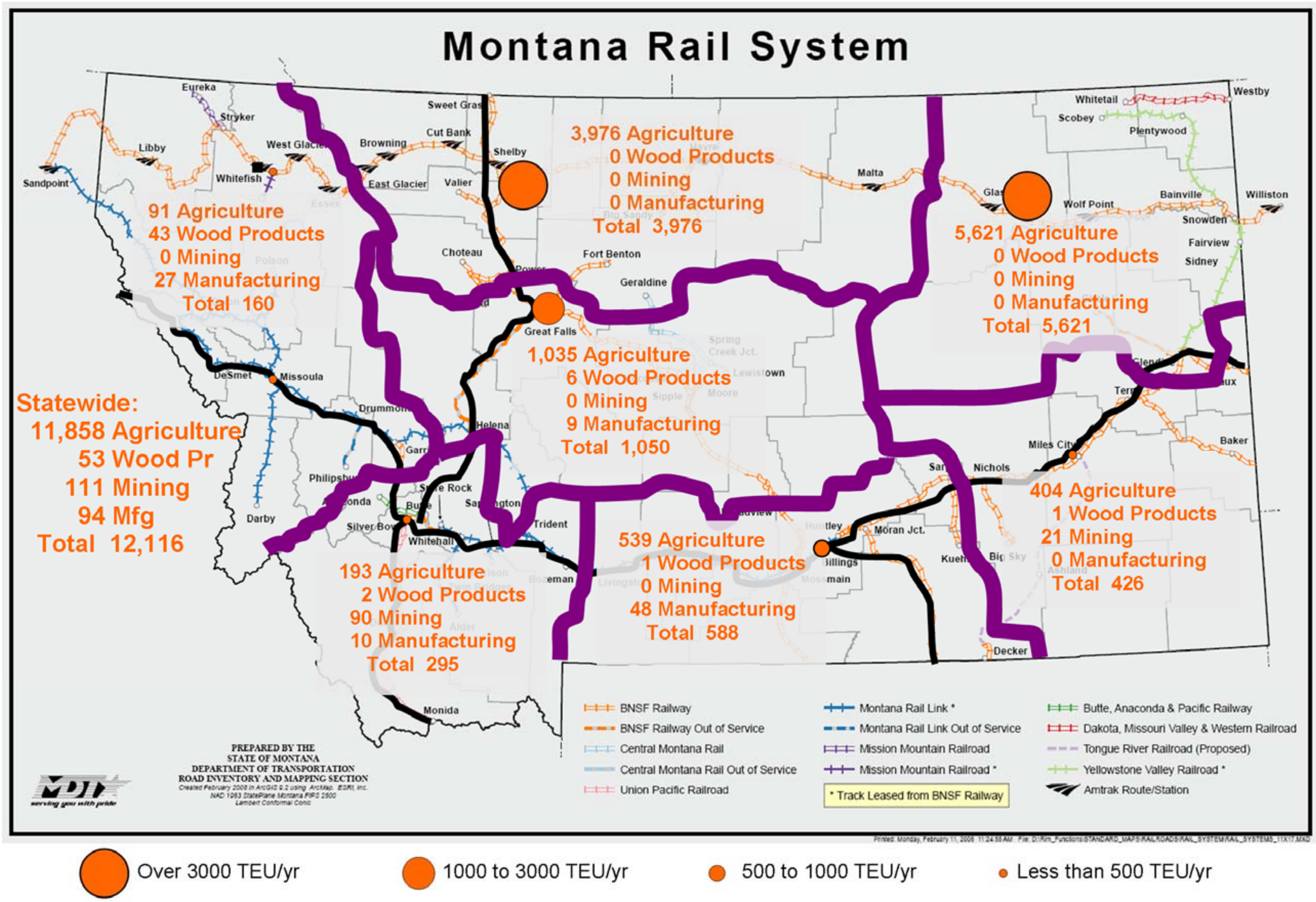


Figure 44: Summary of Potential Container Demand (TEU/yr) for Shipments Originating in Montana Destined for Pacific Northwest Ports.

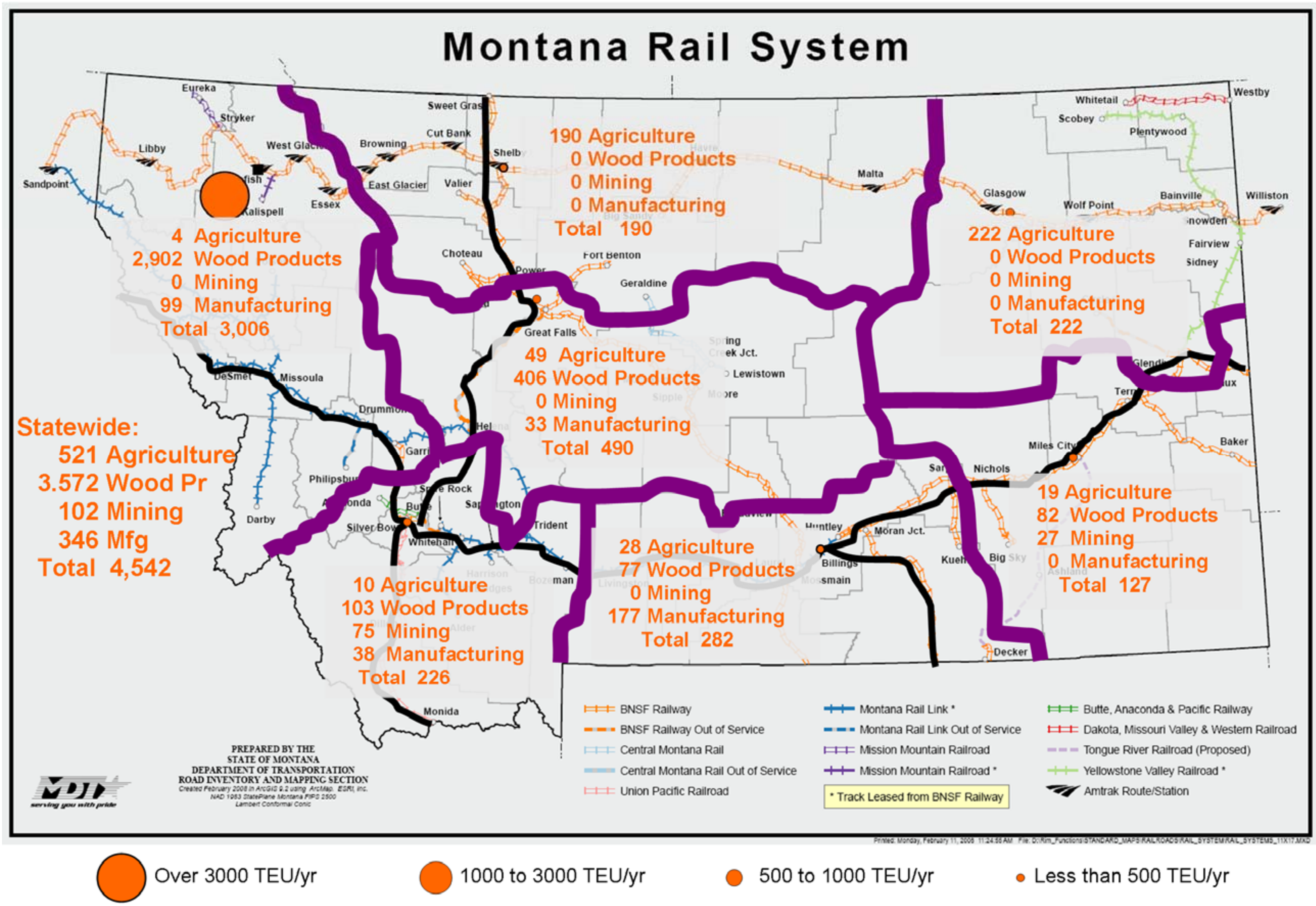


Figure 45: Summary of Potential Container Demand (TEU/yr) for Shipments Originating in Montana Destined for Domestic Markets.

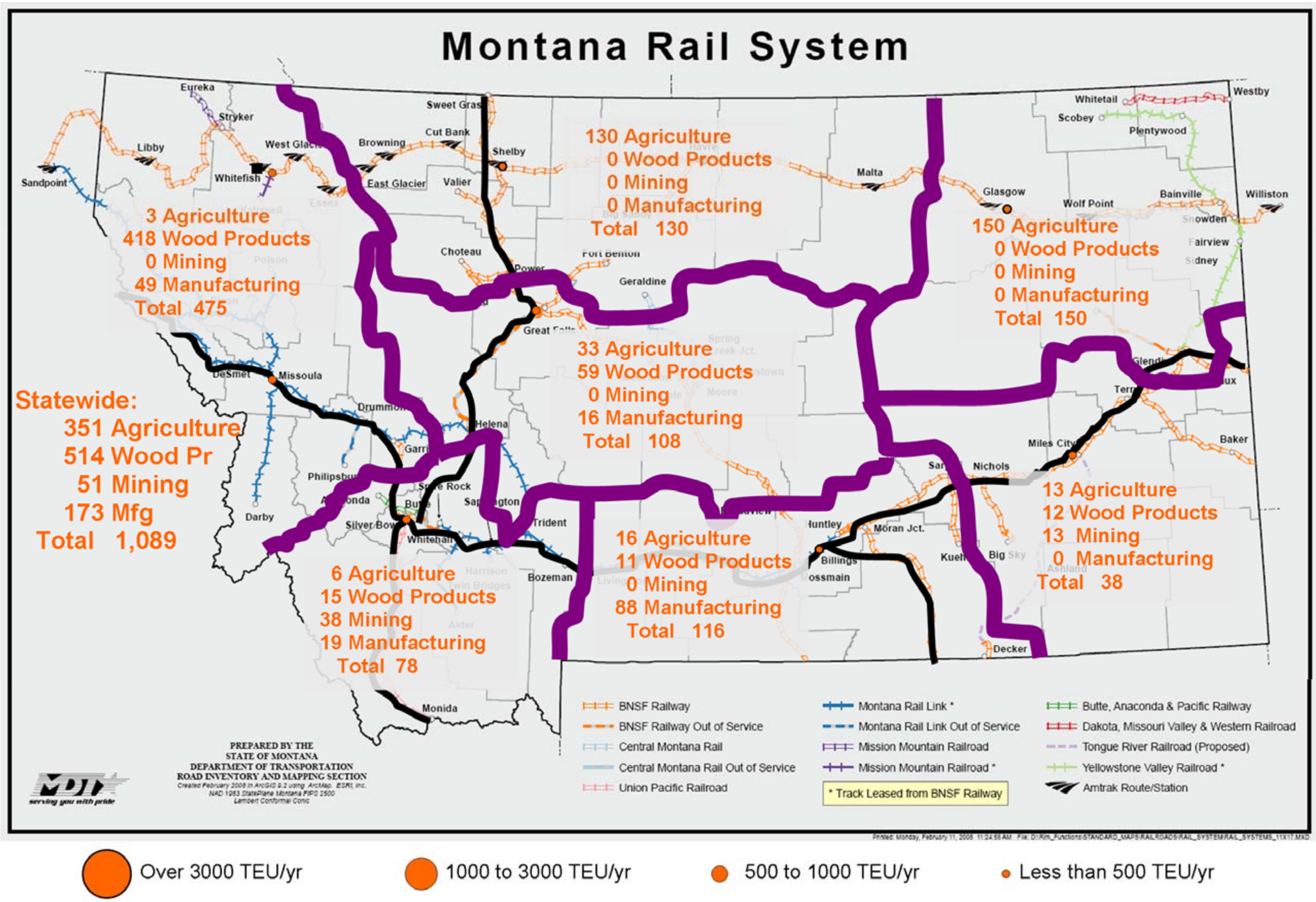


Figure 46: Summary of Potential Container Demand (TEU/yr) for Shipments Originating in Montana Destined for Domestic Markets to the West.

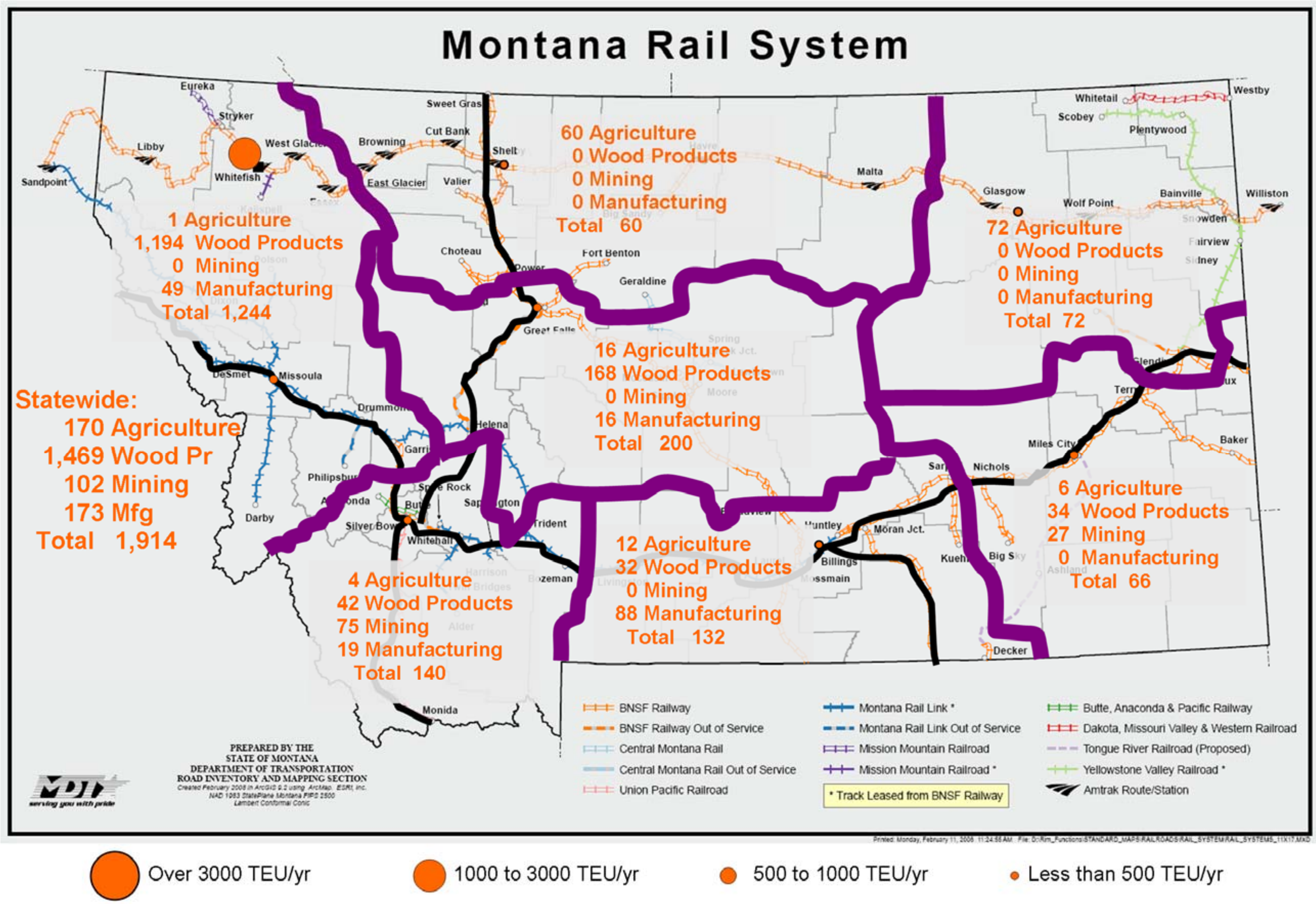


Figure 47: Summary of Potential Container Demand (TEU/yr) for Shipments Originating in Montana Destined for Domestic Markets to the East.

Referring to Figure 44, the majority of the potential container demand for freight moving from Montana to Pacific Northwest ports is associated with agricultural commodities (11,858 TEU/yr). Potential container demands from other sectors of the economy (wood products, mining, and manufacturing) collectively are nominal in magnitude (totaling only 258 TEU/yr). The Northeast, North Central, and Central regions of the state are primarily responsible for the agricultural commodity demand (5,621; 3,976; and 1,050 TEU/yr, respectively). Potential container demands by country of destination were previously reported, as possible, by economic sector and commodity. Aggregation of these results by country across all economic sectors was found to be of limited use beyond that already realized in their earlier presentation, as few countries had significant container activity from more than one sector of the economy. Thus, total container volumes were only nominally different from the volumes reported by economic sector.

Potential container volumes for domestic shipment of Montana's goods and commodities are presented in Figure 45. The only major demand for containers in the domestic arena is to move wood products (3,572 TEU/yr), which is in distinct contrast to the primary source of these demands for shipments to Pacific Northwest ports (which was agricultural commodities). This demand primarily originates in the Northwest region of the state (2,902 TEU/yr). Referring to Figure 46 and Figure 47, which look more closely at the domestic situation, potential container demand for eastbound containers (1,914 TEU/yr) is nearly twice that of westbound containers (1,089 TEU/yr). The relative demand for Montana wood products in eastern versus western markets appears to be responsible for this differential.

2.4.3. Potential Container Demand: Commodities and Products Shipped to Montana

With regard to potential container demands for commodities and products being shipped into the state, Montana's primary industries are based on natural resource extraction and, relative to their output, require little in external (out-of-state) input in their production. Thus, Montana's inbound freight generally consists of the nominal resources necessary to support its industries, and the goods consumed by its relatively small population of approximately 1 million persons. In this situation, outbound freight volume is substantially greater than inbound freight volume. In 1999, for example, outbound shipments by rail from Montana totaled 9.3 million tons (excluding coal and petroleum), while inbound shipments by rail (excluding coal and petroleum) were less than one-quarter of this amount (2.2 million tons) (R. L. Banks & Associates 2000). Values for inbound and outbound freight given in FAF reveal this same general relationship between volumes of inbound and outbound freight. Assuming containerization rates of the same order of magnitude for inbound as for outbound freight, the annual number of inbound containers would be around 1,700 containers per year. This result is similar in magnitude and relative proportion (with respect to outbound container traffic) found by Berwick and his colleagues in their study of intermodal container transportation in North Dakota (Berwick et al. 2002).

Relative to further identifying specific potential inbound freight container flows, detailed information on freight inbound to Montana appears to be primarily available from FAF. As noted in the analyses above, some possible discrepancies were observed in the data presented in FAF relative to that available from other sources, particularly with respect to the absolute volume of freight reported (with the FAF values often appearing to be significantly higher than seen elsewhere). In light of this situation, as well as the relatively small number of potential containers involved, an overly detailed analysis of inbound container flows was not performed.

2.4.4. Potential Container Demand: Complementary Commodity and Product Flows

As may be obvious, there could be complementary inbound and outbound container flows—i.e., inbound container is unloaded and then reloaded with goods or commodities originating in Montana, and vice-versa—but such flows almost need to be explored on an individual basis rather than at a network level in light of the relatively small container volumes involved (particularly of inbound freight), and thus the attendant importance of the specific commodities being shipped and their exact origin and destination in assessing the practicality of such movements. That being said, one possible example in this regard involves international freight moving between Montana and the Port of Seattle. Based on FAF data and using a containerization rate of 10 percent, inbound freight moving to Montana from the Port of Seattle would possibly amount to over 300 containers per year. The analysis above of outbound freight moving from Montana to the Pacific Northwest ports (which includes the Port of Seattle) is over 12,000 containers per year. This example illustrates the imbalance of potential container demands for inbound versus outbound freight. As previously mentioned, this imbalance can possibly be addressed by accessing the stream of empty containers moving through the state on their way back from eastern domestic markets, through Pacific Northwest ports, to Pacific Rim and other countries.

