



**BRITISH COLUMBIA INTERNATIONAL SHIPPING INDUSTRY  
LABOUR MARKET INFORMATION STUDY**

*Prepared by*



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*A division of the GLOBE Group*

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**“The views and opinions expressed in this report are those of its author(s) and not the official policy or position of the Government of British Columbia.”**

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## EXECUTIVE SUMMARY

*The British Columbia International Shipping community is a relatively small component of a much larger maritime industry supporting Canada's marine gateway to the Pacific Rim and home to one of the largest and most diversified ports on the west coast of North America.*

*In fact, British Columbia serves as a major hub for various maritime commerce services ranging from transportation, logistics, and supply chain management, through to a myriad of high technology and corporate services. Included within the domain of corporate services are a host of cargo and vessel management functions, as well as a suite of high level maritime commercial activities such as ship financing, chartering, and associated legal, insurance, and other professional services.*

*This study does not deal with occupations that essentially are sea going or that involve shipbuilding or maritime architecture. Rather, the focus is on the corporate and professional service occupations that manage shipping operations, generally from shore-based companies, also referred to as "Mind and Management" occupations.*

*It is this constellation of occupations that lies at the core of this analysis. As has become evident from the research undertaken, a serious shortage of qualified labour can be expected over the next ten years to fill anticipated vacancies in the international shipping community, especially for senior corporate management and highly skilled technical positions.*

*The purpose of the International Shipping Industry Labour Market Information (LMI) Study is to provide an evidence based analysis of the existing and anticipated labour force supply and demand for key international shipping industry occupations in British Columbia.*

*This study was undertaken by GLOBE Advisors on behalf of the Vancouver International Maritime Centre (VIMC) and was conducted in keeping with existing guidelines for such studies. The findings contained herein are intended to identify barriers or challenges affecting the supply of persons with the required skills, education and experience in this sector, and to help develop policies, programs and a workforce strategy to grow international shipping presence in the Province of British Columbia, particularly relating to corporate services associated with international shipping.*

*There were two major components to the research undertaken for this labour market study. The first was a comprehensive occupational analysis, which involved an in-depth analysis of labour force trends and forecasts as reflected in a variety of statistical databases and forecasting models, most notable being the British Columbia 2025 Labour Market Outlook, as well as Statistics Canada's most recent National Household Survey, 2011. This is generally referred to herein as the 'Secondary Research.'*

*The other major component of the research activity involved extensive outreach and consultations with key industry stakeholders, utilizing a variety of pre-approved survey and questionnaire tools. This outreach extended beyond the British Columbia borders and involved on-line polling and telephone survey activities with key industry players across Canada.*

This research is generally referred to herein as the 'Primary Research,' as it provides the real world intelligence of issues and challenges faced everyday by those who are actively engaged in the international shipping domain.

These two dimensions of the research proceeded on somewhat different timelines, but herein are reported in a tightly integrated manner. The general findings arising from both facets of the research were generally consistent with one another. For the most part, greater weight was given to the findings of the Primary Research in drawing conclusions and recommendations because many of the secondary statistical data sources did not collect or report labour market information specifically tailored to the international shipping component of the broader maritime sector or transportation industry.

Indeed, as is reported more fully within subsequent sections of this report, it was often difficult to isolate data from Canada's 2011 National Occupation Classification (NOC) System, or Statistics Canada's Survey of Employment, Payrolls and Hours (SEPH) that accurately reflected the highly skilled occupations and job titles in the international shipping community. This is due to the fact that no previous study of this nature and within the International Shipping domain has been carried out within Canada.

In order to address this challenge the International Shipping Industry LMI Study that follows took great efforts to clarify what constitutes the international shipping industry. In particular, the study identifies how the international shipping industry sets itself apart from other dimensions of the maritime and transportation sectors in the economy, and what challenges lie ahead in terms of ensuring that there will be an adequate supply of human resources to fill anticipated jobs in the corporate, skilled technical and professional support service jobs in the years ahead.

Finally, in addition to the above, an extensive review of available literature on trends and human resource development in the international shipping community was undertaken. A listing of these research sources is contained in the Appendices to this report.

### THE INTERNATIONAL SHIPPING INDUSTRY IN BRITISH COLUMBIA

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British Columbia is a major marine gateway to the Pacific Rim, and the Port of Vancouver serves as Canada's largest port and one of the most diversified ports on the west coast of North America. In fact, Vancouver and British Columbia overall serve as a major hub or gateway for various maritime services ranging from transportation, logistics, and supply chain management to a myriad of high technology and corporate support services.

Indeed, the critically important functions within the international shipping domain that are at the core of the labour market analysis involve the highly skilled corporate and technical service occupations relating to cargo management, vessel inspections, ship management, crew deployment, and high level maritime commercial activities, such as ship financing, chartering, as well as associated legal, insurance, and other professional services.

By its very nature, the shipping industry is highly mobile. Shipping companies can establish their cargo and ship management operations geographically in line with shifting trade patterns and/or political circumstances. In this regard, globally, economic power is shifting from western mature economies to fast growing economies in Asia, Africa and China, many of which are also

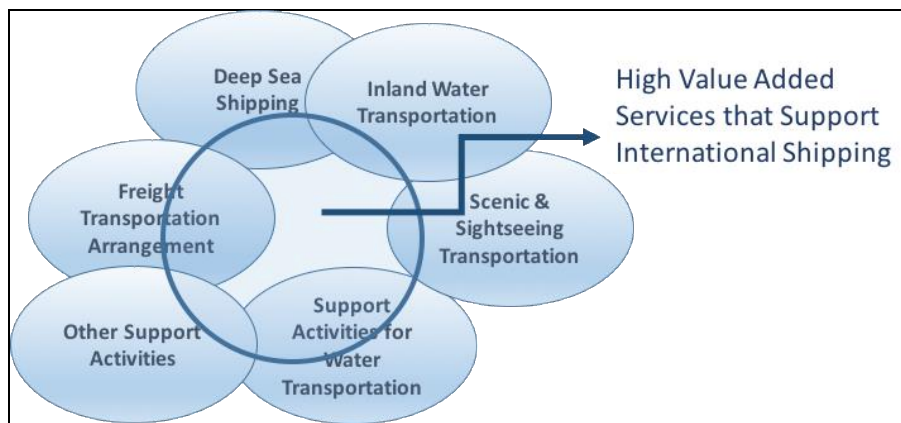
expanding their maritime fleet capacity to serve growing import and export demand.<sup>1</sup> Ship owners and managers have considerable freedom in terms of where they establish their shipping management offices and/or their affiliate companies. International shipping companies based in British Columbia routinely manage cargo moving between various locations around the world.

One of the key goals motivating this labour force analysis was to determine what factors might be in play that are constraining the retention or expansion of this highly important component of the maritime commerce community.

Many studies have confirmed that the professional services sector within international shipping is an important component of British Columbia's community of practice for the larger maritime sector. The clustering effect not only encourages the proliferation of high value added services and high paying jobs; it also encourages innovation and excellence in this domain. The international shipping sector is growing in importance as a contributor to the economic well-being of the province. A later section of this report deals with the economic spinoff benefits of the international shipping sector. See Section 9.

In addition to the international shipping service providers, there exists a supporting cadre of maritime lawyers, bankers, insurance agents, educators and human resource professionals that support international shipping activities. The occupational analysis examined the supply and demand for labour in this community as well. As shown in Figure A below, there is a wide range of sectors that support the international shipping industry.

**FIGURE A**  
**INTERNATIONAL SHIPPING SERVICES VALUE CHAIN**



Source: GLOBE Advisors

<sup>1</sup> Although written with a primary focus on EU Shipping, the OCED Report "Study on the Analysis and Evolution of International and EU Shipping, Final report, September 2015" provides a useful overview on trends and developments affecting the global shipping industry. See <http://bit.ly/2j1kbQ9>

## EMPLOYMENT IN THE INTERNATIONAL SHIPPING INDUSTRY

By way of definition of the types of companies that operate in the International Shipping Sector, the following definitions are based on the North American Industry Classification System (NAICS). All of these classifications include corporate services associated with international shipping.

**Freight forwarders and customs brokers** (NAICS 488519) are primarily engaged as intermediaries between shippers and carriers. They may offer a combination of services spanning transportation modes. This group also includes establishments primarily engaged in arranging and coordinating the transportation and storage of goods without themselves providing actual transportation and storage services.

**Marine Shipping Agencies** (NAICS 488511) comprises establishments primarily engaged in representing shipping lines, arranging for the taking on of cargo and performing other business transactions in port, on behalf of ship owners and charterers.

**Deep Sea and Coastal Water Transportation** (NAICS 4831) consists of establishments primarily engaged in providing water transportation services for freight and passengers. Establishments that operate ocean-going cruise ships are also included here.

As shown in Table One below, in 2015 there were 532 business establishments providing freight transportation and related services in British Columbia. These included 42 Marine Shipping Agencies; 83 businesses engaged in Deep Sea or Coastal Shipping Operations and 407 establishments in the domain of Freight Forwarders and Customs Brokers. These three categories are directly based on the North American Industry Classification System (NAICS), all of which include an aggregate of corporate services associated with international shipping.

**TABLE ONE**  
**SHIPPING RELATED BUSINESS ESTABLISHMENTS, BRITISH COLUMBIA**

	2011	2012	2013	2014	2015
<i>Freight Forwarders and Custom Brokers</i>	368	382	402	403	<b>407</b>
<i>Marine Shipping Agencies</i>	51	45	51	51	42
<i>Deep Sea and Coastal Transportation Service Providers</i>	111	104	109	99	83
<i>Total Shipping Establishments</i>	530	531	562	553	532

Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH)

Essentially, all employees engaged by Marine Shipping Agencies are directly involved in providing international shipping services. Freight Forwarders and Customs Brokers employ people who arrange transportation for cargo on a multimodal basis, including transportation by ocean carrying vessels. Business establishments involved in Deep Sea and Coastal Shipping have shipping divisions that employ “on shore” international shipping experts in addition to at sea employees. It is not possible to extract precise numbers of international maritime shippers from the overall industry involved in managing their “own shipping” activities. They are important to this analysis, as they also compete for personnel with international shipping skills.



**TABLE TWO**  
**EMPLOYMENT BY SHIPPING RELATED COMPANIES IN BRITISH COLUMBIA**

	2011	2012	2013	2014	2015
<i>Freight Forwarders and Customs Brokers</i>	3,739	4,120	3,993	4,029	3,937
<i>Marine Shipping Agencies</i>	836	751	793	778	772
<i>Deep Sea &amp; Coastal Transportation Providers</i>	6,880	6,974	7,069	7,163	7,257
<i>Total Employment by Shipping Companies</i>	11,455	11,845	11,855	11,970	11,966

Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH)

As noted in Table Two above, Marine Shipping Agencies in British Columbia employed an estimated 772 workers in 2015, a small component of the larger shipping related community, which employs almost 12,000 people. Moreover, as these figures illustrate, employment growth has been minimal for these industries since 2011 to 2015

## OCCUPATIONAL ANALYSIS

The occupational analysis that follows is based on comprehensive research methodology and research tools that not only meet the LMI Standards set out by the Province, but also accurately reflect the issues and concerns of key stakeholders in the international shipping community. In addition to providing supply and demand projections, the occupational analysis describes the demographic, educational and income characteristics for shipping related occupations, as reflected in Canada's 2011 National Occupation Classification (NOC).

The initial baseline for the occupational analysis was a selection of NOC Code occupations identified during a preliminary analysis involving many industry stakeholders, and was conducted prior to the current study. These NOC Code occupations were reviewed by a Governance Board comprised of key stakeholders in the international shipping community and subsequently ratified by the Provincial officials responsible for the standards required for such studies. These occupations are grouped in the following categories that reflect the Statistics Canada 2011 NOC structure:<sup>2</sup>

- Senior Management Occupations
- Business Services and Administration Occupations
- Natural and Applied Sciences and Related Occupations
- Education, Law and Social, Community and Government Services
- Sales and Service Occupations
- Trades, Transport and Equipment Operators and Related Occupations.

On a province-wide basis over 750,000 employees are engaged in the baseline occupational NOC Code groups selected for this analysis. This very large population includes workers with a wide range of skills sets, some of which are potentially employable either directly or indirectly in jobs related to the movement of cargo by ocean transportation. It also includes workers that provide valuable support services, including insurance, legal, education, security, engineering, inspection and maritime occupations.

<sup>2</sup> See Appendices for detailed descriptions on each of the relevant NOC Code occupations

It is from this point that the occupational analysis was able to drill down to several select or key occupations more directly engaged in international shipping related activities, drawing upon data from various secondary sources, as well as from the findings from primary stakeholder engagement.

### SKILLS SHORTAGES CONSTRAINING GROWTH

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A key motivating factor for this study has been the ongoing concern expressed by many international shipping companies that a serious shortage exists in the local workforce for persons who are qualified by virtue of their education and/or at-sea experience, but are unable to fill a select number of key senior management or highly technical positions due to the lack of recognition of their qualifications. The types of positions that often fall within this scope are described more fully below.

The lack of qualified and available talent is viewed by many as an impediment to the orderly expansion of British Columbia's international shipping sector, and ultimately an impediment to the realization of a significant area of potential economic growth for the province.

***“International shipping jobs, particularly those in the middle and upper management ranks, require highly specialized knowledge and skills, often combined with extensive experience only available at sea in highly technical operating environments.” – Senior industry stakeholder.***

As noted earlier, international shipping is a highly mobile industry. Middle and senior managers are frequently required to travel the world to manage cargo movements in real time. Not only must these highly skilled employees understand the dynamics of shipping, they must also have an intimate knowledge of operating conditions in many areas of the world – knowledge that can only be acquired through experience at sea.<sup>3</sup>

So too, companies that own or manage commodities to be borne by ships have firm guidelines, not only with respect to vessel standards, but also on the operational experience requirements of personnel directly involved in the transportation of their cargo. Failure to comply with such standards may automatically terminate the shipments. Non-compliance could potentially nullify any insurance coverage should an incident occur in international or national waters.

Graduates from British Columbia's maritime schools for the most part do not have requisite experience at sea, which virtually eliminates them from many vacant positions in the sector, regardless of their academic training.

As was frequently noted in the stakeholder consultations, the shortages of locally available graduates with skills and experience in international shipping needs to resonate with provincial and federal educational and training providers to adapt curricula and skills development programs to better prepare Canadians for occupations in this sector.

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<sup>3</sup> The length of sea time experience required for certification and /or employment in certain at sea or shore-based management positions varies by occupation. The U.K. Maritime Skills Alliance publishes an excellent on-line summary of Roles, Career pathways and Required Qualifications for many of the occupations encompassed in this current Labour Force Analysis. See <http://bit.ly/2i4x9sf>

In this regard, the development of a community of practice among learning institutions, the industry, non-government sectors and governments at all levels is seen as a strong prerequisite for preparing and providing the much needed professional workers.

*“For almost twenty years there have been growing concerns about an impending shortage of seafarers. This shortage of seafarers is a matter of worldwide concern because many of the skill sets needed in the broader maritime sector require seafaring skills. The nature of the maritime sector is such that seafaring has traditionally been viewed as the starting point which can lead to a range of shore-based maritime careers. Seafaring skills and experience are viewed as being of direct use and importance for a range of maritime shore-based careers including pilotage, marine surveying, terminal/cargo operations, port operations, ship management, marine administration, and maritime education and training.”<sup>1</sup>*

A recent report cautions that the industry and relevant stakeholders should not expect an abundant supply of qualified and competent seafarers in the future without a strong concerted effort to promote careers at sea, enhance maritime education and training worldwide, address the retention of seafarers, and continue monitoring the global supply and demand for seafarers on a regular basis.<sup>4</sup>

World-wide marine personnel are needed to replace retiring shipping executives, captains, officers, marine port workers and engineers. So too, as reported by several respondents, the number of students enrolling in marine courses has been falling. Many young professionals are hesitant to join the marine livelihood due to the long times at sea.<sup>5</sup>

The industry, however, is dependent on precisely these individuals whose off-shore experience will shape their competencies for future on-shore positions and corporate activities in international shipping. These skills shortages affect both at-sea and onshore shipping-related operations. For many industrialized countries, including Canada, the shipping industry no longer holds the same level of attraction for younger entrants to the job market.

The changing nature of the shipping industry, as well as persistent labour shortages, is seriously constraining the expansion of shipping operations in many countries. Moreover, these skills and knowledge shortages have yet to fully manifest themselves.<sup>6</sup>

British Columbia-based international shipping companies often seek to overcome these skills gaps by recruiting trained and experienced workers from other countries. However, most of the companies consulted report that Canada's immigration system often does not recognize the complexities of the skill set requirements of the international shipping sector, or the inability to recruit qualified employees from within Canada.

<sup>4</sup> The global supply and demand for seafarers in 2015, BIMCO Manpower Report, [www.bimco.org](http://www.bimco.org)

<sup>5</sup> <http://www.mainlandmachinery.com/maritime-labour-crisis/>

<sup>6</sup> Shipping Shortages and Generation Y, Dr. Stephen Cahoon, Department of Maritime and Logistics Management Australian Maritime College

It has been reported through the stakeholder engagement process that the recruitment process for foreign trained employees is unpredictable, time consuming and very expensive, all of which further prolongs the skills gap impeding company operations.

### OCCUPATIONAL MODEL PROJECTIONS TO 2025

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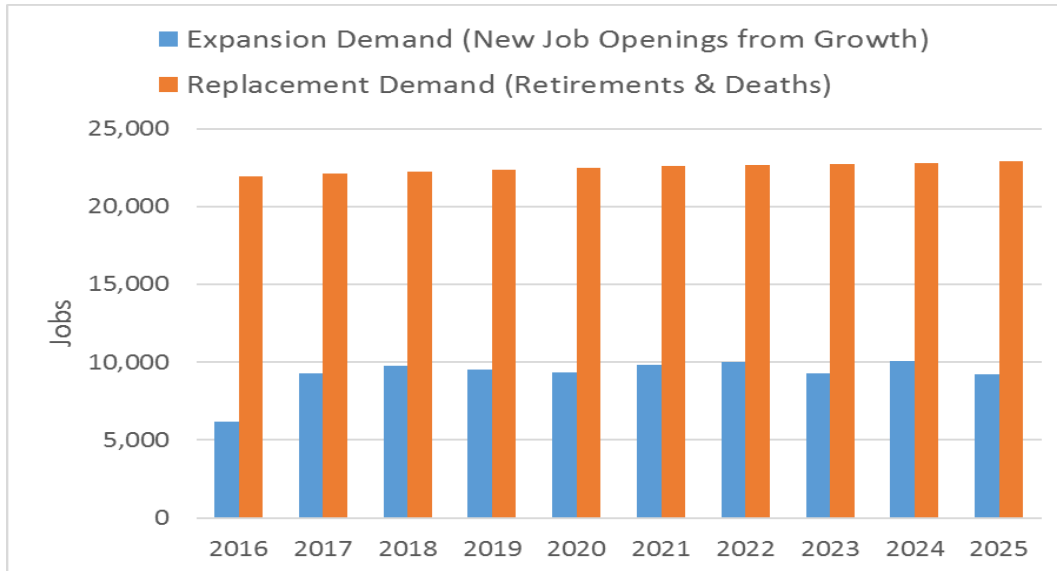
The occupational analysis labour supply and demand projections are based on ten year forecasts (2016 to 2025) using the British Columbia 2025 Labour Market Outlook. This model generates labour demand and supply projections for all 500 occupations in the province. The Model uses the following labour market definitions:

- a) **Unemployment Rate** – the percentage of the labour force in each occupation not employed but available to work.
- b) **Expansion Demand** – new job openings arising due to economic growth.
- c) **Replacement Demand** – job openings to fill positions generated through retirements and deaths.
- d) **Supply less Demand** – the difference between supply and demand. A positive value indicates that supply is greater than demand.
- e) **Demand** – the total number of persons employed plus vacant positions
- f) **Supply** – the expected labour force, including those employed and those actively looking for a job.

Based on projected unemployment rates and a shrinking supply of labour relative to demand, the British Columbia Outlook Model suggests that generally labour markets across the province for the six occupational categories noted earlier will become increasingly tight ten years from now. Overall, for the occupations that have been identified by the VIMC Board as being important to the international shipping job skills needs, labour supply is projected to be slightly greater than demand by 2025.

Figure B shows the projected expansion versus replacement jobs for the outlook period 2016 to 2025. The British Columbia 2025 Labour Market Outlook Model predicts that seventy-one percent of the new jobs that are forecast for these occupations in the ten-year outlook period are replacement jobs based on retirements and deaths. Twenty-nine percent are expansion jobs based on new demand for each occupation's specific services. The heavy focus on replacement versus expansion jobs is consistent with the older age structure of these international shipping related employees.

**FIGURE B**  
**PROJECTED EXPANSION AND REPLACEMENT JOBS 2016 TO 2025,**  
**SELECTED OCCUPATIONS BRITISH COLUMBIA**



Source: British Columbia 2025 Labour Market Outlook

## EDUCATION ATTAINMENT AND AGE STRUCTURE

International Shipping professionals generally are highly educated and trained. A large percentage of the people working in senior management or highly specialized occupations province-wide have university certificates, diplomas or degrees at the bachelor level or above, or other non-university certificates or qualifications. Very few people employed in senior management or the high value added profession services cohort lack certificate, diploma or degree level educational qualifications.

These occupations analyzed have a moderately older workforce than the average for all occupations in the province. More specifically, a higher percentage of Senior Management, Education and Law and Business and Finance personnel falls within the 55 to 64-year age bracket than is the case with other occupations.

This has implications for retirements and the demand for replacement workers over the next five to ten years. With respect to persons currently employed in British Columbia-based international shipping companies, the concerns associated with an aging workforce are very real and immediate.

The high levels of education achieved by this segment of the workforce, as well as the phenomenon of the maturing/aging demographics within international shipping, are discussed more fully in the following paragraphs related to the findings from the stakeholder engagement process.

### FINDINGS FROM STAKEHOLDER ENGAGEMENT CONSULTATIONS

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Many of the observations emerging from the analysis of secondary information sources were confirmed in discussions with firms directly engaged in international shipping. An integral component of the Labour Market Information Study, entailed a comprehensive Stakeholder Engagement Program, intended to gather primary data to validate the secondary data analysis.

The stakeholder engagement process employed a multi-phase, multi-tiered series of surveys, questionnaires, one-on-one interviews, small group meetings and focus groups. Stakeholders targeted included: ship owners and agents within British Columbia, shipping stakeholders across Canada (e.g. suppliers, support services), and international shipping industry stakeholders (e.g. educational institutes, regulatory bodies, immigration and legal experts). In all, a total of 112 organizations were contacted, accounting for approximately 500 employees.

Key questions covered in the primary research included: Individual job titles, workforce demographics (i.e. age, education, etc.), training requirements, incomes, employment tenure, and recruitment practices. Ship owners constituted the largest group of the organizations consulted (over two thirds) followed by Shipping Agents (roughly one third).

Many of the organizations consulted (one third) were headquartered in Asia, while Europe and the United States accounted for less than one quarter each. More than one third of all respondents cited proximity to operations as the primary consideration for the location of their head offices.

### LABOUR / EMPLOYEE PROFILES

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The data captured clearly indicates that a significant segment of the workforce has reached middle age or older; hence, the need to find replacements in these areas will become a major priority within the next 10-15 years. Some of the following observations were particularly telling of the maturing workforce in the international shipping industry:

- A significant segment (nearly half) of senior management and senior technical occupations are currently filled by individuals who are 45 years of age or older.
- Even more noteworthy is that the percentage of employees who have reached 55 years or older is significantly higher (25 – 35 %) than the provincial average (20.3%). This latter statistic clearly spells out a looming labour shortage brought on by substantial retirement figures in the next +/- 10 years.
- Roughly two of ten senior management employees are older than 65 years of age

More than two thirds of the workforce employed in the international shipping sector have a Bachelor's degree (or equivalent), or higher level of education. Combined with on-the-job training and, in certain cases, first-hand experience at sea, the complete training and qualification process for employees in this sector in most cases ranges from 10 – 15 years. Half of senior management personnel possess: two or more certificates/diplomas/degrees or a master's degree (average of 5-6 years of education) plus the experience necessary to occupy a senior position.

### RECRUITMENT / RETENTION

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A significant number of respondents expressed the need to recruit employees from outside of Canada in order to maintain a qualified workforce within their organization. The vast majority of these positions are highly specialized and operations-based.

Roughly half were senior management positions, which further demonstrates the lack of local talent needed to fill key vacancies. Nearly half of all respondents indicated that the current Canadian immigration process has negatively impacted their companies' operations. Of these, virtually all respondents consider the Labour Market Impact Assessment (LMIA) process to be seriously cumbersome and time consuming to navigate. High application fees (\$1,000 / employee) and turnaround times of often six months or longer, have rendered this approach virtually a last resort when recruiting from overseas.

**The cost of international recruitment is high. As one stakeholder respondent noted, "to hire an international employee costs our company approximately \$100,000. Why would any company choose to pay this expense, if in fact qualified workforce were available in the local market?"**

More than two thirds of all respondents foresee shortages of labour for the following areas: Ship chartering (NOC 1315), Engineering superintendents (NOC 2274), Insurance specialists (NOC 2262), Marine engineering (NOC 2273), Marine operations, Operations and commercial management (NOC 1315), Port captains and Port operation (NOC 01310, as well as Project Engineers with ship-based experience, Superintendents (with and without containership experience), and certain trades personnel.<sup>7</sup>

A search was conducted using the Canada Job Bank of international shipping related occupations. The search spanned both public and private job banks, in addition to the Canada Job Bank.<sup>8</sup> In total 11,582 international shipping related postings for British Columbia jobs were issued as of October 21, 2016. These figures clearly indicate the demand that exists for people with shipping related experience and skills.

### IMMIGRATION AND IN-MIGRATION

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The importance of international immigration, inter-provincial in-migration and other net mobility job changers within the province for 2020 cannot be understated. The overall supply change in 2020 for the Core International Shipping occupations are projected to be 26%, attributable to international immigration and inter-provincial in-migration by 2020. Total mobility factors, including other in-mobility or people changing jobs represented 74.8% of the total supply change.

The shipping occupations that are most in-migration sensitive include: Deck officers, Security agents, Engineering inspectors, Engineer officers and Customs brokers. A more complete analysis of immigration and in-migration factors affecting the sector appears within the main body of this report.

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<sup>7</sup> See Appendix 2 - Key Occupations in the International Shipping Industry for a more complete breakdown of these select occupations.

<sup>8</sup> [http://www.jobbank.gc.ca/advanced\\_search.do](http://www.jobbank.gc.ca/advanced_search.do)

### RECOGNITION OF COMPETENCIES

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A major factor compounding the problem of recruitment that was identified during the stakeholder consultations relates to the recognition of marine at-sea experience, education and training by both regulatory agencies and some academic institutions.

It was noted, for example, that although Master's Certificates are recognized by Transport Canada, these certificates are not always recognized across the industry or by educational institutions, despite the fact that upon completing a significant time of practical, "hands-on" experience, a Master Mariner will have acquired skills in Human Relations, Administration and Management that can be offered to prospective employers.

There are many reasons for this practice, some relating to the areas of experience that a particular candidate might have acquired that may or may not fit well with the hiring preferences of the recruiting company or the mandatory operational requirements of a particular shipper.

So too, difficulties in validating academic credentials can prove too daunting for a hiring manager or immigration specialist. In this regard, Canada's immigration system does not always recognize the qualifications acquired at sea as being equivalent to actual educational credentials. As a result, many qualified and urgently needed professionals are not considered qualified to enter the Canadian labour market.

### EDUCATION ISSUES

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One of the key stumbling blocks identified for mariners wanting to work onshore is that the maritime certificates of competency are not necessarily recognized by educational institutes. It was noted that North American academic institutions lag behind other jurisdictions in this regard.

Currently, in Canada only the Marine Institute at Memorial University of Newfoundland, offers a Master's Degree program which accepts maritime officers who have spent significant time at sea, and recognizes the skill sets that they have acquired at sea. It was also noted that the LMI report could be the impetus for institutions to further develop maritime programs for international students, given that tuition fees (hence revenue) are higher from international students. The further development of marine-related educational programs would significantly attract students from abroad. Expanded marine educational programs could also provide an incentive to attract smaller institutions, such as Capilano University and Kwantlen Polytechnic University, as these institutions may have greater curriculum flexibility and willingness to run small programs.

Despite the difficulties in recruiting personnel to fill key positions, overall, salaries for key positions in the international shipping industry are high, reflecting the high levels of education attained by the workforce. Base salaries reportedly range from \$70,000 for middle management personnel to over \$120,000 for senior managers (not counting other benefits such as housing allowances).

An analysis from the stakeholder engagement survey, in conjunction with the occupational analysis, have allowed for the development of a succinct grid (Table Three below) identifying international shipping jobs that are in seriously short supply and in some cases difficult to fill. The stakeholder engagement process concluded that in order for the international shipping industry to reach its full potential, and thereby meet the growing future demand for global shipping, a comprehensive and integrative approach would need to be implemented.



**TABLE THREE**  
**DIFFICULT-TO-FILL INTERNATIONAL SHIPPING JOBS**

<b>NOC</b>	<b>Typical Job Titles</b>	<b>Canada Job Bank</b>	<b>Outreach Results</b>
0016	President / CEO Shipping or Maritime Organization	High	Moderate
	General Manager	High	High
	Vice-President	High	Moderate
0113	Port Operations (Sales) Manager	High	High
	Purchasing and Inventory Control Manager	High	High
	Manager Purchasing Contracts	High	High
0731	Marine Superintendent	Low	High
	Senior Operations Manager, Manager, Freight Traffic	High	High
	Tankers Manager	Low	High
	Fleet Manager	High	High
	Port Captain (Harbour Master)	Low	High
1113	Broker, foreign exchange trader, investment dealer	Low	Moderate
	Commodity trader	Low	Moderate
1215	Supply Control Coordinator	Moderate	Moderate
1315	Chartered Shipbroker	Low	High
	Negotiating Spot / Time Charter, Charterer	Low	Moderate
	Technical Assistant	Low	Moderate
1521	Shipping Agent.	Moderate	Moderate
1526	Schedule Writer, Transportation	Moderate	Moderate
2262	Marine Damage Surveyor, Insurance Inspector / Manager	Moderate	Moderate
	Cargo Surveyor	Moderate	High
	Insurance Loss Prevention Inspector	Moderate	Moderate
2273	Marine Engineering Cadets	Moderate	Moderate
	Master Mariner/ Navigation Officer	Moderate	Moderate
2274	Chief Engineer – Water Transport	Moderate	High
	Engineer Officer – Water Transport	Moderate	High
	Marine Engineer Officer, Engineering Superintendent	Moderate	High
6524	Cargo Customer Service Representative – Marine	High	Moderate
7532	Bridge Watchman, Quartermaster	Moderate	Moderate
	Crew Coordinator	Moderate	High
	Marine Assistant	High	Moderate

Source: GLOBE Stakeholder Outreach Program

### TAKE AWAY POINTS FROM THE STAKEHOLDER OUTREACH PROGRAM

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- Despite efforts reported by all companies to hire locally, most of the positions filled from British Columbia or Canada are corporate support services or administrative positions, while most of the positions filled from outside of Canada involve highly technical operational or in top management activities.
- Most respondents reported that the lack of qualified local candidates was due to factors relating to the specialized nature of the job requirements in the international shipping industry and/or the need for sea-going experience, which was difficult to acquire within Canada.
- Skills upgrading is done through on-the-job training, as well as correspondence courses at international institutions, which, given the nature of the International shipping companies, means that the upgrading process is typically not geographically limited.
- Certifications (Master Mariner, Chief Engineer) that are valid within Canada can only be issued by Transport Canada, and Transport Canada does not recognize many certifications achieved in other countries, thereby severely limiting the talent pool. Furthermore, only those prospective employees with permanent residency or citizenship may write Transport Canada's exams, which inevitably results in further delays in the process.<sup>9</sup>
- Respondents also reported frustration with the visa and permanent residence application processes, namely that they are: slow, uncertain and costly.
- Positions within the industry are reasonably well paid, with good upward mobility. Despite over two-thirds of all respondents listing Vancouver's cost of living as a problem, it is not a key consideration for where to open a head office, with operating costs and geographical location more often listed as primary concerns.

### ECONOMIC IMPACTS OF INTERNATIONAL SHIPPING EMPLOYMENT

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It was frequently reported during the stakeholder consultation process that every new hire in the international shipping community, particularly in the senior management or professional ranks, generated significant direct, indirect and induced benefits.

To test this assertion, GLOBE Advisors undertook a more detailed analysis of such secondary and tertiary economic impacts. Reported below are the findings specifically related to positions at the Senior Management level. In brief, it was found that every dollar earned in a Senior Management position in the international shipping community generates an additional \$7.98 of business revenues in the British Columbia maritime economy, including spinoffs, and \$3.92 in Gross Domestic Product. The economic basis for these findings is as follows.

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<sup>9</sup> See Questions Frequently Asked Regarding: Certification and Training issued by Transport Canada for more details. <http://bit.ly/2j108RR>

**Direct effects** measure the initial requirements for an extra dollar's worth of output of a given industry. The direct effect on the output of an industry is a one dollar change in output to meet the change of one dollar in final demand. Associated with this change, there will also be direct effects on GDP, jobs, and imports.

**Indirect effects** measure the changes due to inter-industry purchases as they respond to the new demands of the directly affected industries. This includes all the chain reaction of output up the production stream since each of the products purchased will require, in turn, the production of various inputs.

**Induced effects** measure the changes in the production of goods and services in response to consumer expenditures induced by households' incomes (i.e. wages) generated by the production of the direct and indirect requirements.<sup>10</sup>

Senior Management international shipping occupations earn a median salary of \$84,690 in 2015 based on Work BC and the Canada Job Bank. For every new job with a salary of \$84,690 based on the Statistics Canada Input Output (IO) multipliers for the British Columbia maritime economy, an additional \$676,163 of direct, indirect and induced maritime related revenues and \$331,709 in GDP were generated. The GLOBE Advisors analysis found that every shipping related job created a total of 2.5 jobs. For every million dollars in maritime related sales 11.6 direct, indirect and induced jobs were supported overall in the economy. See Figure C below.

GLOBE Advisors compared these findings with other similar analyses both domestic and international. A report prepared by Oxford Economics<sup>11</sup> found that for every €1 million the European shipping industry contributes to GDP itself, it creates another €1.6 million elsewhere in the European economy." In other words, every euro of direct GDP generates a total of €2.6 direct, indirect and induced GDP. Based on 590,000 direct shipping jobs, the industry also supported employment for an estimated 2.3 million people overall including spinoffs. Every direct job creates a total of 3.9 direct, indirect and induced jobs.

A 2014 analysis of the Washington State Maritime Cluster found that very direct job in the maritime industry supports 1.6 jobs elsewhere in the economy "or a total of 2.6 direct, indirect and induced jobs. For every million dollars in maritime cluster sales, 10 jobs are supported elsewhere in the economy."<sup>12</sup> A 2013 Economic Impact of Port Metro Vancouver found similar results.<sup>13</sup> The Port of Vancouver supports a total of 76,800 direct, indirect and induced jobs including spinoffs. There are 38,200 direct jobs in the port. In other words, every direct job creates a total of 2.0 jobs. The Port of Vancouver supports a total of \$6,660 million of direct, indirect and induced GDP. Based on direct GDP generated by the Port, every dollar of GDP creates a total of \$1.88 total GDP including spinoffs.

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<sup>10</sup> Source: Provincial Input-Output Multipliers, 2010, Catalogue no. 15F0046XDB, Industry Accounts Division, Statistics Canada

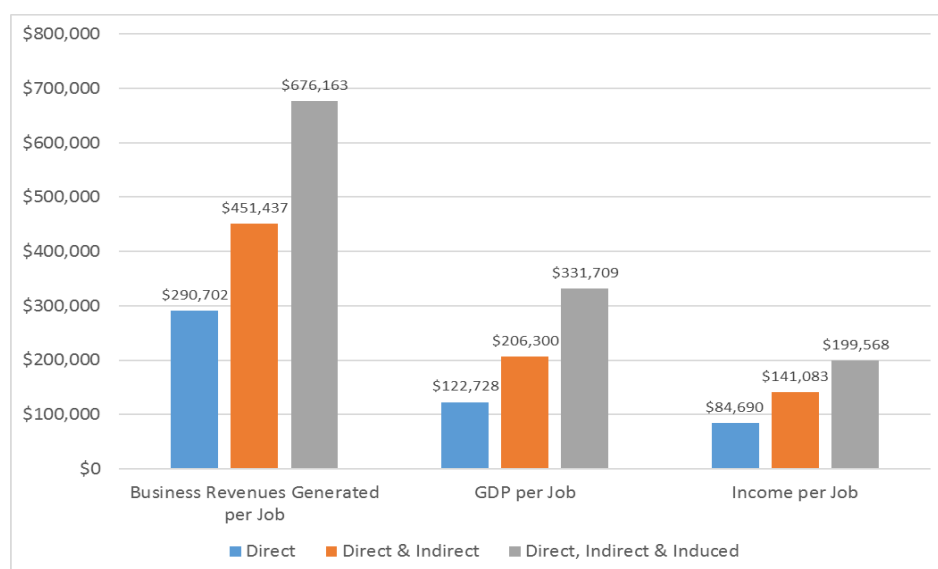
<sup>11</sup> The Economic Value of the EU Shipping Industry, A report for the European Community Shipowners' Associations (ECSA) Oxford Economics April 2014 <http://www.economiadelmare.org/oxford-economics-economic-value-eu-shipping-industry/>

<sup>12</sup> The Washington State Maritime Cluster Economic Impact Study, 2014 <http://leg.wa.gov/JointCommittees/Archive/ERMM/Documents/2014-9-30/a%20Economic%20Impact.pdf>

<sup>13</sup> Economic Impact of Port Metro Vancouver, 2013, <http://www.portvancouver.com/wp-content/uploads/2015/03/2012-port-metro-vancouver-economic-impact-study3.pdf>

By way of comparison, the employment multipliers for the Port of Vancouver, Washington Maritime Cluster and the GLOBE Advisors analysis for the maritime sector, including shipping occupations, range from 2.0 for the Port of Vancouver, 2.6 for the Washington Maritime Cluster and 2.5 for the GLOBE Analysis. It is understandable that the EU has a higher employment multiplier of 3.9 to 1 as Europe has a more robust and mature shipping sector than either Vancouver or Washington. The GLOBE Advisors analysis found that the maritime sector in British Columbia has a GDP multiplier of 2.7 to 1, which is similar to the GDP multiplier for the EU. The British Columbia multiplier is relatively high due to the capital-intensive nature of the shipping sector.

**FIGURE C**  
**ECONOMIC IMPACT OF SENIOR MANAGEMENT WORKERS**



Source: GLOBE Advisors

### INTER-PROVINCIAL COMPARISONS

An inter-provincial comparison was carried out to determine whether or not the same labour force pressures existed in the St. Lawrence Seaway (“Seaway”) provinces of Ontario and Quebec and in Atlantic Canada. Table Four below illustrates the number of jobs for British Columbia, the Seaway Provinces and Atlantic Canada for select international shipping occupations based on the Statistics Canada, 2011 National Household Survey.

Based on business establishment data for 2015, British Columbia has 735 establishments in shipping and maritime operations compared to 1,900 and 980 for Ontario and Quebec respectively. However, British Columbia has 42 marine shipping agencies compared to 43 for Ontario, 41 for Quebec and 18 for Atlantic Canada. These marine shipping agencies are predominately in the business of international shipping, which on the surface looks as if British Columbia is equally strong as Ontario and Quebec. However, British Columbia has less than half the establishments in Other freight transportation arrangement or freight forwarders than does Ontario (400 versus 1,226). These multi-modal freight forwarders conduct some of their operations on water borne transportation, but they are not specialized in this area as are marine shipping agencies.

The Seaway Provinces employ considerably more workers with shipping related skills than does British Columbia. Ontario and Quebec have considerably more senior manager and manager jobs than British Columbia. British Columbia has a higher number of Deck Officers and Engineering Officers and Inspectors than Ontario and Quebec as well as the Atlantic Provinces. The structure and nature of the shipping sector in Ontario and Quebec is based more on general merchandise trade than in British Columbia, where bulk commodities constitute the majority of water borne shipments. As a result, a legitimate labour market comparison for international shipping workers in British Columbia and the Seaway provinces is difficult to carry out. The British Columbia international shipping sector is considerably larger than is the case in Atlantic Canada.

**TABLE FOUR**  
**KEY SHIPPING JOBS BRITISH COLUMBIA, SEAWAY PROVINCES AND ATLANTIC CANADA**

Occupation	British Columbia	Ontario	Quebec	Atlantic Canada
<b>0016 Senior managers</b>	6,135	20,040	20,605	2,385
<b>0113 Purchasing managers</b>	1,680	7,120	3,690	645
<b>0731 Managers in transportation</b>	4,550	13,045	5,890	1,780
<b>1113 Securities agents, investment dealers brokers</b>	2,815	9,080	3,720	285
<b>1215 Supervisors, supply chain, tracking scheduling</b>	4,685	14,510	9,480	1,850
<b>1315 Customs, ship and other brokers</b>	710	2,420	1,095	285
<b>1521 Shippers and receivers</b>	13,535	53,430	36,415	6,195
<b>1526 Transportation route and crew schedulers</b>	710	2,185	1,295	270
<b>2262 Engineering inspectors and regulatory officers</b>	730	2,225	1,120	540
<b>2273 Deck officers, water transport</b>	2,245	735	910	2,045
<b>2274 Engineer officers, water transport</b>	930	460	645	1,180
<b>6524 Ground and water transport ticket agents, cargo service representatives and related clerks</b>	650	1,240	630	240
<b>7532 Water transport deck and engine room crew</b>	1,495	495	915	1,650
<b>Total Key Shipping Occupations</b>	40,870	126,985	86,410	19,630

Source: Statistics Canada, National Household Survey, 2011

### SUMMING UP ON THE KEY RESEARCH FINDINGS

1. The British Columbia 2025 Labour Market Outlook Model predicts that seventy-one percent of new employment in the selected occupations over the ten-year outlook period will be Replacement Jobs, i.e. filling vacancies created by retirements or departures. Twenty-nine percent of new employment will be for Expansion Jobs based on new demand for specific occupational skills or services.
2. The heavy focus on Replacement versus Expansion jobs is consistent with the older age structure of the labour force employed in international shipping. More noteworthy is that the percentage of select international shipping employees 55 years or older is significantly higher than the provincial average (22.2 percent versus 20.3 percent). This is particularly problematic for Senior Managers in the areas of Construction, Transportation, Production and Utilities at 34.7% and 33.9% for Engineering Inspectors and Regulatory Officers.

