

Columbia Basin Trust Regional Shipping and Logistics Analysis Final Report



June 28, 2017

Davies Transportation Consulting
Wave Point Consulting Ltd.
S5 Services



Regional Shipping and Logistics Final Report

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	8
2.1	Study Background	8
2.2	Background on the Columbia Basin Trust	8
3	PROFILE OF COMMUNITIES IN THE COLUMBIA BASIN	11
3.1	Population	11
3.2	Economic Structure of Columbia Basin Communities.....	13
4	SHIPPING AND LOGISTICS SURVEY	14
4.1	Business Demographics	15
4.2	Columbia Basin Subregions	19
4.3	Survey Response Rate by Subregion	21
4.4	Satisfaction with Logistics Practices.....	22
4.5	Satisfaction for Specific Services.....	24
5	REGIONAL LOGISTICS PATTERNS	26
5.1	Source of Supplies.....	26
5.2	Location of Customers	27
6	SERVICE INDUSTRIES	30
6.1	Retail Trade.....	30
6.2	Wholesale Trade.....	31
6.3	Tourism.....	32

6.4	Other Sectors	34
7	GOODS-PRODUCING INDUSTRIES.....	37
7.1	Mining and Metals	37
7.2	Forestry.....	39
7.3	Manufacturing.....	42
7.4	Agriculture	43
8	TRANSPORTATION INFRASTRUCTURE	47
8.1	Highways.....	47
8.2	Rail.....	51
8.3	Intermodal Options	56
8.4	Bulk and Breakbulk Freight.....	57
8.5	Airports	59
9	TRUCKING IN THE SOUTHEAST COLUMBIA BASIN.....	60
9.1	Background	60
9.2	Truckload vs LTL	61
9.3	Trip Patterns	61
9.4	Commodity Profile	63
9.5	Conclusions.....	64
10	ECONOMICS OF REGIONAL FREIGHT.....	65
10.1	Traffic Balance	65
10.2	Economies of Scale.....	65
10.3	Consolidation of Shipments.....	70

11 SMALL PARCEL TRANSPORT: POSTAL, COURIER, BUS & AIR CARGO ..73

11.1 Small Parcel Rates 73

11.2 Canada Post 74

11.3 Courier Services 76

11.4 Greyhound Courier 78

11.5 Survey Findings - Courier Service..... 79

11.6 Air Cargo 80

11.7 Air Cargo Survey Findings 81

11.8 Use of Personal or Company Vehicles Survey Findings 81

12 TRUCKING SERVICE82

12.1 Less Than Truckload (LTL) Trucking Services..... 82

12.2 Truckload Services 86

13 EXISTING TRANSPORT SERVICES & POTENTIAL IMPROVEMENTS . 88

13.1 Service Quality 89

13.2 Competition and Rates 90

13.3 Current Logistics Practices 90

13.4 Is Shipping & Logistics a Barrier to Economic Development? 91

14 INITIATIVES TO IMPROVE SHIPPING & LOGISTICS IN THE COLUMBIA BASIN.....93

14.1 Cold Chain Logistics 93

14.2 Improved information Resources 94

14.3 Courier Service Improvement 95

14.4 Education and Outreach..... 95

**15 APPENDIX A: DETAILED SURVEY RESPONSES ON POTENTIAL
TRANSPORT & LOGISTICS SOLUTIONS97**

15.1 Existing Logistics Practices..... 97

15.2 Logistics Services & Infrastructure..... 100

15.3 Opportunities for Collaboration..... 107

1 EXECUTIVE SUMMARY

This Regional Shipping and Logistics Analysis has been undertaken for the Columbia Basin Trust (the “Trust”) by Davies Transportation Consulting Inc. in collaboration with Wave Point Consulting Ltd. and S5 Services. The scope of the project includes analysis of the shipping and logistics infrastructure in the Basin; identification of constraints and challenges to efficient operations; and assessment of impacts. The study also provides recommendations on potential actions for improving regional logistics to enhance business growth and investment in the region.

The project team undertook extensive consultations with businesses and other agencies within the Columbia Basin. In-person meetings were held in several communities from January 30 to February 3, and telephone interviews with shippers and carriers were also conducted. An online Transportation and Logistics Survey of businesses was also undertaken to gather information about their current shipping practices and challenges. The survey ran from January 20 to February 20, 2017. Regional Chambers of Commerce, advertising, social and traditional media were effectively used to raise awareness of the survey. Three hundred and eighteen businesses participated in the survey, providing a broad overview of the current state of freight logistics and the challenges facing firms in managing their supply chains.

The profile of the businesses who responded to the Transportation and Logistics Survey is similar to that of businesses surveyed in the Basin between 2012 and 2015 for the Business Retention and Expansion Project led by the Columbia Basin Rural Development Institute.¹ A large number of firms have been in business in the region for more than 20 years; most rely on suppliers outside the region for their supplies, but sell most of their products within the Basin; and the majority are small enterprises, with approximately 70% in both surveys reporting employment of nine or less.

There are several factors which impact the cost and availability of the various transportation modes and logistics services available to businesses retention, growth and expansion in the Columbia Basin:

- The relatively low density of population means that shipment volumes are relatively small, making it difficult to achieve efficiency through economies of scale, particularly where frequent service is desired.
- Long distances from major urban centres (that act as sources of supply or product markets for outbound goods) can result in lengthy travel times for ground transportation service providers.

¹ [Columbia Basin Business Retention And Expansion Project Report On Basin-Boundary Businesses Winter 2016](http://www.cbrdi.ca/wp-content/uploads/Basin-Boundary-BRE-Report_Final.pdf) Columbia Basin Rural Development Institute http://www.cbrdi.ca/wp-content/uploads/Basin-Boundary-BRE-Report_Final.pdf

- The mountainous terrain and variable climate can disrupt and delay access to, or travel within the region, particularly in the winter. Consequently, there can be challenges associated with timely replenishment of items that experience a “stock-out”, or whose demand is difficult to forecast for outbound goods.

Service Quality

The survey results and information gathered from discussions within the region indicate that shippers are relatively satisfied with existing services. Satisfaction was highest with the most widely used services – postal parcel and courier services. In discussions, several businesses agreed that trucking services within the Columbia Basin are generally reliable, with periodic disruptions due to weather conditions in the winter.

Within the most widely used services – small parcel service by postal, bus or courier service and LTL trucking – shippers generally have a variety of competitive options. There are some businesses which require specialized services that expressed concerns over current levels of service quality, including some requiring temperature-controlled (“cold-chain” service in refrigerated vehicles or “reefers”), smaller shippers wishing to distribute goods within the Columbia Basin, and some businesses for which the lack of overnight courier service is a problem.

Concern over service quality and costs of reefer service came primarily from shippers involved in food logistics, including retailers sourcing from both local and outside sources and producers wishing to expand their local markets. The interest in expanded reefer service is also spurred by the growing trend to local sourcing of food (as popularized in the ‘100 Mile Diet’) and farm-to-table movement for commercial restaurants. This involves small and frequent shipments among local communities, while the existing commercial transportation system is primarily oriented to shipments into and out of the Basin. Currently the only sizable trucking company offering regular reefer service to the Basin is Clark Freightways, with regular LTL service from their temperature controlled cross-dock facility in Coquitlam. The company has a large, modern pickup and delivery fleet equipped with reefers, cold-walls, temperature probes, and other specialized handling equipment, and offers access to short-term, multi-temperature storage (frozen, cooler, and dry) throughout their network of service centers. In the Columbia Basin, Clark has service centers in Castlegar and Cranbrook.

Reefer service is inherently more expensive than regular LTL service. Capital costs and operating costs are higher. Trucks equipped with reefer units can also be used for dry freight, but the weight of the reefer unit reduces the payload capacity. In the U.S., refrigerated trailers account for only 13% of the active trailer population, compared to 56% for dry vans and 31% for other specialty trailers (flatbed, tanker,

etc.).² Because the share of total freight which requires reefer service is relatively small, it can be harder to aggregate sufficient volume to take advantage of truckload economies of scale in line haul operations.

At the other end of the spectrum, there are a small number of shippers who need to rapidly ship or receive small parcels to or from destinations around the world. Due to the low volume of shipments in the Columbia Basin, courier services do not offer the type of overnight services which are available in large urban centres.

Competition and Costs

There are a variety of competitive options for shippers in the Columbia Basin. In the small parcel segment, shippers can choose between postal service, Greyhound courier service, and multiple courier companies; and for larger shipments they have multiple less than truckload (LTL) carriers to choose from, most with levels of service comparable to the couriers. Truckload service is generally available, though where truck traffic is sparse a lack of backhaul freight on low volume routes may make rates more expensive than for locations on more heavily travelled routes. Competition in the rail sector is limited by the extent of the rail networks, but shippers have successfully bridged the gap to competing carriers through use of transload facilities.

Many shippers identified transportation costs as a major concern. To the extent that costs are high due to the terrain, climate and demographics of the region, it is challenging to provide service at lower rates, particularly with steadily rising expectations regarding transit time and reliability for shipments. Within the courier and LTL sectors, additional competitors might result in a short-term reduction in rates, but reduce the traffic volumes for existing carriers below the levels which could support ongoing terminal operations in the region. Carriers have already adopted strategies to limit terminal costs within the region, using local trucking companies or retail businesses as agents rather than maintaining company terminals.

Logistics Practices

Based on the survey results, most of the businesses in the Columbia Basin have been in operation for a long time. Many indicated they have not adopted any strategies to overcome the challenges of distance to markets. Few indicated that training on shipping and logistics best practices would be helpful to their business. Only a third of respondents responded to the question regarding the potential for collaboration to improve transportation services, and of these many saw little potential.

Impact on Economic Development

From an economic development perspective, the key question is the extent to which shipping and logistics issues act a barrier to economic development in the Columbia Basin.

² "Can Reefer Trailers Carry Dry Freight? You Bet" Strive Logistics <http://blog.strivelogistics.com/can-reefer-trailers-carry-dry-freight-you-bet>

The results of our analysis and the survey findings strongly suggest that existing businesses have aligned their operations to the strengths of the transport and logistics system that serves the region. Among those businesses that have developed a strategy, shippers employ a variety of best practices such as consolidating shipments to reduce transportation costs, collaborating with other shippers, bulk purchases from a single supplier, the use of freight brokers to obtain lower rates, warehousing, and other solutions.

Our analysis also suggests that the transport and logistics system does not unduly restrict businesses' ability to scale their operations and growth. However, businesses with low value and/or heavy products are likely to face challenges in competitively accessing distant markets. For micro-entrepreneurs, it may mean that selling their products beyond the region will not yield a sufficient financial return to overcome the shipping and transport costs. These businesses may need to diversify their product line or focus on the local market.

In summary, the present shipping and logistics system does not appear to act as a barrier to business retention and expansion in the Columbia Basin. However, the location, topography and climate of the Columbia Basin and the characteristics of current transportation services will affect the type of businesses which are likely to consider the region attractive for new developments.

The fastest growing communities in the Columbia Basin over the last five years include Fernie, Invermere, Kimberley, Rossland and Revelstoke. A portion of this growth can be attributed to amenity migration, the movement of people based on the draw of natural and/or cultural amenities. In addition to increasing the local demand for goods and services, amenity migrants can contribute to new business formation within the region. These migrants may choose to locate their businesses in the Columbia Basin for lifestyle reasons rather than business fundamentals, and rely on advanced technology to facilitate a "distributed workplace that allows urban professionals to work anywhere".³ The needs of amenity migrants are likely to drive increased demand for airports, the Internet (broadband connectivity) and the need for first and last mile delivery services to enable them to engage in global commerce from locations of their choosing. In the Columbia Basin, innovations in these services may lag those that are occurring in the major urban centers. Nevertheless, the amenity migrant and tourism guests visiting the region have not changed their consumer expectations and will expect rural communities to offer similar, if not comparable, service levels for logistics and transport services.

³ The Search for Paradise: Amenity migration and the growing pains of western Canadian mountain towns Presented at the Canadian Political Science Association Vancouver, British Columbia, June 2008
Lorna Stefanick Associate Professor, Athabasca University <https://www.cpsa-acsp.ca/papers-2008/Stefanick.pdf>

Initiatives to Improve Shipping and Logistics in the Columbia Basin

The results of the electronic survey, our discussions with Columbia Basin businesses and our analysis of existing services indicate that in general the shipping and logistics system serving the Columbia Basin functions well. However, there are some specific issues identified during our study which appear to be of sufficient concern to Columbia Basin businesses to warrant further activity. These include:

Cold Chain Logistics

During our research, we heard from several businesses with an interest in temperature controlled (“cold chain”) transportation services for food logistics. We heard from several businesses in the West Kootenay corridor who expressed a keen interest in expanding cold chain services, and enthusiasm for collaboration to achieve their objectives.

Given the high level of interest in cold chain logistics, we recommend a market study be undertaken to evaluate the commercial feasibility of enhanced transportation and warehousing services in the West Kootenay. The study could encompass:

- Existing and potential demand for cold chain logistics services.
- A more detailed evaluation of current services.
- Potential improvements and business models for implementation.
- Financial analysis.

To facilitate exploration of alternatives, a working group of interested shippers could be created to oversee or advise on a technical study to examine the commercial feasibility of various transportation service and/or warehousing options for improving cold chain services, based on existing and potential levels of demand, potential benefits and costs, and implementation options.

Improved information Resources

In the survey results and in meetings a significant number of businesses noted the potential for improved efficiency through sharing of information on the demand for and supply of transportation services, by enabling consolidation of shipments among multiple firms and to take advantage of backhaul rates.

Several businesses suggested some type of “load board” or information system which could facilitate collaboration among shippers to consolidate shipments, and to reduce costs by reducing “empty miles” for both private and for-hire vehicles. Shippers already have the option of using existing web-based load boards or freight brokers to negotiate lower rates. However, a regionally-focused load board service might be a more effective way of sharing information and building relationships within the Columbia Basin.

Contemporary load boards are web-based services which enable shippers to post information about their shipping requirements (shipment size, origin and destination, and schedule) and for carriers to offer their

services and negotiate rates. Shippers already have the option of using existing load boards or freight brokers to negotiate lower rates. However, a regionally-focused load board service might be a more effective way of sharing information and building relationships within the Columbia Basin. A pilot project consisting of a rudimentary message board for exchanging information might be valuable in providing an indication of practical interest among regional shippers, if there is an organization which could host it. *Should this prove effective, it may be worthwhile to develop a more sophisticated service.*

Courier Service Improvement

Many firms indicated a desire for improved levels of courier service, particularly for communities located along the north-south highway corridors. Service improvements suggested by shippers relate primarily to same day express courier and overnight courier delivery. Further research to examine methods to improve the service levels for courier traffic moving in the region could be undertaken to estimate the potential demand and to connect with existing service providers to explore methods to implement enhanced services.

Collaboration and pilot projects to facilitate service improvements could help to ensure that unmet needs do not limit economic development. For example, during the peak tourism season or special events, there may be a heightened demand for courier service. However, a lack of awareness amongst courier companies of the changing demographics within the Columbia Basin and expectations of visiting guests may preclude the introduction of service enhancements that would be beneficial to the long-term sustainable growth of the community and region. Initiating pilot projects and working collaboratively with service providers and customers can lead to important learning outcomes. Applying these local solutions and insights will be essential for facilitating new business formation by amenity migrants.

In conjunction with local Chambers of Commerce and existing service providers, a working group discussion around courier service levels in the Basin could be facilitated. Discussions should begin with the recognition that standard courier service is for the most part available within the Columbia Basin, and most current users are relatively satisfied with service levels. However, rising customer expectations in both the consumer and business-to-business marketplace mean that the importance of courier service levels will increase over time.

Education and Outreach

One opportunity as part of an economic development strategy is to engage in education and outreach activities directed at either the business or government sectors.

For the business sector, this study can serve as a resource for economic development activities including business retention, expansion and new investment attraction. The presence of many mature businesses indicates that they have effectively aligned their businesses to the strengths of the transport and logistics

system that serves the region. Among those businesses that have developed a strategy, shippers employ a variety of best practices such as consolidating shipments to reduce transportation costs, collaborating with other shippers, bulk purchases from a single supplier, the use of freight brokers to obtain lower rates, warehousing, and other solutions. These examples provide valuable information on logistics practices within the region which can be utilized to help existing and new businesses to improve their logistics practices.

Business expansion and retention is also influenced by the skill set of the local workforce. While many of the smallest or oldest operating businesses did not feel increased education and training would be helpful, the aging work force suggests that the needs for shipping and logistics training may increase over time. The largest employers among the survey respondents expressed the least satisfaction with their staff's knowledge of shipping and logistics best practices and warehousing operations. Some very small business also indicated an interest in training. In many instances, the need for training and education is of a practical nature; for example, obtaining information on less-than-truck load costs, or the optimal inbound or outbound courier or small parcel shipping arrangements can be extremely time-consuming due to the complexity of the options and charges. A recommended opportunity would be to engage with local Chambers of Commerce, Small Business BC and service providers to develop fact sheets, webinars, or training sessions on specific issues to a broad spectrum of business owners in the area. Providing education and outreach on the shipping and logistics topics most relevant to business owners in the Basin may be beneficial.

Potential education and outreach efforts are not limited to the business sector but need to include government agencies that influence the provision of shipping and logistics services or infrastructure in the region. In general, the survey respondents did not identify specific regulatory issues that need the attention of government policy makers. However, from an economic development perspective it is important for there to be a non-political voice that expresses the importance of issues such as the following:

- Rural postal delivery service and standards,
- Highway maintenance standards,
- Airport and air service reliability.

2 INTRODUCTION

2.1 Study Background

This Regional Shipping and Logistics Analysis was undertaken for the Columbia Basin Trust by Davies Transportation Consulting Inc. in collaboration with Wave Point Consulting Ltd. and S5 Services. The scope of the project includes analysis of the shipping and logistics infrastructure in the Basin; identification of constraints and challenges to efficient operations; and assessment of impacts. The study also provides recommendations on potential actions for improving regional logistics to enhance business growth and investment in the region.

The Columbia Basin Trust has developed a renewed economic development business plan to lead and support efforts to advance economic growth, job creation, innovation and entrepreneurial opportunity for a prosperous and sustainable Basin economy. Freight transportation costs, reliability and availability affect the potential for business retention and expansion in the region.

The analysis encompasses the following tasks:

- Assembly and analysis of road, rail and airport data to develop a GIS-based inventory of current transportation infrastructure in the region.
- Identification and classification of regional shippers through use of the detailed GIS-based Business Points database, with additional data obtained through BC Stats and other public data sources.
- Extensive consultation and interviews with local Chambers of Commerce, industrial businesses, and other local stakeholders to obtain information on current transportation services, constraints and challenges. Outreach methods included an online survey of regional businesses, in-person meetings, and telephone interviews.
- Analysis of logistics challenges and opportunities within the region.
- Development of recommendations based on the extensive experience of the consulting team in logistics and transportation planning.
- Extensive use of GIS-based analysis and mapping to facilitate clear and understandable presentation of the study results.

2.2 Background on the Columbia Basin Trust

Columbia Basin Trust was created by the *Columbia Basin Trust Act* (British Columbia) in 1995 to benefit the region most adversely affected by the Columbia River Treaty (CRT), in the Canadian province of British Columbia. The Columbia Basin Trust received a \$295 million endowment by the Province, including \$250 million committed to finance power project construction, and \$45 million to be reinvested

through short-term cash investments, business loans, real estate ownership, and venture capital projects as directed by Basin residents.

Columbia Basin Region



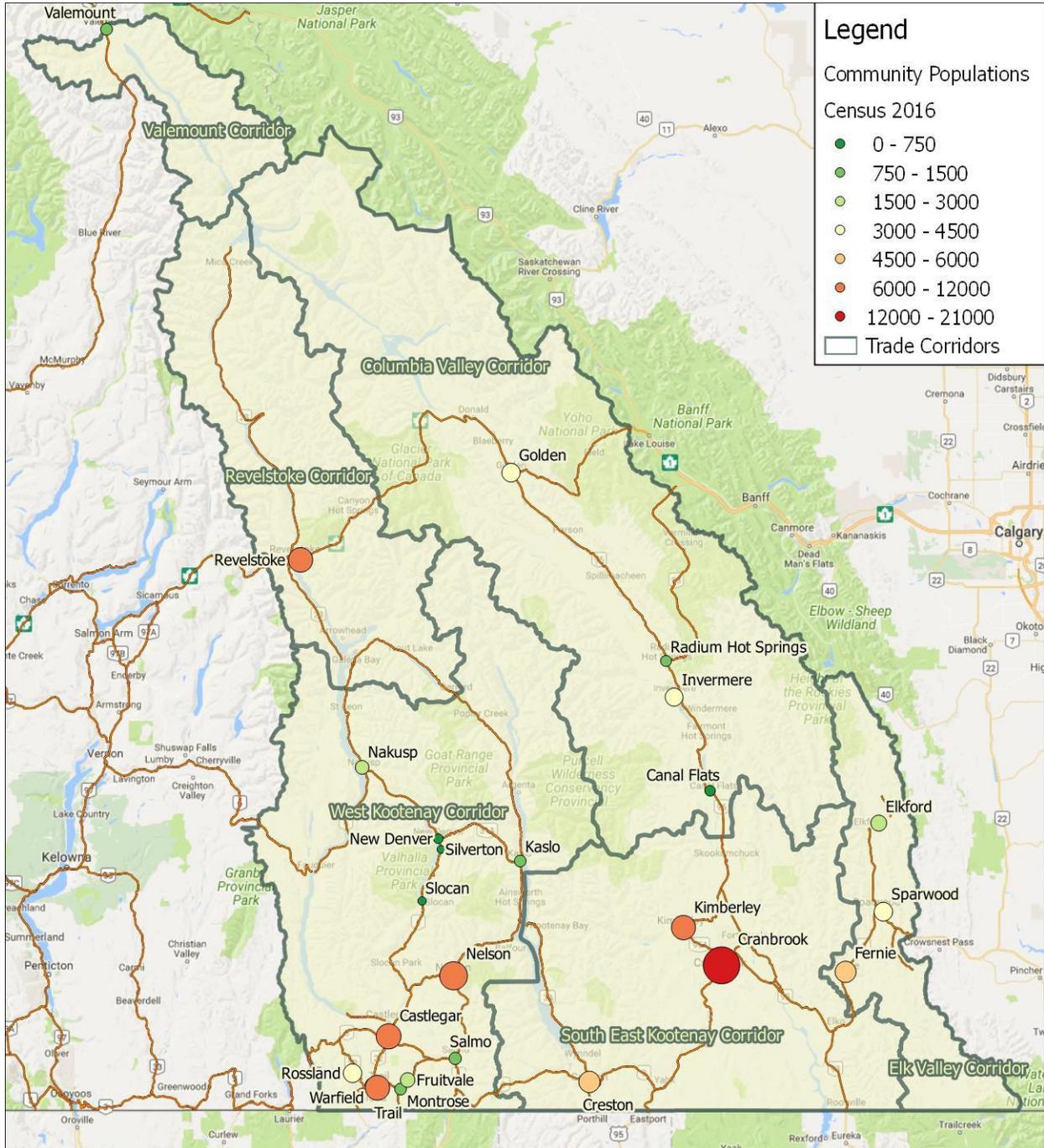
The Trust is mandated under the *Columbia Basin Trust Act* to manage its assets for the ongoing economic, environmental and social benefit of the region, without relieving governments of any obligations in the region. It is also mandated under the Columbia Basin Management Plan to include the people of the Basin in planning for the management of the assets and to work with others to coordinate activities related to the purpose of the Trust. Columbia Basin Trust serves the region consisting of all the watersheds that flow into the Columbia River in Canada.

3 PROFILE OF COMMUNITIES IN THE COLUMBIA BASIN

3.1 Population

The Columbia Basin encompasses 76,147 square km, for an estimated population density of 2.0 persons per square km in 2016, compared to 5.0 persons per square km for the entire province of British Columbia.

Columbia Basin Community Populations



Based on the most recent census data, the population of the Columbia Basin totalled 155,345 in 2016, or approximately 3.3% of the total BC population. This represents an average annual growth rate for the region of 0.7% from the 2011 population of 149,826. In aggregate, population growth in these communities has been slow and stable, with an annual average growth rate of 0.8% In the Kootenays, the challenges around restructuring of traditional natural resource industries that put downward pressure on population and development change have been accompanied by an upswing in amenity migration and retirement migration.⁴

Population figures for larger communities in the Columbia Basin, which account for 65% of the total regional population, are shown below.

Columbia Basin Communities Population 2006 and 2016							
Community	CSDID	RD	2006	2011	2016	10yr AAGR	5yr AAGR
Castlegar	5903045	Central Kootenay	7,360	7,816	8,039	0.9%	0.6%
Creston	5903004	Central Kootenay	4,837	5,306	5,351	1.0%	0.2%
Kaslo	5903023	Central Kootenay	1,073	1,031	968	-1.0%	-1.3%
Nakusp	5903050	Central Kootenay	1,524	1,569	1,605	0.5%	0.5%
Nelson	5903015	Central Kootenay	9,327	10,230	10,572	1.3%	0.7%
New Denver	5903032	Central Kootenay	512	504	473	-0.8%	-1.3%
Salmo	5903011	Central Kootenay	1,008	1,139	1,141	1.2%	0.0%
Silverton	5903027	Central Kootenay	186	195	195	0.5%	0.0%
Slocan	5903019	Central Kootenay	314	296	272	-1.4%	-1.7%
Golden	5939007	Columbia Shuswap	3,811	3,701	3,708	-0.3%	0.0%
Revelstoke	5939019	Columbia Shuswap	7,230	7,139	7,547	0.4%	1.1%
Canal Flats	5901043	East Kootenay	701	715	668	-0.5%	-1.4%
Cranbrook	5901022	East Kootenay	18,493	19,319	20,047	0.8%	0.7%
Elkford	5901003	East Kootenay	2,517	2,523	2,523	0.0%	0.0%
Fernie	5901012	East Kootenay	4,289	4,448	5,249	2.0%	3.4%
Invermere	5901039	East Kootenay	3,046	2,955	3,391	1.1%	2.8%
Kimberley	5901028	East Kootenay	6,184	6,652	7,425	1.8%	2.2%
Radium Hot Springs	5901040	East Kootenay	738	777	776	0.5%	0.0%
Sparwood	5901006	East Kootenay	3,680	3,667	3,784	0.3%	0.6%
Valemount	5953007	Fraser-Fort George	1,018	1,020	1,021	0.0%	0.0%
Fruitvale	5905005	Kootenay-Boundary	1,968	2,011	1,920	-0.2%	-0.9%
Montrose	5905009	Kootenay-Boundary	1,012	1,030	996	-0.2%	-0.7%
Rossland	5905023	Kootenay-Boundary	3,278	3,556	3,729	1.3%	1.0%
Trail	5905014	Kootenay-Boundary	7,248	7,681	7,709	0.6%	0.1%
Warfield	5905018	Kootenay-Boundary	1,739	1,700	1,680	-0.3%	-0.2%
Total			93,093	96,980	100,789	0.8%	0.8%

The fastest growing communities over the last five years include Fernie, Invermere, Kimberley, Rossland and Revelstoke. A portion of these increases can be attributed to amenity migration. Amenity migrants

⁴ <http://sorc.crrf.ca/bc/>

are “people who are retired or independently wealthy, or able to live where they like while working elsewhere, or young and well educated, and who move to a place that has some or all of the following amenities...namely rural landscapes, beautiful and dramatic scenery, good access to parks or wilderness, easy access to outdoor recreation, an attractive built environment or a history that can be seen and felt, good conditions for raising children, good conditions for practicing and enjoying art, and warm human relations”.⁵ Amenity migration is a global phenomenon that is particularly present in mountain regions.⁶ The participants tend to be well educated and entrepreneurial.

3.2 Economic Structure of Columbia Basin Communities

Communities in the Columbia Basin can be divided into two categories based on employment patterns: those dependent on goods-producing industries (primarily mining, forestry and agriculture and related manufacturing activity) and those dependent on service industries.

- Trail and Area – this includes Trail, Rossland, Warfield, Montrose and Fruitvale. The primary industrial activity in these communities is associated with the Teck refinery operations at Trail.
- Castlegar – the major industrial sector is the forest industry, and the Celgar pulp mill.
- Nelson – employment is primarily related to service sector activities.
- Creston and Salmo – have a significant economic dependence on forest products and agriculture.
- Cranbrook – is the major commercial service centre along the Highway 3 Corridor.
- Kimberley – Following closure of the Sullivan mine in 2001 Kimberley’s economy is primarily dependent on service sector activities.
- Fernie, Sparwood and Elkford – the major industrial activity is coal mining at Teck Resource’s five mines in the Crowsnest Pass.
- Invermere and Radium Hot Springs - employment is primarily related to service sector activities.
- Golden and Revelstoke – primarily dependent on service industries, with a high proportion in transportation and warehousing. Revelstoke and Golden are major operations hubs for CP Rail. The forest products industry is also a significant employer.

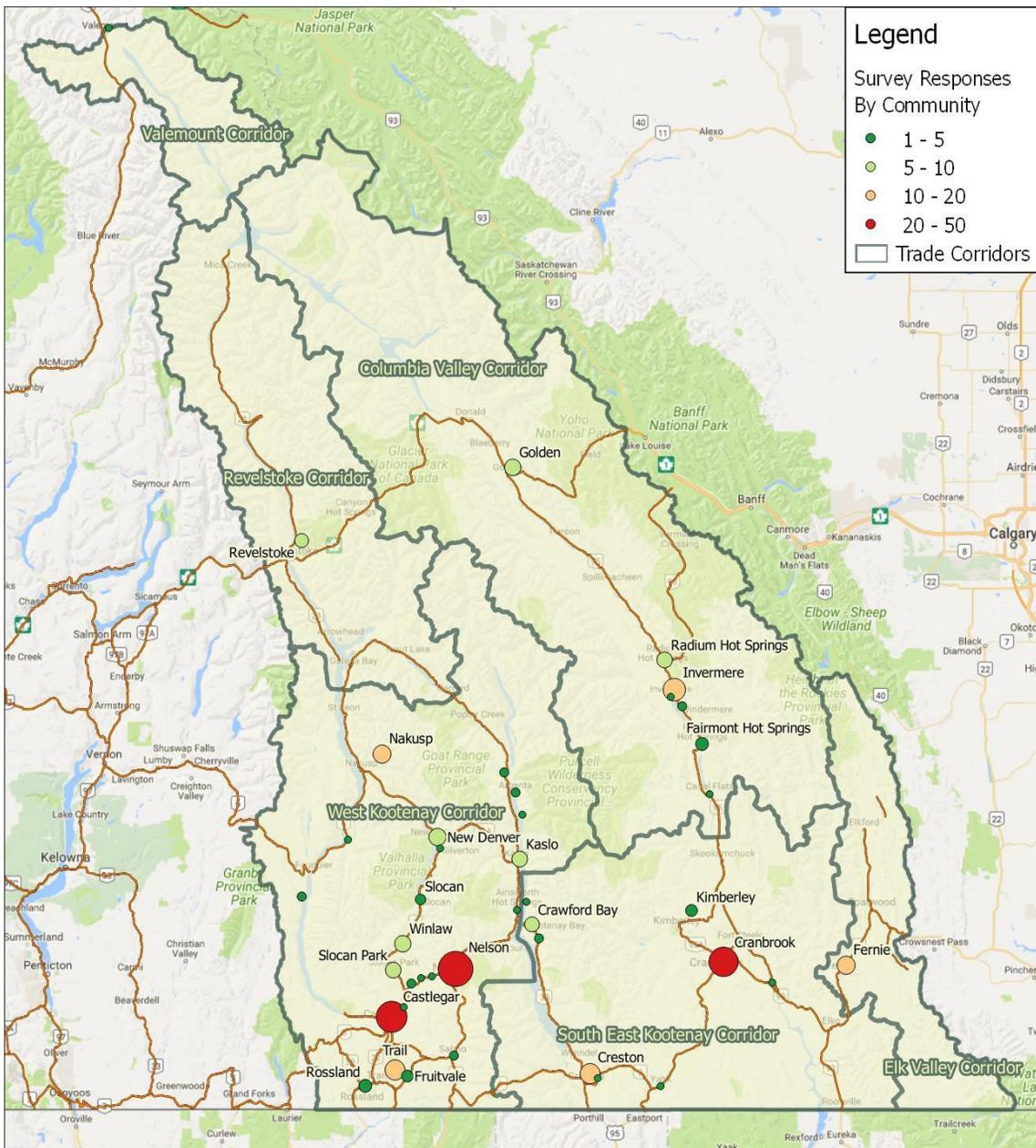
⁵ [http://www.bioone.org/doi/full/10.1659/0276-4741\(2004\)024%5B0327:PFAMIC%5D2.0.CO;2](http://www.bioone.org/doi/full/10.1659/0276-4741(2004)024%5B0327:PFAMIC%5D2.0.CO;2)

⁶ <https://books.google.ca/books?id=qPOMm-KBNrQC&pg=PA172&lpg=PA172&dq=amenity+migration+in+the+kootenay+region&source=bl&ots=WrPWWAttrW-&sig=df31g-THQ8hr5RnCprmV2NLR1w0&hl=en&sa=X&ved=0ahUKEwi4hfXtjPvTAhUR-2MKHb9CDRsQ6AEIRzAG#v=onepage&q=amenity%20migration%20in%20the%20kootenay%20region&f=false>

4 SHIPPING AND LOGISTICS SURVEY

An online Regional Shipping and Logistics Survey of businesses was undertaken to gather information about their current shipping practices and challenges. The on-line survey ran from January 20 to February 20, 2017. Regional Chambers of Commerce, advertising, social and traditional media were effectively used to raise awareness of the survey. Three hundred and eighteen businesses participated in the survey, providing a broad overview of the current state of freight logistics and the challenges facing firms in managing their supply chains. The map below shows the distribution of survey responses among Columbia Basin communities.