2.5. Initial Evaluation of Terminal Locations

Location and operational factors affect the potential success of an intermodal container facility. Not only must the terminal be located within a reasonable reach of the potential market supporting the terminal, it must also fit within the rail service operating network and along a highway network that can connect shippers to railroad facilities. Not all rail tracks carry intermodal trains. Often intermodal trains (which have different operating characteristics) are separated from carload or unit coal train traffic. The map below illustrates the density of intermodal trains on the North American rail network.

From the map in Figure 48 it is clear the primary intermodal rail corridor in Montana runs across the northern tier of the state. Locating a terminal adjacent to this “intermodal freight pipeline” will assure a steady flow of equipment, higher levels of service and better economics for the carrier.

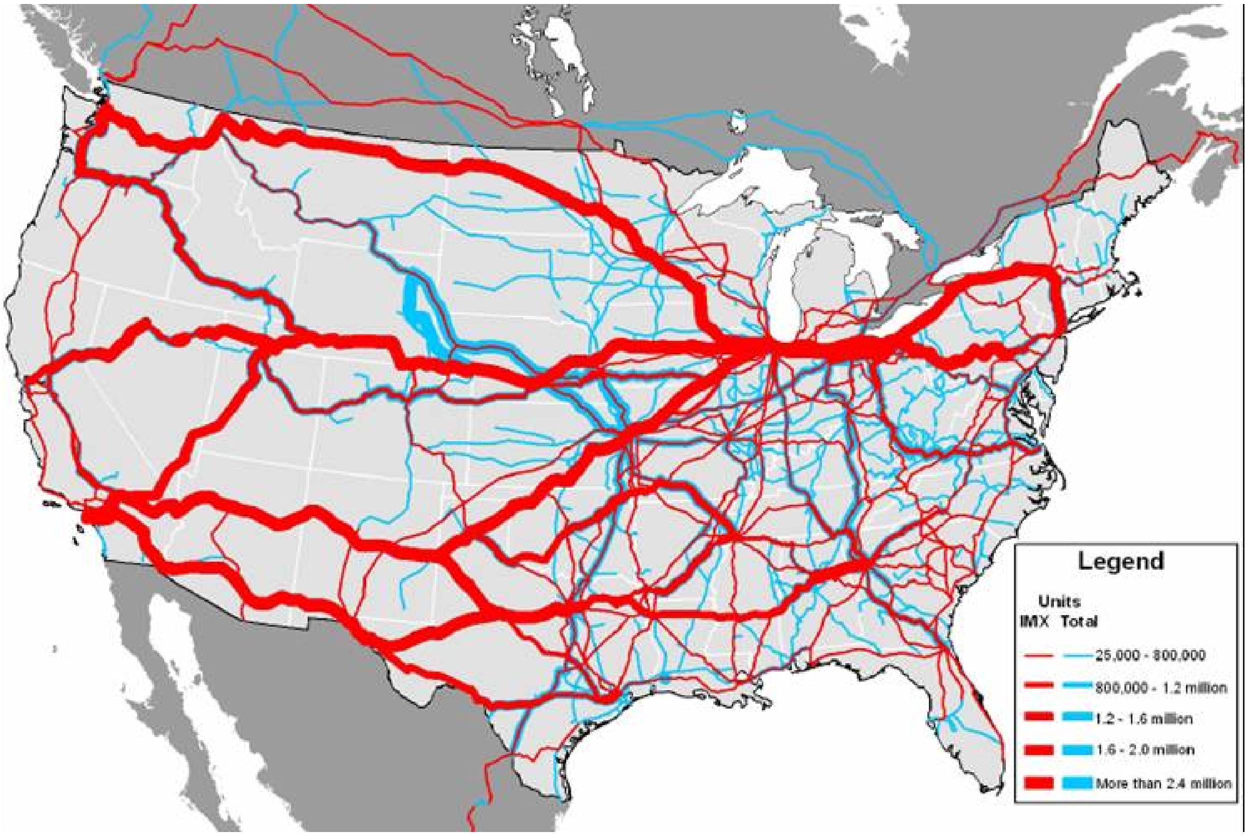


Figure 48: Intermodal Rail Corridor Density Map (AASHTO 2008).

This map illustrates that few secondary lines in the western United States handle intermodal rail traffic. This map also illustrates that Billings is on a low-density intermodal line segment. The Port of Montana in Butte–Silver Bow is on a line not shown on this map connecting to either BNSF or the UP. Finally this map illustrates the current intermodal container flows connection to West Coast ports. Potential sites along the heavy line in northern Montana would have the shortest route-miles for export traffic. It is also evident that the route through northern Montana could be attractive to Canadian shippers because it is located close to the international border.

The viability of a facility can be evaluated based on such things as potential container volume, rail access, highway access, site layout and availability of buildable land, and the political will to support freight activities.

A variety of criteria have been used in different studies to evaluate container terminal viability. Casavant and his colleagues (2004) generated a matrix of attributes of intermodal facilities based on type of facility (i.e., agricultural gathering and assembly, port clearing inland terminal, and distribution center) and criticality of attribute (i.e., critically necessary, contributory, and not important). Of the 23 attributes identified, nine are generally pertinent to this discussion and are presented in Table 22.

Table 22: Attributes and Their Importance: Intermodal Facilities (adapted from Casavant et al. 2004).

	Attribute[a]	Agricultural Assembly	Port Clearing	Distribution Center
1	Adequate Land or Space	A	A	A
2	Two Class I Railroads	C	B	C
3	Major Interstate Highway	C	B	A
4	Proximity to Population Center	X	B	B
5	Available Air and Water Transportation	X	A	B
6	Clearly Established Demand Opportunities	A	B	C
7	Distance to/from Production Points	A	C	B
8	Distance to/from Destination Market	B	B	A
9	Available Volume in Local Production Area	A	C	C

The evaluation scheme is A = Critical, B = Necessary, C = Contributory and X = Not Important
[a] Casavant and his colleagues (2004) consider a total of 23 attributes; selected attributes in this table were judged to be pertinent to facility location.

Berwick and his colleagues (2002) considered a subset of these attributes in their study of container transportation in North Dakota—i.e., container demand, rail access (simply meaning located on a rail line, and if that line already is intermodal), availability of ancillary services, and highway access. Of these various attributes, potential container demand, rail access, highway access, and space availability were specifically judged as appropriate for the purposes of this study.

The above attributes are described for various possible container terminal locations across the state in Table 23. For the purposes of this analysis, a terminal site was selected in each geographic region in the state that was considered in the container demand analysis (see Figure 32). Some initial screening was done in identifying the selected site within each region using as criteria such things as the type and function of rail line, the coincident highway access available, existence of past or present intermodal service (such service was or is available at the Port of Northern Montana in Shelby, the Port of Montana in Butte–Silver Bow, and in Billings), and the size of community. Note that space availability is not included in Table 23, as it was assumed that all sites offer relatively open space for terminal operation and development within reasonable proximity of the indicated location. Also note that a variety of criteria could be used to both divide the state into regions, and to further identify terminal locations within each region. Referring to Figure 32, for example, Helena is centrally located relative to servicing the needs of both the Central and Southwest regions of the state. Similarly, Bozeman may be well located relative to the Southwest and South Central regions of the state. Both Helena and Bozeman, however, are on rail lines served by Montana Rail Link, rather than on Class I lines.

Table 23: Evaluation of Potential Container Terminal Locations.

Location	Region	Potential Outbound Container Volume (TEU/yr)	Class I Rail Service	Existing/ Prior Container Capability	Highway Access	
					Interstate	Major NHS[a] Route
Whitefish – Kalispell	Northwest	3,223	East-West (BNSF)	No	No	No
Missoula	Northwest	3,223	None (MRL)	No	Yes E-W	Yes N-S
Shelby	North Central	4,165	East-West (BNSF) Southeast (BNSF)	Yes	Yes N-S	Yes E-W
Glasgow	Northeast	5,843	East-West (BNSF)	No	No	Yes E-W
Miles City	Southeast	553	East-West (BNSF)		Yes E-W	No
Billings	South Central	972	East-West (BNSF)	Yes	Yes S, E-W	No
Butte– Silver Bow	Southwest	466	South (UP) Northwest (BNSF)	Yes	Yes N-S, E-W	No
Great Falls	Central and North Central	5,723	Southeast- Northwest (BNSF)	No	Yes N-S	No
Bozeman	Southwest South Central	2,530	None (MRL E-W)	No	Yes E-W	No
Helena	Central and Southwest	2,024	None (MRL E-W)	No	Yes N-S	No

[a] National Highway System

There is no established methodology for analyzing the information in Table 23 to determine the relative desirability of each location for an intermodal facility. That being said, a simple quantitative ranking scheme was tried to see if any obvious trends emerged. A numerical score between 0 and 4 was assigned to each characteristic of each site, with 4 being most favorable, 0 being least favorable. Scores were assigned in a relative sense. So, for example, on highway access, Butte–Silver Bow, at the crossroads of two interstates, was scored at 4; while Shelby, at the crossroads of an Interstate and a major highway was scored at 3. If located on a primary intermodal corridor the site scored 4 points, if located on a line with no intermodal service or on a short line railroad the scores were adjusted accordingly. The assignment of the scores was subjective, as was the decision to weigh each factor equally. However in several experimental schemes of relative ranking, the site score often came out the same.

The results of this exercise are reported in Table 24. Referring to Table 24, Shelby was found to be the most favorable location for an intermodal site, followed by Billings and Butte–Silver Bow. These are the three locations in the state that have or previously had intermodal service, which validates the original site location decisions. This outcome was not unexpected, as a) one item used in the scoring scheme was whether or not the site previously offered intermodal service, and b) one reason intermodal facilities were developed at these sites was their desirability for this purpose.

If existing or previous intermodal capability is reduced in relative importance (i.e., by one-half, using a scale of 0 to 2), Shelby still clearly remains the most favorable site, while the desirability of Billings and Butte–Silver Bow becomes somewhat harder to distinguish relative to the desirability of Great Falls, Missoula, and Glasgow (see Table 24). Great Falls, Missoula and Glasgow have attractive potential container volumes, but their access to the transportation system (rail and highway) is limited. Billings and Butte–Silver Bow have less attractive container volumes, but they have better system access.

Based on the comments above, and the survey response, attention was focused upon Shelby, Billings, and Butte–Silver Bow as potential intermodal sites. Additional information on past, present, and possible future operations at Shelby, Butte–Silver Bow, and Billings is presented in subsequent sections of this report.

Table 24: Simple Quantitative Assessment of Potential Intermodal Terminal Locations.

Location	Region	Score (0 to 4, 4 highest)				Total Score (all columns)	Total Score (using ½ column 3 value)
		Container Volume	Rail Situation	Previous or Existing Facility	Highway Situation		
Whitefish–Kalispell	Northwest	3	4	0	1	6	6
Missoula	Northwest	3	2	0	3	8	8
Shelby	North Central	4	4	4	3	15	13
Glasgow	Northeast	4	4	0	1	9	9
Miles City	Southeast	0.5	2	0	2	4.5	4.5
Billings	South Central	1	3	4	4	12	10
Butte–Silver Bow	Southwest	0.5	2	4	4	10.5	8.5
Great Falls	Central and North Central	4	2	0	2	8	8
Helena	Central and Southwest	2.5	1	0	2.5	6	6
Bozeman	Southwest and South Central	2	1	0	3	6	6

All of these sites must also compete with other modes of transportation. In this situation competition may be unit grain trains or single truck shipments. Unit trains remain the most efficient and cost-effective mode of transportation, yet many shippers not moving unit-train volumes prefer smaller quantities or truckload shipments. Table 25 lists a mileage analysis comparing rail miles to highway miles in key export lanes. In all cases the highway miles are shorter than the railroad miles before drayage is considered. This means that the rail rates will have to be lower on a per-mile basis to be competitive.

Table 25: Competitive Mileage Analysis (Prime Focus LLC).

RAIL ROUTE						HIGHWAY ROUTE		
Origin Terminal	Destination Terminal	Railroad	Rail Miles	Origin Drayage	Total Intermodal	Highway Route	Highway Miles	Hwy Advantage
BNSF								
Shelby, MT	Seattle, WA	BNSF	730	105.3	835.3	Shelby to Seattle	702	133.3
Billings, MT	Seattle, WA	BNSF	968	123.15	1091.15	Billings to Seattle	821	270.15
CANADIAN NATIONAL								
Calgary, AB	Vancouver, BC	CN	1001	240	1241	Shelby to Vancouver BC	836	405
Calgary, AB	Prince Rupert, B	CN	1195	240	1435	Shelby to Prince Rupert	1172	263
Calgary, AB	Prince Rupert, B	CN	1195	542	1737	Billings to Vancouver, BC	955	782
CANADIAN PACIFIC								
Calgary AB	Vancouver, BC	CP	641	240	881	Shelby to Vancouver BC	836	45
Regina, SK	Vancouver, BC	CP	1116	457	1573	Shelby to Vancouver BC	836	737
Regina, SK	Vancouver, BC	CP	1116	473	1589	Billings to Vancouver, BC	955	634

Notes

Intermodal routes include rail mileage plus drayage. For BNSF a catchment area of 15% was used to estimate origin dray
Calgary and Regina drayage was estimated based upon distance from Shelby or Billings
The Highway miles from Montana Cities to Seattle are the shortest in this analysis

Railroad Miles Source: Rail Carriers
Highway Miles Source: Mapquest

Figure 49 highlights the railroad lines in the State of Montana and the interchange points between carriers. The rail lines show physical ownership. BNSF utilizes a combination of bridge rights and trackage rights to move BNSF trains and traffic across the MRL lines between Huntley, Montana, and Sandpoint, Idaho, for a fee.

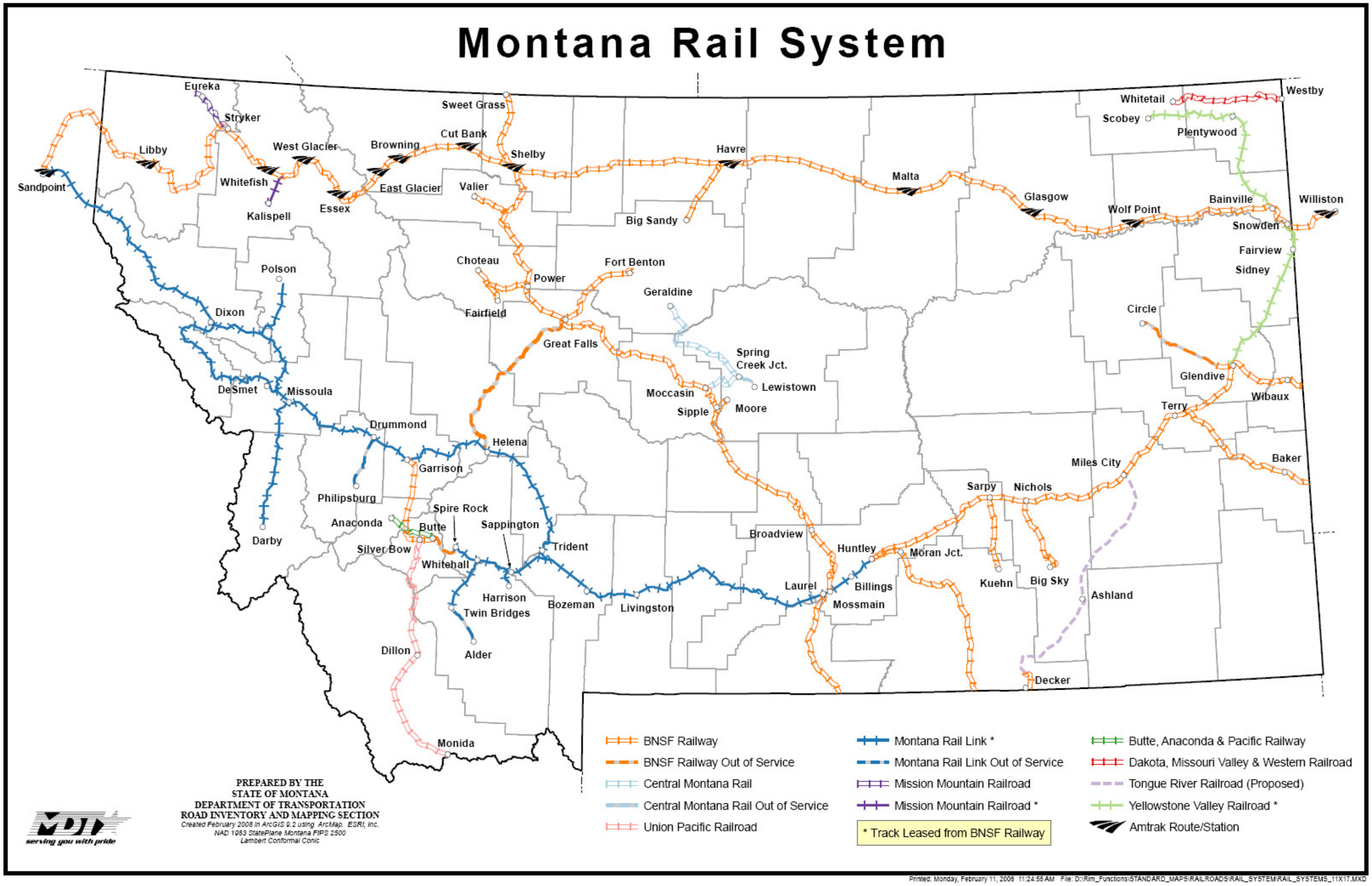


Figure 49: Montana Rail Service (Montana Department of Transportation 2008).

2.5.1. Billings

Billings is a city of approximately 95,270 people as reported by the 2006 U.S. Census. The BNSF Intermodal Terminal in Billings is located at 3311 First Avenue, South (see Figures 50 and 51). Additional information on the terminal is available on the BNSF web site at www.bnsf.com.

2.5.1.1. Past and Present Operations

Billings is the only operational intermodal facility in Montana that has dedicated intermodal train service today. This intermodal terminal is located in the midst of a downtown area with access from I-90. In the BNSF service guide only two service lanes are listed with scheduled service to Billings. Westbound intermodal service is available from Chicago, Illinois, and St. Paul, Minnesota, six days per week with a 54- and 88-hour schedule based on origin terminal. Only empty containers are accepted on the return (eastbound) route.

BNSF operates intermodal trains on its line to Huntley, Montana, where they then move on trackage rights over the MRL railroad to Billings. At Billings the MRL performs the switching and terminal operations for the intermodal facility.

Several users were interviewed about their interest and uses of this intermodal service. The BNSF policy to eliminate rail-provided containers and trailers was noted as a primary barrier for some users. For a number of past users, the elimination of rail-provided equipment resulted in mode shifts. These past users now move their shipments over the road. Other current users identified the need for eastbound service to St. Paul with a second-day delivery schedule. This service does not exist. Many users in Billings have a significant flow of freight to and from Denver and noted that they would consider using train service between Billings and Denver if this service existed. The users of this facility were predominantly LTL shippers, therefore train-specific train schedules are critical to meet sort windows.

2.5.1.2. Opportunities

Of the top ten employers listed by the Billings Chamber of Commerce only two would be considered potential intermodal users: Stillwater Mining and Albertsons Food and Drug. The other eight companies were primarily engaged in education, government, health care or professional services. There is a catchment area of approximately 150–200 miles around the Billings terminal, which could also potentially ship or receive freight in this service.