3. Overall, the British Columbia projections show an increasingly tight but balanced labour market over the outlook period, with relatively low unemployment rates and shrinking numbers of “surplus” workers (supply less demand) by 2025.
4. Based on the findings of the stakeholder consultations and from the review of the Canada Job Bank data serious labour shortages are evident for many key international shipping jobs, particularly for high paying senior management. This shortage is expected to continue throughout the outlook period.
5. There do not appear to be any short-term solutions to these job shortages, given the high level of competition that exists for such skills from both marine shipping agencies, multi-modal freight operators, and from third party logistics companies that operate with both land based and water based transportation modes. In essence, based on the analysis conducted, there is a looming shortage of technically qualified, experienced and available workers in all components of the international shipping sector.
6. The international shipping industry places a high priority on hiring workers for “on shore” positions that have experience working at sea, such as a Master Mariner, Marine Engineer, Cargo Superintendent, or other professionals with similar qualifications. In most cases, to achieve a Canadian certification, a candidate must have Permanent Resident or Citizenship status.
7. New graduates with degrees or diplomas in maritime related subjects are not considered job ready for senior international shipping shore-based positions. Experience and knowledge of activities associated with ocean shipping including “at sea” operations is a key requirement that often is lacking.
8. Most international shipping companies operating in British Columbia seek to overcome these skills shortages through inter-company transfers from other office locations or by recruiting foreign personnel that possess requisite skills. Others have sought to hire locally and to train personnel abroad.
9. Most of the companies consulted report that Canada's immigration system does not recognize the complexities of the skill set requirements of the international shipping sector, or the inability to recruit qualified employees from within Canada. They report the recruitment process for foreign trained employees is unpredictable; time consuming and very expensive, which further prolongs the skills gap impeding company operations.
10. Many international shipping companies have called for greater collaboration between industry, government and academic stakeholders in order to develop to build a robust international shipping community.
11. There are significant direct, indirect and induced economic benefits arising from employment in the international shipping community. In the case of senior management personnel, for every new job with a salary of \$84,690 based on the Statistics Canada Input Output (IO) multipliers for the British Columbia maritime economy, an additional \$676,163 of direct, indirect and induced maritime related revenues and \$331,709 in GDP are generated.

### CONCLUSIONS

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While the amount of research conducted as part of the Labour Market Information Study was extensive, the main conclusions are relatively straight forward and clear. They are as follows:

1. International shipping is affected by a myriad of complex geographical, jurisdictional, regulatory and demographic factors that play a key role in shaping the overall dynamics of this global industry. Moreover, the high level of interdependency among such global industries is further emphasized by virtue of the growth in globalization and the increased mobility of goods, services and labour throughout the international marketplace.
2. British Columbia's international shipping industry is similarly affected by these same factors playing out on the global stage. A rigorous investigation of the British Columbia market, through extensive primary research and analysis of secondary statistics, reveals a number of fundamental conclusions that shed light on the current state of the international shipping industry at a provincial level.
3. **Aging Demographics** -- indicative key conclusions reached, about the shortage of qualified labour, is linked directly to the demographic profile of the international shipping industry in British Columbia. It is evident that a predominantly mature and aging workforce will lead to serious labour shortages over the next ten years, especially for senior corporate management and highly skilled technical positions. As part of the primary research conducted, it was determined that a significant segment (nearly half) of these occupations is currently filled by individuals who are 45 years of age or older. An even more noteworthy observation gathered through the analysis of secondary research data, is that the percentage of employees who have reached 55 years or older is significantly higher at 22.2% than the provincial average (20.3%). This latter statistic clearly spells out a looming labour shortage brought on by substantial retirement figures in the next +/- 10 years
4. **Insufficient Practical Experience at Sea** -- Current labour shortages can also arise from the fact that recent graduates from local educational programs often lack practical at-sea experience. Although nearly all maritime educational programs offer degrees or diplomas in maritime related subjects, these educational qualifications are not readily considered for senior international shipping shore-based positions without significant hands-on seafaring experience. Proficiency and knowledge of activities associated with ocean shipping including 'at sea' operations is a key employment requisite often lacking which can only be acquired over the course of years before the mast.
5. **Maritime Education and Visibility of the Maritime Industry** -- Particular attention needs to be drawn to the lack of visibility currently accorded to the maritime industry in Canada as a prospective career option for Canadian students in secondary and post-secondary institutes. Engagement with stakeholders in the maritime education sector has revealed that there is an apparent lack of understanding and knowledge relating to the various career options available to graduates of maritime training programs. Canadian Maritime educational programs are graduating limited numbers of students, whereas their counterparts abroad typically train a larger pool of students on an annual basis.

6. **International Recruitment and Immigration** -- Most international shipping companies operating in British Columbia seek to overcome skilled labour shortages in the market, either through recruitment from outside of Canada or through inter-company transfers from sister offices located abroad, where international employees may possess the desired requisite skills. Others have sought to hire locally and to train personnel abroad. In most cases, shipping companies based in British Columbia report that reliance on Canada's immigration system is deemed as a last resort when recruiting internationally.
7. A general consensus appears to exist that Canada's immigration system does not meet the immediate business needs of corporate service providers in international shipping, thereby resulting in high recruitment costs and the commitment of limited managerial resources to process Labour Market Impact Assessments. Furthermore, the current immigration process does not always recognize the complexities of the skill set requirements for the international shipping sector, impeding the recruitment of qualified employees from outside Canada.
8. **Economic Benefit of International Shipping** -- Research has shown there are significant direct, indirect and induced economic benefits arising from employment in the international shipping community, particularly for senior management personnel. Every dollar earned in senior management occupations in the international shipping community generated an additional \$7.98 of business revenues in the British Columbia maritime economy, including spinoffs and \$3.92 in Gross Domestic Product. Every job created at a local level typically results in a total of 2.5 spin-off positions created. These figures are mirrored in similar markets, such as Washington State, as well as more mature European markets where a well-developed international shipping industry provides even greater economic benefits and spin-off; hence, reinforcing the considerable value of this industry over the long term.
9. In the immediate term, there do not appear to be any solutions to these labour shortages, especially given the high level of competition that exists for these skills from both marine shipping agencies, multi-modal freight operators, and from third party logistics companies that operate with both land based and water based transportation modes. Nevertheless, moving forward, there is overwhelming consensus among industry stakeholders that the most effective solutions will be developed through collaboration across multiple industries, educational bodies and levels of government.
10. In particular, there is need for a comprehensive and collaborative strategy that integrates the efforts of industry, government and academic stakeholders to foment activities necessary for developing a well-educated pool of human resources, as a basis for building a robust international shipping community in the province. Examples of this include the development of an Educational Task Force, responsible for establishing a more comprehensive system for gathering information and developing communication strategy for Canada's cluster of maritime industries. Furthermore, particular focus will need to be given to the important role played by federal and provincial regulators to ensure that the implementation of new and updated laws reflect the best interests of both the operational and corporate services within the international shipping industry.

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## RECOMMENDATIONS

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In light of the above conclusions, GLOBE Advisors has put forward the following recommendations to help the international shipping industry develop to its fullest economic potential within British Columbia and for Canada as a whole.

**Labour Force Development Strategy** – Based on the extensive consultations conducted with shipping stakeholders, as well as the compilation and analysis of secondary data, a sufficient knowledge base has now been established on the international shipping industry within British Columbia.

- 1. It is recommended that this substantial pool of knowledge now be used to build a comprehensive multi-year labour force development strategy for the province's international shipping sector. This strategy will address the current and anticipated shortages in qualified labour, particularly for the corporate professionals and highly skilled technical occupations that are most vulnerable due to retirements and intense competition from other sectors.**

As part of this strategy, it is vital to ensure that significant collaboration and establishment of partnerships, not only between local industry and the provincial and federal governments, but also at an international level. In order to develop a thriving and economically viable international shipping sector, the Canadian governments at both provincial and federal levels also need to be engaging with those countries that possess demonstrated expertise in seafaring. An example of this includes collaboration and exchange of best practices with countries such as Denmark and Norway, whose governments invest heavily in the international shipping industry at a variety of levels (e.g., education, infrastructure development, technology).

**Community of Practice** – It is apparent that a significant momentum has been built up within the various stakeholder groups that were engaged for the purposes of this study. As a result, it is vital to ensure that the enthusiasm for spearheading new initiatives and managing change within the local international shipping community is maintained.

- 2. To accomplish this, it is recommended that the Vancouver International Maritime Centre initiate the development of a community of practice or cluster for the British Columbia international shipping sector. This cluster would initiate and develop strong social networks among the shipping community, the overall maritime economy in the province, colleges and universities, as well as with areas that possess strong international shipping expertise in other regions of Canada and abroad.**

**Need for More Accurate and Timely Labour Market Information** - It is recognized that the various provincial or national statistical databases consulted for this study do not accurately reflect the real world occupational categories and job titles for professional and corporate service personnel in the international shipping sub-sector of the transportation industry. The need for action programs and policies to address the already critical shortages in the supply of qualified workers and professional managers in the international shipping community requires timely and more accurate information on the labour market situation.

- 3. That is why it is recommended that the Vancouver International Maritime Center, in cooperation with various industry associations and the provincial government undertake an annual mandatory labour market survey to track new hires, retirements, vacancies, skills shortages and other pertinent information, as part of a comprehensive labour force**

**development program.**

**Industry-Government Dialogue on International Recruitment** – The Vancouver International Maritime Centre has established itself as a focal point of liaison across a wide range of industries and shipping-related organizations at provincial, national and global levels. Through its extensive network of industry, regulatory and educational partners, the VIMC is particularly well-positioned to assume a leading role in bringing together industry and government stakeholders to engage in dialogue and policy restructuring activities relating to immigration issues that currently impede corporate activities within the international shipping industry.

- 4. To this end, it is recommended that as a matter of priority the British Columbia International Shipping industry, in partnership with the VIMC, initiate a formal dialogue with Citizenship and Immigration Canada and the British Columbia Government. This dialogue would focus on industry stakeholders communicating their priorities and concerns over alleviating constraints that they perceive as serious roadblocks for the sector to bring in skilled maritime and international shipping workers that are urgently needed. This urgent need is due to the current shortfall in workers with the requisite education, training and job experience to adequately meet current and anticipated job openings**

**Education and Skills Development Needs** - During the stakeholder consultations undertaken for this study it was repeatedly stressed that educational and training institutions in British Columbia had a critical role to play in developing solutions for the pending labour shortages facing the international shipping industry. It was noted that there was a definite need for greater communication and collaboration among the various institutions in the province (and with similar institutions elsewhere in Canada). This increased communication is intended to help establish common standards with respect to the recognition of the academic value of the experience and skills acquired before the mast by those wishing to assume duties ashore.

- 5. To this end, it is recommended that under the leadership of the Vancouver International Maritime Centre, a consultative committee be established to work with the various educational and training institutions. This committee would provide transportation and shipping related programs and services to explore options for greater collaboration to meet the urgent educational and skills development needs of the sector.**

### CONCLUDING COMMENT

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*GLOBE Advisors and the GLOBE Group of Companies stand ready to undertake any further studies relating to international shipping. This Labour Market Information Study has built a significant foundation upon which GLOBE Advisors may continue to provide additional strategic insight to the benefit of the industry as a whole.*

*The Globe team wishes to acknowledge and thank all participating organizations and stakeholders whose tremendous support, feedback and collaboration was instrumental and of exceptional value in completing this British Columbia International Shipping Industry Labour Market Information Study.*

*We wish to extend a special thanks to the Vancouver International Maritime Centre (VIMC), Members of the VIMC Governance Board, Chamber of Shipping of British Columbia, International Ship-Owners Alliance of Canada Inc. (ISAC), and the Shipping Federation of Canada.*

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### 1. INTRODUCTION

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The Vancouver International Maritime Centre (VIMC), a federally and provincially funded initiative, is guided by four key priorities:

1. To brand and market Vancouver and Canada as favourable business jurisdictions for global shipping;
2. To attract international shipping and maritime services companies to Vancouver to build the sector and to create jobs;
3. To provide interested shipping and maritime companies with advice, information and relocation services; and
4. To collaborate with key partners in government and industry to retain B.C.'s current and future international shipping and maritime companies.

This International Shipping Industry Labour Market Information (LMI) Study provides an evidence based analysis of existing supply and demand for key shipping industry occupations, in addition to those required to start up both new operations and maintain existing operations specifically in British Columbia, as well as across Canada. The VIMC undertook this study with funding from the British Columbia Ministry of Jobs, Tourism and Skills Training, also responsible for Labour).

The Vancouver International Maritime Centre sub-contracted GLOBE Advisors for this study, and established a stellar group of industry experts to help guide the analysis and to assist the GLOBE Advisors Team by opening doors and sharing insights on the most critical issues facing the international shipping sector globally and in British Columbia. See the table below listing the members of the project's Governance Board.

Early on in the project, the GLOBE Advisors Team developed detailed Methodology Statements for a comprehensive Occupational Analysis of secondary data and information gathering tools for the Stakeholder Engagement Process. These Methodology Statements were reviewed and approved by the Governance Board and subsequently approved by the Province. The research undertaken to prepare this report has followed the prescribed guidelines of Labour Market Information Studies, as set out by the Province, and has adhered fully to the detailed undertaking set out in the approved Methodological Statements.

The project's findings will help to identify labour supply and demand related issues, barriers and challenges, and to provide a basis from which to inform government on future policy and program considerations about the international shipping labour market. They also will help in the development of a local labour market pool of qualified professionals and highly skilled workers for the industry and to make recommendations regarding the development of a provincial international shipping industry workforce strategy.

Of particular importance will be the study findings that are intended to identify barriers or challenges affecting the supply of professionals with the required skills, education and experience in this sector. Furthermore, the development of policies, programs and a workforce strategy to grow the international shipping presence in the province, particularly relating to corporate services, will be of significance.

There are two major components to the labour market Study. The first is a comprehensive Occupational Analysis, which involves a review of labour force trends and forecasts as reflected in a variety of statistical databases and forecasting models, most notable being the British Columbia 2025 Labour Market Outlook. This is generally referred to herein as the 'Secondary Research.'

The other major component of the research activity involves extensive outreach and consultations with key industry stakeholders utilizing a variety of pre-approved survey and questionnaire tools. This outreach extended beyond the British Columbia borders and involved on-line polling and telephone survey activities with key industry players across Canada. This research is generally referred to herein as the 'Primary Research' as it provides the real world intelligence of issues and challenges faced everyday by those who are actively engaged in the international shipping domain.

These two dimensions of the research proceeded on somewhat different timelines, but herein are reported in a tightly integrated fashion. The general findings arising from both facets of the research for the most part were consistent one with another. For the most part, greater weight was given to the findings of the Primary Research in drawing conclusions and recommendations because many of the secondary statistical data sources did not collect or report labour market information specifically tailored to the international shipping component of the broader maritime sector or transportation industry.

Indeed, as is reported more fully elsewhere in the report, it was often difficult to isolate data from Canada's 2011 National Occupation Classification (NOC) System, or the Statistics Canada Survey of Employment, Payrolls and Hours (SEPH) that accurately reflected the highly skilled occupations and job titles in the international shipping community.

In order to address this challenge the research conducted pursuant to this study took great efforts to clarify what constitutes the international shipping industry, what sets it apart from other dimensions of the maritime and transportation sectors in the economy, and what challenges lie ahead in terms of ensuring that there will be an adequate supply of human resources to fill anticipated jobs in the corporate, skilled technical and professional support service jobs in the years ahead.

Finally, In addition to the above, an extensive review of available literature on trends and human resource developments in the international shipping community was undertaken. A listing of these research sources is contained in the Appendices to this report.

**BRITISH COLUMBIA INTERNATIONAL SHIPPING LABOUR MARKET STUDY  
GOVERNANCE BOARD MEMBERS**

<b>Peter Amat</b>	<b>General Manager, Pacific Basin Shipping (Canada) Ltd.</b>
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<b>Linda Cheng</b>	<b>Assistant Vice-President, Fairmont Shipping (Canada) Ltd.</b>
<b>Christen Downie</b>	<b>Manager, Government Relations, Global Stakeholder Relations, Methanex</b>
<b>The Hon. Colin Hansen</b>	<b>President, Advantage BC</b>
<b>Dr. Trevor Heaver</b>	<b>Professor Emeritus, Sauder School of Business, University of British Columbia</b>
<b>Lanna Hodgson</b>	<b>Secretary General, International Ship-Owners Alliance of Canada</b>
<b>Jone Hognestad</b>	<b>President, Methanex Corporation</b>
<b>Bernard Huizenga</b>	<b>Business Development Manager, Austral Asia Line Ptd Ltd.</b>
<b>William Hung</b>	<b>Executive Vice President, Strategic Development, Teekay Shipping (Canada) Ltd.</b>
<b>Jonathan Leebosh</b>	<b>Barrister and Solicitor. Partner, EY Law LLP</b>
<b>Robert Lewis-Manning</b>	<b>President, Chamber of Shipping of British Columbia</b>
<b>Susan Martyn</b>	<b>Senior Lawyer Immigration, Pricewaterhouse Coopers</b>
<b>Captain Philip McCarter</b>	<b>Associate Dean, School of Transportation, British Columbia Institute of Technology</b>
<b>Bill McKinstry</b>	<b>Director, West Coast Operations, Shipping Federation of Canada</b>
<b>Captain Phillip Nelson</b>	<b>President, Council of Marine Carriers</b>
<b>Gabrielle Smith</b>	<b>Director - Human Resources, Seaspan Ship Management Ltd.</b>
<b>Donna Spalding</b>	<b>Director - Administration, Cruise Lines International Association, North West &amp; Canada</b>
<b>Peter Xotta</b>	<b>Vice-President, Planning and Operations, Vancouver Fraser Port Authority</b>

## 2. STUDY METHODOLOGY

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The **Occupational Analysis Methodology** provides the structure, tasks and data sources to develop an evidence-based study and analysis of the British Columbia international shipping industry labour market. The key areas of analysis reported on include the following:

**Global Shipping Trends** - Research undertaken comprised an overview of the drivers and trends influencing the international shipping industry globally, including: the increasing complexity of seaborne trade and shipping operations, spurred in part by the rapid growth in global trade; changing employment and labour dynamics brought about by technological developments, emerging global employment standards for shipping; and the growing demand for white collar skills in international shipping.

**British Columbia International Shipping Industry** - An historical baseline profile and detailed description of the British Columbia international shipping industry was then prepared, including: types and number of businesses by subsector; types of occupations by NOC/NAIC codes; characteristics of the workforce (age, education levels; certification requirements and length of service).

**Trends in International Shipping Related Occupations** - The demographic, mobility, education and skills factors were evaluated for British Columbia and other provinces for a specific set of NOC occupation codes approved by the study's Governance Board and the Province of British Columbia. The initial source of information was the 2011 Census and the Statistics Canada, National Household Survey.

The demographic information on the age structure of the British Columbia labour force provided an early warning of looming retirements and replacement demand. The education and skills profiles published in the National Household Survey provided the needed information on the skill requirements for this replacement demand, and the extent to which newer and higher technology skills are required to meet the emerging needs of the future.

**Supply/Demand of International Shipping Occupations** - After preparing this comprehensive demographic and labour force profile from the Statistics Canada databases, a synthesis of the detailed supply, demand and shortages for these occupations was prepared ranging to 2024.

**Education and Training** - An examination was undertaken of educational services provided by British Columbia universities, colleges and other training institutions relative to the needs of the industry.

**Inter-Provincial Comparison** - The study also compared shipping skills-related issues in other regions of Canada. This comparison was based on the Statistics Canada National Household Survey and other inter-provincial comparisons available from Statistics Canada.

**Interdependency with Stakeholder Engagement** - The stakeholder engagement process entailed extensive outreach in the form of surveys and one-to-one interviews with a diverse group of international shipping companies and related organizations in the province and across Canada.



**Primary Research Outreach Activities** that were part of the analysis were structured according to three key methodologies and target groups:

**One-to-One in-depth Interviews or Discussion Group** – It was originally planned that 20 industry employers were to be consulted through in-depth one-to-one interviews and roundtable discussions. In fact, the number of such interviews and small group discussions was more than double this total.

**Online Labour Market Survey** – This survey reached out to a broader number of shipping companies, their supply chains and industry stakeholders across Canada. (Full details on the Survey coverage are provided later in the report).

**Focus Group Engagement** – a select group of stakeholders representing a cross-section of the shipping industry met in Vancouver to review the research findings obtained through the one-to-one interviews and the survey tools.

**Literature Review** – In addition to the above, an extensive review of available literature on trends and human resource developments in the international shipping community was undertaken. A listing of these research sources is contained in the Appendices to this report.

### 3. THE INTERNATIONAL SHIPPING INDUSTRY IN BRITISH COLUMBIA

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*British Columbia is a major marine gateway to the Pacific Rim, and the Port of Vancouver is Canada's largest port and one of the most diversified ports on the west coast of North America. In fact, Vancouver and British Columbia overall serve as a major hub for various maritime services ranging from transportation, logistics, and supply chain management to a myriad of high technology and corporate services.*

*Important functions within the domain of corporate services including cargo management and vessel inspections, ship management and crew deployment, high level maritime commercial activities such as ship financing, chartering, and associated legal, insurance, and a host of other professional services.*

*As noted, the shipping industry is highly mobile. Shipping companies can locate their cargo and ship management operations in line with shifting trade patterns and/or political circumstances. In this regard, globally economic power is shifting from western mature economies to fast growing economies in Asia, Africa and China, many of which are also expanding their maritime fleet capacity to serve growing import and export demand.*

*Ship owners have considerable freedom in terms of where they establish their shipping management offices and/or their affiliates. International shipping companies based in British Columbia can and do manage cargo moving between various locations around the world.*

*The international shipping professional services community is an important component of British Columbia's larger maritime sector, one that is growing in importance as a contributor to the economic well-being of the province.*

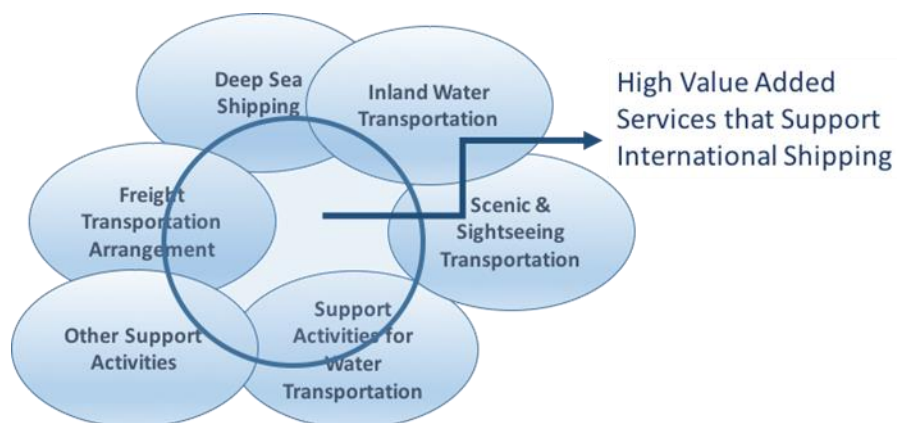
*In addition to the international shipping service providers, there exists a supporting cadre of maritime lawyers, bankers, insurance agents, educators and human resource professionals that support international shipping activities. The occupational analysis examined the supply and demand for labour in this community as well.*

*The analysis conducted for this study is based on both secondary data compiled at an industry-specific level by Statistics Canada, as well as primary research completed through targeted stakeholder engagement within the international shipping industry.*

## NATURE OF THE INDUSTRY

As shown in the figure below there is a wide range of service sectors that support the international shipping industry.

FIGURE 1: INTERNATIONAL SHIPPING SERVICES VALUE CHAIN



Source: GLOBE Advisors

## EMPLOYMENT IN THE INTERNATIONAL SHIPPING INDUSTRY

As shown in Table 1 below, in 2015 there were 532 business establishments providing freight transportation and related services in British Columbia. These included 42 Marine Shipping Agencies; 83 businesses engaged in Deep Sea or Coastal Shipping Operations and 407 establishments in the domain of Freight Forwarders and Customs Brokers. These three categories are directly based on the North American Industry Classification System (NAICS), all of which include an aggregate of corporate services associated with international shipping.

TABLE 1: SHIPPING RELATED BUSINESS ESTABLISHMENTS, BRITISH COLUMBIA

	2011	2012	2013	2014	2015
Freight Forwarders and Custom Brokers	368	382	402	403	<b>407</b>
Marine Shipping Agencies	51	45	51	51	42
Deep Sea and Coastal Transportation Service Providers	111	104	109	99	83
Total Shipping Establishments	530	531	562	553	532

Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH)

Essentially, all employees engaged by Marine Shipping Agencies are directly involved in providing international shipping services. Freight Forwarders and Customs Brokers employ people who arrange transportation for cargo on a multimodal basis, including transportation by ocean carrying vessels. Business establishments involved in Deep Sea and Coastal Shipping have shipping divisions that employ “on shore” international shipping experts in addition to at-sea employees.

It is not possible to extract precise numbers of international maritime shippers from the overall industry involved in managing their “own shipping” activities. They are, nonetheless, important to this analysis, as they also compete for personnel with international shipping skills.

**TABLE 2: EMPLOYMENT BY SHIPPING RELATED COMPANIES IN BRITISH COLUMBIA**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<i>Freight Forwarders and Customs Brokers</i>	3,739	4,120	3,993	4,029	3,937
<i>Marine Shipping Agencies</i>	836	751	793	778	772
<i>Deep Sea and Coastal Transportation Service Providers</i>	6,880	6,974	7,069	7,163	7,257
<i>Total Employment by Shipping Companies</i>	11,455	11,845	11,855	11,970	11,966

*Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH)*

As noted in Table 2 above, Marine Shipping Agencies in British Columbia employed an estimated 772 workers in 2015, a small component of the larger shipping related community, which employs almost 12,000 people. Moreover, as these figures illustrate, employment growth has been minimal for these industries since 2011 to 2015. By way of definition, the following definitions are based on the North American Industry Classification System (NAICS). All of these classifications include corporate services associated with international shipping.

**Freight forwarders and customs brokers** (NAICS 488519) are primarily engaged as intermediaries between shippers and carriers. They may offer a combination of services spanning transportation modes. This group also includes establishments primarily engaged in arranging and coordinating the transportation and storage of goods without themselves providing actual transportation and storage services.

**Marine Shipping Agencies** (NAICS 488511) comprises establishments primarily engaged in representing shipping lines, arranging for the taking on of cargo and performing other business transactions in port, on behalf of ship owners and charterers.

**Deep Sea And Coastal Water Transportation** (NAICS 4831) consists of establishments primarily engaged in providing water transportation services for freight and passengers. Establishments that operate ocean-going cruise ships are also included under this classification.

### 4. THE INTERNATIONAL SHIPPING INDUSTRY

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Shipping companies fall into one of the following two broad categories:

- National shipping companies that largely serve domestic export and import markets. This group includes Japanese, Chinese and South Korean companies.
- International shipping companies that largely focus on international trade. This group includes Greek and Norwegian companies.

Professional shipping services involve ship brokering, chartering, customs clearing, tendering, education, and legal, insurance and other high value added services. These international shipping services involve long-term high-paying jobs that are the upper echelon of the maritime industry.

The players in the maritime economy, including international shipping companies, tend to bond together in a “cluster” or “community of practice”. For example, a critical mass of ship-owners attracts other businesses and maritime services to a particular geographic location, which better serves all the participants in this agglomeration or network. This “cluster” of participants often includes law firms, banks, financial institutions, insurance providers, ship-management, chartering, brokering, and education and training providers. These maritime related ancillary services create a strong “multiplier effect” and are usually found near the top of the high value services supply chain.

**Innovation involves the successful development and application of new forms of knowledge – new ideas, business practices, skills, and technologies – to create greater value for customers.<sup>14</sup>**

The international shipping professional services sector is an important component of British Columbia's “community of practice” for the larger maritime community. The clustering effect not only encourages the proliferation of high value added services and high paying jobs; it also encourages innovation and excellence.

### GLOBAL SHIPPING DRIVERS AND TRENDS

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Maritime transport is a major force of international trade and the global economy. An estimated 80 per cent of global trade by volume and 70 per cent by value are transported by ocean carriers and these goods are handled by ports worldwide. Shipping involves an oceangoing fleet worldwide of more than 32,000 ships.<sup>15</sup>

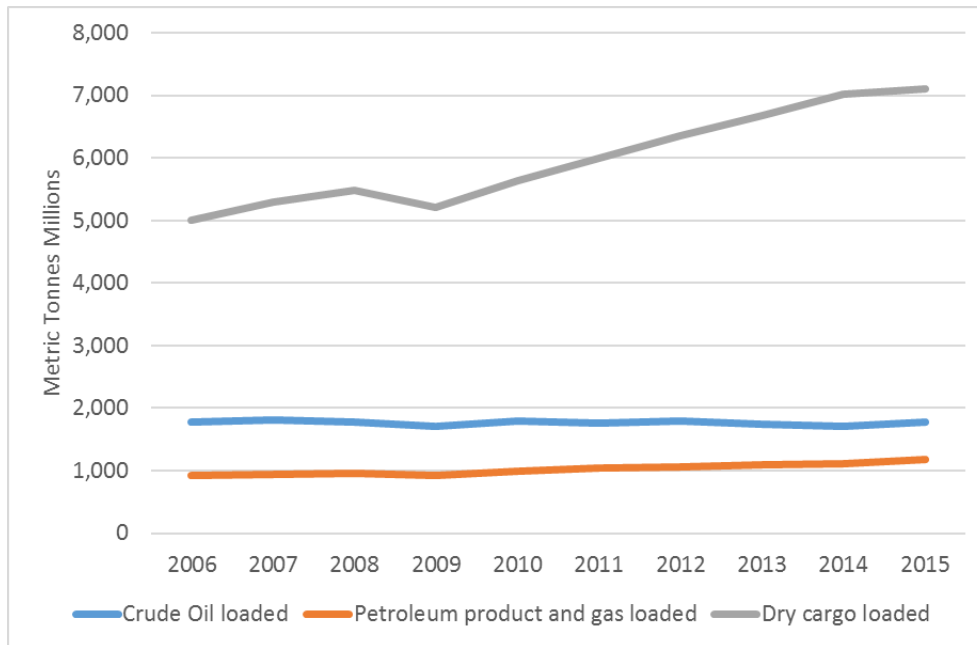
This strong growth in seaborne trade generates a considerable amount of associated activity, especially for international shipping services. International waterborne trade is evolving and changing and these changes are having an impact on the type of skills that are increasing in terms of demand. Most of the growth in seaborne cargo shipments has been in dry cargo as Figure 2 below illustrates.

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<sup>14</sup> *The Business Case for Innovation, Canadian Manufacturers and Exporters, 2002*

<sup>15</sup> [http://unctad.org/en/PublicationsLibrary/rmt2015\\_en.pdf](http://unctad.org/en/PublicationsLibrary/rmt2015_en.pdf)

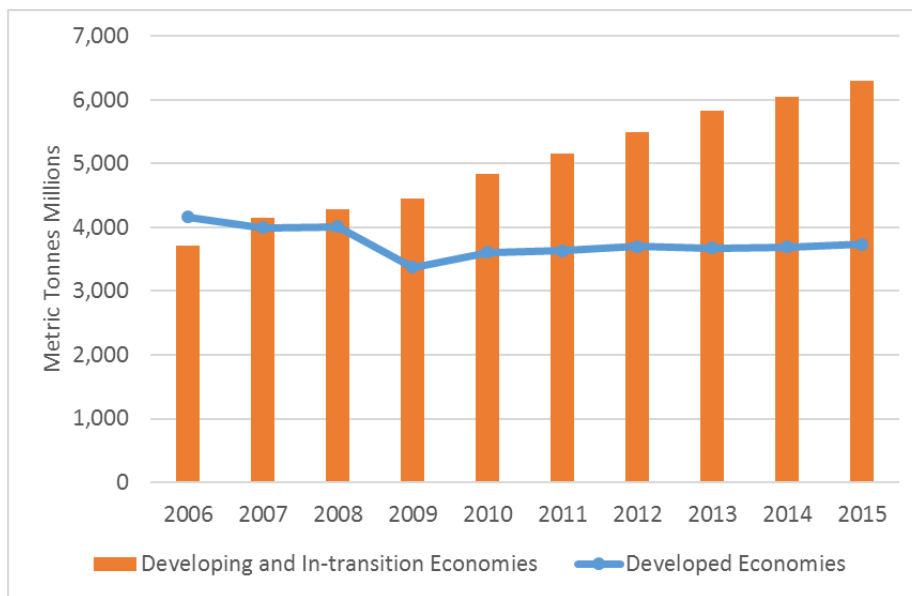
**FIGURE 2: WORLD SEABORNE TRADE BY TYPES OF CARGO**



Source: United Nations Conference on Trade and Development

Dry cargo loaded has grown on average by 4.2% annually from 2006 to 2015. Crude Oil loaded declined on average by 0.3% annually during this period. This growth in seaborne shipments is largely from developing and in- transition economies as illustrated in Figure 3 below.

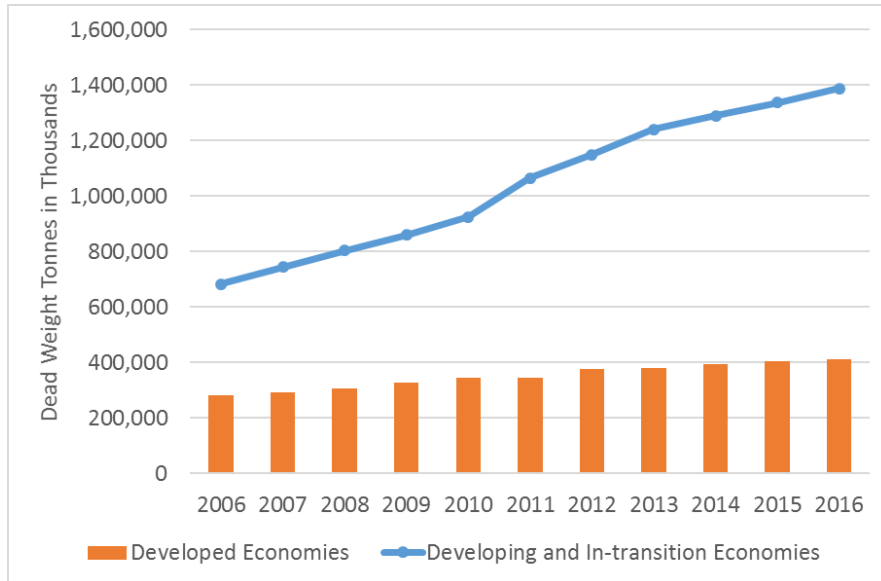
**FIGURE 3: WORLD SEABORNE TRADE**



Source: United Nations Conference on Trade and Development

The growth in the amount of shipping vessels based on dead weight reflects both the increased trend for dry cargo and overall shipping activity by developing and in-transition economies.

**FIGURE 4: DEAD WEIGHT TONNES IN THOUSANDS**



Source: United Nations Conference on Trade and Development

This growing supply of vessels is seriously influencing the demand for skilled sea faring workers which are becoming increasingly scarce on a global scale.

### GLOBAL SKILLS SHORTAGES

The international shipping sector hires high value added professionals that work in senior management, business, administration, science, education and trades. These white collar occupations are filled by high value-added professionals that manage a myriad of highly sophisticated and very important corporate shipping activities and solutions.

International shipping professional support services also are found in law firms, banks, financial institutions, insurance, classification, market exchange, ship-management, chartering, brokering, and education and training service providers. International shipping companies and other cargo management service providers are finding these skill sets in serious short supply.

A serious shortage of white collar talent in shore-based operations is becoming particularly evident for several global shipping hubs. There are serious challenges facing the maritime industry world-wide in terms of the increasing skill- and knowledge shortages. In addition to shore based talent, there are serious shortages of shipping crew and officers, which is currently threatening the future of an industry that remains the lifeblood of world trade.

Marine personnel are needed to replace retiring captains, officers, marine port workers and engineers. The number of students enrolling in marine courses is falling. Many young professionals are hesitant to join the marine profession due to the long time out at sea.<sup>16</sup>

***“For almost twenty years there have been growing concerns about an impending shortage of Seafarers. This shortage of seafarers is a matter of worldwide concern because many of the skill sets needed in the broader maritime sector requires seafaring skills. The nature of the maritime sector is such that seafaring has traditionally been viewed as the starting point which can lead to a range of shore-based maritime careers. Seafaring skills and experience are viewed as being of direct use and importance for a range of maritime shore-based careers including pilotage, marine surveying, terminal/cargo operations, port operations, ship management, marine administration, and maritime education and training.”<sup>17</sup>***

The anticipated serious shortage of sea going trades, particularly that of officers, has also been identified by the Baltic International Maritime Council (BIMCO) and International Shipping Federation (ISF) which concluded that in 2005 there was a shortage of 10,000 officers worldwide and by 2015 it could reach 27,000. These skills shortages affect both at sea and onshore shipping-related operations.

The shipping industry is no longer holding the same level of attraction for the younger entrants to the job market as it once enjoyed previously. The changing nature of the shipping industry as well as persistent labour shortages are having a profound impact constraining the expansion of shipping operations in many countries, not just in Canada. Moreover, these systemic skills and knowledge shortages have yet to fully manifest themselves.<sup>18</sup>

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<sup>16</sup> <http://www.mainlandmachinery.com/maritime-labour-crisis/>

<sup>17</sup> A review of some solutions to the shortage of maritime skills, Barrie Lewarn , Maritime Transport Policy Centre, AMC January 2009 [http://www.amc.edu.au/sites/default/files/MTPC+Occasional+Paper+1\\_0.pdf](http://www.amc.edu.au/sites/default/files/MTPC+Occasional+Paper+1_0.pdf)

<sup>18</sup> Shipping Shortages and Generation Y, Dr. Stephen Cahoon , Department of Maritime and Logistics Management Australian Maritime College



### 5. OCCUPATIONAL ANALYSIS

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This occupational profile is based on comprehensive research methodology and research tools that not only meet the LMI Standards set out by the Province, but also accurately reflect the issues and concerns of key stakeholders in the international shipping community. In addition to providing supply and demand projections, the occupational analysis describes the demographic, educational and income characteristics for shipping related occupations as reflected in Canada's 2011 National Occupation Classification (NOC).

These occupations were initially identified by the VIMC Executive and reviewed by the Labour Force Study Governance Board comprised of key stakeholders in the international shipping community. They were further ratified by the Provincial officials responsible for the standards required for such studies. These "identified" occupations are grouped in the following categories that reflect the 2011 NOC structure:

- Senior Management Occupations
- Business Services and Administration Occupations
- Natural and Applied Sciences and Related Occupations
- Education, Law and Social, Community and Government Services
- Sales and Service Occupations
- Trades, Transport and Equipment Operators and Related Occupations

Currently (2016), on a province-wide basis over 750,000 workers are employed in the occupations initially selected for analysis.

This very large population includes workers with a wide range of skills sets potentially employable either directly or indirectly in jobs related to the movement of cargo by ocean transportation as well as providing valuable support services including insurance, legal, education, security, engineering, inspection and maritime occupations. In addition to covering the demographic and socioeconomic characteristics for this group of occupations, this report also drills down to describing the individual characteristics of several select or key international shipping related occupations.

While multi-modal freight forwarders and cargo inspectors typically are not considered experts in international shipping, they do compete for workers possessing some of the same highly specialized skills. In addition to these highly trained technical specialists, a significant number of other support personnel are employed by companies that active in maritime commerce in the Province.

These include coastal freight and passenger service providers, port and cargo handling personnel, pilotage and regulatory agency personnel, and tug and barge operators. These occupations were included in the analysis because they too compete for the same skill sets required by international shipping firms. As well, these support service providers enable the international shipping sector to function efficiently.

To more accurately reflect the actual characteristics of the much smaller labour pool directly engaged by international shipping companies in the province, the conclusions drawn from the secondary sources were cross validated with the findings drawn from primary data sources, i.e. from direct interactions with industry stakeholders. The main observations arising from the consultations are noted later in this Report.

## SELECT INTERNATIONAL SHIPPING OCCUPATIONS

In addition to examining occupations identified from secondary sources as being representative of the international shipping sphere, based on feedback from stakeholder consultations the study examined a number of very specific occupations considered highly important in terms of the international shipping industry presence in British Columbia. These specific occupations are shown in Table 3 below.

