Metro Facts in Focus | Policy Backgrounder

Short Sea Shipping in Metro Vancouver

metrovancouver
SERVICES AND SOLUTIONS FOR A LIVABLE REGION


Source: Port Metro Vancouver

Industry and Trade in Metro Vancouver

Short sea shipping is defined as the movement of cargo by water over relatively short distances, excluding trans-oceanic voyages; for the region, this activity includes both domestic and trans-border (US) traffic.

Metro Vancouver is a gateway region with a major port, an advanced goods movement network, and strategically located industrial lands; all of which contribute to sustaining a strong regional and national economy. Industrial lands support the significant trade and transportation functions generated by the port. The region's industrial lands are used for a variety of activities, mainly for transportation/warehousing, manufacturing, and wholesale trade. Port logistics activities include transportation, container storage, freight forwarding, warehouses, and other distribution functions. These activities keep the region connected to Canada and the rest of the world, and are essential in global trade.

The import and export industry requires an efficient goods movement network situated on well-located industrial land. With growing demand and a constrained land supply, the region is already experiencing a shortage of industrial lands, which is expected to worsen in the next 10 to 15 years. This shortage could discourage logistics-related businesses from locating or expanding in Metro Vancouver, hamper the functioning of the goods movement network, and slow job growth.

The continued expansion of the port and goods movement network increasingly impacts local communities. The transportation of goods, particularly by truck, leads to increased traffic volumes, congestion, pollution, noise, and accidents. Expanding short sea shipping may be an option for mitigating some of the impacts associated with goods movement traffic and congestion on roadways.

Metro Vancouver 2040: Shaping our Future

Metro Vancouver 2040: Shaping our Future (Metro 2040), the regional growth strategy, represents the collective vision for how our region will grow over the next 25 years. A key strategy in the plan is to maintain and enhance the region's industrial land supply. *Metro 2040* also supports an efficient goods movement network achieved through working collaboratively with TransLink and Port Metro Vancouver and other stakeholders.

The *Metro Vancouver Facts in Focus series* is designed to promote a broad understanding of the key issues and opportunities that frame Metro Vancouver's implementation of the regional growth strategy and its mandate for delivering services and solutions for a livable region.

Metro Vancouver is a political body and corporate entity operating under provincial legislation as a 'regional district' and 'greater boards' that deliver regional services, policy and political leadership on behalf of 23 local authorities.These local authorities comprise 21 municipalities, one electoral area, and one treaty First Nation. Providing timely research and analysis of regional issues is an important service provided by Metro Vancouver.

Source: Port Metro Vancouver

Contents

A. Short Sea Shipping

There has been much discussion about the potential of expanding short sea shipping in the Metro Vancouver region as an alternative means to transporting goods with an aim to reducing drayage truck traffic on the region's roads. The scale and viability of expanded short sea shipping operations has been studied to limited degrees by a number of organizations over the past decade. This *Facts in Focus* policy backgrounder strives to assemble available information about short sea shipping and associated opportunities and challenges.

Over the past decade, interest in expanding short sea shipping has focused on the transportation of containers within the region via waterways, driven primarily by a desire to reduce air emissions, traffic congestion, accidents, and noise. The hope expressed is to shift goods movement from truck to barge and thereby reduce the number of truck trips to and from Port terminals.

This *Facts in Focus* policy backgrounder provides information about the current form and scale of short sea shipping in the region, and the viability of expanding short sea shipping[1]. The policy backgrounder contains a summary of short sea shipping activities in the region as well as international examples, lessons learned, an investigation of the feasibility of new or expanded short sea shipping, and identifies issues for further exploration.

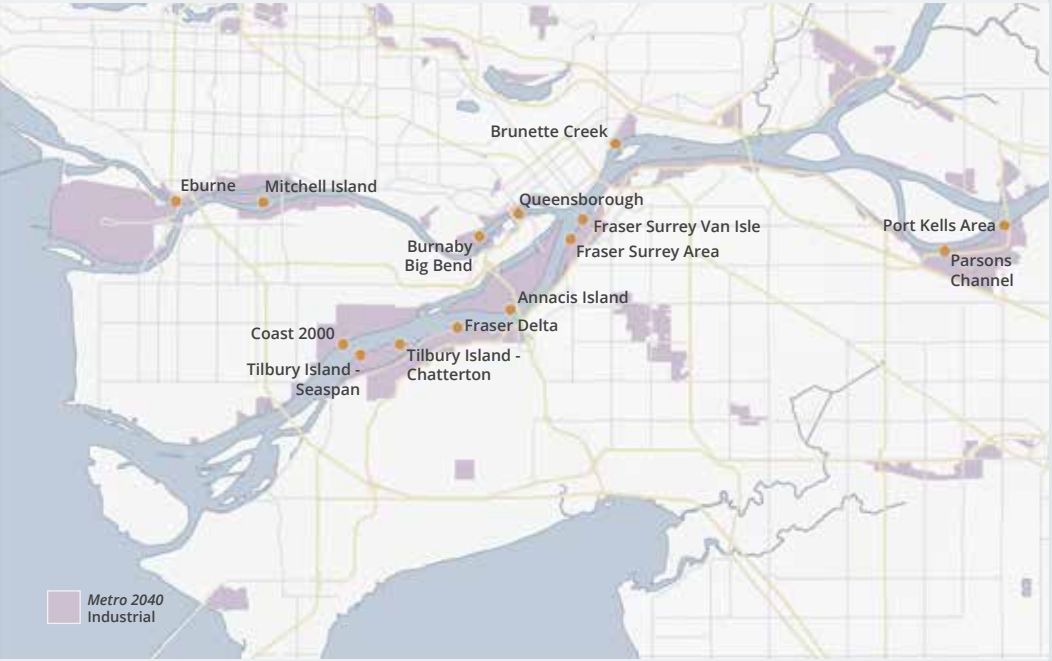
Short sea shipping is defined as the movement of cargo by water over relatively short distances, excluding trans-oceanic voyages; for the region, this activity includes both domestic and trans-border (US) traffic.