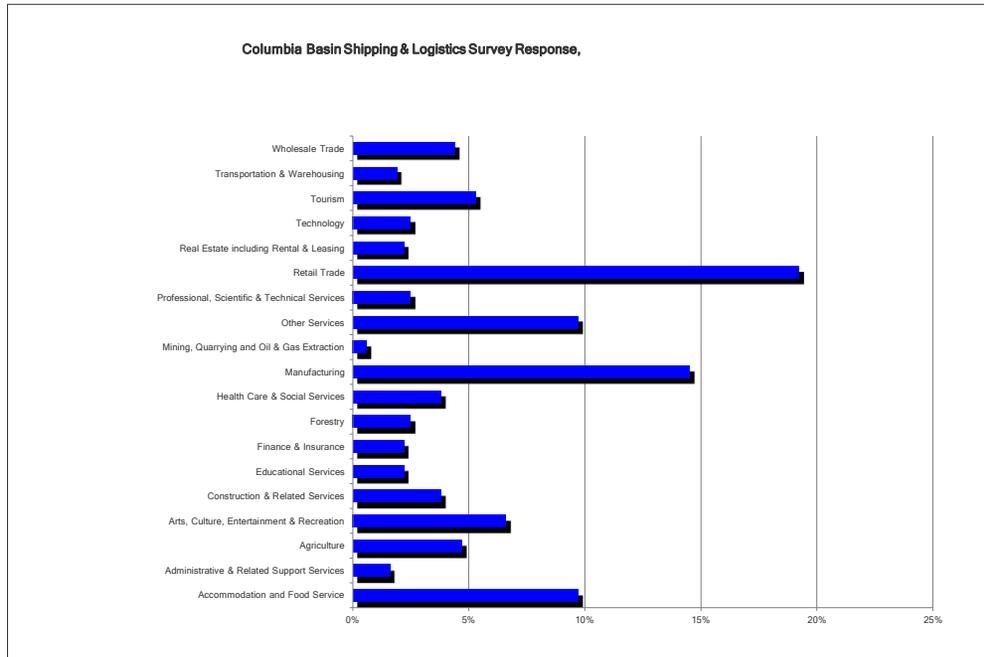
Shipping and Logistics Survey Responses by Community



The material summarized below highlights our analysis of business demographics and regional logistics patterns based on the survey responses. Business sector or mode specific findings are presented and discussed in greater detail in other chapters of report.

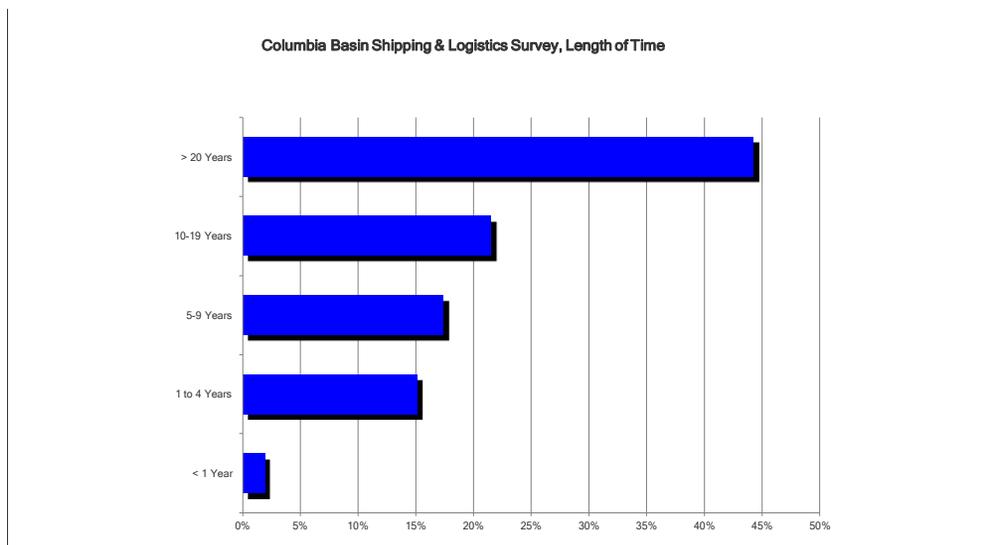
4.1 Business Demographics

The chart below reveals the distribution of survey participants by industrial sector.



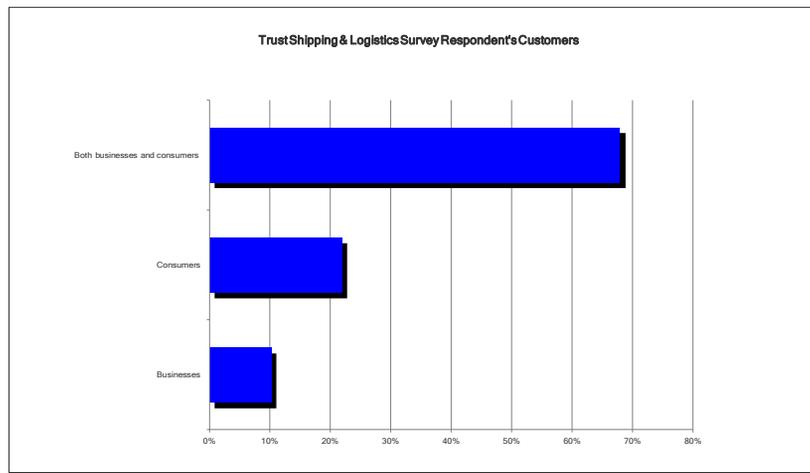
Most Businesses in the Columbia Basin Are Mature

Most business that participated in the study are mature and well established firms. Of firms who responded to the survey, 44% have been operating for more than 20 years, 21% between 10 and 19 years, 17% between five and nine years and 17% for four years or less.



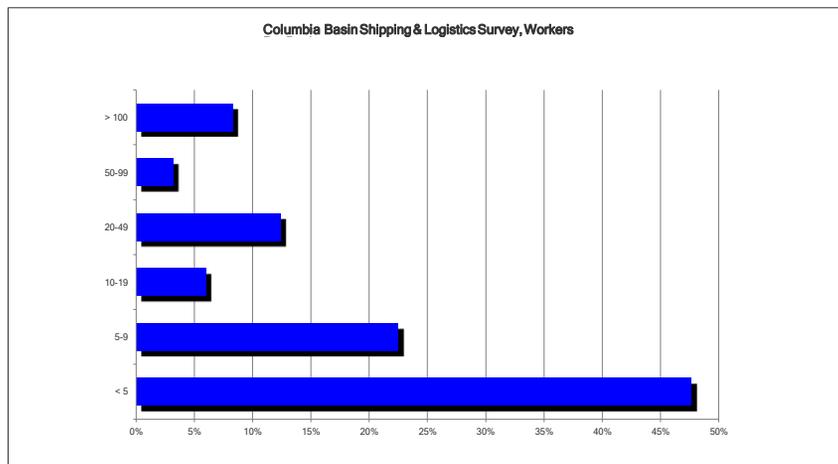
Respondents in the health care and social services and forestry sectors have been operating the longest in the Columbia Basin region, with 75% of the former and 62% of the latter indicating they have been in business more than 20 years. In contrast 79% of agricultural businesses have been in operation between one and nine years.

Over two-thirds of the firms that participated in the survey reported that their customers include both consumers and other businesses, 22% of the businesses serve just the consumer market and only 10% of the survey respondents deal exclusively with other businesses.



The Columbia Basin is Home to a Vibrant Small Business Community

Almost half of the survey respondents indicated that their business has five or fewer employees, 22% have between five and nine employees and only 8% reported that their organization has 100 or more employees. The chart below shows the distribution of respondents based on work force size.



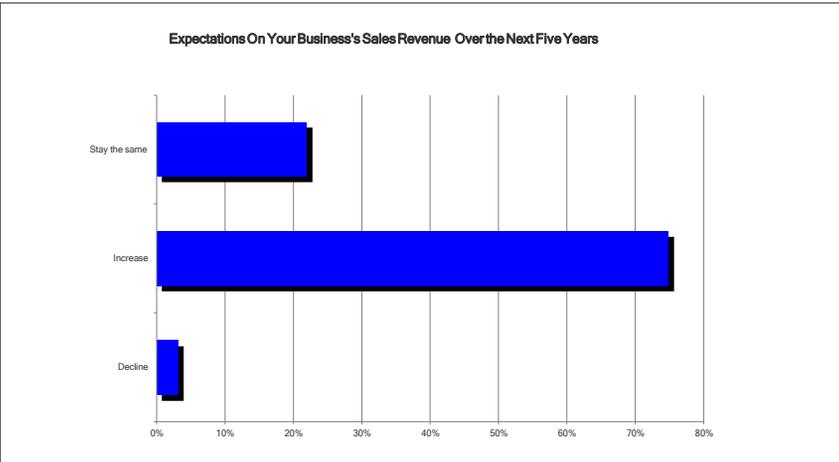
Respondents in the following sectors reported more than 100 employees: Manufacturing, Other Services, Retail Trade, Accommodation and Food Service, Forestry, Health Care and Social Services. Administrative & Related Support Services, Arts, Culture, Entertainment, and Recreation, Construction and Related Services, and Educational Services. Mining, Quarrying and Oil & Gas Extraction also had at least one business with over 100 employees.

The largest employers also have the widest range of shipping and logistics infrastructure on their premises. Seventy per cent of the largest employers occupy premises over 20,000 square feet. The largest employers source their goods primarily from the Greater Vancouver area, the Columbia Basin, International, The Rest of Canada and the United States with Alberta and the Rest of BC being less significant geographic markets for supplies. The largest employers' predominant customer locations are the Columbia Basin, followed by International, United States, and Alberta.

The largest employers indicated that mass produced, heavy products and high value were the top three product attributes. High volume (less dense), non-perishable were also frequently mentioned characteristics. There is a small number of large employers that ship highly perishable products.

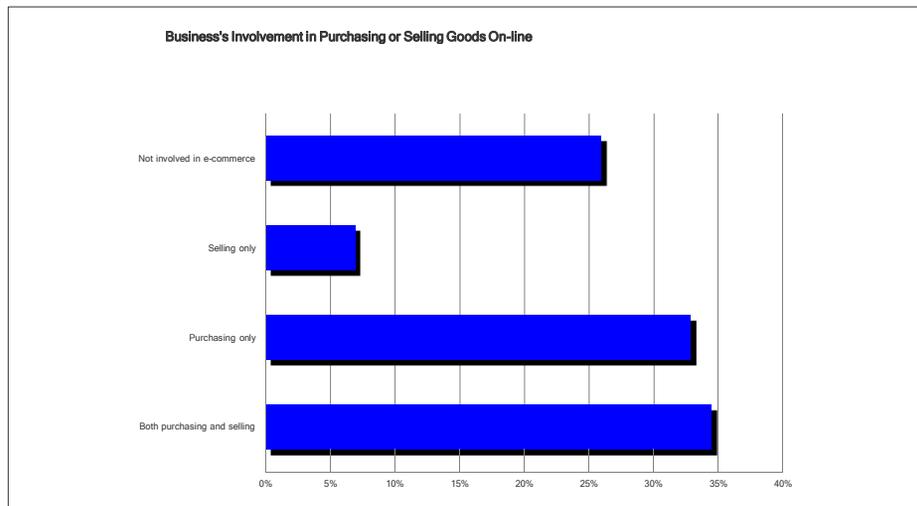
Business Confidence is Strong in Columbia Basin

Business confidence among survey respondents is high. Seventy five per cent of the respondents indicated that they expect their sales revenue to increase in the next five years. The largest employers expect that sales revenue will stay the same over the next five years (25%), or increase (67%). However, firms in the forestry sector expressed a less optimistic outlook with 50% indicating that sales revenue will stay the same and 25% indicating it would decline. Approximately half of the respondents in the health care and social services sector indicated that they expect their business to stay the same.



E-commerce is Affecting Columbia Basin Trust Businesses

To capture insights into some of the structural changes that were occurring in the economy, the survey asked respondents about their business's involvement in electronic commerce. Three-quarters of the businesses have some involvement in purchasing or selling online, with 35% involved in both buying and selling, and 33% in purchasing goods on-line only.



Retail trade businesses indicated a higher level of involvement in e-commerce with 48% of the firms in this sector reporting the use of electronic commerce for both purchasing and selling. Wholesale trade businesses are significantly involved in e-commerce with 43% involved in both purchasing and selling. Half of the respondents in the health and social services sector are involved with purchasing involving e-commerce and 38% are not involved at all.

Due to their business-to-business focus, forestry firms are less inclined to be involved with e-commerce, with over half indicating no involvement. However, 43% are involved for purchasing purposes only.

Businesses in the agricultural sector were significantly involved in e-commerce with only 14% reporting no involvement. Purchasing (43%) is the dominant involvement in e-commerce followed by both purchasing and selling (29%).

For those businesses responding that they are involved in both purchasing and selling using e-commerce, over 70% indicated that they sell their products to both businesses and consumers. The respondents also indicated that the logistics services they use the most include the post office, courier, personal or business vehicle, less than truck load service, full truck load and air freight.

Businesses involved extensively in e-commerce handle products that are high value (45%), light (34%), heavy (34%), have a unique attribute (27%), high volume (less dense) (24%), non-perishable and

personalized (23%). Only 21% of respondents indicated that they are heavily involved in e-commerce with highly perishable products.

Respondents who are involved in both e-commerce purchasing and selling indicated that the price of ground transportation (76%), shipments being complete, on time and damage free (75%) and delivery reliability (73%) are the most important factors influencing their current logistics practices.

Communities where respondents indicated the most frequent use of e-commerce for both purchasing and selling included Cranbrook, Nelson, Crawford Bay, Kaslo, Fernie, Nakusp, Trail, Castlegar, and New Denver.

New Business Formation

Based on the survey responses, new businesses (four years of age or less) are in the manufacturing, retail trade, other services, agriculture, arts, culture, entertainment and recreation, accommodation and food service and wholesale trade sectors. Almost 80% of these new firms have less than five employees. The post office, personal vehicles, couriers and less than truck load service are the most frequent transport options used in these businesses.

New business involvement in e-commerce is also higher than for many of the other firms in the Columbia Basin. Many of the new businesses ship products that are highly perishable, high value or low volume (compact products), or that may require some element of temperature control. New businesses typically have the least amount of logistics infrastructure on site. Delivery reliability, the price of ground transportation and shipments being complete, on time and damage free are all important factors in their current logistics practices. These firms both source and sell most of their products within the Columbia Basin. Nevertheless, the Rest of BC and Alberta are important. The clear majority of new business indicated they have not used any methods to help their business overcome distance to markets, nor did they believe that additional staff training would be helpful.

4.2 Columbia Basin Subregions

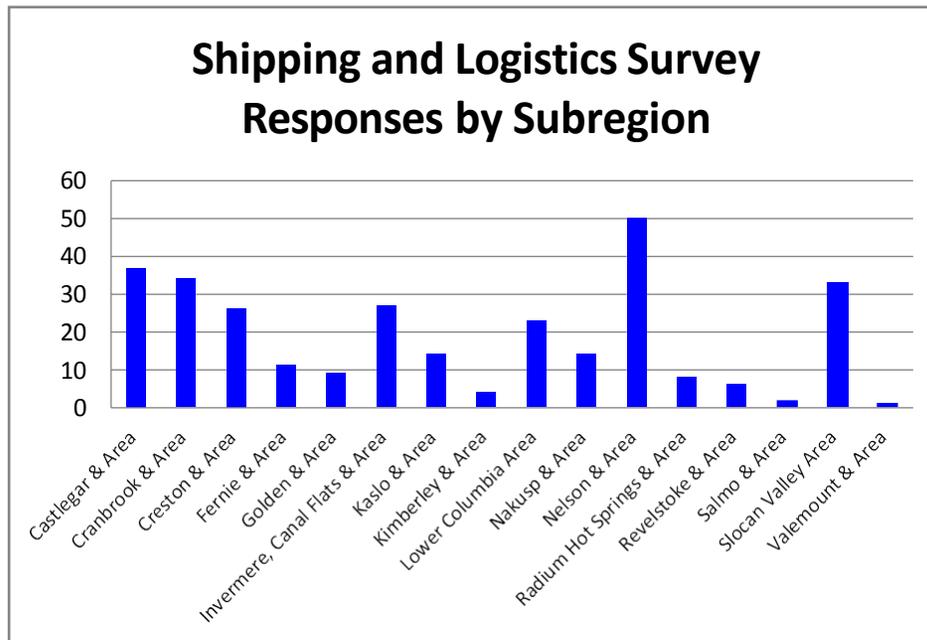
In addition to analysis of logistics and shipping issues for specific industrial sectors, it is useful to explore the experience of business owners in Columbia Basin subregions to determine if there are distinct local issues. The analysis is based primarily on the data gathered in the electronic survey. For purposes of this analysis, the Columbia Basin has been divided into the subregions shown on the map below.

Columbia Basin Subregions



The total number of surveys for areas within the Columbia Basin for which the location could be identified was 299, distributed as shown below. For those subregions where the sample size is extremely low, the responses are not sufficient to draw any conclusions. The subregions with less than 10 observations include Golden & Area (9 observations), Radium Hot Springs & Area (8 observations), Kimberley & Area (4 observations), Salmo & Area (2 observations) and Valemount & Area (1 observation). Since not all the survey respondents answered the entire set of questions, responses to specific questions may be even lower.

Shipping and Logistics Survey Responses by Subregion



4.3 Survey Response Rate by Subregion

The table below shows the estimated survey response rate for each subregion. The response rate is calculated as the number of responses for each region divided by the number of “commercially-oriented” businesses in each region, based on Canada Business Points data for 2016. Estimates of commercially oriented businesses were developed by removing businesses in those sectors which are primarily government provided, including NAICS codes 61(Educational Services), 62 (Health Care and Social Assistance), 92 (Public Administration) and 99 (Unclassified).

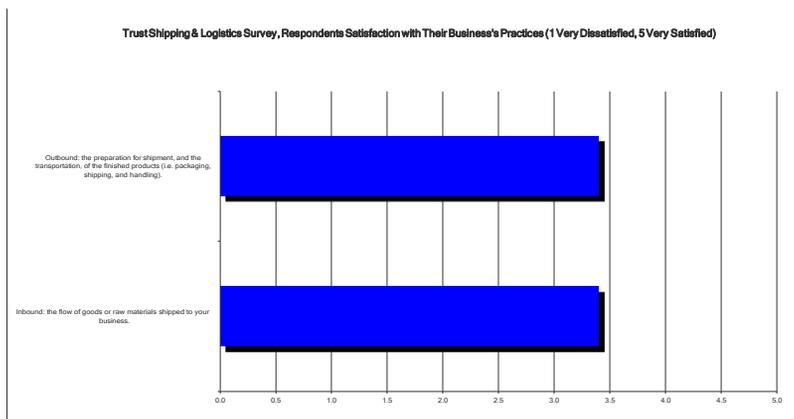
Survey Response Rates by Subregion

Trust Subregion	Response Rate	Trust Subregion	Response Rate
Castlegar & Area	7%	Kaslo & Area	13%
Cranbrook & Area	3%	Kimberley & Area	1%
Lower Columbia Area	3%	Nelson & Area	5%
Nakusp & Area	9%	Radium Hot Springs & Area	7%
Creston & Area	5%	Revelstoke & Area	1%
Elkford	0%	Salmo & Area	3%
Fernie & Area	3%	Slokan Valley Area	17%
Golden & Area	2%	Sparwood	0%
Invermere, Canal Flats & Area	6%		

The response rates vary significantly, from 0% in Sparwood and Elkford to 17% in the Slokan Valley Area. The geographic distribution of response rates is shown below. Based on the estimated survey response rates, interest in shipping and logistics issues is highest in the West Kootenay, including the Slokan Valley, Kaslo and Area, Castlegar and Nelson. To the extent that the survey response rates reflect the level of concern over shipping and logistics issues, interest is highest among businesses in the West Kootenay Corridor.

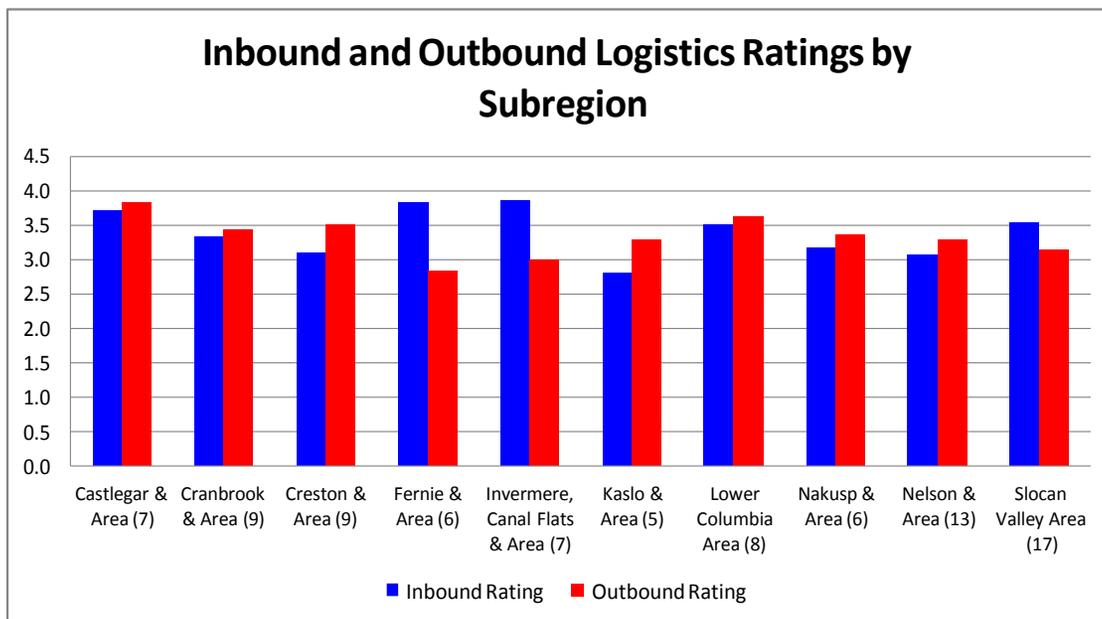
results were to generate overall ratings.⁷ Respondents indicated similar levels of satisfaction with their inbound shipping and logistics practices with a positive overall satisfaction level.

Columbia Basin Survey Satisfaction with Logistics Practices



Survey responses were also analyzed on a subregional level. In almost all cases the average rating falls between 3 (Neither Satisfied nor Dissatisfied) and 4 (Satisfied), which suggests that overall the respondents do not perceive major problems with their logistics practices, though obviously individual companies' perceptions sometimes differ.

Inbound and Outbound Logistics Ratings by Subregion



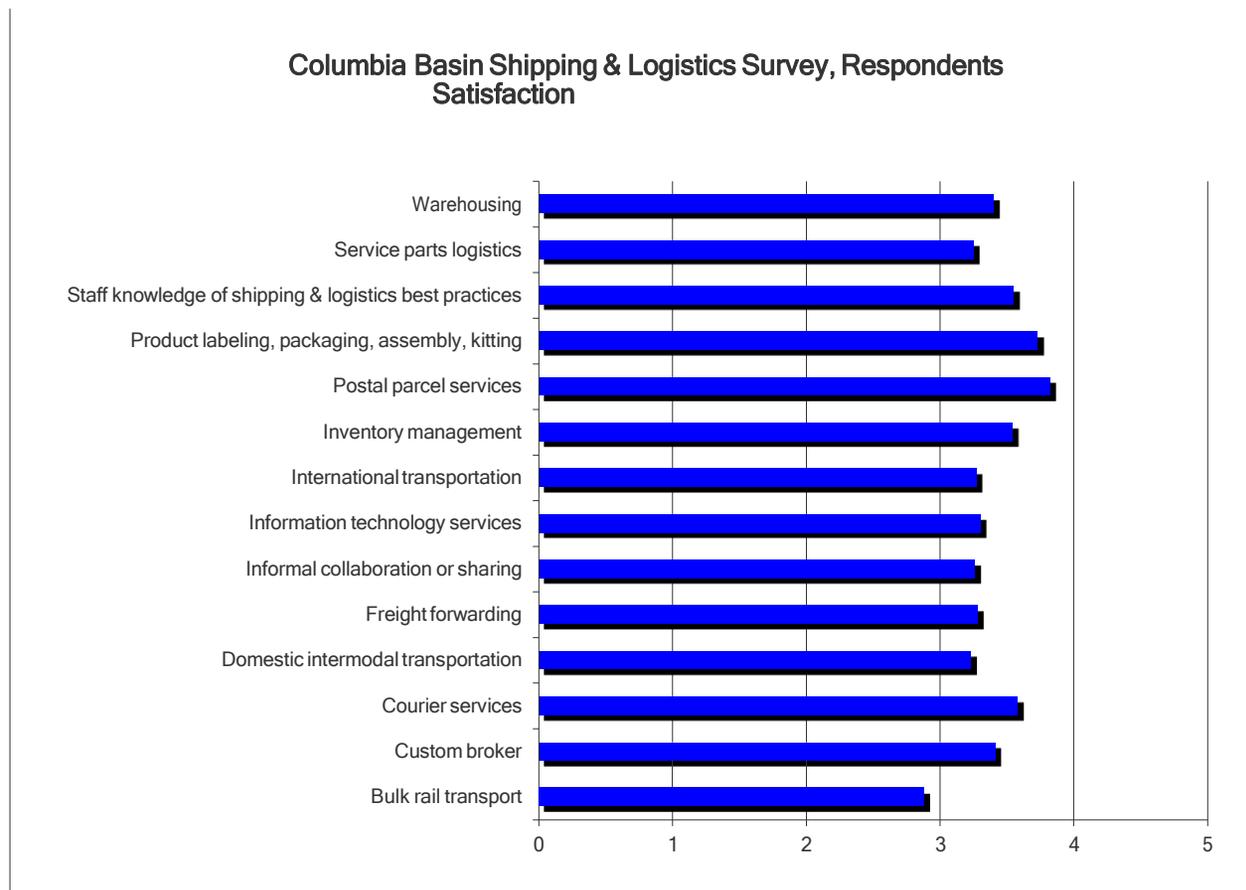
⁷ The Likert scale used in the survey is a 5 point scale allowing respondents to choose among Very Dissatisfied, Dissatisfied, Neither Satisfied or Dissatisfied, Satisfied, or Very Satisfied. To generate overall ratings the responses were assigned a weighting of 1 to 5 and the responses aggregated and divided by the number of responses. Based on this methodology, ratings above 3 are generally considered positive (i.e. better than neutral) and those less than 3 considered negative.

Responses in some subregions show a significant gap in satisfaction between inbound and outbound logistics; for example, the rating for inbound logistics in Fernie and Area was 3.8 but the rating for outbound logistics was only 2.8, indicating that on average firms are dissatisfied with outbound logistics. However, caution is required in interpreting the result due to the low sample size (only 6 respondents). Responses in Kaslo and Area showed the opposite imbalance, with outbound logistics rated higher than inbound (2.8 vs 3.3); however as for Fernie the sample size is very small (6 observations).

4.5 Satisfaction for Specific Services

Respondents were asked to rate their level of satisfaction with specific logistics and transportation services. Overall results are depicted below. Overall ratings were positive, with the exception of bulk rail services. However only a small number of shippers indicated they use bulk rail services.

Columbia Basin Shipping Survey Satisfaction with Specific Services



For most of these services, response rates were very low, with most respondents indicating that they do not use (or had no views on) them (i.e. "Not Applicable"). On average only 26% of survey respondents answered these questions; response was greatest for the most widely used services (Postal Parcel and Courier), and for Staff Knowledge. The only subregions which consistently returned more than 10 responses were Castlegar & Area, Nelson & Area, and the Slocan Valley Area.

Shipping and Logistics Survey Logistics Satisfaction – Responses by Subregion

Shipping and Logistics Survey Logistics Satisfaction - Responses by Subregion															
Subregion	Postal Parcel	Courier	Staff Knowledge	Product Value- added	Information Technology	Inventory Management	Warehousing	Customs Brokers	Freight Forwarding	International Transportation	Service Parts Logistics	Collaboration	Domestic Intermodal	Rail	Average Responses
Castlegar & Area	16	17	13	12	11	10	10	12	12	11	11	9	14	9	12
Cranbrook & Area	14	15	12	11	9	10	10	9	8	8	8	6	3	2	9
Creston & Area	10	10	9	6	5	7	7	2	3	2	6	5	1	0	5
Fernie & Area	7	6	7	4	3	4	2	2	2	2	2	2	2	1	3
Golden & Area	2	2	1	1	1	1	1	1	1	1	1	1	2	0	1
Invermere, Canal Flats & Area	11	10	9	8	7	8	4	2	3	1	4	4	1	0	5
Kaslo & Area	8	6	4	4	3	3	2	4	3	5	2	3	2	0	4
Kimberley & Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lower Columbia Area	11	10	9	10	8	7	6	7	5	6	7	5	6	2	7
Nakusp & Area	8	8	6	4	6	4	3	3	3	5	3	3	3	1	4
Nelson & Area	24	25	24	18	17	15	18	17	16	15	13	11	13	8	17
Radium Hot Springs & Area	3	3	2	1	1	1	2	0	1	1	1	1	1	0	1
Revelstoke & Area	2	3	2	0	2	1	1	1	2	1	2	1	1	0	1
Salmo & Area	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1
Slocan Valley Area	21	20	16	13	14	13	11	12	10	11	8	13	8	2	12
Valemount & Area	1	1	1	0	1	1	0	0	0	0	1	1	0	0	1
Grand Total	139	137	116	93	89	86	78	73	70	70	70	66	57	25	84
% of Respondents	44%	43%	36%	29%	28%	27%	25%	23%	22%	22%	22%	21%	18%	8%	26%

5 REGIONAL LOGISTICS PATTERNS

In addition to geography and the size of individual communities, the structure of the local and regional economy within the Columbia Basin impacts the flow of freight to, from and within the area. Economic structure refers to the mix of industries within the region, including the balance between goods-producing and service industries and the subsectors within these categories. In the Columbia Basin, goods-producing industries include Agriculture, Manufacturing, Forestry, Mining, Quarrying and Oil & Gas Extraction. Service industries include Construction and Related Services, Retail Trade, Accommodation and Food Service, Health Care and Social Services, Administrative & Related Support Services, Arts, Culture, Entertainment, Recreation, Educational Services and Other Services.