In a meeting with BNSF representatives in October of 2007, the discussion of a proof-of-concept operation was posed. BNSF felt that the Billings facility would be capable of handling this westbound market test, which would connect Montana shippers with West Coast ports. This site is currently operational and has space to handle additional business. Objections were raised that Billings may be outside of a reasonable drayage radius from actual producers. It was noted that agricultural products may have to move eastbound to Billings before the shipment could be loaded to a train destined for the port complex in the Pacific Northwest. This out-of-route mileage was a concern that could potentially impact the cost competitiveness of this shipping option. BNSF said that the extra trip miles would not be a significant factor impacting the economics of the service. It was concluded that if the users found the service viable and if the proof of concept met all of the stakeholders’ expectations the actual terminal development could be considered at another suitable location.

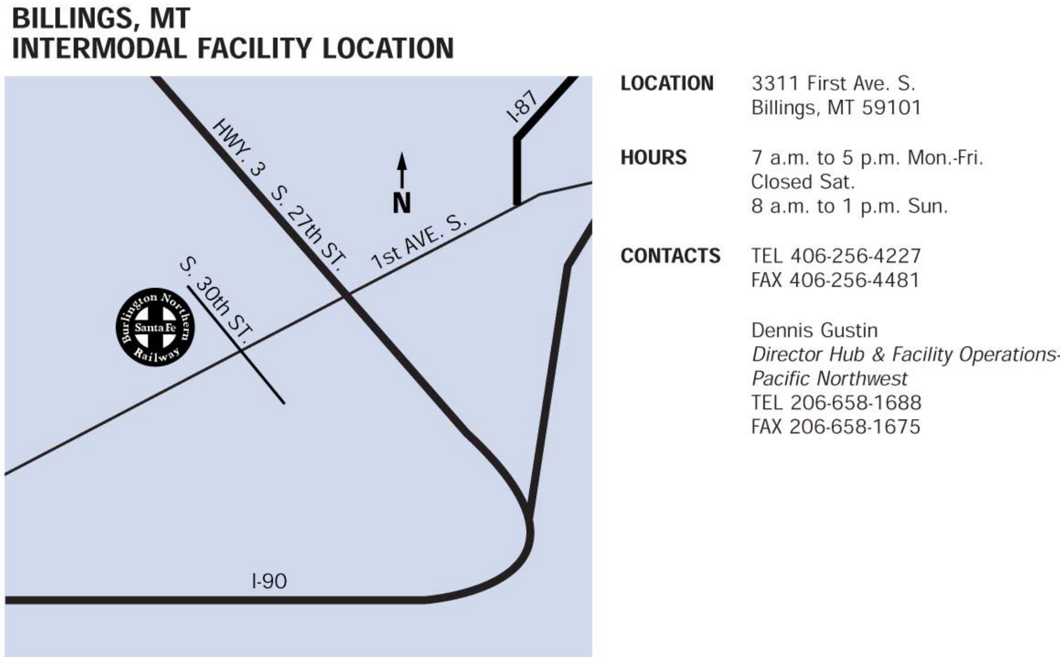


Figure 50: Billings Intermodal Facility Location (BNSF 2008c).

Figure 51: Satellite View of the Billings Intermodal Terminal with Several Cars Lined Up for Loading (Google Maps).

2.5.2. Butte–Silver Bow

Butte–Silver Bow, with a population of 32,519 as reported by the U.S. Census in 2006, is the home of the Port of Montana. It is strategically located at the only rail junction of the BNSF and UP railroads in Montana, and also at the intersection of two major interstate highways: I-15, which runs North-South, and I-90 which runs East-West (Figure 52). The Port provides facilities for transferring cargo between truck to rail modes and intermodal logistics services.

Figure 52: Aerial View of the Port of Montana (Google Maps).

2.5.2.1. Past and Present Operations

The Port of Montana comprises 46 acres, of which 10 acres are paved (see Figure 52). The facility has seven tracks (see Table 26), none of which are long enough to accommodate 100-car unit trains typical of intermodal service.

Table 26: Track Facilities at the Port of Montana

Track No.	Freight
1	Lumber
2	Auto
3	Auto
4	Fertilizer
5	(spare)
6/14	Mag chloride

In 1987 BNSF leased its main line between Huntley, Montana, and Sandpoint, Idaho, to MRL. Today MRL operates and maintains this rail property. BNSF utilizes a combination of bridge rights and trackage rights to move BNSF trains and traffic across the MRL lines between Huntley, Montana, and Sandpoint, Idaho, for a fee. Approximately 14–16 BNSF trains per day are operated over the MRL network. Midway across the MRL network is Garrison, Montana. The Garrison station is a point where MRL connects to a short BNSF-owned rail line segment, otherwise disconnected from its primary rail network (see Figure 49).

In 2003 the BNSF purchased the railroad between Garrison and Butte, a former Burlington Northern line that had been operated since 1986 by the short line company Montana Western Railway. While this line is not physically connected to BNSF's core rail network, BNSF serves customers along this line segment through an interchange with the MRL at Garrison. BNSF operates a five-day-per-week local (Monday through Friday) between the Garrison interchange and Butte–Silver Bow, and provides daily switching service at Butte–Silver Bow. Cars inbound to Butte–Silver Bow and Deer Lodge, Montana, from the east and west are delivered to the Garrison interchange by MRL for furtherance to their destination by BNSF's local train service. Cars outbound from those points are delivered to the Garrison interchange by BNSF's local train service for furtherance east or west on MRL.

The UP also has access to the Port of Montana on a direct basis.

Neither BNSF nor UP routes, which serve the Port of Montana directly, connect to either carrier's primary intermodal service lanes and corridors. Today most railroads do not mix intermodal and carload traffic due to differences in service and terminal requirements.

Historically, the Port handled 600–800 containers (20 ft and 40 ft) per year. Traffic levels varied, with 100 containers handled in a peak month, and 40 containers on a busy day. The majority of container traffic was outbound. For example, Barrett Minerals shipped up to 80 containers of talc per month. Other outbound containerized freight included pasta, meal, log homes, potato flakes (trucked in from Idaho), antlers, and hot tubs. The major inbound containerized freight was fireworks (up to 20 containers per year). Other inbound containerized freight included tires, light fixtures, wicker furniture, household goods, and machinery. All intermodal trains ran on track 6/14. The Port was able to accommodate standard double-stack trains inbound, but could only handle single-stack trains outbound (due to a low overpass). K-Line was the biggest container operator at the port, augmented by some activity by Evergreen, Hanjin, APL and others. The primary container destinations included Japan, Antwerp, China, Indonesia, and South Korea.

At the peak, intermodal operations accounted for 25 percent of Port revenues. Fifteen acres of the Port and two employees (at up to 75 percent effort) were allocated to intermodal operations. Customs service was provided by an agent then located in Butte. Overall, however, intermodal volumes were never large enough or constant enough to be self-sustaining.

Intermodal operations at the Port were originally championed by U.S. Senator Mike Mansfield (now deceased) and Don Peoples, a leader of the Montana Economic Revitalization and Development Institute (now retired). Intermodal service at the Port ended when the railroads made a strategic decision not to offer such service in Montana, preferring instead to concentrate on higher-volume, higher-profit intermodal service at coastal ports. Advantages that the Port of Montana offers if container service is restored in the future include (Paul 2007):

- Network connection and service to and from UP and BNSF, although this rail connection is to the carload network, not primarily intermodal corridors;
- Ready site, track and terminal equipment;
- Experienced personnel;
- Supportive public agencies, including the city of Butte, that will participate in any economic-development-related proposals;
- Rapidly developing industrial park adjacent to the port, with excellent infrastructure in place; and
- Commitment to improving services, and long-term growth plans.

The Port currently transloads 150–200 carloads per month. Outbound freight includes lumber, minerals and paper. Inbound freight includes minerals, wood products, automobiles, and magnesium or calcium chloride. The level of traffic is governed by the economics of rail transportation compared to truck transportation.

Most of the rail operations at the Port of Montana consist of freight interchanging between the UP and the BNSF.

2.5.2.2. Opportunities

The Port of Montana has management interest, adequate land, and handling equipment to accommodate intermodal operations at historical volumes. However, the railroads seem only interested in a high-volume operation of at least 200 containers per day (i.e., one complete intermodal train per day), which is far greater than historical volumes.

2.5.3. Shelby

The intermodal terminal at the Port of Northern Montana was closed by BNSF in May of 2004, but it still exists as a railroad trainload facility. The Port has highway access to I-15 and U.S. Highway 2. This facility is located just off BNSF’s primary intermodal corridor connecting the Pacific Northwest to key Midwest gateways. Additional information on the Port of Northern Montana, located at 112 1st Street, South, in Shelby, Montana, is available at the Port’s web site: www.pnmshelby.com.

2.5.3.1. Past and Present Operations

Activities of the Port of Northern Montana are spread across three locations: Area I (leased through Dick Irving, Inc.) has 20 acres, Area II has 20 acres allocated to lumber transload operations, and the third area is in the Shelby Industrial Park, which has 106 acres. The Port has a 15,000-ft loop track and will soon begin construction of a long spur track capable of accommodating full shuttle and container trains (see Figure 53).

The Port has access to the BNSF mainline: two tracks to the west, one track to the east, and one track to the southeast (the northern line is at capacity).

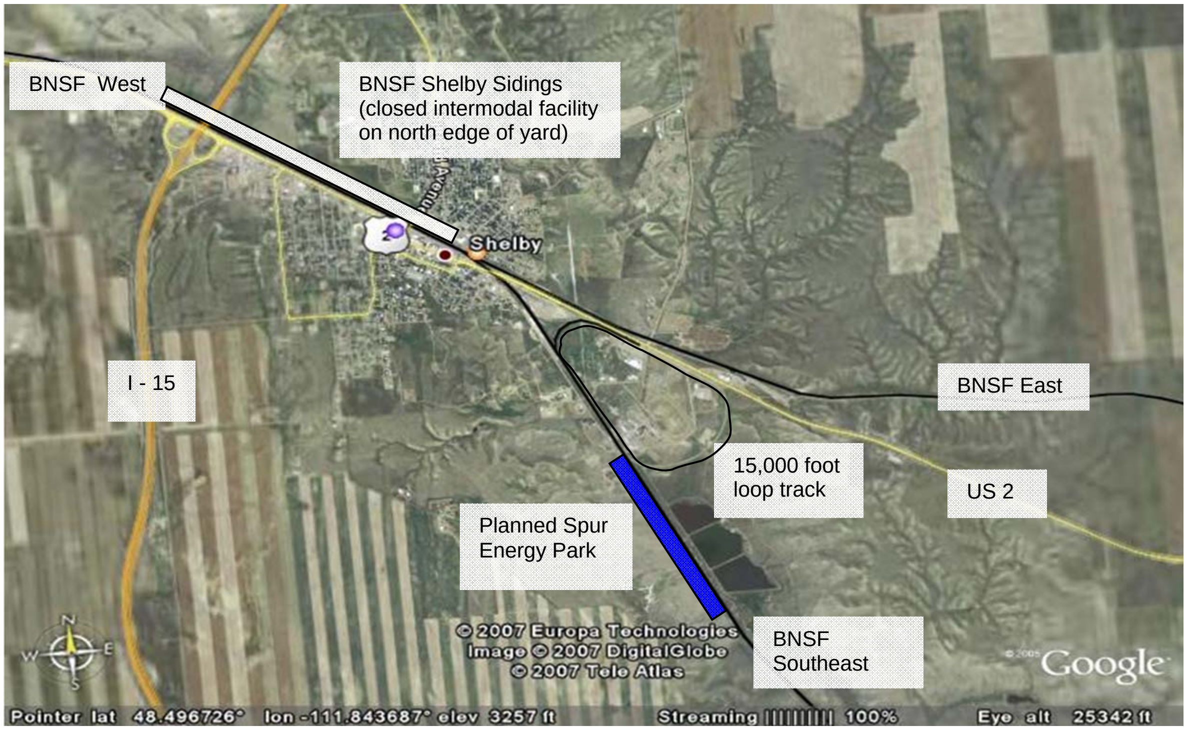


Figure 53: Aerial View of the Port of Northern Montana (Google Maps).

The Port does not currently provide intermodal service. BNSF previously maintained a small intermodal operation at Shelby (adjacent to the northernmost of the several sidings in the yard), but this service is no longer available (Figure 54). At that time, the majority of the intermodal business was TOFC (over 90 percent). Note that 10 to 14 intermodal trains are estimated to pass through Shelby every day on their way across Montana (Figure 55).

Figure 54: Disused BNSF Intermodal Facility at Shelby, Montana (Photo courtesy of Michael Cole).

Figure 55: Intermodal Train Passing Through Shelby, Montana (Photo courtesy of Michael Cole).

The Port of Northern Montana offers several advantages as a terminal if container service is restored in the future, including (Bonderud 2007):

- A new spur facility (scheduled to start construction this fall) that will be able to accommodate full shuttle and intermodal trains,
- Excellent highway access through I-15 and US 2,
- Located on major BNSF lines, and
- Accessible to Canadian shippers.

Currently, the Port’s main outbound freight is wheat (5,000–6,000 carloads/year to Seattle) and lumber (1,500 carloads/year to the southeast United States). The Port’s main inbound freight is LPG (250 cars/year). The Port also handles fertilizer, resin, drilling fluids, and recycled material.

2.5.3.2. Opportunities

The Port’s new spur line will give it ample track to handle full-length container trains. Potential customers include:

- Specialty grains—Dick Irvin Trucking currently hauls 20-ft containers of specialty grains from Fort Benton, Montana, to Calgary, Alberta.
- Pasta—Pasta Montana (Great Falls) currently trucks freight to Seattle, where it is then containerized.
- Freight out of Lethbridge, Alberta—Calgary handles approximately 6,000–7,000 containers/year of freight that originates in Lethbridge. Since Lethbridge is closer to Shelby than to Calgary, some of this freight might move instead through the Port of Northern Montana, if the Port had intermodal operations.

Expected container destinations include China, Japan, Taiwan, and Korea.

The Port has considered buying its own container railcars to provide full train service by purchasing service from BNSF similar to the operation the Port of Pasco has with Northwest Container Services connecting Pasco, Washington, to Tacoma. A second option is to consolidate blocks of business to attach to the back of existing trains passing through Shelby, similar to the Twin Cities Western operation between Montevideo and St. Paul, Minnesota, connecting grain shippers to the CP yard. Neither option has yet proven feasible.

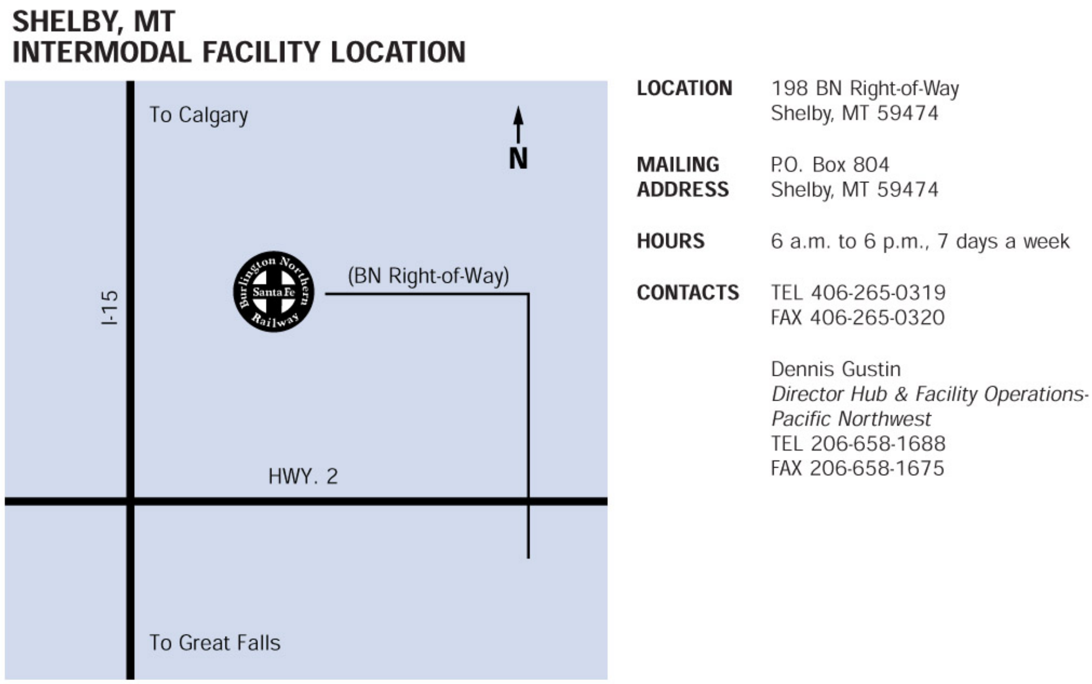


Figure 56: Shelby Intermodal Facility Location (BNSF 2008c).

2.5.4. Other Sites Considered

Given that the primary base-load commodity for the westbound intermodal container service would be wheat and barley, the notion of establishing a demonstration project at a grain shuttle facility was explored. Grain elevators already "lift" the grain from local trucks to load railroad hopper cars. It is possible that these sites could also load containers. Many of these facilities can already accommodate large shuttle trains. If loaded containers could be lifted onto rail cars at one or more of these terminals it is possible that a demonstration project could be developed at an existing grain elevator.

Grain elevators with shuttle train sidings could likely also accommodate well cars and/or alternative technologies such as Railrunner equipment (used in the Montevideo short-line operation in Minnesota). In Joliet, Illinois, facilities similar to grain elevator operations load empty ocean containers for rail movement to Southern California. This allows growers to load containers to 53,000 lbs because of their proximity to the BNSF rail terminal. In Montana these heavy containers could be taken directly to the on-dock intermodal terminals in Tacoma for export and never have to touch a state or local highway where bridge weight or highway truck size and weight regulations may limit the container payload.

2.6. Additional Considerations: Terminal Site Evaluation

Between 2004 and 2007, intermodal traffic volumes grew at a faster pace than the U.S. gross domestic product. This occurred for several reasons. International trading volumes have increased and containerized freight shipments are efficient for high volume operations. Trucking companies have found certain rail corridors with improved rail service can be effective transportation options when bundled with carrier customer service and delivery operations.

According to the IANA (2008d), 14,078,952 intermodal rail shipments were made in 2007—a 1.1 percent decrease from 2006. Container traffic represents 84.8 percent of all intermodal moves and grew 1.1 percent in 2007. There were approximately 3.6 million domestic container moves, an increase of 9.3 percent from 2006 volumes. ISO container volume represents approximately 59.2 percent of total intermodal movements in 2007, or about 8.3 million containers. International container traffic decreased by 2 percent from 2006 levels, due in part to transloading activities at or near deep water ports. IANA (2008d) reported approximately 2.1 million intermodal trailer movements in 2007, an 11.8 percent reduction from 2006. This reduction in trailer volumes has been led by the railroads seeking to improve intermodal economics through the use of containerization.

Montana shippers who trade with global partners would benefit from handling containerized cargo in direct rail movements from ocean terminals. Montana domestic shippers would benefit from intermodal service when shipments move more than 1,000 miles and can remain on the rail for 80–85 percent of the total door-to-door mileage, with a minimal amount of out-of-route miles when compared to door-to-door highway miles. With fuel surcharges increasing on truck shipments, intermodal rail options represent a cost effective alternative to trucking, if an intermodal network is available.

