

# Southern Alberta: Growth of Import and Export Opportunities for West Coast Ports

Southern Alberta is a natural transportation and agriculture hub. This research highlights opportunity to grow and develop exports and key segments of the supply chain required to enable goods movement.

Development and Growth of Bulk Business (Liquid and Dry)

# Contents

- Introduction ..... 1
- Overview of Bulk Business (Liquid & Dry) ..... 1
  - Summary of Alberta Exports to the world (2015):..... 1
- Interviews with Southern Alberta Shippers of Export Products ..... 3
- The Bulk Commodity Supply Chain ..... 4
  - Grain..... 5
  - Canola ..... 6
  - Fertilizer ..... 6
  - Oil & Gas ..... 6
  - Machinery ..... 7
- Impact of Zone Inter-Switching Regulations and Changes ..... 7
- Terminals at West Coast Ports..... 8
  - Port of Prince Rupert ..... 8
  - Port of Vancouver ..... 11
  - Northwest Seaport Alliance – North Harbour ..... 23
  - Northwest Seaport Alliance – South Harbour ..... 24
  - Port of Portland..... 26
- Requirements for Development for Future Prospects ..... 28
  - Agriculture Products ..... 28
  - Oil & Gas (Including Propane)..... 28
  - Fertilizers..... 29
  - Machinery ..... 29
- Opportunities ..... 29
- Summary ..... 30
- Van Horne Institute..... 32
- Triskele Logistics Ltd. .... 32
- JRSB Logistics Consulting Ltd. .... 32

# List of Figures

- Figure 1 - Alberta Exports by Categories to the World and Top Export Countries ..... 1
- Figure 2 - Alberta Exports by Categories to the World and Top Export Countries ..... 2
- Figure 3 - Top Countries for Alberta Exports of Turbo Propellers ..... 4
- Figure 4 - Alberta Exports of Turbo Propellers (2015) ..... 4
- Figure 5 - Over Map of the Bulk Supply Chain ..... 5
- Figure 6 - Percentage of Tonnes Handled at Canadian Ports by Commodity Type ..... 5
- Figure 7 - Western Canada Grain Terminal Capacity by Owner ..... 6

## Introduction

The Liquid & Dry Bulk Business in Alberta is a key source of economic growth and includes commodities such as Chemicals, Plastics / Rubber, Wood and Articles of Wood, Pulp & Paper, Base Metals, and Vegetable products. This analysis highlights the size of the market development opportunities from Southern Alberta and some of the key supply chain components needed to facilitate that growth.

The following factors are covered in detail:

- Overview of the Alberta bulk market
- Southern Alberta's bulk export growth
- Summary of the Bulk Supply Chain
  - o Impact of Inter-Zone Switching
  - o Ocean Port Terminals and Capacities
- Opportunities for growth of bulk exports from Southern Alberta.

## Overview of Bulk Business (Liquid & Dry)

The province of Alberta has been Canada's second largest exporter of bulk products (behind Ontario) for several years. The products that are exported from Alberta are extensive with the volumes varying from country to country as set out in tables 1 and 2 below.

### Summary of Alberta Exports to the world (2015):

<b>Alberta Exports by Categories to the World and Top Export Countries</b>						
	Total (\$Million)	Live animals & animal products (\$M)	Vegetable products Includes Crops (\$M)	Animal or vegetable fats and oils (\$M)	Prepared foodstuffs (\$M)	Mineral products (includes Oil and Gas) (\$M)
World	92441	3073	5066	586	1140	63888
USA	80556	2025	812	219	842	63286
USA %	87.1%	65.9%	16.0%	37.4%	73.9%	99.1%
China	3351	265	964	201	20	139
China %	3.6%	8.6%	19.0%	34.3%	1.7%	0.2%
Japan	1593	324	675	30	69	153
Japan %	1.7%	10.5%	13.3%	5.2%	6.1%	0.2%
South Korea	507	48	42	58	20	59
South Korea %	0.5%	1.6%	0.8%	9.9%	1.7%	0.1%
India	103	0	29	0	2	7
India %	0.1%	0.0%	0.6%	0.0%	0.2%	0.0%

Figure 1 - Alberta Exports by Categories to the World and Top Export Countries

<b>Alberta Exports by Categories to the World and Top Export Countries</b>						
	Products of the Chemical or Allied Industries (\$M)	Plastics / Rubber (\$M)	Wood and Articles of Wood (\$M)	Pulp of wood, paper or paperboard (\$M)	Base metals (\$M)	Machinery and Mechanical Appliances (\$M)
World	3990	4414	1083	1931	1521	3726
USA	3255	3808	1034	1014	628	2273
USA %	81.6%	86.3%	95.4%	52.5%	41.3%	61.0%
China	640	151	1	512	94	135
China %	16.0%	3.4%	0.1%	26.5%	6.2%	3.6%
Japan	5	8	34	169	112	8
Japan %	0.1%	0.2%	3.1%	8.7%	7.4%	0.2%
South Korea	8	2	4	92	25	79
South Korea %	0.2%	0.0%	0.4%	4.8%	1.7%	2.1%
India	2	8	0	4	7	24
India %	0.1%	0.2%	0.0%	0.2%	0.5%	0.6%

Figure 2 - Alberta Exports by Categories to the World and Top Export Countries<sup>1</sup>

Figures 1 & 2 clearly demonstrate that the bulk of Alberta exports (87% in dollar value) are destined to the United States.<sup>2</sup> Overall, Alberta’s most important export region outside of North America was Asia Pacific, which received 59% of Alberta’s non-U.S. exports in 2015.<sup>3</sup>

Alberta accounted for 19% of Canadian exports in 2015. This has declined from a 25% share in 2014 due to the decline in oil and gas prices. Natural gas exports have declined sharply as well, due to decreasing world prices and increasing competition from other producing nations.<sup>4</sup> Alberta has grown overall exports more than any other province over the past ten years despite the drop in 2015.

The bulk of the exports from Southern Alberta to countries other than to the United States is comprised of agricultural products such as wheat, barley, canola oil, etc. Our greatest opportunity for the development and growth in bulk exports will be in grains, oils and other crops from Southern Alberta. Bulk commodities, such as wood, paper, pulp, base metals, chemical, plastics and machinery are produced in Northern Alberta and are, therefore, outside the scope of this current study.

<sup>1</sup> <http://www5.statcan.gc.ca/cimt-cicm/section-section?lang=eng&dataTransformation=0&refYr=2015&refMonth=6&freq=12&countryId=999&usaState=0&provId=48&retrieve=Retrieve&save=null&trade=null>

<sup>2</sup> <http://www5.statcan.gc.ca/cimt-cicm/section-section?lang=eng&dataTransformation=0&refYr=2015&refMonth=6&freq=12&countryId=999&usaState=0&provId=48&retrieve=Retrieve&save=null&trade=null>

<sup>3</sup> <http://www.albertacanada.com/business/export/alberta-trade-facts.aspx>

<sup>4</sup> [https://www.albertacanada.com/files/albertacanada/SP-EH\\_AIME-10-year-review.pdf](https://www.albertacanada.com/files/albertacanada/SP-EH_AIME-10-year-review.pdf)

## Interviews with Southern Alberta Shippers of Export Products

To gain a better understanding of the current bulk export market in Alberta, interviews were carried out with multiple stakeholders. The information helped to identify new potential opportunities for exports through west coast ports.