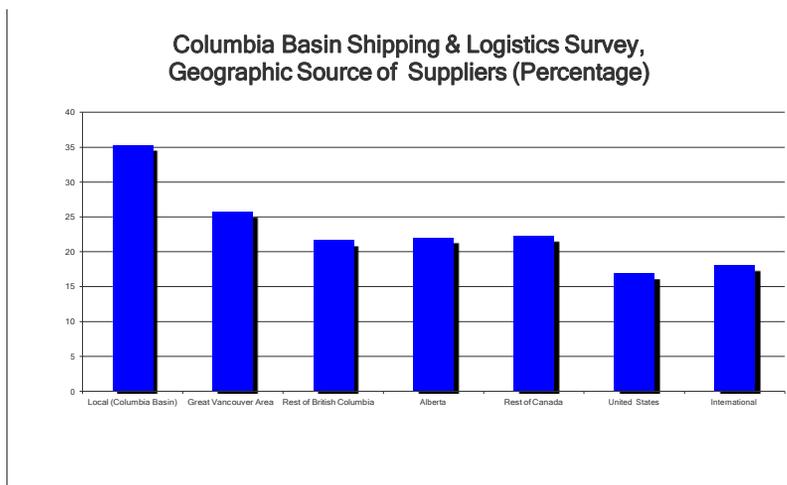
Based on the survey results and available data, there is a substantial imbalance between inbound and outbound shipments. External regions account for 65% of supplies received by firms, but only 34% of total sales to customers. This provides both challenges and opportunities for businesses in the region that will be discussed in more detail in other sections of the report.

The survey responses do not capture the magnitude and type of inbound and outbound freight flows. On balance, the Columbia Basin is probably a net exporter due to the large volumes of coal (over 20 million tonnes per year), metals and forest products produced in the region and exported nationally and internationally. However, in general these use transportation options – unit train and carload rail transportation, and truckload trucking services – which provide limited or no opportunity for inbound transportation of other commodities.

5.1 Source of Supplies

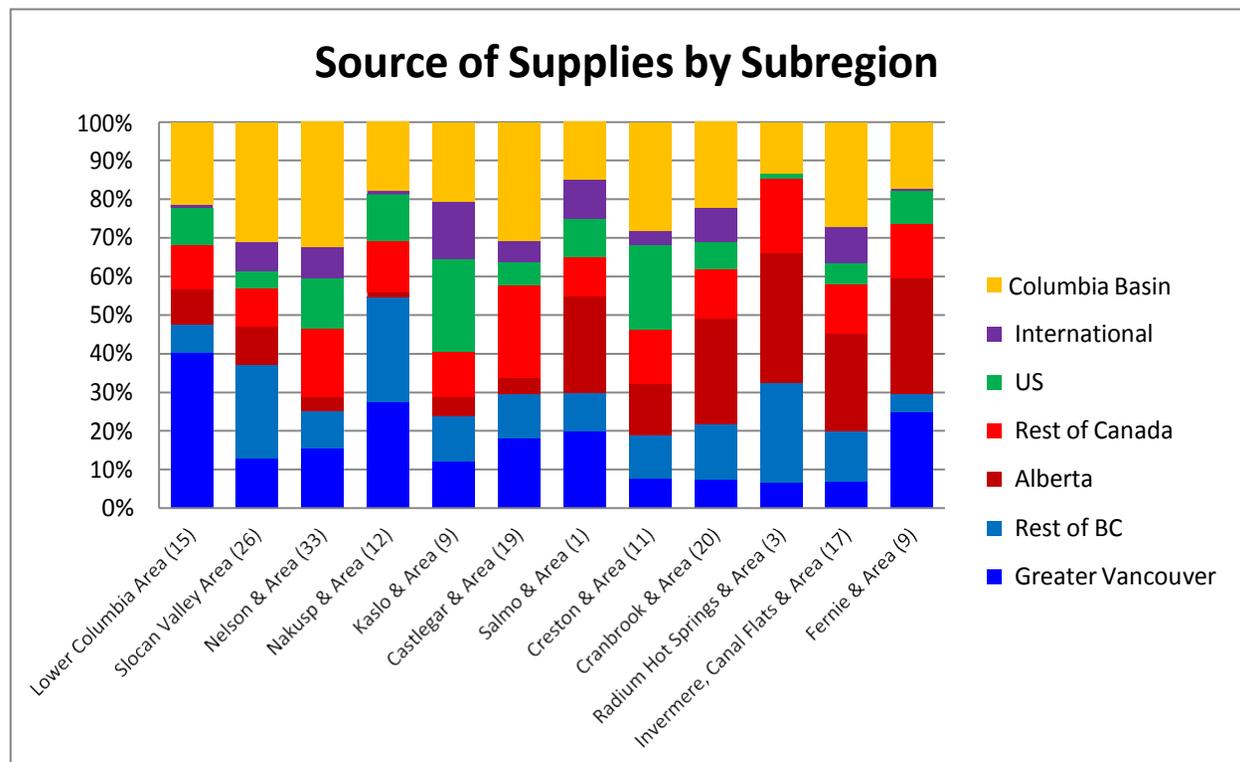
Respondents' answers regarding the sources of their supplies are summarized in the figure below. On average, firms source 35% of their supplies locally within the Columbia Basin, followed by Greater Vancouver and the rest of BC.

Columbia Basin Survey Location of Suppliers



However, these patterns differ significantly by subregion, with firms in the western part of the Columbia Basin highly dependent on the Lower Mainland and the Rest of BC, and those in the east more dependent on supplies from Alberta and the Rest of Canada.

Columbia Basin Survey Location of Suppliers by Subregion



This pattern is consistent with BC MOTI truck counts in the region, which show Average Annual Daily Truck Traffic (AADTT) of only 183 vehicles per day at Salmo, west of Yahk. At Yahk, traffic is higher due to significant volumes of truck traffic crossing the Canada/US border at Kingsgate. This pattern is reinforced by the data collected by the Cranbrook Truck Survey, which found that only 22% of westbound traffic surveyed at Sparwood and Cranbrook was destined to BC locations west of Cranbrook. The Cranbrook truck survey data is analyzed in greater detail in section 9.

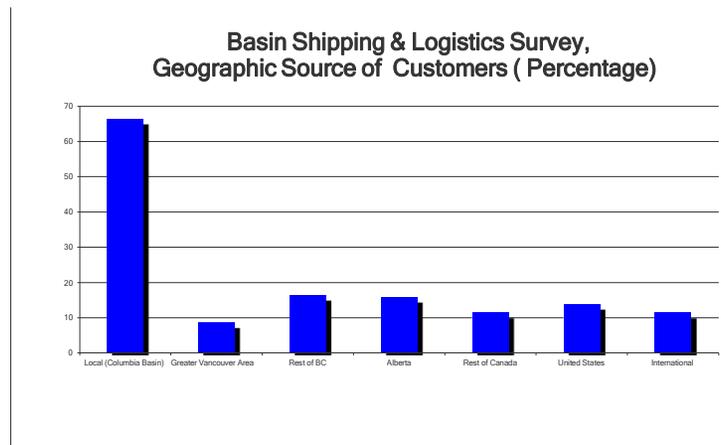
5.2 Location of Customers

The survey also asked businesses to **Estimate the geographic source of most of their sales to customers.** Respondent indicated that customers within the Columbia Basin represent the majority of their business. Some sectors such as the retail trade are even more dependent (89%) on customers in the Columbia Basin.

The Greater Vancouver market, the Columbia Basin and the Rest of BC were very important for 90% of the wholesale trade businesses. For wholesale trade, the Rest of BC, Alberta, United States, and

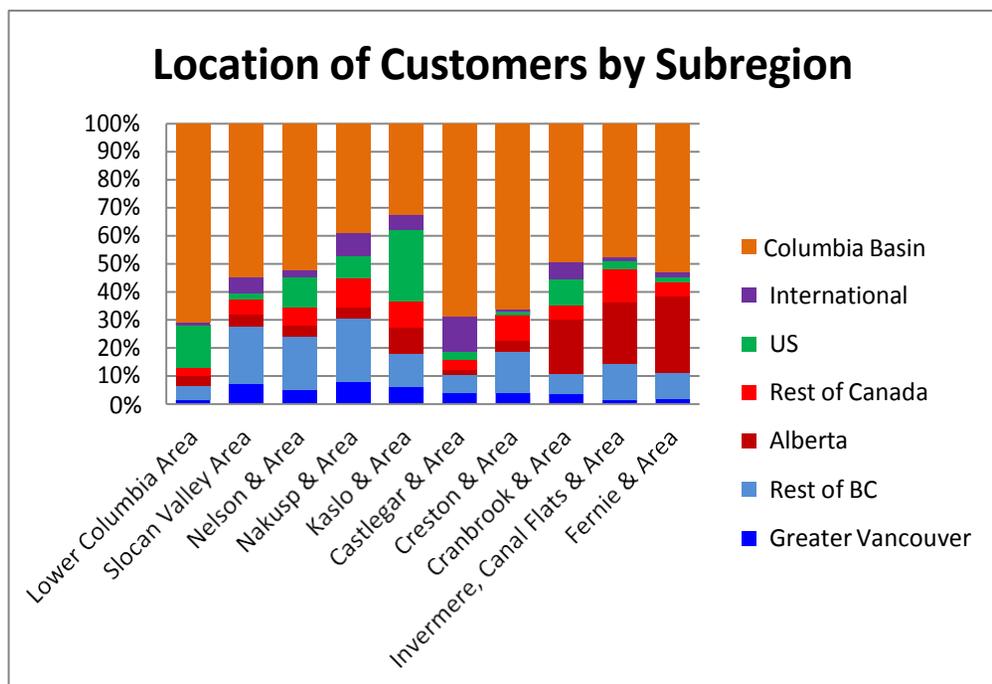
International are all more important geographic markets than the Great Vancouver area as evidenced in the chart below. Other geographic locations of importance include Alberta and Rest of BC.

Columbia Basin Survey Location of Customers



The most important geographic markets for customers for the health and social services businesses are the Columbia Basin, Greater Vancouver and the Rest of BC. For small businesses with less than five employees, the Columbia Basin, Greater Vancouver, Rest of British Columbia, Rest of Canada, International, Alberta and the United States are the most significant geographic locations for their suppliers. Their customer base is largely in the Columbia Basin, followed by the Rest of BC, Alberta, Rest of Canada, United States, Greater Vancouver and International. Locations of customers by subregion are depicted below.

Columbia Basin Survey Customer Locations by Subregion



For virtually all subregions, local customers (within the Columbia Basin) constitute the largest share of sales. As was evident with the source of supplies, subregions in the eastern section of the Columbia Basin are more dependent on Alberta and the Rest of Canada for sales than those in the western section.

6 SERVICE INDUSTRIES

6.1 Retail Trade

The Transport and Logistics survey results indicate that businesses in the retail sector in the Columbia Basin are well established. Only 16% of the respondents indicated that they have been operating four years or less. Forty-five per cent operate with fewer than five employees.

Based on the survey, almost half of the businesses in the retail trades operate from premises that range in size from 1,000 to 4,999 square feet. Twenty-two per cent of the retail trade businesses operate from facilities that are less than 1,000 square feet. Businesses in the retail trades more frequently indicated (55%) that they have warehouse capacity on site and other options for logistics infrastructure.

The most significant logistics services used by businesses in the retail trade sector included courier, postal service, less than truck load and personal or business vehicles.

The retail sector in the Columbia Basin is characterized by the inbound movement of consumer goods originating largely from outside the region. Respondents in the retail trades sector indicated that the Columbia Basin, Greater Vancouver, Rest of Canada, the United States and the rest of British Columbia were a more frequent geographic location of their suppliers than Alberta. Local (Columbia Basin) customers account for over 75% of the retail sector's sales.

The survey highlighted that some sectors of the economy have needs that are distinct from the general profile of firms in the Columbia Basin. For example, almost half of the businesses in the retail trade sector indicated that the ability to handle peak season production and shipping is very important. Over three-quarters indicated that product orders being complete, on time and damage free, and the price of ground transportation are very important.

Business in the retail trade sector expressed the highest satisfaction with the following logistics services: custom broker, courier service, postal parcel service and international transportation. Courier service also received the highest satisfaction levels along with the postal parcel service.

Retail sector respondents expressed slightly more satisfaction with their inbound logistics practices compared to their outbound activities. Overall the retail trade sector was among the industry sectors that expressed a relatively high amount of dissatisfaction or a neutral stance to their own company's operations. Eighty per cent of the retail firms that participated in the survey did not think that more training or staff education on shipping and logistics best practices would be helpful for their business. Yet, 65% indicated that they have not used any methods that have helped their business overcome distance to markets for either suppliers or customers.

6.2 Wholesale Trade

Based on Business Points data, the wholesale trade sector in the Columbia Basin consists primarily of small scale enterprises handling the full variety of industrial and consumer goods required for regional activity. In 2010, the largest employer in the wholesale sector was Finning Canada's Sparwood facility, with 100 employees. Finning closed the Sparwood branch in 2016, but continues to service local customers with local heavy equipment technicians.⁸

Over 40% of businesses in the wholesale trade sector who responded to the survey operate their business from a home office. Twenty-nine per cent operate from facilities between 10,000 and 19,000 square feet, while 29% operate from premises less than 4,999 square feet and a similar percentage from premises less than 1,000 square feet.

Businesses in the wholesale trade frequently indicated they have a warehouse, truck loading bays, forklifts, and the ability to weigh cargo. Some have storage yards.

The product attributes of the wholesale sector covered a broad spectrum with high value (57%), high volume (less dense) products (43%), and highly perishable (29%) being some of the most frequently cited product characteristics.

The Greater Vancouver area was a very important location for 90% of the wholesale trade businesses. However, a significant number of businesses sourced supplies from Alberta, the Rest of Canada, Internationally and from the United States.

Businesses in the wholesale trade sector relied heavily on the less than truck load sector (86%), postal service (71%), courier service (57%) and personal or company vehicles (50%). The most important transport and logistics attributes required by this sector of the economy included shipments being complete, on time and damage free; and delivery reliability (92%). The price of ground transportation was very important (71%).

Wholesale trade respondents to the survey indicated their highest satisfaction with custom brokers and warehousing services.

⁸ "Finning to shut down Sparwood facilities" The Free Press Leah Scheitel Nov 12, 2015
<http://www.thefreepress.ca/news/347258052.html>

6.3 Tourism

Tourism includes a variety of visitor services and accounts for a substantial portion of accommodation and food services activity.⁹ Tourism in the Columbia Basin is influenced by its geographic location close to the border with Alberta and the United States. There are several National and Provincial Parks in the area. Visitors to the area often travel through the gateway cities of Cranbrook, Calgary, Vancouver, Kelowna and Spokane.

The principal tourism products in the region include sightseeing, wildlife viewing, hot springs, cultural attractions, natural history, festival, events and soft adventure. However, the region is also defined by the highest concentration of ski experiences in the world. There are eight lift service ski resorts and over 60 on-snow providers in the region. The ski resorts are among the largest tourist employers in the region. The ski resorts also provide the base for mountain biking. Non-winter tourism experiences include over 25 championship 18-hole golf resorts, road cycling loops, guided backcountry excursions and other adventures such as fishing and water sports. There are numerous artisans, emerging wineries and craft breweries. Certain communities in the region (at or near ski resorts) are also lifestyle destinations where many residents choose to live because they want to be near the amenities and activities that they enjoy.

A little over half of the businesses in the accommodation and food service sector were involved in e-commerce for purchasing goods only, and 25% were not involved at all. E-commerce is one area that is driving changes in transport and logistics practices in the tourism sector within the Columbia Basin. Many visitors and employees in the tourism sector are drawn to the relatively sparsely populated region because of the natural amenities. Increasingly the quality of the local visitor experience and employee attraction and retention is determined by rising consumer expectations around same-day local delivery of products purchased on-line. Rising consumer expectations are also linked to activities and passions of tourist visitors, including skiing, snowmobiling, mountain biking or other activities. Many visitors come to the region for an extended period to indulge in these activities. When an item breaks, needs repair, or a new product purchase cannot be made locally because it is unavailable in a timely manner, the quality of the visitor experience is diminished and satisfaction with the destination is lowered. It does not matter to the guest that they have travelled to somewhat remote or less densely populated areas. E-commerce and changing customer demographics are driving expectations for a transport and logistics system than can deliver goods in a cost effective and timely manner.

⁹ BC Stats defines the Tourism Sector to include the following services provided to tourists (those travelling a minimum distance of 80 kilometres one way from their usual place of residence). The following industries provide services directly to tourists: Retail trade; Transportation; Information and cultural services; Finance, insurance, real estate, rental and leasing; Administrative services; Arts, entertainment and recreation; Accommodation and food services; Personal and other services; and Public sector services. The methodology used by BC Stats to estimate the value of tourism in the province is based on allocating a portion of the activities of each of these industries to the tourism sector. Source: [Changes to the BC Stats Methodology for Measuring the Size of the Tourism Sector](#) Prepared for Destination BC by BC Stats – February 2016.

In other instances, businesses in the Columbia Basin area want to use e-commerce to maintain connections with visitors once they have left the region. Some visitors want to relive the memories and share their experience with friends and family by sourcing Columbia Basin made goods for home consumption. E-commerce allows local businesses to extend their local product brand experience to strengthen ties with former customers. A well-functioning transport and logistics system, especially in the postal/courier and small parcel markets, will thus allow local businesses to scale their business and grow, or in other cases increase the resiliency of a small business by permitting a deeper level of customer engagement.

The accommodation and food service sector in the Columbia Basin does not exclusively serve tourists. However, the size and sale of operations is influenced by the number of visitors to the region.

About 50% of the businesses in the accommodation and food sector have adapted their current logistics practices to accommodate the needs of products that are highly perishable, low volume (compact products), and non-perishable products. A substantial portion of accommodation and food service firms indicated they have logistics infrastructure, including truck loading bays, storage yards, ability to weigh cargo and warehouses.

Accommodation and food service firms place a very high importance on delivery reliability (78%), product order being complete, on time and damage free (73%) and availability of goods (65%).

Businesses in the accommodation and food service sector expressed more dissatisfaction with their outbound logistics practices compared to their inbound practices.

Over three-quarters of the tourism businesses that responded to the survey operate from a home office or a separate building on their residential premises.¹⁰ Over 60% of tourism businesses indicated that they have other logistics infrastructure.

Tourism sector respondents indicated that personal or business vehicles, courier and postal service are used in all cases. Air freight was more important to this segment of the market than any of the trucking services.

Tourism businesses ship products that are highly perishable and low volume (compact products) (67%), followed by heavy and high value (50%). They indicated that delivery reliability, availability of goods, seasonal demand or production and access to suppliers were the most important factors influencing their

¹⁰ Tourism and Food Services and Accommodation were defined as separate categories for purposes of the Transport and Logistics Survey.

current logistics practices. Tourism businesses expressed greater satisfaction with their outbound logistics practices than inbound.

Survey respondents in the arts, culture, entertainment and recreational sector consisted primarily of small enterprises with fewer than five employees. There was one organization with over 100 employees. Postal and courier service, along with personal or business vehicles, less than truck load and air freight are the most common shipping and logistics serviced used.

Product attributes for this sector included personalized, light, high value, non-perishable, and low volume compact. A few businesses in this sector have needs for heavy, highly perishable, or high volume (less dense products).

Delivery reliability, shipments being complete, on time and damage free and the price of ground transport are all of moderate importance along with availability of goods and access to suppliers and ability to handle peak season.

Supply sources vary widely including the Columbia Basin and Greater Vancouver areas. However, the United States, the Rest of Canada, Alberta and International are all more important sources of supply than the Rest of BC. Beyond the local marketplace, Alberta and BC are important customer locations.

Businesses in this group have some unique challenges. For example, there is no insurance available for artwork, and firms are sensitive to the price of local small parcel delivery and service levels, including postal service. Some respondents suggested that temporary access to a facility to receive, process and send out goods for a short period, with proper loading and unloading facilities, and equipment such as packing desks, dollies etc. would be very helpful.

6.4 Other Sectors

Construction and Related Services

Respondents from the construction sector serve both business and consumers. A number are small enterprises with fewer than five employees. Some survey respondents indicated that they are part of an organization with over 100 employees, and a few are part of an organization with between 20 – 49 employees. One-third of the businesses expect revenue to stay the same, while two-thirds anticipate revenue growth.

The construction sector make use of less than truck load, courier service, full truck load, postal service and personal vehicles. Almost one-third indicated they also use air freight service. The product attributes associated with the construction sector were heavy, high value, non-perishable, or other (i.e. awkward sizes). Most construction firms operate from facilities of between 5,000 to 9,999 square feet, with a limited number conducting business from either a larger or smaller facility.

In order of importance, the construction sector secures supplies from the Columbia Basin, the Rest of British Columbia, Alberta, Greater Vancouver, the United States and the Rest of Canada. Delivery reliability, availability of goods and product order completeness, as well as shipments being on time and damage free were all important features of their logistics needs.

Health and Social Services

In order of importance, businesses in the health care and social services make use of the courier and postal services, personal or business vehicles, full truck load service and less than truck load service. About one half of the respondents indicated their only involvement with e-commerce is with purchasing and over one-third are not involved. The product attributes most frequently mentioned were low volume (compact), light and high value. These businesses source goods primarily from the Greater Vancouver area, the Rest of Canada and the Rest of British Columbia. The Columbia Basin and the United States were of lesser importance as locations for supplies. Businesses in these sectors tend to concentrate their customer sales to the Columbia Basin, Greater Vancouver and the Rest of BC. Given their Canada wide product sourcing issues, delivery times from eastern Canada and the time required to get product to and from a warehouse were noted as challenges. The lack of options for direct shipments to Kelowna was also mentioned as a concern.

Technology Sector¹¹

All the respondents in the technology sector indicated they have less than 100 employees. The results of the survey suggest that some technology firms in the Columbia Basin have been able to scale and grow their businesses, because while most have fewer than five employees there were at least some businesses in the range of five-nine, 10-19, 20-49, and 50-99 employees. Each of the technology sector respondents expressed an optimistic business outlook and expected their business's sales revenue to increase over the next five years. Technology firms overwhelmingly (83%) indicated that their products are of high value, with a significant number indicating that other product attributes included light, mass produced and non-perishable products. However, there were also some who indicated their products are heavy.

Technology companies in the Columbia Basin displayed a very different geographic pattern of sourcing their supplies than other sectors of the economy. International and Alberta suppliers are the primary sources of supplies, followed by the Greater Vancouver area and the Columbia Basin. While the Columbia Basin is the dominant customer location, international, the United States, Alberta and the Rest of BC are also of importance. Given the pattern of more international sourcing and customers it is

¹¹ The technology sector is profiled in the Services sector because "The majority of BC tech output is generated by the services sector" (89% compared to 11% for manufacturing in 2012). Source: [Profile of the British Columbia High Technology Sector: 2013 Edition](#) Prepared for the Ministry of Technology, Innovation And Citizens' Services By BC Stats – April 2014 p. 11.

perhaps not surprising that approximately 50% of technology firms reported that border security measures impact their businesses somewhat. However, the other half indicated that border security measures impact their business very little or not at all.

The highest logistics needs in the technology sector are for delivery reliability and shipments being complete, on time and damage free. The price of ground transportation and the time needed to deliver goods to the client were also important factors in influencing their current logistics practices.

Transport and logistics services of importance to the technology sector include shipment tracking, overnight delivery, the availability of drivers who know how to handle high value shipments with care, and assurances that items shipped to the US will not be delayed because of customs or other issues. To address the lack of overnight shipping options to most major centres some technology firms have opted to drive items across the US-Canada border to Northport, especially if the products are going to the United States and are time sensitive. The survey results suggest that at least some technology firms have been able to find transport and logistics services to meet their needs, even when conducting business from a relatively remote Columbia Basin location.

7 GOODS-PRODUCING INDUSTRIES

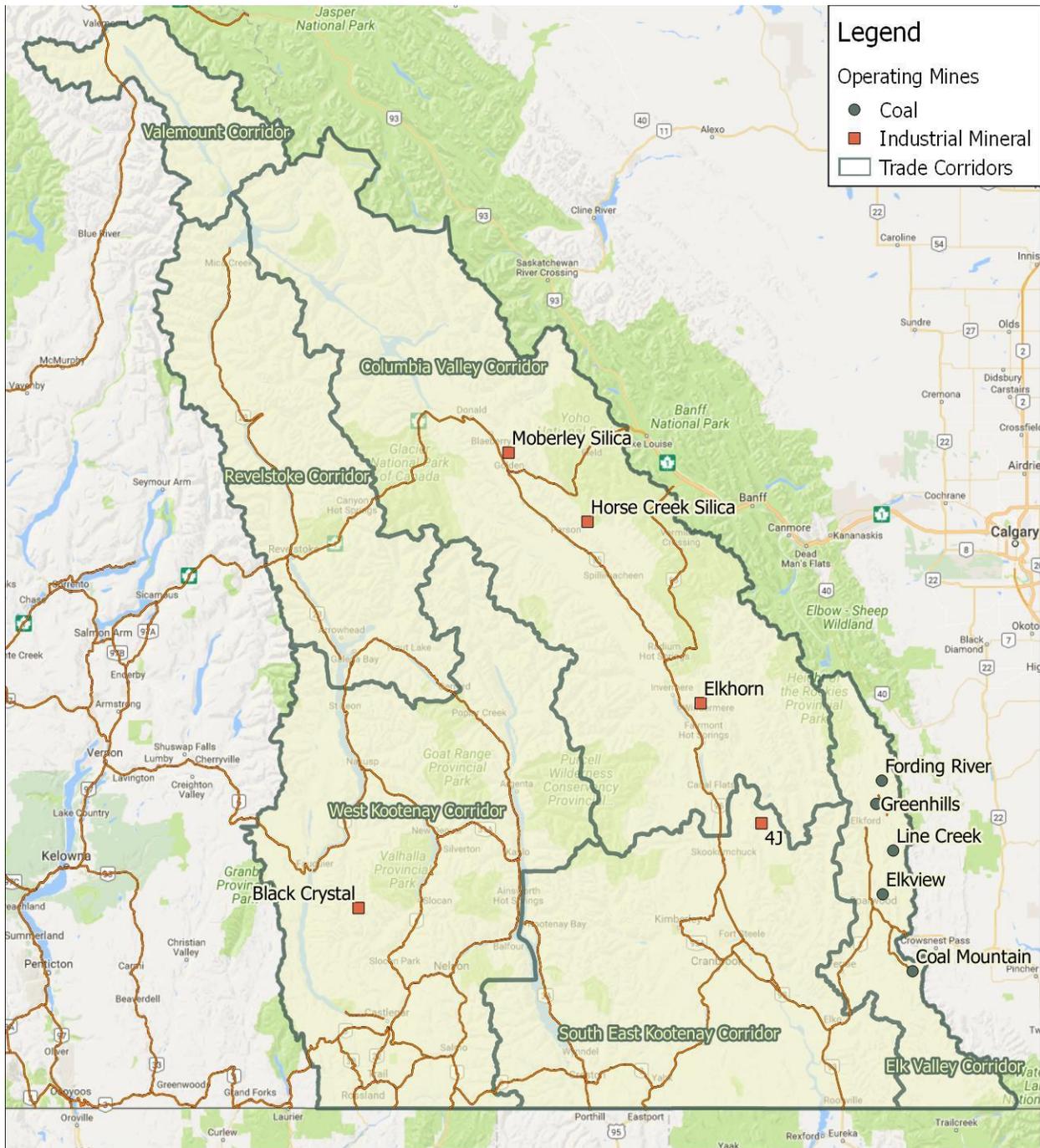
7.1 Mining and Metals

The mining and metal sector is a major employer in the Columbia Basin.

7.1.1 Mining

The locations of selected operating mines are depicted below.

Operating Mines in the Columbia Basin



There are five coal mines in the BC section of the Crowsnest Pass – Fording River, Greenhills, Line Creek, Elkview and Coal Mountain – all majority owned and operated by Teck Coal. Combined total 2016 coal production at Teck’s Southeast BC coal operations is forecast at 26.0 million tonnes of clean coal (predominantly metallurgical).¹² The region accounts for over 70% of Canada’s coal exports. The mines directly employed 3160 people in 2010¹³ and 3718 in 2013.¹⁴

Other operating mines include:

- Mount Brussilof - Baymag Inc. produces high quality magnesite from an open pit mine. Magnesite ore is transported by truck to the company’s processing facility at Exshaw, Alberta for production of magnesium oxide and magnesium hydroxide. Annual production is approximately 220,000 tonnes per year.¹⁵
- Horse Creek Silica: Hi-Test Sand operates a seasonal quarry providing a variety of industrial use and aggregate products.¹⁶
- Moberley Silica – Heemskirk Corporation produces silica, and is investing \$26 million to produce frac sand for the Western Canadian energy industry. Annual capacity is forecast at 400,000 tonnes per year, and the new facility is expected to be completed in 2017.¹⁷
- Elkhorn: Certainteed Gypsum mines gypsum at the Elkhorn mine in Windermere. Projected life of the mine is four years; the company continues to advance the Kootenay West project for construction of a new mine in the Canal Flats area. The mine will have an annual production capacity of 400,000 tonnes per year over a 42 year mine life. The projected start-up date for the mine is 2018.¹⁸
- 4J: Georgia Pacific Limited operates the 4J mine and rail load-out facility at Canal Flats. The company has been re-evaluating their mine design for the next stages of pit expansion while waiting for commodity process to improve. In 2016 they produced mainly fines from stockpiled material for use in the agricultural industry.¹⁹
- Black Crystal: Eagle Graphite Corporation mines graphite ore at Hodder Creek and processes it at a pilot plant 10 km west of Passmore. Sand and aggregates are produced as byproducts. In 2016 the

¹² Provincial Overview of Mining and Exploration in 2016 Information Circular 2017-1 British Columbia Geological Survey January 2017 p. 6.

¹³ Exploration and Mining in BC 2010 Ministry of Forests, Mines and Lands and Ministry of Natural Resource Operations January 2011 p. 104.

¹⁴ Exploration and Mining in BC 2013 Regional Geologist Summaries Exploration and Mining In The Kootenay-Boundary Region, British Columbia By Fiona Katay, P.Geo. Regional Geologist, Cranbrook p. 126.

¹⁵ *Ibid.*, p. 88.

¹⁶ *Ibid.*, p. 90.

¹⁷ *Ibid.*, p. 89-90.

¹⁸ *Ibid.*, p. 93.

¹⁹ *Ibid.*, p. 90.

open pit quarry was on care and maintenance and efforts were concentrated on improving process operations at the plant.²⁰

7.1.2 Trail Smelter

The Trail smelter was constructed in 1896. Taken over by the CPR in 1898, the operation by 1906 had become the Consolidated Mining and Smelting Company of Canada (CM&S), later known as Cominco. Cominco merged with the mining firm Teck Corporation to form Teck Cominco Ltd in 2001, and in 2009 the company changed its name to Teck Resources Ltd.²¹ The Trail smelter produced 307,000 tonnes of zinc in 2016.²²

7.2 Forestry

Almost all of the sawmills in the region have been fixtures of the local economy for decades, though many changed hands because of the restructuring of the industry that has taken place over the last twenty years. A list of mills and estimated capacities²³ in 1990 and 2006 is shown below.