Three factors may have significant impact on intermodal volumes:

- Volume—Railroads wholesale their services to intermediaries such as intermodal marketing companies (IMCs) and truckload and ocean carriers, and do not sell to shippers directly (with few minor exceptions). These intermediaries are required to meet minimum revenue thresholds with each rail carrier. Intermediaries seldom have minimum volume commitments for their customers, but pricing is often more attractive if users make commitments. In order to justify a new intermodal rail terminal, BNSF has stated a minimum requirement of one train per week consisting of 250 containers.
- Seasonality—Agricultural shipments are impacted by seasonality and global environmental factors such as drought and crop disease. Demand during the past two growing seasons for U.S. grain has been strong due to drought and disease in other world markets. Because of the strong global demand typical seasonality patterns were not as pronounced. Agricultural products often are used as the backhaul for inbound retail imports. Typically this inbound market flow peaks between August and October. First-quarter volumes are lowest, followed by increasing demand from April to August. Carrier attempts to incent retailers to level the strong fourth-quarter peaks have had some success in recent years.

- Origin—Intermodal economics tend to favor shipments that move over 1,000 miles and originate within 200 miles of the intermodal terminal. BNSF estimates a 200-mile "catchment area" as a reasonable market reach for any intermodal terminal operation.

2.6.1. User Requirements

Users who were interviewed and responded to the surveys were interested in service to North American rail destinations as well as gateway ports to Asia and Europe. The primary equipment preference was for 20-ft boxes for export and 48-ft and 53-ft equipment for domestic users. When asked about train service frequency, users did not indicate a need for daily service if regular schedules exist.

2.6.2. Potential Freight Volumes

Three methods to determine potential freight volumes were used. The survey, which included users in Canada and the United States, estimated demand approaching 9,625 units per year if equipment was available. Using an estimation scheme developed by UGPTI based on FHWA statistics reported in the Commodity Flow Survey, container demand, as previously mentioned, was estimated at 15,900 TEU/yr for both domestic and international shipments moving both eastbound and westbound. The analysis completed herein based on crop and production data estimates 16,781 shipments in total, 11,856 of which would move over the West Coast ports. This freight volume (11,856 TEU/yr) represents about 228 outbound loads per week to West Coast ports, which is close to the 250 per week BNSF required on an outbound basis each week. The concerns are that a) these loads are distributed geographically all across the state, and b) there is not sufficient balance to bring in 250 loads per week from West Coast origins. There is also some seasonality for these shipments so a steady and predictable volume is not assured.

2.6.3. Lanes and Terminals

Looking at further considerations on intermodal terminal viability, population and manufacturing statistics for various potential terminal locations around the state are given in Table 27 (also see Figure 57).

Table 27: Potential Terminal Locations with 2002 U.S. Census Population and Manufacturing Statistics (U.S. Census Bureau 2006a, Montana Department of Commerce 2002).

Location	Manufacturing ($ Millions)	2002 Population
Billings	$2,138	94,071
Missoula	552	60,365
Great Falls	264	57,220
Butte	95	32,678
Bozeman	367	30,272
Helena	133	26,466
Kalispell	646	16,074
Miles City	n/a	8,288
Shelby	n/a	3,304
Glasgow	n/a	3,127
n/a not available		

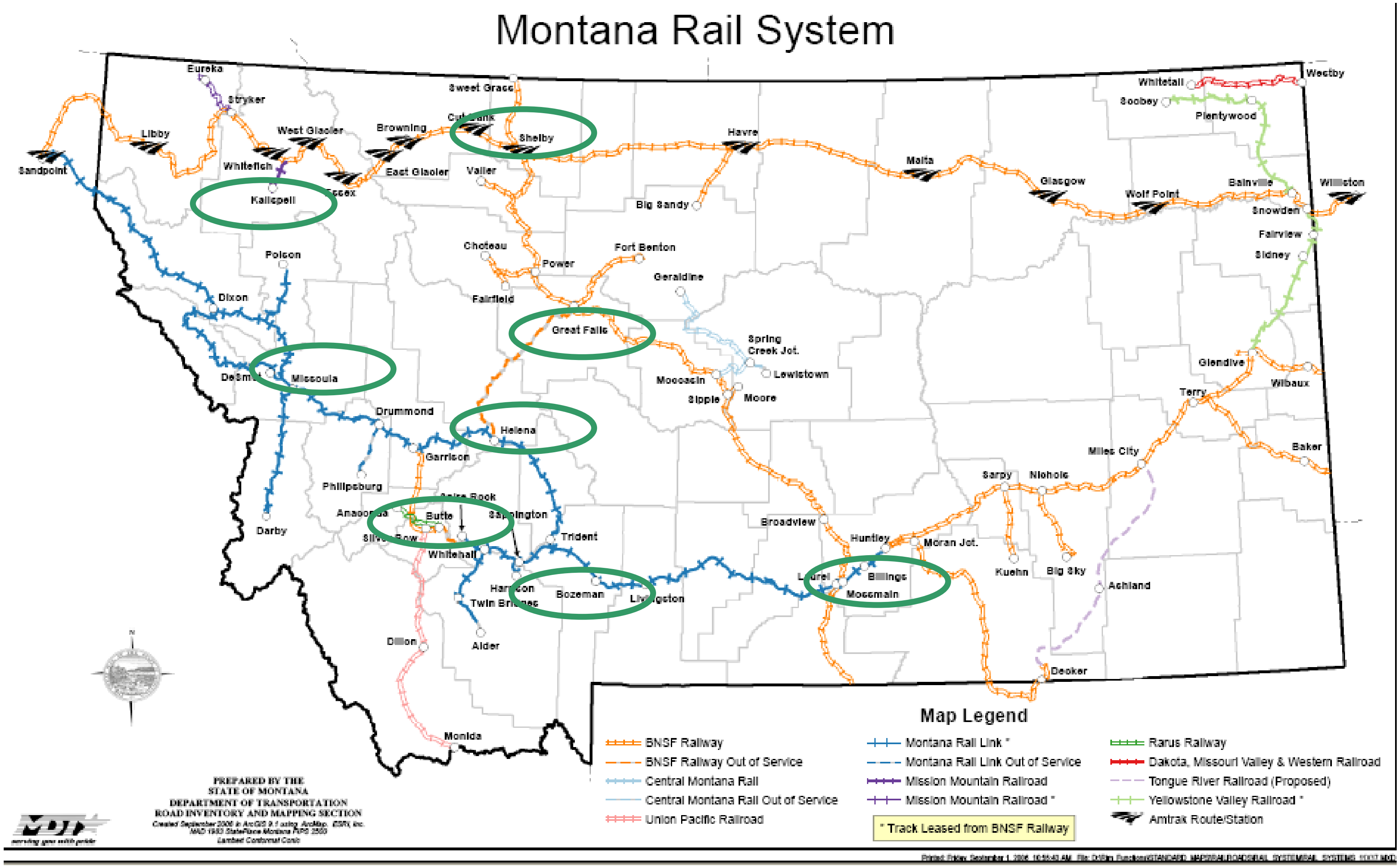


Figure 57: Montana Potential Terminal Sites Located on Class I Railroads (Montana Department of Transportation 2008).

To put these values in perspective, Table 28 shows the existing BNSF intermodal terminals and the 2006 U. S. Census population for the cities where they’re located. Note that these population statistics may be somewhat lower than the total for the regional catchment area served by this terminal. For example, Minneapolis is adjacent to St. Paul, Minnesota, but the Minneapolis population statistics are not included. While population is not the sole determinant of an intermodal location it is a significant indicator of demand and local GDP, which is a measure of economic activity. With the exception of two facilities, these terminals are all in cities with populations in excess of 100,000.

Table 28: BNSF Terminal Locations and 2006 U.S. Census Population Statistics (U.S. Census Bureau 2006b).

2008 BNSF Terminal Locations	Terminal Status	Local Population (2006 U.S. Census)
Los Angeles, CA	Existing	3,773,846
Chicago, IL	Existing	2,749,283
Houston, TX	Existing	2,074,828
Phoenix, AZ	Existing	1,429,637
Alliance (Dallas), TX	Existing	1,192,538
Memphis, TN	Existing	643,122
El Paso, TX	Existing	596,189
Seattle, WA	Existing	582,454
Denver, CO	Existing	566,974
Portland, OR	Existing	539,950
Albuquerque, NM	Existing	493,438
Fresno, CA	Existing	477,468
Atlanta, GA	Existing	442,887
Omaha, NE	Existing	382,776
Oakland, CA	Existing	377,256
St. Louis, MO	Existing	347,181
Stockton, CA	Existing	284,418
St. Paul, MN	Existing	272,217
New Orleans, LA	Existing	223,388
Birmingham, AL	Existing	217,131
San Bernardino, CA	Existing	210,061
Spokane, WA	Existing	197,446
Amarillo, TX	Existing	188,798
Kansas City, KS	Existing	145,266
Billings, MT	Existing	100,208
Minot, ND	New Site Development	34,745
Dilworth, MN	Existing	3,001

BNSF documents noted the following 2006 lift volumes:

- 22 percent of all BNSF terminals handled more than 500,000 annual lifts,
- 16 percent of all BNSF terminals handled 250,000–500,000 annual lifts,
- 19 percent of all BNSF terminals handled 100,000–250,000 annual lifts, and
- 43 percent of all BNSF terminals handled fewer than 100,000 annual lifts.

As noted in North Dakota’s Regional Intermodal Freight Project, prepared in August 2007 for ND DOT, BNSF terminals in operation in 2006 with fewer than 100,000 lifts included:

- Albuquerque, NM (25,000),
- Amarillo, TX (3,000),
- Billings, MT (11,000),
- Birmingham, AL (47,000),
- Dilworth, MN (2,000),
- El Paso, TX (18,000),
- Fresno, CA (33,000),
- Houston, TX (<100,000),
- Marion, AR (45,000),
- Omaha, NE (34,000),
- Portland, OR (<100,000),
- Richmond, CA (33,000),
- Spokane, WA (44,000),
- St. Louis, MO (72,000), and
- Westwego, LA (28,000).

The service lane for Montana traffic would be from a terminal location in Montana to the BNSF terminal in Seattle. In reviewing the above information, it is apparent that the container volumes associated with an intermodal terminal at any location in Montana will be low relative to BNSF’s general practice and desired level of operation. The trend in intermodal terminals is for large integrated operations.

2.7. Terminal Profile

The intermodal business model has changed based on the growth of international trade. Carriers serving West Coast international gateways have enough volume at the ports to justify dedicated intermodal trains to large Midwest markets such as Chicago, Memphis, Kansas City, Dallas and Minneapolis. The new terminals that have been built since 2000 are large-scale facilities capable of handling 750,000 units annually. Many are sited on large “inland port” locations surrounded by warehouse, light manufacturing and other value-added service providers. These new facilities have attracted public and private partnership funds and often economic development incentives to create jobs and new commercial opportunities. The list of new Inland Integrated Intermodal Terminals include Columbus, Ohio; Kansas City, Kansas; Dallas, Texas; Chambersburg, Pennsylvania; Winterhaven, Florida; and Detroit, Michigan.

Other intermodal facilities are being moved or relocated with public investment assistance as urban planners see the need to separate high-use rail terminals from urban traffic patterns. Three examples include Charlotte, North Carolina; San Antonio, Texas; and Chicago, Illinois.

While short-line railroads have typically not participated in intermodal service, several short lines are experimenting with this possibility. Traditionally, short lines did not have sufficient length of haul to justify intermodal rail economics. Due to the increased cost of fuel and inherently imbalanced rural markets, coupled with the availability of new "car-less technology," several regions are exploring this option.

In Montana, based on the demand assessment, which centers load volume along the Highway 2 corridor, the development or the reopening of a pre-existing terminal may be the most cost-effective means of providing an intermodal freight terminal. The cost of constructing a new terminal capable of handling 20,000 to 30,000 TEU/yr (a volume consistent with annual demand statewide in Montana) has been estimated at $28 million, as detailed in Figure 58. This estimate was developed by an engineering firm that builds intermodal terminals and holds several railroad master services contracts. No land costs were considered. The cost to establish a terminal for one train per week would require significant cost to be spread across a relatively low traffic volume. The key to intermodal profitability is load density and terminal throughput. To justify terminal investment it is likely that several other freight functions must also be undertaken to help spread the fixed costs so that no one function is unduly burdened.

Example Intermodal Facility 20,000 - 30,000 TEU's — PATRICK ENGINEERING INC.

ITEM/ACTIVITY	EXPENDITURE	COMMENTS
A GENERAL CONDITIONS	$740,625	General Conditions, Contractor Risk
B CONSTRUCTION		
1.00 DEMOLITION	$200,000	Structures, fencing, etc.
2.00 EXCAVATION AND GRADING	$2,209,500	Stripping, common excavation, subcut, fine grading, filter cloth
3.00 SITE UTILITIES	$2,110,000	Water, sanitary, storm, electrical, lighting, communication, portable compressor
4.00 TRACK	$2,620,000	New track and turnouts, road crossings, switch heaters
5.00 ROADWAYS AND PAD	$6,260,750	Granular, asphalt and concrete pavement, concrete pads, subballast
6.00 STRUCTURES AND BUILDINGS	$950,000	Administrative , box culvert, kiosks, gate system, canopy, maintenance
7.00 MISCELLANEOUS CONSTRUCTION	$462,250	Fencing, erosion control, signage, bollards, guard rail, building furnishings, landscaping
8.00 PHASING/RELOCATION/EXTERNAL	$0	
CONSTRUCTION SECTIONS A AND B	$15,553,125	
C ADMINISTRATIVE		
1.00 ENGINEERING	$1,088,719	Preconstruction services, construction oversite
2.00 PERMITTING	$489,923	Local, Provincial, Federal
3.00 MISCELLANEOUS	$3,895,000	Side lifters, yard dogs, external roads &utility connections, signals, flagging
ADMINISTRATIVE SECTION C	$5,473,642	
SECTIONS A THROUGH C	$21,767,392	
SECTION D CONTINGENCY	$6,530,218	Owner's, unforeseen, and construction contingency
PROPOSED PROJECT EXPENDITURE	$28,297,610	

Assumptions

1. One train per day
2. Facility is open 200 days per year
3. Facility is capable of handling 20,000 TEU's per year
4. Originating traffic 10,000 TEU's, in coming traffic 10,000 TEU's
5. 3 days of container storage
6. Storage is on Chassis
7. One through track 3,000M
8. One unloading track 1,000M
9. Pad 60M by 1,000M
10. Track can support 30,000 TEU's per year
11. Exclusions Land, highway and mainline relocation, environmental
12. This estimate has not allowed for labor, material and contractor cost fluctuation
13. The use of this estimate for specific sites is not approved by Patrick Engineering Inc.

Dated 04/28/08

Figure 58: Terminal Construction Cost Estimate.

2.7.1. Domestic and International Demand

Demand for intermodal service in Montana initially focused on export agricultural crops. Interviews with several economic development groups and regional shippers revealed opportunities to handle manufactured goods and supplies for the growing energy industry in Calgary and Edmonton. Military cargo and aviation development activities in the Great Falls area also represent an opportunity. Yet without potential freight rates and schedules user interest was hard to establish.

Although the surveys and the interviews did not yield the expected results, and the statistical analyses could not validate the volume required by BNSF, other factors and considerations may be considered. In the case of rural Minnesota, private investors shouldered the entire risk of the start-up operation on a modest scale with a short-line railroad. In Minot, not unlike areas of Montana geographically or economically, local leaders secured public money and the commitment of regional users to support a multi-modal terminal, which will also have a modest intermodal terminal and other freight functions. While this study could not validate the volumes required by BNSF to justify an intermodal operation, strong interest in developing intermodal rail service was identified.

2.7.2. Risk Assessment of Mode Shifts

Transportation historically has been a competitive industry. Since deregulation in the 1980s, rail and trucking costs have declined, and both modes have made significant progress in productivity improvements and operational improvements. In the past decade trade growth has increased the demand for rail, intermodal and trucking services. The FHWA predicts that freight volumes will nearly double by 2020; growth since 2004 has stretched all carriers and infrastructure capacity.

Many factors influence mode shifts—some shifts occur due to capacity constraints, some are due to cost changes or a disruption in the equipment supplies. Sometimes mode shifts occur due to changes in customer requirements such as reduced order quantities or transit times; sometimes they are due to carrier business constraints. The freight business is dynamic and changes rapidly.

Railroads have developed choke points along key corridors where coal and international container trade dominates the lanes resulting in lane and customer rationalization in certain corridors. Trucking companies are struggling with soaring fuel prices and record levels of congestion in urban areas. Increasing costs may precipitate a mode shift. Intermodal volumes and inquiries have grown as a result of increased trucking costs.

Contracts used to be a tool that carriers would use to lock in base volume business, but in an era where demand is exceeding supply, many rail carriers have dropped contracting practices and have gone to tariff-based pricing. This allows carriers to change rates on 30-days written notice and to more flexibly pursue new business. Changes in transportation rates can cause mode shifts.

Given unprecedented equipment shortages in rail and ocean transportation sectors, some transportation managers are seeking alternative modes due to equipment availability, fuel surcharges and load balance issues. Ocean and intermodal carriers used to regularly reposition empty equipment to areas of greater demand. This has recently changed as the railroads began to increase empty repositioning rates and give priority to loaded shipments over empty repositioning movements.

In dynamic markets long-term customer commitments are often required for new service or terminal investments.

2.8. Montana Shipper Cost Model

This section of the report looks at shipper logistics costs and trade-offs between modes. Figure 59 gives a continuum of transportation costs by volume and velocity. Rail intermodal falls between truck and rail carload and as noted, but requires longer distances to be competitive.

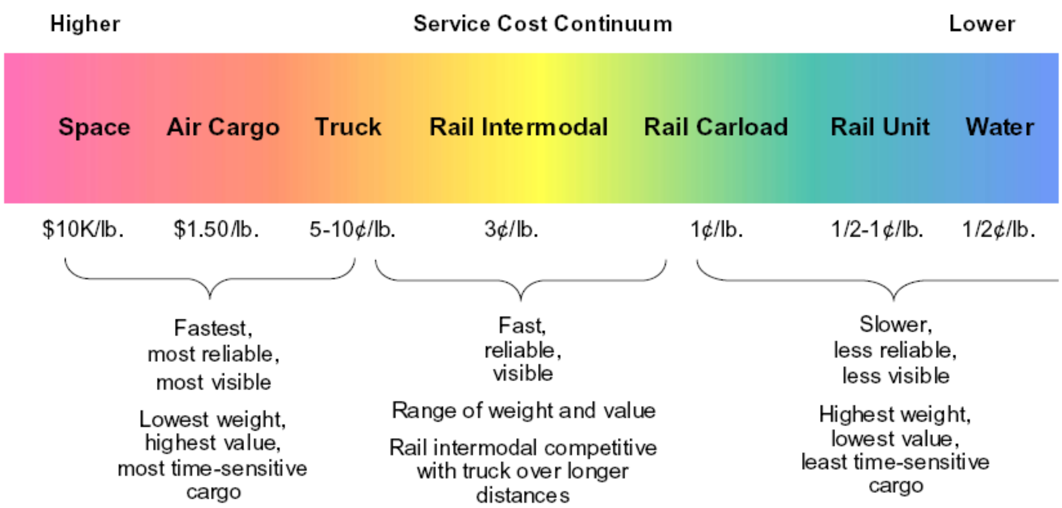


Figure 59: Cost Continuum

Large quantities of bulk agricultural products move with the greatest efficiency and lowest cost when rail shuttle trains are available. For smaller quantities, single-car rail shipments would be the next least expensive mode. Railroads have made a number of productivity improvements in carload capacity and, as a simple rule of thumb, one railcar now takes the place of four truckloads.

When agricultural products are exported, the seller needs to certify the crop. This typically occurs at the point where the shipment is loaded. The cost to certify a railcar shipment is the same as a single truck or container, therefore intermodal and truck transportation savings would have to be great enough to cover other incremental costs associated with the shipment and handling of four containers and four inspections. Each supply chain transportation option needs to quantify the total delivered cost, by each mode, in order to make a fair analysis.