Interviews were conducted with several agricultural companies, two gas shippers, a fertilizer company and a manufacturing company. All of these companies have operations in southern Alberta and some in northern Alberta. The gas companies have their product refined or reprocessed in the Edmonton region (Fort Saskatchewan) and then shipped to market. Alberta exports many products but there are only a few that currently are shipped in high volumes to markets other than the United States. Agricultural products such as grains (wheat, barley, canola and canola oils etc.) comprise the largest volume of commodities exported through the West Coast Ports to Asian markets. These commodities account for about 36% of all non-USA exports from Alberta in 2015.<sup>5</sup>

In dollar value, oil and gas products are the largest export products from Alberta primarily to the United States. However, there have been some recent announcements from AltaGas as to the development of a propane export facility on Ridley Island in Prince Rupert. This facility would export up to 1.2 million tonnes of propane per year. AltaGas anticipates that they will be able to supply up to 40% of that volume, with the remaining volume coming from other producers in western Canada. This project is still pending environmental approval.<sup>6</sup>

Other propane producers also identified opportunities to export through the west coast ports. They stated that their future development of propylene (from PDH which is propane dehydrogenation) as well as polypropylene pellets will be dependent on local North American markets. These producers indicated that exports to other markets through west coast ports have potential (and one has had significant talks with the Port of Prince Rupert).

Most of the fertilizers that are produced in Alberta are also for the North American market. The biggest fertilizer product that is exported outside North America is potash mined in Saskatchewan. The potash industry exporter, Canpotex recently announced that they will continue to export through Vancouver and Portland.

Wood products, wood pulp and newsprint are products that are exported from Alberta. While the United States receives most of these exports, the following Asian countries import newsprint or pulp wood in sizeable quantities. China received 26.5% of Alberta exports in 2015 followed by Japan (8.7%) and South Korea (4.8%). The largest volumes of these products originate in northern Alberta.

A potential growth opportunity for exports from Alberta would be turbo-propellers. Most of the exports of turbo-propellers go to European markets, with the potential to ship turbo-propellers to Asian markets as well. Turbo propellers are exported from Alberta with the bulk going to the United States (about

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<sup>5</sup> <http://www5.statcan.gc.ca/cimt-cicm/section-section?lang=eng&dataTransformation=0&refYr=2015&refMonth=6&freq=12&countryId=999&usaState=0&provId=48&retrieve=Retrieve&save=null&trade=null>

<sup>6</sup> <http://finance.yahoo.com/news/altagas-receives-regulatory-approval-double-131500358.html>

50%) followed by European markets (33.5%), and Asia Pacific markets (8.4%). Figures 3 and 4 below show the overall amounts of exports in \$CAD.

Top Countries for Alberta Exports of Turbo Propellers		
Country	Value	Percentage
United States	\$ 282,451,459.00	50.3%
Switzerland	\$ 63,664,083.00	11.3%
France (incl. Monaco, French Antilles)	\$ 43,503,937.00	7.8%
Italy (incl. Vatican City State)	\$ 40,983,178.00	7.3%
China	\$ 30,572,734.00	5.4%
Poland	\$ 13,461,469.00	2.4%
Australia	\$ 11,666,380.00	2.1%
United Kingdom	\$ 8,895,898.00	1.6%
Thailand	\$ 8,291,802.00	1.5%
New Zealand	\$ 6,869,067.00	1.2%
Top 10 Countries	\$ 510,360,007.00	91.0%

Figure 3 - Top Countries for Alberta Exports of Turbo Propellers

Alberta Exports of Turbo Propellers (2015)	
USA	50.30%
Europe	33.50%
Asia (Pacific)	8.40%
Australia / New Zealand	3.30%
Americas	0.50%
Other	4.00%

Figure 4 - Alberta Exports of Turbo Propellers (2015)<sup>7</sup>

## The Bulk Commodity Supply Chain

The downstream bulk supply chain involves a number of transportation, sorting and storage components.

In western Canada, bulk commodities are typically trucked from the extraction site to a nearby transloading facility where the bulk commodity is transferred into rail cars. Transload facilities will often require storage capacity in order to ensure timely availability of product at the time of loading a train. In some cases, product may be trucked directly to the port depending on proximity and feasibility.

Terminals at the port are specifically designed to handle certain types of export commodities. High volume product, such as grain, is transferred from rail cars to a storage facility where elevators are used to load the product into the hold of a ship. Specialty crops, which are generally shipped in lower volumes, will be stuffed into containers at a separate site close to the port and subsequently loaded at the port onto the ship.

<sup>7</sup> <https://www.ic.gc.ca/app/scr/tdst/tdo/crtr.html>

Below is a supply chain infographic of the bulk supply chain:

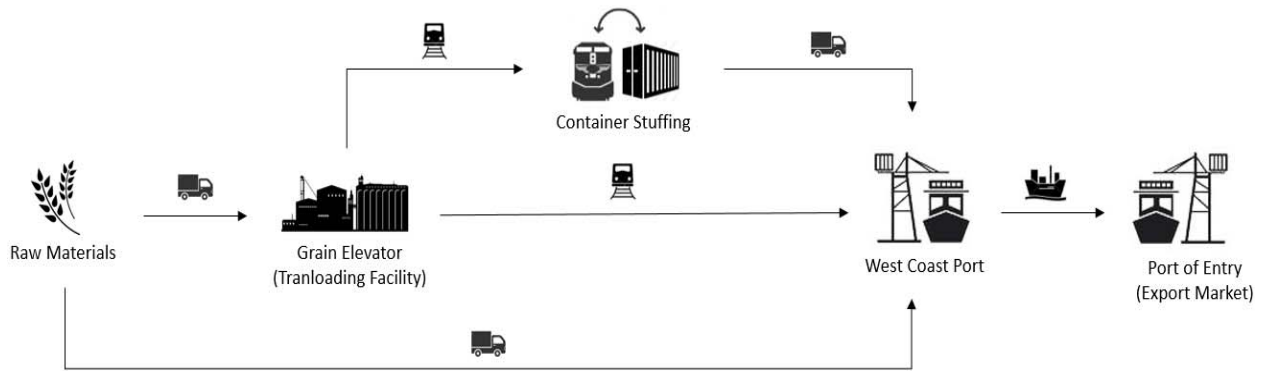


Figure 5 - Over Map of the Bulk Supply Chain

### Grain

Grain plays a major role in exports from southern Alberta with a significant portion being exported to Asia. The majority of grain handled by ports is transported as a bulk commodity with only a fraction shipped in containers. Below is a break down by port:

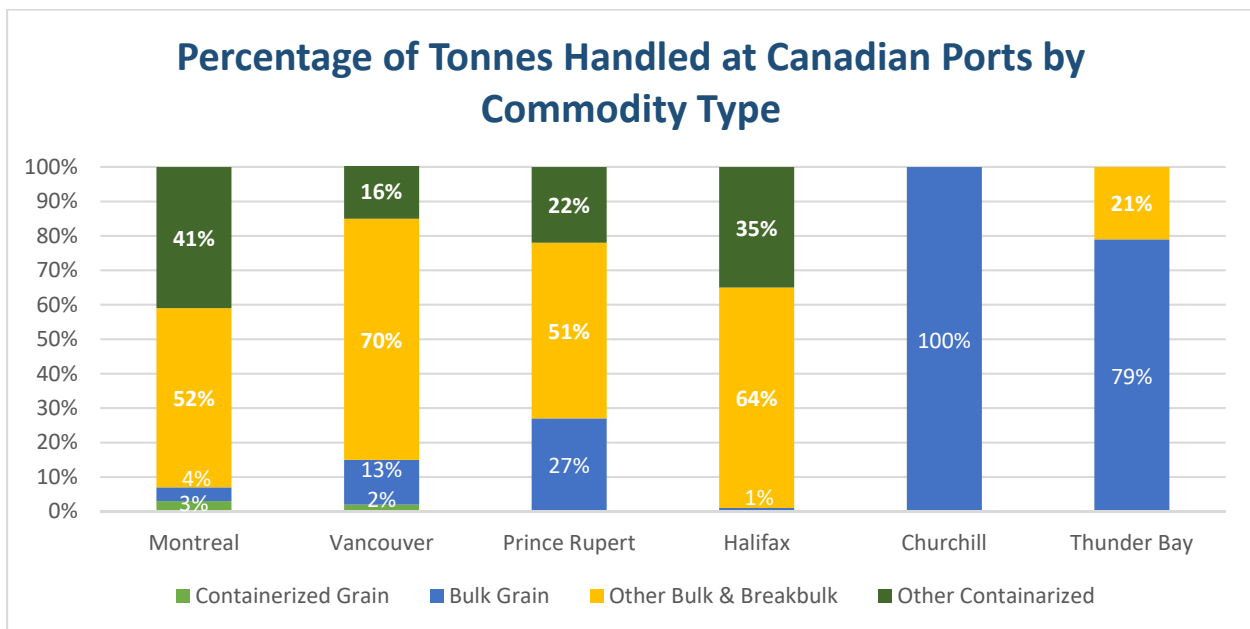


Figure 6 - Percentage of Tonnes Handled at Canadian Ports by Commodity Type<sup>8</sup>

In western Canada, the Port of Vancouver has six grain terminals owned by: Viterra (2), Richardson, Cargill, Kinder Morgan and Alliance Grain. The Port of Prince Rupert has one terminal owned by the

<sup>8</sup> <http://www.quorumcorp.net/Downloads/SupplementalReports/GSC%20Technical%20-%20Marketing%20and%20Moving.pdf>



consortium comprised of Viterra, Cargill and Richardson.<sup>9</sup> Below is an overview of terminal capacity in west coast ports by owner:

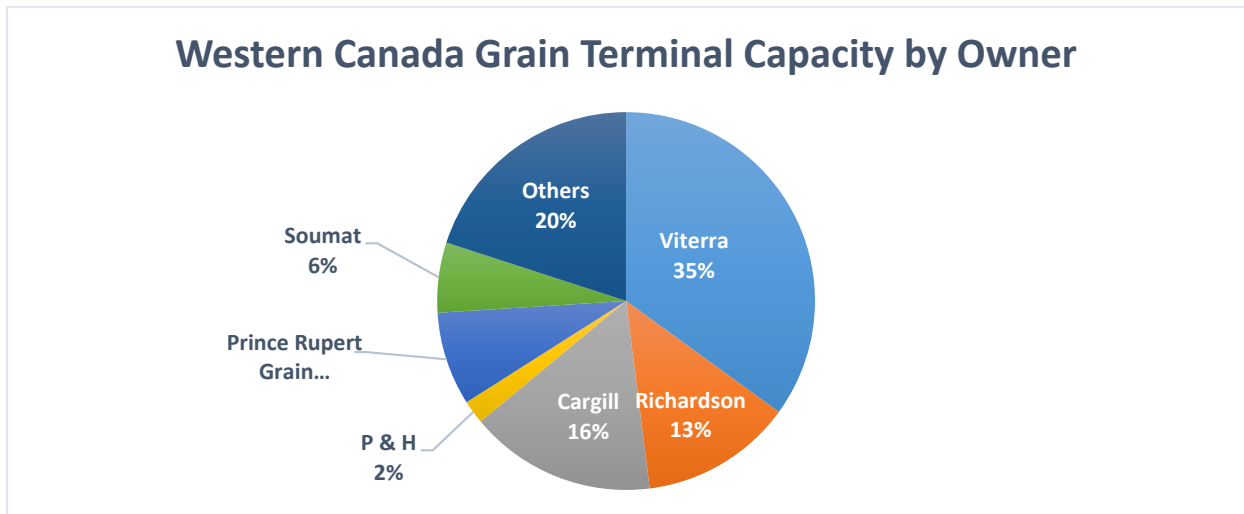


Figure 7 - Western Canada Grain Terminal Capacity by Owner<sup>10</sup>

### Canola

In 2015 Canadian farmers grew approximately 18.4 million tonnes of canola. In October 2016 canola represented 4.4% of all non-intermodal rail traffic.<sup>11</sup> China is Canada’s biggest market for canola seed, accounting for 4 million tonnes of the total 9.5 million tonnes exported. Canola is transported as a bulk liquid, as canola oil, or as a dry bulk in the form of canola seeds. Access to rail transportation has created a bottleneck for exporters in the past as they attempt to get their product to market. In 2013, canola exports fell sharply due to record amounts of agricultural product competing for limited transportation resources combined with weather related delays. Creating viable alternative transportation options for this commodity is vital to minimize supply chain disruption.

### Fertilizer

Within the fertilizer group, potash from Saskatchewan is the main commodity that is exported. Alberta does not have any potash mines and other fertilizers produced within Alberta tend to be distributed within North America and relatively little is exported through the west coast ports.

### Oil & Gas

Approximately 4% of Western Canada’s crude oil production is transported by rail. Around 200 oil tankers call on the Port of Vancouver, with the majority destined to locations in the US. As demand for

<sup>9</sup> <http://www.quorumcorp.net/Downloads/SupplementalReports/GSC%20Technical%20-%20Marketing%20and%20Moving.pdf>

<sup>10</sup> <http://www.quorumcorp.net/Downloads/SupplementalReports/GSC%20Technical%20-%20Marketing%20and%20Moving.pdf>

<sup>11</sup> <http://www.statcan.gc.ca/daily-quotidien/161221/dq161221b-eng.pdf>

oil increases in Asia, west coast ports in Canada will have a sailing time advantage over international competitors.<sup>12</sup>

## Machinery

The primary machinery manufacturing activities in Alberta are for the mining, oil & gas, and construction industries.<sup>13</sup> Machinery for export is transported using a variety of methods depending on the dimensions of the load. Smaller components or parts are transported in containers or as breakbulk. Larger products which exceed the maximum capacity of a standard railcar will be transported on specialized railcars or trucks and are transported through over dimensional corridors.