Sawmills in the Columbia Basin

Columbia Basin Lumber Mills with Capacity Greater than 35 MMFBM					
Location	Company (2016)	Annual Capacity 1990 mmbfm	Annual Capacity 2014 mmbfm	Current Status	Previous Ownership
Wynndel	Canfor	19	67	Operating	Wynndel Box & Lumber Co. Ltd.
Elko	Canfor	108	214	Operating	Crestbrook Forest Industries - Tembec
Radium Hot Springs	Canfor	94	221	Operating	Slocan Forest Products
Canal Flats	Canfor	108	0	Closed	Crestbrook Forest Industries - Tembec
Revelstoke	Downie Timber (Gorman Bros.)	52	117	Operating	Same since 1990
Galloway	Galloway Lumber Co. Ltd.	58	60	Operating	Same
Castlegar	Interfor	240	245	Operating	Westar - Pope & Talbot Ltd.
Erickson	J H Huscroft Ltd.	24	50	Operating	Same
Thrms	Kalesnikoff Lumber Co. Ltd.	22	122	Operating	Same
Creston	n/a	14	0	Closed	Crestbrook Forest Industries
Salmo	Porcupine Wood Products Ltd.	n/a	38	Operating	Opened 1993
Slocan	Springer Creek Forest Products	120	118	Indefinite shutdown	Slocan Forest Products - Canfor
Cranbrook	Tembec Industries Ltd.	96		Closed	Crestbrook Forest Industries
Erickson	J.H Huscroft	24	46	Operating	Same

Pope and Talbot was a major producer in the region from 1969 to 2006. The company operated sawmills at Grand Forks and Midway in the Boundary Timber Supply Area, and a mill at Castlegar in the Arrow

²⁰ Ibid., p. 91.

²¹ <http://wikimapia.org/1172801/Teck-Resources-Ltd-Trail-Operations-smelting-and-refining-complex>

²² Teck <http://www.teck.com/investors/five-year-production/five-year-production-record>

²³ Capacities are listed in Million Board Feet (mmbfm).

Timber Supply Area. Following their bankruptcy in late 2007, Interfor acquired the Grand Forks and Castlegar mills.

Lumber and Pulp Mills in the Columbia Basin



There are two pulp mills located in the Columbia Basin. The largest is the Zellstoff Celgar pulp mill owned by Mercer International. The mill produces approximately 520,000 Air-Dried Metric Tonnes (ADMTs) annually. In 1993, a C\$850 million rebuild and modernization transformed Celgar into a high quality, continuous process pulp mill with modern power generation and environmental treatment facilities. When

Mercer completed the US\$210 million acquisition of Celgar in February 2005, the mill had an annual production capacity of about 430,000 ADMTs. Mercer increased the mill's capacity to 500,000 ADMT's in 2007 through the \$28 million "Project Blue Goose" designed to achieve operation efficiencies, increase production and improve environmental stewardship, including reduced consumption of energy and chemicals. Additional process efficiencies have further increased annual production capacity to 520,000 ADMTs. Production was 453,125 ADMT in 2015. Asia is the largest market, with China accounting for 83% of sales and other Asian markets an additional 11%.²⁴

Paper Excellence operates a pulp mill with a capacity of 250,000 ADMT located at Skookumchuk approximately 50 km north of Cranbrook. The mill was acquired from Tembec in 2013. Tembec previously acquired the mill in 1999 as part of a \$275 million takeover of Crestbrook Forest Industries; the purchase also included sawmills in Elko, Canal Flats, Creston and Cranbrook²⁵. The Creston mill was closed in the early 1990's and the Cranbrook mill was closed following the acquisition by Tembec. The Elko and Canal Flats mills were purchased by Canfor in 2011. The Elko mill was expanded in 2012 and the Canal Flats mill was permanently closed in 2015.

Both pulp mills are highly dependent on rail. Carload service is provided using railway-owned boxcars, and most shipments are destined for the Lower Mainland. Transit times have improved over the last 10 years, but car supply remains a challenge. Substantial quantities of pulp are transloaded into marine containers in the Lower Mainland for export to offshore destinations. With the closure of the CRSA Ryder facility in Port Coquitlam in 2016, there is no longer a suitable transloading facility on CP track in the Lower Mainland, so rail cars must be switched to CN tracks for delivery. This increases the cost and complexity of rail transport.

Based on the results of the Transport and Logistics survey, forest sector businesses operate from some of the largest premises in the Columbia Basin region with 50% having a facility of over 20,000 square feet. Survey respondents indicated that their operations include storage yards and forklifts (80%), and the ability to weigh vehicles, and cargo, rail sidings and warehouses (60%).

Forestry firms indicated that heavy, high value and mass produced products best describe their sector. Because of their business needs, forestry sector firms use full truck load service, courier and postal service most frequently. Air freight and personal vehicles and rail transport are also important transport and logistics services.

²⁴ Mercer website <https://mercerint.com/operations/celgar>

²⁵ Tembec to buy Crestbrook for \$70.4 million in cash, stock creating pulp powerhouse` March 1999 http://findarticles.com/p/articles/mi_qa3636/is_199903/ai_n8836734/

In the forestry sector, businesses indicated that delivery reliability (83%), shipments being complete, on time and damage free, and geographic location (67%) were the primary drivers of their current logistics practices. The availability of goods and the price of ground transportation (40%) were other important considerations.

Forest sector businesses expressed a higher level of satisfaction with their inbound logistics practices than outbound. Forest sector businesses in the Columbia Basin indicated a level of dissatisfaction with intermodal service, bulk rail transport, courier services and freight forwarding.

7.3 Manufacturing

Large forest products mills and the Trail metal smelter account for the vast majority of manufacturing employment within the Columbia Basin. This is consistent with the findings of a 2007 survey of manufacturing and technology companies within the Basin, which found that “the largest 5% of the companies accounted for 94% of the revenues of all the companies surveyed”.²⁶

Other manufacturing operations within the Basin include:

- Food products, including bakeries, confectionery items, breweries, wineries, and other food products manufacturing. The Columbia Brewery is a major employer in Creston.
- Concrete products.
- Machine and welding shops.
- There are a few firms manufacturing electronic products, including broadcast and communications equipment, other communications equipment and other electronic component manufacturing. This includes Pacific Insight Electronics Corporation in Nelson.

Survey results from the non-forestry manufacturing sector in the Columbia show that manufacturers operate from a variety of locations, with almost two-thirds occupying property that they own, lease or rent that is not a residence. However, about one-third of the manufacturing firms operate either from a separate building located on residential premises, a farm or other location. Sixty per cent of manufacturers operate from premises of 4,999 square feet or less.

Manufacturers are generally well equipped, with 53% indicating they have a forklift, 44% truck loading bays and the ability to weigh cargo, and 28% storage yards.

²⁶ [Summary Report West Kootenay & Boundary Manufacturing & Technology Industry Survey](http://www.cbrdi.ca/rdi-resources/west-kootenay-boundary-manufacturing-technology-industry-survey-summary-report/) Ference Weicker & Company Ltd. for the Columbia Basin Trust December 2007 <http://www.cbrdi.ca/rdi-resources/west-kootenay-boundary-manufacturing-technology-industry-survey-summary-report/>

Survey respondents most frequently indicated that their products are heavy and high in value; along with high volume (less dense) products. Another significant group of manufacturers have shipments which are low volume and compact, or light.

For manufacturers, their logistics practices are driven by the need for product orders to be complete, on time and damage free; the price of ground transportation; and delivery reliability.

7.4 Agriculture

7.4.1 Sector Profile

According to 2011 Census of Agriculture data, the Regional District of East Kootenay (RDEK) accounts for approximately 58% of all census farmland within the Basin, but only about one-third of the total number of farms. Conversely, the Regional District of Central Kootenay (RDCK) is home to only 18% of the farmland, but almost half of the farm operations. Comparisons of 2011 and 2001 census data indicate a decline in both farmland area, from 161,747 ha in 2001 to 136,978 ha in 2011, and in the number of farms, from 1,296 in 2001 to 1,159 in 2011. Average farm size, which reflects the diversity in the predominant types of agriculture enterprises across the Basin, has declined from 125 ha in 2001 to 118 ha in 2011.²⁷

Natural rangeland and tame pasture for livestock production is the dominant agricultural land use in the Basin, occurring on 59% of the census farmland in 2011. Crops, which include a broad array of grain, forage, vegetable, fruit and nursery products, account for 21% of farmland use. Woodlands, wetlands, Christmas tree operations, idle land and farm infrastructure account for the remainder.

The RDEK accounts for two-thirds of the natural and tame pasture land use and approximately one-third of the crop land use in the Basin. Almost 45% of RDCK census farmland is utilized for crop production; another 34% is used for pasture. Farmland uses in the Regional District of Kootenay Boundary (RDKB) and Columbia Shuswap Regional District (CSRD) electoral areas within the Trust boundary account for 6% of all farmland uses within the Basin.

Hay and forage crops, predominantly alfalfa and alfalfa/grass mixtures, account for the majority of cultivated crop production in the Basin based on land use. The Regional District of Central Kootenay (RDCK) accounts for more than 55% of the field crop (grains, oilseeds, etc.) area; 92% of the area planted to fruits, berries and nuts; and 85% of the vegetable and nursery production. Commercial-scale greenhouse operations are in both the RDCK and Regional District of East Kootenay (RDEK), with most production focused on flowers and bedding plants. Comparisons with census data from 2001 and 2006

²⁷ Information on the agricultural sector in the Columbia Basin is taken primarily from [Agriculture in the Columbia Basin](#) Prepared for the Columbia Basin Trust by VAST Resource Solutions September 2015.

indicates that, in general, the area sown to hay crops has remained relatively static, field and fruit crops area have declined slightly, and vegetable and greenhouse/nursery production has increased.

Agricultural Land Reserve Areas in the Columbia Basin



7.4.2 Agricultural Commerce

An increasing number of farms and ranches marketing farm products directly to the public from the farm

gate, offering products ranging from breads and grains to herbs, spices, fruits, vegetables, preserves, honey, eggs and meat. In addition, farmers' markets continue to grow in number and diversity, with more than a dozen seasonal markets in communities throughout the Basin offering local produce.

Value added processing and manufacturing of agriculture and food products is currently a very small sector in the Basin, with a focus on bakeries and small-scale food processors (e.g. honey, fruit and vegetable products) and wineries.

Most agricultural products produced in the Columbia Basin are processed and marketed outside the region. There are no longer any local or regional stockyards or auction markets to facilitate local sales of livestock. As a result, most livestock is shipped to Alberta for finishing and slaughter. Similarly, there is no commercial-scale infrastructure associated with grains (i.e. elevators, producer car load-out facilities), fruits, vegetables or forage production or processing.

Five small-scale retail outlets offering locally and BC grown organic produce operate in the East Kootenay. The Kootenay Food Directory lists 30 specialty retail grocers and food stores in the Central Kootenay and Kootenay-Boundary regions. The largest of these is the Kootenay Co-op in Nelson, BC; a consumer owned cooperative offering a wide variety of healthy foods and wellness products, with a focus on locally grown or processed certified organic products. There are a small but growing number of local restaurants throughout the Basin that feature and promote locally grown farm products and endeavor to source most of their raw materials locally.

There are an increasing number of farms and ranches marketing farm products directly to the public from the farm gate, offering products ranging from breads and grains to herbs, spices, fruits, vegetables, preserves, honey, eggs and meat. The 2014 version of the East Kootenay Local Food Guide lists 18 producers offering on-site sales in the North Columbia Valley (Golden to Invermere), 23 in the Central Columbia Valley (Skookumchuk to Cranbrook and Bull River), 43 in the South Columbia Valley (Erickson to Wynndel), and nine in the Elk Valley (Mayook to Fernie and Baynes Lake). The range of available farm products includes breads, nuts, dairy, eggs, flowers, wine, honey, fruit, vegetables, preserves, tea, herbs, plants, grains and meats.

7.4.3 Agriculture Sector Survey Results

Eighty-six per cent of the respondents in the agricultural sector indicated that fewer than five people work at their business. Over 93% indicated that they operate their business from a farm and 50% operate from a building of less than 4,999 square feet. Respondents indicated that they have farm related logistics infrastructure (42%), including forklifts (33%) and the ability to weigh cargo, warehouse and truck loading bays (25%).

Dominant product attributes include highly perishable (64%), heavy (36%) and high volume (less dense) and low volume (compact products) (29%). The price of ground transportation, delivery reliability, product order being complete geographic location, the time needed to deliver goods, ability to handle peak or seasonal demands are some of the most important factors in their current logistics practices.

Agricultural businesses indicated that the Columbia Basin is the dominant source for their supplies. Other geographic locations of importance included Alberta, Greater Vancouver and the Rest of Canada. The Columbia Basin was the dominant location for their customers.

In the agricultural sector, personal or business vehicles (93%) are the dominant form of transportation. Important logistics services included courier and post office (43%). Full truck load and less than truck load service was used by 29% of the agricultural respondents.

Agricultural respondents indicated that delivery reliability (77%), the ability to handle peak season production and shipping (54%), and geographic locations (54%) are the dominant factors that influence their current logistics practices.

For the small number of agricultural respondents that use less than truck load service, the need was driven by products that are highly perishable, high value and heavy. The products are usually destined for markets within the Columbia Basin.

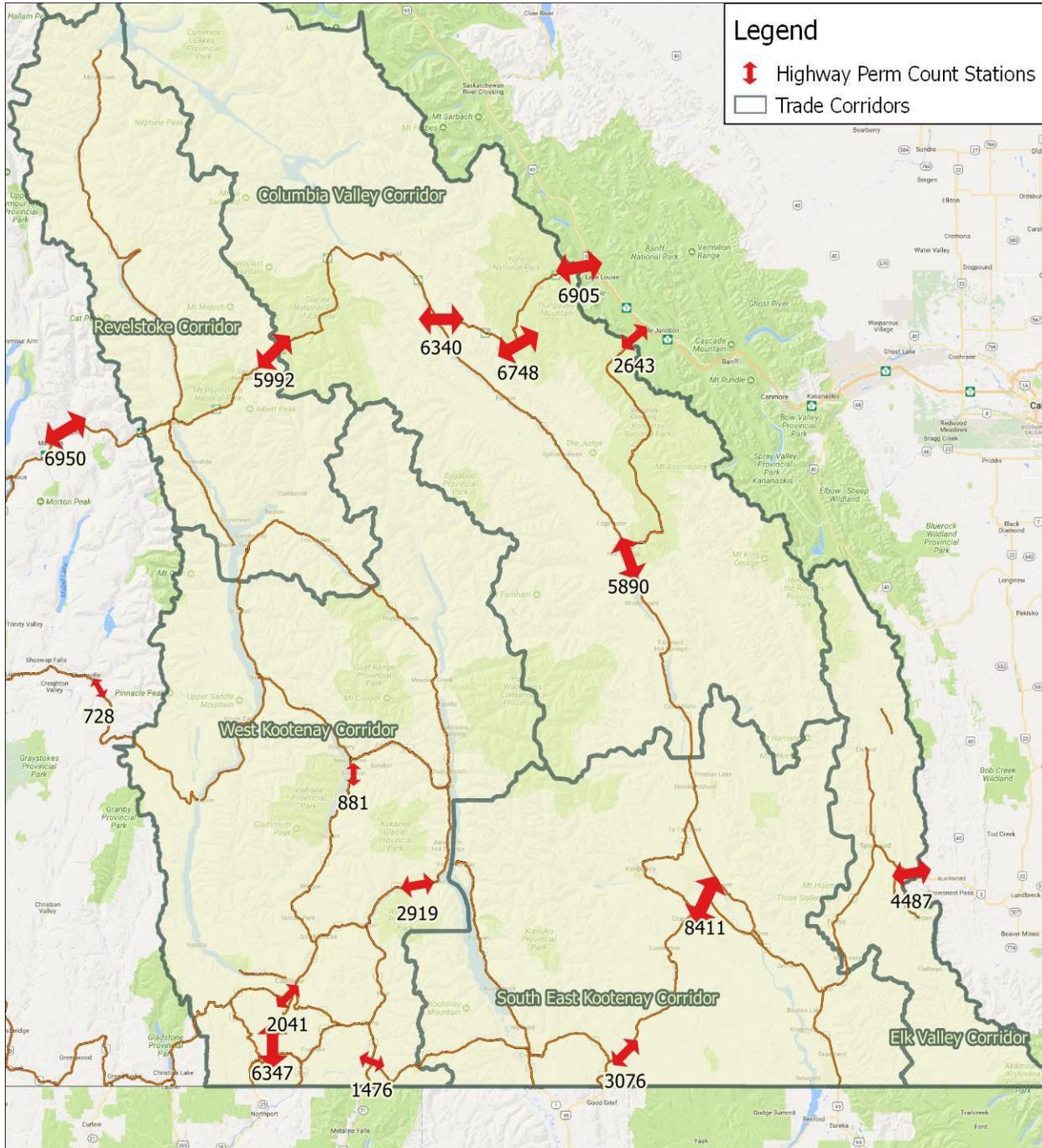
Finally, a significant number of respondents identified the lack of third party temperature controlled warehouse or distribution facilities in the Kootenay region as an issue. The lack of this type of infrastructure may act to limit the ability of some agricultural businesses or other firms to scale their business and grow. The identification of the potential need for some form of aggregation, storage and distribution of farm products is discussed in a later section of this report dealing with possible solutions.

8 TRANSPORTATION INFRASTRUCTURE

8.1 Highways

The primary highway corridors in the Columbia Basin are depicted below. The numbers on the map show the Annual Average Daily Traffic recorded by the BC Ministry of Transportation and Infrastructure traffic counts.

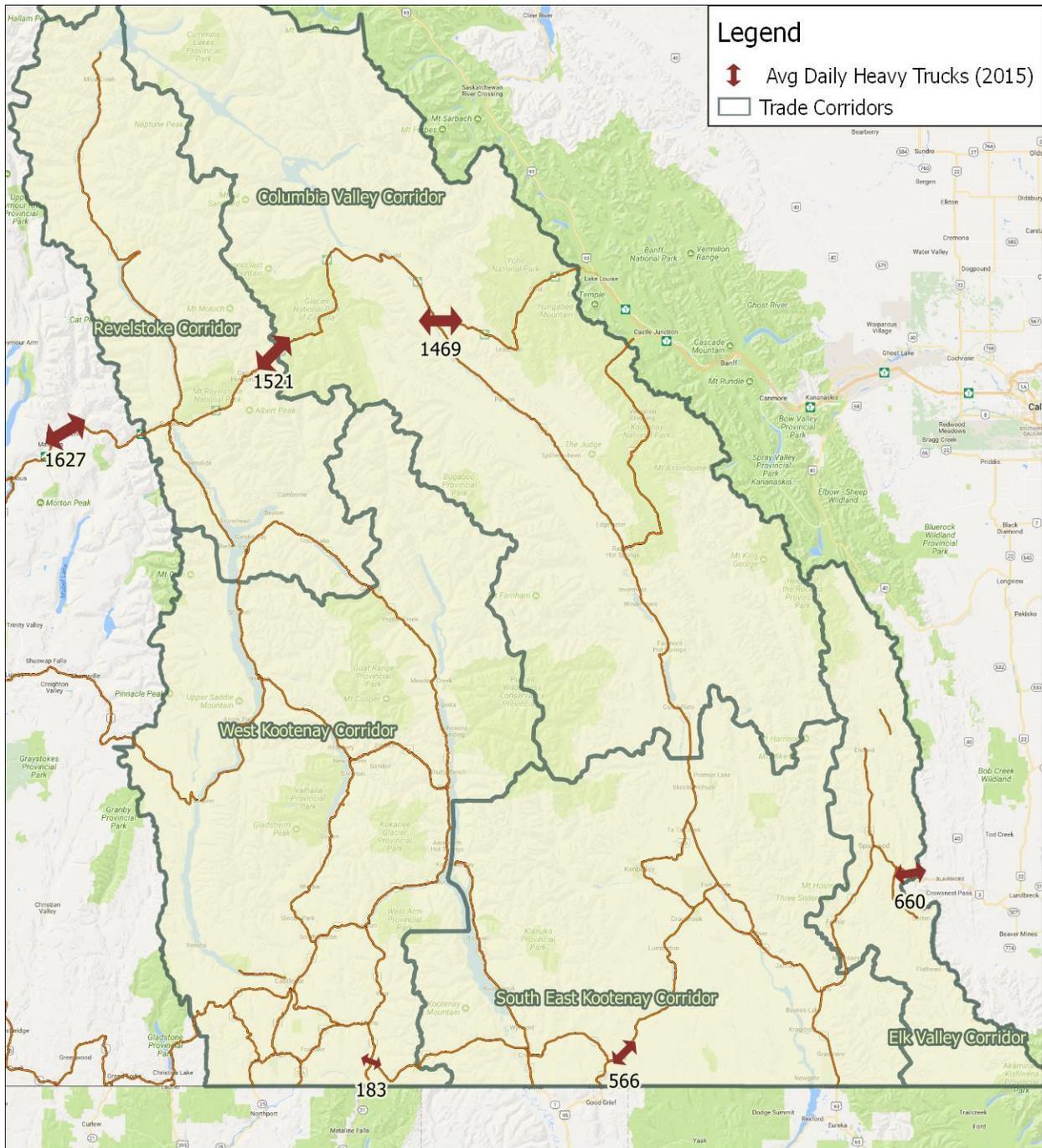
Columbia Basin Highways Annual Average Daily Traffic 2015



Highway infrastructure in the Columbia Basin consists of two high volume east-west corridors serving the larger communities – the TransCanada and Highway 3 – linked by two lower volume corridors connecting them in the east and west.

Heavy truck traffic is the primary measure of freight transportation activity on the highway system. Truck counts are available for a limited number of locations. Estimated Annual Average Daily Traffic levels for heavy trucks in the Columbia Basin are shown on the map below.

Columbia Basin Highways Annual Average Daily Heavy Truck Traffic 2015



Major highway corridors include:

- Highway 1 (the TransCanada Highway), the most direct route between Calgary and BC's Lower Mainland. The Columbia Basin portion is between the Alberta border and the Columbia Basin border between Revelstoke and Craigellachie. In 2015, average daily heavy truck traffic averaged approximately 1500 vehicles.
- The east-west Highway 3 Corridor through the Southern Interior. The Highway 3 Corridor includes approximately 840 km of highway between Hope and the Alberta Border plus sections of Highway 3A and 3B for a total length of approximately 1,120 km. Truck traffic levels vary significantly on different segments of the corridor, in part due to a significant volume of cross border truck traffic originating in Alberta which transits the eastern portion before crossing the Canada-US border. In 2015, heavy truck traffic in the Crowsnest Pass averaged 660 vehicles per day. At Yahk, just north of the Kingsgate border crossing, heavy truck traffic averaged 566 vehicles per day. At Salmo, west of Yahk, truck traffic averaged only 183 vehicles per day.
- The north-south Highway 95 Corridor linking Cranbrook and Golden, with an alternate route between Radium Hot Springs and an alternate junction with the TransCanada east of Golden.
- The north-south link between Castlegar and Nelson and Revelstoke via Highway 6 and Highway 23, using the Upper Arrow Lake Ferry; and an alternate north-south route to the Upper Arrow Lakes Ferry and Highway 23 via Highway 31 on the West Shore of Kootenay Lake.
- Valemount is served by Highway 16 (the Yellowhead Highway) but has no direct links to other communities in the Columbia Basin.

8.1.1 Ferries

Inland ferries in the Columbia Basin are operated as an integral element of the regional highway system: they include the Upper Arrow Lake Ferry, the Kootenay Lake Ferry and the Harrop Cable Ferry.

The Upper Arrow Lake Ferry is required because the Hugh Keenleyside Dam near Castlegar flooded the Arrow Lakes after construction. The dam was built as part of The Columbia River Treaty in 1968. A new vessel, the M.V. Columbia, began service in 2014. The ferry runs across Upper Arrow Lake, 49 kilometres south of Revelstoke on Highway 23, between Shelter Bay (west side) and Galena Bay (east side). Ferry capacity is 80 vehicles and 250 passengers.

The BC Ministry of Transportation and Infrastructure commissioned two studies on the feasibility of a fixed link to replace the Upper Arrow Lake Ferry service. The first was conducted in 2004 by ND Lea. Three potential crossing locations were examined, and total costs were estimated at \$500 to \$550 million for a

suspension bridge, and \$175 million for a fixed causeway. Significant variation in water levels due to the dam limits the options.²⁸

Following this preliminary options evaluation, the Beaton Arm Crossing Association (BACA) compiled a business case for a potential fixed crossing using a multiple account evaluation. The evaluation assessed a total of eight options at various locations within the vicinity of the Beaton Arm area of Upper Arrow Lake. The existing ferry service was incorporated within the assessment as one of the options under evaluation, in order to compare the current operations against potential fixed link options. Scoring of the options was based on a qualitative approach, evaluating criteria by a ranking system. Similar to the ND Lea report the assessment concluded a Beaton Arm fixed causeway/bridge combination crossing north from Storm Point, then re-crossing at Sidmouth back to the existing Highway 23 to the west to be the most viable, due to the shallow water depth.²⁹ Subsequently, Urban Systems was engaged to update cost estimates for construction of a fixed link. The cost of the causeway/bridge combination was estimated at \$462.7 million.³⁰ Average daily traffic was estimated at 650 vehicles in 2014.

In addition to the Upper Arrow Lakes Ferry, the Kootenay Lake ferry runs across Kootenay Lake, 35 kilometres east of Nelson on Highway 3A, between Balfour (west side) and Kootenay Bay (east side), 70 kilometres from Creston on Highway 3A. Due to navigational issues and the need to replace the existing ferry, the BC Ministry of Transportation commissioned technical feasibility study undertaken by engineering firm SNC Lavalin to examine the technical feasibility of a number of alternatives, including relocation of the terminal and improvements to the existing Balfour terminal. That study concluded that a site at Queens Bay North, three km from Balfour would be the preferred location for a new terminal. After strong opposition from residents, the provincial government announced in November 2016 that it has no plans to relocate the ferry terminal.³¹

The Harrop Cable Ferry runs across Kootenay River, on Highway 3A, 24.5 kilometres northeast of Nelson and 8 kilometres west of Balfour to the communities of Harrop and Procter (on the south bank). Ferry capacity is 18 vehicles and 74 passengers. Service is on demand, 24 hours a day, and the crossing time is five minutes.

8.1.2 Highway Survey Findings

A significant number of survey respondents indicated that highway issues are among their three biggest transport and logistics issues. Road conditions, weather delays and long drive times were among the

²⁸ Upper Arrow Lakes Fixed Crossing Feasibility Study ND Lea April 2004

²⁹ Highway 23, Upper Arrow Lake Crossing: Cost Estimate Review and Update Urban Systems for BC MOTI July 2014 p. 1.

³⁰ *Ibid.*, p. 12.

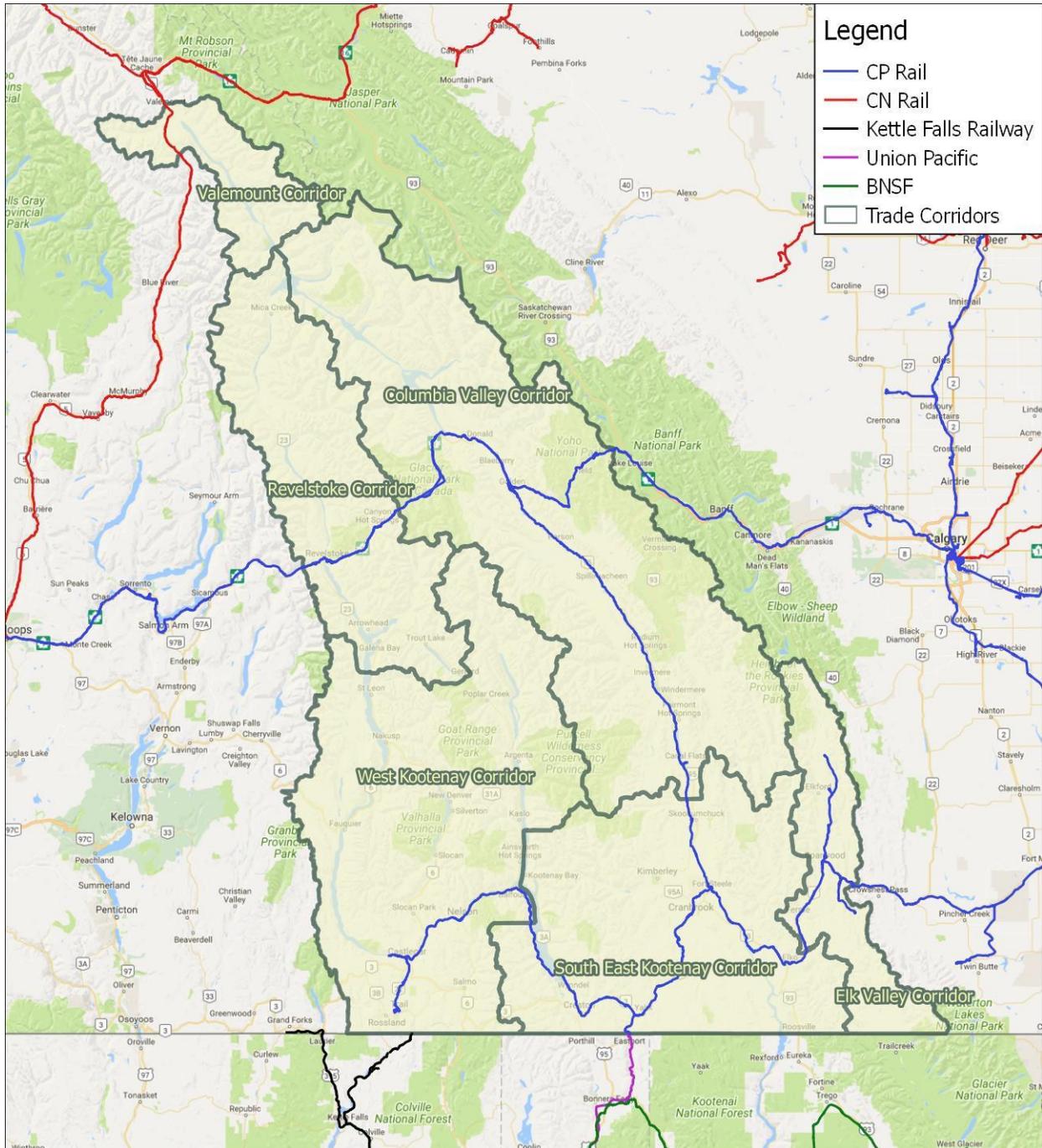
³¹ "Province won't relocate Kootenay Lake ferry terminal" CBC News Bridgette Watson Nov 03, 2016 <http://www.cbc.ca/news/canada/british-columbia/balfour-ferry-relocation-1.3836050>

most frequently mentioned issues. One respondent indicated the need to hold higher inventory levels to ensure against supply problems due to road conditions. Respondents also mentioned local highway and road maintenance issues. Delays due to ferry operations were also mentioned.

8.2 Rail

Railways serving the Columbia Basin are shown below.