Short sea shipping can be used for a variety of cargoes. Within Metro Vancouver, these include dry bulk cargoes such as aggregates or coal; liquid bulk cargoes such as petroleum products; breakbulk cargo such as lumber or steel; and containerized cargo.

There are two primary methods for loading and unloading cargo. Lift on/lift off (LO/LO) uses cranes or other material handling equipment for loading and unloading. Roll on/roll off (RO/RO) vessels and barges specialize in carrying wheeled vehicles (autos, trucks, rail cars) which are loaded and unloaded via a ramp.

1 Much of the materials in this policy backgrounder are sourced from a technical report: "Research on Feasibility and Constraints for Expanded Short Sea Shipping in Metro Vancouver", prepared for Metro Vancouver by Davies Transportation Consulting Inc. in collaboration with MariNova Consulting Ltd., Site Economics Ltd, and Wave Point Consulting Ltd. December 2014.

Source: Port Metro Vancouver



Short Sea Shipping Potential Container Sites Identified by the Greater Vancouver Gateway Council in 2003

Articulated tug barge: Tug and barge combination which can be coupled together to operate as a single vessel

Break bulk cargo: Goods that must be loaded individually

Bulk cargo: Unpackaged in large quantities

Carrier: Transports goods or people by any means of conveyance (truck, auto, bus, airplane, railroad, ship)

Drayage: The transport of containers over a short distance by truck

Lift on/lift off: Cranes or other material handling equipment are used for loading and unloading vessels

Roll on/roll off: Wheeled vehicles or containers on chassis

Roll-on/roll-off vessels: Carry wheeled containers or trailers using interior ramps

Shipper: Sends goods for shipment, by packaging, labeling, and arranging for transit, or coordinates the transport of goods

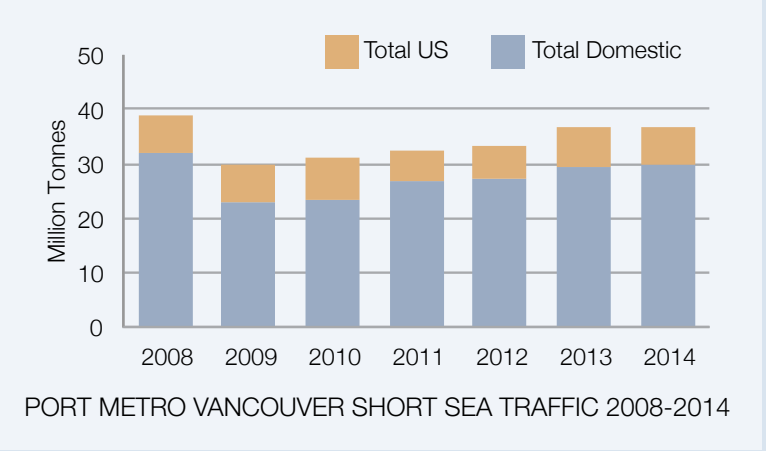

Source: Port Metro Vancouver

B. Overview of Short Sea Shipping in Metro Vancouver

Port Metro Vancouver (the 'Port') is the largest port in Canada and the largest port on the West Coast of North America in terms of weight of goods handled. Short sea shipping (mostly in non-containerized form) is already a vital element in marine commerce in Metro Vancouver, making up approximately 26% of the Port's total traffic in terms of weight.

Port Traffic Volumes

Port Metro Vancouver short sea traffic has two components: domestic traffic and imports and exports from the United States. In 2014, domestic traffic totalled 30 million tonnes, and US traffic totalled 7 million tonnes. For purposes of comparison, Metro Vancouver short sea shipping exceeds total shipping traffic at the Port of Montreal.



PORT METRO VANCOUVER SHORT SEA TRAFFIC 2008-2014

Industry Technology

Short sea shipping on Canada's West Coast is dominated by tug and barge operations. The major exception is truck shipments carried on BC Ferries and Seaspan Ferries vessels serving coastal communities. Elsewhere on the coast, large ocean-going vessels are used.