**TABLE 3: SELECT INTERNATIONAL SHIPPING OCCUPATIONS AND JOB TITLES**

<b>NOC Codes</b>	<b>Illustrative Job Titles</b>
0016 Senior managers - construction, transportation, production and utilities	CEO Shipping or Maritime Organization
	General Manager
0113 Purchasing managers	Purchasing and Inventory Control Manager
	Manager Purchasing Contracts
0731 Managers in transportation	Marine Superintendent
	Manager, Freight Traffic
1113 Securities agents, investment dealers and brokers	Broker, foreign exchange trader, investment dealer
	Commodity trader
1215 Supervisors, supply chain, tracking and scheduling co-ordination occupations	Supply Control Coordinator
1315 Customs, ship and other brokers	Chartered Shipbroker
	Negotiating Spot / Time Charter
1521 Shippers and receivers	Shipping Agent.
1526 Transportation route and crew schedulers	Schedule Writer, Transportation
2262 Engineering inspectors and regulatory officers	Marine Damage Surveyor
	Insurance Loss Prevention Inspector
2273 Deck officers, water transport	Marine Engineering Cadets
	Master Mariner/ Navigation Officer
2274 Engineer officers, water transport	Chief Engineer – Water Transport
	Engineer Officer – Water Transport
6524 Ground and water transport ticket agents, cargo service representatives and related clerks	Cargo Customer Service Representative – Marine Shipping
7532 Water transport deck and engine room crew	Bridge Watchman, Quartermaster

Source: Globe Advisors Stakeholder Outreach Program

Annex 2 to this report contains a more detailed description of the duties and experience requirements of many of the occupations found in the international shipping sector. While the job titles may differ from those contained in the Table above, here is a general consistency across the global industry of the duties typically carried out to ensure the safe transportations of goods and people in maritime commerce.

### SKILLS SHORTAGES CONSTRAINING GROWTH

A key motivating factor for this study has been the ongoing concern expressed by many international shipping companies that a serious shortage exists in the local workforce for persons who are qualified by virtue of their education and/or at-sea experience to fill vacant positions. These shortages are particularly prevalent for senior management and professional service support occupations. This lack of qualified and available talent is viewed as an impediment to the expansion of British Columbia's international shipping community, and ultimately an impediment to tapping into a significant area of potential economic growth for the province.

**International shipping jobs, particularly those in the middle and upper management ranks, require highly specialized knowledge and skills, often combined with extensive experience only available at sea in highly technical operating environments.**

These positions are critical to the management of corporate services, and occupants are frequently required to travel the world to manage cargo movements in real time. Not only must these highly skilled employees understand the dynamics of shipping, they must also have an intimate knowledge of operating conditions in many areas of the world – knowledge that can only be acquired through years of experience at sea.

*“For almost twenty years there have been growing concerns about an impending shortage of seafarers. This shortage of seafarers is a matter of worldwide concern because many of the skill sets needed in the broader maritime sector require seafaring skills. The nature of the maritime sector is such that seafaring has traditionally been viewed as the starting point which can lead to a range of shore-based maritime careers. Seafaring skills and experience are viewed as being of direct use and importance for a range of maritime shore-based careers including pilotage, marine surveying, terminal/cargo operations, port operations, ship management, marine administration, and maritime education and training.”<sup>1</sup>*

So too, companies that own or manage commodities to be borne by ships have firm guidelines, not only with respect to vessel standards, but also on the operational experience requirements of personnel directly involved in the transportation of their cargo. Failure to comply with such standards may automatically terminate the shipments. Non-compliance could potentially nullify any insurance coverage, should an incident occur in international or national waters.

Graduates from British Columbia's maritime schools for the most part do not have requisite experience at sea, which virtually eliminates them from many vacant positions in the sector, regardless of their academic training.

As was frequently noted in the stakeholder consultations, the shortage of locally available graduates with skills and experience in international shipping must resonate with provincial and federal educational and training providers.

The need to adapt curricula and skills development programs that better prepare Canadians for occupations in this sector cannot be overstated. These skills shortages affect both at-sea and onshore shipping-related operations. For many industrialized countries including Canada, the shipping industry no longer holds the same level of attraction for younger entrants to the job market.

The changing nature of the shipping industry, as well as persistent labour shortages, is seriously constraining the expansion of shipping operations in many countries. Moreover, these skills and knowledge shortages have yet to fully manifest themselves.<sup>19</sup>

British Columbia-based international shipping companies often seek to overcome these skills gaps by recruiting trained and experienced workers from other countries. However, most of the companies consulted report that Canada's immigration system does not recognize the complexities of the skill set requirements of the international shipping sector, or the inability to recruit qualified employees from within Canada.

It has been reported through the stakeholder engagement process that the recruitment process for foreign trained employees is unpredictable, time consuming and very expensive, all of which further prolongs the skills gap impeding company operations. Stakeholder concerns over the difficulties and frustrations associated with the recruitment of international workers with the skills and experience considered requisite for employment in the industry are discussed more fully later in this report.

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### BRITISH COLUMBIA SKILLS GAPS

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At a province-wide level, British Columbia faces similar skills shortages in the larger pool of occupations and, more specifically, in the international shipping community. These maritime and international shipping skills shortages are the focus of this report. British Columbia similarly is facing serious skilled labour shortages not only in the maritime and international shipping sector, but more generally in all white-collar occupations.

The Conference Board of Canada recently concluded that "Skills gaps cost the British Columbia economy up to \$4.7 billion in foregone GDP and \$616 million in provincial tax revenues, annually".<sup>20</sup> The Conference Board report stated that there is a "rising concern among leaders in business, government and education that the province will not have enough people with the right education and skills to seize and support these opportunities"<sup>21</sup>. The reported skills gap and mismatches by those surveyed by the Conference Board for this study are especially critical for British Columbia's service-based industries, which make up three-quarters of the provincial economy. The Conference Board survey respondents reported that there is considerable "difficulty in finding employees in business, finance, and administration (35 per cent); trades, transport, equipment operators, and related occupations (30 per cent); and sales and service occupations (23 per cent)".<sup>22</sup>

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<sup>19</sup> *Shipping Shortages and Generation Y*, Dr. Stephen Cahoon, Department of Maritime and Logistics Management  
Australian Maritime College

<sup>20</sup> *Skills for Success: Developing Skills for a Prosperous B.C.*, 2014, Conference Board of Canada

<sup>21</sup> *Ibid*

<sup>22</sup> *Ibid*

“Across all occupational categories, B.C. employers are especially motivated to find managers and supervisors. This reflects concerns about an emerging ‘experience gap’ as managers and other workers retire over the next five to ten years.”<sup>23</sup> In the Conference Board report, British Columbia employers were asked to prioritize their strategies designed to alleviate the skills gaps. Their responses are summarized in the following chart.

**FIGURE 5: BRITISH COLUMBIA EMPLOYER SKILLS SHORTAGES**



The number one “employer skills strategies” was in-house training and development programs, followed by strategies for developing flexible workplace environments. Hiring from out of the province was third on the list. Hiring internationally was last garnering slightly less than 30% of respondents.

The findings of the Conference Board Report are echoed in the facts emerging from GLOBE Advisors’ analysis of the labour outlook for occupations in the international shipping community and in the observations reported during the stakeholder engagement process. To gain a better perspective on the nature and number of current international shipping job vacancies in British Columbia a review was undertaken of both job vacancies reported by Statistics Canada and relevant job postings by the Canada Job Bank.

Initially the Statistics Canada Job Vacancy Survey reported that in the first quarter of 2016 there were 3,405 job vacancies in management occupations and 6,390 vacancies in business, finance and administrative occupations. Subsequently, a search was conducted from the Canada Job Bank based on key words included in the list of international shipping related occupations. In total, 11,582 shipping related postings for British Columbia jobs were issued as of October 21, 2016.

The job postings consisted of senior managers, transportation, supply-chain supervisors, purchasing managers, engineering inspectors, custom brokers, security agents and crew schedulers. And while many jobs were picked up more than once in these searches, the large number of vacancies illustrates the high level of demand for these occupations.

<sup>23</sup> *Ibid*

Finally, the results of the Stakeholder Engagement Survey provided further evidence of the critical skills shortages in the international shipping occupations in British Columbia. More than two thirds of all respondents foresee shortages of labour for the following areas: ship chartering, engineering superintendents, insurance specialists, marine engineering, marine operations, operations and commercial management, port captains and port operations, project engineers with ship-based experience, superintendents (with and without containership experience), and certain trades personnel.

Despite efforts reported by all companies to hire locally, most stated that in general the positions filled from within British Columbia or Canada were corporate support services or administrative positions. Most of the positions filled from outside Canada involved highly technical operational or in top management activities. Most cited the lack of qualified local candidates was due to the specialized nature of the job requirements and/or the need to for sea-going experience, which was difficult to acquire within Canada.

Compounding the shortages of local candidates to fill vacancies in senior management positions, many stakeholders reported frustration with the time and cost associated in recruiting suitable talent from international sources.

Nearly half of all respondents indicated that the current Canadian immigration process has negatively impacted their companies' operations. Of these, virtually all respondents consider the Labour Market Impact Assessment (LMIA) process to be seriously cumbersome and time consuming to navigate. High application fees (\$1,000 / employee) and turnaround times of often six months or longer, have rendered this approach virtually a last resort when recruiting from overseas.

**As one stakeholder respondent noted, “to hire an international employee costs our company approximately \$100,000. Why would any company choose to pay this expense, if in fact qualified workforce were available in the local market?”**

An analysis from the stakeholder engagement survey, in conjunction with the occupational analysis, allowed for the development of a succinct grid identifying international shipping jobs that are in seriously short supply and very difficult to fill. See Table 4 below.

**TABLE 4: DIFFICULT TO FILL INTERNATIONAL SHIPPING JOBS**

<b>NOC</b>	<b>Typical Job Titles</b>	<b>Canada Job Bank</b>	<b>Outreach Results</b>
<b>0016</b>	<i>President / CEO Shipping or Maritime Organization</i>	<i>High</i>	<i>Moderate</i>
	<i>General Manager</i>	<i>High</i>	<i>High</i>
	<i>Vice-President</i>	<i>High</i>	<i>Moderate</i>
<b>0113</b>	<i>Port Operations (Sales) Manager</i>	<i>High</i>	<i>High</i>
	<i>Purchasing and Inventory Control Manager</i>	<i>High</i>	<i>High</i>
	<i>Manager Purchasing Contracts</i>	<i>High</i>	<i>High</i>
<b>0731</b>	<i>Marine Superintendent</i>	<i>Low</i>	<i>High</i>
	<i>Senior Operations Manager, Manager, Freight Traffic</i>	<i>High</i>	<i>High</i>
	<i>Tankers Manager</i>	<i>Low</i>	<i>High</i>
	<i>Fleet Manager</i>	<i>High</i>	<i>High</i>
	<i>Port Captain (Harbour Master)</i>	<i>Low</i>	<i>High</i>
<b>1113</b>	<i>Broker, foreign exchange trader, investment dealer</i>	<i>Low</i>	<i>Moderate</i>
	<i>Commodity trader</i>	<i>Low</i>	<i>Moderate</i>
<b>1215</b>	<i>Supply Control Coordinator</i>	<i>Moderate</i>	<i>Moderate</i>
<b>1315</b>	<i>Chartered Shipbroker</i>	<i>Low</i>	<i>High</i>
	<i>Negotiating Spot / Time Charter, Charterer</i>	<i>Low</i>	<i>Moderate</i>
	<i>Technical Assistant</i>	<i>Low</i>	<i>Moderate</i>
<b>1521</b>	<i>Shipping Agent.</i>	<i>Moderate</i>	<i>Moderate</i>
<b>1526</b>	<i>Schedule Writer, Transportation</i>	<i>Moderate</i>	<i>Moderate</i>
<b>2262</b>	<i>Marine Damage Surveyor, Insurance Inspector / Manager</i>	<i>Moderate</i>	<i>Moderate</i>
	<i>Cargo Surveyor</i>	<i>Moderate</i>	<i>High</i>
	<i>Insurance Loss Prevention Inspector</i>	<i>Moderate</i>	<i>Moderate</i>
<b>2273</b>	<i>Marine Engineering Cadets</i>	<i>Moderate</i>	<i>Moderate</i>
	<i>Master Mariner/ Navigation Officer</i>	<i>Moderate</i>	<i>Moderate</i>
<b>2274</b>	<i>Chief Engineer – Water Transport</i>	<i>Moderate</i>	<i>High</i>
	<i>Engineer Officer – Water Transport</i>	<i>Moderate</i>	<i>High</i>
	<i>Marine Engineer Officer, Engineering Superintendent</i>	<i>Moderate</i>	<i>High</i>
<b>6524</b>	<i>Cargo Customer Service Representative – Marine</i>	<i>High</i>	<i>Moderate</i>
<b>7532</b>	<i>Bridge Watchman, Quartermaster</i>	<i>Moderate</i>	<i>Moderate</i>
	<i>Crew Coordinator</i>	<i>Moderate</i>	<i>High</i>
	<i>Marine Assistant</i>	<i>High</i>	<i>Moderate</i>

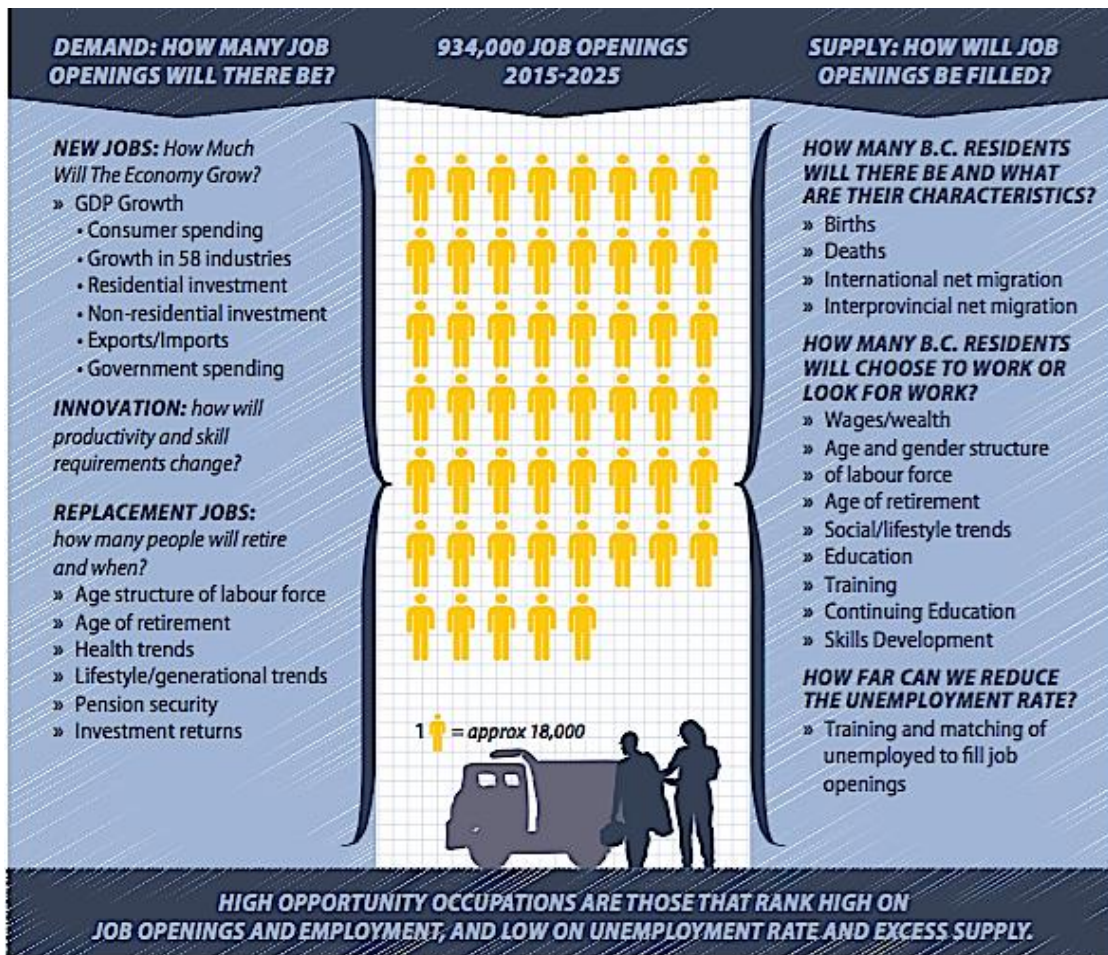
Source: GLOBE Advisors Stakeholder Outreach Program

## 6. BRITISH COLUMBIA LABOUR MARKET OUTLOOK

The Occupational Analysis labour supply and demand projections are based on ten year forecasts (2016 to 2025) using the British Columbia 2025 Labour Market Outlook.

This model generates labour demand and supply projections for 500 occupations in the province. The Model uses the following labour market definitions. The following flow chart describes the key parameters of this model.

FIGURE 6: BRITISH COLUMBIA LABOUR MARKET OUTLOOK



Source: British Columbia Labour Market Outlook

The Outlook uses the following labour market definitions.

- Unemployment Rate** is the percentage of the labour force in each occupation not employed but available to work.
- Expansion Demand** refers to new job openings arising due to economic growth.

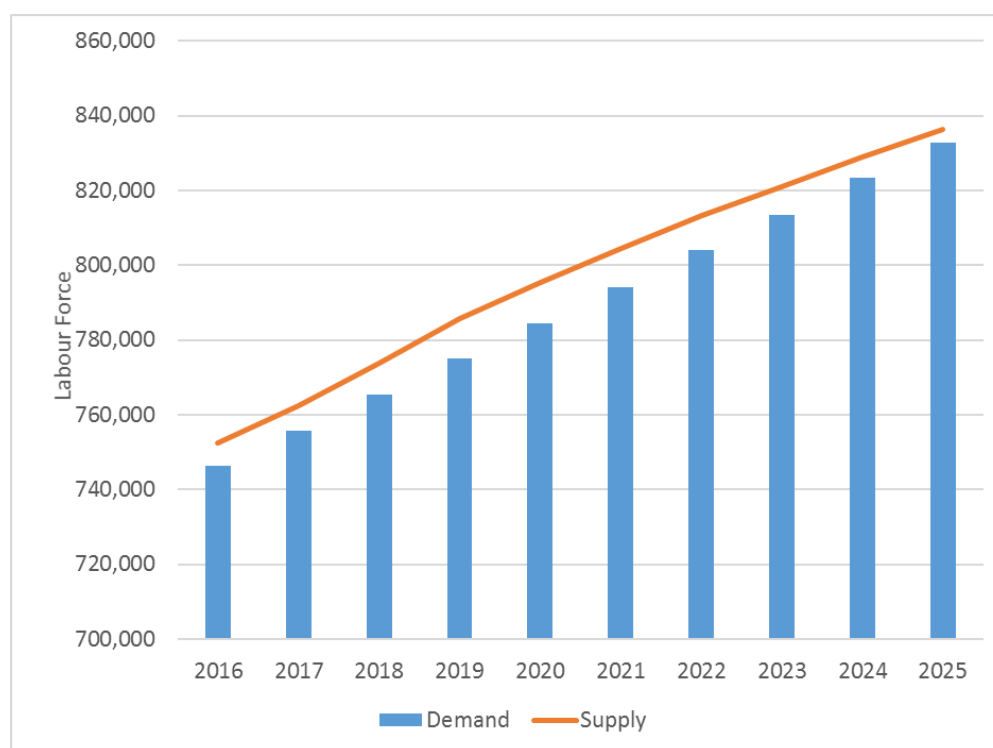


- c) **Replacement Demand** refers to job openings to fill positions generated through retirements and deaths.
- d) **Supply less Demand** refers to the difference between Supply and Demand. A positive value indicates that Supply is greater than Demand.
- e) **Demand** refers to the total number of persons employed plus vacant positions
- f) **Supply** refers to the expected labour force, including those employed and those actively looking for a job.

### OCCUPATIONAL MODEL PROJECTIONS TO 2025

Based on projected unemployment rates and a shrinking supply of labour relative to demand for the larger baseline population sample, the British Columbia Outlook Model suggests that generally labour markets across the province for the six occupational categories noted earlier will become increasingly tighter ten years from now. Overall, for the total occupations that have been identified by the VIMC Board as being important to the international shipping job skills needs, labour supply is projected to be slightly greater than demand by 2025.<sup>24</sup>

**FIGURE 7: PROJECTED SUPPLY AND DEMAND FOR KEY WORKERS, 2016 TO 2025  
BRITISH COLUMBIA**

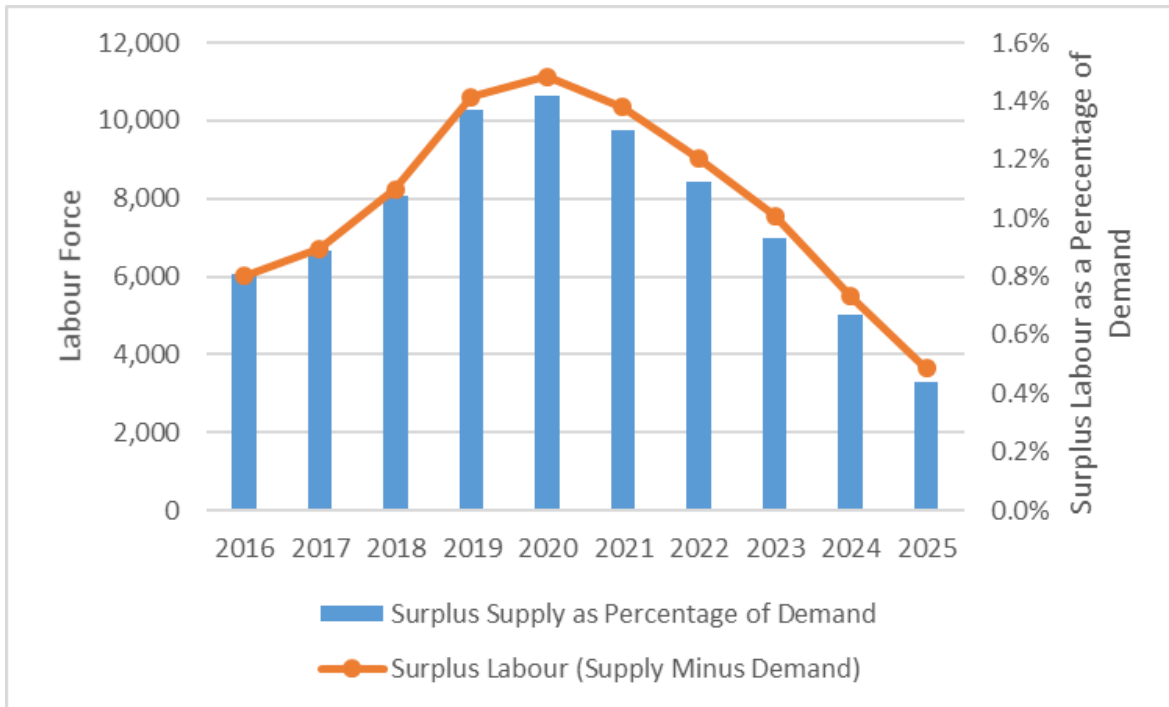


Source: British Columbia Labour Market Outlook

<sup>24</sup> Appendix 1 provides a more in-depth examination of the British Columbia Labour Market Outlook Model, with particular reference to the factors that shape the labour demand and supply estimates.

The British Columbia Outlook Model projects that labour markets will be tighter ten years from now. Labour supply is still projected to be very slightly greater than demand by 2025 as this “surplus” is slated to shrink substantially as noted in the chart below.

**FIGURE 8: PROJECTED SURPLUS LABOUR FOR KEY POSITIONS, BRITISH COLUMBIA**



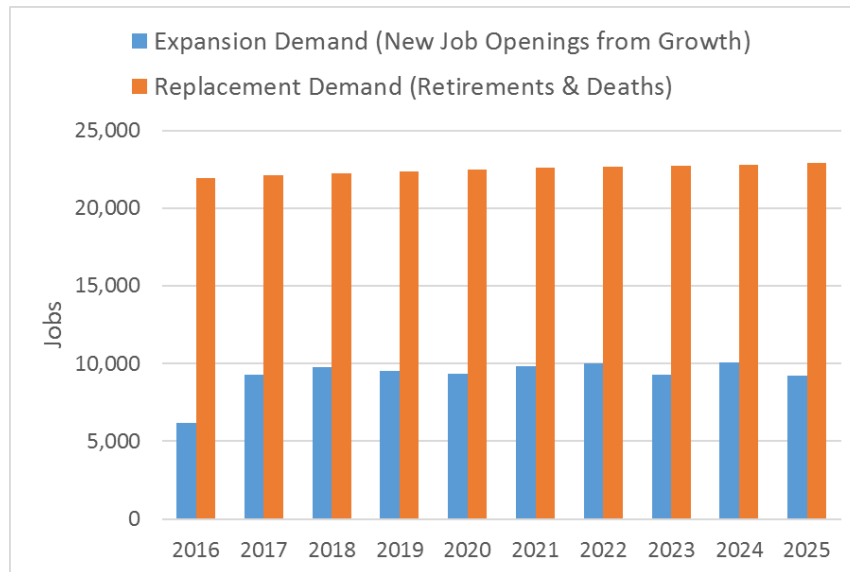
Source: British Columbia Labour Market Outlook

Based on projected unemployment rates and a shrinking supply of labour relative to demand, the British Columbia Model suggests that generally labour markets across the province for the six occupational categories noted earlier will become increasingly tighter ten years from now. Overall, for the total occupations that have been identified as being important to the international shipping job skills needs, labour supply is projected to be slightly greater than demand by 2025.

Figure 9 below shows the projected expansion versus replacement jobs for key occupations for the outlook period to 2025. The British Columbia 2025 Labour Market Outlook Model predicts that seventy-one percent of the new jobs that are forecast for these occupations in the ten-year outlook period are Replacement Jobs based on retirements and deaths. Twenty-nine percent are Expansion Jobs based on new demand for each occupation’s specific services. It is this baseline against which the challenges of recruitment for the senior managerial or highly skilled technical occupations will be compared. The heavy focus on Replacement versus Expansion jobs is consistent with the older age structure of these international shipping related workers<sup>25</sup>.

<sup>25</sup> Section 12 of this report examines in some detail the importance of immigration and in-migration in securing the human resources that will be needed to fill these vacancies.

FIGURE 9: PROJECTED EXPANSION AND REPLACEMENT JOBS  
KEY POSITIONS BRITISH COLUMBIA

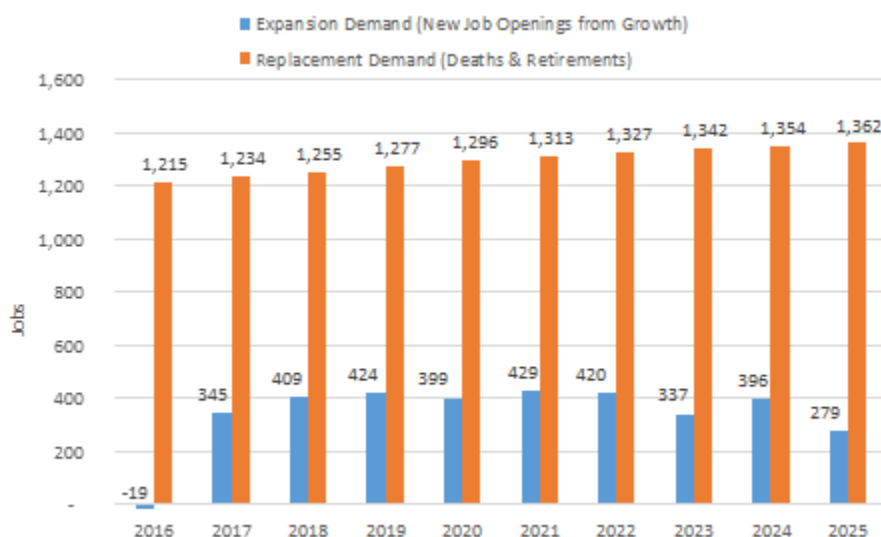


Source: British Columbia 2025 Labour Market Outlook

By comparison, Table 10 below compares the same projected expansion versus replacement jobs for the outlook period to 2025 for the much smaller sample of key International Shipping occupations identified through the stakeholder outreach exercise.

Compared to the baseline profile reflected in Table 9, it is evident that the challenges of recruitment for the senior managerial or highly skilled technical occupations will be even greater. Replacement versus Expansion recruitment for these positions is a reflection of the older age profile of current occupants of these positions.

**FIGURE 10: PROJECTED EXPANSIONS AND REPLACEMENTS  
KEY INTERNATIONAL SHIPPING OCCUPATIONS, BRITISH COLUMBIA**



Source: British Columbia 2025 Labour Market Outlook

### TAKE AWAY FROM THE LABOUR MARKET OUTLOOK PROJECTIONS

- The British Columbia 2025 Labour Market Outlook provides useful baseline information on projected expansion versus replacement jobs by occupation in 2020 and 2025 for the province.
- With particular reference to the larger baseline population sample identified, seventy one percent of the new jobs that are forecast for senior professional occupations are slated to be replacement jobs in the outlook period. Twenty nine percent are expansion jobs based on new demand for each occupation's specific services.
- This heavy focus on expansion versus replacement jobs is consistent with the moderately older age structure of these international shipping related workers.
- The British Columbia Outlook Projections show increasingly tighter markets over the outlook period, especially from 2020 to 2025 with moderately low unemployment rates and shrinking numbers of "surplus" workers (supply minus demand) by 2025.
- The table below provide a summary for projected unemployment rates, expansion demand, replacement demand and "surplus" workers for the much smaller sample of key International Shipping occupations identified through the stakeholder outreach exercise.

**TABLE 5: BRITISH COLUMBIA LABOUR MARKET OUTLOOK PROJECTIONS KEY OCCUPATIONS**

NOC Code	Occupations	Unemployment Rate		Expansion Job Openings		Replacement Job Openings		Labour Supply Minus Demand	
		2020	2025	2020	2025	2020	2025	2020	2025
<b>0016</b>	<i>Senior managers - construction, transportation, production and utilities</i>	4.9%	3.9%	95	0	304	318	126	54
<b>0113</b>	<i>Purchasing managers</i>	5.2%	3.8%	16	15	56	65	32	11
<b>0731</b>	<i>Managers in transportation</i>	4.9%	3.8%	37	34	204	220	84	30
<b>1113</b>	<i>Securities agents, investment dealers and brokers</i>	5.2%	3.8%	16	15	56	65	32	11
<b>1215</b>	<i>Supervisors, supply chain, tracking and scheduling co-ordination occupations</i>	5.7%	4.4%	45	37	164	191	98	37
<b>1315</b>	<i>Customs, ship and other brokers</i>	6.0%	4.5%	5	5	23	22	20	7
<b>1521</b>	<i>Shippers and receivers</i>	6.4%	5.2%	134	119	320	329	244	91
<b>1526</b>	<i>Transportation route and crew schedulers</i>	6.7%	5.4%	3	3	9	10	9	3
<b>2262</b>	<i>Engineering inspectors and regulatory officers</i>	6.0%	4.6%	6	6	17	16	11	4
<b>2273</b>	<i>Deck officers, water transport</i>	5.9%	4.4%	256	281	175	228	187	52
<b>2274</b>	<i>Engineer officers, water transport</i>	5.5%	4.3%	443	512	323	394	255	54
<b>6524</b>	<i>Ground and water transport ticket agents, cargo service representatives and related clerks</i>	7.7%	6.6%	2	3	16	15	11	4
<b>7532</b>	<i>Water transport deck and engine room crew</i>	7.0%	6.2%	10	11	32	32	7	0
	<b>Core Shipping Total / Average</b>	<b>5.9%</b>	<b>4.5%</b>	<b>1068</b>	<b>1041</b>	<b>1699</b>	<b>1905</b>	<b>1116</b>	<b>358</b>

Source: British Columbia 2025 Labour Market Outlook

### 7. BRITISH COLUMBIA INTERNATIONAL SHIPPING DEMOGRAPHICS

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The data captured clearly indicates that a significant segment of the workforce has reached middle age or older; hence, the need to find replacements in these areas, will become a growing priority within the next 10-15 years. Some of the following observations were particularly telling of the maturing workforce in the international shipping industry:

- Nearly half of all employees fall within the 45-64 age group, while those older than 45 (including those 65 and older) make up over half of total employees.
- More than three quarters of all senior management employees are older than 45 years of age
- Roughly two of ten senior management employees are older than 65 years of age

Further analysis was also conducted on the segment of the workforce aged "55+ years." The age bracket "55+ years" was deemed to provide an even better indication of rapidly approaching retirement ages and in fact demonstrated that 25-35% of international shipping workforce are moving nearing retirement age within the next +/- 10 years. This is substantially greater than the provincial average of just over 20%.

More than two thirds of the workforce employed in the international shipping sector have a Bachelor's degree (or equivalent), or higher level of education. Combined with on-the-job training and, in certain cases, first-hand experience at sea, the complete training and qualification process for employees in this sector in most cases ranges from 10 – 15 years. Half of senior management personnel possess: two or more certificates/diplomas/degrees or a master's degree (average of 5-6 years of education) plus the experience necessary to occupy a senior position.

#### EDUCATION ATTAINMENT AND AGE STRUCTURE

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International Shipping professionals' generally are highly educated and trained. A large percentage of the people working in these occupations province-wide have university certificates, diplomas or degrees at the bachelor level or above, or other non-university certificates or qualifications. Very few people employed in the senior management or provide high value added profession services cohort lack certificate, diploma or degree level educational qualifications.

These occupations analyzed have a moderately older workforce than the average for all occupations in the province. More specifically, higher percentages of Senior Management, Education and Law and Business and Finance personnel fall within the 45 to 64-year age bracket than is the case with other occupations. This has implications for retirements and the demand for replacement workers over the next five to ten years. With respect to persons currently employed in British Columbia-based international shipping companies, the concerns associated with an aging workforce are very real and immediate.

The high levels of education achieved by this segment of the workforce, as well as the phenomenon of the maturing/aging demographics within international shipping, are discussed more fully in the following paragraphs related to the findings from the stakeholder engagement process.

**TABLE 6: EDUCATION ATTAINMENT FOR THE CORE SHIPPING OCCUPATIONS, BRITISH COLUMBIA**

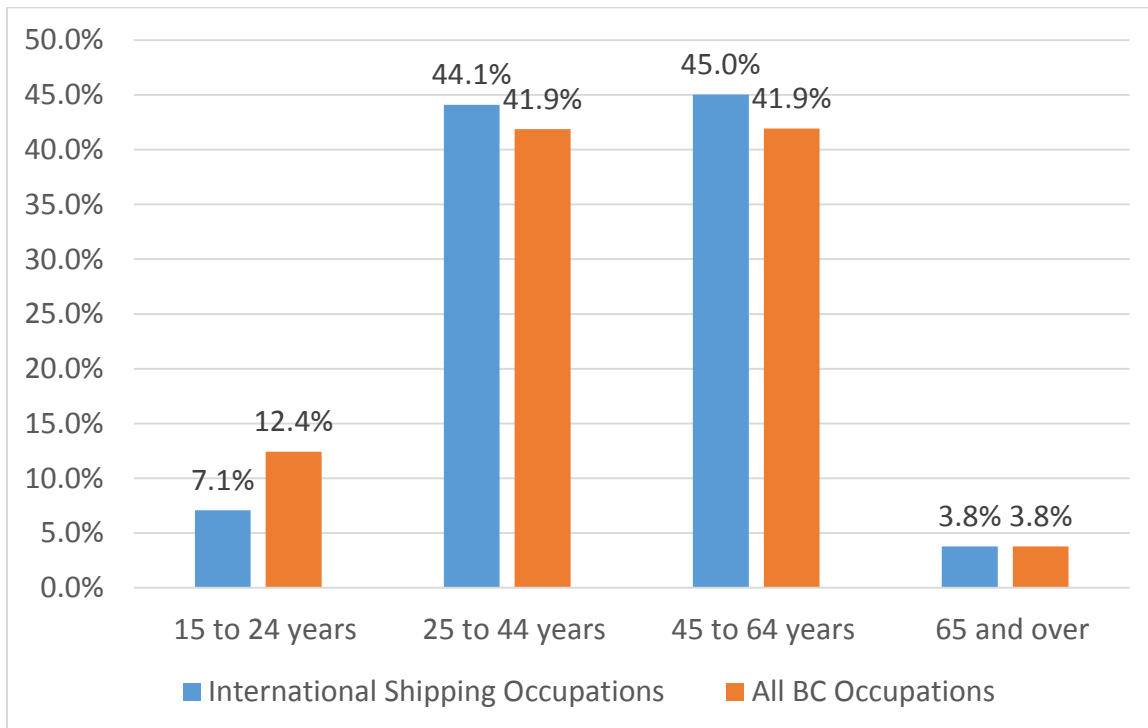
	<b>No certificate, diploma or degree</b>	<b>High school diploma or equivalent</b>	<b>Apprentice or trades certificate or diploma</b>	<b>College, CEGEP or other non-university certificate or diploma</b>	<b>University certificate or diploma below bachelor level</b>	<b>University certificate, diploma or degree at bachelor level or above</b>	<b>Total Population 15 Plus</b>
0016 Senior managers - construction, transportation,	4.7%	17.5%	9.4%	17.4%	8.6%	42.4%	6,130
0113 Purchasing managers	3.9%	23.5%	3.9%	21.4%	9.5%	37.8%	1,680
0731 Managers in transportation	8.9%	28.1%	9.0%	21.6%	8.0%	24.4%	4,555
1113 Securities agents, investment dealers brokers	2.8%	19.0%	3.7%	17.2%	8.5%	48.8%	2,815
1215 Supervisors, supply chain, tracking and scheduling	8.8%	39.8%	9.5%	18.5%	6.2%	17.3%	4,685
1315 Customs, ship and other brokers	2.1%	20.4%	8.5%	37.3%	5.6%	26.8%	710
1521 Shippers receivers	15.2%	50.3%	7.6%	13.6%	3.9%	9.4%	13,540
1526 Transportation route crew schedulers	7.0%	27.5%	8.5%	20.4%	6.3%	29.6%	710
2262 Engineering inspectors regulatory officers	2.1%	17.9%	12.4%	26.2%	12.4%	29.0%	725
2273 Deck officers, water transport	5.3%	14.9%	29.0%	35.2%	6.0%	9.8%	2,245
2274 Engineer officers, water transport	3.8%	7.0%	24.7%	42.5%	10.8%	10.2%	930
7532 Water transport deck and engine room crew	9.7%	30.4%	29.8%	24.4%	3.3%	2.0%	1,495

Source: Statistics Canada, National Household Survey, 2011 May be updated

## AGE STRUCTURE

The select occupations that are being analyzed in this LMI report are moderately older than the average for all occupations.

FIGURE 11: KEY OCCUPATIONS BY AGE STRUCTURE – CHANGE CHART



Source: Statistics Canada, National Household Survey, 2011

More specifically, higher percentages of the Senior Management, Education and Law and Business and Finance are included in the older 45 to 64-year age bracket than other occupations. This has implications for retirements and the demand for replacement workers over the next five to ten years.

This older age structure further reinforces the pending crisis in skills shortages and the importance of commencing with replacement training in the immediate future, given the long lead times required. This situation is more urgent for the Senior Management and the Business, Finance and Administrative occupations.

The people comprising the senior professional occupations are generally older than the provincial average, which further reinforces the pending crisis in skills shortages and the importance of commencing with replacement training in the immediate future, given the long lead times required.

This situation is more urgent for the Senior Management and the Business, Finance and Administrative occupations. The Core Group of select shipping related occupations similarly are older than the provincial average, which again reinforces the urgent need for skills training to fulfil the looming replacement demand.



### INCOME CHARACTERISTICS

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The following income characteristics pertain to the occupations that identified as part of or influencing the International Shipping industry. The occupations showed hourly remuneration rates ranging from \$12 to \$63.

**Senior Management Occupations** had a median salary of \$84,690. At the high end of the pay scale Senior Management occupations paid as much as \$62.62 per hour.

**Business Services and Administration Occupations** had a median salary of \$50,178, which is considerably lower than for Senior Management occupations.

**Natural and Applied Sciences and Related Occupations** had a median salary of \$74,167, while

**Education, Law and Social, Community and Government Services** had a median salary of \$73,096. Both these groups had pay scales much higher than for Business Services and Administration occupations but somewhat lower than for Senior Management occupations.

At the high end, many of these jobs paid more than \$50 an hour which is close to the thresholds being stipulated by Citizenship and Immigration Canada for fast tracking. More specifically, senior managers - construction, transportation, production and utilities earned a median salary of \$84,690 and hourly wages as high as \$80.

Purchasing managers and Managers in transportation earn median salaries of \$75,520 and \$77,167 respectively. Engineering inspectors and regulatory officers Deck officers, water transport earn median salaries of \$80,212 and \$76,771 respectively.