Railways in the Columbia Basin

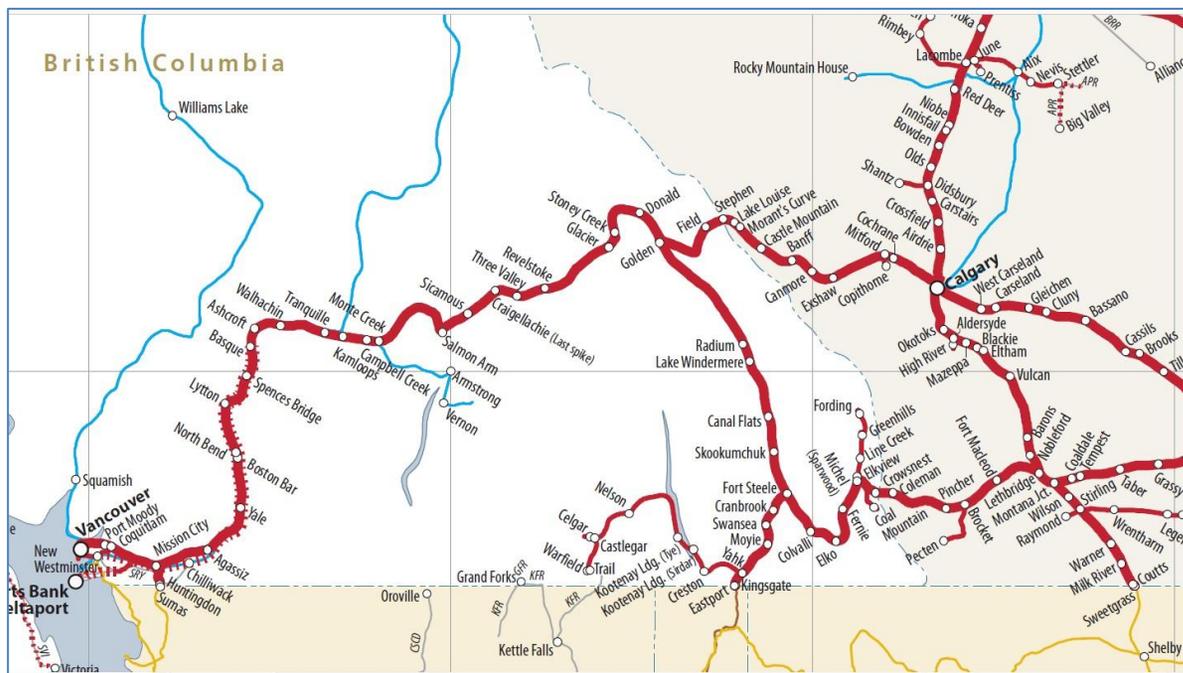


The Columbia Basin is served by the two Canadian Class 1 railways, Canadian National Railway (CN) and Canadian Pacific Railway (CP), and has linkages to the western US Class 1 railways Burlington Northern Santa Fe Railway (BNSF) and Union Pacific Railroad (UP) at the Canada-US border.

8.2.1 CP Railway

The Canadian Pacific Railway built the Crowsnest Route line from Lethbridge, Alberta, to Kootenay Landing, British Columbia, through the Crowsnest Pass between 1897 and 1898. This line was built primarily to access mineral-rich southeastern BC via an all-Canadian rail route, and to assert Canadian (and CPR) sovereignty in an area that U.S. railroads were beginning to build into. It also opened up coal deposits in the Crowsnest and Elk River valleys which were important to mineral smelting operations and assisted the CPR in its conversion of locomotives from wood to coal.

CP Stations in Southern BC



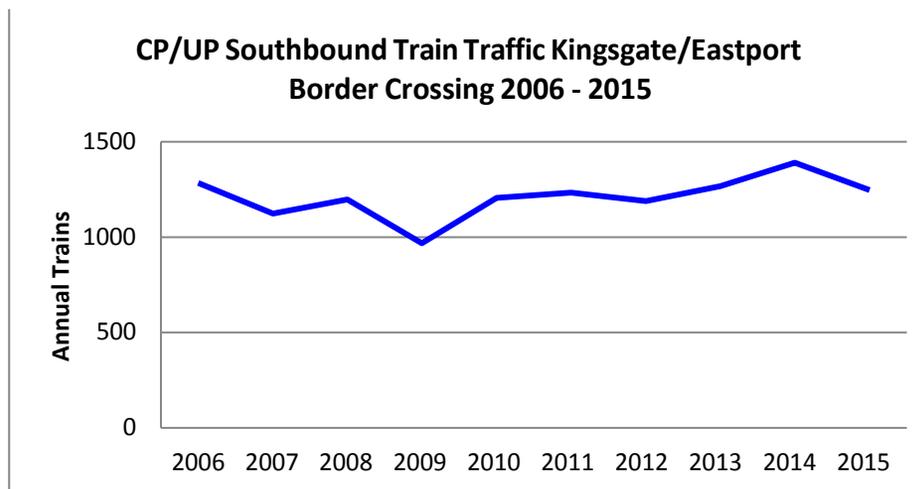
In 2009, CPR operated 1,720 km of track in British Columbia.³² The CPR mainline extends from Calgary to the Alberta/B.C. border and on through Field, Revelstoke, Sicamous (junction with Okanagan Valley Railway), Kamloops, and into the Lower Mainland. The mainline from the B.C.-Alberta border to the Lower Mainland is about 870 km long. A substantial portion of CPR trackage extends south from their mainline (at Golden) into the Kootenays and the southeastern B.C. coal fields north of Sparwood. Representing about half of CPR's track in B.C., this region also includes a connection to the U.S. rail

³² Rail In Canada Statistics Canada 2009 <http://www.statcan.gc.ca/pub/52-216-x/2009000/t002-eng.htm>

network. The CPR connects at Kingsgate, B.C. (approximately 82 km southwest of Cranbrook) with Union Pacific Railroad (UP).

The largest source of CP Rail traffic in the Southern Interior is Teck's coal mines in the East Kootenay. Teck operates five mines in the region: Fording River, Greenhills, Line Creek, Elkview and Coal Mountain. The five East Kootenay mines represent approximately 93% of Teck's coal production capacity.³³ Production from Teck's Southeast mines is forecast at 26 million tonnes in 2016.³⁴ CP also transports significant quantities of freight for interchange with the Union Pacific Railroad at the Canada-US border crossing at Kingsgate (Eastport Idaho). The figure below shows the number of trains crossing the border southbound from 2006 to 2015.

Crossborder Train Traffic at Kingsgate/Eastport Border Crossing 2006 – 2015



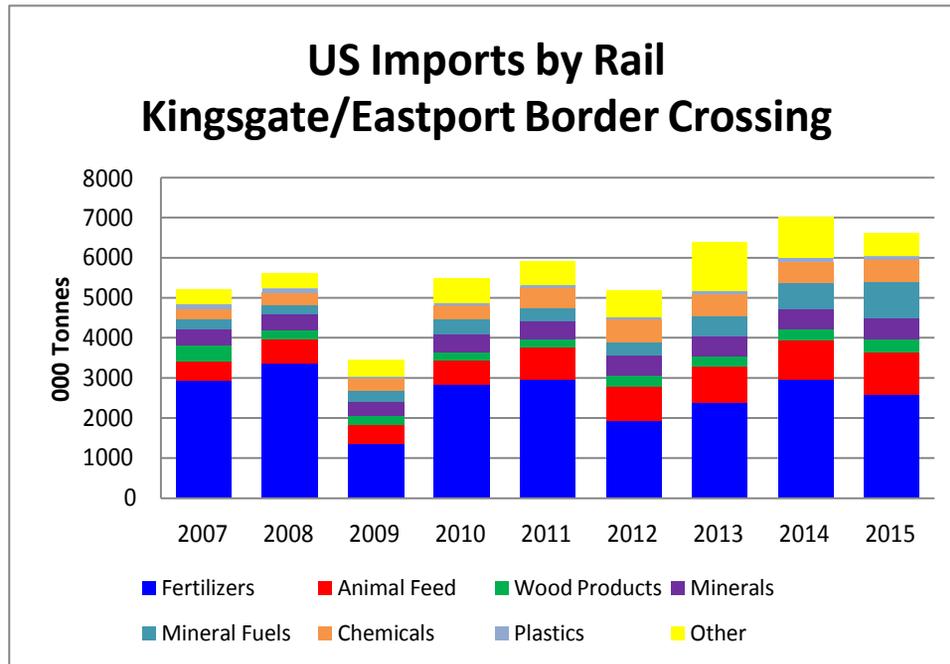
The composition of US imports by rail through the Kingsgate/Eastport border crossing is depicted below. The largest portion is potash shipped from Saskatchewan mines via CP Rail and interchanged to UP at Kingsgate for export via the Port of Portland, Oregon. In 2014, Canpotex said it expects to increase its tonnage through Portland in coming years. It currently moves 2 million tonnes of potash annually through Portland to Asia, Brazil, Australia and other markets.³⁵

³³ Kootenay Development Region 2011 BC Check-Up Institute of Chartered Accountants of British Columbia
http://www.bccpa.ca/CpaBc/media/CPABC/News_Events_Publications/Publications/CPABC%20Check-Up/2013%20and%20earlier/reg_ko_2011.pdf

³⁴ Provincial Overview of Mining and Exploration in 2016 Information Circular 2017-1 British Columbia Geological Survey January 2017 p. 6.

³⁵ "Potash shipper Canpotex to upgrade Oregon port facility" Reuters Wed Oct 8, 2014
<http://www.reuters.com/article/canpotex-potash-ports-idUSL2N0S32B920141008>

US Imports by Rail Through Kingsgate/Eastport Border Crossing³⁶



8.2.2 Kettle Falls International Railway (KFR)

Kettle Falls International Railway LLC (KFR) operates over 83 miles (134 km) of track leased from BSNF from Chewelah, Washington, to Columbia Gardens, BC. A second line owned by KFR operates from Kettle Falls, Washington to Grand Forks, British Columbia. Operations were transferred from BNSF to KFR in 2005. KFR is a subsidiary of Omnitrac, a major North American shortline rail operator. KFR interchanges traffic with BNSF at Chewelah, the Nelson and Fort Sheppard Railway at Fruitvale, and the Grand Forks Railway at Grand Forks.

The major shipper served by this line is Teck Cominco's lead-zinc smelter and refinery complex at Trail BC. The Trail smelter produced 307,000 tonnes of zinc in 2016.³⁷ The metallurgical operations produce refined zinc and lead and a variety of precious and specialty metals, chemicals and fertilizer products. In addition to southbound shipments of lead, zinc, fertilizers and chemicals, this facility generates significant northbound traffic in the form of lead-zinc concentrates to be processed.

At an average concentrate grade of 54% zinc and a recovery rate of 96%³⁸, the 2016 production level at Trail would require approximately 600,000 tonnes of concentrates. The major source of concentrates is the Red Dog mine in Alaska. Additional concentrates are imported from other sources. Concentrate from Red Dog is shipped via the Kinder Morgan Vancouver Wharves terminal at the Port of Vancouver and

³⁶ Source: US Bureau of Transportation Statistics.

³⁷ Teck <http://www.teck.com/investors/five-year-production/five-year-production-record>

³⁸ Based on [Introduction to Zinc and Lead Smelting Business](http://www.nyrstar.com/investors/en/Nyr_Documents/English/zincleadsmelting.pdf) Nyrstar Resources November 25, 2009 http://www.nyrstar.com/investors/en/Nyr_Documents/English/zincleadsmelting.pdf

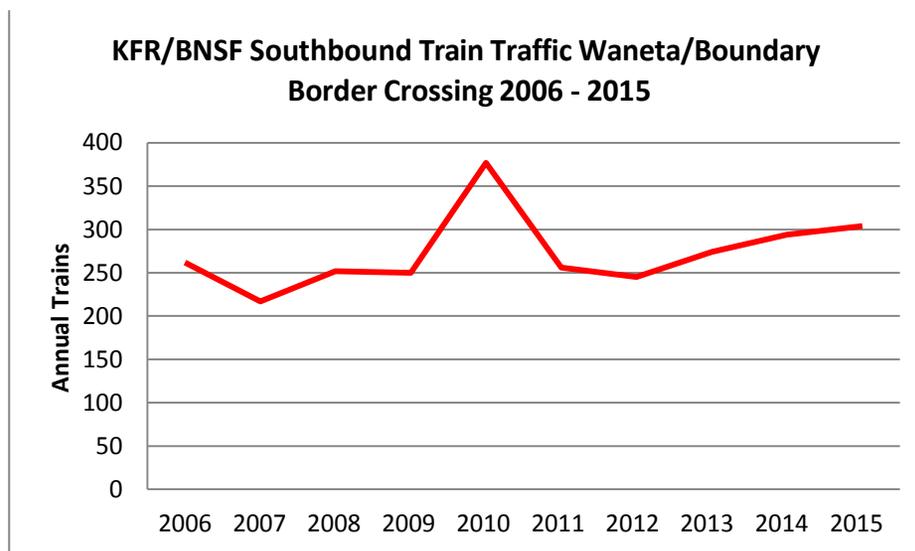
then interchanged by CN Rail with BNSF for shipment via KFR to a bulk reload centre at Waneta, BC. The concentrate is then trucked approximately 9 km to the trail refinery. Some concentrate is also interchanged by CN Rail to CP in the Lower Mainland and shipped directly to the smelter via the CP line.

The reload facility for inbound concentrates is owned by Teck Cominco and operated by Trimac Transportation. Another bulk reload centre operated by Westcan Bulk Transport is used to transfer outbound chemicals and fertilizer to the KFR. Inbound and outbound rail shipments are closely balanced.

Other shippers on the Canadian side of the line include ATCO Forest Products at Fruitvale. The ATCO plant is linked to the KFR by the 11 mile Nelson and Fort Sheppard Railway. This line was previously owned by International Rail Road Systems (IRRS) and was purchased by ATCO in 2010 and subsequently renamed. In addition to their own shipments, ATCO provides transloading services for other shippers.

In addition to the cross-border traffic, KFR handles additional traffic on the U.S. portion of the line from shippers including the Vaagen Brothers sawmill at Colville and Boise Cascade in Kettle Falls.

Kettle Falls International Railway Southbound Rail Traffic Waneta/Boundary 2006 – 2015



8.2.3 Rail Issues Identified in Survey

Rail transportation is important for some of the region’s largest employers. Forty-seven per cent of rail respondents had over 100 employees at their business and 80%of them indicated that they expect their business’s sales revenue to increase over the next five years.

The product attributes mentioned were heavy (67%), mass produced (67%), high value (53%), non-perishable (33%), low volume (compact products) (20%), light (20%).

Respondents who used rail tended to have the most shipping and logistics infrastructure on their premises with warehouses (80%) and Forklifts (80%) being most often cited. In addition to truck loading bays, storage yards, the ability to weigh cargo and vehicles, approximately one-third of the rail respondents have a rail siding on their property.

Respondents who use rail transport services also operate from the largest premises with 53% indicating they that they operate from a facility over 20,000 square feet, and 20% with facilities of between 10,000 to 19,999 square feet.

Delivery reliability (93%), shipments being complete, on time and damage free (87%), shipping volume (80%) and geographic location (80%) are the dominant factors influencing their current logistics practices. Price of ground transportation (73%) and time need to deliver goods to customers (67%), and availability of goods (60%) are also important.

Dissatisfaction with bulk rail service was cited by 35% of the respondents and domestic intermodal transportation by 43% of rail respondents.

8.3 Intermodal Options

Intermodal transportation refers to the transfer of cargo between modes of transport at some point between the origin and destination of the shipment. For the Columbia Basin, there are separate options for containerized and non-containerized freight.

8.3.1 Containerized Freight

In North America, rail intermodal service refers to the transportation of cargo in standardized steel containers. Intermodal services are divided into two categories based on the type of containers used:

- International intermodal traffic is shipped in standard international containers designed for use by international shipping lines to be transported by oceangoing vessels, typically 20 and 40 foot containers.
- Domestic intermodal traffic is typically shipped in large containers, typically 53 feet in length to correspond to the maximum length limitations of over-the-road highway trailers.

The closest location for Columbia Basin shippers to access rail intermodal services is Calgary, where both CN and CP have sizable intermodal yards. CN and CP do not provide service to smaller rail hubs in Canada, but focus on unit train operations between intermodal terminals in large urban areas. Consequently, the only way that Columbia Basin shippers can access containerized transportation is by truck to and from Calgary. For most shipments, this is more costly than direct trucking, because there are few opportunities to balance inbound and outbound loads so the shipper has to bear the costs of repositioning the empty container. Shippers who export containerized commodities to offshore markets generally find it cheaper to ship by carload rail or truck directly to the Lower Mainland and transload the cargo there.

8.4 Bulk and Breakbulk Freight

Intermodal service for bulk and breakbulk freight³⁹ is provided by truck-rail transload or “reload” facilities where freight is transferred between truck (typically in full truckload service) and rail. The primary cargo for reload facilities in the Interior of BC is lumber. Reload centres provide producers with options to loading directly to rail at the mill, which can result in lower overall costs and the ability to negotiate better rates with the railway providing direct service. Expansion of transload operations was facilitated by changes to heavy truck weights and dimensions regulations by an interprovincial agreement through the Roads and Transport Association of Canada (RTAC) in 1987. For BC shippers, the most significant change was authorization of the Super B train configuration with two 28-foot trailers, eight axles and a gross vehicle weight of up to 63,500 kg (140,000 lbs.). This enables payloads in the neighbourhood of 44 tonnes and made trucking much more competitive for longer haul transportation of heavy commodities. Shippers have taken advantage of the increased competitiveness of trucking to facilitate access to competing railways to obtain lower rates.

The deregulation of rail line abandonment in the National Transportation Act 1987 also led to the expansion of reload facilities. Lumber reload centres were developed to maintain service to mills on rail lines that were closed. One of the earliest examples was development of a lumber reload facility in Kamloops in 1988 to serve mills affected by CP Rail’s abandonment of the Princeton Subdivision which served the communities of Merritt, Princeton and Penticton.

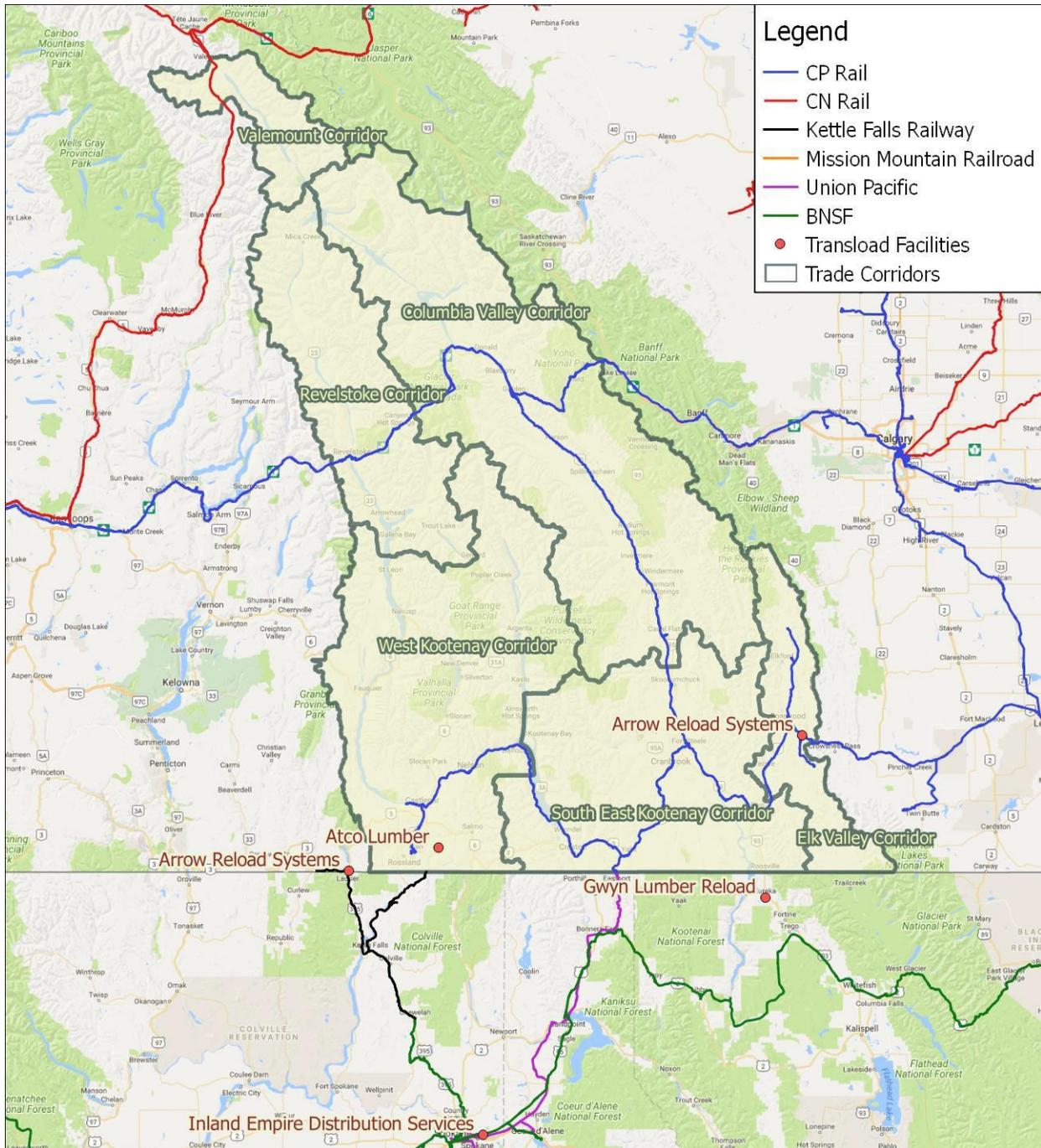
Information on transload facilities serving the Columbia Basin is summarized below. Inland Empire Distribution Services in Spokane has direct access to both BNSF and Union Pacific railways. Gwyn Lumber Reload in Eureka Montana is linked to BNSF by the Mission Mountain Railroad.

Transload Facilities Serving the Columbia Basin				
Name	City	Prov-State	Products	Railways
Arrow Reload Systems	Christina Lake	BC	Lumber	KFR-BNSF
Arrow Reload Systems	Sparwood	BC	Bulk	CP
Atco Lumber	Fruitvale	BC	Lumber	KFR-BNSF
Inland Empire Distribution Services	Spokane	WA	Lumber	BNSF, UP
Gwyn Lumber Reload	Eureka	MT	Lumber	MMT-BNSF

³⁹ Breakbulk Cargo encompasses a variety of goods that must be loaded individually, and not in intermodal containers nor in bulk as with oil or grain. Common commodities transloaded in the Columbia Basin include lumber and steel.

The locations of facilities offering third party transload services to Columbia Basin shippers are shown in the figure below.

Transload Facilities Serving the Columbia Basin



The Teck smelter in Trail provides an example of a reload facility in the dry bulk sector. CP Rail serves the smelter but the company found it more economical to ship via BNSF. The major source of concentrates is the Red Dog mine in Alaska. Additional concentrates are imported from other sources. Concentrate from Red Dog is shipped via the Kinder Morgan Vancouver Wharves terminal at Port Metro

Vancouver and then interchanged by CN Rail with BNSF for shipment via the Kettle Falls International Railway (KFR) to a bulk reload centre at Waneta, BC. The concentrate is then trucked approximately 9 km to the smelter. The reload facility for inbound concentrates is owned by Teck and operated by Trimac Transportation.

8.5 Airports

The locations of airports in the Columbia Basin are shown below.

Columbia Basin Airports

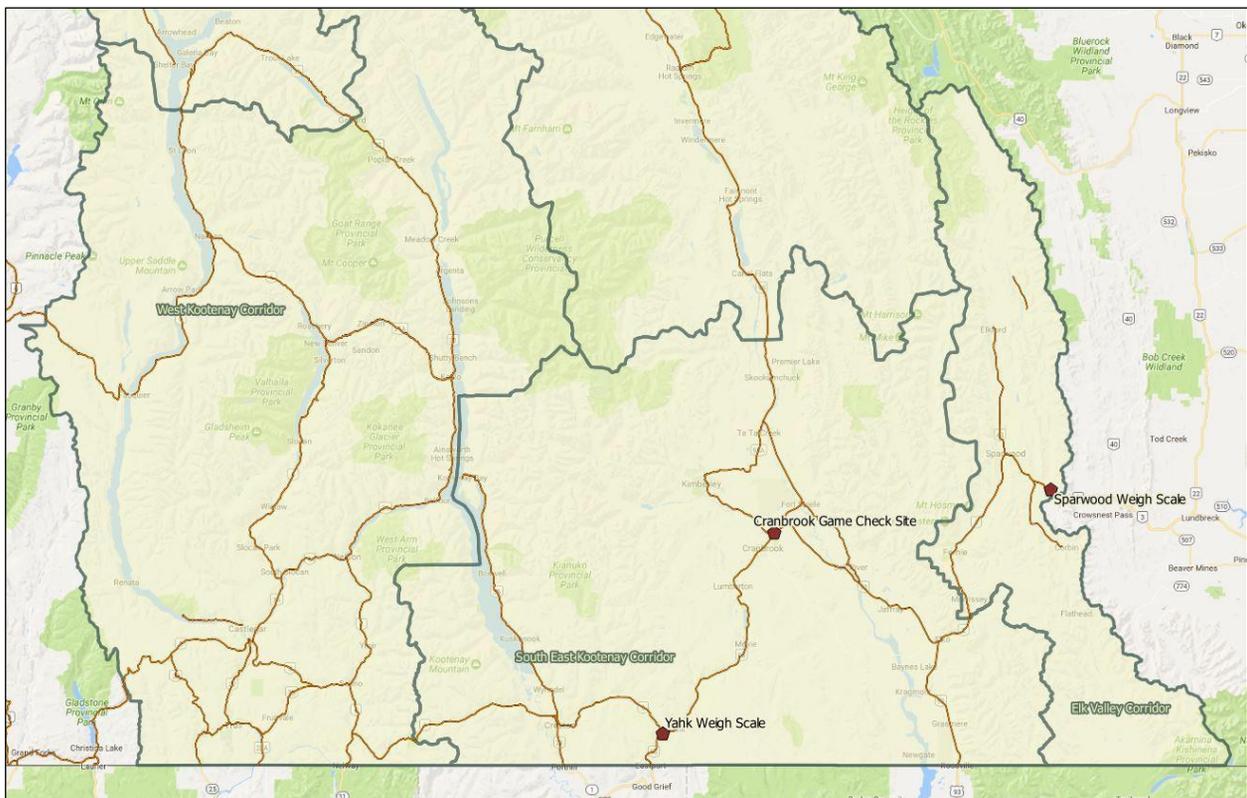


9 TRUCKING IN THE SOUTHEAST COLUMBIA BASIN

9.1 Background

On Wednesday October 26, 2016 the City of Cranbrook, in partnership with College of the Rockies and the Commercial Vehicle Safety Enforcement (CVSE) branch of the Ministry of Transportation & Infrastructure (MOTI) conducted a roadside survey of long haul trucks on cordon lines for the trucks that enter into the City (i.e. traffic borne from within the City was excluded). The purpose of the survey was to understand commodity flows and the logistics/supply chain that have been established in and around the Cranbrook region for the development of growth and change strategies by the City and its regional stakeholders. It was intended to capture where to/from goods and services move, ownership of the freight and businesses, the needs of trucking industries/operators and traffic volume. Survey teams were set up at the Yahk and Sparwood inspection stations on Highway 3 and at the Cranbrook game check site on Highway 3/95 on the outskirts of the north side of the City. Traffic was surveyed in both directions at the Yahk and Sparwood sites, but only westbound at Cranbrook due to site limitations.

Cranbrook Truck Roadside Survey Locations



A breakdown of observations at each survey location is shown below. Direction of travel was not recorded in the survey; observations have been classified using origin and destination data to deduce the direction of travel for each observation. Some responses indicated that the truck origin and destination were the same (i.e. for example travelling from Calgary to Calgary); these have been classified separately as it is impossible to deduce the direction of travel at the time the truck was surveyed.

Cranbrook Truck Survey Observations				
Survey Location	Sparwood	Cranbrook	Yahk	Total
Direction				
Eastbound	52		54	106
Westbound	70	100	49	219
Round Trip	11		4	15
Blank	2		4	6
Total	135	100	111	346

9.2 Truckload vs LTL

Of the 316 observations which included information on type of load, 87% indicated they were carrying a single commodity (i.e. “truckload” shipments) and 13% were carrying multiple commodities (less than truckload or LTL shipments).

Cranbrook Truck Survey Truckload vs LTL Observations					
Survey Location	Truckload	%	LTL	%	Total
Sparwood	119	92%	10	8%	129
Cranbrook	77	90%	9	10%	86
Yahk	79	78%	22	22%	101
Total	275	87%	41	13%	316

9.3 Trip Patterns

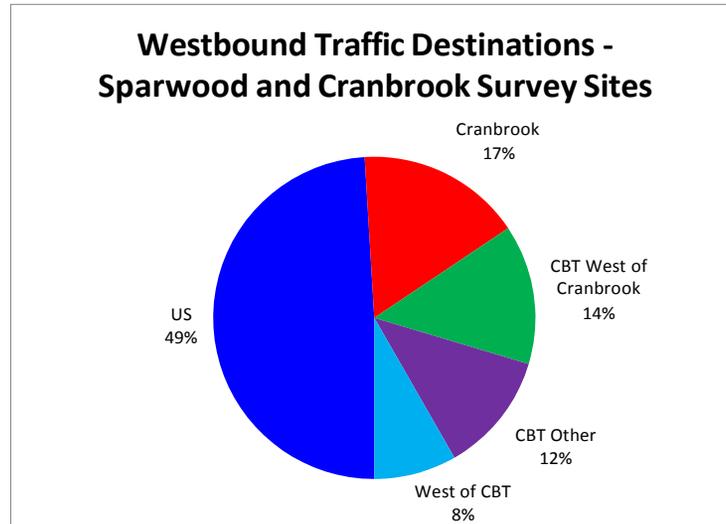
On their current trips, the majority of trucks (60%) surveyed were transiting (travelling through) the Columbia Basin. Of the remainder, 30% either originated in or destined within the Columbia Basin, and only 10% were travelling entirely within the region. Cranbrook had a higher percentage of intra-CB trips, which may reflect the community’s role as a regional distribution centre.

Cranbrook Truck Survey Traffic Patterns in Southeast Columbia Basin								
Traffic Type	Transiting	% of Total	Origin/Dest in CB	% of Total	Intra-CB	% of Total	Total	%
Survey Location								
Sparwood	87	64%	42	31%	6	4%	135	39%
Cranbrook	48	48%	34	34%	18	18%	100	29%
Yahk	73	66%	29	26%	9	8%	111	32%
Total	208	60%	105	30%	33	10%	346	100%

Examination of trip destinations westbound and eastbound along the Highway 3/95 Corridor highlights the importance of crossborder traffic on overall traffic levels.

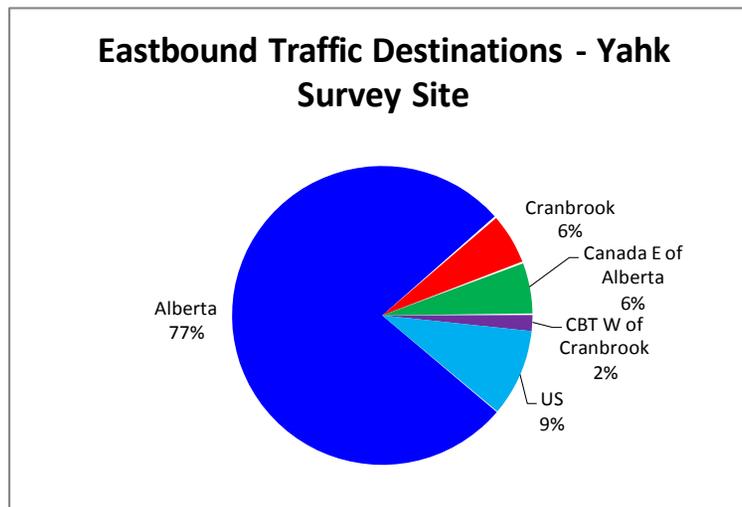
The distribution of destinations for westbound traffic surveyed at the Sparwood and Cranbrook survey sites is shown below. The largest share consists of through traffic bound for US destinations, accounting for 49% of all traffic; followed by trips destined to Cranbrook which accounted for 17%. Through traffic bound for destinations west of the Columbia Basin region (including the Okanagan and the Lower Mainland) accounted for only 8% of all trips.

Westbound Traffic Destinations – Sparwood and Cranbrook



The distribution of destinations for eastbound traffic surveyed at the Yahk site is shown below.