Barges are generally either towed or pushed by tugs, though self-propelled tugs have been used to a limited extent, particularly for log barges. Barges are typically self-loading and use onboard cranes.

Short sea shipping activity for cargo in the Metro Vancouver region can be divided into two categories:

- **Roll-on/Roll-off ferry operations** include BC Ferries and Seaspan Ferries regularly scheduled services. The primary cargo service by BC Ferries is the carriage of trucks on its regularly scheduled passenger ferries. Seaspan Ferries carries trucks from terminals in Delta (Tilbury) and Surrey, and rail cars from the Southern Railway of BC barge ramp on Annacis Island. These services enable flexible and rapid door to door service for high value commodities such as foodstuffs and consumer goods, and backhaul opportunities for lower value commodities such as lumber.
- **Point-to-point tug and barge services** transport raw materials (logs and aggregates) between coastal mills and quarries and Metro Vancouver region short sea sites, primarily on the Fraser River. Manufactured goods (pulp and paper) also use short sea shipping.

Short sea shipping operations require appropriate terminals and facilities at both ends of the trip.

BARGE TYPES

Bulk Barge

Pulp and Paper Barge

Chip Barge

Rail Barge

Petroleum Barge

Log Barge

Source: Seaspan

Source: Port Metro Vancouver

Goods Transported by Short Sea Shipping

Inbound short sea shipping traffic in Port Metro Vancouver is dominated by forest products and aggregates. Primary outbound commodity traffic includes forest products, petroleum products, and minerals and metals.

Forest Products

Shipments of forest products continue to dominate short sea shipping traffic in Metro Vancouver. Forest products accounted for 43% of Port Metro Vancouver inbound traffic (mostly logs and paper & paper-board) and 71% of outbound domestic traffic (mostly logs and woodchips) in 2013.

Logs: Large quantities of logs are handled on the Fraser River. The largest portion originates from Coastal locations, though small quantities are transported from inland origins as far upriver as Harrison Lake. Logs are hauled by truck to water, transported to sorting and booming grounds, towed in booms or barges to storage areas, then are towed to local mill storage sites and, finally, to the processing facility. Historically, logs were transported and processed at mills in Metro Vancouver. However, many of these mills have closed in the past decades, significantly reducing the volume of logs processed in the region. Large volumes are still stored on the Fraser River.

Woodchips: Large quantities of by-product wood chips and hog fuel from Interior sawmills are barged to Coastal pulp mills. The Fibreco terminal in Burrard Inlet is primarily devoted to exports of woodchips to Japan.

Paper and Paperboard: Paper products are shipped by barge and truck ferry from Coastal mills (Port Alberni, Crofton, and Powell River) to Catalyst Paper's Surrey Distribution Centre. Pulp originates at coastal pulp mills (Port Mellon, Port Alice). Products may then be transferred to rail for shipment to North American markets, or loaded into containers for offshore exports. The volume of paper product shipments has declined due to coastal mill closures.

Metro Vancouver Region Cement and Concrete Plants

Minerals and Metals

Domestic minerals shipments consist primarily of aggregates and cement. Aggregates originate at major mining operations (primarily Sechelt and Texada Island) and are shipped to multiple locations within Metro Vancouver. This sector is dominated by two large corporate groups:

The Heidelberg Group has a cement plant in Delta and eight plants accessible by water providing concrete products and aggregates. The company produces aggregates at a major sand and gravel pit at Sechelt.

In addition to existing facilities, Heidelberg's Lehigh Hanson subsidiary proposes to build a new trans-shipment terminal for aggregates and cement on Port Metro Vancouver land in Richmond. The planned facility includes two barge berths and a deepsea vessel berth. If built, the trans-shipment port terminal facility will be used for cement storage and trans-shipment, aggregate production, and trans-shipment and concrete manufacture and shipment.

Lafarge Canada Inc. has a cement plant in Richmond and six water-accessible plants providing concrete products and aggregates. Lafarge also produces aggregates at major coastal facilities on Texada Island and Earl Creek on the Sechelt Peninsula.

The locations of water-accessible cement and concrete plants are shown on the map.

Containers

The new DP World container barge service transfers containers between DPW's Centerm terminal in the Vancouver Inner Harbour and the Duke Point terminal in Nanaimo. The short sea shipping service commenced in mid-2012, and has grown to two to three barge moves per week.

The service has streamlined the movement of containerized export cargo off Vancouver Island, which previously typically required trucking via BC Ferries or Seaspan Ferries to a transload centre in the Metro Vancouver region, followed by a drayage trip to Port terminals.


Source: Port Metro Vancouver

C. Potential For Expansion of Short Sea Shipping

New Services

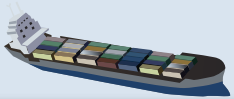
Existing short sea shipping services are easily scalable to accommodate expanded volumes if demand increases.