**TABLE 7: INCOME DYNAMICS KEY INTERNATIONAL SHIPPING OCCUPATIONS, BRITISH COLUMBIA, 2015**

Occupation	Labour Force	Median Annual Salary	Hourly Wages		
			Low	Medium	High
<b>0016</b>	Senior managers - construction, transportation, production and utilities	\$84,217	\$22.50	\$40.38	\$80.13
<b>0113</b>	Purchasing managers	\$75,520	\$22.15	\$36.21	\$52.88
<b>0731</b>	Managers in transportation	\$77,167	\$20.00	\$37.00	\$62.50
<b>1113</b>	Securities agents, investment dealers and brokers	\$50,138	\$10.45	\$24.04	\$57.69
<b>1215</b>	Supervisors, supply chain, tracking and scheduling co-ordination occupations	\$53,141	\$14.25	\$25.48	\$40.00
<b>1315</b>	Customs, ship and other brokers	\$44,986	\$10.73	\$21.57	\$39.00
<b>1521</b>	Shippers and receivers	\$35,445	\$11.25	\$17.00	\$28.00
<b>1526</b>	Transportation route and crew schedulers	\$49,846	\$12.90	\$23.90	\$42.27
<b>2262</b>	Engineering inspectors and regulatory officers	\$80,212	\$16.68	\$38.46	\$67.09
<b>2273</b>	Deck officers, water transport	\$76,771	\$19.84	\$36.81	\$46.00
<b>2274</b>	Engineer officers, water transport	\$69,763	\$21.00	\$33.45	\$45.01
<b>6524</b>	Ground and water transport ticket agents, cargo service representatives and related clerks	\$37,228	\$12.00	\$17.85	\$24.99
<b>7532</b>	Water transport deck and engine room crew	\$53,371	\$18.00	\$25.59	\$32.50
	Key Shipping Average	\$59,850	\$17.33	\$30.91	\$50.97

Source: Work BC, Canada Job Bank and British Columbia 2025 Labour Market Outlook Model

### 8. NAUTICAL EDUCATION AND TRAINING

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The 2015 BIMCO Manpower Report on the global supply and demand for seafarers estimates that the current supply-demand situation in the international shipping industry amounts to a shortage of 16,500 officers and a surplus of 119,000 ratings, with an overall surplus of 102,500 seafarers.

This report concludes that "The current maritime manpower situation and future outlook indicate that the industry and relevant stakeholders should not expect there to be an abundant supply of qualified and competent seafarers in the future without concerted efforts and measures to address key manpower issues. It is crucial to promote careers at sea, enhance maritime education and training worldwide, address the retention of seafarers, and to continue monitoring the global supply and demand for seafarers on a regular basis."<sup>26</sup>

As well, the changing nature of the modern marine industry means that lifelong learning and a broader, more diversified education system is needed. Lean-crewing and human resource shortages mean that productivity changes are needed in the industry and in the delivery of education and training. This will necessitate greater coordination and partnering between educational and training institutions and public policy support to attract and develop a skilled work force for the sector.

Nautical training is important for the required skills to work in International shipping companies as the more senior corporate positions require considerable at sea experience. Therefore, this section of the report provides a brief overview of available nautical education and training that may ultimately be beneficial for on shore international shipping jobs.

The Federal Government, through Transport Canada and Industry Canada, prescribes the training syllabus for ship board training. The syllabus is based on international requirements. The Ministry of Advanced Education (AVED) does not directly provide training related to the oceans sector, rather it provides provincial recognition to institutions that provide training.

The following discussion provides a brief overview of nautical training being offered in British Columbia that is relevant for an at sea career, which then may lead to a high value added onshore international shipping career.

#### BRITISH COLUMBIA INSTITUTIONS

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##### British Columbia Institute of Technology

From the Marine Campus in North Vancouver, the British Columbia Institute of Technology provides two streams of marine cadet training: Marine Engineering and Nautical Sciences. Both are designed to prepare students for a career at sea. The nautical or marine engineering cadet program takes individuals with little or no experience through a series of academic and coop placement terms, and turns them into junior officers by the end of a 4-year program.

Graduates are awarded a Diploma from BCIT, and upon completion of prerequisites, a Certificate of Competency from Transport Canada, which allows them to seek employment in or outside of Canada.

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<sup>26</sup> The global supply and demand for seafarers in 2015, BIMCO Manpower Report, [www.bimco.org](http://www.bimco.org),<sup>26</sup>  
<http://www.mainlandmachinery.com/maritime-labour-crisis/>

BCIT offers further courses targeting specific certificates, to help mariners advance in their careers by preparing them for Transport Canada examinations. These certification courses include Master 150 Gross Ton Domestic, Master 500 GT Domestic, Master 300 GT Domestic and Chief Mate. BCIT also offers a number of specific individual courses on emergency preparedness, ship and port security and oil tanker operations.

BCIT and Camosun College have a 'Letter of Understanding' through which they attempt to align their respective curricula to serve different paths within the maritime education sector. While both institutions offer courses aimed at many of the same certifications, they offer them on a revolving basis, so as not to compete directly with each other.

### **Camosun College**

Camosun College, from its two locations on Vancouver Island, is a provider of experience-based marine training. Its programs and courses allow students to move up through the ranks from deckhand to Master Mariner or Pilot.

Camosun's courses target those already employed in the industry, typically as deckhands. After completion of mandatory sea time, Camosun offers academic courses to prepare students for the next level of examination by Transport Canada. Students then go back out to sea, until they have met the sea time requirements for the next level again. Graduates receive a Certificate of Competency from Transport Canada, once they have completed the necessary prerequisites. Due to the nature of their programs they do not offer work placements, because many of their students do not require them. The 'at-sea' work intervals vary in duration, depending on the educational level being pursued and may range anywhere between 12, 36 and 84 months.

Camosun's education programs prepare graduates for work in domestic waters (near coastal), international waters and the fishing industry. Certifications include Master 500 GT Coastal, Master 3000 GT Coastal, Master Near Coastal and Master Mariner. Camosun College, like BCIT, uses maritime training simulators, helping to assure practical experience alongside the academic components.

### **University of British Columbia Sauder School of Business**

The Sauder School of Business at the University of British Columbia offers a Bachelors of Commerce with an Operations and Logistics specialization. This specialization, based in the Centre for Transportation Studies, can include courses on the Maritime and International Transportation industry, preparing students to work in the business sector, where shipping is a component.

Sauder's Operation and Logistics option is commercially focused, with emphasis placed on supply chain management, transportation economics, and service operations. This allows graduates to work in a wide variety of industries, not exclusively the maritime shipping industry. Sauder School of Business also offers a Master's and PhD in Transportation and Logistics.

The Centre for Transportation Studies, together with the Copenhagen Business School (CBS Maritime), leads an international maritime research network on the governance challenges and opportunities of greening of the maritime supply chain. This operates in partnership with some of Vancouver's biggest International Shipping Companies and industry organizations, including Teekay Shipping, Seaspan Ship Management Ltd., the Chamber of Shipping of British Columbia, the Shipping Federation of Canada and Transport Canada.

### Western Maritime Institute

The Western Maritime Institute operates from its principal campus in Ladysmith on Vancouver Island, as well as a secondary campus in Richmond, BC. The Institute was specifically established to provide marine training in urban and rural locations throughout British Columbia and Canada to meet the accreditation training standards established by Transport Canada, the Canadian Coast Guard and Industry Canada for the fishing, commercial and recreational marine industry.

Graduates are typically prepared for careers with a wide variety of marine employers, ranging from BC Ferries Corporation, the Canadian Coast Guard, Seaspan, tug and barge companies, as well as within the fishing industry.

The Western Marine Institute stands out with highly accelerated courses, running 8 hours a day Monday to Friday, to help students get to working faster. They also have specialized training with simulators in Fire Fighting and Survival craft utilization, one of only two schools in Canada to offer these courses. Another way the Marine Institute stands out is its ability to bring the classroom to rural communities, where other schools make students come to them.

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## NAUTICAL COURSES OFFERED IN ATLANTIC CANADA

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### The Marine Institute at Memorial University

The Marine Institute of Memorial University of Newfoundland, based in St. John's, is a leader within the Canadian maritime education sector. It provides high quality education in a wide variety of maritime fields, including Marine Engineering, Engineering Systems Design, Environmental Technology, Nautical Science and Naval Architecture. With a rich history of training mariners, the College has a mandatory minimum of either 180 or 360 sea days as part of cadet internship, depending on the stream. Included in the academic component is time in the Institute's maritime simulator, which can create sea-like operating conditions from anywhere in the world.

The Marine Institute provides an educational path from layperson to Master Mariner, with the possibility of working either internationally or domestically. As well, the Marine Institute is the only educational organization within Canada that offers a Bachelor's and Master's Degree in Maritime Management to those with a marine certificate. This helps those with significant technical and real world experience receive recognition for their work, as marine certificates are not well understood or valued outside of their industry.

Achieved primarily through online correspondence work, the Master's degree in Maritime Management prepares graduates for work as marine surveyors, consultants, managers in maritime organizations, and maritime regulators, such as Transport Canada, for example. Soon, the Marine Institute will be offering PhD's on maritime subjects.

### Canadian Coast Guard College

The Canadian Coast Guard College (CCGC) is a national maritime training facility located on Canada's East Coast, on Cape Breton Island, Nova Scotia. It provides training and services in both official languages.

The Canadian Coast Guard program trains Officers in Marine Engineering and Marine Navigation. The 45-month training period encompasses in-class theory at the Canadian Coast Guard College, and practical experience at sea on Coast Guard vessels. The program provides Officer Cadets with a thorough understanding of ship operations and the latest in marine technology.<sup>27</sup>

The College develops and delivers marine training essential to Coast Guard operations. The training basically falls into one of two categories, the first being student training that produces graduates. The College's Officer Training Program and its Maritime Communication and Traffic Services student training fall into this category. The second category includes all short-term specialized training courses, including any refresher courses for field staff. Marine maintenance and equipment training, search and rescue training, and environmental response training are included in this category.<sup>28</sup>

Three Coast Guard directorates — Fleet, Maritime Services and Integrated Technical Services — are the College's clients. Three other key stakeholders provide further direction and input on the College's training: Transport Canada accredits the Officer Training Program (OTP); Cape Breton University ensures that the Officer Training Program meets its academic requirements as it confers a Bachelor's degree on Officer Training Program graduates; and Industry Canada sets requirements for part of the Maritime Communications and Traffic Services (MCTS) training.

### Nautical Institute, Nova Scotia Community College, Marine Programs

The Nova Scotia Community College (NSCC) offers a range of marine programs and courses for students who want to start or advance their career in the commercial marine and fish harvesting industries. Marine training is conducted at the Nautical Institute in Port Hawkesbury, NS, and the School of Fisheries in Shelburne, NS.<sup>29</sup> The following maritime related programs are relevant to the analysis:

**Quick-Start Marine Programs** - The Quick-Start Marine Program provides hands-on training and skills that are needed to quickly get a career at sea. The courses range in length from 15 to 26 weeks. Graduates will expect to obtain an entry-level position in the marine sector with salaries starting from \$45,000.

**Marine Engineering & Marine Navigation Programs** - The Marine Engineering & Marine Navigation Programs combine academic study and a work term at sea to become a marine engineer or marine navigator. Programs range in length from one to three years and prepare graduates as a Ship's Officer. Salaries start as high as \$70,000.

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## TOWARDS AN EDUCATION COMMUNITY OF PRACTICE

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The concept and potential for a Community of Practice or a knowledge-based cluster for the international shipping and maritime economy in British Columbia has been broached in this LMI. The relationship that the Marine Institute has with the maritime cluster in St. John's, NL may serve as a best practice model for this concept.

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<sup>27</sup> <http://www.ccg-qcc.qc.ca/College-and-Careers/college>

<sup>28</sup> <http://www.dfo-mpo.qc.ca/ae-ve/evaluations/12-13/cqc-eng.htm>

<sup>29</sup> [http://www.nsc.ca/learning\\_programs/marine\\_training/](http://www.nsc.ca/learning_programs/marine_training/)

The Marine Institute and engineering students from Memorial University have a long history of working as students at the National Research Council laboratory which has a full service wave tank and ice tank, providing real simulation conditions for ships operating in a major storm or in ice conditions. The Marine Institute also houses the Canadian Centre for Marine Commutations (CCMC) which has particular emphases on navigation and marine communications including safety issues that are critical for people working at sea to be proficient at and fully understand.

The National Research Council at St. John's considers the region to be a knowledge cluster for marine technologies and has developed various programs and funding initiatives to support this cluster. The cluster has an educational component consisting of the Marine Institute and Memorial University, the NRC wave and ice tank, including strong engineering capabilities in ship design and a thorough understanding of the harsh wave and ice conditions of the North Atlantic. In addition, it includes the oil patch that designed and operated oil drilling platforms, along with a cadre of over twenty marine companies that largely served markets both locally and in Europe for a wide range of marine-related products and services.

The Cluster is managed by OceansAdvance, defined as follows: "OceansAdvance is led by groups of professionals, who spearhead cutting-edge oceans research; who have award-winning and growing expertise in operating safely and efficiently in Arctic marine conditions; who are leaders in the global Blue Economy; and who lead an impressive innovation ecosystem. OceansAdvance enjoys many mutually-beneficial relationships from its expanding network of global innovation partners." <sup>30</sup>

"This multi-stakeholder technology cluster is underpinned by innovation, commercialization and export, and is influenced by Newfoundland and Labrador's burgeoning offshore energy, transportation, fishing and aquaculture sectors. Locally developed ocean technologies and the innovators who develop them are employed in laboratories, on barges, tankers, vessels, production platforms and submersibles. They are deployed at every depth of the ocean column, from the high water mark to the depths of the Marianas Trench."<sup>31</sup>

The relationship that the Marine Institute has with the local maritime community in St. John's, from both a research and operational perspective, could serve as a "best practices" model for British Columbia's future plans to develop a maritime and international shipping community of practice.

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### STAKEHOLDER ENGAGEMENT FINDINGS ON MARITIME EDUCATION

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The discussion and the stakeholder engagement analysis revealed that the British Columbia education system that provides maritime related training and course development is facing serious constraints, both from an educational perspective and from the job prospects for graduates of these programs. Some of the key points to emerge from the stakeholder engagement included the following:

- Students in the engineering training programs are being trained according to the syllabus approved by Transport Canada. However, there are concerns that the rate of change in the technology of the industry is outpacing Canada's regulatory regime.

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<sup>30</sup> <http://www.oceansadvance.net/about>

<sup>31</sup> <http://www.oceansadvance.net/about>

- Access to at-sea or 'on-board' training for recent graduates, or even those still completing their studies is very limited, due to the lack of infrastructure in Canada. In countries, such as the Philippines, for example, cadet training entails regular access to actual ships stationed in port; thereby allowing students to gain experience, not only using simulators, but also on board an actual ship.
- Transport Canada limits its recognition of other certificates or educational qualifications issued by third countries. New immigrants, even though they may be well trained, may be required to complete a new set of competency training and certification exams in order to receive a Canadian Certificate of Competency or Proficiency. This can be time-consuming and expensive, and ultimately limits Canada's access to a ready pool of otherwise qualified workforce talent.
- It is becoming more difficult to recruit new cadets who are willing to go to sea for extended periods. Basic skill sets for operating ships can only be learned through experience at sea and the training for such can only come from people who have had seagoing experience. This requires significant time, and it is not uncommon for professional seafarers to have spent at least 10 years acquiring their skills and knowledge at sea.
- A ship's master or chief engineer needs to possess significant sea time in order to be considered for employment ashore. An MBA in ship management is typically not deemed as sufficient. Similarly, people working in the pilotage domain require certified technical competence which often requires extensive sea time.
- BC Ferries Corporation is a very strong competitor for the types of skills that are being graduated from British Columbia training programs. Where other flag state nautical training facilities may graduate 25 to 60+ people per year, for example, BCIT can only graduate a handful, due to resource constraints, many of which end up working for BC Ferries. These are skill sets that are also required for international shipping and are hence being lost to a local corporation.
- There is a distinct lack of awareness and understanding surrounding potential career paths in the maritime industry. In particular, secondary and post-secondary students do not appear to be aware of the wide diversity of career options and the relatively high salaries that may be available to them as graduates of a marine training program. Furthermore, the degree to which marine training programs are marketed and promoted tends to be very limited throughout most of Canada, thereby exacerbating the problem. The marine industry in Canada – especially in British Columbia -- simply appears to lack the visibility to attract a sufficient and regular pool of new recruits to the industry.



## 9. ECONOMIC IMPACTS OF INTERNATIONAL SHIPPING EMPLOYMENT

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It was frequently observed during the stakeholder consultation process that every new hire in the international shipping community, particularly in the senior management or professional ranks, generated significant direct, indirect and induced benefits.

To test this assertion, GLOBE Advisors undertook a more detailed analysis of such secondary and tertiary economic impacts. Reported below are the findings specifically related to positions at the Senior Management level. In brief it was found that every dollar earned in a Senior Management position in the international shipping community generates an additional \$7.98 of business revenues in the British Columbia maritime economy including spinoffs and \$3.92 in Gross Domestic Product.

The economic basis for these findings is as follows.

**Direct effects** measure the initial requirements for an extra dollar's worth of output of a given industry. The direct effect on the output of an industry is a one dollar change in output to meet the change of one dollar in final demand. Associated with this change, there will also be direct effects on GDP, jobs, and imports.

**Indirect effects** measure the changes due to inter-industry purchases as they respond to the new demands of the directly affected industries. This includes all the chain reaction of output up the production stream since each of the products purchased will require, in turn, the production of various inputs.

**Induced effects** measure the changes in the production of goods and services in response to consumer expenditures induced by households' incomes (i.e. wages) generated by the production of the direct and indirect requirements.<sup>32</sup>

Senior Management international shipping occupations earn a median salary of \$84,690 in 2015 based on Work BC and the Canada Job Bank. For every new job with a salary of \$84,690 based on the Statistics Canada Input Output (IO) multipliers for the British Columbia maritime economy, an additional \$676,163 of direct, indirect and induced maritime related revenues and \$331,709 in GDP were generated. The GLOBE Advisors analysis found that every shipping related job created a total of 2.5 jobs. For every million dollars in maritime related sales 11.6 direct, indirect and induced jobs were supported overall in the economy. See Figure 12 below.

GLOBE Advisors compared these findings with other similar analyses both domestic and international. A report prepared by Oxford Economics <sup>33</sup> found that for every €1 million the European shipping industry contributes to GDP itself, it creates another €1.6 million elsewhere in the European economy." In other words, every euro of direct GDP generates a total of €2.6 direct, indirect and induced GDP. Based on 590,000 direct shipping jobs, the industry also supported employment for an estimated 2.3 million people overall including spinoffs. Every direct job creates a total of 3.9 direct, indirect and induced jobs.

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<sup>32</sup> Source: Provincial Input-Output Multipliers, 2010, Catalogue no. 15F0046XDB, Industry Accounts Division, Statistics Canada

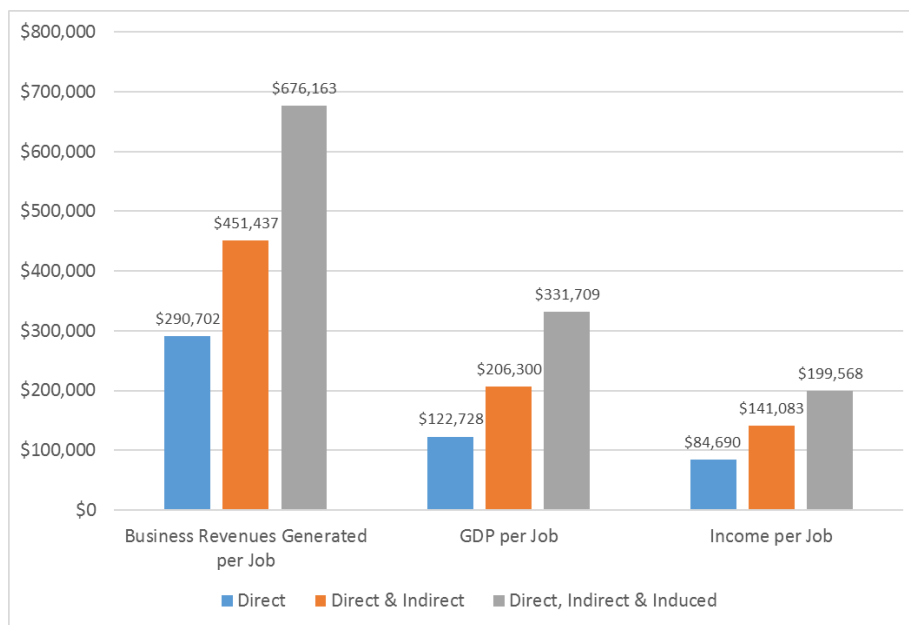
<sup>33</sup> The Economic Value of the EU Shipping Industry, A report for the European Community Shipowners' Associations (ECSA) Oxford Economics April 2014 <http://www.economiadelmare.org/oxford-economics-economic-value-eu-shipping-industry/>

A 2014 analysis of the Washington State Maritime Cluster found that very direct job in the maritime industry supports 1.6 jobs elsewhere in the economy “or a total of 2.6 direct, indirect and induced jobs. For every million dollars in maritime cluster sales, 10 jobs are supported elsewhere in the economy.”<sup>34</sup>

A 2013 Economic Impact of Port Metro Vancouver found similar results.<sup>35</sup> The Port of Vancouver supports a total of 76,800 direct, indirect and induced jobs including spinoffs. There are 38,200 direct jobs in the port. In other words, every direct job creates a total of 2.0 jobs. The Port of Vancouver supports a total of \$6,660 million of direct, indirect and induced GDP. Based on direct GDP generated by the Port, every dollar of GDP creates a total of \$1.88 total GDP including spinoffs.

By way of comparison, the employment multipliers for the Port of Vancouver, Washington Maritime Cluster and GLOBE Advisors' analysis for the maritime sector including shipping occupations range from 2.0 for the Port of Vancouver, 2.6 for the Washington Maritime Cluster and 2.5 for the GLOBE Advisors' analysis. It is understandable that the EU has a higher employment multiplier of 3.9 to 1 as Europe has a more robust and mature shipping sector than either Vancouver or Washington. The GLOBE Advisors Analysis found that the maritime sector in British Columbia has a GDP multiplier of 2.7 to 1, which is similar to the GDP multiplier for the EU. The British Columbia multiplier is relatively high due to the capital-intensive nature of the shipping sector.

FIGURE 12: ECONOMIC IMPACT OF SENIOR MANAGEMENT WORKERS



Source: GLOBE Advisors

<sup>34</sup> The Washington State Maritime Cluster Economic Impact Study, 2014 <http://leg.wa.gov/JointCommittees/Archive/ERMM/Documents/2014-9-30/a%20Economic%20Impact.pdf>

<sup>35</sup> Economic Impact of Port Metro Vancouver, 2013, <http://www.portvancouver.com/wp-content/uploads/2015/03/2012-port-metro-vancouver-economic-impact-study3.pdf>

## 10. INTERPROVINCIAL COMPARISONS

An inter-provincial comparison was carried out to determine whether or not the same labour force pressures existed in the St. Lawrence Seaway ("Seaway") provinces of Ontario and Quebec and in Atlantic Canada. Table 8 below illustrates the number of jobs for British Columbia, the Seaway Provinces and Atlantic Canada for select international shipping occupations based on the Statistics Canada 2011 National Household Survey.<sup>36</sup>

The Seaway Provinces employ more workers with shipping related skills than does British Columbia. Ontario and Quebec have considerably more senior manager and manager jobs than does British Columbia, although B.C. has a higher number of Deck Officers, Engineering Officers, and Inspectors. This conclusion is supported by current job openings in international shipping related occupations reported in the Canada Job Bank (see Table 9).

The structure and nature of the shipping sector in Ontario and Quebec is based more on general merchandise trade than is the case in British Columbia, where bulk commodities constitute the majority of water borne shipments. As a result, a legitimate labour market comparison for international shipping workers in British Columbia and the Seaway provinces is difficult to do. The British Columbia international shipping sector is considerably larger than is the case in Atlantic Canada.

**TABLE 8: KEY SHIPPING JOBS BRITISH COLUMBIA, SEAWAY PROVINCES, ATLANTIC CANADA**

Occupation	British Columbia	Ontario	Quebec	Atlantic Canada
<b>0016 Senior managers</b>	6,135	20,040	20,605	2,385
<b>0113 Purchasing managers</b>	1,680	7,120	3,690	645
<b>0731 Managers in transportation</b>	4,550	13,045	5,890	1,780
<b>1113 Securities agents, investment dealers brokers</b>	2,815	9,080	3,720	285
<b>1215 Supervisors, supply chain, tracking scheduling</b>	4,685	14,510	9,480	1,850
<b>1315 Customs, ship and other brokers</b>	710	2,420	1,095	285
<b>1521 Shippers and receivers</b>	13,535	53,430	36,415	6,195
<b>1526 Transportation route and crew schedulers</b>	710	2,185	1,295	270
<b>2262 Engineering inspectors and regulatory officers</b>	730	2,225	1,120	540
<b>2273 Deck officers, water transport</b>	2,245	735	910	2,045
<b>2274 Engineer officers, water transport</b>	930	460	645	1,180
<b>6524 Ground and water transport ticket agents, cargo service representatives and related clerks</b>	650	1,240	630	240
<b>7532 Water transport deck and engine room crew</b>	1,495	495	915	1,650
<b>Total Key Shipping Occupations</b>	<b>40,870</b>	<b>126,985</b>	<b>86,410</b>	<b>19,630</b>

Source: Statistics Canada, National Household Survey, 2011

<sup>36</sup> Data based on the 2011 Canada Census National Household Survey is the most current source for detailed socioeconomic and demographic data as the 2016 National Household Survey has not been released by Statistics Canada.

The Table below shows the results of the job search for British Columbia, the Seaway Provinces (Ontario and Quebec) and Atlantic Canada.

**TABLE 9: KEY SHIPPING JOB POSTINGS - OCTOBER 21, 2016**

NOC	Canada Job Bank Postings				
	British Columbia	Ontario	Quebec	Atlantic Canada	Total
<b>0016 Senior managers - construction, transportation, production and utilities</b>	1,702	3,979	3,331	334	9,346
<b>0113 Purchasing managers</b>	1,249	2,689	1,739	193	5,870
<b>0731 Managers in transportation</b>	1,347	3,174	1,879	224	6,624
<b>1113 Securities agents, investment dealers and brokers</b>	243	484	1,165	86	1,978
<b>1215 Supervisors, supply chain, tracking and scheduling co-ordination occupations</b>	1,341	1,142	1,042	107	3,632
<b>1315 Customs, ship and other brokers</b>	446	1,634	1,730	205	4,015
<b>1521 Shippers and receivers</b>	62	214	189	12	477
<b>1526 Transportation route and crew schedulers</b>	142	295	243	29	709
<b>2262 Engineering inspectors and regulatory officers</b>	703	1,230	1,651	90	3,674
<b>2273 Deck officers, water transport</b>	546	808	1,045	80	2,479
<b>2274 Engineer officers, water transport</b>	755	1,351	1,798	102	4,006
<b>6524 Ground and water transport ticket agents, cargo service representatives and related clerks</b>	2,672	5,275	6,098	701	14,746
<b>7532 Water transport deck and engine room crew</b>	374	738	1,115	65	2,292
	11,582	23,013	23,025	2,228	59,848

Source: Canada Job Bank

Ontario and Quebec each has more than twice as many shipping related job postings as British Columbia. Management level jobs are particularly in strong demand.

## INTERNATIONAL SHIPPING RELATED BUSINESS ESTABLISHMENTS

The table below shows the number of business establishments with employees for British Columbia, the Seaway Provinces and Atlantic Canada that serve international shipping markets and employ high skilled shipping related occupations. This is an important table as it strongly illustrates the demands and the pressures to hire people with international shipping and related skills and training. Ontario has more than twice as many international shipping related establishments as British Columbia. Quebec has slightly more establishments in this domain.

**TABLE 10: BUSINESS ESTABLISHMENTS SERVING INTERNATIONAL SHIPPING MARKETS 2015**

International Shipping Related Industries	British Columbia	Ontario	Quebec	Atlantic Canada
Deep sea, coastal and Great Lakes water transportation (except by ferries)	75	27	45	27
Deep sea, coastal and Great Lakes water transportation by ferries	8	8	12	18
Inland water transportation (except by ferries)	30	10	6	1
Inland water transportation by ferries	9	5	10	5
Other support activities for water transportation	63	31	40	26
Marine shipping agencies	42	43	41	18
Other freight transportation arrangement	400	1,226	628	120
Other support activities for transportation	108	550	198	31
<b>Total International Shipping Related Business Establishments</b>	<b>735</b>	<b>1,900</b>	<b>980</b>	<b>246</b>

Source: Statistics Canada, Canada Business Patterns, December 2015

## TAKE AWAY POINTS FROM THE INTERPROVINCIAL COMPARISONS

- Based on the number of Core Shipping occupations, British Columbia has far less jobs than Ontario and Quebec, but greater numbers than Atlantic Canada.
- Based on business establishment data for 2015, British Columbia has 735 establishments in shipping and maritime operations compared to 1,900 and 980 for Ontario and Quebec respectively. However, British Columbia has 42 marine shipping agencies compared to 43 for Ontario, 41 for Quebec and 18 for Atlantic Canada. These marine shipping agencies are predominately in the business of international shipping, which on the surface looks as if British Columbia is equally strong as Ontario and Quebec. However, British Columbia has less than half the establishments in Other freight transportation arrangement or freight forwarders than does Ontario (400 versus 1,226). These multi-modal freight forwarders conduct some of their operations on water borne transportation, but they are not specialized in this area as are marine shipping agencies.

- *The Great Lakes shipping sector, however has stronger ties to multi-modal logistics and freight management than is likely the case for British Columbia. The nature of Great Lakes shipping is different than ocean shipping and involves different players, although at the occupation level, all the coastal provinces are competing for the same scarce employment resources and skills.*
- *Freight arrangement and brokerage services in Canada cost an estimated four times the amount of money Canadian industry spends on water transportation services as virtually all Canadian exports that are shipped by water must be transported to the port by train, truck or multi-modal transportation modes.*
- *Most industries that ship their product by water also spend considerable sums of money on third party freight arrangement and brokerage services. This means that in addition to internal freight arrangement services provided by international shipping lines, considerable product is being brokered and freight arranged through third party service providers. These activities put further pressures on hiring scarce and highly skilled human resources in people with training and experience in international shipping.*
- *The Seaway Provinces undoubtedly generate a considerable amount of this hiring pressure.*
- *Based on the last Statistics Canada National Household Survey in 2011, British Columbia had almost 40,000 people working in occupations that are a core part of the Province's International Shipping sector, Ontario had more than three times that amount (125,000 people) and Quebec employed 85,000 people in these occupations.*
- *The Atlantic Provinces had less than half of the British Columbia total or 17,500 people employed in these core shipping occupations.*
- *These higher numbers of workers in the Seaway Provinces undoubtedly has a strong effect on British Columbia workers who are looking to upgrade their shipping job skills or earn more money working in Ontario.*

### 11. STAKEHOLDER ENGAGEMENT

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An integral component of this Labour Market Information Study, entailed the rollout of a comprehensive stakeholder engagement program, intended to gather primary research data and to support the analysis of existing secondary data.

Survey and discussion questions for the stakeholder engagement program were developed in consultation with members of the VIMC Governance Board and were approved by the Province's Ministry of Jobs, Tourism & Skills Training and Responsible for Labour. The engagement process was carried out employing a multi-phase and multi-tiered approach over the course of approximately 10 weeks from late-August to early November 2016.

The outreach methodology consisted of three core tools intended to provide the most efficient methodology for capturing information from key stakeholders:

1. Survey/Questionnaire – Two Formats: Detailed for Select Companies; General for On-line Survey
2. One-to-one interviews
3. Focus group

The key groups of stakeholders that were targeted for the outreach activities included:

- Ship owners and agents within British Columbia
- Shipping stakeholders across Canada (e.g. suppliers, support services)
- International shipping industry stakeholders (e.g. Educational institutes, regulatory bodies, immigration and legal experts)

In order to ensure that significant industry input was received, as part of the stakeholder engagement process, the following organizations were consulted to facilitate the identification of the most appropriate target groups: Chamber of Shipping of British Columbia; International Ship-Owners Alliance of Canada; Shipping Federation of Canada; VIMC Governance Board, as well as other related industry stakeholders. Primary research activities were administered, using tools considered most effective and practical for capturing relevant data for each particular target group:

- 1) Ship owners and agents within British Columbia
  - In-depth survey/questionnaire
  - One-to-one / in-person interview
- 2) Shipping stakeholders across Canada
  - General online survey/questionnaire
- 3) International Shipping industry stakeholders
  - One-to-one / in-person interview

As a follow-up to the stakeholder engagement process, a focus group session was organized on October 20th, as a means of bringing together a small group of participants from most target groups, in order to validate initial research findings and to elaborate upon the subjective feedback received over the course of the outreach activities. Copies of the various Tools are contained in the Appendices.

## SUMMARY OF OUTREACH PARTICIPATION

In developing the outreach strategy, it was recognized that the total number of key international shipping stakeholders in Canada is significantly small. Moreover, the total number of international ship owner companies within the Canadian market is estimated to be less than 100. For the purposes of this study, a total of 112 organizations were contacted from a broad range of international shipping related domains.

As noted earlier, organizations targeted for the outreach -- in particular, ship owners, agents and shipping stakeholders -- were identified through in-depth consultation with members of the VIMC Governance Board, as well as the Chamber of Shipping of British Columbia, International Ship-Owners Alliance of Canada and the Shipping Federation of Canada. The very targeted and narrow selection of companies was deemed necessary in order to ensure the maximum response rate possible. Detailed survey collected from ship owners and agents alone accounted for nearly 500 employees. The overall breakdown of response rates are detailed in Table 11

**TABLE 11: BREAKDOWN OF STAKEHOLDER RESPONSE RATES**

<b>Target Group</b>	<b>Number Contacted</b>	<b>Number of Respondents</b>
<b>Ship owners and agents within British Columbia</b>	28	14 (50%)
<b>Shipping stakeholders across Canada</b>	67	14 (21%)
<b>International Shipping industry stakeholders</b>	17	17 (100%)
<b>Focus Group Participation</b>		12

Source: Globe Advisors

## RESEARCH FOCUS

Outreach questions and activities were tied closely to the underlying purpose of the Labour Market Information Study, namely: To provide evidence based analysis of the existing and anticipated labour force supply and demand for key international shipping industry occupations in British Columbia. Furthermore, the stakeholder engagement process was developed with the intent of capturing primary research data not currently or readily available through the current pool of secondary research statistics. In particular, key questions covered under the primary research for the international shipping industry included:

- |   |                          |
|---|--------------------------|
| 1) Individual job titles  | 4) Training requirements |
| 2) Age of workforce within pre-determined occupational categories | 5) Employee tenure       |
| 3) Education of workforce   | 6) Recruitment practices |

With this in mind, the primary research sought specifically to capture information within the following framework:

- |                               |  |
|-------------------------------|--|
| 1) Company Profiles           | 5) Criteria for Establishing a Head Office in British Columbia and/or Canada |
| 2) Labour / Employee Profiles | 6) Immigration Related Issues  |
| 3) Recruitment / Retention    |  |
| 4) Salaries                   |  |



It should be noted that while gender was initially identified as one of the research parameters to be included in the study, initial consultations with stakeholders during the outreach development phase of the project, determined that collection of this level of detail was not feasible. The LMI Outreach Tools and Methodology were consequently approved by the Province without the inclusion of gender-specific survey questions.

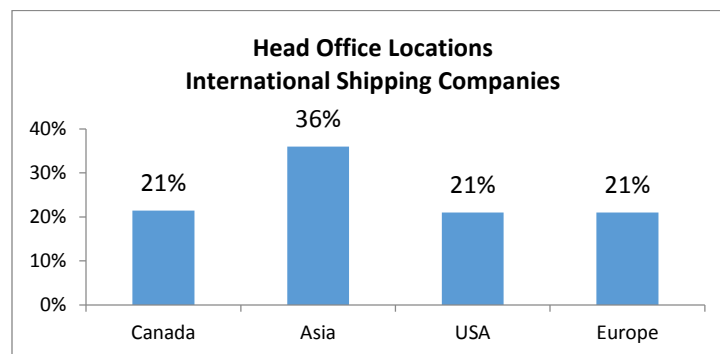
### SUMMARY OF KEY FINDINGS

**Company Profiles** - The following section summarizes the key results derived from the detailed surveys, questionnaires and interviews administered to ship owners and agents. Where appropriate these findings are cross validated or compared to findings derived from the analysis of secondary data. Overall, respondents identified themselves as belonging to two main groups:

- **Ship Owner (71%)** - An organization, person or fund which owns one or more merchant vessels. As ship owners, organizations may manage ships themselves or, alternatively, outsource all or some aspects of ship management (e.g. operations, chartering, ship-brokering).
- **Agency (29%)** - An organization responsible for handling shipments and cargo, and the general interests of its customers, at ports and harbors worldwide, on behalf of ship owners, managers, and charterers. They do not own ships.

**Head Office Location** - Of all the companies with offices in the British Columbia, only a minority ( $\pm 21\%$ ) maintained their head office at the same location, i.e. within the province. Head offices for the majority ( $\pm 79\%$ ) of participants appear to be concentrated in Asia ( $\pm 36\%$ ), while head offices for the remaining companies were equally split between Europe and USA ( $\pm 21\%$  for each region respectively). When selecting a location designated as a head office, 40% of respondents cited that both operating costs and geographical location and proximity to operations were primary considerations.

**FIGURE 13: HEAD OFFICE LOCATION BRITISH COLUMBIA INTERNATIONAL SHIPPING COMPANIES**



Source: GLOBE Advisors Stakeholder Engagement

### LABOUR / EMPLOYEE PROFILES

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**Demographics** Stakeholder responses relating specifically to age and occupation categories, accounted for a total of 476 employees\*. Each of these employees was further categorized by age and assigned to the following occupational categories, most closely aligned with the international shipping industry:

- a) Senior Management
- c) Natural and Applied Sciences
- d) Education, Law, Social, Community and Government Services
- e) Sales and Service
- f) Trades, Transport and Equipment Operators

The data captured clearly indicates that a significant segment of the workforce has reached middle age or older; hence, the need to find replacements in these areas, will become a growing priority within the next 10-15 years. Some of the following observations were particularly telling of the maturing workforce in the international shipping industry:

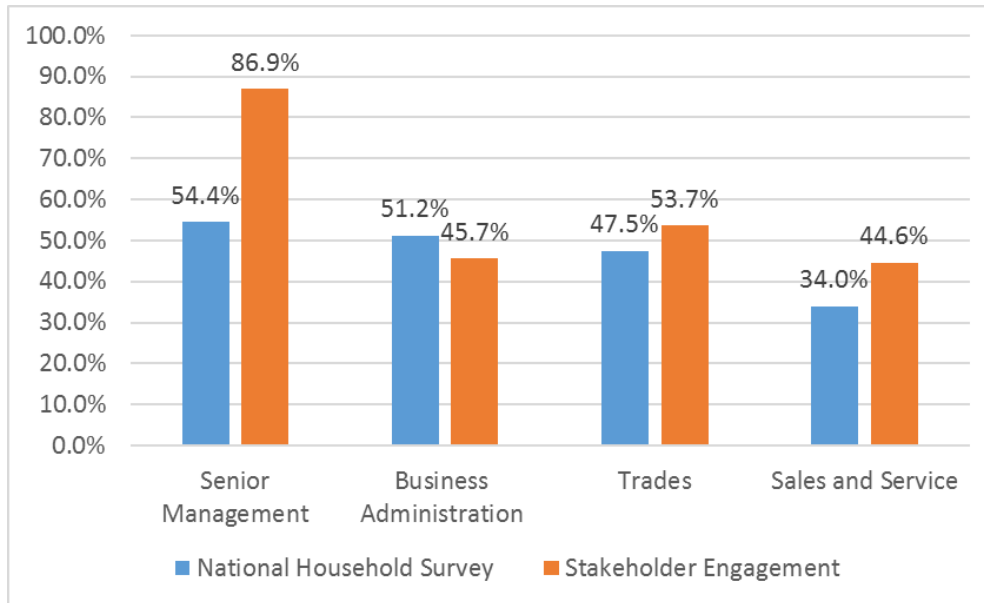
- Nearly half (46.9%) of all employees fall within the 45-64 age group, while those older than 45 (including those 65 and older) make up 53.1% of total employees.
- 86.9% of all senior management employees are older than 45 years of age
- 20% of all senior management employees are older than 65 years of age

Except for the Trades occupations, the GLOBE Advisors primary stakeholder engagement process found that those firms surveyed were older than the overall average for these occupations. This trait is illustrated in the chart below.

The stakeholder companies surveyed by GLOBE Advisors have considerably higher levels of employees over 45 years than the general average of occupations representing the international shipping sphere.

The smaller group from this primary survey had higher percentages of employees over 45 years in the Trades as well as in Sales and Service occupations. The one exception is Business Administration employees which were moderately younger in the GLOBE Advisors survey data than the overall average based on the National Household Survey.