Eastbound Traffic Destinations – Yahk

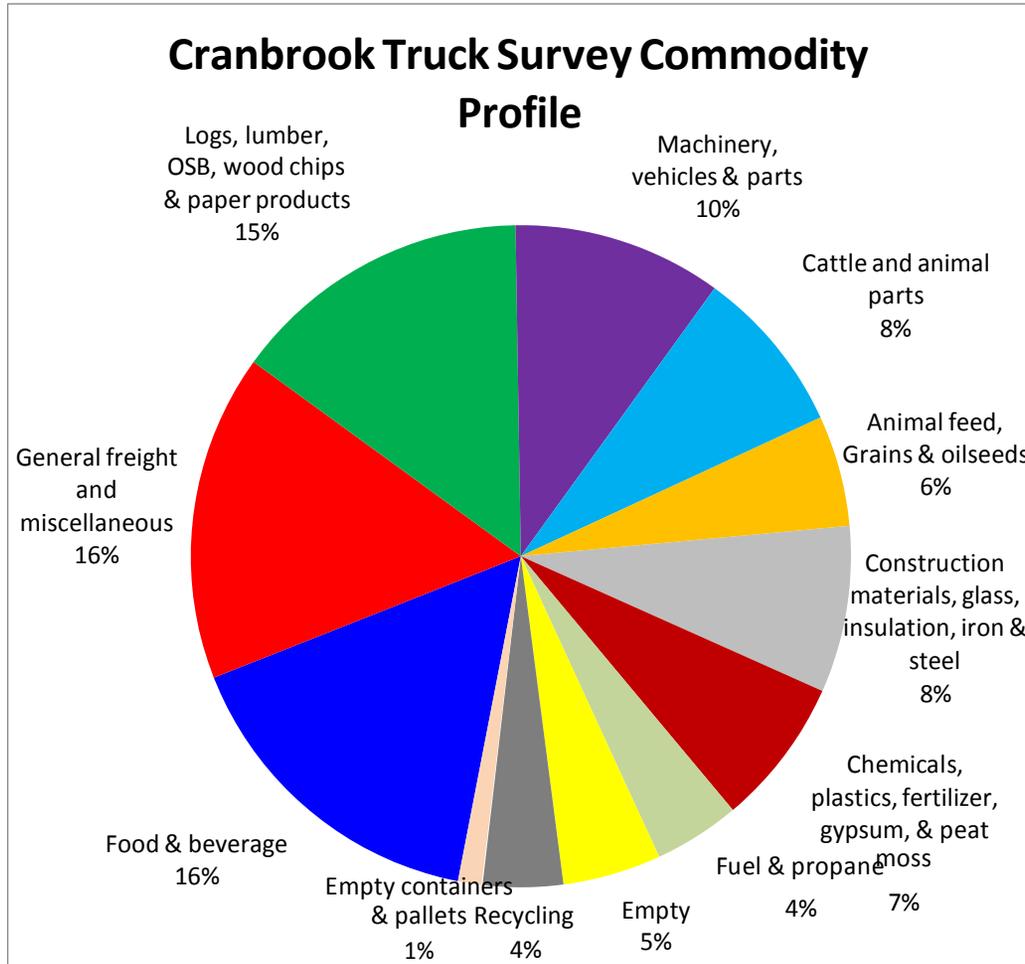


The largest share consists of trips destined to Alberta, which accounted for 77% of all trips. An additional 9% consisted of trips to US destinations.

9.4 Commodity Profile

The distribution of commodities carried by trucks surveyed at all three sites is shown below. Traffic is heterogeneous, with no single commodity dominating.

Cranbrook Truck Survey Commodity Profile



The data indicates that only a small percentage of trucks were travelling empty, which limits the opportunities to take advantage of low backhaul rates for Columbia Basin shippers. Note that an additional 5% consists of low value commodities (Empty containers and pallets and Recycling) which might indicate that shippers of these commodities are already taking advantage of backhaul rates.

Cattle and animal parts accounted for 8% of total traffic. This highlights the importance of the corridor as a route for traffic between Alberta and the major meat packing plants in Washington State (Pasco and Wallula). Based on the survey data the live cattle traffic is relatively balanced westbound and eastbound. Animal parts traffic is primarily westbound from Alberta.

9.5 Conclusions

Data from the Cranbrook survey supports the following conclusions:

- Truckload traffic predominates, accounting for 87% of all trucks surveyed. In contrast, only 13% consisted of Less Than Truckload (LTL) traffic, which highlights the challenges in achieving economies of scale for smaller shipments, and in the ability of the market to support multiple competing carriers.
- The largest share (60%) of trucks surveyed consisted of trucks transiting the Columbia Basin. Trucks engaged in trips within the Columbia Basin accounted for only 10%.
- The largest share of westbound trucks surveyed on the eastern section of the corridor (surveyed at Sparwood and Cranbrook) consisted of trips bound for US destinations (49%) followed by Cranbrook (17%). Fourteen per cent of trucks were destined to Trust communities west of Cranbrook, and only 8% of trucks were destined west of the Columbia Basin (i.e. to the Okanagan or Lower Mainland).
- The largest share of eastbound trucks surveyed on the western section of the corridor were bound for Alberta (77%). An additional 9% were bound for destinations in the US.
- Only 5% of trucks surveyed were travelling empty, which suggests that opportunities for taking advantage of backhaul rates are severely limited.

10 ECONOMICS OF REGIONAL FREIGHT

10.1 Traffic Balance

Transportation services require traffic balance between origins and destinations to maximize efficiency by avoiding the costs of repositioning empty equipment. For example, to haul a truckload of freight from Vancouver to Castlegar requires the trucker to drive the full round trip distance to return to Vancouver; if there is no freight available to haul back from Castlegar (“backhaul” freight) the rate to Castlegar must cover the full round trip costs. If backhaul freight can be found, each shipment has to cover only costs for the one-way trips. Where freight flows are not balanced, shippers may be able to negotiate lower rates for routes where truckers would otherwise be running empty (“backhaul rates”).

Truckers employ a variety of methods to reduce empty miles. Contracts with shippers which specify regular shipment volumes on a “take or pay” basis can reduce the risk for carriers, and may therefore attract lower overall rates.

Many carriers use “load boards” to identify and book loads. These include online services which enable shippers to post information about their shipping requirements (shipment size, origin and destination, and schedule) and for carriers to offer their services and negotiate rates. Many offer additional value-added services. For example, TransCore LinkLogistics, an Ontario-based firm, offers an online load board, market information on rates and truck-to load ratios for specific corridors based on transactions carried out through their system, dispatch applications, a driver job posting board, and targeted advertising.⁴⁰ A TransCore survey of truckers in 2013 found that load boards represented the largest single source of loads for trucking companies, accounting for 37.1% of loads for for-hire carriers and 45.1% of owner-operator loads. Other sources of loads included 3PL’s (i.e. third party logistics operators engaged by companies to manage their supply chains) responsible for 28.2% of loads for for-hire carriers and 28.1% for owner-operators; and shippers responsible for 31.1% and 22.8% of loads respectively. The survey found that use of load boards leads to improvements in asset utilization, especially for fleets that included more than 50% van trailers. The relationship between load board use and empty miles was not significant for reefer or flatbed carriers.⁴¹

10.2 Economies of Scale

Economies of scale are critical in the efficiency of freight transportation. Economy of scale occurs when the cost of providing the service, or producing the good, declines because the size of production increases. Each transport mode is characterized by different cost functions or profiles but the examples below will illustrate the concept.

⁴⁰ TransCore LinkLogistics <http://transcore.ca/products>

⁴¹ 3rd DAT Carrier Benchmark Survey Q1 2013 TransCore LinkLogistics
http://www.dat.com/Resources/~media/Files/DAT/Resources/Whitepapers/2013_Carrier_BenchMark_Surveyfinal.ashx

The traffic for which railways have a competitive advantage is low value, heavy commodities over medium to long haul routes (generally over 500 km). Low value commodities are less sensitive to transit time, large volumes maximize the efficiency of rail loadings, and long haul routes enable the railways to take advantage of their lower tonne-km costs.

For low value, heavy commodities the most efficient form of transportation serving the Columbia Basin is railway transport, and in particular, “unit train” operations. A unit train is a single train consisting of multiple cars loaded with a single commodity, typically shuttling between a single origin and destination and returning. In the Columbia Basin, the major application of unit train operations is the transportation of coal from the Teck coal mines to port terminals for export from the Lower Mainland. Currently these consist of 152 cars, each containing 105 tonnes of coal for a total of 16,000 tonnes per train.⁴² In its 2015 Annual Report, Teck forecasted average transportation costs for coal of \$35 to \$37 per tonne for 2016.⁴³

Railways also provide carload or “manifest” rail services for shipments of single or smaller multiple car quantities. In the Columbia Basin, the major user of carload rail service is the forest industry, including the pulp and paper mills. For purposes of comparison, CP’s current published tariff shows rates for forest products shipments to the Lower Mainland of \$6127 per carload, plus a mileage-based fuel surcharge of \$.0981 per mile. For a shipment of lumber from Radium to North Vancouver, a distance of 536 miles, this would amount to approximately \$6180 per carload. At 90 tonnes per carload, this would be approximately \$69 per tonne. Shippers may be able to negotiate lower rates under confidential contracts with the railway.

Large shipments which are not suitable for rail may include those which require faster or more reliable transit times, which are being transported relatively shorter distances, or for which either the origin or destination does not have direct rail access. These can be most efficiently handled as full truckload shipments:

*Truckload (TL) carriers specialize in hauling large shipments for long distances. TL shipments are usually defined as those weighing 10,000 pounds or more. In this segment, a driver employed by a TL firm, or a truck owner-operator, will pick up a load from a shipper and carry the load directly to the consignee, without transferring the freight from one trailer to another. Thus, TL carriers do not need a network of terminals. This segment of the industry involves substantial competition and labor is typically not unionized.*⁴⁴

⁴² “Coal production in B.C. is a thriving industry” *Canadian Mining and Energy* 2014

http://www.miningandenergy.ca/mines/article/coal_production_in_bc_is_a_thriving_industry/

⁴³ Teck Annual Report 2015 p. 12. <http://www.teck.com/media/2015-Teck-Annual-Report.pdf>

⁴⁴ “Section 2: Trucking Industry Background and Structure” *Estimating Multifactor Productivity in Truck Transportation* US Bureau of Transportation Statistics
https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/research_papers/estimating_multifactor_productivity_in_truck_transportation/html/section_02.html

For smaller shipments which do not require the entire capacity of a truck, shippers can take advantage of Less Than Truckload (LTL) service:

Less than truckload (LTL) carriers consolidate, in one truck, several shipments that are going to the same general geographic area. LTL shipments are usually defined as those shipped in amounts that weigh less than 10,000 pounds. The consolidation of freight requires a network of freight terminals. Consequently, LTL carriers are characterized by networks of consolidation centers and satellite terminals. In this framework, a pickup-and-delivery truck typically transports an LTL shipment from the shippers dock to the trucking firms local terminal. There, dock workers unload and recombine the shipments with other shipments that are going to similar destinations, typically a destination terminal in another city. This transportation may be accomplished by large trucks or by another transportation mode e.g., rail or ship, depending on price and service considerations. When the shipment arrives at its destination terminal, the load is processed, moved to a pickup-and-delivery truck, and then transported to the consignee. There are national LTL firms and regional LTL firms.⁴⁵

Courier, bus express, postal services or air cargo may be used for smaller shipments. The typical division between these services in the U.S. context is summarized below:

... motor carriers can be categorized by the average size of each shipment. Here we can divide shipments into three categories, from largest average shipment size to smallest. Most of the statistics on the for-hire (narrow) trucking industry do not account separately for parcel carriers (such as UPS and FedEx) ... Parcel firms handle small shipments, with weights from letter size up to 150 lbs, but with an average typically less than 50 lbs. Less-than-truckload (LTL) firms handle shipments ranging widely in size and weight but with an average weight typically around 1,000 lbs. The key thing that unites LTL and parcel firms that provide intercity service is that they need terminals in each city they serve, at which small shipments can be consolidated together into full trailer loads for over-the-road movement, and then be broken out again for local delivery upon arrival. Parcel and LTL firms generally have one group of drivers who do local pickup and delivery at each terminal, and a second group who move trailers between terminals over relatively fixed routes.

TL carriers operate primarily in point-to-point service, filling the truck up at a shipper's location, going wherever in the 48 states the load delivers to empty out, and then running empty to pick up a (preferably nearby) new load.⁴⁶

Costs for truckload service are primarily variable and dependent on trip length. Costs for LTL and parcel service are significantly higher due to terminal and local pickup and delivery costs, and since LTL and courier services typically serve a network on a regular schedule, costs are primarily fixed costs.

For purposes of illustration, a comparison of the linehaul costs for truckload and LTL service for a regional shipment can be derived based on typical trucking costs. The example below is based on typical costs from the 2013 edition of Transport Canada's Operating Costs of Trucks in Canada.⁴⁷

⁴⁵ Ibid.

⁴⁶ Trucking 101 An Industry Primer Transportation Research Circular Number E-C146 Steven V. Burks et al Transportation Research Board 2010 <http://onlinepubs.trb.org/onlinepubs/circulars/ec146.pdf>

⁴⁷ Operating Costs of Trucks in Canada 2013 Prepared for Transport Canada Economic Analysis Directorate by Logistics Solutions Builders Inc. March 2014.

The model used in the Transport Canada report estimates total costs per kilometre based on typical unit costs including fuel, wages, insurance, licensing, depreciation, etc. and an allowance for operator profit. Costs for a number of different truck configurations are analysed; for purposes of this comparison, the appropriate configurations are a suitable tractor and five axle semi configuration dry van trailer, and a two axle straight truck.

The Transport Canada model estimates that costs per kilometre for the two axle straight truck are significantly higher than for the five axle semi, primarily due to differences regarding trip distances and terminaling productivity (i.e. the time it takes the driver to load or unload the truck). The assumptions on trip lengths are summarized below:

Intra Regional Base Case Trip Distances: The combination units are assigned a round trip distance of 320 kilometres since they are assumed to be involved in predominantly "terminal-to-terminal" highway service. Urban two axle units are assigned a trip distance of 100 kms. These common trip distances tend to reflect average common operational factors within the industry - recognizing there are shorter and longer distance market segments, for specific operations.⁴⁸

The relevant assumptions on terminaling productivity are summarized below:

Dry Freight in Combination Units: One origin-destination per trip is assumed, which reduces the time required to handle one payload. Realistically, the rate of loading-unloading varies with consignment type; however observation indicates that 4,500 kg per man-hour is representative of dry freight loading/unloading performance. Assuming an adequate availability of manpower, a handling time criteria of three hours for 27,270 kg has been applied to all applicable cases. That is, the driver will be on the job, but not driving, three hours for a 27,270 kg dry freight payload.

Dry Freight in Van Straight Trucks: The time spent loading and unloading freight was assumed to be one person hour per 1600 kg of consignment.⁴⁹

Due to the differences in trip lengths and terminal productivity, costs per km for the straight truck were estimated to be significantly higher than for the five axle semi: \$3.23 per km for the straight truck compared to \$1.897 for the five axle semi.⁵⁰ These estimates were based on an average 2013 fuel price of \$1.33 per litre; current fuel prices are lower (\$1.20 per litre) and other unit costs are also likely to have changed somewhat since 2013.

⁴⁸ Ibid., p. 11.

⁴⁹ Ibid., p. 10.

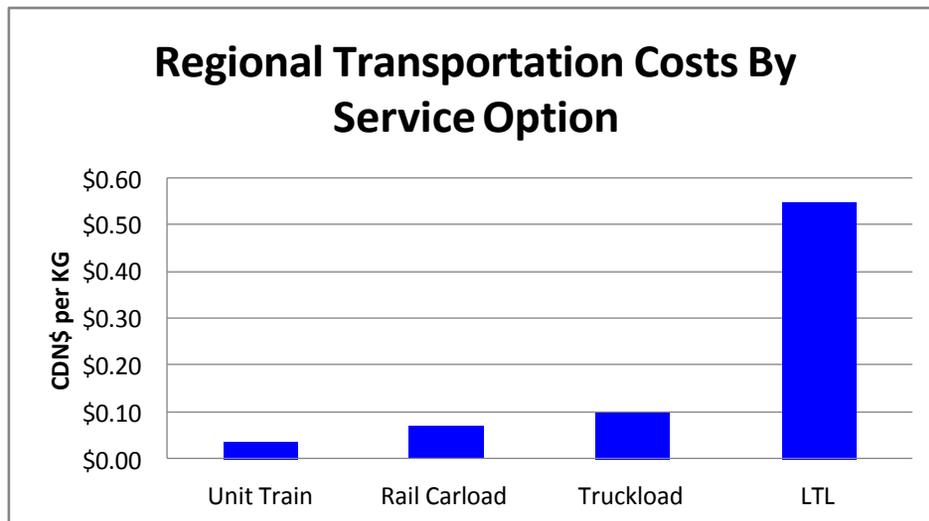
⁵⁰ Ibid., p. 62. Estimated costs quoted are for medium annual utilization for each unit and a 5% operator margin for BC operations.

The example shows the estimated cost per kg of a shipment from Burnaby to Nakusp by a truckload and an LTL carrier. The five axle semi is used for the complete trip from origin to destination for the truckload option; for the LTL option, the shipment is delivered by the five axle semi to a terminal in Castlegar and then transferred to the two axle straight truck for delivery to Nakusp.

Trucking Costs Example						
Origin	Destination	Two way km	Total Cost per km	Total Cost per Trip	Payload (kgs)	Total cost per kg
Truckload Option						
Surrey	Nakusp	1426	\$1.897	\$2,705.12	27,270	\$0.10
LTL Option						
Line Haul						
Origin	Destination	Two way km	Total Cost per km	Total Cost per Trip	Payload (kgs)	Total cost per kg
Surrey	Castlegar	1136	\$1.897	\$2,154.99	27,270	\$0.08
Local Delivery						
Origin	Destination	Two way km	Total Cost per km	Total Cost per Trip	Payload	Total cost per kg
Castlegar	Nakusp	290	\$3.230	\$936.70	2,000	\$0.47
LTL Total Costs per kg						\$0.55
% Line Haul						14%
% Local Delivery						86%

Based on this example, the local delivery share of the transportation costs accounts for 86% of total costs. In addition, the LTL carrier must bear the cost of terminal operations across its network, and pricing must account for the risk that shipment volumes will fall based on cyclical economic factors and competition.

Estimated costs per kg for the four transportation options are highlighted below. Note that the trucking costs are based on round trip distances i.e. round trip costs are assigned to the one way shipment on the assumption there are no opportunities for backhaul revenue on the return trip.



10.3 Consolidation of Shipments

The analysis of economies of scale in the preceding section highlights the importance of shipment consolidation in reducing transportation costs. Even where shippers are unable to ship sufficient volumes for truckload service, they can take advantage of graduated LTL rate scales which offer lower rates per kg for larger shipments. For example, an LTL carrier in Ontario provides the following description of a typical rate structure (based on rates per 100 lbs or CWT):

*MIN is the minimum rate for freight in that lane. These are usually standard or smaller skids that have small weights. The LTL break is the next rate up and is used on all freight that is under 500 lbs and more than the minimum amount. The 500 lbs CWT rate is next and used for freight between 500 and 1000 lbs. the 1M CWT rate is for freight between 1000 and 2000 lbs. 2M for 2000 and 5000 lbs and the 5m rate for freight over 5000 lbs.*⁵¹

Pick-up location: Toronto, ON - Destination: Montreal, PQ					
MIN	LTL	500 lbs	1M	2M	5M
\$40.00	\$16.00	\$14.00	\$12.00	\$10.00	\$9.00

Rates are usually calculated on a “billable weight” which considers the size as well as the weight of shipments. Shippers may also be able to negotiate lower rates based on large and/or regular shipping volumes.

In our discussions with shippers in the Columbia Basin we found many examples of consolidation strategies which have been adopted to reduce transportation costs.

⁵¹ http://www.cavalier.ca/en/resources_transportation_downloads.asp

- Some retailers rely primarily on a single wholesaler to supply most of their stock. The wholesaler will manage the supply chain, arranging for transportation and negotiating rates with the carrier. The larger shipment sizes and total freight volumes enable the wholesaler to negotiate more favourable rates with carriers, or transport their own goods using a dedicated truck fleet.

Home Hardware represents a sophisticated example of this strategy. The company operates as a cooperative for independent retail stores, enabling them to take advantage of increased purchasing power and logistics efficiencies of bulk buying. The company offers 60,000 products (sku's or stock keeping units) distributed through four major distribution centres in Canada, located in St. Jacobs and Elmira, Ontario; Debert, Nova Scotia; and Wetaskiwin, Alberta. The company claims reliable fill rates and a high service level. Home Hardware maintains its own fleet of delivery vehicles (125 tractors and 400 trailers).

- One shipper reported negotiation of backhaul rates for truckload shipments from Alberta grain haulers on their backhaul from Vancouver.
- One shipper uses a consolidation point in Vancouver to assemble shipments for a full truckload quantity.
- Many retailers noted that the minimum quantities to be ordered from their suppliers are based on value not shipment size i.e. for example a \$300 minimum order to qualify for free or subsidized shipping. One noted that a supplier in Burnaby allows shipments from other suppliers to be delivered to their shipping dock and consolidated as a single shipment to qualify for a lower rate.
- For non-perishable goods, retailers can consolidate shipments by ordering larger quantities and storing them onsite or at an offsite warehouse until needed. For this option, reduced transportation costs must be balanced against additional inventory holding costs, including storage and financing costs.
- One producer of relatively low value products found that LTL shipments to local retailers were prohibitively expensive. To overcome this, he engages a carrier to provide truckload service delivering to all of his regional customers at the beginning of the season. To facilitate their cooperation, he allows deferred payments, which eliminates the additional inventory costs of receiving a single large shipment for his customers.
- Some shippers make use of freight brokers or cooperative buyers' clubs to negotiate lower rates for freight transportation services. For example, the Canadian Federation of Independent Business (CFIB) has a "Privilege Program" called ZoomShipR which allows members to compare rates from different carriers and book shipments online at reduced rates. The service claims freight savings of up to 30% for

courier shipments and “likely more” for LTL shipments.⁵² In order to use the service, companies must be CFIB members; dues for a one-year membership are \$300.00 plus \$30.00 per employee, to a maximum of \$4,500.00 per year.

- Many shippers transport their shipments using their own vehicles. The scale of operations ranged from personal automobiles to specialized vans and trucks (refrigerated) to full semitrailers. Several noted that the downside of this option is that it distracts attention from their core business.

⁵² ZoomShipR Frequently Asked Questions <http://www.cfib-fcei.ca/english/article/5316-faq-frequently-asked-questions-zoomshipr.html>

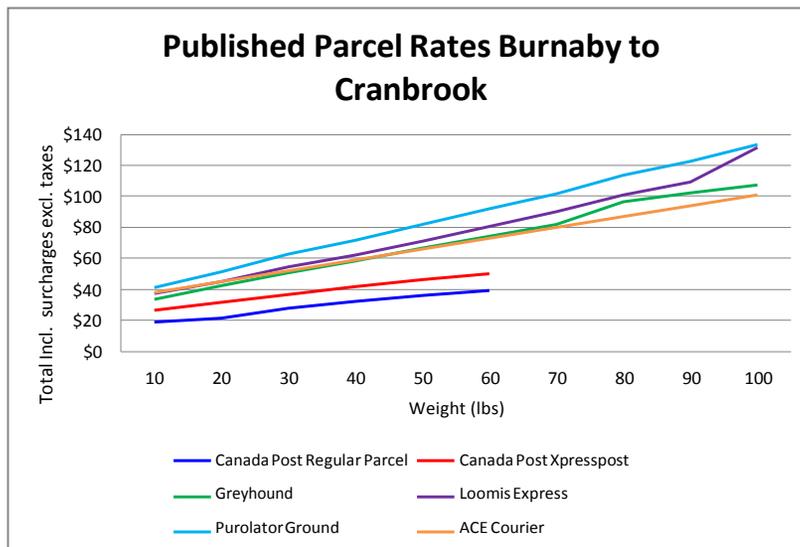
11 SMALL PARCEL TRANSPORT: POSTAL, COURIER, BUS & AIR CARGO

Various services specialize in transportation of small parcels, and compete with LTL trucking for this business. Among survey respondents postal and courier services were the most widely used methods of transport, with 80% indicating they use postal services and 78% courier services. Air cargo services were used by 21% of respondents. For purposes of the survey, bus courier services (Greyhound) were implicitly included in the courier category. The smallest businesses expressed the highest satisfaction with the postal parcel service, courier and product labelling and packaging logistics services. All offer multiple options based on transit time requirements and other specialized service requirements (refrigerated shipments, Transportation of Dangerous Goods, etc.), though not all services are available at every location.

11.1 Small Parcel Rates

Comparative rates for a parcel from Burnaby to Cranbrook are shown below. For Canada Post shipments, Xpresspost is the closest in transit time to the courier services. These rates are taken from published rate schedules and/or online rate quotations, and include surcharges (including fuel surcharges) but exclude taxes. The package size for these quotes is 1 cubic foot (12 in X 12 in X 12 in). Loomis Express charges include an Overweight Surcharge for parcels of 75 lbs and over.

Published Parcel Rates Burnaby to Cranbrook



Shippers may be able to obtain lower rates. For example, Canada Post offers rate discounts based on annual spending through its Solutions for Small Business program.

In addition to different fees for level of service, some carriers charge additional surcharges for “remote” locations; for example, Fedex charges a “Remote Rural Surcharge” for a Fedex Express shipment from Burnaby to Nakusp of \$21.00 for a 10 lb parcel. However, the same package shipped by Fedex Ground (four day transit) would not incur a surcharge.

Comparable Air Canada standard air cargo rates from Vancouver to Cranbrook have a minimum charge of \$50 and a rate for 45 kgs (approximately 100 lbs) of \$117 plus a fuel surcharge of \$47.25 (\$1.05 per kg) and an aviation security surcharge (\$.15 per kg minimum \$5.00) and a NAVCAN fee (\$.07 per kg minimum \$5.00) for a total of approximately \$176.

11.2 Canada Post

Canada Post offers the following options for parcel service:

Canada Post Parcel Services			
	Local Delivery	Regional Delivery	National Delivery
Regular Parcel	2 Days	5 Days	9 Days
Xpresspost	1 Day	1 Day	2 Days
Priority	1 Day	1 Day	
Delivery standards are for items sent between most major urban centres and depend on origin and destination.			
Delivery standards are in business days, not calendar days.			

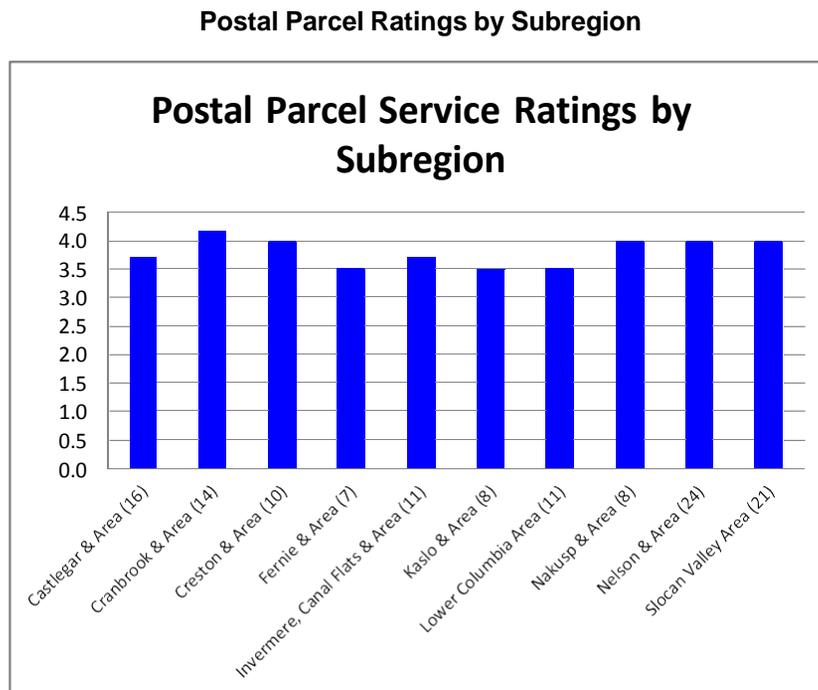
Service levels are lower for communities in the Columbia Basin. Examples are shown below:

Canada Post Service Standards Columbia Basin - Delivery Days				
Community	Postal Code	Priority	Xpresspost	Regular Parcel
Invermere	VOA 1K0	1	2	3
Nakusp	VOG 1R0	2	2	3
Kimberley	V1A 1A1	2	2	3
Cranbrook	V1C 0A1	2	2	3
Castlegar	V1N 0A1	1	2	3
Kaslo	VOG 1M0	2	2	3
Meadow Creek	VOG 1N0	5	5	8

Note that for locations classified as “remote” such as Meadow Creek (39 km north of Kaslo) service times can be considerably longer.

11.2.1 Survey Findings – Postal Service

The average ratings for Postal Parcel service for subregions with six or more observations are shown below. In general, the ratings are positive, ranging from 3.4 for Kaslo & Area to 4.1 for Cranbrook and Nakusp.



Respondents' issues with postal service in the Columbia Basin were generally related to the speed of service, communication and service reliability:

- Packages can disappear or take up to months to arrive.
- Postal takes too long.
- Poor communications from postal services.
- Unreliable post office.
- Postal strikes.

Poor communications from the postal service can also impact businesses with cargo claims handling issues. For example, one respondent indicated that they recently had a very bad experience with Canada Post. The post office was the service provider they preferred to use most. However, the firm was unsuccessful in an insurance claim for shipment damage from Canada. Consequently the respondent would like to use other carriers, but the other options are not competitively priced for this business.

11.2.2 Postal Pricing

Several respondents indicated that the pricing of postal services was among their three biggest issues related to transport and logistics for their business in the Columbia Basin. The businesses expressed their sentiments about both parcel and letter service:

- The costs are prohibitive for larger items.
- Canada Post rates for unaddressed mail.
- High cost of tracked mail for both shipping and receiving.
- Canada Post shipping routes to US use coastal port of entry, different customs rules.

There are many impacts of postal service pricing on businesses success in the Columbia Basin. One respondent indicated that a substantial portion of their supplies is not available locally so they end up ordering from distant suppliers and the costs can really add up. The business prefers to ship and receive through Canada Post because of the convenience. Other businesses indicated price sensitivity to postal service in related to shipment size, or relying on Canada Post because they are in a remote location. For example, Crawford Bay is remote and rural, and businesses rely on Canada Post because many couriers allow shipments to East Shore addresses but do not come to Crawford Bay.

11.3 Courier Services

Couriers require a network of terminals and generally operate with a hub-and-spoke system of pickups and deliveries. Courier service competes with the post office and the LTL sector. However, the relatively high fixed cost of terminal operations and regularly scheduled or expedited services requires a sufficient traffic volume to cover the operating expenses of the carrier. It can be a challenge to provide courier service in less densely populated markets and many nationally recognized courier brands may opt to provide first and last mile delivery by interlining with a local courier company, rather than directly providing the service themselves.

Courier services in the Columbia Basin include major national and international firms, regional carriers and local operators. Major national and regional firms serving the region are shown below. Both Canpar and Loomis are owned by Transforce International of Montreal.

Carrier	Type	Service Hubs	International Affiliations
Loomis	National	Service through agents in multiple communities	DHL
Fedex Canada	National	Service through agents in multiple communities	Fedex
Purolator Canada	National	Service through agents in multiple communities	Purolator International
UPS Canada	National	Service through agents in multiple communities	UPS
Canpar	National	Service through agents in multiple communities	
Ace Courier	Regional	Cranbrook, Castlegar, Golden	

Couriers offer a variety of services which vary by transit time and other service conditions. For example, Purolator offers the following services for shipments within Canada. Note that the overnight services may not be available outside of large urban centres. For example, Purolator provides only the Purolator Express Guaranteed and Purolator Ground options for a parcel shipped from Burnaby to Cranbrook, and

transit time for both options is given as two days (shipped on Tuesday, delivered by the end of the business day on Thursday).⁵³

Purolator Services - Shipments Within Canada	
Purolator Express® 9AM	Receive guaranteed delivery in Canada by 9 a.m. the next business day.*
Purolator Express® 10:30AM	Receive guaranteed delivery in Canada by 10:30 a.m. the next business day.*
Purolator Express®	Receive guaranteed delivery in Canada by the end of the next business day.*
Purolator Express® Evening**	Receive guaranteed delivery in Canada between 5:30 p.m. and 9 p.m. of the next business day.*
Purolator Ground® 9AM**	Receive guaranteed delivery in Canada by 9 a.m. in two or more business days.*
Purolator Ground® 10:30AM**	Receive guaranteed delivery in Canada by 10:30 a.m. in two or more business days.*
Purolator Ground®	For less time-sensitive shipments in one or more business days.
Purolator Ground® Evening**	Receive guaranteed delivery between 5:30 p.m. and 9 p.m. in two or more business days.*

In addition, Purolator offers a number of additional specialized services (at additional cost) including Chain of Signature (COS), Dangerous Goods, Duties and Brokerage Fees, ExpressCheque®***, Hold For Pickup (within Canada only), Purolator Express® Packaging, Return Services, Saturday Service, Signature Not Required / Origin Signature Not Required, Signature Required (Residential), and Special Handling.