For the past decade, interest in expansion of short sea shipping through new services has focused on intraregional short sea transportation of containers. Available data was collected and analyzed to estimate the potential volume of container traffic that could be shifted to short sea shipping in Metro Vancouver. As shown on the following schematic of container logistics, of the approximate 1.5 million loaded import containers arriving each year in Metro Vancouver, nearly two-thirds leave port terminals by rail. The remaining third leave by truck. Of the containers transported by truck, 9% are trucked directly to Western Canada destinations and 26% are transferred to import distribution centres.

One-fifth of the containers arriving at import distribution centres are reloaded from 40 foot international containers to 53 foot domestic containers to realize efficiency gains. These containers are then trucked to the rail intermodal terminals: CP's Vancouver Intermodal Facility in Pitt Meadows or CN's Vancouver Intermodal Terminal in Surrey.

Based on these figures, the import traffic that is potentially available to shift from truck to a short sea shipping service would be a maximum of 26% (equal to 390,000 twenty-foot equivalent units (TEU) or approximately 229,000 containers in 2014). If the intra-regional movement of containers by barge was financially viable, the theoretical market size could be sufficient to support at least one regular short sea shipping service in the Metro Vancouver region, based on the probable scale of operations.

Commodities exported in containers are typically shipped by rail to warehouse facilities in Metro Vancouver, transloaded into marine containers, and trucked to the port terminals. A portion of this traffic could also potentially be shifted to short sea transportation.



Goods arrive at Marine Terminals

63% by rail (marine containers)

37% leaves by truck

16% via Intermodal yards

2% goes directly to Intermodal Yards

26% goes to Import Transloads

47% direct rail to Eastern Canada and the US

38% ends up in Lower Mainland Intermodal yards

20% goes back to Intermodal Yards

26% goes to Import Transload

85% Rail to Eastern Canada/US

2% goes to BC customers

4% goes to other Canadian destinations

9% goes directly to Western Canada destinations

<1% goes direct to the US

SOURCE: TRANSLOAD MAPPING STUDY, 2011.

Source: Port Metro Vancouver

D. Logistics Affecting Transportation Choices

Shipper Priorities

Shippers have priorities that impact the viability of transportation services. From a financial perspective, the major factors influencing shippers' choices can be divided into two categories: transportation costs and inventory costs.

Transportation costs are relatively straightforward and include labour, fuel, equipment, and storage. Inventory costs include two major components. The first is the cost of pipeline inventory for goods in transit, which is a function of average transit time from origin to destination and the value of the commodity. The other cost is that of safety stocks maintained as a hedge against uncertainties in transit times.

In general, shippers prefer:

- lower cost alternatives;
- smaller and more frequent shipments minimize pipeline inventory costs; and
- reliability in transportation options as it reduces inventory costs by minimizing the level of safety stocks required.

Carrier Priorities

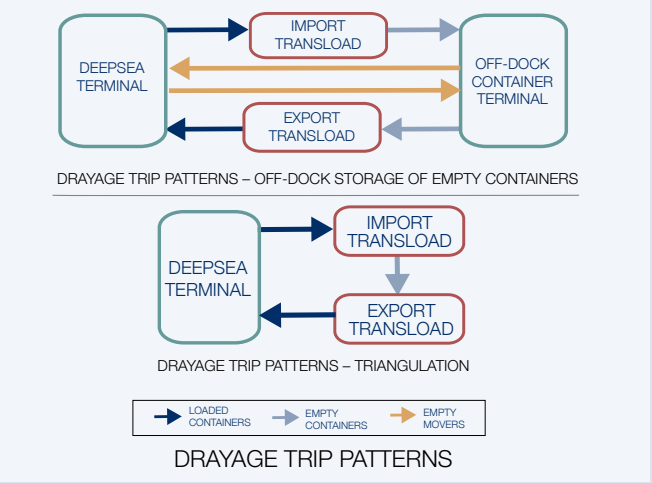
Logistics requires the cooperation of many transportation service providers. Businesses want to achieve the highest operational utilization rates possible while keeping costs down. Commercial feasibility or willingness to consider short sea shipping traffic is also a function of the total freight demand and any seasonal peak demands along with the unit size of the cargo. The more consistent and regular the traffic, the more appealing it is to develop a regular commercial service. Accordingly, carriers may choose not to serve low value short sea shipping, especially during times of tight capacity.

Carriers' priorities are as follows:

- **Shipping lines** attempt to maximize utilization of their container assets by limiting "free time" (i.e. the time that shippers are allowed for loading or unloading of a container before additional charges are imposed).
- **Container terminals** maximize the throughput capacity of their terminals by reducing dwell time (i.e. the time containers spend on the dock).
- **Railways** maximize the efficiency of their operations by reducing dwell time for rolling stock and by ensuring every available slot on a train is filled. The drive for efficiency has placed pressure on railway customers to increase their railcar capacity. These changes necessitate minimum efficient train sizes, which discourages lower volume rail-served short sea shipping services.