FIGURE 14: PERCENTAGE OF EMPLOYEES 45 YEARS OF AGE AND OVER



Source: Statistics Canada National Household Survey, 2011 and GLOBE Advisors Stakeholder Engagement

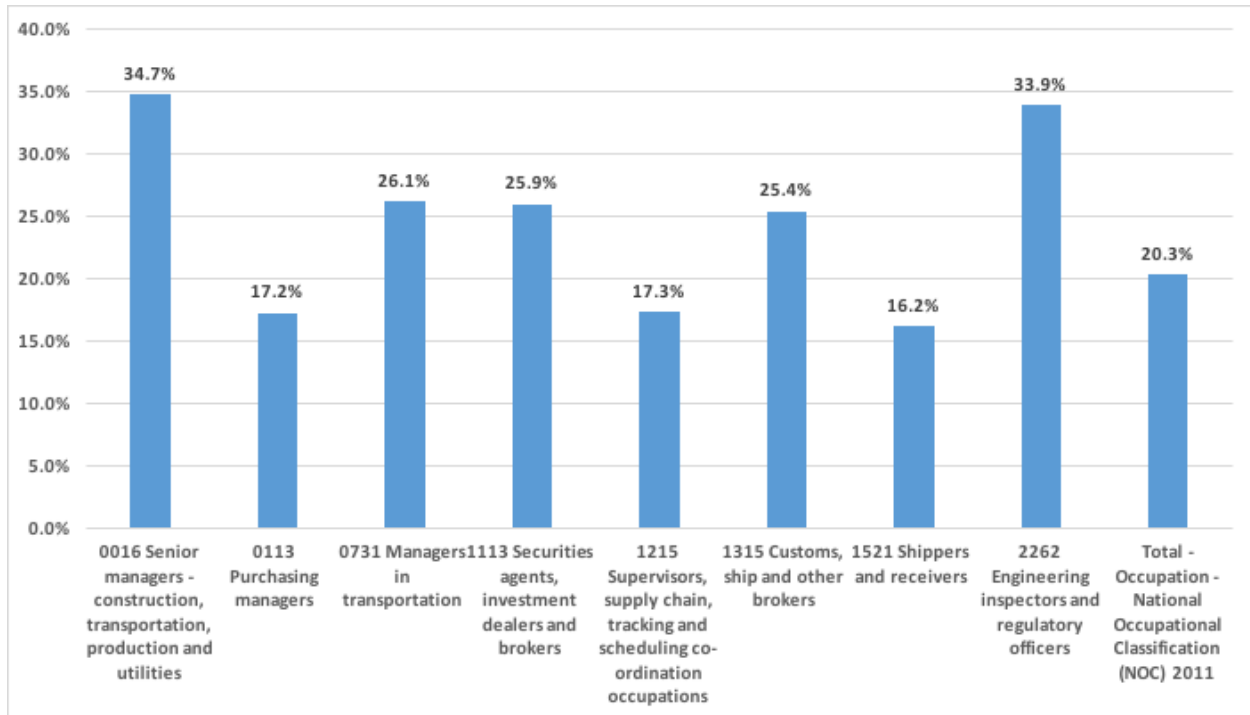
**Potential Retirees** While the demographic data collected and depicted in Figure 14 above draw attention to the maturing labour force in international shipping, it is also important to recognize that the age bracket of “45+ years” is not immediately indicative of a looming shortage of labour in the short term due to retirement.

Instead, one must also acknowledge that a significant percentage of the modern workforce may retire after the age of 65 years. For this reason, in order to provide a more fulsome understanding of potential long term labour shortages, further analysis was also conducted on the segment of the workforce aged “55+ years.” The age bracket “55+ years” was deemed to provide a better indication of rapidly approaching retirement ages

Data for this analysis are based entirely on secondary statistics from the Statistics Canada National Household Survey and are intended to supplement the primary research conducted. The figure below illustrates several specific international shipping occupations whose employees are 55 and over. Virtually all of the surviving people in this cohort will be age 65, which is the conventional retirement age by 2025. This high level of potential retirees in the next 10 years is particularly alarming and much higher than the provincial average for all occupations. Firms employing Senior Managers and Managers in Transportation are 34.7 percent and 26.1 percent aged 55 and over. Engineering inspectors are 33.9 percent over the age of 55.

Other occupational shipping related groups over 25 percent 55 and over include Security agents and Customs ship and other brokers at 25.9 percent and 25.4 percent respectively. This potential retirement situation is serious compared to the population at large in BC where only 20.3 percent of all occupations are over the age of 55 years.

FIGURE 15: KEY INTERNATIONAL SHIPPING OCCUPATIONS PERSONS 55 YEARS OR OLDER - BRITISH COLUMBIA



Source: Statistics Canada, National Household Survey 2011

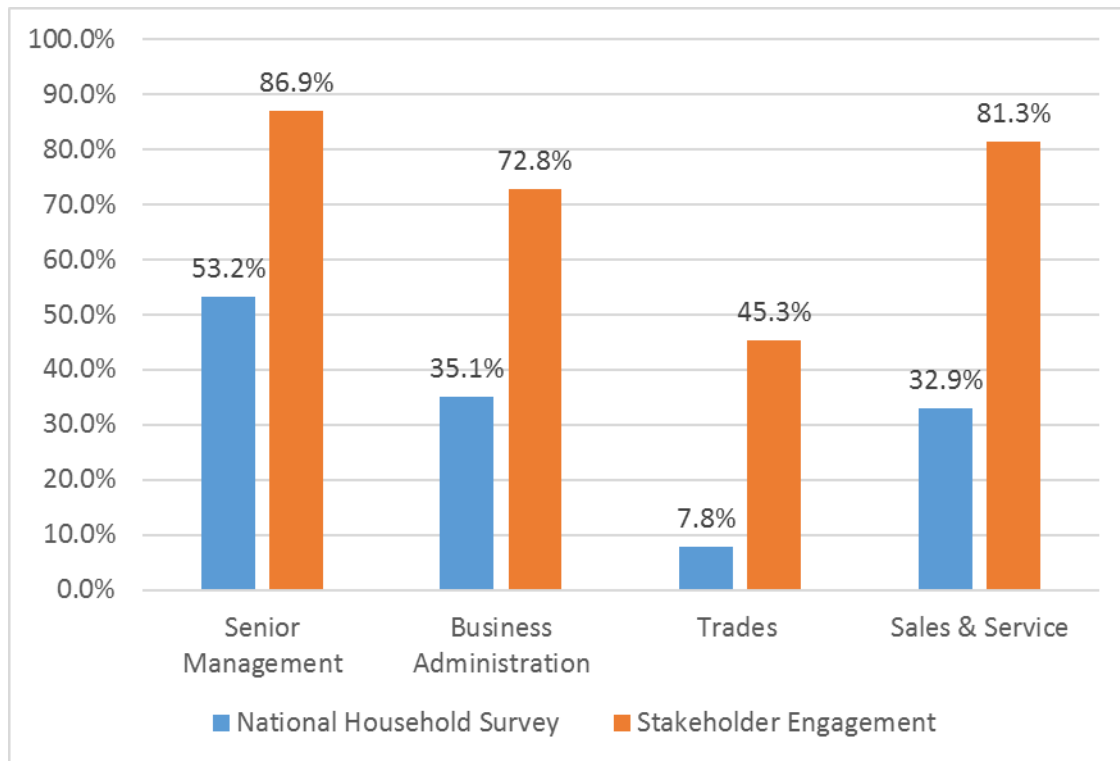
**Education** Responses relating specifically to education of employees, accounted for a total of 453 employees\*. Based on the data collected, it is apparent that a significant majority (68.2%) of the workforce employed in the international shipping sector, is well educated, having earned a Bachelor's degree (or equivalent), or higher level of education.

Combined with on-the-job training and, in certain cases, first-hand experience at sea, the complete training and qualification process for employees in this sector in most cases ranges from 10 – 15 years. Some of the following observations were of particular importance:

- 86.9% of senior management have: bachelor's (or equivalent) or higher;
- 50.8% of senior management have: two or more certificates/diplomas/degrees or a master's degree (average of 5-6 years of education) + experience necessary to occupy a senior position;
- 81.3% of sales/service have: bachelor's (or equivalent) or higher;
- 72.8% of business/admin/finance have: bachelor's (or equivalent) or higher; and
- 45.3% of trades/transportation/equipment managers have: bachelors (or equivalent) or higher.

Shipping companies surveyed by GLOBE Advisors as part of the stakeholder engagement process reported higher percentages of employees with Bachelor Degrees or higher than the overall average for characteristics for the occupations analyzed as part of the secondary data review.

FIGURE 16: EMPLOYEES WITH BACHELOR DEGREES OR MORE



Source: Statistics Canada National Household Survey, 2011 and GLOBE Advisors Stakeholder Engagement

*\*Note: The difference between the total number of employees accounted for under demographics and those accounted for under education, is attributed to the response rate by participants to individual questions of the survey.*

**Recruitment / Retention** A significant number of respondents expressed the need to recruit employees from outside of Canada, in order to maintain a qualified workforce within their organization. A total of 43% of survey respondents indicated that they have been compelled to recruit outside of Canada.

It should be noted that for the most part, companies whose line of business was primarily commercial (e.g. focusing chiefly on accounting or finance), as opposed to operational, were more likely to recruit locally than internationally. This is particularly evident in the employment patterns demonstrated by survey respondents during the past 24 months.

Of the total 14 companies, which provided employment statistics, nine (9) have recruited employees from outside of Canada during the past 24 months; an average of 1.85 employees hired in the last 24 months have required a work visa.

In particular the key job titles that were filled during this 24 month time period included:

- Accounting Assistant (1)
- Crew Coordinator (1)
- Director Canada (1)
- Director Inbound (1)
- Engineering Superintendent (1)
- Financial and Investment Analyst (1),
- Fleet Personnel Officer (1)
- General Manager (2),
- General Operations Manager (1),
- HSEQ Manager (1)
- IT Application and Support (1)
- Office Manager (1),
- Operations (2),
- Operations Manager (2),
- Operations/chartering (4, undisclosed mix),
- Port Captain (1)
- Sales Manager (1),
- Senior Commercial Manager (1)
- Superintendent (1)
- Vice President Strategic Planning (1)

The vast majority of these positions are highly specialized and operations-based. Moreover, it should be noted that at least 50% comprised senior management positions, which further demonstrates the significant numbers of senior positions being filled from outside of Canada due to a lack of local talent.

Respondents, whose companies recruited internationally, clearly articulated their position that the main reason for recruiting employees from outside of Canada was due to a lack of qualified workforce locally. In light of the current need to recruit positions for a significant number of job titles from outside of Canada, along with a maturing and aging senior workforce, it has become apparent that the Canadian market will be unable and unprepared to meet the levels of demands of key positions over the next 5-10 years. In particular, 64% of respondents foresee shortages of labour for the following positions:

- Chartering
- Engineering superintendent
- Insurance specialist
- Marine engineer
- Marine operations
- Operations and commercial roles
- Port captain
- Port operations
- Project engineers with ship experience
- Superintendent (with and without containership experience)
- Trades

### EDUCATIONAL REQUIREMENTS FOR RECRUITMENT

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In addition to the discussions on education requirements with the international shipping stakeholders, we examined the education requirements for the core occupations that were reported in the Canada Job Bank postings. In addition to having formal training and experience in management, on the job training is also critically important which we have interpreted to represent considerable at sea experience.

- 27% of the key international shipping occupations require management training at either university or college level. 10.5% require Other University and 25% require College or Apprenticeship training. 31% require Secondary School and/or Occupation Specific Training.
- Of the Management Group, 52% of the Senior Managers, Construction, Transportation, Production and Utilities require management training, 10.5% Other University and 17.4% College or Apprenticeship Training.
- Three quarters of the jobs posted for Purchasing Managers and Managers in Transportation require Management Training at a university or college.

Table 12: Education Requirements Reported in the Canada Job Bank

	<i>Management</i>	<i>University</i>	<i>College or Apprenticeship training</i>	<i>Secondary school and/or Occupation-specific training</i>	<i>On-the-job training</i>	<i>Total</i>
<b>0016 Senior managers - construction, transportation, production and utilities</b>	52.0%	10.5%	17.4%	10.4%	9.7%	100.0%
<b>0113 Purchasing managers</b>	78.8%	9.4%	9.4%	2.0%	0.4%	100.0%
<b>0731 Managers in transportation</b>	74.8%	9.0%	10.0%	5.7%	0.5%	100.0%
<b>1113 Securities agents, investment dealers and brokers</b>	2.3%	21.0%	14.9%	47.6%	14.1%	100.0%
<b>1215 Supervisors, supply chain, tracking and scheduling co-ordination occupations</b>	8.0%	3.5%	84.3%	4.0%	0.2%	100.0%
<b>1315 Customs, ship and other brokers</b>	3.4%	2.6%	6.5%	81.6%	6.0%	100.0%
<b>1521 Shippers and receivers</b>	0.2%	3.7%	5.3%	89.4%	1.4%	100.0%
<b>1526 Transportation route and crew schedulers</b>	17.1%	2.5%	26.7%	49.1%	4.7%	100.0%
<b>2262 Engineering inspectors and regulatory officers</b>	4.9%	30.6%	43.2%	18.4%	2.9%	100.0%
<b>2273 Deck officers, water transport</b>	4.8%	11.7%	38.6%	40.3%	4.6%	100.0%
<b>2274 Engineer officers, water transport</b>	5.5%	24.6%	38.1%	28.4%	3.3%	100.0%
<b>6524 Ground and water transport ticket agents, cargo service representatives and related clerks</b>	4.3%	2.4%	21.0%	63.0%	9.4%	100.0%
<b>7532 Water transport deck and engine room crew</b>	7.0%	28.1%	29.5%	26.7%	8.7%	100.0%
<b>Total</b>	27.0%	10.1%	25.2%	31.9%	5.8%	100.0%

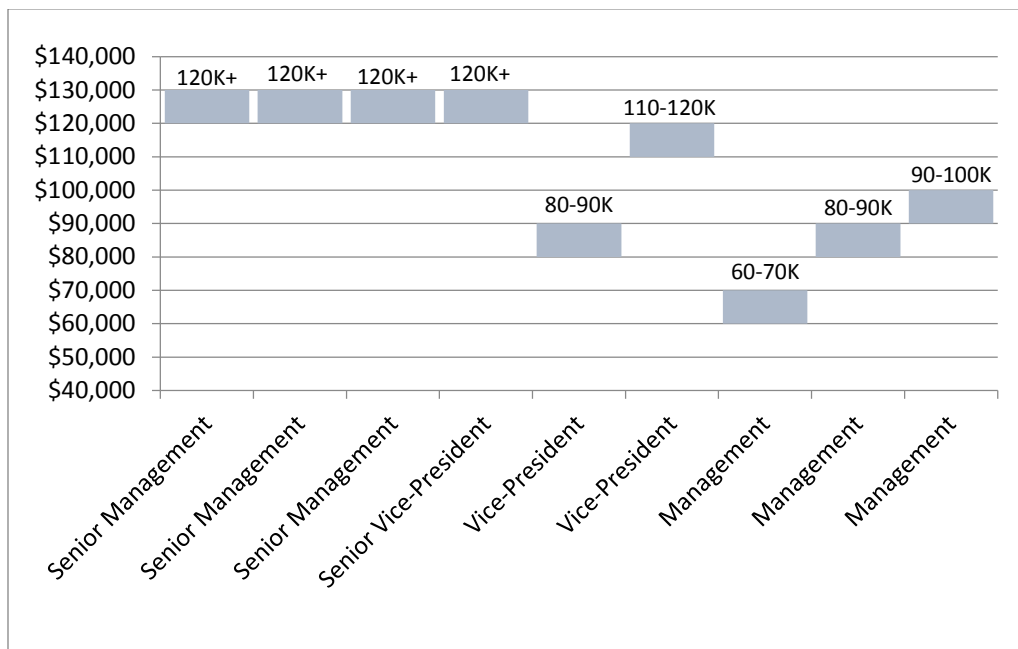
Source: Canada Job Bank

**Salaries** Overall, salaries for key positions in the international shipping industry appear to be well-paid and tend to reflect the associated high levels of education attained by the workforce. It should, however, be noted that the salary ranges cited below are based on primary data collected through the stakeholder engagement process and may vary substantially from one company to another. Salary ranges for key occupational groups are reflected in the tables below and are indicated specifically for positions within the domains of:

- Senior Management
- Vice-President / Senior Vice President
- Management
- Operations
- Commercial Managers
- Chartering
- Superintendents
- Technical Personnel & Technical Senior
- Coordinators and Administrative Personnel

The stakeholder engagement process showed that senior managers in international shipping jobs had pay scales in the range of \$80,000 to \$120,000 annually. General Management jobs had pay scales of \$60,000 to \$100,000. These pay scales are illustrated in the following graph.

**Figure 17: Salary Ranges for Senior Management, Vice-President and Management Personnel**

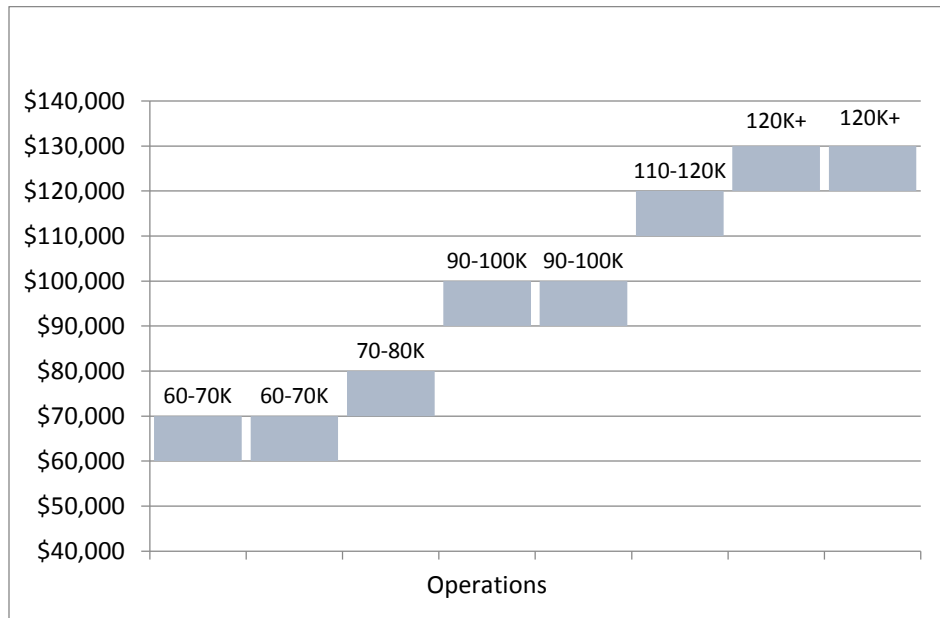


Source: GLOBE Advisors Stakeholder Engagement

By point of comparison Work BC, based on data from the Canada Job Bank report that Senior Management jobs in the international shipping occupations pay from a low of \$46,926 and a high of \$167,115 in 2015. The median annual salary was \$84, 217.

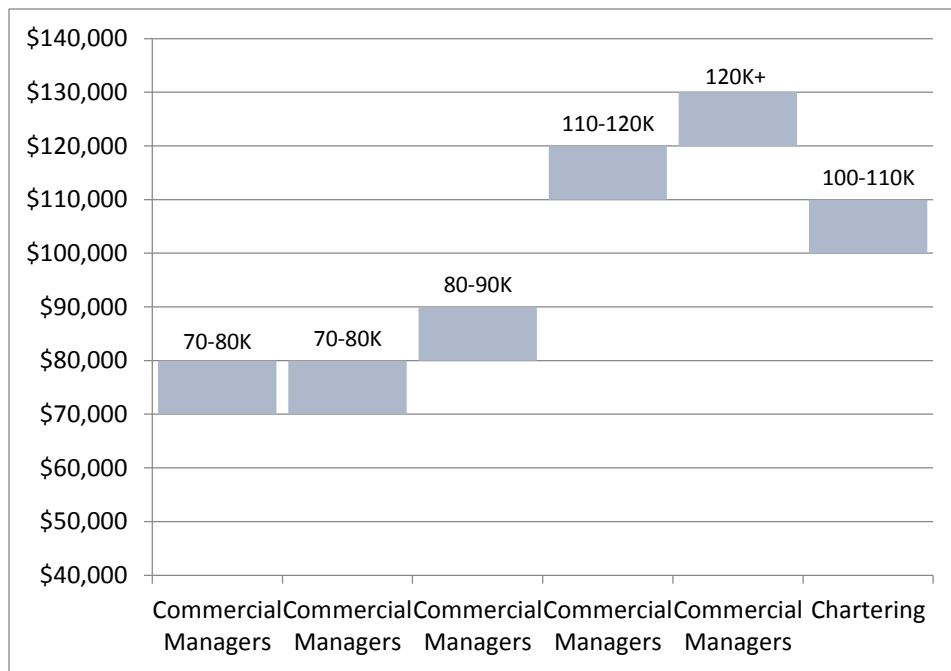


Figure 18: Salary Ranges for Operations



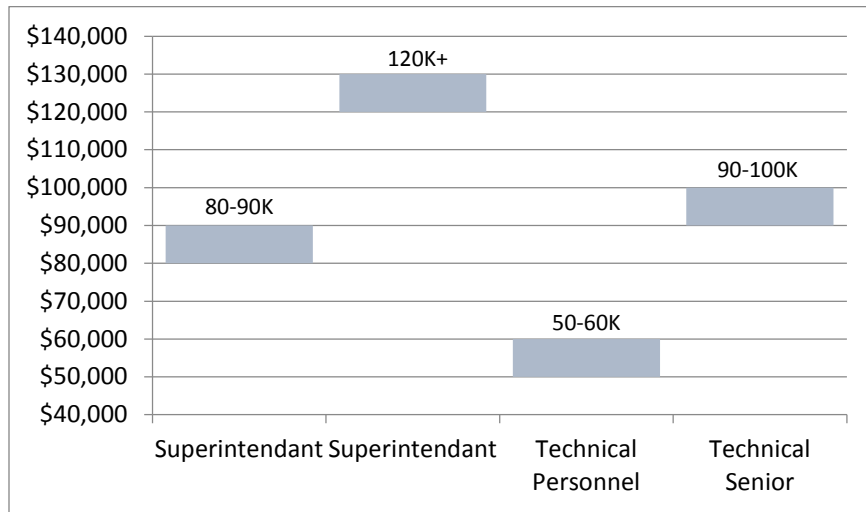
Source: GLOBE Advisors Stakeholder Engagement

Figure 19: Salary Ranges for Commercial Managers and Chartering



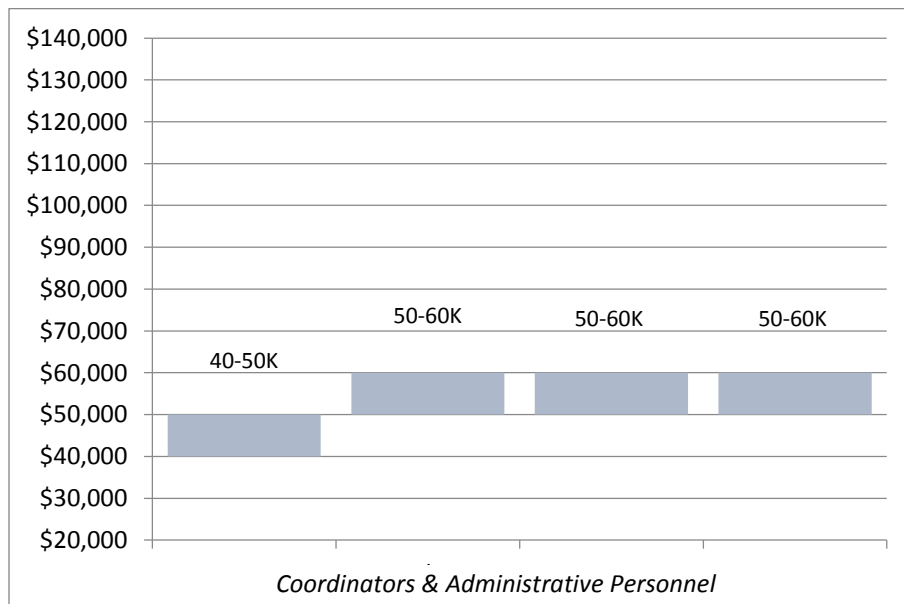
Source: GLOBE Advisors Stakeholder Engagement

Figure 20: Salary Ranges for Superintendent and Technical Positions



Source: GLOBE Advisors Stakeholder Engagement

Figure 21: Salary Ranges for Coordinators and Administrative Personnel



Source: GLOBE Advisors Stakeholder Engagement

### ESTABLISHING A HEAD OFFICE IN BRITISH COLUMBIA OR CANADA

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In determining the most important benchmarks for establishing or maintaining an office in a particular city, respondents were asked to select and rank their top criteria from the following list:

- a) Operating costs
- b) Geographical location
- c) Investment Climate
- d) Beneficial taxation
- e) Infrastructure
- f) Quality of port service
- g) Level of ancillary services (e.g. repair, financial services)
- h) Availability of and accessibility to skilled workforce
- i) Affordability / Cost of living for employees

An equal number of respondents indicated that their most important consideration for establishing a head office/office was both "operating costs" and "geographical location." Each criterion was selected as a first choice by 40% of companies which participated in the survey. Second and third important choices included "infrastructure," "availability of and accessibility to skilled workforce," as well as "affordability / cost of living for employees."

It should be noted that as a separate survey question, 55% of companies cited cost of living as "very important" when establishing an office; nevertheless, this was not as significantly reflected in the selection of top criteria. Furthermore, 67% of all companies indicated that Vancouver's cost of living has become a potential barrier to recruitment.

### KEY ISSUES EMERGING FROM THE STAKEHOLDER ENGAGEMENT PROCESS

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The in-depth survey and one-to-one discussions with ship owners and agents have revealed a number of issues that underscore the key challenges faced by the international shipping industry in British Columbia and, to a certain degree, across Canada. In particular, some of the recurring messages captured as part of the outreach process include the following points:

#### Lack of Local Opportunities for Gaining Practical Experience

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To acquire sufficient, well-rounded experience that meets the requirements of most international shipping positions, it is typically necessary for prospective candidates to have worked in the international shipping industry outside of Canada.

Over half of the stakeholders interviewed confirmed that international experience over an extended period of time is currently a key requisite for candidates seeking employment. In light of the lack of infrastructure and deep-sea shipping activities within Canada, it is virtually impossible for a recent graduate from a marine training institute to earn the necessary technical and leadership skills strictly within Canada. As a result of these requisites, it is not uncommon for local shipping companies and agents to require candidates to have spent several years gaining experience at different ports abroad. In many cases, the local talent pool has not acquired the necessary international experience; hence, shipping companies are compelled to recruit from outside of Canada in order to ensure that their workforce sufficiently meet the needs of the company.

### Preference for Local versus International Recruitment

Although the prospective recruitment of international employees may initially appear to offer the most effective solution for sourcing highly qualified labour, the majority (over half) of companies interviewed, conceded that international hiring is typically a less desirable option, given the inordinate amount of time and resources required to engage individuals from outside of Canada. In certain cases, respondents have estimated incremental costs associated with foreign recruitment of approximately \$100,000.

In light of this, it would appear rational for most companies to prefer sourcing local talent than incur the added expense of recruiting from abroad. Nevertheless, the fact that over 60% of respondent companies felt compelled to hire at least one employee from abroad during the past 24 months, clearly confirms a shortage of qualified international shipping talent in British Columbia. Hence, despite efforts reported by all companies to hire locally, there appears to be a specific tendency to fill upper managerial, senior leadership and operational roles from overseas, while positions in the financial, accounting or sales domains were deemed more easily sourced locally.

### Regulatory Restrictions as Impediments

The growth of a robust and thriving international shipping industry in British Columbia is in many cases closely tied to the current regulatory landscape in Canada. In particular, two key areas identified during the stakeholder engagement process are related to policies and regulations set out by the Federal Government departments of Transport Canada and Citizenship and Immigration Canada.

*“The rapidly changing environment of international shipping is leaving in its wake a regulatory regime that is failing to keep pace with new projects, policy initiatives or new technologies. In many areas the current regulatory regime is outdated and an update of the statutory framework is sorely needed. For example, the Canada Shipping Act does not fully provide regulatory guidance for projects such as the LNG pipeline. Changing technologies in ship design and construction have introduced vessels that are larger and more sophisticated. Yet our regulatory regime does not fully account for these advances and we do not have in place the capacity to train inspectors qualified to inspect such large vessels. Updated regulations relating to the operation of new technology vessels are also required.”* Comments from Stakeholder Interview

A significant hurdle faced by many seasoned shipping employees who have successfully completed their education and tenure abroad, is Transport Canada's inability to recognize international marine education and training. More specifically, the Canada Shipping Act does not provide an option for certification of marine tickets (e.g. Master Marine, Chief Engineer) achieved in other countries.

This regulation exists, despite the fact that all international certifications are tested in accordance with The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

As a result, a senior Master Mariner immigrating to Canada with 10-15 years of active experience, would nevertheless be required to repeat the entire certification process, which in most cases would be equivalent to several years of education and training at a significantly lower pay scale.

Furthermore, only those prospective employees with permanent residency or citizenship may write Transport Canada's exams, which inevitably results in further delays in the process. In many cases, these policies have only served as a significant disincentive for highly qualified personnel to relocate to British Columbia, and ultimately support the corporate and commercial growth of the international shipping industry.

The regulations set out by Citizenship and Immigration Canada, appear to contribute additional complexity to the British Columbia's international shipping industry. A particular concern voiced by stakeholder respondents relates to the shortage of qualified local talent but the extremely cumbersome, time-consuming and costly process for recruiting the required employees from outside of Canada. This appears to be further aggravated by the reported frequent changes in requirements and general application procedures, (e.g. forms and documents to be completed).

Nearly half of all companies surveyed cited the Canadian immigration process as being a significant impediment to their operations. Moreover, nearly a third of those companies interviewed, lamented the fact that there is currently no special provision under Citizenship and Immigration Canada to distinguish between prospective international shipping candidates and those from other industries. In particular, immigration laws do not appear to recognize the highly specialized nature of maritime occupations and the inability for these positions to be easily filled by someone from outside of the industry. As a result, within the last 10 years large international shipping companies with significant operations in British Columbia, have either relocated or are currently considering moving their major operations to overseas locations. The general sentiment has in many cases been that it is simply too difficult to conduct business in the Canadian market.

Furthermore, immigration officers do not appear to be trained to understand the precise skills requirements for the international shipping industry. The current immigration process effectively appears only to apply a standardized "one size fits all" approach for admitting prospective professional immigrants into Canada. As a result, the turnaround time for recruiting qualified foreign candidates may be unnecessarily long, or in the worst case scenario, a candidate may be denied entry.

An example of how this policy negatively impacts the recruitment of international shipping professionals is exemplified by the preference for younger applicants, based on the Comprehensive Ranking System (CRS) criteria currently employed by Citizenship and Immigration. This effectively penalizes highly qualified shipping employees, given the length of time (10 – 15 years) to become fully competent in their profession.

### **Additional Relevant Points Noted**

- Many of the industry stakeholders consulted have called for greater collaboration between industry, government and academic stakeholders in order to develop the necessary human resources needed to build a robust international shipping community in the province. In particular, it is suggested that collaboration among Canadian organizations, as well as between Canadian and international stakeholders would be the most effective method for addressing and further developing the issue of labour shortages in the international shipping industry.
- The research has shown that there are significant direct, indirect and induced economic benefits arising from employment in the international shipping community, particularly for senior management personnel.

- *Based on the current demographic profile of the international shipping industry in British Columbia, serious labour shortages will prevail over the next ten years for international shipping jobs, especially for senior corporate management and highly skilled technical positions.*
- *Positions within the industry are reasonably well paid, with good upward mobility. Despite over two-thirds of all respondents listing Vancouver's cost of living as a problem, it is not a key consideration for where to open a head office, with operating costs and geographical location more often listed as primary concerns.*
- *Skills upgrading is done through on-the-job training and correspondence courses at international institutions, which given the nature of the International shipping companies means it is not geographically limited.*

## 12. THE IMPORTANCE OF IMMIGRATION AND IN-MIGRATION

In light of a shortage of qualified workforce in the British Columbian international shipping market, companies have felt compelled to recruit employees from outside of Canada to fill the gap in their personnel. Immigration and in-migration are important elements for select occupations in the international shipping community. The table below illustrates both international immigrants and inter-provincial in-migrants for the select group of international shipping occupations that are projected for 2020 and 2025.

**Table 13: Projected Immigrants and In-migrants Key Occupations British Columbia**

NOC Code	Description	2020		2025	
		Immigrants	In-Migrants	Immigrants	In-Migrants
0016	Senior managers construction, transportation and utilities	34	5	29	1
0113	Purchasing managers	7	0	8	-1
0731	Managers in transportation	21	4	24	1
1113	Securities agents, investment dealers and brokers	45	6	43	0
1215	Supervisors, supply chain, and scheduling co-ordination	20	2	23	-1
1315	Customs, ship and other brokers	11	1	9	-1
1521	Shippers and receivers	151	19	123	18
1526	Transportation route and crew schedulers	4	0	3	0
2262	Engineering inspectors and regulatory officers	11	1	10	0
2273	Deck officers, water transport	40	37	45	33
2274	Engineer officers, water transport	7	5	4	5
6524	Ground and water transport agents, cargo service clerks	4	2	1	2
7532	Water transport deck and engine room crew	3	11	1	12
	Total select occupations	358	93	323	69

Source: British Columbia 2025 Labour Market Outlook

Shippers and Receivers will account for 42% of the immigrants from other countries in 2020. Other immigrant intensive industries include:

- Securities agents, investment dealers and brokers (12.6%)
- Deck officers, water transport (11.2%)
- Senior managers - construction, transportation, production and utilities (9.5%)
- Managers in transportation (5.9%)
- Deck officers, water transport and Shipper and receivers were associated with the highest levels of inter-provincial in-migration at 39.8% and 20.4% respectively

The following table shows international immigration and inter-provincial in-migration as a percent of total supply change for the select group of international shipping occupations.

**Table 14: Projected Immigration and In-migration - Percent Total Supply Change, British Columbia**

<b>NOC</b>	<b>Description</b>	<b>2016</b>	<b>2020</b>	<b>2025</b>
<b>0016</b>	Senior managers - construction, transportation, production and utilities	10.0%	9.8%	9.9%
<b>0113</b>	Purchasing managers	10.4%	9.5%	9.2%
<b>0731</b>	Managers in transportation	10.0%	10.1%	10.3%
<b>1113</b>	Securities agents, investment dealers and brokers	25.7%	49.0%	48.3%
<b>1215</b>	Supervisors, supply chain, tracking and scheduling co-ordination occupations	9.7%	10.1%	10.3%
<b>1315</b>	Customs, ship and other brokers	n/a	40.0%	33.3%
<b>1521</b>	Shippers and receivers	17.4%	36.1%	34.2%
<b>1526</b>	Transportation route and crew schedulers	25.0%	30.8%	27.3%
<b>2262</b>	Engineering inspectors and regulatory officers	33.3%	50.0%	50.0%
<b>2273</b>	Deck officers, water transport	92.9%	110.0%	113.0%
<b>2274</b>	Engineer officers, water transport	11.1%	46.2%	39.1%
<b>6524</b>	Ground and water transport ticket agents, cargo service representatives and related clerks	12.5%	31.6%	18.8%
<b>7532</b>	Water transport deck and engine room crew	17.6%	34.1%	31.7%
	<b>Total Key Occupations</b>	<b>13.1%</b>	<b>26.0%</b>	<b>25.4%</b>

Source: British Columbia 2025 Labour Market Outlook

Essentially all of the supply change for Deck officers, water transport is attributable to both net international immigration and inter-provincial in-migration. Other in-migration intensive occupations include Security agents, investment dealers and brokers, Engineering inspectors and regulatory officers, Engineer officers, water transport and Water transport deck and engine room crew.

Table 15 summarizes the importance of international immigration, inter-provincial in-migration and other net mobility or job changers within the province for 2020. The overall supply change in 2020 for the Core International Shipping occupations are projected to be 26% attributable to international immigration and inter-provincial in-migration by 2020. Total mobility factors including other in-mobility or people changing jobs represented 74.8% of the total supply change.

The shipping occupations that are most in-migration sensitive include:

- Deck officers
- Security agents
- Engineering inspectors
- Engineer officers
- Customs brokers.



**Table 15: Projected Immigration and In-Migration - Select Occupations, British Columbia, 2020**

<b>NOC</b>	<b>Occupation 1</b>	<b>Immigration 2</b>	<b>In- migration 3</b>	<b>Net Other In- Mobility 4</b>	<b>Total Mobility 2+3+4</b>	<b>Total Supply Change</b>	<b>Total Mobility as Percent Supply Change</b>	<b>Immigration &amp; In- Migration as Percent Supply Change</b>
<b>0016</b>	Senior managers - construction, transportation, and utilities	34	5	356	395	396	99.7%	9.8%
<b>0113</b>	Purchasing managers	7	0	67	74	74	100.0%	9.5%
<b>0731</b>	Managers in transportation	21	4	223	248	248	100.0%	10.1%
<b>1113</b>	Securities agents, investment dealers and brokers	45	6	3	54	104	51.9%	49.0%
<b>1215</b>	Supervisors, supply chain, tracking scheduling occupations	20	2	196	218	218	100.0%	10.1%
<b>1315</b>	Customs, ship and other brokers	11	1	1	13	30	43.3%	40.0%
<b>1521</b>	Shippers and receivers	151	19	9	179	471	38.0%	36.1%
<b>1526</b>	Transportation route and crew schedulers	4	0	0	4	13	30.8%	30.8%
<b>2262</b>	Engineering inspectors and regulatory officers	11	1	1	13	24	54.2%	50.0%
<b>2273</b>	Deck officers, water transport	40	37	-6	71	70	101.4%	110.0%
<b>2274</b>	Engineer officers, water transport	7	5	-1	11	26	42.3%	46.2%
<b>6524</b>	Ground and water transport agents, cargo service reps and related clerks	4	2	0	6	19	31.6%	31.6%
<b>7532</b>	Water transport deck and engine room crew	3	11	-3	11	41	26.8%	34.1%
	Core Shipping Total / Average	358	93	846	1297	1734	74.8%	26.0%

Source: British Columbia 2025 Labour Market Outlook

The paragraphs and Tables above confirm the importance that international and inter-provincial immigration are having on the core group of international shipping occupations. Overall, 71.9 percent of jobs for these core occupations are projected to be filled by people either moving to the province or switching jobs; 25.4 percent of these jobs being filled will come from people either immigrating to the Province from abroad or from other provinces. Clearly, migration is a huge factor in filling these jobs.

### **13. THE CHALLENGES OF INTERNATIONAL RECRUITMENT**

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*In light of an evident shortage of qualified workforce in the British Columbian international shipping market, companies have felt compelled to recruit employees from outside of Canada to fill the gap in their personnel rosters. These companies have invariably been required to negotiate the numerous complexities of Canada's immigration system.*

*Roughly 43% of all respondents indicated that the current Canadian immigration process has negatively impacted their companies' operations. Of these, the vast majority consider the Labour Market Impact Assessment (LMIA) process to be the most cumbersome and time consuming to navigate. High application fees (\$1,000 / employee) and turnaround times of six months or longer, have rendered this approach virtually a last resort when recruiting from overseas.*

*Where feasible, many companies recruit international employees by means of intra-company transferees from parent or sister offices abroad. This process appears to be much simpler and faster for securing personnel from abroad, reducing wait times from months to weeks.*

*Another concern voiced by shipping companies is that the current Canadian immigration system has not evolved to differentiate between prospective immigrants in the shipping industry and those from another industry. In other words, the immigration system presently applies a "one system fits all" approach.*

*As a result, there appears to be a profound lack of understanding by immigration officials of the specialized skill set required for the international shipping industry, versus that of any other industry. While a particular position may require highly specialized education and practical training, immigration officers have not been trained to recognize the particular requisites and consequentially often deny entry to the applicant.*

*While some companies have engaged immigration specialists to assist in this process and are willing to pay the extra costs involved, others have chosen to shift some of their highly technical and/or corporate financial activities to other maritime cities.*

*Similarly, immigration officers do not always recognize the qualifications acquired at sea by an applicant as actual educational credentials. As a result, many qualified and urgently needed professionals are not considered qualified to enter the Canadian labour market. Often these are the very people needed to educate or develop local workers to qualify them to take on the duties of corporate management or highly technical positions as they become available.*

*In spite of the considerable social and economic benefits associated with growing Canada's immigration numbers, the stakeholder engagement process has concluded that there are serious barriers, high costs and long wait times for international shipping companies to bring in foreign workers, especially where the requisite skills and job experience is not evident locally.*

*The looming shortage of the professional skill sets required by the industry, and the inability of local educational institutions to train Canadians to fill the anticipated job vacancies over the short or medium term, suggests that concerted action by both industry and government will be needed. In particular, there is a strong need for an open dialogue between the international shipping firms that are experiencing serious shortfalls in hiring workers with the requisite training and experience and federal and provincial immigration officials.*

The GLOBE Advisors team examined a number of recent studies and position papers published by the federal government on plans to overhaul the Temporary Foreign Worker Program and measures being put in place online system to facilitate applications made by Canadian employers to hire LMIA-exempt foreign workers.<sup>37</sup>

The Federal Advisory Council on Economic Growth in its October 2016 report concluded that, "Canada should scale top talent immigration and create conditions for successful economic integration". The Council also recommended that Canada should expand LMIA exemptions for senior executive roles and highly specialized functional roles with skill sets lacking in Canada. It notes that Canada should "focus on top business talent and international students in industries and roles where Canadian skill shortages exist."

The VIMC has long been aware of the immigration-related challenges companies face when trying to recruit maritime professionals and highly skilled and experienced technical personnel from outside Canada. Various solutions have been suggested, ranging from temporary exemptions to expedited Permanent Residency streaming.

It is beyond the remit of the GLOBE Advisors to recommend specific actions or measures from the many options that are available in the administration of the immigration system that could alleviate the problems identified. So too, we are fully cognizant of the wide range of related issues at play, including national security and public safety issues. However, the findings of the Labour Market Analysis with respect to the looming shortages in much needed skills in this area suggests that action to find workable solutions to these problems cannot be delayed any further.

In view of the Council's strong push on Canada bringing in more skilled immigrants, there is more than likely a desire at the federal level to introduce more flexibility in the immigration process to fast track immigration processes for high talent and high paid immigrants who can help grow key sectors of the economy. In this regard stronger communications between the industry stakeholders and government officials who manage the immigration process could lead to more flexibility, acceleration of the process and a reduction in costs.

To this end, it is recommended that as a matter of priority the British Columbia International Shipping industry, in partnership with the VIMC, initiate a formal dialogue with Citizenship and Immigration Canada and the British Columbia government. This dialogue would focus on the industry communicating their priorities and concerns over alleviating constraints that they perceive as providing a serious roadblock for the sector to bring in skilled maritime and international shipping workers that are urgently needed. This urgent need is due to the current shortfall in workers with the requisite education, training and job experience to adequately meet current and anticipated job openings.