## Impact of Zone Inter-Switching Regulations and Changes

The focus of this research is to highlight the opportunities to grow and develop exports from Southern Alberta and identify the key segments of the supply chain required to enable goods movements. Part of this investigation, therefore, should touch on some of the modifications that have recently occurred in the regulations allowing inter-switching. Inter-switching regulations were developed in 1904<sup>14</sup> as with the regulatory response to concerns expressed over competitive access expressed by shippers whose facilities were located on the branch lines serviced by one railway alone. This “captive” shipper would be subject to the rates charged by the serving railway. Any shipper subject to this monopolistic level of market power could only resort to the use of trucks as an alternative to moving their goods to market.

The Government of Canada introduced regulations that allowed any shipper that could demonstrate that their location was 30 miles or less from an interchange between the railway that served their location, and a competing rail carrier to enter into a contract with that rail carrier for shipment from their facility to the ultimate destination. In all cases, the rail carriers would be either CN or Canadian Pacific, and the 30 kilometres from the inter-switching point, i.e. where both railroads met would be measured as if drawn on a straight line on a map or “as the crow flies”.

In summary, for a shipper, whose location fell within the inter-switching zone, the regulations create an opportunity for that shipper to enter into a contract with the other railway that did not provide service directly to the shipper’s location.

Any shipper invoking the inter-switching regulations would create the following scenario; the railroad that has rail line to the customer’s door would be obliged to move the railcar to the inter-change point (“the switch”) with the railcar would be turned over to the longer haul carrier. The railroad providing the switch gets paid by the longhaul carrier, a mandated amount based on the distance to the point of interchange from the shipper’s warehouse.

The winter of 2013 will go on record as one of the harshest winters in Canadian history. Operationally, the railways were required to operate shorter trains to minimize the freezing of the air breaking system. Elevator operations across the prairies were curtailed due to the extreme cold. The operations of the Western Canadian seaports were compromised by the effects of the weather and were pressed into additional hours of operations, resulting from what was described as a failure of the western grain

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<sup>12</sup> <http://www.capp.ca/canadian-oil-and-natural-gas/infrastructure-and-transportation/marine>

<sup>13</sup> [http://international.gc.ca/investors-investisseurs/assets/pdfs/download/Machinery\\_and\\_Equipment.pdf](http://international.gc.ca/investors-investisseurs/assets/pdfs/download/Machinery_and_Equipment.pdf)

<sup>14</sup> [http://onlinepubs.trb.org/onlinepubs/sp/Regulation\\_of\\_Freight\\_Rail\\_in\\_Canada\\_Cairns.pdf](http://onlinepubs.trb.org/onlinepubs/sp/Regulation_of_Freight_Rail_in_Canada_Cairns.pdf)

supply chain. If the inclement weather was the primary cause of a slowdown in the grain transportation system by rail, the additional problem facing the prairie grain producers, was exacerbated by what should have been a very positive factor, i.e. a fall bumper crop of wheat and other grains. Additionally, the normal marketing structure relied upon by the farmers in Western Canada was in the process of disappearing. Traditionally, farmers could only sell their wheat into world markets through the Canadian Wheat Board. With the dissolution of this Crown Agency, farmers were free to enter into the market themselves to sell their wheat at a time and price that they determined.

The perceived failure of the grain supply chain and the groundswell of dissatisfaction expressed by a wide range of stakeholders caused the Government of Canada to introduce an additional zone for inter-switching in the three prairie provinces (Alberta, Saskatchewan and Manitoba). The new fifth zone extended for 160 kilometres from the inter-switching point and allowed not only CP and CN to enter into contracts with captive shippers, but also allowed U.S. carriers, such as BNSF, to operate within zone five up to 160 kilometres on the Canadian branch line system to enter into contracts with shippers for the ongoing transportation from the switching point to the ultimate destination.

Both CN and CP have objected to the imposition of the new zones, and this matter is still a contentious topic. From the prospective of the shipper, the new zone five opens up the opportunity for shippers within 160 kilometres of a switching point in the three prairies provinces to access competitive rail services. To date, few shippers have actually utilized the new zone and it is difficult to predict how much it will be used in the future. The rates provided by the competing railroad will not only have to factor in the additional switch costs in order to be competitive, it must provide a longhaul rate for the carriage of the shipment that is lower than that offered by the carrier currently serving the branch line. The shipper who is supposed to benefit from the addition of the new inter-switching zone, may also have to factor in a longer transit time for the shipment due to the time required to complete the switch.

## Terminals at West Coast Ports

In order to import and export products to and from Canada, there are specific terminals at west coast ports that enable the transition from ocean to rail/truck and rail/truck to ocean. Each of Port of Prince Rupert, Port of Vancouver, North West Seaport Alliance (Seattle/Tacoma region) and Port of Portland have specific terminals to facilitate importing and exporting of products.

Each port is different in size, scope, and commodities handled as reflected below. Intermodal terminals were excluded from this list as each of the ports has at least one intermodal terminal and intermodal transportation was not the focus for the commodities that were included in this analysis.

Each of the ports has expansion and modernization projects planned or in progress as they look to improve or diversify their service and product offerings.

### Port of Prince Rupert

1. **Ridley Coal Terminal** - <http://www.rupertport.com/shipping/terminals/rti>

**Commodity** - Export of metallurgical coal, thermal coal and petroleum coke

**Capacity** - Annual Throughput Capacity: 18 million tonnes  
Storage Capacity: 1.2 million tonnes (expanding to 2.5 M)  
Rail Unloading Rate: 6,000 tonnes/hour  
Ship Loading Rate: 9,000 tonnes/hour  
Single berth depth: 22 m (low tide)  
Ship size limit: 250,000 DWT (Capesize)

**Description** - Certified under ISO 9001, ISO 14001, OHSAS 18001 standards  
Efficient railcar turn-around via tandem rotary dumpers  
Vessel loading rates significantly higher than those of other west coast terminals  
High-tech, computer based handling systems  
Available volume capacity



2. **Prince Rupert Grain Terminal** - <http://www.rupertport.com/shipping/terminals/prg>

**Commodity** - Wheat and barley

**Capacity** - Annual Throughput Capacity: 7 million tonnes  
Storage Capacity: 202,000 tonnes  
Ship Loading Rate: 4,000 tonne/hour  
Single berth depth: 14.5 m (low tide)  
Ship size limit: 145,000 DWT (Suezmax)  
On- terminal rail trackage: 17 km

**Description** - Efficient railcar turn-around  
Loading rates significantly higher than those of other west coast terminals  
Capable of cleaning grain and loading at the same rate  
High-tech, computer operated handling systems  
Extensive dust control systems