The primary competition for short sea shipping of containers is trucking ("drayage"). Under current conditions, trucking cost less and takes less time than short sea shipping. These important factors as well as operational issues would have to be addressed for expanded short sea shipping to be a viable and competitive option in the region.

Drayage trips are generated by the transportation of loaded import containers from the port terminals to import distribution warehouses; transfer of empty containers to off-dock storage or export transload facilities; and transportation of loaded export containers back to the port terminals. In addition, to supply empty containers for export transloading in the Metro Vancouver region, a portion of the containers returning empty by rail are subsequently trucked from port terminals to export transloads to be loaded with export cargo. This creates additional regional truck trips.



DRAYAGE TRIP PATTERNS

Since 2004, drayage efficiency has been reduced by the use of off-dock storage for empty containers. The industry has evolved to compensate by onsite storage of empty containers at import and export warehouses, and increased use of "triangulation" (direct transfer of containers between import and export warehouses) to minimize empty truck trips. Triangulation is facilitated by "clustering" or co-locating import and export activities. In order to compete with trucking, short sea shipping will have to adopt similar strategies. To be competitive, the short sea shipping service would need to involve a river terminal in close proximity to existing distribution centres, which would still necessitate truck trips, although for shorter distances. These additional truck trips may not be required if the terminal is co-located with transload and intermodal facilities.

E. Factors Impacting the Potential of Short Sea Shipping

Short Sea Shipping Viability Requirements

There are a number of factors that have to be present for the expansion of short sea shipping to be commercially viable in Metro Vancouver. It needs to:

- **Offer acceptable transit times** and travel time reliability to accommodate shippers' requirements.
- **Maintain efficient patterns of container movements** throughout the full "cycle" of an import container, including destuffing (cargo is loaded into a container and transported to the carrier for loading on board a ship) at an import distribution centre, transfer to an export transload (process of transferring a shipment from one mode of transportation to another), return of the loaded export container to the deepsea terminal, and potentially empty container storage.
- **Be compliant** with service providers' performance requirements to avoid financial penalties.
- **Be cost competitive** and financially viable for the operator.
- **Provide a financial return** to other supply chain participants (port terminal operators, railways) sufficient to offset the opportunity cost of diverting their assets from other uses.

Federal and Provincial Government Policies

Marine ports, railways, roads, and airports provide efficient, reliable market access, and support economic growth and development. Both the federal and provincial governments support an expanded gateway and trade role through Port Metro Vancouver. Specifically, the Asia-Pacific Gateway and Corridor Initiative is an integrated set of investment and policy measures focused on expanded trade with the Asia-Pacific Region.

Federal and provincial government policies and actions have supported the expansion of short sea shipping through capital contributions for development of infrastructure. Transport Canada support has included contribution agreements for private sector projects, and funding studies exploring the feasibility of short sea shipping.

Industrial Land Supply and Terminal Facilities

The limited availability and high cost of industrial land in the region is a major constraint on development of both deep sea and short sea shipping terminal facilities. Some historic industrial lands have converted to higher density commercial, residential, or mixed use developments. *Metro 2040* includes regional land use designations and policies designed to protect industrial lands for industrial uses, but it cannot encourage or prioritize specific forms of industrial activity, which are determined by market forces. In order to protect the long-term viability of different forms of goods movement in the region, including short sea shipping, key industrial lands must be protected through appropriate land use plans and policies.

Operators of short sea shipping vessels require appropriate terminals and infrastructure at both ends of the trip. In many cases, increased utilization rates at existing terminals could be achieved through intensification. However, significantly increased volumes, new origins or destinations, or new types of cargo (i.e. containers) would require additional land and new terminals and infrastructure. Given the scarce land supply in the Metro Vancouver region, and the limited number of sites located along waterways, a significant challenge to greatly expanded or new forms of short sea shipping is the lack of sites for terminal facilities, as well as associated costs.