These consultations could form the basis for a follow on to this labour Market Information Study that could develop more specific and targeted actions that would address the many concerns for all stakeholders involved.

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<sup>37</sup> <http://www.cicnews.com/2015/11/canada-rolls-employer-portal-international-mobility-program-116508.html>

## **14. SUMMING UP OF THE MAJOR FINDINGS**

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The key messages emerging from the research were:

1. *Based on the current demographic profile of the international shipping industry in British Columbia, serious labour shortages will prevail over the next ten years for international shipping jobs, especially for senior corporate management and highly skilled technical positions.*
2. *The British Columbia 2025 Labour Market Outlook Model predicts that seventy-one percent of new employment in the selected occupations over the ten-year outlook period will be Replacement Jobs, i.e. filling vacancies created by retirements or departures. Twenty-nine percent of new employment will be for Expansion Jobs based on new demand for specific occupational skills or services. The heavy focus on Replacement versus Expansion jobs is consistent with the older age structure of the labour force employed in international shipping.*
3. *The international shipping industry places a high priority on hiring workers for “on shore” positions that have experience working at sea such as a Master Mariner, Marine Engineer, Cargo Superintendent, or other professionals with similar qualifications. New graduates from local educational programs with degrees or diplomas in maritime related subjects are not considered job ready for international shipping shore-based positions largely because they lack the experience and knowledge of activities associated with ocean shipping including “at sea” operations.*
4. *International shipping companies operating in British Columbia seek to overcome these skills shortages through inter-company transfers from other office locations or by recruiting foreign personnel that possess the requisite skills. Others have sought to hire locally and to train personnel abroad. However, most of the companies consulted report that Canada's immigration system does not recognize the complexities of the skill set requirements of the international shipping sector, or the inability to recruit qualified employees from within Canada. They report the recruitment process for foreign trained employees is time consuming and very expensive, which further prolongs the skills gap impeding company operations.*
5. *Similarly, Canada's immigration system does not always recognize the qualifications acquired at sea as actual educational credentials. As a result, many qualified and urgently needed professionals are not considered qualified to enter the Canadian labour market. In most cases to achieve a Canadian certification, a candidate must have Permanent Resident or Citizenship status.*
6. *As well it was noted that although Master's Certificates are recognized by Transport Canada, these certificates are not always recognized across the industry or by educational institutions, despite the fact that upon completing a significant time of practical, “hands-on” experience, a Master Mariner will have acquired skills in Human Relations, Administration and Management that can be offered to prospective employers.*
7. *It was generally recognized that educational and training institutions in British Columbia had a critical role to play in developing solutions for the pending labour shortages facing the international shipping industry. However, it was noted that there was a definite need for greater communication and collaboration among the various institutions in the province and with similar institutions throughout Canada.*

8. *There do not appear to be any short-term solutions to these serious job shortages, especially given the high level of competition that exists for these skills from both marine shipping agencies, multi-modal freight operators, and from third party logistics companies that operate with both land based and water based transportation modes. In short, based on the analysis conducted there is a looming shortage of technically qualified, experienced and available in all components of the international shipping sector.*
9. *It was generally recognized that changing the immigration system to better accommodate the hiring of qualified workers from abroad was only a small part of meeting the challenges posed by the looming skills shortages. A broader, more comprehensive strategy was required focused on developing the human resource talent needed not only to fill the anticipated vacancies arising from retirements and departures, but also to help grow the industry to its full potential.*
10. *To this end, in order to deal effectively with these issues, many of the stakeholders consulted called for greater collaboration between industry, government and academic stakeholders in order to develop the necessary human resources needed to build a robust international shipping community in the province.*
11. *Finally, the research has shown that there are significant direct, indirect and induced economic benefits arising from employment in the international shipping community, particularly for senior management personnel. For example, in the case of senior management personnel, for every new job with a salary of \$84,690, based on the Statistics Canada Input Output multipliers for the British Columbia maritime economy, an additional \$676,163 of direct, indirect and induced maritime related revenues and \$331,709 in GDP are generated. Similar secondary benefits were reported in other jurisdictions.*

### 15. CONCLUSIONS

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While the amount of research conducted as part of the Labour Market Information Study was extensive, the main conclusions are relatively straight forward and clear. They are as follows:

1. International shipping is affected by a myriad of complex geographical, jurisdictional, regulatory and demographic factors that play a key role in shaping the overall dynamics of this global industry. Moreover, the high level of interdependency among such global industries is further emphasized by virtue of the growth in globalization and the increased mobility of goods, services and labour throughout the international marketplace.
2. British Columbia's international shipping industry is similarly affected by these same factors playing out on the global stage. A rigorous investigation of the British Columbia market, through extensive primary research and analysis of secondary statistics, reveals a number of fundamental conclusions that shed light on the current state of the international shipping industry at a provincial level.
3. **Aging Demographics** -- indicative key conclusions reached, about the shortage of qualified labour, is linked directly to the demographic profile of the international shipping industry in British Columbia. It is evident that a predominantly mature and aging workforce will lead to serious labour shortages over the next ten years, especially for senior corporate management and highly skilled technical positions. As part of the primary research conducted, it was determined that a significant segment (nearly half) of these occupations is currently filled by individuals who are 45 years of age or older. An even more noteworthy observation gathered through the analysis of secondary research data, is that the percentage of employees who have reached 55 years or older is significantly higher at 22.2% than the provincial average (20.3%). This latter statistic clearly spells out a looming labour shortage brought on by substantial retirement figures in the next +/- 10 years
4. **Insufficient Practical Experience at Sea** -- Current labour shortages can also arise from the fact that recent graduates from local educational programs often lack practical at-sea experience. Although nearly all maritime educational programs offer degrees or diplomas in maritime related subjects, these educational qualifications are not readily considered for senior international shipping shore-based positions without significant hands-on seafaring experience. Proficiency and knowledge of activities associated with ocean shipping including 'at sea' operations is a key employment requisite often lacking which can only be acquired over the course of years before the mast.
5. **Maritime Education and Visibility of the Maritime Industry** -- Particular attention needs to be drawn to the lack of visibility currently accorded to the maritime industry in Canada as a prospective career option for Canadian students in secondary and post-secondary institutes. Engagement with stakeholders in the maritime education sector has revealed that there is an apparent lack of understanding and knowledge relating to the various career options available to graduates of maritime training programs. Canadian Maritime educational programs are graduating limited numbers of students, whereas their counterparts abroad typically train a larger pool of students on an annual basis.

6. **International Recruitment and Immigration** -- Most international shipping companies operating in British Columbia seek to overcome skilled labour shortages in the market, either through recruitment from outside of Canada or through inter-company transfers from sister offices located abroad, where international employees may possess the desired requisite skills. Others have sought to hire locally and to train personnel abroad. In most cases, shipping companies based in British Columbia report that reliance on Canada's immigration system is deemed as a last resort when recruiting internationally.
7. A general consensus appears to exist that Canada's immigration system does not meet the immediate business needs of corporate service providers in international shipping, thereby resulting in high recruitment costs and the commitment of limited managerial resources to process Labour Market Impact Assessments. Furthermore, the current immigration process does not always recognize the complexities of the skill set requirements for the international shipping sector, impeding the recruitment of qualified employees from outside Canada.
8. **Economic Benefit of International Shipping** -- Research has shown there are significant direct, indirect and induced economic benefits arising from employment in the international shipping community, particularly for senior management personnel. Every dollar earned in senior management occupations in the international shipping community generated an additional \$7.98 of business revenues in the British Columbia maritime economy, including spinoffs and \$3.92 in Gross Domestic Product. Every job created at a local level typically results in a total of 2.5 spin-off positions created. These figures are mirrored in similar markets, such as Washington State, as well as more mature European markets where a well-developed international shipping industry provides even greater economic benefits and spin-off; hence, reinforcing the considerable value of this industry over the long term.
9. In the immediate term, there do not appear to be any solutions to these labour shortages, especially given the high level of competition that exists for these skills from both marine shipping agencies, multi-modal freight operators, and from third party logistics companies that operate with both land based and water based transportation modes. Nevertheless, moving forward, there is overwhelming consensus among industry stakeholders that the most effective solutions will be developed through collaboration across multiple industries, educational bodies and levels of government.
10. In particular, there is need for a comprehensive and collaborative strategy that integrates the efforts of industry, government and academic stakeholders to foment activities necessary for developing a well-educated pool of human resources, as a basis for building a robust international shipping community in the province. Examples of this include the development of an Educational Task Force, responsible for establishing a more comprehensive system for gathering information and developing communication strategy for Canada's cluster of maritime industries. Furthermore, particular focus will need to be given to the important role played by federal and provincial regulators to ensure that the implementation of new and updated laws reflect the best interests of both the operational and corporate services within the international shipping industry.

### 16. RECOMMENDATIONS

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In light of the above conclusions, GLOBE Advisors has put forward the following recommendations to help the international shipping industry develop to its fullest economic potential within British Columbia and for Canada as a whole.

**Labour Force Development Strategy** – Based on the extensive consultations conducted with shipping stakeholders, as well as the compilation and analysis of secondary data, a sufficient knowledge base has now been established on the international shipping industry within British Columbia.

- 1. It is recommended that this substantial pool of knowledge now be used to build a comprehensive multi-year labour force development strategy for the province's international shipping sector. This strategy will address the current and anticipated shortages in qualified labour, particularly for the corporate professionals and highly skilled technical occupations that are most vulnerable due to retirements and intense competition from other sectors.**

As part of this strategy, it is vital to ensure that significant collaboration and establishment of partnerships takes place, not only between local industry and the provincial and federal governments, but also at an international level. In order to develop a thriving and economically viable international shipping sector, the Canadian governments at both provincial and federal levels also need to be engaging with those countries that possess demonstrated expertise in seafaring. An example of this includes collaboration and exchange of best practices with countries such as Denmark and Norway, whose governments invest heavily in the international shipping industry at a variety of levels (e.g., education, infrastructure development, technology).

**Community of Practice** – It is apparent that a significant momentum has been built up within the various stakeholder groups that were engaged for the purposes of this study. As a result, it is vital to ensure that the enthusiasm for spearheading new initiatives and managing change within the local international shipping community is maintained.

- 2. To accomplish this, it is recommended that the Vancouver International Maritime Centre initiate the development of a community of practice or cluster for the British Columbia international shipping sector. This cluster would initiate and develop strong social networks among the shipping community, the overall maritime economy in the province, colleges and universities, as well as with areas that possess strong international shipping expertise in other regions of Canada and abroad.**

**Need for More Accurate and Timely Labour Market Information** - It is recognized that the various provincial or national statistical databases consulted for this study do not accurately reflect the real world occupational categories and job titles for professional and corporate service personnel in the international shipping sub-sector of the transportation industry. The need for action programs and policies to address the already critical shortages in the supply of qualified workers and professional managers in the international shipping community requires timely and more accurate information on the labour market situation.



- 3. That is why it is recommended that the Vancouver International Maritime Center, in cooperation with various industry associations and the provincial government undertake an annual mandatory labour market survey to track new hires, retirements, vacancies, skills shortages and other pertinent information, as part of a comprehensive labour force development program.**

**Industry-Government Dialogue on International Recruitment** – The Vancouver International Maritime Centre has established itself as a focal point of liaison across a wide range of industries and shipping-related organizations at provincial, national and global levels. Through its extensive network of industry, regulatory and educational partners, the VIMC is particularly well-positioned to assume a leading role in bringing together industry and government stakeholders to engage in dialogue and policy restructuring activities relating to immigration issues that currently impede corporate activities within the international shipping industry.

- 4. To this end, it is recommended that as a matter of priority the British Columbia International Shipping industry, in partnership with the VIMC, initiate a formal dialogue with Citizenship and Immigration Canada and the British Columbia Government. This dialogue would focus on industry stakeholders communicating their priorities and concerns over alleviating constraints that they perceive as serious roadblocks for the sector to bring in skilled maritime and international shipping workers that are urgently needed. This urgent need is due to the current shortfall in workers with the requisite education, training and job experience to adequately meet current and anticipated job openings**

**Education and Skills Development Needs** - During the stakeholder consultations undertaken for this study it was repeatedly stressed that educational and training institutions in British Columbia had a critical role to play in developing solutions for the pending labour shortages facing the international shipping industry. It was noted that there was a definite need for greater communication and collaboration among the various institutions in the province (and with similar institutions elsewhere in Canada). This increased communication is intended to help establish common standards with respect to the recognition of the academic value of the experience and skills acquired before the mast by those wishing to assume duties ashore.

- 5. To this end, it is recommended that under the leadership of the Vancouver International Maritime Centre, a consultative committee be established to work with the various educational and training institutions. This committee would provide transportation and shipping related programs and services to explore options for greater collaboration to meet the urgent educational and skills development needs of the sector.**

### CONCLUDING COMMENT

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*GLOBE Advisors and the GLOBE Group of Companies stand ready to undertake any further studies relating to international shipping. This Labour Market Information Study has built a significant foundation upon which GLOBE Advisors may continue to provide additional strategic insight to the benefit of the industry as a whole.*

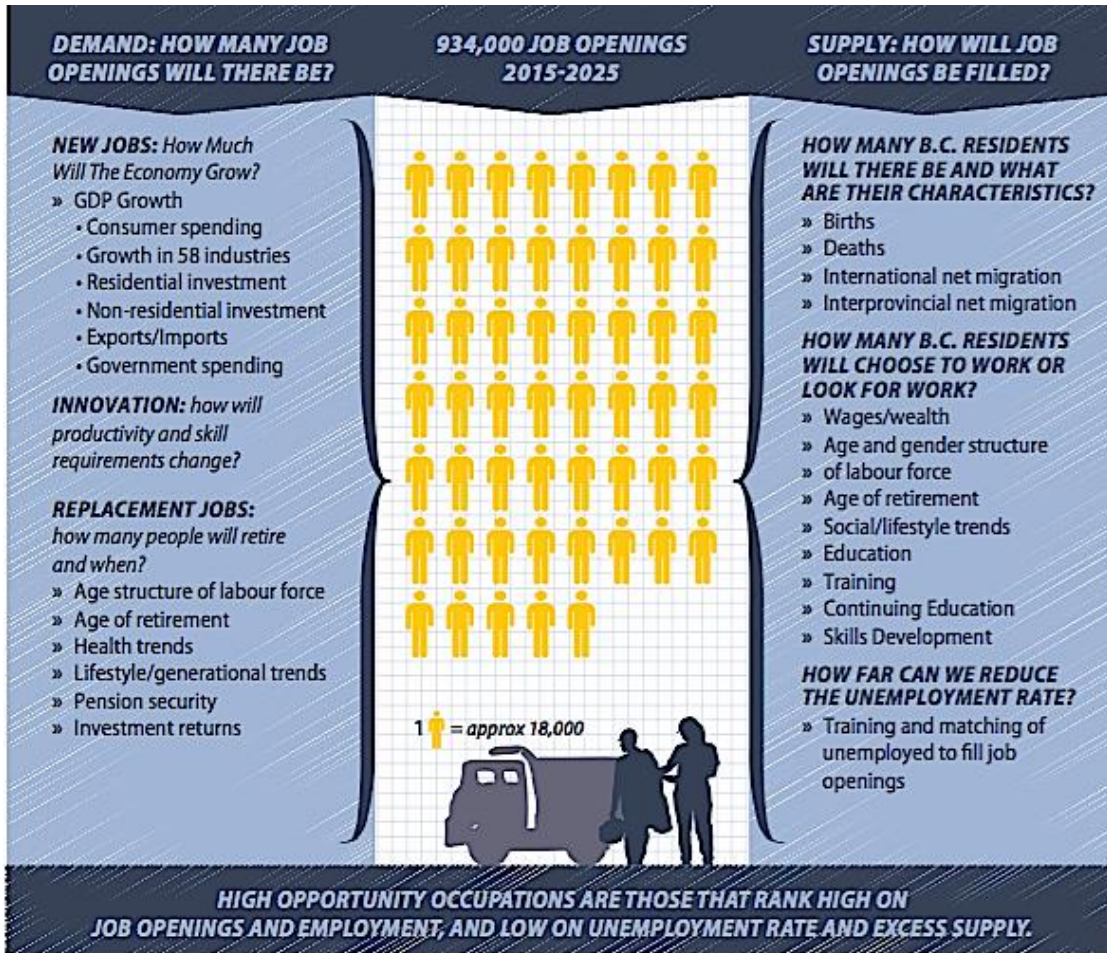
*The Globe team wishes to acknowledge and thank all participating organizations and stakeholders whose tremendous support, feedback and collaboration was instrumental and of exceptional value in completing this British Columbia International Shipping Industry Labour Market Information Study.*

*We wish to extend a special thanks to the Vancouver International Maritime Centre (VIMC), Members of the VIMC Governance Board, Chamber of Shipping of British Columbia, International Ship-Owners Alliance of Canada Inc. (ISAC), and the Shipping Federation of Canada.*

## APPENDIX 1: COMMENTARY ON THE BRITISH COLUMBIA SCENARIO MODEL AND THE SECONDARY DATA

The British Columbia Labour Market Outlook to 2025 is based on an overarching economic model that forecasts labour force supply and demand from 2016 to 2025 for industries classified both by the National Industrial Classification System (NAICS) and at a highly-detailed level occupations classified by the National Occupation Classification structure,

### CAPTURING COMPLEX LABOUR MARKET DYNAMICS



Source: British Columbia 2025 Labour Market Outlook

The **Demand** component of this model includes GDP growth, innovation or productivity and the expected number of replacement jobs due to pending retirements and deaths. The **Supply** component is based on a detailed analysis of the province's demographics, migration patterns, education, training and expected incomes. These labour market **Supply** and **Demand** projections have been developed for the province as a whole and for each of its Economic Development Regions. The model projects the number of job openings expected from 2016 to 2025 and the potential workforce supply available to fill the potential job openings.

The **Demand** analysis examines potential number of available jobs based on GDP growth, productivity and innovation expectations and the anticipated number of 'replacement jobs' extrapolated on the basis of the age structure of the current workforce, expected deaths and other lifestyle issues.

The **Supply** side analysis examines demographic data including births, deaths, immigration from abroad and in-migration from other provinces. Expected labour force participation rates and education factors are similarly assessed. The following table summarizes the macroeconomic results that the model has forecast.

### KEY MODEL DRIVERS

CONCEPT	DESCRIPTION	2012–2022 FORECAST	2014–2024 FORECAST	2014–2025 FORECAST	IMPACT OF CHANGE 2024 vs 2025
<b>Retirement Rate</b> (% of labour force, 10 year average)	Rate of exits from the labour force due to retirement, disability, illness and death	2.5%	2.4%	2.4%	No change to openings
<b>Real GDP</b> (\$2007 terms, Annual average growth)	Total amount of economic activity/spending adjusted for inflation. Weaker GDP growth leads to lower demand for labour.	2.5%	2.2%	2.2%	No change to openings
<b>Employment</b> (Annual average growth)	Growth in employment generates job openings due to economic expansion	1.2%	1.2%	1.2%	No change to openings
<b>Non-residential investment</b> (Constant \$2007, sum over 10 years of the forecast)	Investment in industrial, natural resource, and commercial equipment and structures – a large, often variable, component of GDP. Less investment leads to drop in labour demand.	\$437 Billion	\$386 Billion	\$391 Billion	Higher openings
<b>Participation Rate</b> (10 year average)	The % of the working age population that is in the labour force – a lower rate reduces labour supply.	64.7%	63.1%	63.0%	No change to Labour Supply
<b>Net interprovincial In-Migration</b> (Sum over 10 years of forecast)	In-migration less out-migration – higher net in-migration leads to higher labour supply.	117,000	112,000	122,000	Higher Labour Supply
<b>Net International In-Migration</b> (Sum over 10 years of forecast)	In-migration less out-migration – higher net in-migration leads to higher labour supply.	376,000	410,000	390,000	Lower Labour Supply

Source: British Columbia 2025 Labour Market Outlook

Real GDP is projected to grow by 2.2 percent annually from 2014 to 2025. Employment growth during this period is forecast to average 1.2 percent annually. This employment growth is based on assumptions of a cumulative net growth of 122 thousand in-migrants from other provinces and 390 thousand net immigrants from other countries over the outlook period.

Of particular interest is that the model is projecting an average retirement rate of 2.4 percent which is considerably higher than average employment growth of 1.2 percent. More specifically, the Labour Market Outlook to 2025 concludes “Economic growth will generate thousands of job openings but replacement of retiring workers will generate over two-thirds of job openings over the next ten years. We now have more people reaching retirement age than we have people entering the labour force.”

The 2025 Labour Market Outlook forecast incorporates a clear view on the impact of an aging population and why focused policies and programs will be needed to facilitate the required growth in the province's labour supply.

## TRANSPORTATION SECTOR

The model subsequently drills down its forecasts at an industry level. The table below shows forecast employment growth rates for the transportation sector and its components. International shipping, while not defined exclusively with the NAICS structure, is captured ubiquitously within these transportation components, mostly in Water Transportation and Support Activities for Transportation.

### KEY SUMMARY METRICS, TRANSPORTATION, BRITISH COLUMBIA PROJECTION MODEL TO 2025

Industry Component	2016 Employment	Employment Growth (Average annual %)		Job Openings		
	Number	2016- 2020	2020- 2025	Total	Expansion Jobs	Replacement Jobs
<b>Air Transportation</b>	14,300	2.15%	1.37%	5,600	1,400	4,200
<b>Rail Transportation</b>	6,100	1.29%	0.37%	2,500	600	1,900
<b>Water Transportation</b>	6,200	1.00%	0.71%	1,900	300	1,600
<b>Truck Transportation</b>	37,400	0.70%	0.74%	11,800	900	10,900
<b>Support Activities</b>	26,400	0.56%	0.75%	7,500	-100	7,600
<b>Postal and Couriers</b>	19,200	1.14%	0.77%	7,900	1,600	6,300
<b>Warehousing and Storage</b>	7,800	3.78%	0.87%	5,100	2,900	2,200
<b>Other Transportation</b>	21,100	0.71%	0.53%	9,100	2,500	6,600
<b>Total</b>	138,500	1.10%	0.77%	51,400	10,100	41,300

Source: British Columbia 2025 Labour Market Outlook

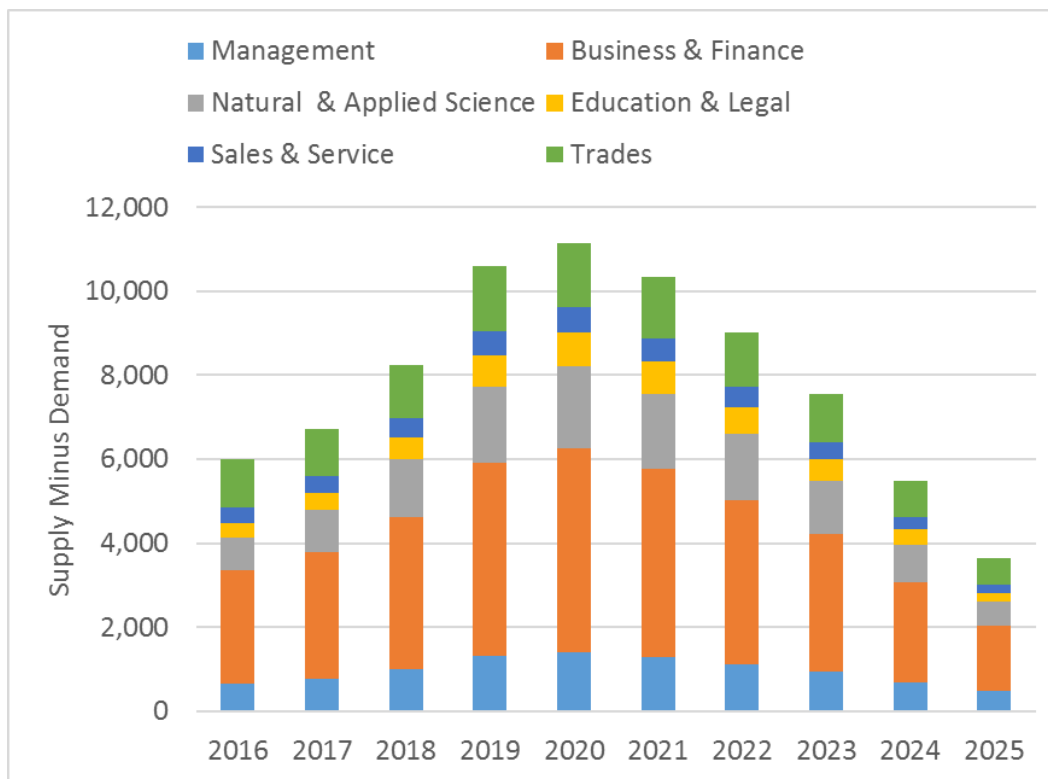
The Model is projecting anemic growth for the transportation sector employment. The projected rate is 1.1 percent annually from 2016 to 2020 and 0.77 percent from 2020 to 2025. Water transportation employment is projected to grow by 1.0 percent annually from 2016 to 2020 and by 0.71 percent annually from 2020 to 2025. The aggregate projections for Transportation Sector employment are in line with the province's overall employment projections and reflect the impact of demographically constrained growth in the outlook period.

## INTERNATIONAL SHIPPING OCCUPATIONS

While the Projection Model shows considerably lower numbers of surplus senior management workers that are associated with the international shipping sector (Supply minus Demand) by 2025, these projections show an increase in these surplus workers from 2016 to 2020; after which the level of surplus workers starts to decelerate from 2021 to 2025. However, the stakeholder engagement process concluded that serious shortages of these select occupations are evident currently and not five years from now as the model has forecast.

The lack of a precise measurement for the international shipping sector and its poor fit to Statistics Canada classification systems may be problematic here as the discussion below illustrates.

PROJECTED LABOUR SURPLUS, SELECT INTERNATIONAL SHIPPING OCCUPATIONS, BRITISH COLUMBIA



Source: British Columbia 2025 Labour Market Outlook

CONSISTENCY BETWEEN THE MODELED DATA AND THE RESULTS FROM THE STAKEHOLDER ENGAGEMENT

The findings from the Stakeholder Engagement process reflect the skill set qualifications that employers are willing to accept and much of that acceptance is tied to experience at sea. Personnel recruitment and selection practices are shaped largely on the particular biases and preferences of individual companies most of whom place a high value on experience gained in years before the mast. Trying to fill certain positions with people who lack that experience is a tough sell.

There are similar echoes of resistance by some universities that do not recognize sea going experience as legitimate precursor academic qualifications. This observation is based solely on the stakeholder engagement process that involved a considerable number of face-to-face and telephone interviews, a focus group and a primary survey. The extent that this conclusion is supported by the secondary data and the British Columbia Occupation Projection Model to 2025 is discussed in the following paragraphs.

### THE SECONDARY DATA IN BRIEF

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The secondary data focussed on a select number of key occupations that are strongly identified as fulfilling the needs of the international shipping sector. These occupations were determined through a combination of literature search and through the stakeholder discussions including an industry focus group designed exclusively to discuss the challenges and constraints that the industry is having in fulfilling jobs. These stakeholder discussions and focus group definitively showed the difficulties that the industry is having in fulfilling these key jobs, mostly involving a shortage of available people having the requisite skills training and more importantly, significant experience at sea.

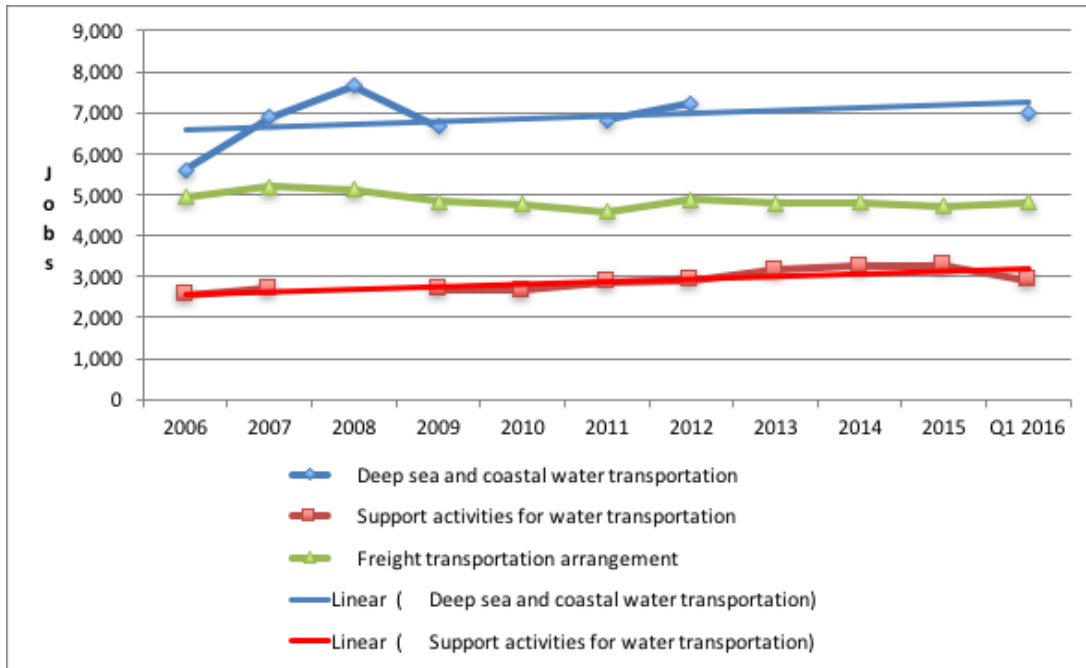
The problem with validating these stakeholder conclusions with the secondary data is that this secondary data is that international shipping is not well defined through either the Statistics Canada North American Industrial Classification System (NAICS) or the National Occupation Classification (NOC).

As previously noted, international shipping involves highly specialized activities concerning the provision of services that are required to move cargo to or from international destinations. As the report discusses, statistical data on international shipping activities are buried inside both the Ocean Shipping and the Freight Arrangement Sectors.

Based on Statistics Canada employment data, growth in both sectors has been anemic. Deep Sea and Coastal Water Transportation Employment grew at an annual rate of 1.4 percent from 2006 to 2015 based upon the derived linear trend line which was calculated due to missing data for various years based on Statistics Canada confidentiality thresholds.

Freight Transportation Arrangement employment grew by 0.3 percent and Support Activities for Water Transportation by 0.2 percent. Clearly, the water transportation and related sectors have experienced very slow employment growth over the past decade, especially the services side including freight arrangement.

EMPLOYMENT TRENDS, BRITISH COLUMBIA

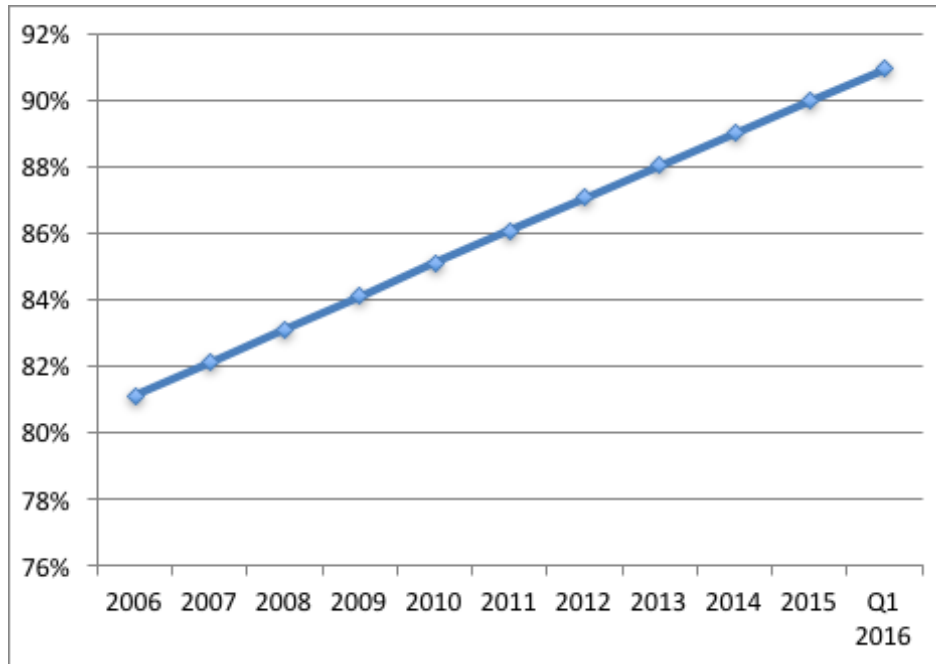


Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH) And GLOBE derived trend lines

One reason may be the result of increased productivity in transportation services and freight arrangement services as the following chart clearly illustrates. Of course, advanced international shipping centers such as London, Hong Kong and Athens arrange shipping outside of the home ports. International shipping in British Columbia has not reached this state of maturity and the growing productivity trends illustrated in the figure above, may well be acting to constrain employment growth in the international shipping sector in this province.



TRANSPORTATION ARRANGEMENT AND SERVICES PRODUCTIVITY TRENDS



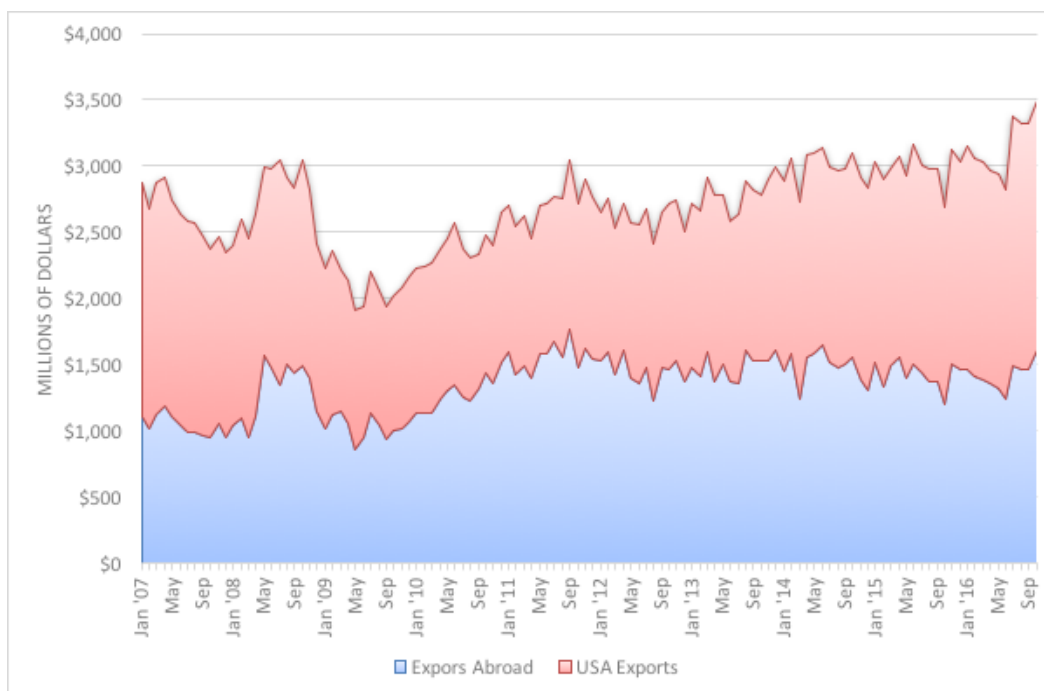
Source: Statistics Canada Survey of Employment, Payrolls and Hours (SEPH)  
And GLOBE derived trend lines

Deep sea and Coastal Water Transportation employment taken as a percentage of both freight arrangement and water transportation services has grown constantly from 2006 to the first quarter of 2016 as the chart above clearly illustrates. This ratio has likely grown as both freight arrangement and transportation services are probably exhibiting greater productivity or business efficiencies. Another factor that is involved with this slow growth scenario is that international exports to non-American economies (exports abroad) in spite of greater overall export growth have been static. In other words, the demand side of the international shipping equation has been static over the past decade.

Static exports abroad from British Columbia, increased productivity of freight arrangement and transportation services and serious challenges in filling international shipping jobs through a lack of at sea experience by potential job candidates has collectively resulted in the sector being stuck in a virtual no growth situation.

While the baseline historical profile of British Columbia's international shipping sector has been relatively static, the issue being addressed in this profile involves the potential for the international shipping community to significantly increase its presence in British Columbia and what are the associated challenges in meeting this goal.

BRITISH COLUMBIA INTERNATIONAL EXPORTS



Source: Industry Canada, Trade Data Online

PROJECTED SUPPLY AND DEMAND FOR KEY INTERNATIONAL SERVICES OCCUPATIONS

The following paragraphs and tables summarize the salient data based on the British Columbia Projection Model from 2016 to 2025 and attempts to frame these projections through the story line that has emerged from the stakeholder engagement process.

The first story line refers to the importance that international and inter-provincial immigration are having on the core group of international shipping occupations. Table 2 shows the importance that these migration factors are having on the sector. The table is based on 2025 forecast data. These mobility factors (90 percent plus) are very important to many of the specific international shipping occupations including:

- Senior managers - construction, transportation, production and utilities
- Purchasing managers
- Managers in transportation
- Supervisors, supply chain, tracking and scheduling co-ordination occupations
- Deck officers, water transport.

Overall, 71.9 percent of jobs for these core occupations are projected to be filled by people either moving to the province or switching jobs; 25.4 percent of these jobs being filled will come from people either immigrating to the Province from abroad or from other provinces. Clearly, migration is a huge factor in filling these jobs.

**TABLE 2: IMMIGRATION AND IN-MIGRATION KEY OCCUPATIONS, BRITISH COLUMBIA, 2025**

NOC	Description	Immigration	In-migration	Net Other In-Mobility	Total Mobility	Total Supply Change	Total Mobility as Percent Supply Change	Immigration & In-Migration as Percent Supply Change
0016	Senior managers - construction, transportation, production and utilities	29	1	273	303	304	99.7%	9.9%
0113	Purchasing managers	8	-1	68	75	76	98.7%	9.2%
0731	Managers in transportation	24	1	218	243	243	100.0%	10.3%
1113	Securities agents, investment dealers and brokers	43	0	-4	39	89	43.8%	48.3%
1215	Supervisors, supply chain, tracking and scheduling co-ordination occupations	23	-1	193	215	214	100.5%	10.3%
1315	Customs, ship and other brokers	9	-1	-1	7	24	29.2%	33.3%
1521	Shippers and receivers	123	18	-17	124	412	30.1%	34.2%
1526	Transportation route and crew schedulers	3	0	0	3	11	27.3%	27.3%
2262	Engineering inspectors and regulatory officers	10	0	-1	9	20	45.0%	50.0%
2273	Deck officers, water transport	45	33	-9	69	69	100.0%	113.0%
2274	Engineer officers, water transport	4	5	-1	8	23	34.8%	39.1%
6524	Ground and water transport ticket agents, cargo service representatives and related clerks	1	2	-1	2	16	12.5%	18.8%
7532	Water transport deck and engine room crew	1	12	-2	11	41	26.8%	31.7%
	Core Shipping Total / Average	323	69	716	1108	1542	71.9%	25.4%

Source: British Columbia 2025 Labour Market Outlook

**TABLE 2 TAKE AWAY POINTS**

- Net Other In-Mobility refers to people changing jobs within the Province
- Total Mobility includes International Immigration, Inter-Provincial in-migration and Net Other Mobility.

**TABLE 3: PROJECTED CHARACTERISTICS FOR KEY OCCUPATIONS, BRITISH COLUMBIA**

NOC	Occupations	Main Education Requirements	Unemployment Rate		Expansion Jobs		Replacement Jobs		Replacement Jobs as Percent New Jobs	
			2020	2025	2020	2025	2020	2025	2020	2025
		Canada Job Bank 2016								
0016	Senior managers - construction, transportation, production and utilities	Management / University	4.90%	3.90%	95	0	304	318	76.2%	100.0%
0113	Purchasing managers	Management / University	5.20%	3.80%	16	15	56	65	77.8%	81.3%
0731	Managers in transportation	Management / University	4.90%	3.80%	37	34	204	220	84.6%	86.6%
1113	Securities agents, investment dealers and brokers	Secondary school and/or Occupation-specific training	5.20%	3.80%	16	15	56	65	77.8%	81.3%
1215	Supervisors, supply chain, tracking and scheduling co-ordination occupations	College or Apprenticeship training	5.70%	4.40%	45	37	164	191	78.5%	83.8%
1315	Customs, ship and other brokers	Secondary school and/or Occupation-specific training	6.00%	4.50%	5	5	23	22	82.1%	81.5%
1521	Shippers and receivers	Secondary school and/or Occupation-specific training	6.40%	5.20%	134	119	320	329	70.5%	73.4%
1526	Transportation route and crew schedulers	Secondary school and/or Occupation-specific training	6.70%	5.40%	3	3	9	10	75.0%	76.9%
2262	Engineering inspectors and regulatory officers	College or Apprenticeship training	6.00%	4.60%	6	6	17	16	73.9%	72.7%
2273	Deck officers, water transport	Secondary school and/or Occupation-specific training	5.90%	4.40%	256	281	175	228	40.6%	44.8%
2274	Engineer officers, water transport	College or Apprenticeship training	5.50%	4.30%	443	512	323	394	42.2%	43.5%
6524	Ground and water transport ticket agents, cargo service representatives and related clerks	Secondary school and/or Occupation-specific training	7.70%	6.60%	2	3	16	15	88.9%	83.3%
7532	Water transport deck and engine room crew	College or Apprenticeship training	7.00%	6.20%	10	11	32	32	76.2%	74.4%
	Core Shipping Total / Average		5.90%	4.50%	1068	1041	1699	1905	61.4%	64.7%

Source: British Columbia Occupational Projection Model 2016 to 2025

### TABLE 3 TAKE AWAY POINTS

- The projected unemployment rates range from 3.9% to 6.6% by 2025.
- These unemployment rates still show some slack in the sector and are reflective of an economy that is at less than full capacity in general.
- Although the market is tighter for the management occupations which as unemployment rates at less than 4%.
- The majority of projected new jobs are replacement jobs due to deaths and retirements.