3. **Westview Wood Pellet Terminal** - <http://www.rupertport.com/shipping/terminals/westview>

**Commodity** - Wood Pellets

**Capacity** - Annual Throughput Capacity: 1.3 million tonnes

Storage Capacity: 50 thousand tonnes

Rail Unloading Rate: 6,000 tonne/hour

Ship Loading Rate: 2,000 tonne/hour

Single berth depth: 12.5 m (low tide)

Ship size limit: 75,000 DWT (Panamax)

**Description** - Scheduled rail service

High terminal productivity



4. **Expansion Projects:**

**Canpotex Potash Terminal** – Proposed and currently on hold

<http://www.rupertport.com/future/canpotex-potash-terminal#>

**Road, Rail and Utility Corridor**

<http://www.rupertport.com/future/road-rail-utility-corridor>

**WCC LNG Ltd. (Tuck Inlet)**

<http://www.rupertport.com/future/wcc-lng>

**Aurora LNG (Digby Island)**

<http://www.rupertport.com/future/aurora-lng>

**Pacific NorthWest LNG (Lelu Island)**

<http://www.rupertport.com/future/pacific-northwest-lng>

**Ridley Island Propane Export Terminal** – has received approval from federal regulators and planned to start construction in 2017 and to finish in 2019

<http://www.rupertport.com/future/altagas>

**Maintenance & Warehouse Complex**

<http://www.rupertport.com/future/maintenance-and-warehouse-complex>

**Port of Vancouver**

1. **Alliance Grain Terminal** - <http://www.portvancouver.com/cargo-terminals/bulk/>

**Commodity** – Grain

**Capacity** - 3 million metric tonnes

**Description** - Alliance Grain Terminal is a leading Canadian farmer-directed agri-business and one of Canada’s largest grain handling businesses. It handles grain and grain products.



2. **Burrard Products Terminal (Suncor)** - <http://www.portvancouver.com/cargo-terminals/bulk/>

**Commodity** - Petroleum products

**Capacity** - Size: 377 acres in Port Moody and 60 acres in Burnaby

**Description** - Burrard Products Terminal handles petroleum products primarily for Suncor, one of the largest integrated oil and gas companies in Canada.





3. **Canexus Chemicals** - <http://canexus.ca/about-us/overview>

**Commodity** – Chemicals

**Capacity** – N/A

**Description** – Canexus Chemicals is a chemical terminal located on the that imports bulk sea salt and exports caustic soda and sodium chlorate, used in the bleaching process of paper products.



4. **Cargill** - <http://www.cargill.ca/en/products-services/grain-handling-exporting/index.jsp>

**Commodity** – Grain

**Capacity** - 175 cars per day

**Description** - Cargill is a grain terminal and one of Canada's largest agricultural merchandisers and processors. It handles wheat, durum, canola, barley and grain by-products.



5. **Cascadia** - <http://www.canadiansailings.ca/?p=8110>

**Commodity** – Grain

**Capacity** - Storage Capacity: 282,830 tonnes

**Description** - Cascadia a grain terminal and handles wheat, durum, canola, barley, rye, oats and by-products. Viterro Inc. who owns Cascadia, operates Canada’s largest grain handling network.



6. **Fibreco** - <http://fibreco.com/terminal-operations/terminal-information/>

**Commodity** - Woodchips / wood pellets

**Capacity** - Annual Capacity: 5 million tonnes

Storage capacity wood chips: 75,000 bone dry metric tonnes

Storage capacity wood pellets: 45,000 tonnes

Additional land available for variety of storage options

**Description** - Fibreco offers one of the largest woodchip handling facilities in the world. Fibreco also ships wood pellets.





7. **IOCO (Imperial Oil Corporation)** – <http://www.portmoody.ca/index.aspx?page=842>

**Commodity** - heavy fuel oil, intermediate fuel oil, and marine gas oil

**Capacity** - Size: 50 acres

Terminal is typically supplied by rail car from Edmonton.

**Description** - IOCO is a petroleum terminal handling heavy fuel oil, intermediate fuel oil, and marine gas oil.



8. **Kinder Morgan Vancouver Wharves** -

<http://www.kindermorgan.com/content/docs/terminalbrochures/W-C-VancouverWharves.pdf>

**Commodity** - Bulk mineral concentrates liquids, sulphur/fertilizers, specialty agri-products and other dry bulk commodities

**Capacity** - Size: 139 acres, available land for expansion

Storage capacity: Bulk - 1 million tonnes

4 deep-sea births.

Servicing rail roads: CN rail, interchanges from CP and BNSF

**Description** - Kinder Morgan Vancouver Wharves offers services for bulk shippers moving products to and from all regions of Western Canada and the Pacific Northwest. It handles bulk mineral concentrates liquids, sulphur/fertilizers, specialty agri-products and other dry bulk commodities.



9. **Kinder Morgan Westridge** -

<http://www.kindermorgan.com/pages/business/canada/transmountain.aspx>

**Commodity** - crude petroleum, petroleum products, and jet fuel

**Capacity** - Can accommodate ships up to Aframax in size (approximately 120,000 dead weight tons) and barges. The Westridge marine terminal houses three storage tanks and can handle volumes of approximately 395,000 barrels (63,000 m<sup>3</sup>).

**Description** - Kinder Morgan Westridge is a petroleum terminal handling crude petroleum, petroleum products, and jet fuel. The terminal imports and stores aviation turbine fuel for delivery to Vancouver International Airport via Kinder Morgan's jet fuel pipeline.



10. **Lantic Inc.** - <http://wikimapia.org/2003182/BC-Sugar-refinery-and-terminal>

**Commodity** - bulk raw sugar imports

**Capacity** - Size: 13.5 acres

Refinery produces 100,000 - 120,000 metric tonnes of sugar annually

**Description** - Lantic Inc. is the leading refiner, processor, distributor and marketer of Rogers Sugar brand products in Western Canada. The terminal also handles and distributes other sugar products throughout Western Canada in addition to handling bulk raw sugar imports.



11. **Neptune Bulk Terminals** - <http://www.neptuneterminals.com/explore-our-terminal/>

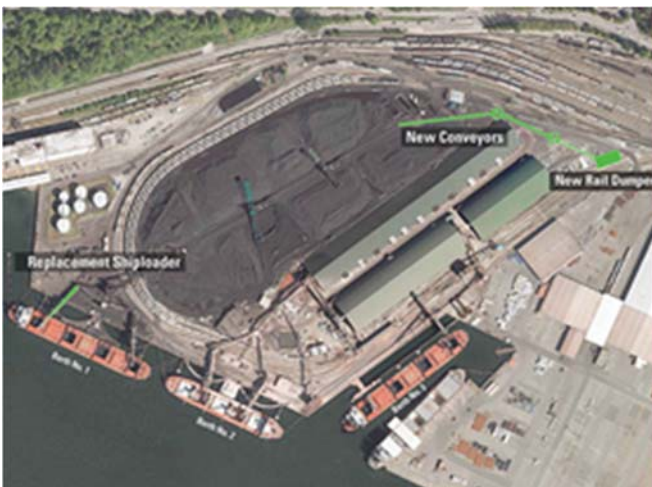
**Commodity** - metallurgical coal, potash, grains, special crops, animal feed, bulk fertilizers, and canola oil

**Capacity** - Capacity to handle over 24 million tonnes of bulk products a year.

Facility covers 29 hectares (71 acres).