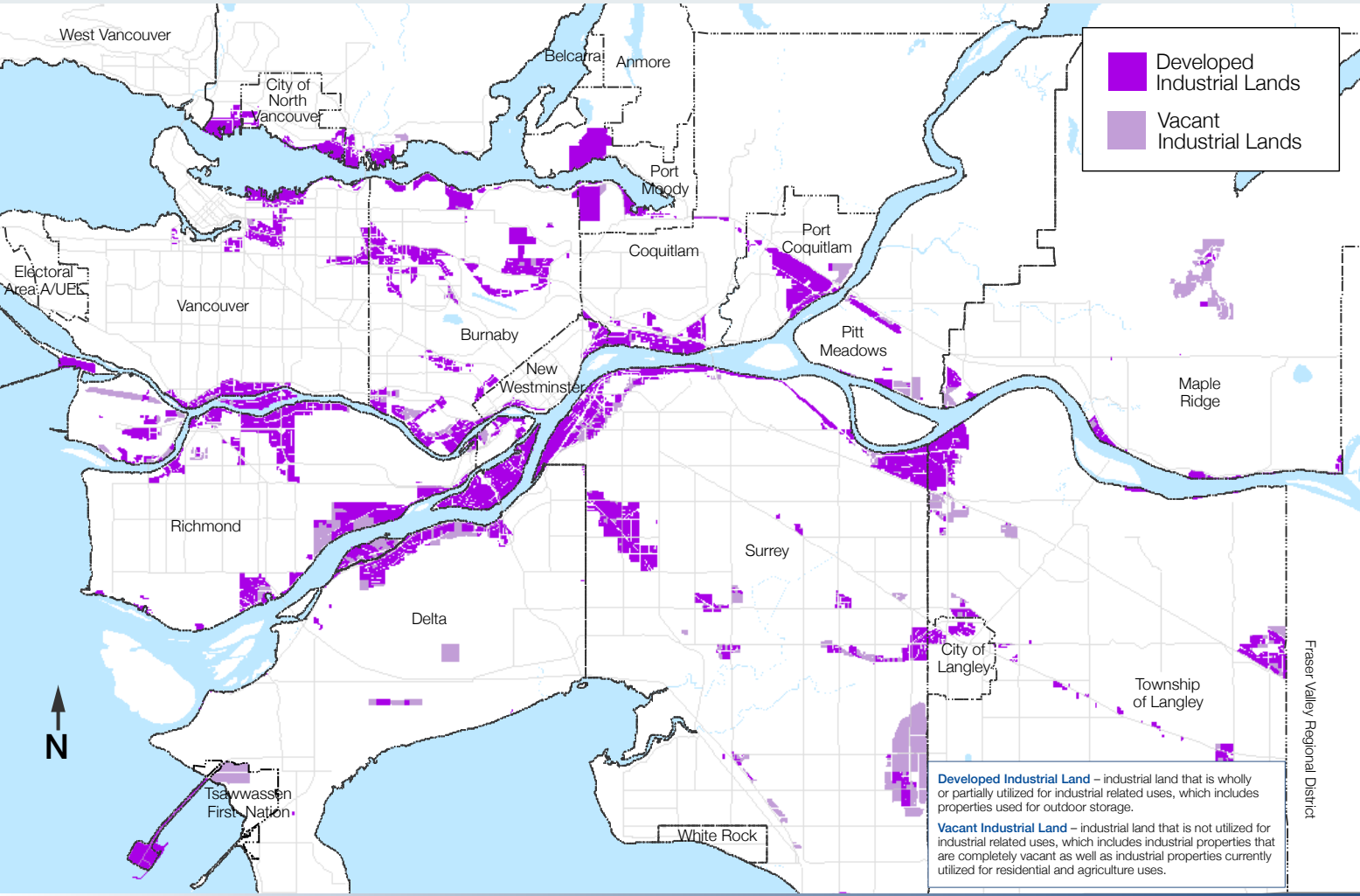
Strategic Lands for Port Related Facilities

Current short sea shipping services are largely in the form of roll on/roll off for trucks and trailers, and point-to-point tug and barge for bulk and break bulk goods. These services do not require significant lands for expansion, even with expected increases in future demand. The existing sites appear to be sufficient for the medium-term and have capacity to increase throughput simply through more intensive use.

Expanding short sea shipping through the development of short sea shipping terminals for container services would require large amounts of land that allows for clustering of container-handling facilities. Clustering improves efficiency and reduces the number of external truck trips. Development of significant new short sea terminals would require new lands beyond those available in the current industrial land supply. Conversion of non-industrial lands to port related uses would require active participation by senior levels of governments. Under current policies, potential locations for short sea shipping terminals for container services are likely to be limited to existing clusters of activity.

Metro 2040 calls on municipalities to protect access points to navigable waterways in order to reserve the potential for goods movement. Short sea shipping requires waterfront lands; these lands are of high value for alternative uses, and vigilance is required by all stakeholders to ensure that existing short sea shipping facilities are not lost. Coordination of regional land use planning with Port Metro Vancouver and member municipalities can also encourage the expansion of short sea shipping activity.

INDUSTRIAL LAND INVENTORY IN METRO VANCOUVER, 2010



Transportation Infrastructure

The movement of goods is greatly impacted by access to the transportation infrastructure network. Transportation operators seek the most efficient, reliable, and cost effective options available to fulfill their needs. Truck, rail, and shipping each have different characteristics and needs.

Industrial businesses, and particularly the logistics sector, locate near transportation infrastructure to maximize efficiencies. However, in many cases, due to the limited land supply in the region, logistics operators are forced to locate farther away from port and rail terminals. The associated truck traffic trips between these destinations, as well as truck parking and container storage, can have negative impacts on surroundings areas.

South Fraser Perimeter Road

The completion of the South Fraser Perimeter Road (SFPR) has reduced travel times for container trucks, particularly for trips to and from Deltaport, at Roberts Bank. This gives drayage (short-haul truck movements of rail or ocean freight) a further comparative advantage over short sea shipping.