Postal and courier packages are limited in weight and size. Maximum parcel weights and sizes for selected carriers are shown below. Courier services accept shipments with multiple parcels, so total shipment weights could be significantly higher.

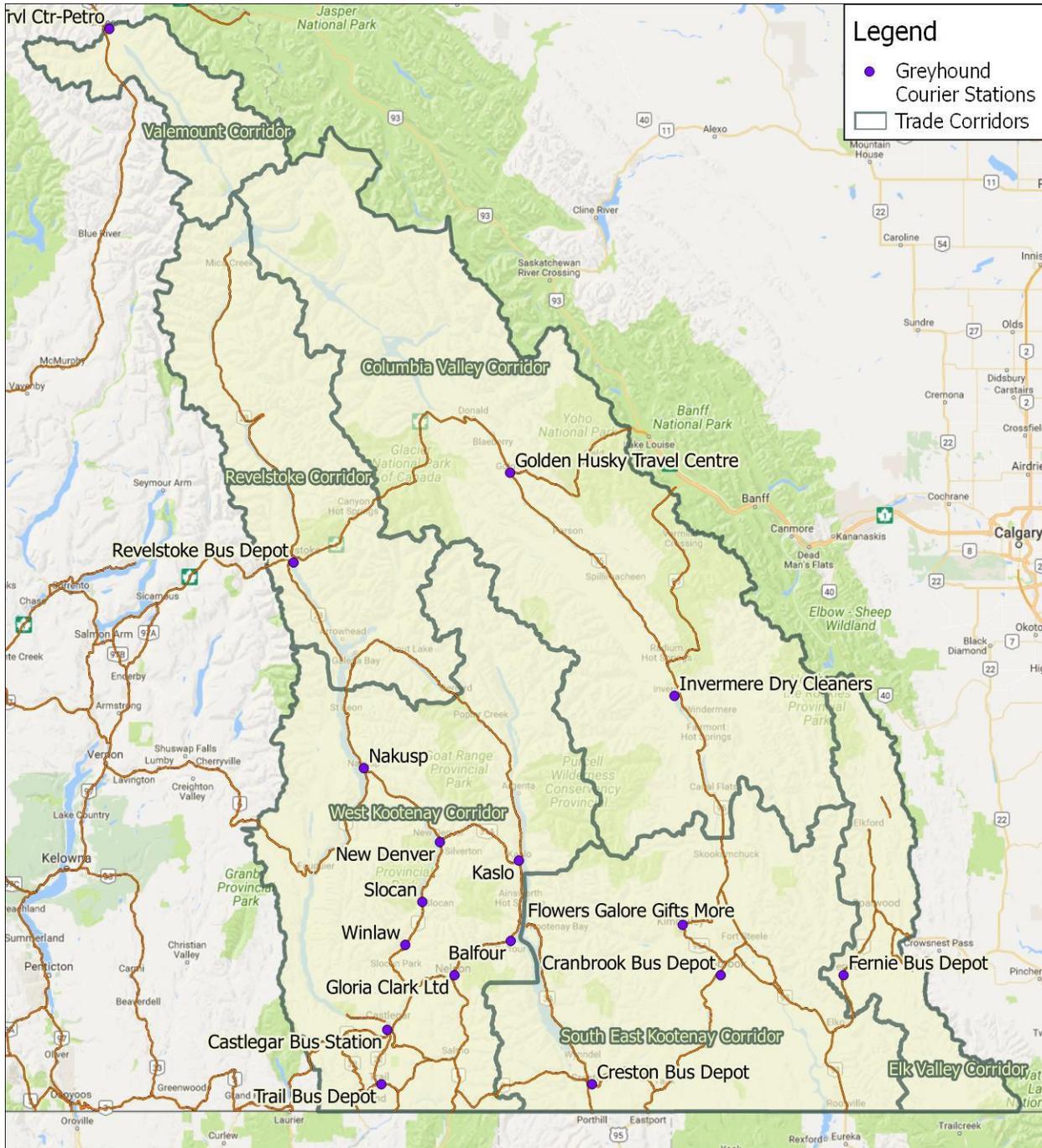
Maximum Parcel Size Domestic Services			
	Weight (kg)	Length (m)	Length & Girth (m)
Canada Post	30	2	3
Purolator Ground	68	3.1	3.7
Loomis	68	2.3	3.7
Fedex	68	2.7	4.2
Canpar	68	2.7	4.2

⁵³ Results from Purolator's online rate and transit time estimator retrieved on February 28, 2017.

11.4 Greyhound Courier

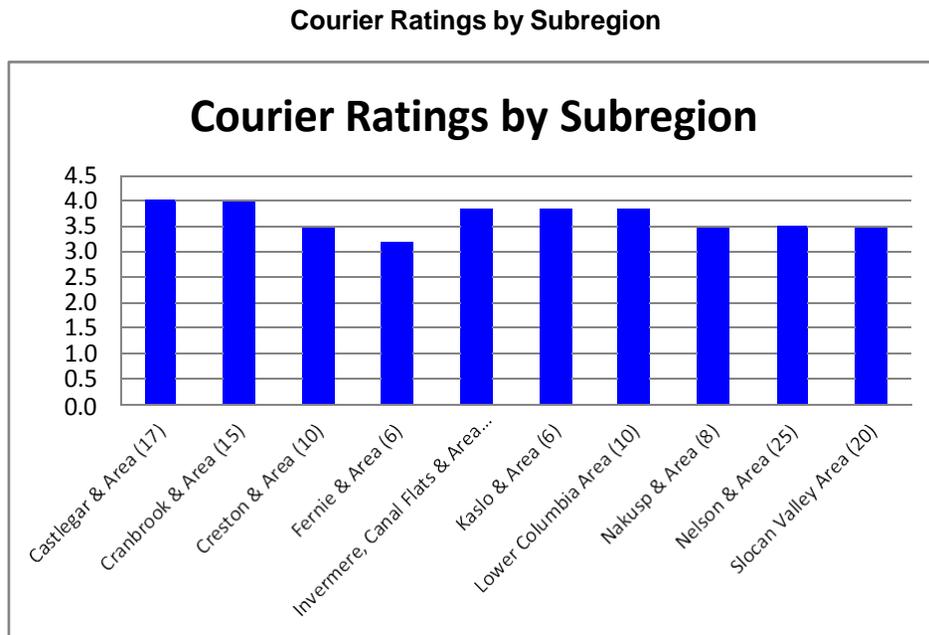
Greyhound of Canada provides courier service as an adjunct to its passenger bus operations. In addition to transportation of freight along its regular bus routes, Greyhound provides additional scheduled truck services to selected points on and outside the bus route network. The map below shows bus stations, communities and agents with Greyhound courier services within the Columbia Basin.

Greyhound Courier Stations



11.5 Survey Findings - Courier Service

The average ratings for Courier service for subregions with six or more observations are shown below. Ratings ranged from a low of 3.2 in Fernie to a high of 4.1 in Castlegar.



In spite of the positive ratings, a number of survey respondents expressed their concerns with the level of courier service in the Columbia Basin region. Issues cited by businesses included:

- Courier deliveries not early enough in the day.
- Couriers that our suppliers wish to use, but that don't serve this area well or at all.
- Courier service requires a minimum of an extra day due to location.
- Lack of delivery/pick up by standard shipping companies such as FedEx.
- Lack of overnight/two-three-day express delivery.
- Overnight delivery.
- No overnight availability to us from most major centres/US.
- Parcel delivery not available or when occasionally available is not reliable.
- Couriers ignoring instructions.

Businesses provided insight into how courier service levels impact their operations. For example, the timeline for shipping is extended because the lack of overnight service means that delivery takes two days. In other instances, the commute to pick up courier deliveries is time consuming - 40 to 60 minutes per delivery. Other respondents indicated courier service levels impact their ability to get parts, or obtain all their parcels at once. In addition, some communities such as Invermere do not have a local courier. One respondent noted that Purolator recently announced that the local subcontractor's route will be cancelled this spring, which could have major implications for business later this fall.

Courier Pricing

Survey respondents expressed their concerns with the pricing of courier service in the Columbia Basin region. Issues identified included the following:

- Affordability, accessibility, timeliness, limited options (e.g. no UPS).
- Cost of courier services to remote locations.
- Cost of remote/rural service (lack of competition re couriers/trucking).
- Cost and having to have reduce services because of lack of demand i.e. daily courier contract is now weekly.
- Local contractors working for courier and trucking companies. Service ends once it hits the local contractor (except for Purolator). We pay for express services only to have it stall and sit at the local contractors' warehouse for days.

Businesses provided insight into how courier pricing impacts their operations. For example, pricing of courier service out of Golden is by far the largest issue. One business has moved two-thirds of their warehousing to a third party in Kamloops. A lack of financially feasible options increases the cost of shipping finished products with a courier. Courier is the only option other than personal vehicle. Courier expenses increase the respondent's cost so much that it is difficult to make a good profit.

11.6 Air Cargo

Year-round scheduled service is provided at Cranbrook, Castlegar and Trail. Current scheduled services are summarized below.

Columbia Basin Region Scheduled Air Service 2017				
Carrier	Origin	Destination	Frequency (Inbound Flights per weekday)	Aircraft
Air Canada	Vancouver	Cranbrook	3	Dash 8-300
	Calgary	Cranbrook	3	Beech 1900
	Vancouver	Castlegar	3	Dash 8-300
	Calgary	Castlegar	1	Dash 8-300
Pacific Coastal	Vancouver	Cranbrook	2	Saab 340/Beech 1900
	Kelowna	Cranbrook	1	Saab 340/Beech 1900
	Vancouver	Trail	2	Saab 340/Beech 1900

Cargo capacity is limited due to the relatively small size of the aircraft; cargo is carried in the belly and in general passenger luggage has priority. Passenger capacity of the aircraft is shown below.

Carrier	Aircraft	Passenger Capacity
Air Canada	Dash 8-300	50
	Beech 1900D	18
Pacific Coastal	Saab 340A	30
	Saab 340B	34
	Beech 1900C	19

11.7 Air Cargo Survey Findings

The Retail Trade sector accounted for 33% of the responses from users who indicated they use air cargo services. Others included the manufacturing sector, other services, arts, culture, entertainment and recreation. Delivery reliability (74%) and shipments being complete, on time and damage free (68%) were the two most mentioned factors influencing the choices of those using air freight.

Respondents using air freight also have a more diverse geographic range of suppliers. The Rest of Canada, Greater Vancouver area, International, the Columbia Basin and United States were the most important areas. The Columbia Basin region was the dominant customer location. However, International and United States and Rest of Canada were important to some businesses.

Businesses in the finance and insurance sectors indicated that air freight is important to their business but made more extensive use of couriers, postal service and personal vehicles. Respondents involved in air freight indicated that they are most satisfied with courier and customs broker services.

Survey participants who responded to air cargo issues focused their concerns with airports in the Columbia Basin region including:

- Flight cancellations at Castlegar Airport.
- Limited access to airports.
- Minimum four hours travel to nearest airport that has minimal weather delays.
- Unreliable airport or the need for a reliable airport

One respondent indicated that there are limitations of some airlines (AC) regarding live cargo transport.

11.8 Use of Personal or Company Vehicles Survey Findings

Businesses of all sizes use personal or company vehicles to address transport and logistics needs. Respondents from the manufacturing, retail trade, tourism, accommodation and food and beverage, agricultural and other services were among the survey respondents who indicated the highest use of personal or company vehicles. Delivery reliability is an important factor. Many respondents noted the importance of reliability and safety of the highway network in meeting their business needs.

12 TRUCKING SERVICE

12.1 Less Than Truckload (LTL) Trucking Services

Less Than Truckload (LTL) means a shipment that does not require a full 48-or 53-foot trailer. There are many carriers that specialize or offer this service and, like full truckload carriers, the LTL carriers themselves specialize in different services such as lift gate and residential pickups and deliveries, guaranteed services, freeze protection, transit, and bottom line costs to name a few.

LTL carriers require a network of terminals and generally operate with hub-and-spoke system of pickups and deliveries. LTL service is less competitive than truckload service, because the relatively high fixed cost of terminal operations and regularly scheduled services represent a barrier to entry in the otherwise deregulated trucking industry.

Rates for LTL freight are determined by shipment characteristics, weight, pick up and destination locations (in the transportation industry this is commonly referred to as the “lane”), and any additional services required to meet the shipper’s and consignee’s needs. The main factors affecting LTL shipping rates⁵⁴ include:

- Distance.
- Weight.
- Shipment dimensions, density⁵⁵ and value, stow-ability, handling and liability.
- Accessorials - Fuel surcharges are the fuel costs associated with the lane of a shipment and added on top of line haul costs. Extra charges for transportation services including packing, unpacking, long haul fees and extra pick-ups. Freight carriers may also charge extra fees for trailer detention, re-delivery, fuel increases, and other expenses or extra services. The biggest difference between accessorials and surcharges, special service codes, and other fees that the major carriers charge is that, for the most part, they are assessed and applied post-shipment.

From a pricing perspective, a standard LTL shipment is considered dock-to-dock, business-to-business. This means when the driver arrives for pickup, he expects to be able to back his truck up to a loading dock. From there, the shipper will load the freight on to the back of the truck using a forklift or pallet jack. The freight will then be in transit until it arrives for delivery to another business dock.

⁵⁴ [The Less-Than-Truckload Guide: From the Basics to Best Practices for Complete Mastery](#), Cerasis.

⁵⁵ Freight density is the ratio of weight to volume expressed in per cubic foot (pcf) measurements. Shipments that take up a lot of space for their weight will be in a higher freight class and generally cost more to ship. Shipments that are heavy and compact will be in a lower freight class and generally less expensive to ship.

LTL trucking competes with courier service for smaller parcels (typically up to 68 kg) and shipments with multiple parcels.

12.1.1 LTL services in the Columbia Basin

The Columbia Basin is served by several regional and local carriers. The major carriers are listed below.

LTL Carriers in the Columbia Basin			
Carrier	Area Served	Own Service Hubs	Agents
Clarks Freightways	BC	Castlegar, Cranbrook	
Van Kam Freightways	Western Canada	Castlegar	Cranbrook, Creston, Revelstoke, Valemount
Overland West	BC and Alberta	Castlegar, Cranbrook	
Manitoulin	National	Cranbrook	
Golden Transfer	Local	Golden	
City Transfer	Local	Revelstoke	

Of the larger carriers, only Clarks Freightways offers temperature controlled (“reefer”) service. Regional carriers connect with national carriers (“interlining”) for shipments outside the region; for example, Canadian Freightways shipments are handled by Overland West for shipments to and from the Columbia Basin. In addition to their own terminal in Castlegar, Van Kam Freightways provides service through local trucking company agents in Cranbrook, Creston, Revelstoke and Valemount.

Transit times for LTL shipments from the Lower Mainland to communities in the Columbia Basin are shown below, based on information from company websites. Not all communities have daily service from each carrier.

LTL Transit Time (Days) for Shipments from Burnaby					
Community	Clarks Freightways	Van Kam Freightways	Overland West	Manitoulin	Canadian Freightways
Castlegar	1	1	1	2	3
Cranbrook	1	1	1	1	3
Fernie	2	2	1	2	3
Kimberley	1	2	4	2	3
Nelson	1	1	1	2	3
Revelstoke	1	2	1	4	2
Rossland	1	1	1	3	3
Trail	1	1	1	2	3
Creston	1	2	1	1	3
Golden	2	3	1	2	3
Fruitvale	1	1	1	2	3
Kaslo	1	2	5	3	4
Nakusp	1	2	5	4	4
New Denver	1	1	5	3	4
Radium Hot Springs	2	3	1	2	3
Salmo	1	1	1	3	4
Silverton	1		5	3	4
Slocan	1		5	3	4
Valemount	1	2	2	2	2
Warfield	1	1	1	2	3

12.1.2 Less than Truck Load Survey Findings

The retail trade (23%) and manufacturing (19%) were the two most important sectors using LTL services. Other sectors of significance included the wholesale trades, accommodation and food service other services and the construction and related services sectors. However, businesses from across all of the sectors indicated that they use less than truck load service to some extent.

Business that use less than truck load service also use courier service (83%), postal service (81%) and personal or business vehicles more frequently than the other services.

The product attributes for LTL users include heavy (43%), high value (40%). LTL is broadly used for cargo with other products attributes; the least frequently mentioned was personalised products (16%).

Users of LTL service tend to operate their business from larger facilities with over 20% operating from premises over 10,000 square feet. The most frequent (35%) premise size is 1,000 to 4,999 square feet.

Delivery reliability (76%), shipments being complete, on time and damage free (73%), availability of goods (57%) and access to suppliers (54%) were the most frequently cited factors influencing LTL customers' current logistics practices.

LTL user respondents indicated that in order of importance they source supplies from the Columbia Basin, Greater Vancouver, Alberta, the Rest of British Columbia, Rest of Canada, International and United States. The businesses primarily sell their goods to customers in the Columbia Basin but customers are also located in the Rest of British Columbia, Alberta, Rest of Canada, International, Greater Vancouver and the United States.

LTL users with heavy products expressed the most dissatisfaction with their inbound logistics practices when sourcing supplies from Greater Vancouver, the United States, the Columbia Basin and the Rest of British Columbia, Rest of Canada and then Alberta.

LTL respondents from the manufacturing, retail trade and wholesale trade sector expressed the highest level of dissatisfaction with their current inbound logistics processes. LTL users in the arts, culture, entertainment and recreation sector along with agriculture and food and beverage producers indicated dissatisfaction with LTL services for outbound shipments.

LTL Issues

Comments on LTL services included the following:

- Need consistent, affordable shipping without add-ons.
- Cost of brokerage vs complexities/lack of knowledge for brokering our own incoming shipments.

- Rates.
- Negotiating backhauls to get best rates.
- Receiving partial truck loads based on our needs. We do our best to maximize truck load deliveries, but sometimes it's not in our best interest especially if materials/parts/equipment are for emergency related work.
- We and our suppliers have tried complaining, switching transport companies. Especially for freight/trucked good on a pallet the options are very limited here and we never have a good experience with this.

Temperature Controlled – Less than Truck Load

Many survey respondents indicated that issues associated with food, perishable goods and live animal logistics (usually LTL) are among their three biggest transport and logistics issues. The breadth of issues faced is captured in the following comments:

- Access to refrigerated semi for frozen goods & LTL shipments locally.
- The ability to easily ship frozen products.
- Local storage or aggregation for local sales of frozen products.
- Near monopoly on refrigerated freight -Clark Freightways.
- There is only one LTL refrigerated shipping company, costs are high and service is unreliable.
- I cannot get my product out of this valley as it requires refrigeration. There are shipping companies who say they can do it but they do not have a schedule and offer the service at a ridiculous cost that does not make sense for us as we would then lose our margin.
- Specialized transport for frozen food.
- No refrigerated shipping available to certain areas.
- We deal with perishable products so if we're shipping long distances most shipping companies hold over shipments in warehouses and if we can't make a full load then it can take many days for product to arrive.
- Lack of freight services equipped to handle the kind of materials shipped to me.
- Lack of refrigerated transportation is an extreme hindrance to the desired growth of my business, currently volumes are too small for service so products are poorly handled using personal vehicle
- Temperature controlled shipments to customers.
- Heat in the summer.
- Reefer delivery out of area - to Alberta or West.
- Refrigerated transport at an affordable price when I need it.
- We ship a perishable item weekly. It must get to us within 24hrs and not frozen or overheated. It's difficult to have them delivered reliably.

Agricultural Related

A small number of respondents identified agricultural related issues as their biggest transport of logistics challenge illustrated by the following comments:

- Food transportation from local farmers to our restaurant.
- Time off farm for delivery.
- Staff time to both source and pick up from the farm.

Animals/Live Cargo

A small number of respondents identified animals/live cargo related issues as their biggest transport of logistics challenge illustrated by the following comments:

- Long and dangerous travel to ship live animals to an inspected abattoir so I can sell into the retail and restaurant market. Long distance to pick my carcasses up to deliver to local processor.
- Live cargo.

Product & Information Handling by Transport Companies

The quality of transport service was a concern to some respondents. Sentiments expressed included the following:

- Ability to track and find missing packages.
- Care and attention of the freight.
- Claims and proof of damage or theft can be difficult.
- Damaged shipments (in general), problems with damage due to interlining (change of carriers both truck or intermodal from rail to truck).
- Drivers who understand how to handle high value shipments with care.
- Freight damage.
- Need shipping companies to be accountable for loss and damage.
- No insurance available for artwork.
- Poor handling of product by trucking companies.
- Receiving everything we ordered.
- Quality Control.
- The products and invoices coming in a week apart.

12.2 Truckload Services

Truckload shipping is the movement of large amounts of homogeneous cargo, generally the amount necessary to fill an entire semi-trailer or intermodal container. A truckload carrier is a trucking company that generally contracts an entire trailer-load to a single customer.

Truckload carriers normally deliver a semi-trailer to a shipper who will fill the trailer with freight for one destination. After the trailer is loaded, the driver returns to the shipper to collect the required paperwork (i.e. Bill of lading, Invoice, and Customs paperwork) and depart with the trailer containing freight. In most cases the driver then proceeds directly to the consignee and delivers the freight him or herself. Occasionally, a driver will transfer the trailer to another driver who will drive the freight the rest of the way. Truckload transit times are normally constrained by the driver's availability according to Hours of Service regulations and distance. Typically, truckload drivers will transport freight at an average rate of 47 miles per hour (including traffic jams or queues at intersections).

Because truckload carriers are asked to ship a wide variety of items, a truckload carrier will often specialize in moving a specific kind of freight. Some carriers will primarily transport food and perishable items, whereas others may specialize in moving poisonous and hazardous materials. Carriers may only transport specific commodities because different equipment and/or insurance is needed for other commodities.

12.2.1 Truckload Survey Findings

Twenty per cent of retail trade and manufacturing sector respondents use full truck load service. Accommodation and food service (13%), construction and related services (8%) and wholesale trade (6%) were also significant respondents along with forestry and agriculture. However, full truck load service is used by the other sectors, though less often.

Truckload service is used for products with the following attributes: heavy (55%), high value (44%), mass produced (29%), non-perishable (31%), high volume (less dense) (25%). Truckload service is also used for products with other attributes but to a lesser extent.

Respondents who indicated that they use truckload service have warehouses (63%), forklifts (55%), truck loading bays (51%), and the ability to weigh cargo (25%). A few firms have rail sidings and the ability to weigh vehicles.

Respondents who indicated that they use truckload service operate from generally larger premises. Twenty-six per cent operate from premises over 20,000 square feet and 22% from premises from 5,000 to 9,999 square feet.

Truckload customers place very high importance on delivery reliability (85%), product order being complete, on time and damage free (83%), price of ground transportation (71%), and time needed to deliver goods to client (54%).

In order of importance, truckload customers source their goods from the Columbia Basin, Greater Vancouver, Alberta, Rest of British Columbia, Rest of Canada, International and the United States. The Columbia Basin was the predominant customer location. However, the Rest of BC, Alberta, International and the United States were also important. Greater Vancouver was the least important geographic market.

The sectors that expressed the highest level of dissatisfaction with truckload services for inbound logistics were the retail, accommodation and food; wholesale trade; and manufacturing. For outbound logistics, respondents from retail trades, accommodation and food service and agriculture and wholesale trade sectors expressed dissatisfaction with truckload services.

A significant number of survey respondents indicated that trucking issues are among their three biggest transport and logistics issues. The list below illustrates the broad range of comments received in the survey:

- The business is in a rural location so it's more expensive to ship and receive and not all trucking outfits will come to site.
- Trucks coming directly from Cranbrook are often full.
- The availability of pup type trailers.
- The added cost of shipping goods to larger centers from the Kootenay region. This must be added to the cost of the product, which gets passed on to the retailers and then end-consumer making Kootenay products more expensive than others in the market.
- Most freight companies in our industry (waste and recycling) don't even want to deal with the Kootenay region and many can't even get here in the winter (weather, road conditions, time it takes to get back to main highways that put commercial drivers over their daily driving limit).
- Shipping my products to customers is biggest consideration.
- We must rent warehouse space in both Creston and Nelson and bring the product to our business using our own trucks.
- We are on Highway 3A at Gray Creek BC so very few truck lines come this way.
- Lack of decent Class 1 drivers.
- Driver Training.

13 EXISTING TRANSPORT SERVICES & POTENTIAL IMPROVEMENTS

There are several factors which impact the cost and availability of the various transportation modes and logistics services available to support business retention, growth and expansion in the Columbia Basin, including:

- The relatively low density of population means that shipment volumes are relatively small, making it difficult to achieve efficiency through economies of scale, particularly where frequent service is desired. As a result, businesses in the region experience pricing pressure on their inbound goods to compete with alternative communities.
- Long distances from major urban centres (that either act as centers or distribution or sources of supplies) can result in lengthy travel times for ground transportation service providers.
- The mountainous terrain and variable climate can disrupt and delay access to, or travel within, the region, particularly in the winter. Thus, there can be challenges associated with timely replenishment of items that experience a “stock-out”, or whose demand is difficult to forecast.

New and emerging electronic channels for purchasing and delivery are influencing consumer and tourist expectations around delivery reliability and timeliness. Rising consumer expectations are especially important in the tourism sector where guests travel into the region to immerse themselves in higher-end tourism products and experiences. The quality of the visitor experience is increasingly linked to the performance of the transport and logistics system.⁵⁶

13.1 Service Quality

The survey results and information gathered from discussions within the region indicate that in general shippers are relatively satisfied with existing services. Satisfaction was highest with the most widely used services – postal parcel and courier services.

Within the most widely used services – small parcel service by postal, bus or service and LTL trucking – shippers generally have a variety of competitive options.

Due to the low volume of shipments in the Columbia Basin, courier services do not generally offer the overnight services which are available in large urban centres. As a result, there are some businesses which require specialized services that expressed concerns over current levels of service quality. For some businesses, the lack of overnight courier service is one of their most pressing transport and logistics issues. For example, there are a small number of shippers who need to rapidly ship or receive small parcels to or from destinations around the world. Other businesses simply would benefit from overnight service from major domestic markets.

⁵⁶ “Customers want more: 5 new expectations you must meet now: More personalization, more options, constant contact, listen closely, respond quickly.” <http://www.customerexperienceinsight.com/customer-expectations-you-must-meet-now/>

13.2 Competition and Rates

There are a variety of competitive options for shippers in the Columbia Basin. In the small parcel segment, shippers can choose between postal service, Greyhound courier service, and multiple courier companies; and for larger shipments have multiple LTL carriers to choose from, most with levels of service comparable to the couriers. Truckload service is generally available, though where truck traffic is sparse a lack of backhaul freight on low volume routes may make rates more expensive than for locations on more heavily travelled routes. Competition in the rail sector is limited by the extent of the rail networks, but shippers have successfully bridged the gap to competing carriers through use of transload facilities.

Many shippers identified transportation costs as a major concern. To the extent that costs are high due to the terrain, climate and demographics of the region, it is challenging to provide service at lower rates, particularly with steadily rising expectations regarding transit time and reliability for shipments. Within the courier and LTL sectors, additional competitors might result in a short-term reduction in rates, but reduce the traffic volumes for existing carriers below the levels which could support ongoing terminal operations in the region. Carriers have already adopted strategies to limit terminal costs within the region, using local trucking companies or retail businesses as agents rather than maintaining company terminals.

13.3 Current Logistics Practices

Based on the survey results, most of the businesses in the Columbia Basin have been in operation for a long time.

In the retail sector many of the businesses, purchase their suppliers from wholesalers who also negotiate the transport options and shipping volumes required for an all-inclusive price for delivery into the region. Direct discussions with business owners and the results of the survey suggest that in many instances dealing with speciality wholesalers that cater to an industry market segment is very effective for managing transport related costs.

For several small businesses in the retail trade there is a need to source their product line from a wide variety of wholesalers and geographic locations. The rationale offered from these firms was to offer the customer a complete shopping experience, or to provide goods that would clearly differentiate their business the customer experience as a way of competing with major urban centers and the impacts of e-commerce. The results of a high differentiation strategy mean that it is difficult for these businesses to achieve the economies of scale needed to lower transport costs.

Many respondents indicated they have not adopted any strategies to overcome the challenges of distance to markets. Few indicated that training on shipping and logistics best practices would be helpful to their

business. Only a third of respondents responded to the question regarding the potential for collaboration to improve transportation services, and of these many saw little potential.

13.4 Is Shipping & Logistics a Barrier to Economic Development?

From an economic development perspective, the key question is the extent to which shipping and logistics issues act a barrier to economic development in the Columbia Basin.

The results of our analysis and the survey findings strongly suggest that existing businesses have aligned their businesses to the strengths of the transport and logistics system that serves the region. Among those businesses that have developed a strategy, shippers employ a variety of best practices such as consolidating shipments to reduce transportation costs, collaborating with other shippers, bulk purchase from a single supplier, the use of freight brokers to obtain lower rates, warehousing, and other solutions.

The results of our analysis also suggest that the transport and logistics system does not unduly restrict businesses' ability to scale their operations and growth. However, businesses with low value and/or heavy products are likely to face challenges in competitively accessing distant markets. For micro-entrepreneurs, it may mean that selling their products beyond the region will not yield a sufficient financial return to overcome the shipping and transport costs. These businesses may need to diversify their product line or focus on the local market.

In summary, the present shipping and logistics system does not appear to act as a barrier to business retention and expansion in the Columbia Basin. However the location, topography and climate of the Columbia Basin and the characteristics of current transportation services will affect the type of businesses which are likely to consider the region attractive for new developments.

The fastest growing communities in the Columbia Basin over the last five years include Fernie, Invermere, Kimberley, Rossland and Revelstoke. A portion of this growth can be attributed to amenity migration, the movement of people based on the draw of natural and/or cultural amenities. In addition to increasing the local demand for goods and services, amenity migrants can contribute to new business formation within the region. These migrants may choose to locate their businesses in the Columbia Basin for lifestyle reasons rather than business fundamentals, and rely on advanced technology to facilitate a “distributed workplace that allows urban professionals to work anywhere”.⁵⁷ The needs of amenity migrants are likely to drive increased demand for airports, the Internet (broadband connectivity) and the need for first and

⁵⁷ The Search for Paradise: Amenity migration and the growing pains of western Canadian mountain towns Presented at the Canadian Political Science Association Vancouver, British Columbia, June 2008
Lorna Stefanick Associate Professor, Athabasca University <https://www.cpsa-acsp.ca/papers-2008/Stefanick.pdf>

last mile delivery services to enable them to engage in global commerce from locations of their choosing. In the Columbia Basin, innovations in these services may lag those that are occurring in the major urban centers. Nevertheless, the amenity migrant and tourism guests visiting the region have not changed their consumer expectations and will expect rural communities to offer similar, if not comparable, service levels for logistics and transport services.

14 INITIATIVES TO IMPROVE SHIPPING & LOGISTICS IN THE COLUMBIA BASIN

The results of the electronic survey, our discussions with Columbia Basin businesses and our analysis of existing services indicate that in general the shipping and logistics system serving the Columbia Basin functions well. However there are some specific issues identified in the course of our study which appear to be of sufficient concern to Columbia Basin businesses to warrant further activity.