Terminal has three berths.

**Description** - Neptune Bulk Terminals is North America's largest multi-product bulk terminal. It handles metallurgical coal, potash, grains, special crops, animal feed, bulk fertilizers, and canola oil.



12. **Pacific Coast Terminals** - <http://pct.ca/our-operations/our-terminal/>

**Commodity** - sulphur, canola oil and ethylene glycol

**Capacity** - 108 acres of property.

36,000 railcars or 3.5 million tonnes of sulphur.

2 berths.

**Description** - Pacific Coast Terminals, owned by Sultran, is the world's largest and most automated export sulphur and bulk liquids marine terminal. It handles sulphur, canola oil and ethylene glycol.



13. **Pacific Elevators** - <http://www.agcanada.com/daily/viterra-to-boost-vancouver-port-terminal-throughput>

**Commodity** - canola, flax, peas, wheat and other grain products

**Capacity** - Annual Capacity: 6 million tonnes

Storage capacity: 136,000 tonnes

**Description** - Pacific Elevators handles canola, flax, peas, wheat and other grain products. Viterra Inc. who owns Pacific Elevators, operates Canada's largest grain handling network.





14. **Richardson International** - <https://www.richardson.ca/our-business/terminals/>

**Commodity** - canola and cereal grains, wheat, canola, barley, rye, flax, grain and feed products

**Capacity** - Annual capacity: 6 million tonnes

Storage capacity: 178,000 metric tonnes

**Description** - Richardson International is a major exporter of canola and cereal grains to trading economies along the Pacific Rim. It handles wheat, canola, barley, rye, flax, grain and feed products.



15. **Shellburn** – <http://wikimapia.org/1200677/Shell-Shellburn-Distribution-Terminal>

**Commodity** - Petroleum products

**Capacity** – N/A

**Description** - Shellburn is a petroleum distribution terminal handling petroleum products.



16. **Stanovan** – <http://wikimapia.org/1725347/Stanovan-terminal>

**Commodity** - Petroleum products

**Capacity** - 52,000 barrel refinery

**Description** - Stanovan is a petroleum terminal handling petroleum products.



17. **Univar Canada Terminal** – <http://wikimapia.org/1799901/Univar-Canada-Terminal>

**Commodity** - caustic soda solution and ethylene glycol

**Capacity** – N/A

**Description** - Univar Canada Terminal handles caustic soda solution and ethylene glycol, and is a leading chemical distributor in Canada.



18. **West Coast Reduction** – <http://www.wcrl.com/vancouver/>

**Commodity** - Inedible tallow, feather meal, poultry meal, blood meal, fish meals and fish oil and exports canola oil

**Capacity** – 83,000 metric tonne tank farm, exporting 65% of Canada’s canola oil to Asia Pacific markets

**Description** - West Coast Reduction is a leader in the rendering industry, operating technologically advanced rendering plants of fat and oil products. It handles inedible tallow, feather meal, poultry meal, blood meal, fish meals and fish oil and exports canola oil.



19. **Westshore Terminals** - <http://www.westshore.com/#/bynumbers>

**Commodity** - coal and coke, fuel, exports

**Capacity** - Size: 133 acres.

On-site storage: 2 million tonnes.

Terminal throughput capacity: 33 million tonnes

Peak birth loading 7,000 tonnes per hour

Volume 2014: 30.6 million tonnes

**Description** - Westshore Terminals is a coal and coke (fuel with few impurities and high carbon content) export terminal.



20. **Fraser Surrey Docks** - <http://www.canadiansailings.ca/?p=8110>

**Commodity** - General cargo, steel, lumber, containers, log loading, log loading, agri-bulk

**Capacity** - Size: 154 acres

Ship berths: 6

Annual volume: 50,000 containers, 500,000 tonnes of steel

**Description** - Fraser Surrey Docks is a multi-purpose marine terminal handling containers, and breakbulk commodities such as general cargo, logs, steel, machinery and project cargo.



21. **Lynnterm** - [http://www.westeve.com/term\\_operation.html](http://www.westeve.com/term_operation.html)

**Commodities** - wood pulp and paper, lumber, panel products, steel products, project cargo, and machinery

**Capacity** - Size: 145 acres.

7 berths.

8 warehouses totalling 876,000 sq. ft.

Direct service with CN

**Description** - Lynnterm is the consolidation centre for forest products, steel and other breakbulk commodities in the Pacific Northwest. It handles wood pulp and paper, lumber, panel products, steel products, project cargo, and machinery.



22. **Expansion Projects**

**Alliance Grain Terminal** - Gallery Replacement Project

<http://www.portvancouver.com/development-and-permits/status-of-applications/alliance-grain-terminal-gallery-replacement-project/>

**Cargill** - Rail Improvement Project

<http://www.portvancouver.com/development-and-permits/status-of-applications/cargill-rail-improvement-project/>



**IOCO (Imperial Oil Corporation)** - Removal of two sections of pipeline crossing Burrard Inlet

<http://www.portvancouver.com/development-and-permits/status-of-applications/imperial-pipeline-removal-project/>

**Kinder Morgan Westridge** - Expansion of terminal

<https://www.transmountain.com/marine-westridge-terminal>

**Neptune Bulk Terminals** - With the completion of terminal improvement projects, capacity at the terminal will increase to 30 million tonnes.

<http://www.neptuneterminals.com/explore-our-terminal/terminal-improvements/>

**Pacific Coast Terminals** - Construction of potash handling facility

<http://pct.ca/growing-our-business/>

Dredging Project

[http://www.portvancouver.com/development-and-permits/status-of-applications/pacific-coast-terminals-dredging-project/?doing\\_wp\\_cron=1482512060.1511209011077880859375](http://www.portvancouver.com/development-and-permits/status-of-applications/pacific-coast-terminals-dredging-project/?doing_wp_cron=1482512060.1511209011077880859375)

**Pacific Elevators** - Shipping upgrade project

<http://www.portvancouver.com/development-and-permits/status-of-applications/viterra-pacific-elevators-shipping-upgrade-project/>

**Richardson International** - Recently completed expansion project, Grain storage capacity (\$140 million)

<https://www.richardson.ca/richardson-doubles-capacity-at-vancouver-port-terminal-and-sets-shipping-records/>

New hopper bin project

<http://www.portvancouver.com/development-and-permits/status-of-applications/richardson-international-new-hopper-bin-project-2/>

**Westshore Terminals** - Renovation project

<http://www.westshore.com/#/upgrade>

**Fraser Surrey Docks** - Coal Facility

<http://www.portvancouver.com/development-and-permits/status-of-applications/fraser-surrey-docks-direct-transfer-coal-facility-project-permit-amendment/>