George Massey Tunnel Replacement

The replacement of the George Massey Tunnel will have limited impact in terms of opening up the Fraser River to additional shipping opportunities. The Province's replacement of the tunnel will eliminate the current Fraser River draft restriction at that location. The river has similar draft restrictions at other points. In addition, the channel width adjacent to Fraser Surrey Docks limits the length of vessels which can be handled. These restrictions prevent the terminal from handling larger and increasingly common Panamax-sized vessels. The draft and turning radius restrictions are not, however, limiting factors for smaller vessels and short sea shipping. Although the replacement of the tunnel, and associated highway improvements, may spur port-related redevelopment interest in the area, any marine use will be limited by the physical constraints of the channel.

South Fraser Perimeter Road. Source: Port Metro Vancouver

Proposed Roberts Bank Terminal 2

The proposed Terminal 2 at Roberts Bank Deltaport would dramatically increase port throughput, particularly container imports. While the use of short sea shipping within Port Metro Vancouver would not be able to replace the need for a new terminal, the proposed Roberts Bank Terminal 2 Project is being designed to accommodate a future modification to add a short sea shipping operation, should this activity become feasible at some time. However, the factors affecting overall competitiveness of short sea shipping are unlikely to change with construction of the new terminal. The Port Metro Vancouver Land Use Plan states general support for the increased use of regional waterways for the transport of cargo.

F. International Examples

Northern Europe

Europe has been very aggressive in pursuing goods movement modal shift from road to sea and rail, which produces fewer greenhouse gas emissions, pollution, and accidents. Initiatives to encourage short sea shipping include the establishment of Short Sea Promotion Centres that have a strategic vision to make maritime transport a fully integrated component of door-to-door intermodal transport services and a major contributor to sustainability and competitiveness.

Great Lakes & St. Lawrence

The Great Lakes St. Lawrence System is one of the most unique shipping environments in the world, and these ships ("lakers") have many similarities with vessels used for short sea shipping on the Pacific Coast. Maximum ship size is restricted by the dimensions of the St. Lawrence Seaway, various locks and canals. Canadian ship operators pioneered the use of self-unloading technology and have done ship-to-ship transfers of large cargoes downriver using the same technology.

Analysis and Lessons Learned

In reviewing examples of short sea shipping services, the contrast between European and North American outcomes is striking. Europe supports a thriving short sea industry, while North American services have struggled to survive.

The success of short sea shipping is driven by geography and in some cases by inter-industry linkages. Many of the destinations served by short sea shipping are relatively isolated and dependent on ferries to connect to mainland Europe. The relative inefficiency of European road and rail transport is also a factor in short sea shipping's success there. In addition, government policies favour the use of short sea shipping over other modes for freight transport. Furthermore, train capacity is much lower in Europe, and costs are much higher, making train transport for goods less competitive vis-à-vis short sea shipping.

Despite the measures to discourage highway transport, the share of trucking in European Union freight traffic actually increased by 4.5% from 1995 to 2009, from 42.1% to 46.6%, while rail traffic declined from 12.6% to 10.0% over the same period. The mode share of short sea shipping by inland waterway declined from 4.0% to 3.3%.

In British Columbia, the short sea services most resembling Europe are the roll on/roll off ferry operations of BC Ferries and Seaspan Ferries, providing flexible and rapid door-to-door service for various commodities. These services do not compete directly with road or rail transport due to the lack of a fixed link between Vancouver Island and Metro Vancouver. For communities and industries with direct road and rail links, short sea services have not been competitive.

Unifeeder Kiel-max vessel leaving Kotka, Finland.
Photo: James Frost, 2008

Source: Port Metro Vancouver

G. Key Findings

Short sea shipping already plays a significant role in the transport of goods in the Metro Vancouver region, particularly for non-containerized forest products and aggregates, and currently makes up over a quarter of Port Metro Vancouver's total traffic by weight. The potential for expanding short sea shipping varies for different types of goods (containerized vs non-containerized), and accordingly, efforts to advance these forms of goods movement should also vary.

Short sea shipping for existing traffic can be increased through intensification of existing facilities. In most cases, new forms of short sea shipping, such as containers, would require significant new infrastructure investment.

Practically, operational factors limit the location of a short sea shipping terminal to areas in close proximity to existing container import, export and storage facilities; or would require significant investments in the development of an efficient "cluster" of facilities. Further, the potential scale of short sea shipping of containers within the region is limited to the 26% of containers currently moved by truck from Port terminals to transload or intermodal facilities.

Although barge transportation is estimated to be 3.7 times more fuel efficient than transportation by truck, which in turn could lead to reduced fuel costs and consumption, reduced greenhouse gas (GHG) emissions and less air pollution, the truck traffic or GHG reduction impacts of a shift towards greater short sea shipping is limited to the probable scale of operations.

Shipping companies and carrier operators will only provide service that meets their needs and the needs of their customers. Short sea shipping introduces an additional step in the journey, with increased handling costs and other complexities. Additionally, well located industrial lands accessible to waterways are scarce. A shipping service must be competitive (compared to alternatives, i.e. trucking) in terms of costs and transit times, volumes, reliability, and flexibility.