Fuel surcharges have been significant enough for many shippers to consider re-evaluating their mode of transportation. Fuel surcharges are a greater percentage of total transportation cost for truck shipments than for intermodal shipments. Intermodal fuel surcharges are greater as a percentage of total transportation cost than for rail or shuttle-train movement.

Ideally, the Montana shipper cost model needs to compare rail, truck, and intermodal costs (recognizing that based on the commodities and geographic location involved in this study, transport by aircraft and ship need not be considered). Although shippers were asked about shipping rates none were provided for this analysis. Contract rates are proprietary and were not available. BNSF directed us to ocean carriers and intermodal marketing companies for lane rates that were not provided by these intermediaries.

Estimates of rail shipping costs appeared to only be available when specific shipping requirements were known, which is consistent with these costs varying significantly depending on these requirements. Intermodal rates were difficult to estimate in the absence of existing intermodal service within the state, as well as the absence of intermodal service being offered elsewhere under conditions sufficiently similar to those in Montana.

In the case of trucking costs, truck rates cannot be established without exact shipper or terminal locations, yet zip-code-to-zip-code truck rates were provided. The matrix in Table 29 shows a western region cost matrix, using 48,000 lbs per truckload with no fuel surcharge or any driver or terminal accessorial charges.

Table 29: Dry Van Truck Rates, 48,000 lbs, Terminal to Terminal (AFC 2008).

Truck Rates, in US Dollars						
City		Seattle	Tacoma	Portland	Oakland	Los Angeles
	zip code	98168	98401	97209	94607	90731
Billings	59101	1,180	1,195	1,675	1,550	1,620
Bozeman	59715	1,095	1,125	1,265	1,275	1,400
Butte	59701	975	1,000	1,135	1,280	1,410
Great Falls	59401	1,140	1,150	1,525	1,605	1,505
Helena	59601	980	995	1,145	1,315	1,445
Missoula	59801	850	875	955	1,180	1,560
Kalispell	59901	885	900	1,000	1,450	1,680

Fuel surcharges change weekly, according to Department of Energy information. Individual shipper contracts often establish fuel surcharges. Table 30 shows a representative fuel surcharge matrix for intermodal, LTL and truck brokerage movements. Twin Modal is an intermodal marketing company that represents all three modes of transportation.

Table 30: Representative Fuel Surcharges for Intermodal, LTL and Truck Shipments.

TWIN MODAL Fuel Surcharge Scale

Truckload		LTL		Intermodal			
When DOE Fuel Index is between	**TL FSC**	**When DOE Fuel Index is Between**	**LTL FSC**	**When DOE Fuel Index is Between**	**Rail FSC**		
$1.20 - $1.25	1.50%	*$1.21 - $1.25*	2.00%	*$0.00 - $1.16*	0.00%		
$1.26-$1.40 add 0.5% for eve		$1.26-$3.50 add 0.5% for every		$1.17-$2.51 add 0.5% for every 5			
cent increment		cent increment		cent increment			
$1.41-$2.50 add 1% for every 5							
cent increment							
$2.51 - $2.55	25.00%	*$3.51-$3.55*	26.50%	*$2.52 - $2.55*	19.00%	*$3.88 - $3.91*	36.00%
$2.56 - $2.60	26.00%	*$3.55-$3.60*	27.00%	*$2.56 - $2.59*	19.50%	*$3.92 - $3.95*	36.50%
$2.61 - $2.65	27.00%	*$3.61-$3.65*	27.50%	*$2.60 - $2.63*	20.00%	*$3.96 - $3.99*	37.00%
***$2.66 - $2.80**	**28.00%**	*$3.66-$3.70*	28.00%	*$2.64 - $2.67*	20.50%	*$4.00 - $4.03*	37.50%
$2.81 - $2.95	29.00%	*$3.71-$3.75*	28.50%	*$2.68 - $2.71*	21.00%	*$4.04 - $4.07*	38.00%
$2.96 - $3.10	30.00%	*$3.76-$3.80*	29.00%	*$2.72 - $2.75*	21.50%	*$4.08 - $4.11*	38.50%
$3.11 - $3.25	31.00%	*$3.81-$3.85*	29.50%	*$2.76 - $2.79*	22.00%	*$4.12 - $4.15*	39.00%
$3.26 - $3.40	32.00%	*$3.86-$3.90*	30.00%	*$2.80 - $2.83*	22.50%	*$4.16 - $4.19*	39.50%
$3.41 - $3.55	33.00%	*$3.91-$3.95*	30.50%	*$2.84 - $2.87*	23.00%	*$4.20 - $4.23*	40.00%
$3.56 - $3.70	34.00%	*$3.96-$4.00*	31.00%	*$2.88 - $2.91*	23.50%	*$4.24 - $4.27*	40.50%
$3.71 - $3.85	35.00%	*$4.01-$4.05*	31.50%	*$2.92 - $2.95*	24.00%	*$4.28 - $4.31*	41.00%
$3.86 - $4.00	36.00%	*$4.06-$4.10*	32.00%	*$2.96 - $2.99*	24.50%	*$4.32 - $4.35*	41.50%
$4.01 - $4.15	37.00%	*$4.11-$4.15*	32.50%	*$3.00 - $3.03*	25.00%	*$4.36 - $4.39*	42.00%
$4.16 - $4.30	38.00%	*$4.16-$4.20*	33.00%	*$3.04 - $3.07*	25.50%	*$4.40 - $4.43*	42.50%
$4.31 - $4.45	39.00%	*$4.21-$4.25*	33.50%	*$3.08 - $3.11*	26.00%	*$4.44 - $4.47*	43.00%
$4.46 - $4.60	40.00%	*$4.26-$4.30*	34.00%	*$3.12 - $3.15*	26.50%	*$4.48 - $4.51*	43.50%
$4.61 - $4.75	41.00%	*$4.31-$4.35*	34.50%	*$3.16 - $3.19*	27.00%	*$4.52 - $4.55*	44.00%
$4.76 - $4.90	42.00%	*$4.36-$4.40*	35.00%	*$3.20 - $3.23*	27.50%	*$4.56 - $4.59*	44.50%
$4.91 - $5.05	43.00%	*$4.41-$4.45*	35.50%	*$3.24 - $3.27*	28.00%	*$4.60 - $4.63*	45.00%
$5.06 - $5.20	44.00%	*$4.46-$4.50*	36.00%	*$3.28 - $3.31*	28.50%	*$4.64 - $4.67*	45.50%
$5.21 - $5.35	45.00%	*$4.51-$4.55*	36.50%	*$3.32 - $3.35*	29.00%	*$4.68 - $4.71*	46.00%
$5.36 - $5.50	46.00%	*$4.56-$4.60*	37.00%	*$3.36 - $3.39*	29.50%	*$4.72 - $4.75*	46.50%
$5.51 - $5.65	47.00%	*$4.61-$4.65*	37.50%	*$3.40 - $3.43*	30.00%	*$4.76 - $4.79*	47.00%
$5.66 - $5.80	48.00%	*$4.66-$4.70*	38.00%	*$3.44 - $3.47*	30.50%	*$4.80 - $4.83*	47.50%
$5.81 - $5.95	49.00%	*$4.71-$4.75*	38.50%	*$3.48 - $3.51*	31.00%	*$4.84 - $4.87*	48.00%
$5.96 - $6.10	50.00%	*$4.76-$4.80*	39.00%	*$3.52 - $3.55*	31.50%	*$4.88 - $4.91*	48.50%
$6.11 - $6.25	51.00%	*$4.81-$4.85*	39.50%	*$3.56 - $3.59*	32.00%	*$4.92 - $4.95*	49.00%
		$4.86-$4.90	40.00%	*$3.60 - $3.63*	32.50%	*$4.96 - $4.99*	49.50%
		$4.91-$4.95	40.50%	*$3.64 - $3.67*	33.00%	*$5.00 - $5.03*	50.00%
		$4.96-$5.00	41.00%	*$3.68 - $3.71*	33.50%	*$5.04 - $5.0*	50.50%
		$5.01-$5.05	41.50%	*$3.72 - $3.75*	34.00%	*$5.08 - $5.1*	51.00%
		$5.06-$5.10	42.00%	*$3.76 - $3.79*	34.50%	*$5.12 - $5.1*	51.50%
		$5.11-$5.15	42.50%	*$3.80 - $3.83*	35.00%	*$5.16 - $5.1*	52.00%
		$5.16-$5.20	43.00%	*$3.84 - $3.87*	35.50%	*$5.20 - $5.2*	52.50%

* *If the U.S National Average Fuel Index exceeds $6.25 per gallon,the fuel surcharge increases 1% for*	*If the U.S National Average Fuel Index exceeds $5.20 per gallon, the fuel surcharge increases 0.5% for every 5-*	*If the U.S National Average Fuel Index exceeds $5.23 per gallon, the fuel surcharge increases 0.5% for every 4-cent*

**** With fuel increasing at unprecidented rates, we shortened our FSC to be mor user friendly and easier to read.**

Revised 10.24.07

Effective 10.30.07

Figure 60 shows the fluctuation in ocean rates for animal feed and soybeans as a representative illustration of how grain rates might change based on container availability and demand.

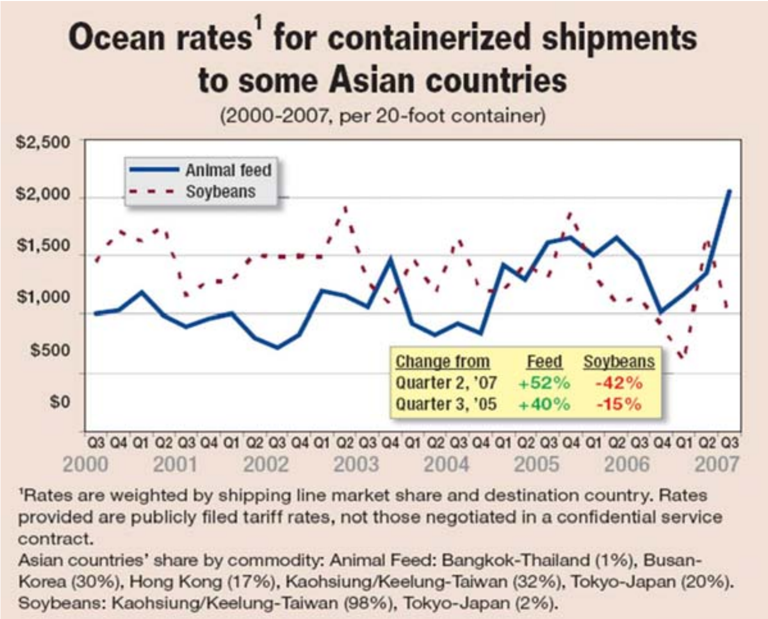


Figure 60: Ocean Rates for Containerized Grain (American Shipper Magazine 2008).

Figure 61 illustrates the seasonality for grain shipments. February volumes were approximately 22,000 containers, while peak October volumes approach 37,000 TEU. While this seasonality is difficult to deal with on an operational level at the terminal, it is also important to note that inbound containers increase in volume from September through December, often loaded with holiday merchandise. Sustaining a small terminal would be difficult with this volatility unless other complementary business activities can be developed.

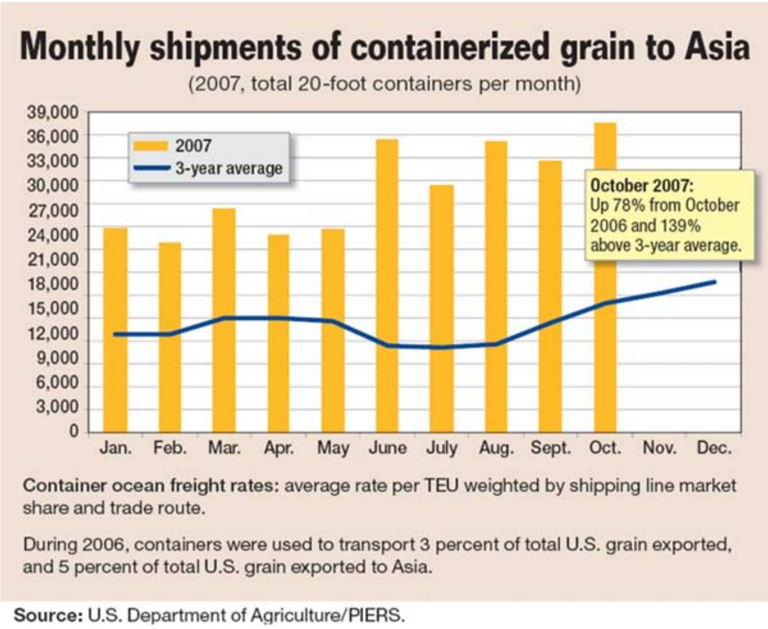


Figure 61: Monthly Containerized Grain Fluctuation (American Shipper Magazine 2008).

2.8.1.1. Truck Availability

The user survey included several questions about truck availability and contract commitments. Seventy-four percent of the respondents indicated that truck capacity is adequate, and 13 percent said that trucking availability was less than adequate.

Users were asked about how many times their primary carriers turned down loads tendered to them in the past six months. Over 75 percent of those who completed the survey responded that this happened less than 5 percent of the time or was not an issue.

When potential users were asked how they expected intermodal rates to compare to truckload prices, 58 percent said they felt that they would save more than $100 per load if intermodal service was available, and 21 percent expected to save less than $100 per shipment.

Users who have contracts in place often cannot be as flexible about trying new services. Sixty-six percent of the respondents indicated they had no contracts in place and purchased transportation on a spot-market basis. When asked if users would commit to an intermodal contract, 53 percent indicated that they would sign a one-year contract for intermodal service. In some cases new intermodal services have been introduced with guaranteed volume contracts. These are often referred to as "take-or-pay" commitments. Eighty-one percent of those who responded to the survey indicated that they would not commit to guaranteed volumes.

2.9. Current Intermodal Activities

Figure 62 and Figure 63 show how the weight and value of export shipments are increasing. This is impacting many outbound vessels that call at West Coast ports. Many ships are limiting their export grain bookings due to ship weight and balance. Given the nature of exports from the State of Washington, Montana will compete with neighboring states for export capacity on westbound vessels. Because of the weak U.S. dollar, export value is growing, which is putting pressure on ocean carriers to allocate empties to the highest value customer. This is impacting the volume of containers available to grain shippers. These trends need to be carefully monitored. Several years ago many thousands of empty containers passed through Montana every week. With the change in global trade economics this is no longer the case.

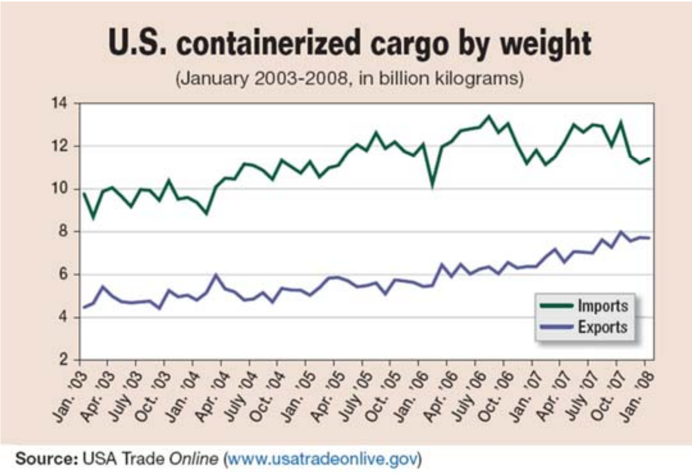


Figure 62: Containerized Cargo by Weight (American Shipper Magazine 2008).

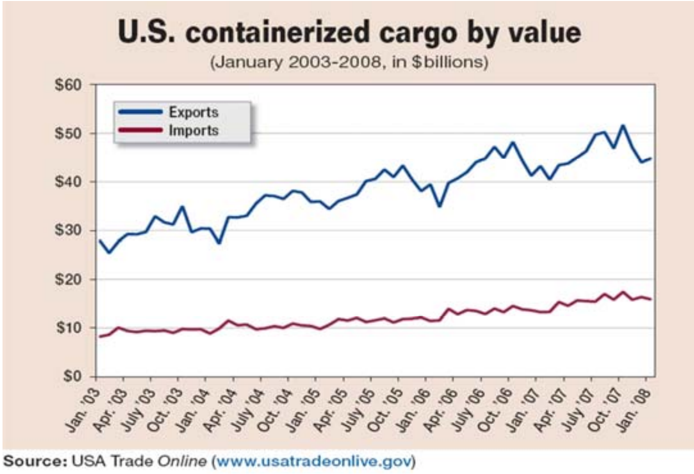


Figure 63: Containerized Cargo by Value (American Shipper Magazine 2008).

2.9.1. Inbound Volume Profile

Inbound train service from Chicago and Minneapolis and St Paul supports the LTL shippers in the eastern portion of Montana. The Chicago gateway is an excellent connection with the largest number of train connections of any Midwestern hub city for shipments originating in the eastern United States.

For import goods from Asia, containers are trucked to the state from the deepwater port facilities in the Pacific Northwest. Some ocean carriers are beginning to limit street interchanges and movement of their boxes beyond a 100-mile radius of the port. This restriction could impact the inbound shipments to Montana, and the resulting equipment availability.

2.9.2. Equipment Ownership

In mid-2006 BNSF adopted a policy to no longer provide rail-managed equipment for intermodal users. This policy had a significant impact on small shippers and many LTL consolidators that use the Billings intermodal facility. Equipment ownership and management requires capital investment for equipment and a full-time management function to track, trace and assure equipment is loaded and returned to the owner. Many small LTL shippers do not have the capital, balanced business flows or a dedicated staff to justify investment in a fleet of intermodal equipment.

2.9.3. Lanes Served

Today the only intermodal (trailer or container on flatcars) service offered in Montana is at a facility owned by the BNSF in Billings. The schedule in Figure 64 shows the cut off and availability for intermodal shipments from Chicago to Billings. Only westbound service is available for loaded shipments. This is the only intermodal service lane listed on the BNSF web site.

ABOUT BNSF | PROSPECTIVE CUSTOMER | MARKETS & SERVICES | CUSTOMER TOOLS | INVESTORS | MEDIA | SUPPLIERS | COMMUNITIES | EMPLOYEES & RETIREES | CAREERS

BNSF RAILWAY

LOGIN | PRICES

Intermodal Service Schedules - Search Results

- Intermodal Service Schedules - Search
- Help

Origin: CHICAGO, IL **Destination:** BILLINGS, MT

Service Level: **Equipment:**

Back

Download to
- PDF Format
- Comma Separated

Your search returned 1 record.

Origin: CHICAGO, IL
Destination: BILLINGS, MT

Service Level - E	CUTOFF	MON 1700	TUE 1700	WED 1700	N/A	FRI 1700	SAT 1700	SUN 1700
TRAILER	AVAIL	WED 2130	THU 2130	SUN 0800	N/A	SUN 2130	MON 2130	TUE 2130
	GOAL HRS	54	54	88	N/A	54	54	54

The schedules are based on service under normal conditions and are subject to change without prior notification. For questions or modifications please send an email to: intermodal@bnsf.com or call your Intermodal Marketing or Customer Solutions representative at 1-888-428-2673 (1-888-IBU-BNSF).

Figure 64: Billings Intermodal Service Schedule (BNSF 2008c).