TABLE 4: PROJECTED SUPPLY KEY SHIPPING OCCUPATIONS, BRITISH COLUMBIA

NOC	Occupations	Labour Supply Minus Demand		Total Immigration & In-Migration		Total Net Other Mobility		Total Immigration & In-Migration as Percent Expansion & Replacement Jobs		Total Mobility as Percent Expansion & Replacement Jobs	
		2020	2035	2020	2035	2020	2035	2020	2035	2020	2035
0016	Senior managers - construction, transportation, production and utilities	126	54	39	30	356	273	9.8%	9.4%	99.0%	95.3%
0113	Purchasing managers	32	11	7	7	67	68	9.7%	8.8%	102.8%	93.8%
0731	Managers in transportation	84	30	25	25	223	218	10.4%	9.8%	102.9%	95.7%
1113	Securities agents, investment dealers and brokers	32	11	51	43	3	-4	70.8%	53.8%	75.0%	48.8%
1215	Supervisors, supply chain, tracking and scheduling co-ordination occupations	98	37	22	22	196	193	10.5%	9.6%	104.3%	94.3%
1315	Customs, ship and other brokers	20	7	12	8	1	-1	42.9%	29.6%	46.4%	25.9%
1521	Shippers and receivers	244	91	170	141	9	-17	37.4%	31.5%	39.4%	27.7%
1526	Transportation route and crew schedulers	9	3	4	3	0	0	33.3%	23.1%	33.3%	23.1%
2262	Engineering inspectors and regulatory officers	11	4	12	10	1	-1	52.2%	45.5%	56.5%	40.9%
2273	Deck officers, water transport	187	52	77	78	-6	-9	17.9%	15.3%	16.5%	13.6%
2274	Engineer officers, water transport	255	54	12	9	-1	-1	1.6%	1.0%	1.4%	0.9%
6524	Ground and water transport ticket agents, cargo service representatives and related clerks	11	4	6	3	0	-1	33.3%	16.7%	33.3%	11.1%
7532	Water transport deck and engine room crew	7	0	14	13	-3	-2	33.3%	30.2%	26.2%	25.6%
	Core Shipping Total / Average	1116	358	451	392	846	716	16.3%	13.3%	46.9%	37.6%

Source: British Columbia Occupational Projection Model 2016 to 2025

**TABLE 4 TAKE AWAY POINTS**

- The new jobs (mostly replacement) for several occupations are projected to be filled by people switching jobs or in-migrating to British Columbia from either abroad or from other provinces.
- These migration intensive jobs include:
  - Senior managers - construction, transportation, production and utilities
  - Purchasing managers
  - Managers in transportation
  - Securities agents, investment dealers and brokers
  - Supervisors, supply chain, tracking and scheduling co-ordination occupations
  - Engineering inspectors and regulatory officers
- The occupations that are less in-migration intensive include:
  - Customs, ship and other brokers
  - Shippers and receivers
  - Transportation route and crew schedulers
  - Deck officers, water transport
  - Engineer officers, water transport
  - Ground and water transport ticket agents, cargo service representatives and related clerks
  - Water transport deck and engine room crew

## HOW DOES THIS SECONDARY DATA FIT WITH THE RESULTS OF THE STAKEHOLDER ENGAGEMENT?

The secondary Statistics Canada data and the British Columbia Projection Model for the occupations assessed in this labour market study are based on metrics stemming from well-defined components of transportation sector which have solid baseline profiles and track records of systematic data acquisition by which meaningful and realistic projections can be developed.

### Requirement for Statistical Normalization

However, the current labour market study focuses on a particular component of the transportation industry for which reliable and systematically gathered data is not routinely available. As well, the occupational categories and specific job titles for the professional and corporate service personnel that manage international shipping operations do not fit well into the Statistics Canada North American Industrial Classification System (NAICS) or the occupations under the National Occupation Classification (NOC) system.

These professional shipping service providers carry out highly specialized ship brokering, chartering, customs clearing, tendering, education and training, legal, insurance and other high value added services.

As the research undertaken for this labour market study has confirmed, for this component of the transportation sector the problem of the looming retirement crisis is even more critical than is the case for the sector or the province as a whole.

For this reason more reliable and systematically gathered data is required in order to develop the focused policies and programs that will be needed just to sustain international shipping activities in this province let alone meet any demand associated with industry expansion when and if international shipping firms decide to grow their presence in British Columbia. Securing much better international shipping data would facilitate more valid projections which in turn would lead to better decisions for expanded educational and training initiatives in this sector.

It is recognized that effecting changes to the Statistics Canada North American Industrial Classification System (NAICS), or the National Occupation Classification (NOC) system, or the British Columbia Labour Market Outlook model to more accurately reflect the real world occupational categories and job titles for the professional and corporate service personnel in the international shipping sub-sector of the transportation industry is not a quick and easy undertaking. This in no way is reason for inaction. The need for action programs and policies to address the already critical shortages in the supply of qualified workers and professional managers in the international shipping community requires action now.

### **Framed by Slow Growth and Aging Demographics**

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The secondary data and the projections from the British Columbia Occupational Projection Model are both framed by a very slow growth scenario although the province's aging labour force is taking a heavy toll as most of the forecast new jobs are to replace retiring workers or deaths.

This age structure and retirement based conclusion is totally consistent with the results of the stakeholder engagement. The stakeholder engagement concluded that virtually all of the select or key occupations used in the analysis were either very difficult or moderately difficult to fill. This observation does not totally square with the secondary data, where some, albeit a declining labour surplus is evident for each key occupation and unemployment rates ranged from 3.9% to 6.6%.

However, several, but not all of the new jobs for these select occupations are being filled by migrants; migrants either from abroad, other provinces or job switchers. The need to fill these jobs with migrants is consistent with the results of the stakeholder engagement. The critical question that remains is to what extent are the skills training constraints, especially the need for people with considerable at sea experience actually acting as a serious barrier for the sector to grow?

**The answer is that if everything remains constant, then the occupations representing the international shipping sector will likely to remain in a slow growth balance. Continued shortages of British Columbia workers with the right skills sets and significant at sea experience is not conducive to expansion of the sector in this province.**

### **“People without Jobs: Jobs without People.”**

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A skills mismatch is emerging involving a growing gap between the skills Canadian employers say they need and the ones job seekers can provide. In addition, Canada has an aging population and a rapidly changing economy. As the first wave of baby boomers hits retirement age and younger people stay in school longer, the percentage of Canadians in their prime earnings years begins to shrink, taking with it Canada's capacity to fund everything from pensions to education.

He Hon. John Manley, president and chief executive officer of the Canadian Council of Chief Executives, has called it a “demographic time bomb.”<sup>38</sup>

The federal government's own data through its Occupational Projection Model shows the overall labour market will remain “in balance” over the next decade, much like it is today. Retiring baby boomers will play a huge role in the creation of job openings creating nearly two-thirds of the vacancies, while economic growth will account for the rest.

However, the new jobs will require more education, more specific skills than the professions of the past. There needs to be a much better job of collecting and disseminating reliable labour market information. It has been remarked that “Our data is horrible”. Critiques of the Canadian Occupational Projection System argue that it is based on outdated “national occupation codes,” the official descriptors of hundreds of job categories. It doesn't take into account the fact that jobs evolve over time and require new skills.

The Canadian employment system, in fact is not in balance. A serious skill mismatch exists at the same time as the aggregate numbers have the appearance of a balance market, even when serious surplus or unemployed workers are evident. No matter how tight is a labour market, there always will be a certain amount of frictional and structural unemployment, even in occupations which are hard to fill due to a lack of trained personal.

Frictional unemployment involves people being in transition as they change jobs. Structural unemployment involves people being unemployed as they do not have the requisite skills which in our case is at sea experience and maritime-related accreditation that employers want in order to fill international shipping jobs.

Serious shortages of skills will make this situation much worse. Employers are being forced to engage in a number of strategies in response to a shortage of workers. These include rigorous recruiting, increasing monetary and non-monetary benefits and trying to bring in foreign workers that have the requisite training and experience.

The pursuit of trained and skilled foreign workers for hard to fill international shipping occupations is a case in point. The conclusion by the federal Occupational Model (and its British Columbia component) that supply and demand will be in balance ten years from now just as it is today completely misses the mark regarding our growing skills imbalance, especially in those occupations that are outside the scope of the outdated National Occupation System (NOC). Even if this balance is accurate in aggregate, the resulting loss of productivity where people are under employed in jobs that don't match up with their skills will be profound.

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### A CONCLUDING NOTE

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Until appropriate adjustments are made to the British Columbia Scenario Model to enable more representative data gathering for the international shipping sector, as an interim measure the Vancouver International Maritime Center, in cooperation with various industry associations and the provincial government might undertake an annual mandatory labour market survey to track new hires, retirements, vacancies skills shortages and other pertinent information as part of a comprehensive labour force development program.

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<sup>38</sup> See *People without Jobs — Jobs without People: Decoding Canada's 'skills crisis'*  
[https://www.thestar.com/business/2013/05/24/decoding\\_canadas\\_skills\\_crisis.html](https://www.thestar.com/business/2013/05/24/decoding_canadas_skills_crisis.html)



## **APPENDIX 2 KEY OCCUPATIONS IN THE INTERNATIONAL SHIPPING INDUSTRY**

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One of the notable challenges encountered in the conduct of this research was the fact that many of the occupational classifications and/or job title commonly used in the international shipping domain were not adequately reflected in the Statistics Canada North American Industrial Classification System (NAICS) or in the occupations referenced under the National Occupation Classification (NOC) system.

As well, there is wide variation between companies with respect to the actual duties that are being undertaken, or the skills and/or experience required to be successful therein. This is a contributing factor in frequently encountered problems in having skills, experience, and certificates recognized by regulatory and immigration authorities and by some academic institutions.

Outlined below are some of the typical duties and experience requirements for some of the key occupations discussed throughout this research project, with particular attention paid to those occupations that are hard to fill.

### **Shipping Manager (Commercial Operations, Purchasing and Bunkering) – Fleet Manager**

A Shipping Manager assumes responsibility for the smooth operation of vessel(s) under their charge, which includes securing berths, arranging bunkers and organizing delivery/loading schedules. A Shipping Manager is expected to maintain day-to-day contact with individuals working in commercial, operational and berth planning roles, as well as with their line manager and officials from ports in which they operate. A sound understanding of the commercial and operational aspects of the shipping business and a shipping related degree (or equivalent experience) is necessary for this role.

### **Intermodal Manager (Freight Trading, Chartering) – VP Operations**

An Intermodal Manager is responsible for the development and execution of a company's transportation strategy, through negotiating the best price and maximum efficiency of the freight transportation chain. This position is customer focused, and as a team leader has an emphasis on recruitment and training of new personnel. A degree, management experience, strong interpersonal skills and a sound grasp of the freight transportation market are all necessary for this job.

### **Agency Manager (Commercial Operations, Technical and Marine) – Port Captain**

An Agency Manager plans out the berthing of ships, ensuring that cargo is loaded and discharged efficiently and safely. By liaising with freight customers and shipping agents, as well as Port Authorities and Customs and Immigrations, an Agency Manager assures that ships and their cargo move through ports in a timely and safe manner. Experience within a shipping agency, management experience, as well as a comprehensive understanding of customs and immigration procedures, are all required to succeed in this job.

### **Pricing Analyst (Research and Development)**

This position is highly commercial, focused on strategically planning and participating in service contract negotiations, as well as negotiating freight rates and terms and conditions. The ability to prepare for, participate in, and potentially run strategy meetings are essential. A solid grasp of the shipping industry, including terminology, logistics, as well as global economic insight, an understanding of technology and commonly a degree are all essentials.

### **Ships Planner (Technical and Marine, Quality and Safety, Commercial Operations) – Port Captain**

A Ships Planner is responsible for the safe loading and offloading of cargo of all sizes, shapes, weights and dangerousness. Usually working out of container yard, this role ensures efficient and cost-effective cargo transfer, while meeting safety requirements and liaising with the Vessel Chief to communicate necessary travel plans. Previous work as a senior planner, as well as management experience totalling a minimum of two years in the shipping industry, and a degree are required.

### **Ships Operator (Technical and Marine, Quality and Safety, Commercial Operations) – Senior Operations Manager**

A Ships Operator is a very senior operations position. Tasks include coordinating day-to-day operations to ensure vessel's voyages are efficient and costs are controlled, liaising with charterers with respect to payments, preparing vessel positions updates, communicating with external agents and Marine Superintendents, and dealing with crew management. A degree in Nautical Sciences, as well as a minimum of 2<sup>nd</sup> Mates Certificate of Competency and a breadth of management and industry experience, are all required, and many employers have more specific (and stringent) requirements as well.

### **Letter of Credit Officer (Ship Broker)**

This position involves processing and completing Letters of Credit, which are issued by a bank once a contract has been negotiated and signed between a buyer and a seller. The Letter of Credit is a guarantee that the agreed upon payment will be paid on time and in full, even if the buyer is unable to make the purchase. A degree and relevant financial qualifications (based on the country where business is being done) are necessities, and region/country specific experience can also be required.

### **Commodities Traders (Charterer, Freight Trading, R&D)**

A highly diverse position, the main task is to research and understand commodity markets, to make money 'bidding' on commodities in a volatile global market. A Commodities Trader is also called upon to provide advice on what to buy and sell to clients. The position requires a degree, as well as relevant industry qualifications and an in-depth understanding of global markets.

### **Supply Chain Coordinator (Purchasing and Bunkering) – Manager Purchasing**

This position is responsible for managing the purchase and delivery of goods or services, on behalf of their company or clients. This includes rate negotiation with carriers and coordinating all inbound and outbound traffic in a cost-effective way while following all ISO and health and safety regulations. Those who hold this position require a degree, as well as customer service

### **Dry Cargo Broker (Ship Brokering)**

A Dry Cargo Broker is a specialist Ship Broker, who charters bulk carriers on behalf of ship owners or charterers. They are responsible for negotiating the deal for their clients from start to end, keeping costs down and maximizing profits through extensive knowledge of tonnage, rates, cargos and vessel positions. This position requires a commercial degree or associated shipping qualification, extensive market knowledge, as well as a previous experience within the shipping industry.

### **Tanker Broker (Ship Brokering)**

A Tanker Broker specializes in the chartering of tankers, which requires knowledge of special, stringent industry enforced standards. They negotiate contracts on behalf of their clients, from beginning to end, achieving the best possible rate while coordinating the execution of the contract with the operations department. A degree is usually required, as is five years' experience in chartering and extensive knowledge of the market in which the broker specializes.

### **Ship Broker**

A Ship Broker acts as specialist intermediaries/negotiators between ship owners and charters to arrange ocean transport of goods and commodities, the employment of a vessel or to buy/sell ships on behalf of his client. The position includes presenting business to potential clients, negotiating the main terms of a contract or sale and seeing it through to its conclusion and any follow up that may be involved. Typically a commercial degree, as well as knowledge of markets, a keen ability to negotiate, and an understanding of the shipping industry are keys to success.

### **Maritime Supply Manager (Commercial Operations, Purchasing and Bunkering)**

This position is focused on the establishment and maintenance of an efficient supply chain, which delivers the necessary supply of goods and services required, at the best possible price and in-line with the quality desired. This involves negotiating contracts, establishing and maintaining relationships with suppliers and management of a significant budget. This is a senior position that impacts a company's strategic direction, and as such, requires ten years' experience in the contracting/procurement business, a degree level education and relevant industry qualifications, and depending on the employer, specific global experience.

### **Legal and Insurance Manager (Technical and Marine, Safety & Quality)**

A Legal and Insurance Manager is a fully qualified shipping lawyer. The position involves managing a team of maritime law and insurance specialists, to oversee the claims process for the company as well as drafting and supervising insurance policies. Specific competencies required vary by company.

### **Ship's Captain (Commercial Operations, Technical and Marine, Safety & Quality)**

A Ship's Captain is ultimately responsible for all aspects of a vessel's operation. They are responsible for the safety and welfare of their crew and ship, adherence to all laws and regulations, as well as the on-time arrival of their cargo. They are also responsible for preventing pollution and spills. A Ship's Captain is commonly a Master Mariner, with significant experience in ship's operation, including cargo storage, vessel maintenance and navigation, as well as human resources and administration.

### **Crew Manager (Commercial Operations, Technical and Marine, Safety & Quality) – Crew Coordinator**

The senior manager of all crew handles a wide variety of Human Resources related tasks. They coordinate promotions and training, as well payroll, travel budget and compliance with laws related to the workforce. They require a bachelor level degree at minimum, two years of HR experience, and knowledge of the international shipping industry.

### **Chief Engineer (Commercial Operations, Technical and Marine, Safety & Quality)**

A Chief Engineer holds ultimate responsibility for the operation of the engine room and maintenance of all machinery on board. The Chief Engineer maintains inventory, and as well inspects the vessel and oversee maintenance. They must have a Chief Engineers Certificate of Competence, Class 1, as well as a degree in Marine Engineering and extensive maritime experience. They occasionally hold equal rank to a Ship's Captain.

### **Offshore Technical Superintendent (Commercial Operations, Technical and Marine, Safety & Quality) – Marine/Engineering Superintendent**

The Offshore Technical Superintendent ultimately manages a vessel's welfare, conducting repairs, inspecting the ship, and ensuring compliance with Health, Safety and Environment Policies. They record and report on all accidents, and conduct quality control of the vessel's cargo. This position requires a degree, relevant qualifications such as Chief Engineer or Master Mariner, as well as certificates in dangerous cargo management and health and safety regulations. They require in-depth knowledge of relevant legislation and extensive maritime experience.

### APPENDIX 3: BRITISH COLUMBIA INTERNATIONAL SHIPPING LABOUR MARKET STUDY - LIST OF PERSONS CONSULTED

Chad Allen, Director, Marine Operations, Shipping Federation of Canada  
Peter Amat, General Manager, Pacific Basin Shipping (Canada) Ltd  
Art Bensler, Executive Vice President and General Counsel, Teekay Shipping (Canada) Ltd  
Erich Billung-Meyer, Senior VP Operations, COO, ACGI Port Agents  
Captain S.W. (Stan) Bowles, General Manager, Milestone Chemical Tankers Pte Ltd  
Domenic Bravi, Senior Vice President, Montship Inc.  
Joanne Cavallo, HR Generalist, Seaspans Ship Management Ltd  
Richard Chappell, Regional VP Operations, Westwood Shipping Lines  
Linda Cheng, Assistant Vice-President, Fairmont Shipping (Canada) Ltd.  
Monica Cheung, Executive Secretary Administration, Valles Steamship (Canada) Ltd  
Colin Conrad, President, F.K. Warren  
Karen Deegan, President, K.D. Marine  
Christen Downie, Manager of Government and Global Stakeholder Relations, Methanex Corporation  
Captain Clifford Faleiro, Senior Operations Manager, Saga Welco AS  
Denien Ford, Policy Analyst, Chamber of Shipping of British Columbia  
Bonnie Gee, Vice President, Chamber of Shipping of British Columbia  
Patricia Godin, Human Resources, Anglo-Eastern Ship Management  
The Hon. Colin Hansen, President and CEO, Advantage BC  
Dr. Trevor Heaver, Professor Emeritus, Former Director, Centre for Transportation Studies, Sauder School of Business  
Matthieu Hethrington, Operations Manager, Oceanic Tankers Agency Inc  
Trisha Hine, Senior Manager, Human Resources and Administration, Hapag-Lloyd (Canada) Inc.  
Lanna Hodgson, Secretary General, International Ship-Owners Alliance of Canada  
Jone Hognestad, President, Methanex Corporation  
Bernard Huizenga, Business Development Manager, Austral Asia Line Pte Ltd  
William Hung Executive Vice President, Strategic Development, Teekay Shipping (Canada) Ltd.  
Captain Masoud Jahani, Senior Marine Inspector, Compliance and Enforcement, Transport Canada  
Diego Jaramillo, Quality and Responsible Care Supervisor, Waterfront Shipping Company Ltd  
Bernie Jones, Partner, Sealink Holdings Ltd  
Fritz King, Managing Director, Atlantic Container Line  
Jonathan Leebosh, Barrister and Solicitor, Partner, EY Law LLP  
Eva Leung, Human Resources Advisor, Teekay Shipping (Canada) Ltd  
Robert Lewis-Manning, President, Chamber of Shipping of British Columbia  
Lance Lin, VP and GM, Yang Ming Shipping (Canada) Ltd  
Travis Linfoot, Regional Sales Manager, MOL (Canada) Ltd  
Susan Martyn, Senior Lawyer, Immigration, Price Waterhouse Coopers (PWC)  
Captain Philip McCarter, Associate Dean, BCIT - School of Transportation  
Bill McKinstry, Director, West Coast Operations, Shipping Federation of Canada  
John Mears, Owner/President, Pacific Northwest Ship and Cargo Services

Yvette Myers, Regional Director, Marine Safety & Security, Transport Canada  
Captain Phillip Nelson, President, Council of Marine Carriers  
Michel O'Neil, Operations, Currie Maritime  
Anthony Pearkes, Director, Oldendorff Carriers  
Captain Morteza Peivast, Nautical Instructor and Program Leader, Camosun College  
Captain Oscar G. Pinto, Director, Valles Steamship (Canada) Ltd  
Peter Riley, President, G.W. Nickerson  
Luis Riveros, Operations Coordinator, CMA CGM Canada  
Real Robichaud, Executive Vice President, Lower St. Lawrence Ocean Agencies  
Captain Joachim Ruether MNI, Secretary/Treasurer, Nautical Professional Education Society of Canada  
George Runyon, Junior Vice President, Evergreen Shipping Agency (America) Corp  
Romeo Rusan, Marine Manager, Norton Lilly International  
Gabrielle Smith, Director, HR, Seaspan Ship Management Ltd  
Richard Smith, Chairman, Nautical Professional Education Society of Canada  
Michael Smolander, Human Resources Specialist, McAsphalt Marine Transport Ltd  
Donna Spalding, Director Administration, Cruise Lines International Association - North West & Canada  
Peter Swanson, Partner, Bernard LLP  
Sundeep Thakur, Accounting Manager, Greig Star  
Cynthia Tsai, Esq, Executive Vice President, Oak Maritime (Canada) Ltd  
Captain Ferdi van de Kuylen, VP Operations, Island Tug, ITB Marine Group  
Ken Veldman, Director, Public Affairs, Prince Rupert Port Authority  
Rick Worrall, Instructor, Nautical Training, Camosun College  
Mary Wu, Executive Assistant, Oak Maritime (Canada) Ltd  
Peter Xotta, VP Planning and Operations, Vancouver Fraser Port Authority

## APPENDIX 4: BRITISH COLUMBIA INTERNATIONAL SHIPPING LABOUR MARKET STUDY – GROUPS CONSULTED

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ACGI Port Agents  
Advantage BC  
Anglo-Eastern Ship Management Company  
Atlantic Container Line  
Austral Asia Line Pte Ltd.  
BCIT – School of Transportation  
Bernard LLP  
Camosun College  
Chamber of Shipping of British Columbia  
CMA-CGM (Canada) Inc  
Council of Marine Carriers  
Cruise Lines International Association North West and Canada  
Currie Maritime Corporation  
Evergreen Shipping Agency (America) Corporation  
EY Law LLP  
F. K. Warren Ltd.  
Fairmont Shipping (Canada) Ltd  
G.W. Nickerson Co Ltd.  
Greig Star  
Hapag-Lloyd (Canada) Inc  
International Ship-Owners Alliance of Canada  
Island Tug, ITB Marine Group  
KD Marine Inc.  
Lower St. Lawrence Ocean Agencies  
McAsphalt Marine Transportation Industries Ltd.  
Methanex Corporation  
Milestone Chemical Tankers Pte Ltd.  
MOL (Canada) Inc.  
Montship Inc.  
Nautical Professional Education Society of Canada  
Norton Lilly International  
Oak Maritime (Canada) Inc.  
Oceanic Tankers Agency Inc  
Oldendorff Carriers  
Pacific Basin Shipping (Canada) Ltd.  
Pacific NorthWest Ship and Cargo Services  
Prince Rupert Port Authority  
Saga Welco AS  
Sauder School of Business – University of British Columbia  
Sealink Holdings Ltd.  
Seaspan Ship Management Ltd.  
Shipping Federation of Canada  
Teekay Shipping (Canada) Ltd  
Transport Canada Marine  
Valles Steamship (Canada) Ltd  
Vancouver Fraser Port Authority  
Waterfront Shipping Company Ltd  
Westwood Shipping Lines  
Yang Ming Shipping (Canada) Ltd

## APPENDIX 5: INTERNATIONAL SHIPPING LABOUR MARKET STUDY - INFORMATION SOURCES CONSULTED

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## APPENDIX 6: STAKEHOLDER ENGAGEMENT PROCESS – SURVEY TOOLS UTILIZED

### Stakeholder Outreach Questionnaire Annex 1 – Discussion Questions for One-to-One Interviews and Roundtable Sessions

#### Company Profile

- 1) Name of Company \_\_\_\_\_
- 2) Contact Name of Interviewee \_\_\_\_\_
- 3) Job Title of Interviewee \_\_\_\_\_
- 4) Telephone Number \_\_\_\_\_
- 5) Email Address \_\_\_\_\_
- 6) Office Location of interviewee \_\_\_\_\_
- 7) Location of corporate head office \_\_\_\_\_

#### Recruitment / Retention

- 1) For which occupations, if any, is it difficult to recruit qualified employees locally from British Columbia or from other regions within Canada?
- 2) For which occupations does your company currently experience the greatest overall gap in supply of qualified workforce?
- 3) Does your recruitment process involve sourcing employees from outside of Canada? Yes  No 
  - a. If “Yes,” what is the main reason for this?
  - b. What are your key challenges in sourcing employees from outside of Canada?
    - How could these challenges be minimized?
  - c. For recruitment of employees from outside of Canada, how many (what percentage) are:
    - b. Permanent \_\_\_\_\_
    - c. Temporary: \_\_\_\_\_

#### Criteria For Establishing Head Office in Canada

- 4) What are your company’s key considerations for establishing or maintaining a head office?
- 5) In selecting a location for establishing your head office, how important are affordability and cost of living for your employees?

#### Immigration Related

- 6) Do Canadian immigration/work visa regulations affect your business’ ability to grow your operations in Canada?

Yes:

No:

Interview Probes:

*If yes, please identify which aspect of the immigration process poses the greatest challenges:*

- a. Labour Market Impact Assessment (LMIA)
- b. Intra-Company Transferees
- c. Permanent Residence Applications
- d. Visa requirements for Canada (i.e. restrictions based on country of origin)
- e. Educational requirements
- f. Security requirements (e.g. Police Certificates)

## **Other Comments & Issues Raised**

Stakeholder Outreach Questionnaire Annex 2 – “Take-Away” Questionnaire for Participants of the One-to-One interviews and Roundtable Sessions

**Company Profile**

1. Name of Company [Click here to enter text.](#)
2. Office Location of interviewee [Click here to enter text.](#)
3. Location of corporate head office [Click here to enter text.](#)
4. Year Established
  - a. Head Office Operations [Click here to enter text.](#)
  - b. British Columbia Operations [Click here to enter text.](#)
5. Within the context of the shipping sector, how best would you classify your company?
  - a. Ship Owner
  - b. Agent
  - c. Support Services
  - d. Other (please specify)
6. If your company is a ship owner, at what capacity are you currently operating (in terms of # of vessels)?
  - a. Overall [Click here to enter text.](#)
  - b. From ports in British Columbia [Click here to enter text.](#)
  - c. From other ports in Canada [Click here to enter text.](#)
  - d. From international ports [Click here to enter text.](#)
  - e. N/A [Click here to enter text.](#)
7. If your company acts as an agent or intermediary, at what capacity are your clients currently operating (in terms of # of vessels)?
  - a. Overall [Click here to enter text.](#)
  - b. From ports in British Columbia [Click here to enter text.](#)
  - c. From other ports in Canada [Click here to enter text.](#)
  - d. From international ports [Click here to enter text.](#)
  - e. N/A [Click here to enter text.](#)
8. If your company is primarily engaged in support services, at what capacity are you currently serving (in terms of # of vessels)?
  - a. Overall [Click here to enter text.](#)
  - b. From ports in British Columbia [Click here to enter text.](#)
  - c. From other ports in Canada [Click here to enter text.](#)
  - d. From international ports [Click here to enter text.](#)
  - e. N/A [Click here to enter text.](#)

**Labour / Employee Profile**

9. Number of employees
  - a. In British Columbia [Click here to enter text.](#)
  - b. In Canada [Click here to enter text.](#)
  - c. Outside of Canada [Click here to enter text.](#)

10. For your operations in Canada, please identify the individual job titles that currently exist within your company that fall into the categories listed in questions (a) – (f) below:

a. Senior Management Occupations

[Click here to enter text.](#)

b. Business, Finance and Administration Occupations

[Click here to enter text.](#)

c. Natural and Applied Sciences And Related Occupations

[Click here to enter text.](#)

d. Occupations In Education, Law And Social, Community and Government Services

[Click here to enter text.](#)

e. Sales and Service Occupations

[Click here to enter text.](#)

f. Trades, Transport and Equipment Operators and Related Occupations.

[Click here to enter text.](#)

g. Other

[Click here to enter text.](#)

11. Are any of your company’s positions in Canada unionized?

Yes

No

- If “Yes,” please list:

[Click here to enter text.](#)

12. For your operations in Canada, identify the age of your employees – please specify the number of employees by occupational category:

Age Group	Senior Management	Business, Finance and Administration	Natural and Applied Sciences Related	Education, Law, Social Community and Gov’t	Sales and Service	Trades Transport, Equipment Operators
18 – 24	█	█	█	█	█	█
25 – 44	█	█	█	█	█	█
45 – 64	█	█	█	█	█	█
65+	█	█	█	█	█	█

13. For your operations in Canada, approximately what percentage of your employees do you expect to retire within the following time period:

Time to retirement	Percentage	Occupational areas/ Job Titles
--------------------	------------	--------------------------------

## BRITISH COLUMBIA INTERNATIONAL SHIPPING LABOUR MARKET STUDY

0 – 5 years	%	<a href="#">Click here to enter text.</a>
6 – 10 years	%	<a href="#">Click here to enter text.</a>
11 – 15 years	%	<a href="#">Click here to enter text.</a>
15+ years	%	<a href="#">Click here to enter text.</a>

14. Education level of employees – For your operations in Canada, please specify the number of employees for each occupational category.

	Senior Mgmt.	Business, Finance and Administration	Natural and Applied Sciences Related	Education, Law, Social Community and Gov't	Sales and Service	Trades Transport, Equipment Operators
Less than secondary school (high school)	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Secondary School diploma (high school grad.)	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
One-year degree, diploma or certificate from a university, college, trade or technical school, or other institute	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Two-year program at a university, college, trade or technical school, or other institute	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Bachelor's degree OR a three or more year program at a university, college, trade or technical school, or other institute	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Two or more certificates, diplomas, or degrees. One must be for a program of three or more years	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Master's degree, OR professional degree needed to practice in a licensed profession	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
Doctoral level university degree (Ph.D.)	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

15. How many employees has your company hired within the past 12 months?

[Click here to enter text.](#)

16. What number of employees hired within the past 12 months have completed their education in the following regions to meet requisites for their position?



## BRITISH COLUMBIA INTERNATIONAL SHIPPING LABOUR MARKET STUDY

Region	Number	Occupation / Job Title
a. In British Columbia	#	<a href="#">Click here to enter text.</a>
b. Other regions of Canada	#	<a href="#">Click here to enter text.</a>
c. Outside of Canada	#	<a href="#">Click here to enter text.</a>

**\*\*Note:** Please hit the <ENTER> key within the cell to add multiple lines

17. If education was completed outside of Canada, what was the primary reason?

- a. Employee was living in in another country
- b. Affordability of education and/or cost of living
- c. Lack of educational facilities or insufficient infrastructure for maritime training in British Columbia
- d. Other [Click here to enter text.](#)
- e. N/A

18. Please identify the international shipping industry certification requirements for specific occupations within your company?

	Job Title / Occupation within your Company	Name of Certification	Renewal Requirements
a.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
b.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
c.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
d.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
e.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
f.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
g.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

If additional space is required, please provide information under the "Additional Comments" field at the end of this questionnaire

19. Continuing education / training requirements for your employees:

- Does your company have a recertification or "skills-upgrade" training program?  
Yes   
No
- If "Yes," please describe briefly the program and process:  
[Click here to enter text.](#)

### Recruitment / Retention

20. On average, how many years of service do your employees in Canada have with the company

	Job Title / Occupation within your Company	Years of Service
a.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
b.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
c.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
d.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

**\*\*Note:** Please hit the <ENTER> key within the cell to add multiple lines

21. What method does your company primarily use to recruit new employees for specific positions and/or job

titles?

Recruiting Method	Job Title / Position
a. Local employment posting	<a href="#">Click here to enter text.</a>
b. National employment posting	<a href="#">Click here to enter text.</a>
c. International employment posting	<a href="#">Click here to enter text.</a>
d. Company-internal posting	<a href="#">Click here to enter text.</a>
e. Industry-specific referrals (i.e. within the maritime industry)	<a href="#">Click here to enter text.</a>
f. Other <a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

*\*\*Note: Please hit the <ENTER> key within the cell to add multiple lines*

22. Has your company been compelled to recruit employees from outside of Canada?

Yes

No

If "yes," please state why:

[Click here to enter text.](#)

23. For which occupations, if any, is it difficult to recruit qualified employees locally from British Columbia or within Canada?

[Click here to enter text.](#)

24. During the past 24 months, what number of employees hired for your Canadian office have required a Canadian work permit/visa?

[Click here to enter text.](#)

- Please list the job titles and number of positions filled by employees requiring work permits / visas

[Click here to enter text.](#)

25. Does your recruitment process involve sourcing employees from outside of Canada? Yes  No

a. If "Yes," what is the main reason for this?

[Click here to enter text.](#)

b. What are your key challenges in sourcing employees from outside of Canada?

[Click here to enter text.](#)

- How could these challenges be minimized?

[Click here to enter text.](#)

26. If not already, does your company plan to employ qualified labour/workforce from outside of Canada? Yes

No

If yes,

Temporary:

Permanent:

Please Clarify, if required:

[Click here to enter text.](#)

27. For which occupations does your company currently experience the greatest overall gap in supply of qualified workforce?

[Click here to enter text.](#)

28. Where does your company see the greatest growth in occupational requirements in Canada during the next 5 - 10 years? Please list the top three (3).

- a. [Click here to enter text.](#)
- b. [Click here to enter text.](#)
- c. [Click here to enter text.](#)

29. At an industry level, do you foresee shortages of qualified labour for any particular occupation in the next 5 – 10 years?

Yes  No

- If “Yes,” please list:

[Click here to enter text.](#)

- Please identify potential reasons:

[Click here to enter text.](#)

30. Which of the following occupational domains require outsourcing by your company? (i.e. your company does not possess in-house expertise) – Please indicate:

a. Chartering	<input type="checkbox"/>
b. Freight Forwarding	<input type="checkbox"/>
c. Research and Development	<input type="checkbox"/>
d. Ship Brokering	<input type="checkbox"/>
e. Commercial Operations	<input type="checkbox"/>
f. Technical and Marine, Safety & Quality	<input type="checkbox"/>
g. New Buildings	<input type="checkbox"/>
h. Purchasing & Bunkering	<input type="checkbox"/>
i. Crewing	<input type="checkbox"/>
j. Legal	<input type="checkbox"/>
k. Insurance	<input type="checkbox"/>
l. Tax Specialists	<input type="checkbox"/>
m. Repair technicians or mechanics	<input type="checkbox"/>
n. Other: <a href="#">Click here to enter text.</a>	

o. Additional Comments: [Click here to enter text.](#)

31. Please identify the salary ranges for specific occupations within your company?

	Job Title / Occupation within your Company	Salary Range (drop-down)
a.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
b.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
c.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
d.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
e.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
f.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
g.	<a href="#">Click here to enter text.</a>	<a href="#">Choose an item.</a>
h.	<a href="#">Additional Job Titles &amp; Salary Ranges</a>	

### Criteria For Establishing Head Office in British Columbia/ Canada

32. Key considerations for establishing or maintaining a head office:

On a scale of 1 to 5, where 1 = the most important, please identify the top five (5) reasons why your company would select (or has selected) British Columbia as a preferred location for establishing (or maintaining) your head office?

a. Operating Costs	<a href="#">Click here to enter Ranking</a>
b. Geographical location	<a href="#">Click here to enter Ranking</a>
c. Investment climate	<a href="#">Click here to enter Ranking</a>
d. Beneficial taxation	<a href="#">Click here to enter Ranking</a>
e. Infrastructure	<a href="#">Click here to enter Ranking</a>
f. Quality of port service	<a href="#">Click here to enter Ranking</a>
g. Level ancillary services (e.g. repair, financial services.)	<a href="#">Click here to enter Ranking</a>
h. Availability of and accessibility to skilled workforce	<a href="#">Click here to enter Ranking</a>
i. Affordability / cost of living for employees	<a href="#">Click here to enter Ranking</a>
j. Other: <a href="#">Click here to enter text.</a>	

33. How important is cost of living for employees when deciding to establish or maintain an office or head office?

- a. Very important
- b. Important
- c. Somewhat Important
- d. Not Important

34. Does the cost of living for employees in Vancouver pose a potential barrier to recruitment?

Yes  No

35. What operational deficiencies, if any, does your company face while conducting business in British Columbia?

[Click here to enter text.](#)

36. How does your company compensate for any operational deficiencies?

[Click here to enter text.](#)

## Immigration Related

37. Do Canadian immigration/work visa regulations affect your business' ability to grow your operations in British Columbia?

Yes:

No:

If yes, please identify which aspect of the immigration process poses the greatest challenges:

a. Labour Market Impact Assessment (LMIA)

Comments: [Click here to enter text.](#)

b. Intra-Company Transferees

Comments: [Click here to enter text.](#)

c. Permanent Residence Applications

Comments: [Click here to enter text.](#)

d. Other(s):

Comments: [Click here to enter text.](#)

## Additional Comments

38. Additional Comments:

- [Click here to enter text.](#)

Stakeholder Outreach Questionnaire Annex 3 – General Stakeholders

Disclaimer: GLOBE Advisors regards the confidentiality of survey data to be of utmost importance. No personally identifiable information will be shared with any recipient of this report, unless personally requested. All responses are combined with those of many others and summarized in a report to further protect the anonymity of the respondent.

**Company Profile**

1. Name of Company [Click here to enter text.](#)
2. Contact Name of Interviewee [Click here to enter text.](#)
3. Job Title of Interviewee [Click here to enter text.](#)
4. Telephone Number [Click here to enter text.](#)
5. Email Address [Click here to enter text.](#)
6. Office Location of interviewee [Click here to enter text.](#)
7. Location of corporate head office [Click here to enter text.](#)
  
8. Year Established
  - a. Head Office Operations [Click here to enter text.](#)
  - b. Canadian Operations [Click here to enter text.](#)
  
9. Within the context of the shipping sector, how best would you classify your company?
  - a. Ship Owner
  - b. Agent
  - c. Support Services
  - d. Other (please specify) [Click here to enter text.](#)
  
10. How would you categorize the majority of your (or your client's) ship traffic?
  - a. Bulk Shipping
  - b. Container Shipping
  - c. Tanker Shipping
  - d. Other [Click here to enter text.](#)
  
11. Where do your ships (or clients' ships) predominantly operate?
  - a. Coastal Shipping
  - b. Inland Shipping
  - c. Other [Click here to enter text.](#)

**Labour / Employee Profile**

12. Number of employees
  - a. In your Province [Click here to enter text.](#)
  - b. In other regions of Canada [Click here to enter text.](#)
  - c. Outside of Canada [Click here to enter text.](#)
  
13. For your operations in Canada, please identify the individual job titles that currently exist within your company that fall into the categories listed in questions (a) – (f) below:

a. Senior Management Occupations

[Click here to enter text.](#)

b. Business, Finance and Administration Occupations

[Click here to enter text.](#)

c. Natural and Applied Sciences And Related Occupations

[Click here to enter text.](#)

d. Occupations In Education, Law And Social, Community and Government Services

[Click here to enter text.](#)

e. Sales and Service Occupations

[Click here to enter text.](#)

f. Trades, Transport and Equipment Operators and Related Occupations.

[Click here to enter text.](#)

g. Other

[Click here to enter text.](#)

14. For your operations in Canada, approximately what percentage of your employees do you expect to retire within the following time period:

Time to retirement	Percentage	Occupational areas/ Job Titles
0 – 5 years	%	<a href="#">Click here to enter text.</a>
6 – 10 years	%	<a href="#">Click here to enter text.</a>
11 – 15 years	%	<a href="#">Click here to enter text.</a>
15+ years	%	<a href="#">Click here to enter text.</a>

15. Please identify international shipping industry certification requirements for specific occupations within your company?