**Fraser Grain Terminal:** Grain Export Facility

<http://www.portvancouver.com/development-and-permits/status-of-applications/fraser-grain-terminal-grain-export-facility/>

**Lynterm** - G3 grain terminal

<http://g3terminalvancouver.ca/project-details/>

## Northwest Seaport Alliance – North Harbour

1. **Terminal 5** - [https://www.nwseaportalliance.com/sites/default/files/nwsa\\_mapbrochure\\_5-2016\\_web.pdf](https://www.nwseaportalliance.com/sites/default/files/nwsa_mapbrochure_5-2016_web.pdf)

**Commodity** - Terminal 5 is being modernized for containers, in the interim period it is Breakbulk, moorage

**Capacity** - Size: 185 acres

Ship berths: 2

Rail Ramps: On-dock

**Description** - Terminal 5, a 185-acre (75 ha) site, is available during modernization as a container terminal.



2. **Terminal 30** - [https://www.nwseaportalliance.com/sites/default/files/nwsa\\_mapbrochure\\_5-2016\\_web.pdf](https://www.nwseaportalliance.com/sites/default/files/nwsa_mapbrochure_5-2016_web.pdf)

**Commodity** - Container, Breakbulk

**Capacity** - Size: 70 acres

Ship berths: 2

Rail Ramps: Near-dock

**Description** - Terminal 30, a 70-acre (33 ha) facility, offers deep water and near-dock rail with major highways literally next door.



**Expansion Projects:**

1. **Terminal 5** - Container terminal to be modernized to handle larger ships.  
<https://www.nwseaportalliance.com/about/strategic-plan/t5>

**Northwest Seaport Alliance – South Harbour**

1. **T-7 A/B/C** - [https://www.nwseaportalliance.com/sites/default/files/nwsa\\_mapbrochure\\_5-2016\\_web.pdf](https://www.nwseaportalliance.com/sites/default/files/nwsa_mapbrochure_5-2016_web.pdf)

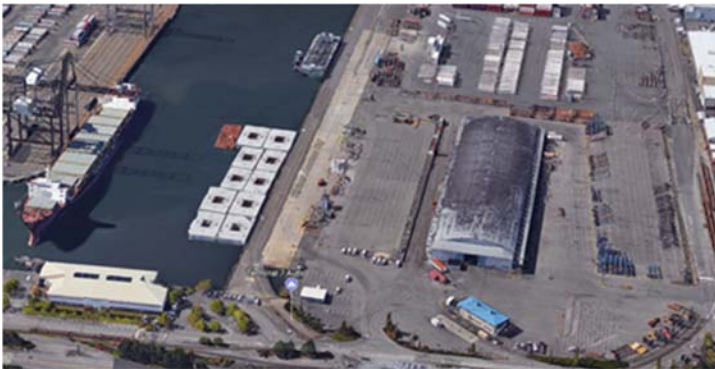
**Commodity** - Breakbulk, Autos

**Capacity** - Size: 12 acres

Ship berths: 3

Rail Ramps: On-dock

**Description** - Terminal 7 (A/B/C), a 12-acre (4.9 ha) auto and breakbulk facility, features 1,800 ft (549m) of deep water berthing and on-dock rail service.



2. **East Blair 1** - [https://www.nwseaportalliance.com/sites/default/files/nwsa\\_mapbrochure\\_5-2016\\_web.pdf](https://www.nwseaportalliance.com/sites/default/files/nwsa_mapbrochure_5-2016_web.pdf)

**Commodity** – Breakbulk

**Capacity** - Size: 20 acres

Ship Berths: 1

Rail Ramps: On-dock

**Description** - East Blair One, a 20-acre (8.1 ha) facility, is equipped with a 1,200 (366m) deep-water berth, on-dock rail spur and a 120'x119' heavy lift pad.



3. **W Hylebos Facility** -

[https://www.nwseaportalliance.com/sites/default/files/nwsa\\_mapbrochure\\_5-2016\\_web.pdf](https://www.nwseaportalliance.com/sites/default/files/nwsa_mapbrochure_5-2016_web.pdf)

**Commodity** - Bulk, Breakbulk. Currently being utilized as a bulk log facility

**Capacity** - Size: 16 acres

Ship berths: 1

Rail ramps: Off-dock

**Description** - West Hylebos, a 16-acre (6.5 ha) terminal, is currently being utilized as a bulk log facility.



## Port of Portland

1. **Terminal 2** - <http://www2.portofportland.com/Marine/Terminal2>

**Commodity** - Steel rail, Bulk Ore, Barite, wood products, project cargo

**Capacity** - Size: 53 acres  
300,00 sq. ft. of covered storage

**Description** - Terminal 2 is a 53-acre facility that can handle virtually any cargo from lumber and forest products to steel, machinery and packaged cargoes. T-2 is considered one of the most modern and efficient multipurpose marine facilities on the U.S. West Coast.



2. **Terminal 4** - <http://www2.portofportland.com/Marine/Terminal4>

**Commodity** - autos, forest products, steel, and dry and liquid bulks

**Capacity** - 25 acres currently available for lease.  
Capable of handling Panamax bulk vessels.

**Description** - Terminal 4 is multipurpose, 262-acre facility features seven ship berths capable of handling a variety of cargoes including autos, forest products, steel, and dry and liquid bulks. Existing tenants include: Toyotal, Kinder Morgan, Internation Raw Materials



3. **Terminal 5** - <https://www2.portofportland.com/Marine/Terminal5>

**Commodity** - Grain, Potash and other bulk commodities



**Capacity – N/A**

**Description** - Located on the north edge of the Port's Rivergate Industrial District, Terminal 5 and its 190 acres feature a rapid-handling grain elevator operated by Columbia Grain Inc. In the fall of 1997, a \$48 million mineral bulk exporting facility began handling potash and other bulk commodities.



**Expansion Projects:**

1. **Terminal 2** - Terminal 2 Crane Upgrades  
Terminal 2 Rail Improvement  
<https://www2.portofportland.com/Properties/TransportationProjects>
2. **Terminal 4** - Barnes to Terminal 4 Rail  
Terminal 4 Pier 1 Site Preparation  
<https://www2.portofportland.com/Properties/TransportationProjects>
3. **Terminal 5** - Terminal 5 Entrance Road  
<https://www2.portofportland.com/Properties/TransportationProjects>

## Requirements for Development for Future Prospects

This analysis has focused on exports in bulk from Southern Alberta, including agricultural products, fertilizers, oil and gas with some reference to machinery. Each product requires specific facilities and methods of handling for export. What follows is an examination of the requirements for infrastructure and/or land to facilitate the expansion of bulk exports from Southern Alberta.

### Agriculture Products

Each of the Ports of Prince Rupert, Vancouver, and Portland have existing facilities for the exporting of grain. The value of exports from both Canada and the United States fluctuates from year to year. These fluctuations are caused by a number of factors, including the size of the crop that is harvested and the capacity of the supply chain to facilitate the variations in products, including storage facilities, railcar availability, unit train handling (unloading at the port), availability of marine vessels for export – the list goes on.