2.9.4. Growth Projection

Based on a weakening dollar and port diversification decisions made by many retailers as a result of the labor disruption in Southern California in 2004, intermodal volumes from West Coast ports have softened. Intermodal volumes reported in Figure 65 reflect the recent softening in the U.S. market. While intermodal traffic previously enjoyed a robust growth rate that was stronger than the growth in GDP, industry experts said that containerized transportation has simply leveled off in the near term. Population growth and the outsourcing decisions of many Fortune 100 firms still have industry analysts fairly confident that growth will return.

Intermodal Traffic

Cumulative, 4 weeks 2008

Source: AAR Policy and Economics Department

	U.S. RAILROADS		CANADIAN RAILROADS	
	2008 Numbers	% up/down from 2007	2008 Numbers	% up/down from 2007
Total Units	842,973	-4.2	181,896	11.0
Trailers	178,949	-5.3	6,509	-0.1
Containers	664,024	-3.8	175,387	11.4

Figure 65: North American Intermodal Traffic Volume (Progressive Railroading Magazine 2008).

2.10. Interview Ocean Carriers

Ocean carriers that call the ports of Seattle–Tacoma and Portland were contacted about their interest in providing ocean containers (20 ft and 40 ft) for Montana growers. A description of a site in Montana was provided, coupled with a weekly unit-train rail service provided by BNSF. Potential volumes were identified.

Carriers collectively are responding to several industry trends and factors. The weakening U.S. dollar has led to an increase in the export of higher value products. Many containers with head haul (import destinations) in the Midwest (Chicago and upper Midwest markets) are now in demand for export transportation. The strength of the European markets and currencies have significantly impacted the flow of containers, which has altered the number of empty containers that move empty through Montana for return to Asia.

Rail rates for a number of contract holders have been increased, which has also impacted the flow of containers across the intermodal rail core routes passing through Montana. Several carriers have changed gateways from the Pacific Northwest to the Pacific Southwest for discretionary cargo.

The focus on improved international container utilization due to the increasing size of vessels has further limited the inland flow of containers. As vessel size has increased and as the industry strategy of port diversification has grown, fewer containers are being allowed to move inland. The largest carriers have announced a reduction or rationalization of inland terminals served. Some have gone so far as to limit the inland cartage of containers made available at deepwater ports in an effort to improve their chassis and box utilization.

All of these factors have limited the availability of empty international container equipment in Montana.

2.10.1. Pacific Northwest Carriers

Ocean carriers with vessel calls in Portland and Seattle–Tacoma were contacted about their interest in providing service to Montana under the following conditions:

- 250 containers per week from one terminal in Montana,
- One destination location in Seattle area, and
- One train per week to be run on a fixed schedule.

Several carriers expressed interest but did not have enough equipment to be the sole source provider of a train per week. While actual available container volumes varied, none had more than 20 extra per week on an annual basis. Carriers expressed concern over the scarcity of equipment and noted that with the strong export demand for higher value manufactured goods, equipment was often allocated by destination location and shipment revenue.

2.11. Exploration of Railroad Incentives

Incentives are often offered as an economic development tool for new businesses and industries interested in opening new markets or facilities. Economic development professionals have a well-stocked tool chest, which varies by state and may include tax incentives, workforce development assistance, interest free loans, grants and development assistance, and other benefits.

The National Surface Transportation Policy and Revenue Study Commission (NSTPR 2008) reported that the nation's railroad system will need $175 billion to $195 billion of investment over the next 20 years to meet freight volume demand, but private sector railroads predict that they will only be able to invest $145 billion over the same time frame. This shortfall of $30 billion has become the focus of proposed legislation that would provide Class I railroads with an investment tax credit. Many of those interviewed by phone said that the need for railroad investment is important, yet the policy should require that tax credits earned in the state should result in further investments within the state.

Determining public and private benefits is a difficult task. In several proposed public–private partnerships, such as the Chicago CREATE program, railroads have said that the private sector will pay for private sector benefits and that the public sector should pay for the public sector benefits.

Figure 66 identifies several areas of benefits that can often be quantified to justify public investment.

Variable Description	Explanation
Transportation and Economic Benefits	
Avoided maintenance costs	If the project preserves rail service, the no-action alternative may put more trucks on the highway. This may produce a net positive or negative benefit, to be evaluated based on the type of road affected and the cost of maintaining the rail line.
Reduction in shipper costs (for shipments originating in State) – freight only	Benefits derived from lower logistic costs to the shippers, which ultimately can lead to lower consumer prices.
Reduction in automobile delays at grade crossings	Benefits resulting from improving grade crossing and decreasing automobile delays.
Economic Impacts	
New or retained jobs	Jobs that a particular project/action may keep from moving out of the State (e.g., by construction of a rail spur serving a factory or warehouse, etc.), or new jobs that are created within the State. Also to be considered are changes in job quality and pay levels (e.g., adding, losing, or changing union jobs). This measure accounts for both retained and new jobs.
Tax increases from industrial development	A rail action/project may foster industrial development that results ultimately in increased industrial property taxes to the State.
External Impacts	
Safety Improvements	By diverting truck freight to rail, savings on highway safety improvements can occur.
Environmental Benefits	Railroads are on average three or more times more fuel efficient than trucks. The State can benefit from savings due to environmental improvements.

Figure 66: State Cost–Benefit Variables to Consider (WSTC 2006).

2.11.1. New Mexico Case Study

The UP and the state of New Mexico have partnered to create a $150 million railroad refueling facility and logistics gateway in Strauss, New Mexico—about four miles northwest of Santa Teresa (Figure 67).

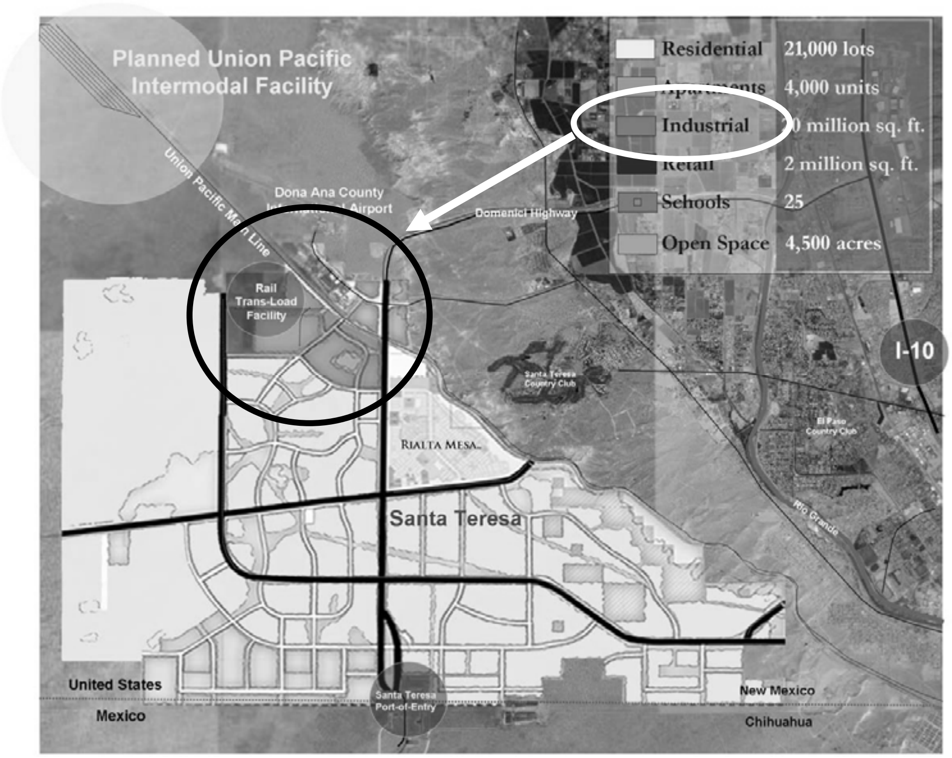


Figure 67: Santa Teresa, New Mexico, Intermodal Facility.

The development includes a land swap between the UP and the Bureau of Land Management. UP will acquire land adjacent to the Santa Teresa airport in exchange for other property it owns in New Mexico. Gov. Bill Richardson and the 2007 state legislature agreed to commit $5 million to improve four miles of a county road connecting the Pete Domenici Highway in Santa Teresa with the new UP facility in Strauss. The state also agreed to remove the gross receipt and compensating tax for locomotive fuel by July 1, 2009, as a condition for UP to build the proposed 934-acre railroad intermodal facility (shown in the dark circle), which is projected to handle a minimum of 100,000 container units annually. The new intermodal terminal is estimated to cost $10 million to construct and will be the largest such facility in the Southwest. Senators Pete Domenici and Jeff Bingaman also secured $14 million for the infrastructure improvement from the SAFETEA-LU Act of 2005 and are making efforts to expand the hours for the Santa Teresa port of entry. These actions will result in 285 UP jobs being relocated to the area. Both projects are anticipated to have a $300 million economic impact in the region.

2.11.2. List of Public and Private Incentives Available in Montana

Figure 68 lists a number of public and private incentives available for Montana projects. Some programs already exist and some are proposed. In nearly every example of public–private partnerships a combination of funding mechanisms along with local matching funds is necessary.

Depending on the region, the potential volume and the estimated economic benefit, actual program funding may vary.

	Funding Mechanism	Revenue Generation Potential	Notes	Source of Concept
Existing Tools	National Highway System (NHS)	$30.5 billion from 2005 to 2009	Provides funding on designated highway intermodal connectors to intermodal facilities also NHS.	23 USC Section 103
	Surface Transportation Program (STP)	$32.6 billion from 2005 to 2009	Funds projects on any Federal aid highway, bridge projects on any public road, transit capital projects, and other state or local projects. Can be used for improvements to accommodate rail freight.	23 USC Section 133
	Interstate Maintenance (IM)	$25.2 billion from 2005 to 2009	Provides funding for resurfacing, restoration, rehabilitation, and reconstruction (4R) of Interstate facilities.	23 USC Section 119
	Bridge Program	$21.6 billion from 2005 to 2009	Provides funding for replacement, rehabilitation, and systematic preventive maintenance of bridges.	23 USC Section 144
	Capital Grants for Rail Relocation Grants	$1.4 billion from 2006 to 2009	Provides grants for local rail line relocation and improvement projects. Projects should improve vehicle traffic flow, quality of life, and economic development.	SAFETEA-LU Section 9002
	Truck Parking Facilities	$.025 billion from 2006 to 2009	Provides funds for projects addressing the shortage of long-term parking for commercial vehicles on the NHS.	SAFETEA-LU Section 1305
	Congestion Mitigation and Air Quality Improvement Program (CMAQ)	$8.6 billion from 2005 to 2009	Funds transportation projects in nonattainment and maintenance areas that improve air quality. Can be used for start up costs associated with operations (for up to three years).	SAFETEA-LU Section 1103
	Rail-Highway Grade Crossings Program	$.880 billion from 2006 to 2009	Provides funding to eliminate rail-highway crossing hazards.	SAFETEA-LU Section 130
	Coordinated Border Infrastructure Program	$.71 billion from 2005 to 2009	Provides funding to border states for projects that improve the safe movement of motor vehicles and cargo at or across the U.S. border with Canada and Mexico.	SAFETEA-LU Section 1303
	FTA Section 5309 - Rail Modernization	$6.07 billion from 2006 to 2009	Funds for capital improvements on "fixed guideway" systems that have been operating for at least seven years.	SAFETEA-LU
	USACE Harbor Maintenance	n/a	Funding for operations and maintenance of federally authorized channels for commercial navigation	FHWA
	US Department of Commerce - Economic Development Administration Funds	n/a	Grants for project site that promote job creation and/or retention in economically depressed industrial areas.	FHWA
	US Department of Agriculture - Community Facility Program	n/a	Grants and loans to fund construction, enlargement, extension, or improvement of community facilities in rural areas of less than 20,000 people	FHWA
	Environmental Protection Agency - Brownfield Redevelopment Program	n/a	Provides grants and loans for brownfield site cleanup	FHWA
	Transportation Infrastructure Finance and Innovation Act (TIFIA)	$2 billion per year	$122 million of credit support per year	SAFETEA-LU Section 1601
	State Infrastructure Banks (SIBs)	Up to 10% of NHS, STP, Bridge, and Equity Bonus Programs	At the discretion of State DOTs	SAFETEA-LU Section 1602
	Rail Rehabilitation and Improvement Financing (RRIF)	$35 billion from 2005 to 2009	Loans and credit assistance to public and private sponsors of rail and intermodal projects administered by FRA; $7 billion directed to short line and regional railroads	SAFETEA-LU Section 9003
	Private Activity Bonds	$15 billion bond ceiling	Issuance of tax-exempt bonds for highway and freight transfer facilities	SAFETEA-LU Section 11143
	Grant Anticipation Revenue Vehicle (GARVEE) Bonds	n/a	Revenue-anticipation bonds	23 USC Section 122
Proposed Concepts	Freight Rail Infrastructure Capacity Expansion Act of 2007	n/a	25% tax credit for freight rail infrastructure capacity; Based on investment credit claims up to $300 million per year	S. 1125 sponsored by Sen. Trent Lott (R-MS) and Sen. Kent Conrad (D-ND); HR. 2116 sponsored by Rep. Eric Cantor (R-VA) and Kendrik Meek (D-FL)
	Investment Tax Credits for Freight	$1.2 billion per year	Based on investment credit claims up to $500 million per year	AASHTO
	Customs Fees	$2.8 billion per year	Based on 10% of customs fee revenue	AASHTO
	Container Fee	$2.8 billion per year	Based on a $30 per container (TEU-equivalent) fee	AASHTO
	Tax Credit Bonds - Build America Bonds Act of 2007	$50 billion bond ceiling over six years	Minimum 1% allocation for each state by the Transportation Finance Corporation	Sen. Ron Wyden (D-OR) and Sen. John Thune (R-SD)
	Tax Credit Bonds - National Infrastructure Bank Act of 2007	$60 billion initial bond ceiling	All major infrastructure projects with at least $75 million of federal commitment are eligible, including transit systems, housing properties, roads, bridges, drinking water systems, and wastewater systems	Sen. Chris Dodd (D-CT) and Chuck Hagel (R-NE)
	US Truck Freight Bills	$6.2 billion per year	1% fee on total annual US billing of $622.9 billion	ARTBA - Critical Commerce Corridors
	US All Modes Freight Bills	$7.4 billion per year	1% fee on total annual US billing of $739 billion	ARTBA - Critical Commerce Corridors
	Ton-Based Freight Movement by Trucks	$.107 billion per year	At $0.01 per ton assessment	ARTBA - Critical Commerce Corridors
		$10.7 billion per year	At $1 per ton assessment	ARTBA - Critical Commerce Corridors
	Ton-Based Freight Movement by All Modes	$.155 billion per year	At $0.01 per ton assessment	ARTBA - Critical Commerce Corridors
		$15.5 billion per year	At $1 per ton assessment	ARTBA - Critical Commerce Corridors
	Ton-Mile Freight Movement by Trucks	$12 billion per year	At $0.01 per ton assessment based on 1.2 trillion ton-miles of travel	ARTBA - Critical Commerce Corridors
	Ton-Mile Freight Movement by All Modes	$41 billion per year	At $0.01 per ton assessment based on 4.1 trillion ton-miles of travel	ARTBA - Critical Commerce Corridors
	National Vehicle Safety Inspection Tag	$.241 billion per year	At $1 per registered vehicle based on 241 million vehicles	ARTBA - Critical Commerce Corridors

Figure 68: Freight Funding Matrix (AASHTO 2008).

3. INTERMODAL SERVICE RECOMMENDATION

3.1. Identify Location Based on User Input

This research effort explored both domestic and international opportunities and completed a "bottom-up" forecasting effort that looked at potential industries and trade patterns. Montana is a large, sparsely populated state, which makes it hard to identify a single site that would accommodate the needs of the entire state. It is also not very surprising that locations that historically handled intermodal shipments would re-emerge as likely potential sites to redevelop. Effort was made to identify previous shippers as well as new shippers in each region and match those service needs with potential rail access areas.

The lowest cost intermodal terminal is property with existing rail access and flat surrounding land areas for parking and terminal storage. Terminals that can provide various freight support functions such as transloading, warehousing or value-added services (such as consolidation or packaging) often diversify their business risks by offering multiple services.

Based on the survey results, additional interviews with various stakeholders, the statewide statistical analysis of potential demand, the proximity to a primary intermodal rail corridor and highway services, the single best location for an intermodal terminal in Montana is on the BNSF intermodal mainline that parallels U.S. Highway 2 near the intersection of Interstate 15 in Shelby. This locale holds the most promise, based on a growing Canadian economy and potential development along the I-15/US 2 corridors and the other freight services offered by the Port of Northern Montana.

Shelby is in a location with strong regional intermodal demand, access to intermodal trains, and Interstate highway connections north to Lethbridge and Calgary and south to Great Falls. It's also in reasonable proximity to export-grain shippers. An existing facility is available with adequate access and parking space but lift equipment would need to be purchased to make this site operational.

Other locations in the state, like the former terminal in Butte–Silver Bow, were considered but discounted due to the lower potential intermodal business volumes and the lack of access to a primary Class I rail intermodal corridor. Access to two Class I rail carriers is attractive for many shippers, but without a direct connection to core rail intermodal corridors, transit times and equipment utilization may not fit current industry expectations. If a service could be coordinated with the BNSF and MRL on an LTL basis (less than 200 containers per train) and connections could be made in Billings and Spokane (both existing BNSF intermodal terminals), a secondary intermodal service model may be considered. This operation would need to be modeled after the Twin Cities Western–Canadian Pacific operation, which connects Montevideo, Minnesota, and St. Paul, or a service similar to the Northwest Container Service model that connected the Port of Pasco to the Port of Tacoma in Washington. This model would assume that the operator provides the rail cars and would contract with the Class I for power, crews and track time to connect Butte–Silver Bow with a West Coast port.

The existing terminal in Billings would increase potential volume if bi-directional service was offered and if a user equipment pool could be created. Larger volumes could be handled if service was available to Denver or Kansas City.

Loading intermodal containers at existing grain shuttle train facilities was considered, but not enough container volume could be generated at these sites.

3.2. Identify Location Based on Carrier Interest

There are two Class I railroads with direct access to Montana. While UP has interest in developing traffic to or from the state, it would need to reposition empty equipment from Denver (784 miles away) or Salt Lake City (411 miles) to the loading point at the Port of Montana (Butte–Silver Bow). UP would then handle the loaded equipment to Southern California for export. This route would have considerably more land miles than a BNSF export option. It would be very difficult for UP to compete with the BNSF given the cost to move empty containers into the market, and given nearly double the rail miles to West Coast ports based on the rail network.

BNSF expressed interest in a pilot or proof of concept at Billings, and said that up to 500 miles of drayage could be supported to demonstrate the concept. While other locations were discussed— without lift equipment (Shelby) or without single-line access (Butte–Silver Bow)— these alternative terminal locations were not considered viable by BNSF. The volume projections for the Billings market and surrounding catchment area were not sufficient to justify one dedicated train per day to the West Coast ports.

3.3. Identify Public and Private Partnership Programs Suitable for Montana

Programs exist to help communities, especially small and rural ones, with the cost of building, replacing and upgrading public infrastructure. Typically these programs are targeted at public health and safety infrastructure and sometimes roads and utilities. Few programs exist for freight, as historically freight was considered the responsibility of the private sector. As transportation facilities and access to global networks has become a critical economic development tool, several state programs may be available to help fund portions of a freight facility. It is important to note that most of these programs have specific guidelines about use and purpose. Some can be used to leverage other private investment, but in most cases these programs do not apply to projects on private property.