	Job Title / Occupation within your Company	Name of Certification	Renewal Requirements
a.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
b.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
c.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
d.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
e.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
f.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
g.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

*If additional space is required, please provide information under the "Additional Comments" field at the end of this questionnaire*

### **Recruitment / Retention**

16. On average, how many years of service do your employees in Canada have with the company?

Job Title / Occupation within your Company	Years of Service

a.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
b.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
c.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
d.	<a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>

*\*\*Note: Please hit the <ENTER> key within the cell to add multiple lines*

17. What method does your company primarily use to recruit new employees?

Recruiting Method	Job Title / Position
a. Local employment posting	<a href="#">Click here to enter text.</a>
b. National employment posting	<a href="#">Click here to enter text.</a>
c. International employment posting	<a href="#">Click here to enter text.</a>
d. Company-internal posting	<a href="#">Click here to enter text.</a>
e. Industry-specific referrals (i.e. within the maritime industry)	<a href="#">Click here to enter text.</a>
f. <a href="#">Click here to enter text.</a>	<a href="#">Click here to enter text.</a>
ther	

*\*\*Note: Please hit the <ENTER> key within the cell to add multiple lines*

18. For which occupations, if any, is it difficult to recruit qualified employees locally from your Province or from other regions within Canada?

[Click here to enter text.](#)

19. Does your recruitment process involve sourcing employees from outside of Canada? Yes  No

a. If "Yes," what is the main reason for this?

[Click here to enter text.](#)

b. What are your key challenges in sourcing employees from outside of Canada?

[Click here to enter text.](#)

- How could these challenges be minimized?

[Click here to enter text.](#)

20. For which occupations does your company currently experience the greatest overall gap in supply of qualified workforce?

[Click here to enter text.](#)

21. Where does your company see the greatest growth in occupational requirements in Canada during the next 5 - 10 years? Please list the top three (3).



a.	<a href="#">Click here to enter text.</a>
b.	<a href="#">Click here to enter text.</a>
c.	<a href="#">Click here to enter text.</a>

22. Which of the following occupational domains require outsourcing by your company? (i.e. your company does not possess in-house expertise) – Please indicate:

a. Chartering	<input type="checkbox"/>
b. Freight Forwarding	<input type="checkbox"/>
c. Research and Development	<input type="checkbox"/>
d. Ship Brokering	<input type="checkbox"/>
e. Commercial Operations	<input type="checkbox"/>
f. Technical and Marine, Safety & Quality	<input type="checkbox"/>
g. New Buildings	<input type="checkbox"/>
h. Purchasing & Bunkering	<input type="checkbox"/>
i. Crewing	<input type="checkbox"/>
j. Legal	<input type="checkbox"/>
k. Insurance	<input type="checkbox"/>
l. Tax Specialists	<input type="checkbox"/>
m. Repair technicians or mechanics	<input type="checkbox"/>
n. Other <a href="#">Click here to enter text.</a>	
o. Additional Comments: <a href="#">Click here to enter text.</a>	

**Criteria For Establishing Head Office in Canada**

23. Key considerations for establishing or maintaining a head office:

On a scale of 1 to 5, where 1 = the most important, please identify the top five (5) criteria for selecting or maintaining an office or head office?

a. Operating Costs	<a href="#">Click here to enter Ranking</a>
b. Geographical location	<a href="#">Click here to enter Ranking</a>
c. Investment climate	<a href="#">Click here to enter Ranking</a>
d. Beneficial taxation	<a href="#">Click here to enter Ranking</a>
e. Infrastructure	<a href="#">Click here to enter Ranking</a>
f. Quality of port service	<a href="#">Click here to enter Ranking</a>
g. Level ancillary services (e.g. repair, financial services.)	<a href="#">Click here to enter Ranking</a>
h. Availability of and accessibility to skilled workforce	<a href="#">Click here to enter Ranking</a>
i. Affordability / cost of living for employees	<a href="#">Click here to enter Ranking</a>
j. Other: <a href="#">Click here to enter text.</a>	

24. How important is cost of living for employees when deciding to establish or maintain an office or head office?

- a. Very important
- b. Important

- c. Somewhat Important
- d. Not Important

25. Does the cost of living for employees in Vancouver pose a potential barrier to recruitment?  
Yes  No

**Immigration Related**

26. Do Canadian immigration/work visa regulations affect your business' ability to grow your operations in Canada?

- Yes:
- No:

If yes, please identify which aspect of the immigration process poses the greatest challenges:

a. Labour Market Impact Assessment (LMIA)

Comments:	<a href="#">Click here to enter text.</a>
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b. Intra-Company Transferees

Comments:	<a href="#">Click here to enter text.</a>
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c. Permanent Residence Applications

Comments:	<a href="#">Click here to enter text.</a>
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d. Other(s):

Comments:	<a href="#">Click here to enter text.</a>
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**Additional Comments**

27. Additional Comments:

<ul style="list-style-type: none"><li>• <a href="#">Click here to enter text.</a></li></ul>
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## Labour Market Information Study Focus Group

Name:

Company/Organization:

### Labour Market Issues Facing the International Shipping Industry

Please review the issues identified below and indicate whether or not you perceive these as problems for the International Shipping Industry in Vancouver.

	Strongly Agree	Agree	Somewhat Agree	Disagree	Not Applicable
<b>Our company has found the cost of living in Vancouver to be an issue of concern in recruiting or maintaining employees</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
<b>Local maritime education programs are not providing graduates sufficiently qualified to meet our needs.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
<b>Our company anticipates a major demographic problem over the next 10 years due to anticipated retirements</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
<b>Many of the local candidates we wish to recruit do not possess the required experience needed to fill current or anticipated vacancies</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
<b>There is a lack of qualified Canadian candidates for senior management positions</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					
<b>Industry, governments and educational institutions need to work together to develop the workforce needed by the international shipping</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

### Additional Comments

## Recruitment

Has your company or organization recruited candidates for any of the following occupations during the last five (5) years? If so, how difficult was it to find locally qualified candidates?

	Very difficult	Somewhat Difficult	Not Difficult	Not Planning to	Not Applicable To Your Organization
<b>President/CEO</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Vice-President</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Customs, ship and other</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Marine Engineer</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Marine Superintendent</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Engineer Officers</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>General Manager</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Senior Operations Manager</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Insurance Manager</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Tankers Manager</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Fleet Manager</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Engineering Superintendent</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Marine Assistant</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Technical Assistant</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Crew Coordinator</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Other(s):</b>					
<b>1)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>2)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>3)</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Can you provide further comments to support your ratings above?

Have you experienced difficulties recruiting qualified candidates from other countries? If so, was the Canadian Immigration process helpful or a limiting factor in your efforts? Please explain.

### APPENDIX 7: NATIONAL OCCUPATIONAL CLASSIFICATION CODES REVIEWED IN THIS STUDY

The following National Occupational Classification (NOC) codes recommended below are considered highly relevant to the International Shipping Labour Market Study. This list has been updated based on feedback provided by Governance Board members and other stakeholders. The approach taken to develop these codes involved several steps. Initially, GLOBE Advisors examined all occupations from the 2006 Canada Census and updated these to the 2011 NOC Classification Structure. The 2011 NOC structure was then used to generate a detailed crosswalk of industries (NAICs) and associated occupations that are active in the international shipping related industries. <sup>[1]</sup>

The three leading Maritime industries (Ocean Transportation, Services to Ocean Transportation, and Shipbuilding and Boat Building) essentially include all the major occupation groups. It was then necessary to hone this extensive list of occupations down to a workable number of skill set needs that pertain to the goals of the International Shipping LMI Study.

The VIMC Strategy Report and three internal documents on suggested occupation NOC codes provided useful initial guidance. The GLOBE Advisors team then carried out extensive searches of the omnibus 2011 NOC structure to generate a list of current (2011) NOC codes that are representative of the international shipping related economy in British Columbia. The VIMC Strategy Report stresses that white-collar workers skilled in international shipping are critical skill sets needed to promote corporate operations and activities the industry in British Columbia. In addition, key on the ground skilled workers are examined as they are fundamental to a skilled international shipping industry labour market and capacities in British Columbia.

This would include people with strong financial and banking, logistics, customs brokerage and finance / accounting skills. Also needed and included in the NOC Code lists that follow are skill sets related to security, immigration, education and ship repair. In addition to suggesting shipping specific codes, GLOBE cross-referenced these NOC codes to the Human Resources nomenclature used by HR Consulting, a UK based consultancy on international shipping related human resources. <sup>[2]</sup> This allowed us to cross-reference international shipping related occupational titles to their corresponding NOC codes. The HR Consulting categories are also shown in the tables that follow only to illustrate possible relevant job titles.

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<sup>[1]</sup> This industry and occupation crosswalk was not done in 2011 due to complications with making the Long Form not mandatory.

<sup>[2]</sup> The HR Consulting nomenclature is described in Annex A.

NATIONAL OCCUPATIONAL CLASSIFICATION CODES REVIEWED

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Senior Management Occupations</b>		
0013 Senior managers - financial, communications and other business services	<ul style="list-style-type: none"> <li>• CEO (Chief Executive Officer) – Financial, Communications And Other Business Services (Shipping Or Maritime Organization),</li> <li>• Vice-President – Financial, Communications And Other Business Services (Shipping Or Maritime Organization)</li> <li>• Senior Executive Operations</li> <li>• Supply Chain Management Executive</li> <li>• Account Executive</li> <li>• General Manager</li> <li>• Country Manager</li> <li>• Deputy General Manager</li> <li>• Ship Captain, Chief Officer</li> </ul>	Executive Leadership Team
0111 Financial managers	<ul style="list-style-type: none"> <li>• Director – Financial Services (Shipping Or Maritime Organization),</li> <li>• Manager, Financial Planning And Analysis (Shipping Or Maritime Organization)</li> <li>• Cost Control</li> </ul>	Finance (Marine & Corporate)
0112 Human resources managers	<ul style="list-style-type: none"> <li>• Manager, Human Resources (Shipping or Maritime Organization)</li> <li>• Manager, Personnel Training And Development (Shipping Or Maritime Organization)</li> <li>• Talent Acquisition</li> </ul>	Human Resources
0113 Purchasing managers	<ul style="list-style-type: none"> <li>• Supply Chain Logistics Manager</li> <li>• International Logistics Manager</li> <li>• Purchasing and Inventory Control Manager</li> <li>• Manager, Purchasing Contracts</li> <li>• Export Control Manager</li> </ul>	Purchasing & Bunkering
• 0114 Other administrative services managers	<ul style="list-style-type: none"> <li>• Manager, Security</li> <li>• Manager, Support Services</li> </ul>	• Secretarial, Administration & Support
0016 Senior managers - construction, transportation, production and utilities	<ul style="list-style-type: none"> <li>• CEO (Chief Executive Officer) – Goods (Services) Production, Utilities, Transportation and Construction</li> <li>• Executive Vice-President – Railway and Shipping Companies</li> </ul>	Secretarial, Administration & Support
0121 Insurance, real estate and financial	<ul style="list-style-type: none"> <li>• Insurance Claims Service Manager</li> <li>• Brokerage Manager – Investments</li> </ul>	Legal, Insurance and Claims

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Senior Management Occupations</b>		
brokerage managers	<ul style="list-style-type: none"> <li>• Insurance Manager</li> </ul>	
0122 Banking, credit and other investment managers	<ul style="list-style-type: none"> <li>• Manager, Corporate Services – Banking, Credit and Investment</li> <li>• Assistant Operations Manager, Banking, Credit and Investment</li> </ul>	Finance (Marine & Corporate)
0124 - Advertising, marketing and public relations managers.	<ul style="list-style-type: none"> <li>• Internet Communications Manager</li> <li>• Web Marketing Manager</li> <li>• Advertising Director, Advertising Manager, Director, Communication</li> <li>• Marketing and Trade Manager</li> <li>• Import Trade Manager</li> </ul>	Communications and Public relations 1123
1228 Employment insurance, immigration, border services and revenue officers	<ul style="list-style-type: none"> <li>• Employment Insurance Agent</li> <li>• Employment Insurance Benefits Control Officer</li> <li>• Immigration Officers Supervisor</li> </ul>	HR and Legal, Insurance and Claims
0211 Engineering managers	<ul style="list-style-type: none"> <li>• Director, Engineering Research And Development</li> <li>• Engineering Manager</li> <li>• Chief Engineer</li> </ul>	Technical & Marine Safety & Quality
0213 Computer and information systems managers	<ul style="list-style-type: none"> <li>• Manager, Data Processing And Systems Analysis</li> <li>• Manager, Management Information System (MIS)</li> <li>• Manager, Edi Application Architect</li> <li>• Manager, Workflow Specialist</li> <li>• Manager, Solution Architect</li> </ul>	IT (Marine & Corporate)
0731 Managers in transportation	<ul style="list-style-type: none"> <li>• Freight Forwarding Manager</li> <li>• Marine Superintendent</li> <li>• Distribution Manager – Logistics</li> <li>• Manager, Freight Traffic</li> <li>• Manager, Import Traffic</li> <li>• Manager, Integrated Logistics</li> <li>• Manager, International Traffic</li> <li>• Fleet Crew Operator</li> <li>• Chief Operations</li> <li>• Berth Planner</li> <li>• Manager Ship Repair By A Shipyard.</li> </ul>	Technical and Marine, Safety & Quality

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Business, Finance and Administration Occupations</b>		
1111 Financial auditors and accountants	<ul style="list-style-type: none"> <li>• Certified General Accountant (CGA)</li> <li>• Certified Management Accountant (CMA)</li> <li>• Chartered Accountant (CA)</li> <li>• Chief Accountant</li> <li>• Cost Control Senior Analyst</li> </ul>	Finance (Marine & Corporate)
1112 Financial and investment analysts	<ul style="list-style-type: none"> <li>• Chartered Financial Analyst</li> <li>• Financial Analyst</li> <li>• Investment Analyst</li> <li>• Money Market Analyst</li> <li>• Portfolio Manager</li> <li>• Research Associate, Financial Services</li> </ul>	Finance (Marine & Corporate)
1113 Securities agents, investment dealers and brokers	<ul style="list-style-type: none"> <li>• Broker, Foreign Exchange Trader, Investment Dealer</li> <li>• Commodity Trading</li> <li>• Analyst Pricing</li> </ul>	Finance (Marine & Corporate)
1114 Other financial officers	<ul style="list-style-type: none"> <li>• Account Manager</li> <li>• Financial Investigator</li> <li>• Financial Planner</li> </ul>	Finance (Marine & Corporate)
1121 Human resources professionals	<ul style="list-style-type: none"> <li>• Chief Of Compensation And Human Resources Information Systems</li> <li>• Human Resources Research Officer</li> <li>• Human Resources Specialist</li> <li>• Staff Training and Development Officer</li> <li>• Staff Training and Development Supervisor</li> <li>• Supervisor, Staff Training and Development</li> <li>• Union Adviser</li> </ul>	Human Resources
1122 Professional occupations in business management consulting	<ul style="list-style-type: none"> <li>• Advisor Marine</li> <li>• ISO Consultant</li> <li>• Business Management Consultant</li> <li>• Health Information Management Consultant Management Analyst</li> <li>• Organizational Analyst</li> </ul>	Technical & Marine Safety & Quality



Occupation (2011 NOC)	Examples	Relevant Categories
<b>Business, Finance and Administration Occupations</b>		
1123 - Professional occupations in advertising, marketing and public relations	<ul style="list-style-type: none"> <li>• Advertising Consultant</li> <li>• Communications Officer</li> <li>• Communications Specialist</li> </ul>	Communications and Public Relations
1211 – Supervisors, general office and administrative support workers	<ul style="list-style-type: none"> <li>• Clerical Supervisor</li> <li>• Data Entry Supervisor</li> <li>• Filing Clerks Supervisor</li> <li>• Shipping Supervisor</li> <li>• Shipping Coordinator</li> <li>• Warehouse Shipping and Receiving Supervisor</li> </ul>	Secretarial, Administration & Support
1212 Supervisors, finance and insurance office workers	<ul style="list-style-type: none"> <li>• Accounts Payable Supervisor</li> <li>• Accounts Receivable Supervisor</li> <li>• Supervisor, Claims Adjusters</li> <li>• Tax Managers</li> </ul>	Legal, Insurance and Claims, and Finance (Marine & Corporate)
1213 - Supervisors, library, correspondence and related information worker	<ul style="list-style-type: none"> <li>• Regulatory Clerks</li> <li>• Correspondence Clerks Supervisor</li> <li>• Library Clerks Supervisor</li> <li>• Publication Clerks Supervisor</li> <li>• Statistical Clerks Supervisor</li> <li>• Supervisor, Survey Interviewer</li> </ul>	Secretarial, Administration & Support
1215 Supervisors, supply chain, tracking and scheduling co-ordination occupations	<ul style="list-style-type: none"> <li>• Dispatch Logistician</li> <li>• Freight Forwarding Logistician</li> <li>• Head Dispatcher</li> <li>• Head Shipper</li> <li>• Logistics Supervisor – Transportation</li> <li>• Supply Control Coordinator</li> <li>• Document Control Officer</li> </ul>	Purchasing & Bunkering
1221 Administrative officers	<ul style="list-style-type: none"> <li>• Business Agent, Labour Organization</li> <li>• Classification Officer – Human Resources</li> <li>• Classification Specialist</li> <li>• Compensation Research Analyst</li> <li>• Conciliator / Consultant, Human Resources</li> </ul>	Secretarial, Administration & Support
1223 Human resources and recruitment officers	<ul style="list-style-type: none"> <li>• Human Resources Officer</li> <li>• Personnel Officer, Recruitment Specialist, Staffing Analyst</li> <li>• Staffing Coordinator</li> </ul>	Human Resources

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Business, Finance and Administration Occupations</b>		
1224 Property administrators	<ul style="list-style-type: none"> <li>• Accommodation Officer</li> <li>• Property Administrator</li> </ul>	Secretarial, Administration & Support
1241 Administrative assistants	<ul style="list-style-type: none"> <li>• Administrative Assistant</li> <li>• Executive Secretary (Except Legal And Medical)</li> <li>• Office Administrative Assistant</li> <li>• Private Secretary</li> </ul>	Secretarial, Administration & Support
1242 Legal administrative assistants	<ul style="list-style-type: none"> <li>• Administrative Assistant Legal, Corporate Law</li> <li>• Legal Assistant</li> </ul>	Legal, Insurance and Claims
1253 Records management technicians	<ul style="list-style-type: none"> <li>• Operate and Maintain Systems for Classification</li> <li>• Information Management Technician</li> <li>• Records Classifier</li> </ul>	Secretarial, Administration & Support
1254 Statistical officers and related research support occupations	<ul style="list-style-type: none"> <li>• Statistical Officer</li> <li>• Technical Research Assistant (Except Post-Secondary)</li> </ul>	Research & Development
1311 Accounting technicians and bookkeepers	<ul style="list-style-type: none"> <li>• Accounting Bookkeeper</li> <li>• Accounting Technician</li> <li>• Bookkeeper</li> <li>• Tax Analyst</li> </ul>	Finance (Marine & Corporate)
1312 Insurance adjusters and claims examiners	<ul style="list-style-type: none"> <li>• Claims Examiner</li> <li>• Claims Representative</li> <li>• Insurance Adjuster</li> </ul>	Legal, Insurance and Claims
1313 Insurance underwriters	<ul style="list-style-type: none"> <li>• Insurance Underwriter</li> <li>• Liability Underwriter</li> </ul>	Legal, Insurance and Claims
1314 Assessors, valuers and appraisers	<ul style="list-style-type: none"> <li>• Accredited Appraiser</li> <li>• Business Valuator</li> <li>• Chartered Business Valuator (CBV)</li> </ul>	Freight Trading
1315 Customs, ship and other brokers	<ul style="list-style-type: none"> <li>• Cargo Broker, Marine Broker</li> <li>• Chartered Shipbroker</li> <li>• Customs Broker, Licensed Customs Broker, Shipbroker, Brokering The Sale And Purchase Of Vessel (s)</li> <li>• Negotiating Spot / Time Charter</li> </ul>	Ship Brokering

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Business, Finance and Administration Occupations</b>		
1411 – General office support workers	<ul style="list-style-type: none"> <li>• Administrative Clerk</li> <li>• File and Classification Clerk</li> <li>• Filing Clerk</li> <li>• General Office Worker</li> </ul>	Secretarial, Administration & Support
1414 – Receptionists	<ul style="list-style-type: none"> <li>• Appointment Clerk</li> <li>• Business Receptionist</li> </ul>	Secretarial, Administration & Support
1415 – Personnel clerks	<ul style="list-style-type: none"> <li>• Classification Clerk – Human Resources</li> <li>• Employment Clerk</li> <li>• Human Resources Assistant</li> <li>• Human Resources Clerk</li> <li>• Labour Relations Clerk</li> </ul>	Secretarial, Administration & Support
1422 – Data entry clerk	<ul style="list-style-type: none"> <li>• Data Control Clerk</li> <li>• Data Entry Operator</li> <li>• Data Input Clerk</li> <li>• Data Processor</li> <li>• Payment Entry Clerk</li> </ul>	Secretarial, Administration & Support
1431 Accounting and related clerks	<ul style="list-style-type: none"> <li>• Accounting Clerk</li> <li>• Accounts Payable Clerk</li> <li>• Accounts Receivable Clerk</li> <li>• Finance Clerk</li> <li>• Freight-Rate Clerk</li> </ul>	Finance (Marine & Corporate)
1432 Payroll clerks	<ul style="list-style-type: none"> <li>• Pay Advisor</li> <li>• Pay and Benefits Administrator</li> <li>• Payroll Officer</li> <li>• Salary Administration Officer</li> </ul>	Human Resources
1434 Banking, insurance and other financial clerks	<ul style="list-style-type: none"> <li>• Ledger Control Clerk</li> <li>• Credit Clerk,</li> <li>• Premium Rater – Insurance</li> </ul>	Finance (Marine & Corporate)
1452 – Correspondence, publication and regulatory clerks	<ul style="list-style-type: none"> <li>• Advertising Clerk</li> <li>• Application Clerk</li> <li>• Authorization Clerk</li> <li>• Customs Clerk</li> <li>• Directory Compiler</li> <li>• Documentation Clerk</li> <li>• Editorial Assistant</li> <li>• Import Clerk</li> <li>• License Clerk</li> </ul>	Secretarial, Administration & Support, contract clerk, correspondence clerk, customs clerk
1521 Shippers and receivers	<ul style="list-style-type: none"> <li>• Freight Receiver</li> <li>• Freight Shipper</li> <li>• Freight Coordinator</li> <li>• Import Freight Clerk</li> <li>• Receiver</li> <li>• Shipper</li> </ul>	Commercial Operations

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Business, Finance and Administration Occupations</b>	<ul style="list-style-type: none"> <li>• Shipper-Receiver,</li> <li>• Shipping Agent.</li> <li>• Shipping and Receiving Clerk</li> <li>• Shipping and Receiving Supervisor</li> <li>• Supply Chain Assistant</li> </ul>	
1522 Storekeepers and parts persons	<ul style="list-style-type: none"> <li>• Authorization Clerk</li> <li>• By-Law Clerk</li> <li>• Classified Advertising Clerk</li> <li>• Contract Clerk</li> <li>• Correspondence Clerk</li> <li>• Customs Clerk</li> </ul>	Secretarial, Administration & Support
1523 Production logistics coordinators	<ul style="list-style-type: none"> <li>• Expediter</li> <li>• Material Estimator</li> <li>• Production Clerk</li> <li>• Production Coordinator</li> <li>• Production Scheduler</li> <li>• Scheduling Clerk</li> <li>• Supply Chain Coordinator – Production</li> <li>• Traffic Control Clerk</li> <li>• Logistics Shipping Manager</li> <li>• Inventory Control Coordinator</li> </ul>	Purchasing & Bunkering
1525 Dispatchers	<ul style="list-style-type: none"> <li>• Inbound/Outbound Freight Coordinator</li> <li>• Freight Forwarding Coordinator</li> <li>• Mobile Equipment Dispatcher</li> <li>• Radio Operator</li> </ul>	Commercial Operations
1526 Transportation route and crew schedulers	<ul style="list-style-type: none"> <li>• Schedule Writer, Transportation</li> <li>• Schedule Analyst</li> <li>• Schedule Writer, Transportation</li> </ul>	Commercial Operations

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2114 Meteorologists and climatologists	<ul style="list-style-type: none"> <li>• Air Quality Meteorologist</li> <li>• Climatologist</li> <li>• Hydro-Meteorologist</li> <li>• Meteorologist</li> <li>• Operational Meteorologist</li> <li>• Weather Forecaster</li> </ul>	Technical & Marine Safety & Quality
2131 Civil engineers	<ul style="list-style-type: none"> <li>• Transportation Engineer</li> <li>• Environmental Engineer</li> <li>• Geodetic Engineer</li> <li>• Geomatics Engineer</li> </ul>	Technical & Marine Safety & Quality
2132 Mechanical engineers	<ul style="list-style-type: none"> <li>• Energy Conservation Engineer</li> <li>• Power Generation Engineer</li> <li>• Fluid Mechanics Engineer</li> <li>• Heating, Ventilation and Air Conditioning (HVAC) Engineer</li> <li>• Mechanical Engineer</li> <li>• Mechanical</li> <li>• Maintenance Engineer</li> <li>• Maintenance and Optimization</li> <li>• Maintenance Superintendent</li> </ul>	Technical & Marine Safety & Quality
2133 Electrical and electronics engineers	<ul style="list-style-type: none"> <li>• Control Systems Engineer</li> <li>• Distribution Planning Engineer,</li> <li>• Electrical Engineer</li> <li>• Electrical Network Engineer</li> <li>• Instrumentation and Control Engineer</li> </ul>	Technical & Marine Safety & Quality
2134 Chemical engineers	<ul style="list-style-type: none"> <li>• Chemical Engineer</li> <li>• Environmental and Waste Treatment Engineer</li> </ul>	Technical & Marine Safety & Quality
2141 Industrial and manufacturing engineers	<ul style="list-style-type: none"> <li>• Industrial Engineer</li> <li>• Quality Control Engineer</li> <li>• Safety Engineer</li> <li>• Work Measurement Engineer</li> <li>• Technical Coordinator</li> <li>• Control Officer</li> <li>• Performance Measurement</li> <li>• Business Process Measurement</li> <li>• Safety Managers</li> <li>• Student Assistant</li> <li>• EMR Supervisor Reefer Specialist</li> </ul>	Technical & Marine Safety & Quality

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2142 Metallurgical and materials engineers	<ul style="list-style-type: none"> <li>• Corrosion Engineer</li> <li>• Materials Engineer</li> <li>• Coal Preparation Consulting Engineer</li> </ul>	Technical & Marine Safety & Quality
2143 Mining engineers	<ul style="list-style-type: none"> <li>• Mineral Engineer</li> <li>• Consulting Mining Engineer</li> </ul>	Technical & Marine Safety & Quality
2144 Geological engineers	<ul style="list-style-type: none"> <li>• Geological Engineer</li> <li>• Geophysical Engineer</li> <li>• Geotechnical Engineer</li> </ul>	Technical & Marine Safety & Quality
2145 Petroleum engineers	<ul style="list-style-type: none"> <li>• Subsea Engineer</li> <li>• Natural Gas Engineer</li> <li>• Oil and Gas Production Engineer</li> </ul>	Technical & Marine Safety & Quality
2147 Computer engineers (except software engineers and designers)	<ul style="list-style-type: none"> <li>• Wireless Communications and Network Engineer</li> <li>• Computer Hardware Engineer</li> </ul>	Technical & Marine Safety & Quality
2148 Other professional engineers, n.e.c.	<ul style="list-style-type: none"> <li>• Marine Engineer</li> <li>• Naval Architect</li> <li>• Senior Naval Architect</li> <li>• Junior Naval Architect</li> </ul>	Technical & Marine Safety & Quality
2151 Architects	<ul style="list-style-type: none"> <li>• Consulting Architect</li> <li>• Industrial and Commercial Buildings Architect</li> </ul>	Technical & Marine Safety & Quality
2171 Information systems analysts and consultants	<ul style="list-style-type: none"> <li>• Computer Systems Development Coordinator</li> <li>• Consultant, Data Processing</li> <li>• Consultant, Information Technology (It)</li> <li>• Consultant, Management Information Systems (MIS)</li> <li>• Consultant, Systems</li> <li>• Edi Application Architect</li> <li>• Workflow Specialist</li> <li>• Solution Architect</li> </ul>	IT (Marine & Corporate)
2172 Database analysts and data administrators	<ul style="list-style-type: none"> <li>• Data Administrator</li> <li>• Data Custodian</li> <li>• Data Warehouse Analyst</li> <li>• Database Administrator (Dba)</li> <li>• Database Analyst, Database Architect</li> <li>• Technical Architect – Database</li> </ul>	IT (Marine & Corporate)

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2173 Software engineers and designers	<ul style="list-style-type: none"> <li>• Application Architect</li> <li>• Computer Software Engineer</li> <li>• Embedded Software Engineer</li> <li>• Software Architect</li> <li>• Software Design Engineer</li> <li>• Software Design Verification Engineer</li> <li>• Software Designer; Software Testing Engineer, Systems Integration Engineer – Software, Technical Architect – Software</li> <li>• Telecommunications Software Engineer</li> </ul>	IT (Marine & Corporate)
2174 Computer programmers and interactive media developers	<ul style="list-style-type: none"> <li>• Web Programmer</li> <li>• Application Programmer</li> <li>• Business Application Programmer</li> </ul>	IT (Marine & Corporate)
2175 Web designers and developers	<ul style="list-style-type: none"> <li>• Internet Site Designer</li> <li>• Internet Site Developer, Intranet Site Designer</li> <li>• Web Manager</li> <li>• Web Site Developer, Webmaster</li> <li>• E-Business Web Site Developer</li> </ul>	IT (Marine & Corporate)
2211 - Chemical technologists and technicians	<ul style="list-style-type: none"> <li>• Chemical Analyst</li> <li>• Chemical Engineering Technician</li> <li>• Chemical Engineering Technologist</li> </ul>	Technical & Marine Safety & Quality
2231 Civil engineering technologists and technicians	<ul style="list-style-type: none"> <li>• Civil Engineering Technician</li> <li>• Civil Engineering Technologist</li> </ul>	Technical & Marine Safety & Quality
2232 Mechanical engineering technologists and technicians	<ul style="list-style-type: none"> <li>• Marine Engineering Technologist</li> <li>• Mechanical Engineering Technician</li> <li>• Mechanical Engineering Technologist</li> </ul>	Technical & Marine Safety & Quality

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2251 - Architectural technologists and technicians	<ul style="list-style-type: none"> <li>• Architectural Design Technician</li> <li>• Architectural Design Technologist</li> <li>• Architectural Technician</li> <li>• Architectural Technologist</li> </ul>	Technical & Marine Safety & Quality
2255 Technical occupations in geomatics and meteorology Technical & Marine Safety & Quality	<ul style="list-style-type: none"> <li>• Climate Data Processor</li> <li>• Climate Service Technician</li> <li>• Geographic Information Systems (GIS) Technician. Ice Observer/ Map Editor</li> <li>• Mapping Technician.</li> <li>• Meteorological Inspector'</li> <li>• Meteorological Technician</li> <li>• Surface Weather Observer</li> </ul>	Technical & Marine Safety & Quality
2261 Non-destructive testers and inspection technicians	<ul style="list-style-type: none"> <li>• Operate Radiographic, Ultrasonic</li> <li>• Liquid Penetrant</li> <li>• Magnetic Particle</li> <li>• Eddy Current and Similar Testing Equipment</li> </ul>	Technical & Marine Safety & Quality
2262 Engineering inspectors and regulatory officers	<ul style="list-style-type: none"> <li>• Inspector, Electricity and Gas Meters</li> <li>• Inspector, Weights and Measures</li> <li>• Insurance Loss Prevention Inspector</li> <li>• Marine Damage Surveyor</li> </ul>	Technical & Marine Safety & Quality
2263 Inspectors in public and environmental health and occupational health and occupational health and safety	<ul style="list-style-type: none"> <li>• Environmental Health Officer</li> <li>• Hazardous Waste Inspector</li> <li>• Health and Safety Officer, Health Standards Inspector</li> <li>• Occupational Health and Safety Officer</li> <li>• Environment Quality</li> <li>• Pollution Control Inspector</li> <li>• Public Health Inspector</li> <li>• Conservationist, Marine</li> </ul>	Technical & Marine Safety & Quality
2264 Construction inspectors	<ul style="list-style-type: none"> <li>• Building Construction Inspector</li> <li>• Construction Inspector</li> </ul>	Technical & Marine Safety & Quality



Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2273 Deck officers, water transport	<ul style="list-style-type: none"> <li>• Deck Officer – Water Transport</li> <li>• Ferryboat Master/ First Mate, Ship</li> <li>• Master Mariner/ Navigation Officer</li> <li>• Coast Guard Vessel</li> <li>• Second Mate</li> <li>• Ship Pilot</li> <li>• Ship's Captain</li> <li>• Ship's Mate</li> <li>• Third Mate</li> <li>• Ship</li> <li>• Tugboat Captain</li> <li>• Watch Keeping Officer</li> <li>• Nautical Cadets</li> <li>• Marine Engineering Cadets</li> </ul>	Technical & Marine Safety & Quality
2274 Engineer officers, water transport	<ul style="list-style-type: none"> <li>• Chief Engineer – Water Transport</li> <li>• Engineer Officer – Water Transport</li> <li>• Fourth Engineer – Water Transport</li> <li>• Marine Engineer Officer</li> <li>• Second Engineer</li> <li>• Third Engineer – Water Transport</li> <li>• Tugboat Engineer</li> <li>• Nautical Cadets</li> <li>• Marine Engineering Cadets</li> </ul>	Technical & Marine Safety & Quality
2275 Railway traffic controllers and marine traffic regulators	<ul style="list-style-type: none"> <li>• Chief Rail Traffic Controller</li> <li>• Marine Traffic Regulator</li> <li>• Rail Traffic Controller</li> </ul>	Technical & Marine Safety & Quality
2281 Computer network technicians	<ul style="list-style-type: none"> <li>• Internet Web Site Technician</li> <li>• LAN (Local Area Network) Administrator</li> <li>• LAN (Local Area Network) Technician</li> <li>• Web Technician</li> <li>• Computer Network Technician</li> <li>• Data Centre Operator</li> </ul>	Technical & Marine Safety & Quality
2282 User support technicians	<ul style="list-style-type: none"> <li>• Client Support Representative – Systems</li> <li>• Computer Help Desk Representative – Systems</li> <li>• Computer Help Desk Supervisor</li> </ul>	Technical & Marine Safety & Quality

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Natural and Applied Sciences and Related Occupations</b>		
2283 Information systems testing technicians	<ul style="list-style-type: none"> <li>• Software Test Coordinator</li> <li>• Software Tester</li> <li>• Software Testing Technician</li> <li>• Systems Tester</li> </ul>	Technical & Marine Safety & Quality
<b>Occupations In Education, Law And Social, Community and Government Services</b>		
4011 University professors and lecturers	<ol style="list-style-type: none"> <li>1. Business Administration Professor – University</li> <li>2. Engineering and Architecture Professor – University</li> <li>3. Oceanography Professor – University</li> </ol>	Human Resources
4021 College and other vocational instructors	<ul style="list-style-type: none"> <li>• Nautical Instructor</li> <li>• Marine Engineering Instructor</li> <li>• Bookkeeping Teacher</li> <li>• Business Administration Teacher</li> <li>• Business Administration Teacher – College Level</li> <li>• Training Officer – Company</li> </ul>	Human Resources
4112 Lawyers and Quebec notaries	<ul style="list-style-type: none"> <li>• Senior Legal Counsel</li> <li>• In-House Legal Counsel</li> <li>• Insurance Lawyer</li> <li>• Intellectual-Property Lawyer</li> <li>• Corporation Lawyer</li> <li>• Labour Lawyer</li> <li>• Law and Corporate Affairs Adviser</li> <li>• Tariff Counsel</li> </ul>	Legal, Insurance and Claims
4164 Social policy researchers, consultants and program officers	<ul style="list-style-type: none"> <li>• Policy Analyst</li> <li>• Consultant, Marine</li> <li>• Immigration Analysts</li> <li>• Immigrant Settlement Liaison Officer</li> <li>• Immigration and Demographic Analysis Officer</li> <li>• Labour Policy Analyst</li> </ul>	Technical & Marine Safety & Quality
4211 Paralegal and related occupations	<ul style="list-style-type: none"> <li>• Corporate Paralegal</li> <li>• Independent Paralegal</li> <li>• Legal Researcher</li> <li>• Student Legal Assistant</li> </ul>	Legal, Insurance and Claims

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Sales and Service Occupations</b>		
6231 Insurance agents and brokers	<ul style="list-style-type: none"> <li>• Insurance Agent</li> <li>• Insurance Broker</li> </ul>	Legal, Insurance and Claims
6524 Ground and water transport ticket agents, cargo service representatives and related clerks	<ul style="list-style-type: none"> <li>• Agent, Ship Cargo</li> <li>• Cargo Customer Service Representative – Marine Shipping</li> <li>• Transportation Agent</li> <li>• Import Customer Service</li> </ul>	Commercial Operations
6551 Customer services representatives - financial institutions	<ul style="list-style-type: none"> <li>• Accounts Information Service Clerk – Financial Institution</li> <li>• Current Account Representative – Financial Services</li> <li>• Customer Service Agent – Financial Institution</li> <li>•</li> </ul>	Finance (Marine & Corporate)
6552 Other customer and information services representatives	<ul style="list-style-type: none"> <li>• Accounts Information Clerk</li> <li>• Complaints Clerk – Customer Service</li> <li>• Contact Centre Agent – Customer Service</li> <li>• Courtesy Desk Clerk</li> <li>• Customer Service Representative – Call Centre</li> <li>• Enquiries Clerk</li> <li>• Information Clerk – Customer Service</li> </ul>	Commercial Operations

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Trades, Transport and Equipment Operators And Related Occupations</b> 7271 Carpenters	<ul style="list-style-type: none"> <li>• Ship Joiner</li> <li>• Shipbuilding Carpenter</li> <li>• Shipbuilding Joiner</li> <li>• Wood Shipwright</li> <li>• Wooden Boat Builder</li> </ul>	Technical & Marine Safety & Quality
7451 Longshore workers	<ul style="list-style-type: none"> <li>• Dockworker</li> <li>• Longshore Worker</li> <li>• Longshoreman/Woman</li> <li>• Ship Loader Operator</li> <li>• Stevedore</li> <li>• Tanker Loader</li> </ul>	Commercial Operations
7452 Material handlers	<ul style="list-style-type: none"> <li>• Bin Filler</li> <li>• Coal Handler</li> <li>• Conveyor Console Operator Forklift Truck Operator</li> <li>• Freight Handler (Except Air Transport)</li> <li>• Furniture Mover</li> <li>• Lumber Pilar – Building Supplies</li> <li>• Material Handler</li> <li>• Railway Car Loader</li> <li>• Stockpile</li> <li>• Storage Worker – Material Handling</li> <li>• Truck Loader</li> <li>• Warehouseman/Woman</li> </ul>	Commercial Operations
7511 Transport truck drivers	<ul style="list-style-type: none"> <li>• Bulk Goods Truck Driver</li> <li>• Logging Truck Driver</li> <li>• Transport Driver</li> </ul>	Commercial Operations
7514 Delivery and courier service drivers	<ul style="list-style-type: none"> <li>• Courier Driver</li> <li>• Courier Service Driver</li> <li>• Delivery Driver – Parcels</li> </ul>	Commercial Operations
7521 Heavy equipment operators (except crane)	<ul style="list-style-type: none"> <li>• Heavy Equipment Operator</li> <li>• Heavy Equipment Operator Apprentice</li> <li>• Heavy-Duty Equipment Operator</li> <li>• Heavy-Duty Equipment Operator Apprentice</li> <li>• Marine Railway Operator</li> </ul>	Commercial Operations

Occupation (2011 NOC)	Examples	Relevant Categories
<b>Trades, Transport and Equipment Operators And Related Occupations</b> 7532 Water transport deck and engine room crew	<ul style="list-style-type: none"><li>• Quartermaster</li><li>• Bridge Watchman</li><li>• Engine Room Rating</li><li>• Able Seaman/Woman – Except Armed Forces</li><li>• Boatswain – Water Transport</li><li>• Deckhand</li><li>• Engine Room Crew Member – Ship</li><li>• Helmsman/Woman – Water Transport</li><li>• Marine Engine Oiler</li><li>• Marine Engineering Mechanic</li><li>• Ship Stoker</li><li>• Tunnel Operator, Ship Loading</li><li>• Marine Fire Fighter</li></ul>	Technical & Marine Safety & Quality

### Consulting Maritime Codes and Descriptions

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**Chartering:** This group contains commercial staff responsible for chartering activities.

**Freight Trading:** This group contains commercial staff responsible for freight trading activities.

**Research and Development:** This group contains business development staff and market analysts who support commercial business activities.

**Ship Brokering:** This group contains commercial staff who are specialist intermediaries between ship owners and charterers; negotiating spot / time charters for their principals / clients – often called 'chartering brokers' or "competitive shipbrokers". This group also includes the sale and purchase of vessel(s).

**Commercial Operations:** This group is responsible for commercial vessel operations, laytime and demurrage. It also includes shipbroking and post-fixture staff. It has also been used for port operations.

**Technical and Marine, Safety & Quality:** This group contains the staff who are responsible for the running of the fleet including maintenance, audits, officer performance, inspections, compliance, health and safety, operating procedures and environmental management. It has also been used for the land based shipping and marine operations. This group also includes managing vessel docking repairs" (carried out at shipyard), which is distinct from running maintenance (carried out by crew alone).

**New Buildings:** This group contains both office-based and shipyard-based new buildings staff and may also include technical specialists and naval architects.

**Purchasing & Bunkering:** The purchasing and bunkering job families have been combined because of potential overlap. Purchasing staff are usually focused on technical procurement, but may also have responsibility for bunker purchases. It is becoming more common, however, for companies to have dedicated bunker buyers (who may also be responsible for bunker hedging).