14.1 Cold Chain Logistics

During our research, we heard from a number of businesses with a particular interest in temperature controlled (“cold chain”) transportation services for food logistics. We heard from several businesses in the West Kootenay corridor who expressed a keen interest in expanding cold chain services, and enthusiasm for collaboration to achieve their objectives.

Concern over service quality and costs of reefer service came primarily from shippers involved in food logistics, including retailers sourcing from both local and outside sources and local producers wishing to expand their local markets. The interest in expanded reefer service is also spurred by the growing trend to local sourcing of food (as popularized in the ‘100 Mile Diet”) and farm-to-table movement for commercial restaurants. This involves small and frequent shipments among local communities, while the existing commercial transportation system is primarily oriented to shipments into and out of the Basin.

Currently the only sizable trucking company offering regular reefer service to the Basin is Clark Freightways, with regular Less Than Truck Load (LTL) service from their temperature controlled cross-dock facility in Coquitlam. The company has a large, modern pickup and delivery fleet equipped with reefers, cold-walls, temperature probes, and other specialized handling equipment, and offers access to short-term, multi-temperature storage (frozen, cooler, and dry) throughout their network of service centers. In the Columbia Basin, Clark has service centers in Castlegar and Cranbrook.

Some survey respondents offered thoughts on ways to improve cold chain services, including some form of local pick-up/delivery, aggregation, refrigerated warehousing/storage and distribution of farm products. Several expressed interest in controlled affordable offsite storage solutions.

Temperature controlled or refrigerated (reefer) service is inherently more expensive than regular LTL service. Capital costs and operating costs are higher. Trucks equipped with reefer units can also be used for dry freight, but the weight of the reefer unit reduces the payload capacity. In the U.S., refrigerated trailers account for 13% of the active trailer population, compared to 56% for dry vans and 31% for other

specialty trailers (flatbed, tanker, etc.).⁵⁸ Because the share of total freight which requires reefer service relatively small, it can be harder to aggregate sufficient volume to take advantage of truckload economies of scale in line haul operations.

Given the high level of interest in cold chain logistics, we recommend a market study be undertaken to evaluate the commercial feasibility of enhanced transportation and warehousing services in the West Kootenay. The study could encompass:

- Existing and potential demand for cold chain logistics services.
- A more detailed evaluation of current services.
- Potential improvements and business models for implementation.
- Financial analysis.

To facilitate exploration of alternatives, a working group of interested shippers could be created to oversee or advise on a technical study to examine the commercial feasibility of various transportation service and/or warehousing options for improving cold chain services, based on existing and potential levels of demand, potential benefits and costs, and implementation options.

A pilot project consisting of a rudimentary message board for exchanging information might be valuable in providing an indication of practical interest among regional shippers; should this prove effective, it may be worthwhile to invest resources to develop a more sophisticated service.

14.2 Improved information Resources

In the survey results and in meetings a significant number of businesses noted the potential for improved efficiency through sharing of information on the demand for and supply of transportation services, by enabling consolidation of shipments among multiple firms and to take advantage of backhaul rates.

Contemporary load boards are web-based services which enable shippers to post information about their shipping requirements (shipment size, origin and destination, and schedule) and for carriers to offer their services and negotiate rates. Shippers already have the option of using existing load boards or freight brokers to negotiate lower rates. However, a regionally-focused load board service might be a more effective way of sharing information and building relationships within the Columbia Basin. A pilot project consisting of a rudimentary message board for exchanging information might be valuable in providing an indication of practical interest among regional shippers, if there is an organization which could host it. Should this prove effective, it may be worthwhile to invest resources to develop a more sophisticated service.

⁵⁸ "Can Reefer Trailers Carry Dry Freight? You Bet" Strive Logistics <http://blog.strivelogistics.com/can-reefer-trailers-carry-dry-freight-you-bet>

14.3 Courier Service Improvement

Many firms indicated a desire for improved levels of courier service, particularly for communities located along the north-south highway corridors. Service improvements suggested by shippers relate primarily to same day express courier and overnight courier delivery. Further research to examine methods to improve the service levels for courier traffic moving in the region could be undertaken to estimate the potential demand and to connect with existing service providers to explore methods to implement enhanced services. This could involve the development of a pilot project, where a negotiated service level would be provided by a private sector carrier, and the risks and rewards associated with the use of the improved courier service would be shared by members of a courier shipping pool. Potential infrastructure investments in some rural areas to support improved courier service could also be explored. Many rural businesses are not located sufficiently close to a courier office for picking up their shipment.

Collaboration and pilot projects to facilitate service improvements could help to ensure that unmet needs do not limit economic development. For example, during the peak tourism season or special events, there may be a heightened demand for courier service. However, a lack of awareness amongst courier companies of the changing demographics within the Columbia Basin and expectations of visiting guests may preclude the introduction of service enhancements that would be beneficial to the long-term sustainable growth of the community and region. Initiating pilot projects and working collaboratively with service providers and customers can lead to important learning outcomes. Applying these local solutions and insights will be essential for facilitating new business formation by amenity migrants.

In conjunction with local Chambers of Commerce and existing service providers, a discussion around courier service levels in the Basin could be facilitated. Discussions should begin with the recognition that standard courier service is for the most part is available within the Columbia Basin, and most current users are relatively satisfied with service levels. However, rising customer expectations in both the consumer and business-to-business marketplace mean that the importance of courier service levels will increase over time.

14.4 Education and Outreach

One possible action to pursue as part of an economic development strategy is to engage in education and outreach activities directed at either the business or government sectors.

For the business sector, this study can serve as a resource for economic development activities including business retention, expansion and new investment attraction. The presence of many mature businesses indicates that they have effectively aligned their businesses to the strengths of the transport and logistics system that serves the region. Among those businesses that have developed a strategy, shippers employ a variety of best practices such as consolidating shipments to reduce transportation costs, collaborating with other shippers, bulk purchases from a single supplier, the use of freight brokers to obtain lower rates, warehousing, and other solutions. These examples provide valuable information on logistics practices

within the region which can be utilized to help existing and new businesses to improve their logistics practices.

Business expansion and retention is also influenced by the skill set of the local workforce. While many of the smallest or oldest operating businesses did not feel increased education and training would be helpful, the aging work force suggests that the needs for shipping and logistics training may increase over time. The largest employers among the survey respondents expressed the least satisfaction with their staff's knowledge of shipping and logistics best practices and warehousing operations. Some very small business also indicated an interest in training. In many instances, the need for training and education is of a practical nature; for example, obtaining information on less-than-truck load costs, or the optimal inbound or outbound courier or small parcel shipping arrangements can be extremely time-consuming due to the complexity of the options and charges. A recommended opportunity to pursue could be to engage with local Chambers of Commerce, Small Business BC and service providers to develop fact sheets, webinars, or training sessions on specific issues to a broad spectrum of business owners in the area. Finding a sponsor to help offset costs, or pursue any number of partnership arrangements in providing education and outreach on the shipping and logistics topics most relevant to business owners in the Basin is a recommended step.

Education and outreach efforts to engage in are not just limited to the business sector but need to include government agencies that influence the provision of shipping and logistics services or infrastructure in the region. In general, the survey respondents did not identify specific regulatory issues that need the attention of government policy makers. However, from an economic development perspective it is important for there to be a non-political voice that gives rise and attention to the importance of issues such as the following:

- Rural postal delivery service and standards,
- Highway maintenance standards,
- Airport and air service reliability.

15 APPENDIX A: DETAILED SURVEY RESPONSES ON POTENTIAL TRANSPORT & LOGISTICS SOLUTIONS

15.1 Existing Logistics Practices

Recognizing that many businesses in the Columbia Basin are long established and mature firms, the survey asked respondents to briefly describe any **methods that have helped their business overcome distance to markets for either suppliers or customers**. Themes that emerged included: air transportation, backhaul trucking, collaboration with others, delivery systems, consolidation, electronic commerce or tools, family and friends, own vehicles, rail, suppliers and warehouses as examples of existing practices used by the business community. The results demonstrate that no single solution will work to improve transport and logistics issues. The survey respondents provided a variety of examples.

Air

One respondent in the aircraft charter business indicated that their business receives and ships parts for our own use.

Backhaul Trucking Rates

A small number of respondents indicated they actively seek to obtain backhaul trucking rates by:

- Using grain haulers from Alberta on their backhaul from Vancouver.
- Calling freight companies to get back haul rates.

Collaboration

Respondents indicated that they collaborate with others to help overcome distance to markets in the following manner:

- Companion shipping inbound with local businesses to access par minimums.
- I will make a larger order to share specialized materials with my competitors/colleagues to save on cost of shipping.
- Some of our sub-contractors ship direct with our branding on the shipment so we do not have to charge an extra shipment fee from us to Grand Forks.
- Use an informal connection of other trucking companies to transport my goods, reliable but scheduling is less than ideal as there are delays.

Delivery System

Courier, Postal & Bus

In the small parcel sector involving courier, postal or bus service, several respondents indicated that they actively manage parts of the delivery system. For example,

- FedEx via Canada Post at Balfour Post Office.

- Keep a Post Office box in the states meeting courier to drop off packages when no drop off station available.
- Private courier use. However, often parcels get lost.
- We use a courier that goes between Trail and Nelson on a regular daily route and have negotiated a cheaper rate for daily service at their schedule.
- We also use Greyhound Bus a lot.

Consolidation

Some businesses have actively managed their shipping and logistics issues by the following techniques:

- Full truck loads and a consolidation point in Vancouver.
- Our business has established a delivery system.
- Grouping shipments for two separate business units then splitting the bill (e.g. paper shipments from Calgary). Also, having sales staff combine deliveries and sales calls.
- Fast freight through Canadian Federation for Independent Business for larger parcels; otherwise use Canada Post to ship.
- My delivery service is great and working to help expand our product.
- Sure, I have used a transport company, shipped goods myself or commissioned people.
- I have used Van Kam and they will interline into Alberta.
- It is on an ongoing situation depending on where part is located and the day and time of week on decision to drive and pick up part.

Electronic Commerce or Tools

Respondents indicated that some of them are using electronic commerce or other tools to help their business overcome distance to markets. For example:

- Continuing to grow our digital communication capacity within limited service providers who are trying to keep up with yesterday's standards and outdated target capacities on limited resources from a small, widely distributed customer base.
- Internet sales, but because my products are in the range of \$20-60, a \$12-15 shipping cost for regular ground means that the cost of shipping is 25-60% of the cost of the product, which seems absurd.
- Moving towards electronic inventory monitoring at customer locations, allowing us to be more efficient in our scheduling of deliveries to customers.

Family and Friends

Some small business respondents indicated that they have used family and friends to help solve a transport need in the following ways:

- Sometimes asking people I know who are traveling for pleasure somewhere to do drop offs for me.

- Sometimes getting their mum to make deliveries if she is going out of town.

Freight Brokers/3PL

A limited number of respondents indicated that they use freight brokers to help address their transport and logistics requirements. Examples, included the following:

- Found better brokers and freight forwarders. Negotiate better rates.
- Utilizing a freight broker (based in BC) reduced costs of courier service dramatically for shipments within North America.
- We Use Freightquote.com for U.S. shipments.
- We currently use a 3PL based out of Kamloops because rates are much more competitive. As of this fall we will also be using a second 3PL based in either Toronto or Quebec.

Own Vehicles

Survey respondents indicated that it was not uncommon for their business to either use a personal or company vehicle to address a transport need. Respondents described their activities in the following way:

- Delivered it myself.
- Do pick up in Cranbrook ourselves.
- Drive it myself.
- Drove it myself that took me away from the day to day running of my business.
- Drove to pick up order to reduce shipping cost.
- I personally take us shipments across border and pay us border user fee to access better shipping options there.
- I have a delivery reefer van pickup and I do a few deliveries with our business van.
- Mostly my own vehicle transportation.
- Purchase our own vehicles for pick up & delivery.
- Purchased our own fleet of reefer trucks.
- Use our own semi.
- Travel to the Okanagan, doing business in person.
- We have done much of our own shipping over the years. This has helped our bottom line, but not our family life. It means a lot more time away from home and less time to improve other areas of the business.
- We have rented u hauls and went and got it ourselves or used personal vehicles.
- We purchased our own delivery trucks.

Rail

Two respondents indicated that they have acted to support the shipment of product by rail to address distance to market issues. The comments received in the survey were:

- Use rail whenever possible.

- We've acquired the shortline railroad in Fruitvale to improve the reliability of our rail access to the markets.

Suppliers

Several respondents indicated that they work with their suppliers to address transportation challenges associated with distance to market. Examples cited include:

- Researched alternate sources located closer to Rossland or who provide free shipping to reduce or eliminate shipping costs.
- Ordering larger quantities at a time to lower the cost.
- Sometimes our suppliers offer "delivered to our door" pricing.
- Changed suppliers to accommodate lower rates by buying as much as we can from BC based suppliers.
- Increased use of local suppliers for regional produce.
- Consolidation from suppliers to secure less pick up fees and bulk freight rates. Have also had vendors bill flat rate and they negotiate shipment of goods decreasing our rate.
- got suppliers to store items within Canada to speed up shipping time: down from 10 days to four-five days
- Tried to join high volume associations for reduce shipping fees. The membership fee outweighed the reduction in shipping fees.

Warehouse

A small number of respondents indicated that they use warehousing to reduce shipping costs. Examples included:

- Paying extra per month for warehouse space in the two major centers around us so that they will store goods for us until we have someone from our business that can go and pick up.
- Using distribution companies that warehouse some of our goods and then transport them to our customers along with other companies that do the same.

15.2 Logistics Services & Infrastructure

Businesses in the Columbia Basin were asked **What should be done to improve logistics services and infrastructure in the Columbia Basin region?** Themes that emerged from the open-ended questions included: air service/airport reliability, ferry service, food/animal & reefer logistics, information and electronic tools, local and regional delivery, origin and destination of transport services, post office, rail, recycling, road and bridges and trucking.

Air Service/Airport Reliability

Some respondents indicated that air service interruptions related to bad weather events or low cloud ceiling are an issue at local airport that impact the reliability of inbound freight shipments. Addressing these issues at the respective airports would make air freight more reliable.

Other respondents indicated that air cargo information or options at the Columbia Basin airports are not well publicized or made readily available. Thus, they do not know what items can be sent to Castlegar Airport quickly (often overnight or two-day maximum) for example.

Survey respondents also indicated that once air cargo arrives at an airport such as Castlegar it can take significantly more time to then arrive in Nelson, as an example. More frequent or faster regional ground delivery would complement the existing air cargo services available.

Animal, Food & Reefer Logistics

A respondent suggested that having an abattoir in the Nelson/Castlegar/Slocan Valley area would be an example of supporting logistics infrastructure and service that could improve animal and food related logistics services in the Columbia Basin.

Some respondents offered thoughts on ways to improve food related logistics practices for smaller scale producers. The ideas generally focused on some form of local pick-up/delivery, aggregation, refrigerated warehousing/storage and distribution of farm products. Logistics infrastructure possibilities include temperature controlled affordable offsite storage solutions. An opportunity for producers to collaborate such as being able to co-pallet products for shipping to reduce costs was mentioned as another possibility.

Some businesses suggested a shipping pool would be beneficial. Other ideas included a possible produce delivery service, including the pick-up of produce at the farm on a weekly basis with prices that were not cost prohibitive for smaller volume shipments.

A farmer in West Kootenay, for example, may benefit from a regularly scheduled truck (combo dry/refrigerated /and perhaps frozen) that picks up and drops off cargo at communities around both the Selkirk loop (including Nakusp) and the Castlegar/Trail/Salmo loop. The aggregation point could be an actual depot in Nelson where items can be collected and dropped off. Perhaps a Creston leg could also be developed and/or a similar system might work in East Kootenay as well.

Survey respondents indicated that small scale food processors could benefit by coordinating a full truck shipment of bottles and/or non-refrigerated ingredients.

Businesses indicated that they feel that delivery services within the region are expensive. Clark Freight Company is the most significant service provider for those with frozen product transport needs in this

region. Several respondents indicated that they would like to see another freight option exist believing that increased competition would improve service levels and price.

Refrigerated, frozen and dry shipping offered weekly for small scale producers from east-west-north Kootenay regions was also mentioned as an emerging issue. A respondent indicated that they know of at least five small businesses that were experiencing this transport issue as a major barrier to growth in their business within the west and east Kootenay regions. Managing their own logistics and transport needs is extremely physically and mentally taxing and takes a toll on their business. However, for this respondent there was no other feasible option.

Other suggestions included cool storage for vegetables and fruit and freezer space for meat; intercity transport between farming communities; a large animal abattoir near Nelson & Slocan Valley; dedicated livestock truckers to abattoir in Creston; and a need for hay and feed transport service.

Information & Electronic Tools

A significant number of respondents indicated that education and information sharing about shipping and logistics topics would help improve the situation in the Columbia Basin.

Some businesses believed that it would be beneficial for the economic development agencies to educate firms in eastern provinces like Ontario that the Columbia Basin is not a hard destination to ship to based on the belief that this information would help educate transport service providers and in turn influence their pricing policies. Respondents did not believe that they deserve huge increases in transport or shipping rates because they were located off the major population centers.

Other respondents believed that shipping companies serving the Columbia Basin would benefit from the information obtained in this study since it will help them identify areas to target and the services required that they could potentially capitalize on. In other instances, the existing transport service provider may be spurred on to improve communication with their existing customers. Some respondents indicated that it is difficult to even find phone numbers and talk to people about a lost or delayed shipment. For example, one respondent gave an example of a shipment left at a warehouse in Cranbrook. The business owner was willing and able to arrange for pick-up of the shipment if they could communicate with someone from the transport company.

The possible benefits of information sharing were not limited to transport service firms. Some respondents suggest that the creation of an avenue to collect and distribute shipping information success stories within the Columbia Basin would be beneficial. When a Basin member finds shippers that can move product without damaging it, they should tell all their friends and everyone should support that shipper and put the other ones out of business.

Still more respondents suggested that the creation of regional/local shipping co-operatives could be helpful to businesses with similar shipping times/needs together to share shipping and logistics costs. For example, collaborative shipping for businesses could involve a shipper or carrier taking several orders from different businesses for a price from Kaslo-Nelson, Kaslo-Castlegar, Kaslo-Trail, Kaslo-Creston, Kaslo-Cranbrook, perhaps one day a week. A similar arrangement to other destinations may also be possible.

Other respondents indicated that physical and digital distribution services were underdeveloped, and infrastructure in the Columbia Basin was not coordinated so region-wide planning, and investment does not occur. The solution put forward to fill in gaps with missing or economically marginal services was to offer development support.

Local & Regional Delivery

Survey respondents offered a variety of solutions to address the issues related to local and regional delivery within the Columbia Basin.

Increasing the frequency of courier or local delivery service was a predominant suggestion. For example, one respondent indicated that they only have a courier once a week that comes to their area. In other instances, some respondents thought that it would be helpful to have a courier service that could cross the Harrop ferry. Options to reduce shipping/courier times and costs both in and outbound was also mentioned by survey respondents.

The availability of overnight courier delivery was another area where respondents thought a possible solution might be beneficial. For example, UPS, FEDEX and other major courier companies needed to clarify their service and schedule to certain areas such as the east shore for example.

Infrastructure to support improved courier service was also suggested by some respondents, for example secure drop off stations for courier parcels (something like a more robust community mailbox). In other instances, drop-off counters where couriers could have local phone contacts and deliver might be beneficial. The business could call for pick up and have their shipment picked up without having to pay extra.

Origin and Destinations for Service

Survey respondents offered a variety of areas where they would like to see ground transportation service improvements for businesses in the Columbia Basin. The examples below illustrate the range of local, regional and longer distance markets:

- Need to better serve Slocan Valley / Kaslo.
- More regional shipping service from Golden to Castlegar and other points in the east.

- More competition and quicker service to the Lower Mainland.
- More local freight services going to Alberta and British Columbia.
- Faster shipping to the U.S. Currently many businesses opt to drive items to Northport if they are time sensitive.

Businesses also offered their thoughts on the types of shipping services that would be an improvement over their current situation:

- Overnight shipping option to most major centres.
- One day service to/from major cities.
- Dedicated service within the Columbia Basin.
- More access to and service by standard parcel / small freight services, better communications by standard parcel services when estimating delivery times.
- Better rates for getting shipments to our door.

Post Office

Suggestions for improvements to postal service includes more postal outlets, open late on Sundays and direct delivery from Calgary - not going through Cranbrook-Canada Post very slow.

Rail

Respondents had few suggestions for improving rail service. Some wondered if it was economically possible for the rail mode of transport to be used for more goods. In another instance, a respondent thought it might be beneficial to have a rail freight depot capable of loading and unloading container shipments from Vancouver port located within the Columbia Basin.

Recycling

Some respondents noted the challenges associated with shipping and logistics issues associated with recycling efforts. Opportunities for improvements included:

- Pick up service for recyclable packaging materials.
- Recycle Styrofoam locally.
- Recycle bubble wrap.

To address the needs of recycling, the suggestion that a combination recycling/shipping facility (for mom and pop shops) and a non-profit brokering/shipping organization serving the Columbia Basin businesses would have some uptake.

Roads & Bridges

Survey respondents offered a variety of suggestions for improvements to roads and bridges in the Columbia Basin region. Suggested highway capital improvements included:

- Construct one or two bridges across Arrow Lakes.

- Highway 6 over the Monashees from Fauquier to Vernon to reduce travel time.
- Build a road from Passmore/Vallican along Koch Creck to Fauquier on existing logging roads.
- Build a road from Grey Creek to Kimberly along existing logging roads.

Highway maintenance and safety improvements suggestions offered included:

- Consistent and regular winter road maintenance on highways and side roads.
- Continue to keep highways clear.
- Highway 1 over from Revelstoke to Kamloops to reduce travel time and improve road safety.
- Improve road safety.
- Better road maintenance for our truckers.
- Improve roads so they are not so dangerous in winter so shipments aren't cancelled.
- The roads are not kept in good driving condition in winter.
- Improved road maintenance on the passes and Highway 3, especially during the winter months.
- Roads should be kept in good repair, road closures to a minimum.

Examples of comments offered by respondents included “during the winter months is when I have the hardest time getting deliveries, trucks refuse to come up the valley because of road maintenance”. “Having YRB (Yellowhead Road & Bridge) manage the roads better would be great”.

Trucking

Several respondents indicated that they thought that more trucking companies serving the Columbia Basin would be an improvement based on the belief that more competition would lead to an increase in service, or lower rates. Others believed that collaboration between businesses could lead to improvements. Examples of these sentiments included the following remarks:

- Do not know but if there was a system of sharing truck space on inbound or outbound trips it would possibly help reduce costs.
- The coordination of empty trailers so the units can be loaded both ways.
- Can we fill empty trucks with a central freight co-ordination system?
- Load up trucks heading out empty with items needing to be shipped.

Some respondents offered a locational reason for suggesting collaboration, “being in Creston we are not a major trucking route, I think providing businesses with a list of freight or trucking companies that are going through Creston or doing backhauls through Creston would be good”. Currently we have to run our own trucks and if we need to make an unscheduled delivery it is not possible.” “We need a business that brokers, including sales, distribution and warehousing services”.

Other forms of collaboration offered as a solution by respondents included the possibility of bargaining with freight/courier companies for better 'return' (backhaul) rates for businesses shipping from the Kootenays. There are many transport trucks that arrive full and leave partially empty, especially returning to Vancouver. If they can fill their vehicles with product from the Kootenays, then it would overall be more efficient and help the bottom line. Shipping rates are still quite expensive for us, and just recently increased in the New Year due to the fuel surcharges.

Ad hoc trucking suggestions offered by respondents included the following:

- Shipping companies need to hire more drivers and delivery people.
- Responsible trucking companies who take responsibility for damage.
- Enforcement of commercial vehicle standards so that there aren't too many breakdowns.

Transport Costs & Service Levels

A fair number of respondents offered the thought that it is important to reduce the price of shipping to or from and within the Columbia Basin.

- Maybe a rebate or subsidy for businesses based on volume shipped can be introduced, which translates into economic \$\$ to the area.
- The added shipping costs out of this area are a handicap and added expense and can be make or break for some businesses/products. If our shipping rates were cut in half, we would be able to charge less for our products, meaning they cost less for retailers and in turn cost less for the customers and be more competitive in the market.
- Provide small businesses with lower shipping rates so that we can increase our customer base by reaching a farther geographical sales area with reasonable shipping rates for our customers.

A fair number of respondents also offered their thoughts that speed of delivery and service reliability were important.

- We need service providers who offered fair prices with a set schedule.
- We need a reliable delivery system that includes passenger service as well.

Warehouse & Distribution

Warehouse and distribution suggestions offered by respondents included the following:

- Entice distribution and warehousing companies to establish centres locally.
- Have a warehouse.
- Perhaps a central warehousing facility for businesses which can't afford their own facility.
- Proper consolidation Point in West Kootenay area that would allow companies to pick up their own freight.

15.3 Opportunities for Collaboration

Shipment consolidation is a key strategy to take advantage of economies of scale in transportation. Collaboration among shippers to consolidate their traffic is one method. The survey asked respondents **What possibilities do you see in collaborating with other local businesses for logistics or transportation solutions?**

The respondents' primary reason for considering a collaborative solution was to improve rates and service levels. Specific collaboration based themes that emerged from the open-ended questions included: airports (Castlegar/Trail), information sources for collaboration and electronic tools, logistics services, equipment and facilities, rates and services. Survey respondents also provided insights into why collaboration with other local businesses might not help solve shipping and logistics issues. The details are provided in the material below.

Rates and Services

The respondents' primary reason for considering a collaborative solution was to improve rates and service levels. Businesses expressed the following thoughts:

- Better services and rates from shipping companies.
- Definite possibility with appropriate and reliable inventory management.
- Difficult to say our products are needed sometimes overnight this does not happen like it does in the Lower Mainland.
- I would collaborate with other business to get a volume shipping price. The expansion of my business is directly affected by the price of shipping. Canada Post and Ace Courier are the two companies I use but the prices are too high for on-line shopping.
- Subsidies on goods shipped out and possibly goods shipped in.

Airports

Collaboration between Castlegar airport and Trail airport would solve some problems.

Information Sources for Collaboration & Electronic Tools

Survey respondents expressed a wide variety of thoughts and ideas related to how collaboration and the use of electronic tools might be of assistance in address transportation and logistics challenges in the Columbia Basin. Examples, of the insights provided included the following comments regarding reasons or avenues for collaboration:

- We have talked about collaborative shipping. Unsure how that will work.
- To learn what others are doing to find solutions.
- Improve communication and information network services to outlying areas so local collaboration has infrastructure with robust capacity to get around limitations of lower population, widely distributed across mountains, lakes, and winter roads.

- Seek out the cheapest rates through all shipping companies available.
- There is a possibility to collaborate if someone knowledgeable was to undertake it.
- Shared trucking.
- Talk to your suppliers.
- The Chamber of Commerce is always trying to see if we can discuss collaborating - so often the business owner is too busy working in the business that they (we) forget to work on our business!!!
- There are lots of food production companies that ship, but we all ship in small sizes to various differing places etc.
- Plenty of possibilities. Cost sharing/frequency of deliveries/maximizing load capacities. This does take organization.

Collaboration could involve the use of electronic tool suggested by the respondents:

- Set up a website where everyone can enter in what they need to be shipped in or out in order to collaborate and be efficient.
- Notice board system to share freight delivery between Trail, Nelson, Castlegar, Slocan. Sometimes we need to produce a product in Trail and would like to get it to Castlegar/ Nelson in a few hours. I have no idea what that would look like but someone might...it would reduce the cost to the consumer for locally produced products. I think consumer's value shopping local but need it to be easy.
- Networking data base for companion shipments, Columbia Valley wide directory of businesses, organizations, and special interest groups, searchable by theme or topic of involvement.

Collaboration with service providers:

- Teaming up to make an east Kootenay run weekly with a shipper possible, there is a shipper interested and at least three local businesses wanting weekly service from Nelson-Cranbrook-Kimberly-Invermere and many more small businesses who would be interested.

Collaboration with those within a specific industry segment:

- We are collaborating with restaurants in town to meet minimum shipping requirements from suppliers.
- The biggest problem we've found is nobody seems to know what resources are available from local businesses, including many that work in the food sector. Collaboration can't happen if there is not an inventory of existing businesses.
- Would work well if needs were similar between businesses.

Logistics Services, Equipment and Facilities

Survey respondents offered several thoughts and ideas on how logistics services, equipment and facilities could be used to facilitate collaboration as evidenced by the following comments:

Parcel Service

- Tracking on smaller lighter parcels would be most valuable (within Canada, to USA and international ... would require collaboration with worldwide shipper or postal services worldwide.)

Less than Truck Load

- It would be great to set up sharing as our truck travels throughout east Kootenay sometimes half full only.
- Kootenay-made freight solution with trucks running to Lower mainland, and local warehousing.
- It makes sense to me for similar business to co-ship when shipping or receiving goods.
- We have a couple of good examples where we have been able to collaborate with local businesses to create opportunities that would not be reliably available to them through outside vendors. As our industry continues to evolve to larger, more centralized (and usually more distant) supply points, smaller operators are forced to change how they operate (for example larger storage capabilities), which requires increased investment on their part - which I have long felt is more for the benefit of their supplier-not the local business.

Customs Broker

- I would also like to look at using a Customs Broker, but not at their current rates. For me to take an entire day, do the paperwork and drive to the border and process my shipment, is onerous. The hundreds of dollars they charge is just too much. If we could have a broker which gave multiple businesses a discounted rate, that would be great.

Packaging

A limited number of respondents thought there may opportunities for collaboration in terms of packaging:

- Banding together for packaging - bottles are heavy and expensive to deliver.
- I think it is possible, but for me I like to purchase certain styles of bottles and not every business wants to use the same packaging as then everything looks the same on the shelf.

Routes & Transportation within and to and from the Kootenay Region

Some respondents indicated that collaborative transport solutions within and to and from the Kootenay region would be beneficial to deal with the situations listed below:

- Because our raw materials are all in the Kootenays it would be nice if there was more affordable short distance shipment available. i.e. Slocan Valley to Creston.
- We have no regular routes and every piece is different.
- If other businesses could co-operate to encourage truck lines to use highway 3A it would be a big help.
- Our key suppliers bring their own semi-trucks out this way to service us and similar companies, not sure how else it could be done. We don't have outbound shipping.

- Our product is specialized and requires a dedicated vehicle so we cannot share freight services.
- Rotation on deliver with other local farmers to shared market. But issue is limited to individual's truck space capacity.
- We will piggyback with other businesses to ensure full loads so the shipper is making their margin.
- There is the possibility of joining with other businesses shipping goods from Vernon to Nakusp.

Infrastructure within the Columbia Basin

- By creating and enhancing local supply points, we are also aiming to offer more reliable supply, hopefully allowing the business allocate funds as they see fit, not as is dictated to them by a supplier.
- Maybe a local freight hub for shipping receiving.
- Having access to a temporary location to receive, process and send out goods over a temporary period, which would have proper loading and unloading facilities, equipment such as packing desks, dollies etc. would be very helpful for us. We would use such a facility 4-5 times per year.
- We move a lot of packages, there should be a better martialing yard in Castlegar, let's say the industrial park.

Why Collaboration Won't Work

Several respondents provided their insights into the limitations or difficulties associated with try to implement collaborative solutions. They include the following comments:

- We have put together informal 'group orders' from places like Uline, but that has its own complications sorting out payments and deliveries.
- We work at it but it is really tough to find out who has empty units.
- Shipping isn't on a regular basis so not sure a collaboration would be of much benefit to either ourselves or others.
- Ours is on equipment down basis and maintenance.
- They do not carry the same products or buy from the same suppliers as us.
- Timing...when it needs to go, you can't wait.

- Very few businesses in our area carry the same products that are so bulky.
- Canada Post has a monopoly on delivering the mail. Send a letter to the government to get our post office functioning properly.
- We are too busy with the other parts of our business to take on a logistics project.
- We do almost all our own delivery & pick up - gasoline price is greatest hindrance.
- Ultimately, we must be able to run businesses independently so day to day collaboration is probably not realistic.
- I'm very specialised and therefore not much chance.