Montana has several programs available through the Departments of Commerce, Agriculture and Labor that may help fund portions of a bundled transportation project. These program sources usually deal with water, sewer or public utilities and must be justified based on factors such as air quality, community size, economic development impact, jobs, workforce development or new technologies.

Some states rely on their departments of revenue to establish local business tax incentives. The establishment of a Tax Increment Financing District can help with infrastructure surrounding a facility.

Figure 68 above outlines existing and proposed tools to fund freight development.

4. CONCLUSIONS

The objective of this study was to investigate intermodal service in Montana with respect to the potential demand for such service, obstacles to its implementation, and incentives that might be appropriate to promote it. A surge in international trade coupled with the recent energy crisis has resulted in new business models for virtually every rail carrier. Intermodal and coal business units are now driving the decisions of all railroad CEOs. This situation is having a dramatic impact, including reduced rail access for small and rural communities that are intermediate to the railroad's end-to-end connections. The absence of access to containerized freight transportation service may represent a significant barrier to the competitive position of some Montana companies in the global marketplace. The only intermodal service currently available in the state is in Billings, and this service is limited in nature.

For this study, information on the potential demand for intermodal service in Montana was collected by two means: a) conducting a survey and directly interviewing various stakeholders in this area, including both users and service providers, and b) reviewing information from public databases on economic activity, freight logistics, and intermodal programs around the country. While the survey response was sparse, the majority of potential users who responded indicated they would use intermodal service for export purposes if it was available (even if it was available fewer than five days a week). To more fully characterize potential demand for containerized freight service across the state, a network-level analysis was done on transportation demand by sector of the state's economy. Applying containerization rates found in the literature to Montana's level of commodity production, this demand was estimated to be 17,000 TEU/yr. The majority of these containers (approximately 12,000) would move specialty agricultural products primarily from north central and northeast Montana to Pacific Northwest ports for export to Asian countries.

Relative to providing containerized service in the state, current rail intermodal operating models are focused on unit trains hauling 250 containers from terminal to terminal, with as many lifts as possible concentrated at each terminal facility. Ninety percent of BNSF's intermodal terminals, for example, perform over 20,000 lifts per year. In an interview conducted for this study, BNSF officials indicated they would be willing to consider investigating regular service in Billings for 250 containers per week, which corresponds to 13,000 TEU/yr. This quantity of containers exceeds the demand in the immediate Billings area, and approaches that of the entire state each year. Draying containers from the northern half of the state to Billings would appear to be problematic. Note that based on a variety of factors (potential volume of demand, rail access, highway access, previous experience), and independent of preferred rail operating models, Shelby is a strong candidate for an intermodal terminal, followed more distantly by Billings and Butte–Silver Bow.

In any intermodal terminal development there are three primary components: freight demand, container supply and rail service. Given the current economic conditions, the available container supply to support an export lane to feed one intermodal train per week is not available. To attract equipment providers, a more robust market that would provide freight density and balance (inbound loads to match outbound equipment demand) must be identified.

The above comments notwithstanding, rail business practices can and do change over time, and with the specific situation encountered. The Montana rail intermodal situation has many parallels to the situation in North Dakota. The two states have similar freight and population profiles.

Through the leadership and vision of North Dakota businesses and elected officials, a pilot project is being explored to offer a joint intermodal service. Montana should monitor this project closely as there may be many lessons to be learned in the process. As a “fast follower,” Montana will be able to replicate the successes and avoid the failures, provided a valid business plan can be developed.

The weak dollar could have a dramatic impact on the ocean container supply. As the dollar weakens, Montana grain competes with high-value export products. Vessels are already limiting shipments at key gateways as export demand surges. The weak dollar also impacts freight crossing the Canadian border. The exchange rate can reverse the flow of freight and dramatically increase demand for intermodal service over a terminal in northern Montana if the dollar remains weak.

As fuel prices increase, demand for intermodal services will grow and train capacity, which is nearly depleted in certain corridors, may evaporate. Establishing an intermodal terminal will be a significant economic benefit for users, provided there are sufficient containers to load. Load balance is critical to achieve a profitable operation. Every effort must be made to identify equal volumes of inbound shipments for outbound load demand.

While this project was meant to focus on export intermodal volumes over the Pacific Northwest ports, freight data analysis along with user surveys and interviews all validate that interest for intermodal access to all North American markets is desirable.

There are few freight funding programs available. A public and private partnership may be needed to help offset development costs. Locating a terminal on a former intermodal site may be a low-cost strategy to develop an intermodal terminal in Montana. Once a site is selected, users and stakeholders should establish a service and long-term user commitments (contracts) to ensure that projected volumes will materialize.

5. REFERENCES

American Association of Railroads (AAR). 2005. *Railroad Service in Montana, 2005*.

AAR. 2007. National Rail Freight Infrastructure Capacity and Investment Study. Prepared by Cambridge Systematics, Inc. Boston, MA, September 2007.

American Association of State Highway and Transportation Officials (AASHTO). 2008. http://www.transportation.org/.

American Freight Companies (AFC). 2008. http://www.freightcenter.com/.

American Shipper Magazine. 2008. http://www.americanshipper.com/.

Barney and Worth, Inc. 2001. *Inland Northwest Socio-Economic Assessment–Phase II, Forest Products Data–Summary, 2001*.

Berwick, M. 2001. *North Dakota Strategic Freight Analysis: Item I. Intermodal Highway/Railway/Container Transportation and North Dakota.* Upper Great Plains Transportation Institute, North Dakota State University, Fargo.

Berwick, M., J. Bitzan, J. Chi and M. Lofgren. 2002. *North Dakota Strategic Freight Analysis: The Role of Intermodal Container Transportation in North Dakota*. Upper Great Plains Transportation Institute, North Dakota State University, Fargo.

Berwick, M. 2007. Feasibility of a Logistics Center Including Container/Trailer Intermodal Transportation in the Fargo/Moorhead Area, Upper Great Plains Transportation Institute, North Dakota State University, Fargo.

Bonderud, L. 2007. Director, Port of Northern Montana, Shelby. Personal communication.

Burlington Northern Santa Fe Corporation (BNSF). 2007. Intermodal System Map. http://www.bnsf.com/markets/intermodal/maps.html. November 2007.

BNSF. 2008a. Presentation to JPMorgan Aviation & Transportation Conference, New York, NY. March 19, 2008.

BNSF. 2008b. 2007 Annual Report. February, 2008.

BNSF. 2008c. Intermodal Facilities Guide. http://www.bnsf.com/markets/intermodal/facilities_guide.html.

Canadian National (CN) Intermodal. 2008. http://www.cn.ca/productsservices/intermodal/en_intermodal.shtml.

Canadian Pacific (CP). 2008. http://www8.cpr.ca/cms/English/Customers/default.htm.

Casavant, K., E. Jessup and A. Monet. 2004. *Determining the Potential Economic Viability of Inter-modal Truck-Rail Facilities in Washington State*. Prepared for the Washington State Transportation Commission, Washington State DOT, by the School of Economic Sciences, Washington State University, Pullman.

CH2M Hill. 2008. Staff presentation, Philadelphia, PA. August 25, 2008.

Chicago Metropolitan Agency for Planning (CMAP). 2008. http://www.cmap.illinois.gov/.

DDC Consulting Services, Inc. 2004. "Assessment of Overseas Container Service Issues and Opportunities for Saskatchewan Exporters." Prepared for Saskatchewan Energy and Resources. December 2004.

Easton, I. 2005. Testimony Before the U.S.-China Economic and Security Review Commission, Center for International Trade in Forest Products (CINTRAFOR). College of Forest Resources, University of Washington. January 2005.

Ennes, D., R. Heuer and W. King. 2006. Capitalizing on Containers: Assessment of an Agricultural Development Opportunity for Northern Illinois. Illinois Department of Commerce and Economic Opportunity, Springfield, IL.

Federal Highway Administration (FHWA). 2007. *Freight Analysis Framework*.

GTS Group International and Activation Analysis. 2004. *Alberta Containerized Intermodal Freight Analysis (Exploratory Study)*. Prepared for Alberta Transportation. Alberta, Canada.

Intermodal Association of North America (IANA). 2005. *Industry Statistics: Overview, 2005*.

IANA. 2008a. IANA Rail Intermodal Terminal Directory. http://www.skedz.com/iana/.

IANA. 2008b. 50-Year Intermodal Volume. http://www.intermodal.org/statistics_files/stats44.shtml.

IANA. 2008c. 18-Year Equipment Trends. http://www.intermodal.org/statistics_files/stats33.shtml.

IANA. 2008d. Year 2007 Industry Statistics. http://www.intermodal.org/statistics_files/stats6.shtml.

Intermodal Container Web Page (ICWP). 2008. http://www.matts-place.com/intermodal/part1/sea_containers1.htm.

Janzen, E., G. Flaskerud, J. Fisher, and E. Bartsch. 2006. *Pulse Crop Marketing Guide*. North Dakota State University Extension Service, Fargo, ND. August 2006.

Johnson, J. and J. Jimmerson. 2003. Briefing: Safflower. Agriculture Marketing Policy Center. *Briefing No. 58*. Montana State University, Bozeman, MT. December, 2003.

Kankakee County Commuter Transit Feasibility Study (KACOT). 2007. http://www.kacotstudy.com/.

Keegan, C.E., K. Gebert, A. Chase, T. Morgan, S. Bodmer and D. Van Hooser. 2001. *Montana's Forest Products Industry: A Descriptive Analysis 1969-2000*. Rocky Mountain Research Station, USDA, U.S. Forest Service.

Keegan, C.E., and T. Morgan. 2005. *Montana's Timber and Forest Products Industry Situation, 2004*. Prepared for Senators Baucus and Burns, and Representative Rehberg. May, 2005.

Maersk Line. 2008. http://www.maerskline.com/appmanager/.

Marinova Consulting. 2006. *The Use of Containers in Canada*. Prepared for Transport Canada. December, 2006.

Minneapolis Federal Reserve Bank. 2007 *Montana Manufactured Exports*.

Minot Area Development Corporation (MADC). 2008. Minot Value-Added Agricultural Complex. http://www.minotusa.com/uploads/resources/365/minot_agpark_7_07.pdf.

Moore Economics. 2007. *The Economic Contributions of the Mining Industry in 2005*. Prepared for the National Mining Association.

Montana Department of Commerce, Census and Economic Information Center (CEIC). 2002. http://www.ceic.commerce.state.mt.us/.

Montana Department of Transportation. 2008. Montana Rail System. Montana Department of Transportation, Road Inventory and Mapping Section. http://www.mdt.mt.gov/travinfo/docs/railmap.pdf.

Montana Rail Link (MRL). 2008. http://www.montanarail.com/.

Montana Wheat and Barley Committee. 2006. *Montana All Wheat—Movement to Pacific Northwest, Utilization and Exports.* Compiled from data from Montana Agricultural Statistics Service, Helena, MT. December 2006.

National Agricultural Statistics Service (NASS). 2006a. *All Wheat—Supply and Disposition by Marketing Years*.

NASS. 2006b. *Wheat and Barley Movement: July 2005–December 2005 and Revised Crop Year Summary 2003–2004 & 2004–2005*.

NASS. 2006c. *All Crops—Acreage, Yield, and Production, by Counties and Districts, Montana, 2005*.

NASS. 2007a. *Wheat and Barley Movement: July 2006–December 2006 and Revised Crop Year Summary 2004–2005 & 2005–2006*.

NASS 2007b. *2006 Montana Agricultural Statistics*.

National Surface Transportation Policy and Revenue Study Commission (NSTPR). 2008. *Transportation for Tomorrow*. http://www.transportationfortomorrow.org/final_report/report_html.aspx.

Northern Plains Commerce Center (NPCC). 2006. Facilities. http://npccbismarck.com/facility.html.

Official Intermodal Guide. 2001. Commonwealth Business Media, East Windsor, NJ. January 2001.

Paul, G. 2007. Personal communication. Port of Montana, Butte, MT.

Port of Quincy, Intermodal Services Division (Port of Quincy). 2006. http://portofquincyintermodal.com/_wsn/page3.html.

Progressive Railroading Magazine. 2008. http://www.progressiverailroading.com/.

R. L. Banks & Associates. 2000. *2000 Montana State Rail Plan Update*. Prepared for the Montana Department of Transportation in cooperation with Harding ESE, Helena, MT.

RailRunner. 2008. http://www.railrunner.com/index.php.

Railway Age. 2008. Railway Age Names 2008 Short Line, Regional Railroads of the Year. *Railway Age*, March 14, 2008. http://www.railwayage.com/breaking_news_archive.shtml.

Satwinder, P. and N. Woodbury. 2006. Opportunity Assessment for an Inland Intermodal Container Facility in Kamloops. Venture Kamloops, Kamloops, British Columbia. September 2006.

Statistics Canada. 2003. Shipping Canada, 2003. *Catalogue No. 54-205*.

Tacoma–Seattle OSC. 2003. *What effect does security have on supply chain logistics?* CINTRAFOR's 20th Annual International Forest Products Markets Conference. October, 2003.

Union Pacific (UP). 2006. 2006 Analyst Fact Book. http://www.up.com/investors/attachments/factbooks/2006/factbook.pdf.

UP. 2008. Intermodal Facilities Maps. http://www.uprr.com/customers/intermodal/intmap/index.shtml.

U.S. Census Bureau. 2005. *2002 Economic Census, Manufacturing, Geographic Area Series, Montana: 2002*. ECO2-31A-MT(RV), U.S. Department of Commerce, Economic and Statistics Administration.

U.S. Census Bureau. 2006a. *2002 Economic Census, Geographical Area Series, Micropolitan Statistical Areas: Montana*. http://www.census.gov/prod/ec02/ec0231amt.pdf.

U.S. Census Bureau. 2006b. *Population Estimates*. http://www.census.gov/popest/estimates.php.

U.S. Department of Commerce, Bureau of Economic Analysis (undated). *Regional Economic Accounts, Gross Domestic Product by State.*

U.S. Department of Agriculture (USDA), Agricultural Marketing Service. 2005. Rail Transportation. *Grain Transportation Report.* July 14, 2005.

USDA, Economic Research Service. 2006. *State Fact Sheets: Montana 2005–2006*.

USDA. 2007. Ocean Transportation. *Grain Transportation Report.* May 20, 2007.

U.S. Geological Survey. 2007a. *2005 Minerals Yearbook*. U.S. Department of Interior.

U.S. Geological Survey. 2007b. *Mineral Production Summaries*. U.S. Department of Interior.

U.S. Grain Council. 2006. *Barley: Building Global Markets for America's Grains*.

U.S. International Trade Commission. 2008. USITC Interactive Tariff and Trade DataWeb, Version 3.0.0. http://dataweb.usitc.gov/ (accessed August 2008).

Vachal, K. and H. Reichert. 2001. *U.S. Containerized Grain and Oilseed Exports, Industry Profile: Phase I.* Upper Great Plains Transportation Institute, North Dakota State University (Vachal); U.S. Department of Agriculture Transportation and Marketing Programs (Reichert). November, 2001.

Vachal, K., T. VanWechel and H. Reichert. 2003. *U.S. Containerized Grain and Oilseed Exports: Industry Survey*. Upper Great Plains Transportation Institute, North Dakota State University, for USDA Transportation and Marketing Programs. July, 2003.

Vancouver Port Authority. 2005. *Port of Vancouver, Statistical Overview 2005.*

Washington State Transportation Commission (WSTC). 2006. Statewide Rail Capacity and System Needs Study: Final Report. Prepared by Cambridge Systematics, Inc. Boston, MA, December 2006.

Weixel, Gordon. 2006. Rail freight system will likely improve with new facilities. *Bismarck (ND) Tribune*, April 21. http://www.bismarcktribune.com/articles/2006/08/21/news/local/119488.txt.

Wilbur Smith Associates, Transystems. 2007 *Regional Intermodal Freight Project*. North Dakota Department of Transportation. August 8, 2007.

WISERTrade (undated). *State Exports by NAICS.* World Institute for Strategic Economic Research, Holyoke Community College, Holyoke, MA.

World Organization of Resource Councils. 2002. *United States Wheat Markets.* October, 2002.

World Port Source. 2007. http://www.worldportsource.com/index.php (accessed August 2008).

6. APPENDIX

6.1. Montana Intermodal Survey

6.1.1. Survey Instrument

The recent reduction in Montana intermodal services presents a major barrier for Montana businesses as they attempt to compete in the U.S. and international marketplace. The absence of these services will affect Montana's economy by increasing transportation costs and keeping Montana businesses out of potential markets. Value added agricultural commodities are especially dependent upon intermodal transportation. For these reasons the State of Montana has initiated a phased research project to explore ways to increase container and trailer on flatcar commerce in order to provide Union Pacific and BNSF Railways with the incentive to provide additional intermodal services to Montana shippers.

Your input is vital to the success of this transportation improvement initiative.

This survey has been developed to capture user information, interest and insights in the process of developing intermodal service and rail carrier incentives in Montana.

Based on the results of this survey, and concurrent independent research, we will quantify the demand for service by lane, location and equipment type. Demand for this new service will help us identify potential sites on Montana's mainline railroads.

All individual replies will remain confidential. The composite findings of the survey along with select comments will be used to define interest and need for a new facility. Please complete this survey by September 30, 2007.

If you have any questions or concerns please contact: Libby Ogard, Prime Focus LLC

920-217-7222 logard@new.rr.com or Jerry Stephens at the Western Transportation Institute at Montana State University 406-994-6113 jerrys@coe.montana.edu.

User background:

1. Please check the area which best describes your business activities?
   - ☐ Agriculture
   - ☐ Automotive
   - ☐ Bio Medical
   - ☐ Manufacturing
   - ☐ Consumer Products
   - ☐ Lumber Industry
   - ☐ Mining
   - ☐ Transportation Services
   - ☐ Warehousing
   - ☐ None of the above

2. What are your top five inbound freight origins?

3. What are your top five outbound freight destinations?

4. Please check the box which best describes how much you spend on freight transportation per year?
   - ☐ Less than 2% of your cost of goods sold.
   - ☐ 2-5% of your cost of goods sold.
   - ☐ More than 5% of cost of goods sold.