In most cases, trucking is the established form of transporting containers within the region, and offers a flexible, timely, and cost effective option.

Efforts have been advanced by the Port and other operators to provide for a more efficient trucking system in the region. The recent completion of the South Fraser Perimeter Road further facilitates truck transportation within the region. Until the dynamics of the market change, such as increased costs for trucking or more road congestion, significant new short sea shipping services are unlikely.

H. Towards a Regional Dialogue

Noting the requirements for short sea shipping to be viable, the following section explores some of the issues and challenges to advance the expansion of short sea shipping in Metro Vancouver.

Issue #1: Expanding Current Ferry and Barge Forms of Short Sea Shipping

Short sea shipping activity for non-containerized cargo in the Metro Vancouver region can be divided into two categories: regularly scheduled roll on/roll off ferry operations, and point-to-point tug and barge operations. These services enable flexible and rapid door-to-door service and are easily scalable to accommodate expanded volumes if demand increases.

Discussion questions exploring potential solutions:

1. What can be done to expand the existing forms of short sea shipping services for non-container goods?
2. What is the capacity of existing short sea shipping infrastructure to accommodate increased volumes?
3. How could operators within the region expand their utilization of short sea shipping transport, such as the example of Heidelberg's proposal to build a new trans-shipment terminal for aggregates and cement on Port Metro Vancouver land in Richmond?
4. Could some goods that are currently transported in containers be instead transported without containers by short sea shipping?
5. To what degree would a potential shift towards increased short sea shipping of goods impact regional traffic volumes, air pollution, GHG emissions, vehicle accidents, etc.?
6. What are the economic, employment, and taxation implications of expanded short sea shipping?

Source: Port Metro Vancouver

Source: DTCI Team

Issue #2: Increasing the Commercial Viability of Container Short Sea Shipping

Based on numerous studies using different methodologies, cost estimates indicate that the movement of containers by barge is not competitive with transportation by truck under prevailing conditions. Further, even if direct costs were comparable, a commercially viable short sea service would have to offer comparable levels of service for other carriers and service providers.

Discussion questions exploring potential solutions:

1. Could existing industrial lands and port terminals be used for the transport of goods in containers by short sea shipping?
2. What could be done to reduce the capital and operating costs of a potential containerized short sea shipping service?
3. What could be done to improve the commercial viability of short sea shipping for containers?
4. Would increases in fuel costs, road pricing or other policy levers make short sea shipping more competitive relative to trucking?

Issue #3: Reducing Short Sea Shipping Transit Times

Transportation by barge takes significantly longer than by truck. For example, the transit time for import containers by short sea shipping from Vancouver's Inner Harbour to Pitt Meadows is approximately 32 hours, including 8 hours for loading the barge, 8 hours for travel time by barge, and 16 hours to unload at the river terminal. Additional travel time would be incurred if an additional drayage move was required to deliver the container to its final destination. In comparison, current truck travel times for the same trip for individual containers would total approximately 74 minutes, based on a terminal turn time of 42 minutes and a travel time of 32 minutes.

Discussion questions exploring potential solutions:

1. What types of goods are less time sensitive and thus more appropriate for slower transport service?
2. How could short sea shipping transit times be reduced?
3. If road congestion increases or road pricing is enacted, will short sea shipping become more viable?

Issue #4: Securing Industrial Lands for Short Sea Shipping Facilities

There is a very limited supply of industrial lands in Metro Vancouver. Although many of the regionally significant industrial lands are protected through the regional growth strategy, the scarcity of land affects most aspects of the logistics industry. There are only a few sufficiently large industrial sites with access to waterways. If short sea shipping operators wanted to expand in the region, they would find very few suitable large-scale sites with good road and/or rail access, fronting the Fraser River or ocean.

Discussion questions exploring potential solutions:

1. What further plans or actions are required to protect industrial lands along waterways for marine related uses including short sea shipping?
2. How can local and regional goals and impacts be balanced when considering the use of industrial lands located along waterways?
3. Of the inventory of industrial lands in the region, which sites have the greatest potential for short sea shipping use?
4. Are there other lands in the region with potential for short sea shipping use?
5. What lessons can be applied from other jurisdictions to support short sea shipping expansion in Metro Vancouver?

Issue #5: Securing Industrial Lands for Co-locating Logistics Centres

Efficiency in drayage trips can be facilitated by "clustering" or co-locating import and export transload warehouses, and transferring empty containers directly from importers to exporters near inter-modal transportation terminals. This "triangulation" minimizes travel time and reduces the number of truck trips.

Discussion questions exploring potential solutions:

1. What further plans or actions are required to secure industrial lands near intermodal terminals for co-locating logistics centres?
2. Of the inventory of industrial lands in the region, which sites have the greatest potential for co-locating logistics centres?
3. To what degree would potential co-located logistics centres impact the region in terms traffic, pollution, GHG emission, and accidents?
4. What are the economic, employment, and taxation implications of co-locating logistics centres?

Source: Port Metro Vancouver

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