There is clearly a growing demand for Canadian-produced quality grains. With the ever-increasing population in the world, this demand offers some stability to the Canadian production cycle. If the trend over the last 15-25 years is for an increasing demand for the export of Canadian grains, the question arises as to whether the existing grain handling system is flexible enough to create greater efficiencies and/or increased in size in order to handle the projected increased flows of Canadian products to be exported.

With respect to grains, which travel in hopper cars for direct loading at the port into the holds of the marine vessels, an increase in export volumes will probably require the expansion of existing track infrastructure or the development of new loop tracks or linear tracks to accommodate unit trains comprising 112 railcars in length. While minimizing the opportunity for a growth of existing facilities in the Port of Vancouver, opportunity for the development of the required trackage to handle unit trains could be initiated in the Port of Prince Rupert, or in the development of inland ports such as Ashcroft Terminal, both of which have available land for expansion.

### Oil & Gas (Including Propane)

The Port of Vancouver already has some significant facilities for the export of oil and gas products. Propane and butane produced in Alberta have a large potential for export to foreign markets where there is a growing demand for facilities to convert these gases to propylene and polypropylene for multiple uses. With an increase in demand for export, there will be a further demand for terminals to facilitate the export of these products. The Port of Prince Rupert has announced a new propane export expansion with AltaGas to help meet the increased demand.

Facilities will be required for the transloading and tank storage of these products moving from trucks/trains into storage or directly onto the vessels.

## Fertilizers

Other than potash, there are not many fertilizers that are exported through the west coast ports. Potash is exported through the ports of Vancouver and Portland through the potash industry's marketing agent, Canpotex. Canpotex has recently decided not to pursue an expansion at the Port of Prince Rupert for the export of potash.

Any further expansion of fertilizer exports would require new storage sheds (for dry fertilizers) or storage tanks (for liquid fertilizers). Storage sheds that can hold a variety of fertilizers can occupy a significant amount of space accompanied by a requirement for truck and rail access as well as conveyor belts to move the product to vessels.

The space required for liquid fertilizers would generally be smaller than the space required for dry fertilizers. Liquid fertilizers tend not to move in bulk trains, but in smaller blocks. Tank or shed storage size depends on the type of fertilizers that could move through the port. It is important to separate the different types of fertilizers, since contamination degrades their value. An increase in the volume of fertilizers exported would require an expansion of the facilities to handle these products at the west coast ports.

## Machinery

All of the west coast ports have the ability to ship machinery. Machinery can move in containers, boxcars, flatcars, and specialty cars and varies in size, weight and consistency of shipping. Machinery would fall most logically under the category of break bulk due to this variability. Very large machinery from Alberta tends to move east to the Great Lakes or beyond or south to the Port of Houston to avoid the mountainous terrain between Alberta and the west coast ports.

## Opportunities

Opportunity Type	Export
<b>Agriculture Products</b>	<b>A1.</b> Continued growth of traditional Grains and Specialty Crops and the increasing world demand for these products
<b>Oil and Gas</b>	<b>A2.</b> Propane and Butane – new project at the Port of Prince Rupert Continued demand worldwide for petroleum and gas products
<b>Fertilizers</b>	<b>A3.</b> Strong demand in the search for higher crop yields worldwide
<b>Machinery</b>	<b>A4.</b> Rotor propellers, other oil and gas machinery
<b>Wood Products</b>	<b>A5.</b> Lumber, Wood Board, Pulp, Newsprint

### **A1. Continued growth of traditional Grains and Specialty Crops**

This demand is expected to remain and grow in the coming years with the population expected to grow worldwide.



## **A2. Propane and Butane**

Propane and Butane seem to be the hot topics at this time but the potential always remains for other petroleum and gas products to be exported based on price volatility and overall demand.

## **A3. Strong demand in the search for higher crop yields worldwide**

Most exports to the United States but with increasing world demand for food could lead to exports to countries requiring fertilizer for their crops.

## **A4. Rotor propellers, other oil and gas machinery**

Sporadic, dependent on volume, size and ease of transportation to ports through existing infrastructure (railroads and highways).

## **A5. Lumber, Wood Board, Pulp, Newsprint**

These products are generally harvested and processed in northern Alberta but offer large opportunities for export.

## **Summary**

Compared to other Provinces in Canada, Alberta is a very large exporter of products, and while most of these exports are destined for the United States, there continues to be many growing opportunities to export Alberta products to the world. While we recognize that the majority of exports from Alberta have been oil and gas, these volumes have decreased substantially due to the downturn in the extraction and production of these products in the Province.

This analysis has focused on the opportunity created for export from Southern Alberta of agricultural products produced in the Province. Grains, canola oils and specialty crops make up most of these potential products for export with other agricultural products, including beef, pork and poultry as prime candidates for export.

Phase 3 of this study has discussed the opportunities for increased exports of agricultural products, including beef, pork and poultry (either chilled or frozen) through the use of refrigerated containers. The need to source refrigerated containers directly into the Alberta production facilities for source loading is extremely important to service the Alberta reefer export market in order to expand the new opportunity faced by Alberta producers.

With the introduction of the new zone five for rail switching in Alberta, farmers have more transportation options. The worldwide demand for food driven by population growth and growth in demand for quality Canadian products will require the development of an enhanced supply chain and supply chain infrastructure in order to connect this anticipated increase in volume in product with world markets utilizing the assets of Western Canada's inland ports and west coast seaports. Traditional grains (wheat, barley, etc.) and specialty crops (lentils, beans, etc), are in high demand in Asian markets and Alberta producers should work in conjunction with the Government of Alberta to exploit this expanding opportunity.

The Port of Prince Rupert already has development plans for a facility to export propane (in conjunction with AltaGas). Propane is extracted all over Alberta but the bulk is consolidated and stored in the

Edmonton/Fort Saskatchewan region. Other oil and gas products are also grouped in this region from all over the province and present opportunities to export through the west coast ports.

Fertilizer products that are exported from Alberta head almost entirely to the United States. In conjunction with food demand increasing worldwide, the requirements for fertilizers are also going to increase. Fertilizers are produced all over the world but there are still opportunities for fertilizer products from Alberta to be exported overseas to Asian markets.

Alberta and particularly Southern Alberta are extremely well positioned to expand its production of the products listed above, into world markets as a diversification strategy, which would see the province no longer as dependent as in the past, on the exports of oil and gas into world markets. The expansion, in bulk of the agricultural products has been the subject of this analysis should be seized upon immediately by both industry and government.

## Van Horne Institute

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## Triskele Logistics Ltd.

Triskele Logistics is a supply chain consulting company that enables its customers to achieve cost reduction and efficiency in their supply chain. In addition, we manage projects and complete supply chain research using our industry knowledge, connections and expertise. Founded in 2013 by Corrie Banks, Triskele applies simple, efficient change methodologies to work with you to achieve your vision and execute your projects. From strategy to project execution to sustainment, Triskele Logistics brings it all together.

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