5. Please check the box which bests describes the amount you spend annually on **DOMESTIC** transportation?
   - ☐ Less than $200,000 dollars per year.
   - ☐ $200,001 to $499,999 dollars per year
   - ☐ $500,000 to $1 million dollars per year.
   - ☐ $1 - $5 million dollars per year.
   - ☐ $5- $10 million dollars per year.
   - ☐ $11-20 million dollars per year.
   - ☐ Don't know

6. How much do you spend annually on **GLOBAL** transportation?
   - ☐ Less than $200,000 dollars per year.
   - ☐ $200,001 to $499,999 dollars per year
   - ☐ $500,000 to $1 million dollars per year.
   - ☐ $1 - $5 million dollars per year.
   - ☐ $5- $10 million dollars per year.
   - ☐ $11-20 million dollars per year.
   - ☐ Don't know

7. Please estimate what percentage of your transportation budget is spent on each mode of transportation listed below? (Total must add up to 100%)

   ____ Truck

   ____ LTL Truck

   ____ Private Fleet

   ____ Rail carload

   ____ Intermodal rail

   ____ Air

   ____ Water

8. Do you anticipate any changes in the mode distribution identified in question #7? If so, what is the most likely reason for the shift? (check one)
    - ☐ Service improvement
    - ☐ Cost savings
    - ☐ New service offering
    - ☐ Change in product or materials
    - ☐ Change in supply chain (vendors or customers)

9. Check the box to indicate who determines the mode of transportation for **INBOUND** freight?
    - ☐ Your company
    - ☐ Supplier
    - ☐ Third Party Logistics Company

10. Check the box to indicate who determines the mode of transportation for **OUTBOUND** freight?
    - ☐ Your company
    - ☐ Customer
    - ☐ Third Party Logistics Company

11. Check the box that most closely describes your average **inbound** length of haul?
    - ☐ Less than 500 miles
    - ☐ 500-700 miles
    - ☐ 701-1000 miles
    - ☐ More than 1000 miles

12. Check the box that most closely describes your average **outbound** length of haul?
    - ☐ Less than 500 miles
    - ☐ 500 - 700 miles
    - ☐ 701 – 1000 miles
    - ☐ More than 1000 miles

13. Check the box that indicates how you would rate your supply chain visibility for **INBOUND** freight?
    - ☐ Poor
    - ☐ Good
    - ☐ Excellent

14. Check the box that indicates how you would rate your supply chain visibility for **OUTBOUND** freight?
    - ☐ Poor
    - ☐ Good
    - ☐ Excellent

Intermodal

15. Do you use intermodal freight transportation services today? (check all that apply)
    - ☐ For Domestic shipments
    - ☐ For International shipments
    - ☐ No longer use intermodal
    - ☐ Interested in learning more about intermodal (not a user today)

16. If you currently use intermodal transportation services please indicate which terminals you use today?
    - ☐ Billings, MT
    - ☐ Spokane, WA
    - ☐ ___________(Please Name) Other

17. If train service for export loads over the West Coast Ports was available, would you consider using it? Please check one box.
    - ☐ Yes
    - ☐ No
    - ☐ Maybe

18. If train service for import loads moving from West Coast Ports was available would you consider using it? Please check one box.
    - ☐ Yes
    - ☐ No
    - ☐ Maybe

19. How many loads per week would you consider routing via intermodal service to/from the West Coast if service and rates are competitive?
    - ☐ Less than one per week
    - ☐ 2 per week
    - ☐ 3-10 per week
    - ☐ 11-20 per week
    - ☐ More than 20 per week

20. For inbound intermodal shipments please estimate how many shipments you would receive per week in the following types of equipment.

____20' ocean containers ___40' ocean containers

____ 48' containers ___ 53' containers

21. If service scheduled service was available less than 5 days per week to West Coast Ports would you consider using it?

_____ Yes

_____ Maybe

_____ No

22. Do you have a rail carrier preference? If so please indicate which carrier(s) you prefer? (Check as many as you like)
    - ☐ BNSF
    - ☐ Canadian National
    - ☐ Canadian Pacific
    - ☐ Union Pacific

23. Which ocean carriers would you consider using if this equipment was available for reload in Montana?
    - ☐ APL
    - ☐ CCNI
    - ☐ COSCO
    - ☐ China Shipping
    - ☐ CMA
    - ☐ Fesco
    - ☐ Hamburg Sud
    - ☐ Hanjin
    - ☐ Hyundai
    - ☐ Hapag Lloyd
    - ☐ K Line
    - ☐ Maersk
    - ☐ Maruba
    - ☐ Matson
    - ☐ MOI
    - ☐ Norton
    - ☐ OOCL
    - ☐ Yang Ming
    - ☐ Zim
    - ☐ Other

Rail Carload

24. Does Montana need more and or improved railroad access?
    - ☐ Yes
    - ☐ No

25. Should the State of Montana be actively involved in the location and/or development of freight transportation facilities?
    - ☐ Yes
    - ☐ No

26. Does your company have a rail siding or access to railroad service?
    - ☐ Yes
    - ☐ No

27. Would you consider using a rail consolidation service or transload operation if it was competitively priced?
    - ☐ Yes
    - ☐ No

28. Do you use any of the following TRANSLOAD rail facilities to load railcars?
    - ☐ Boise, ID
    - ☐ Butte, MT
    - ☐ Eureka, MT
    - ☐ Laurel, MT
    - ☐ Missoula, MT
    - ☐ Shelby, MT
    - ☐ Sunburst, MT
    - ☐ Sweetgrass, MT
    - ☐ Other

29. If a rail intermodal freight terminal was developed in Montana, please rank each location which would be of interest to you. (1=Greatest Interest – 5= No Interest)
    - ☐ Billings
    - ☐ Bozeman
    - ☐ Butte
    - ☐ Great Falls
    - ☐ Helena
    - ☐ Missoula
    - ☐ Shelby
    - ☐ Whitefish

- ☐ Other

Trucking Information

30. How would you describe the availability of trucking capacity for your primary shipments?
    - ☐ Plentiful
    - ☐ Adequate
    - ☐ Less than adequate

31. In the last six months, what percentage of the time have your loads been turned down by your primary carrier?
    - ☐ Less than 5% of the time
    - ☐ 6-10% of the time
    - ☐ 11-20% of the time
    - ☐ More than 20% of the time

32. If intermodal container or trailer service was available how much would you expect to pay per unit versus a truck shipment in the same lane?
    - ☐ Would expect a savings of less than $100 per load in intermodal vs. truck service.
    - ☐ Would expect to save more than $100 per load for intermodal vs. truck service.
    - ☐ Would expect similar rates for truck or intermodal service.
    - ☐ Would not expect a savings for intermodal versus truck service.

33. Do you currently have a truck rate contract in place? If so please check the duration of the contract?
    - ☐ Multi year contract.
    - ☐ One year contract.
    - ☐ Month to Month contract.
    - ☐ No contract in place, spot market pricing.

34. Assuming favorable rates and service, what period of time would you be willing to contractually commit, if a new intermodal service was offered?
    - ☐ Would not commit to any contract.
    - ☐ Would commit to a one year contract for intermodal service.
    - ☐ Would commit to a multi-year contract.

35. Would you commit to a "take or pay" contract for intermodal service? In this scenario a minimum volume would be required over a fixed period of time, if the minimum volume was not met; you would play for the empty slots which were unused.

- ☐ Yes
- ☐ No
- ☐ Maybe

36. What is the minimum number of shipments you would commit moving in intermodal service if price and schedules were attractive?
    - ☐ Less than 5 loads per week.
    - ☐ 6-29 loads per week.
    - ☐ More than 30 loads per week.

Incentives

37. In your opinion what type of FEDERAL incentives should be offered to the mainline railways to restore intermodal service to Montana users?
    - ☐ Loans should be made available to help off set development costs.
    - ☐ Grants should be made available to help off set development costs.
    - ☐ Tax credits should be made available to help off set specific development costs.
    - ☐ Other please specify:

38. In your opinion what type of STATE incentives should be offered to the mainline railways to restore intermodal service to Montana users?
    - ☐ Loans should be made available to help off set development costs.
    - ☐ Grants should be made available to help off set development costs.
    - ☐ Tax credits should be made available to help off set development costs.
    - ☐ Operating subsidies should be provided to help off set empty repositioning costs.
    - ☐ Economic Development tools and funds should be used to cover highway access and utilities connection.
    - ☐ Other please specify:

39. In your opinion what type of PRIVATE incentives should be offered to mainline railways to restore intermodal service to Montana users?
    - ☐ Loans
    - ☐ Grants
    - ☐ Public Private Partnership programs
    - ☐ User contracts with minimum volume guarantees
    - ☐ Other please specify:

More Information

40. Would you like a copy of the results of this survey? (if so please complete name and address section)
    - ☐ Yes
    - ☐ No

Name:

Title:

Company:

Address:

City/State/Zip:

Email:

Phone:

41. Would you like more information about rail or intermodal services in Montana?
    - ☐ Yes
    - ☐ No

42. Please share any comments you have about rail freight transportation. These comments may be referenced in the final report but will not be attributed to an individual.

43. Are there others we should contact about rail service in Montana, if so please let us know who and how to contact them.

6.1.2. Responders to Montana Survey

Due to the confidentiality of the comments provided by the shippers, the actual names of the companies surveyed have been withheld. Thirty-three companies responded to the survey representing a broad cross-section of locations and industries across the state. These companies represented the following industries:

- Active Importers,
- Active Exporters,
- Construction,
- Agriculture,
- Technology,

- Milling,
- Mining,
- Forest, and
- Plastics.

They represented these locations:

- Belgrade,
- Billings,
- Bozeman,
- Butte,
- Chester,
- Columbia Falls,
- Condon,
- Fort Benton,
- Great Falls,
- Lincoln,
- Missoula,
- Olney,
- Three Forks, and
- Victor.

6.2. Canadian Intermodal Survey

6.2.1. Survey Instrument

The recent reduction in Montana intermodal services presents a major barrier for businesses in Alberta, Canada and Montana, as they attempt to compete in the international marketplace. The absence of these services will affect the regional economies of Montana and Southern Alberta by increasing transportation costs and limiting market access. Value added agricultural commodities are especially dependent upon intermodal transportation. For these reasons the State of Montana has initiated a phased research project to explore ways to increase container and trailer on flatcar commerce in order to provide railways with an incentive to provide additional intermodal services for shippers in Alberta and Montana.

Your input is vital to the success of this transportation improvement initiative.

This survey has been developed to capture user information, interest and insights in the process of developing intermodal service and rail carrier incentives in Montana.

Based on the results of this survey, and concurrent independent research, we will quantify the demand for service by lane, location and equipment type. Demand for this new service will help us identify potential sites on Montana's mainline railroads.

All individual replies will remain confidential. The composite findings of the survey along with select comments will be used to define interest and need for a new facility. Please complete this survey by January 4, 2008.

If you have any questions or concerns please contact: Libby Ogard, Prime Focus LLC, 920-217-7222 logard@new.rr.com or Jerry Stephens at the Western Transportation Institute at Montana State University 406-994-6113 jerrys@coe.montana.edu.

User background:

1. Please check the area which best describes your business activities?
   - ☐ Agriculture
   - ☐ Automotive
   - ☐ Bio Medical
   - ☐ Manufacturing
   - ☐ Consumer Products
   - ☐ Lumber Industry
   - ☐ Mining
   - ☐ Transportation Services
   - ☐ Warehousing
   - ☐ None of the above

2. What are your top five inbound freight origins?

3. What are your top five outbound freight destinations?

4. Please check the box which best describes how much you spend on freight transportation per year?
   - ☐ Less than 2% of your cost of goods sold.
   - ☐ 2-5% of your cost of goods sold.
   - ☐ More than 5% of cost of goods sold.

5. Please check the box which bests describes the amount you spend annually on **DOMESTIC** transportation?
   - ☐ Less than $200,000 dollars per year.
   - ☐ $200,001 to $499,999 dollars per year
   - ☐ $500,000 to $1 million dollars per year.
   - ☐ $1 - $5 million dollars per year.
   - ☐ $5- $10 million dollars per year.
   - ☐ $11-20 million dollars per year.
   - ☐ Don't know

6. How much do you spend annually on **GLOBAL** transportation?
   - ☐ Less than $200,000 dollars per year.
   - ☐ $200,001 to $499,999 dollars per year
   - ☐ $500,000 to $1 million dollars per year.
   - ☐ $1 - $5 million dollars per year.
   - ☐ $5- $10 million dollars per year.
   - ☐ $11-20 million dollars per year.
   - ☐ Don't know

7. Please estimate what percentage of your transportation budget is spent on each mode of transportation listed below? (Total must add up to 100%)

   ____ Truck

   ____ LTL Truck

   ____ Private Fleet

   ____ Rail carload

   ____ Intermodal rail

   ____ Air

   ____ Water

8. Do you anticipate any changes in the mode distribution identified in question #7? If so, what is the most likely reason for the shift? (check one)
   - ☐ Service improvement
   - ☐ Cost savings
   - ☐ New service offering
   - ☐ Change in product or materials
   - ☐ Change in supply chain (vendors or customers)

9. Check the box to indicate who determines the mode of transportation for **INBOUND** freight?
   - ☐ Your company
   - ☐ Supplier
   - ☐ Third Party Logistics Company

10. Check the box to indicate who determines the mode of transportation for **OUTBOUND** freight?
    - ☐ Your company
    - ☐ Customer
    - ☐ Third Party Logistics Company

11. Check the box that most closely describes your average **inbound** length of haul?
    - ☐ Less than 500 miles
    - ☐ 500-700 miles
    - ☐ 701-1000 miles
    - ☐ More than 1000 miles

12. Check the box that most closely describes your average **outbound** length of haul?
    - ☐ Less than 500 miles
    - ☐ 500 - 700 miles
    - ☐ 701 – 1000 miles
    - ☐ More than 1000 miles

13. Check the box that indicates how you would rate your supply chain visibility for **INBOUND** freight?
    - ☐ Poor
    - ☐ Good
    - ☐ Excellent

14. Check the box that indicates how you would rate your supply chain visibility for **OUTBOUND** freight?
    - ☐ Poor
    - ☐ Good
    - ☐ Excellent

Intermodal:

15. Do you use intermodal freight transportation services today? (check all that apply)
    - ☐ For Domestic shipments
    - ☐ For International shipments
    - ☐ No longer use intermodal
    - ☐ Interested in learning more about intermodal (not a user today)

16. If you currently use intermodal transportation services please indicate which terminals you use today?
    - ☐ Billings, MT
    - ☐ Calgary, AB
    - ☐ Spokane, WA
    - ☐ ___________(Please Name) Other

17. If train service for export loads over the West Coast Ports was available, would you consider using it? Please check one box.
    - ☐ Yes
    - ☐ No
    - ☐ Maybe

18. If train service for import loads moving from West Coast Ports was available would you consider using it? Please check one box.
    - ☐ Yes
    - ☐ No
    - ☐ Maybe

19. How many loads per week would you consider routing via intermodal service to/from the West Coast if service and rates are competitive?
    - ☐ Less than one per week
    - ☐ 2 per week
    - ☐ 3-10 per week
    - ☐ 11-20 per week
    - ☐ More than 20 per week

20. For inbound intermodal shipments please estimate how many shipments you would receive per week in the following types of equipment.

____ 20' ocean containers ___ 40' ocean containers

____ 48' containers ___ 53' containers

21. If service scheduled service was available less than 5 days per week to West Coast Ports would you consider using it?

_____ Yes

_____ Maybe

_____ No

22. Do you have a rail carrier preference? If so please indicate which carrier(s) you prefer? (Check as many as you like)

- ☐ BNSF
- ☐ Canadian National
- ☐ Canadian Pacific
- ☐ Union Pacific

23. Which ocean carriers would you consider using if this equipment was available for reload in Montana?

- ☐ APL
- ☐ CCNI
- ☐ COSCO
- ☐ China Shipping
- ☐ CMA
- ☐ Fesco
- ☐ Hamburg Sud
- ☐ Hanjin
- ☐ Hyundai
- ☐ Hapag Lloyd
- ☐ K Line
- ☐ Maersk
- ☐ Maruba
- ☐ Matson
- ☐ MOI
- ☐ Norton
- ☐ OOCL
- ☐ Yang Ming
- ☐ Zim
- ☐ Other

Rail Carload

24. Does Montana need more and or improved railroad access?
    - ☐ Yes
    - ☐ No

25. Should the State of Montana be actively involved in the location and/or development of freight transportation facilities?
    - ☐ Yes
    - ☐ No

26. Does your company have a rail siding or access to railroad service?
    - ☐ Yes
    - ☐ No

27. Would you consider using a rail consolidation service or transload operation if it was competitively priced?
    - ☐ Yes
    - ☐ No

28. Do you use any of the following TRANSLOAD rail facilities to load railcars?
    - ☐ Boise, ID
    - ☐ Butte, MT
    - ☐ Eureka, MT
    - ☐ Laurel, MT
    - ☐ Missoula, MT
    - ☐ Shelby, MT
    - ☐ Sunburst, MT
    - ☐ Sweetgrass, MT
    - ☐ Other

29. If a rail intermodal freight terminal was developed in Montana, please rank each location which would be of interest to you. (1=Greatest Interest – 5= No Interest)
    - ☐ Billings
    - ☐ Bozeman
    - ☐ Butte
    - ☐ Great Falls
    - ☐ Helena
    - ☐ Missoula
    - ☐ Shelby

- Whitefish
- Other

Trucking Information

30. How would you describe the availability of trucking capacity for your primary shipments?
    - Plentiful
    - Adequate
    - Less than adequate

31. In the last six months, what percentage of the time have your loads been turned down by your primary carrier?
    - Less than 5% of the time
    - 6-10% of the time
    - 11-20% of the time
    - More than 20% of the time

32. If intermodal container or trailer service was available how much would you expect to pay per unit versus a truck shipment in the same lane?
    - Would expect a savings of less than $100 per load in intermodal vs. truck service.
    - Would expect to save more than $100 per load for intermodal vs. truck service.
    - Would expect similar rates for truck or intermodal service.
    - Would not expect a savings for intermodal versus truck service.

33. Do you currently have a truck rate contract in place? If so please check the duration of the contract?
    - Multi year contract.
    - One year contract.
    - Month to Month contract.
    - No contract in place, spot market pricing.

34. Assuming favorable rates and service, what period of time would you be willing to contractually commit, if a new intermodal service was offered?
    - Would not commit to any contract.
    - Would commit to a one year contract for intermodal service.
    - Would commit to a multi year contract.

35. Would you commit to a "take or pay" contract for intermodal service? In this scenario a minimum volume would be required over a fixed period of time, if the minimum volume was not met; you would play for the empty slots which were unused.
    - ☐ Yes
    - ☐ No
    - ☐ Maybe

36. What is the minimum number of shipments you would commit moving in intermodal service if price and schedules were attractive?
    - ☐ Less than 5 loads per week.
    - ☐ 6-29 loads per week.
    - ☐ More than 30 loads per week.

Incentives

37. In your opinion what type of FEDERAL incentives should be offered to the mainline railways to restore intermodal service to Montana users?
    - ☐ Loans should be made available to help off set development costs.
    - ☐ Grants should be made available to help off set development costs.
    - ☐ Tax credits should be made available to help off set specific development costs.
    - ☐ Other please specify:

38. In your opinion what type of STATE incentives should be offered to the mainline railways to restore intermodal service to Montana users?
    - ☐ Loans should be made available to help off set development costs.
    - ☐ Grants should be made available to help off set development costs.
    - ☐ Tax credits should be made available to help off set development costs.
    - ☐ Operating subsidies should be provided to help off set empty repositioning costs.
    - ☐ Economic Development tools and funds should be used to cover highway access and utilities connection.
    - ☐ Other please specify:

39. In your opinion what type of PRIVATE incentives should be offered to mainline railways to restore intermodal service to Montana users?
    - ☐ Loans
    - ☐ Grants
    - ☐ Public Private Partnership programs
    - ☐ User contracts with minimum volume guarantees
    - ☐ Other please specify:

More Information

40. Would you like a copy of the results of this survey? (if so please complete name and address section)
    - ☐ Yes
    - ☐ No

Name:

Title:

Company:

Address:

City, State, Zip Code:

Email:

Phone:

41. Would you like more information about rail or intermodal services in Montana?
    - ☐ Yes
    - ☐ No

42. Please share any comments you have about rail freight transportation. These comments may be referenced in the final report but will not be attributed to an individual.

43. Are there others we should contact about rail service in Montana, if so please let us know who and how to contact them.

6.2.2. Canadian Distribution List

Due to the confidential nature of the comments provided by the shippers, the actual names of the companies surveyed have been withheld. There were 134 companies surveyed, representing a broad cross-section of locations and industries across Alberta. Responders represented the following industries:

- Consumer products,
- Plastics,
- Construction,
- Equipment/Manufacturing,
- Agriculture,
- Forest, and

- Active Importers and Exporters.

They represented these locations:

- Calgary,
- Edmonton,
- Medicine Hat,
- Red Deer,
- Spruce Grove,
- St. Albert, and
- Lethbridge.

Several smaller communities with single responders were also represented.