Canadian Merchant Service Guild

IMPACTS OF PROPOSED CHANGES TO THE *COASTING TRADE ACT*

Prepared by: Kieran MAS

In association with: DAMF Consultants Inc. and
Davies Transportation Consulting Inc.

September 2016

The **Canadian Merchant Service Guild** (CMSG) is a national association of ships' officers and marine pilots, established by an Act of Parliament in 1919 and updated in 1981.

The Guild represents the majority of ships' officers and pilots in the Canadian maritime industry, with a total membership of close to 4,000 mariners. Guild representatives participate in all federal committees involved in the development of marine legislation and regulations affecting seafarers.

Kieran Management Advisory Services Ltd. (Kieran MAS) is a management consulting firm that specializes in strategic planning services for transportation and supply chain networks with extensive experience in marine transportation.

DAMF Consultants Inc. is a management consulting firm that specializes in transportation and logistics strategic management with significant experience in marine and intermodal transportation.

Davies Transportation Consulting Inc. (DTCI) is a Vancouver-based firm providing a broad range of transportation consulting services. Specialties include drayage, port operations, goods movement and land use, intermodal facilities and short line railways, and economic analysis and program review.

OUTLINE

Objective and Methodology

- Coasting Trade
- CTA Review's Recommendation to Amend the *Coasting Trade Act*
- Study Objective
- Methodology

Findings

- Overview
- Canadian Jobs, Wages and Tax Revenue
- Marine Training Institutes
- Sustaining a Robust Maritime Sector

Summary

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THE COASTING TRADE

Definition

"…the carriage of goods and passengers between Canadian points as well as any other marine activity of a commercial nature in Canadian waters" (Transport Canada)

Characteristics

- 63 million tonnes annual traffic
- 189 vessels with total volume of 2.6 million Gross Tons
- Generates employment for more than 30,000 people
- Distinct regional characteristics in terms of vessels and cargo for the West Coast, Northern coastal areas/McKenzie River, Great Lakes/St. Lawrence, and Atlantic Coast
- Mature and stable sector, with little annual fluctuation in fleet, staffing and tonnage

Additional background information is provided in Appendix Slide 3.

The estimate of employment is an order-of-magnitude number for the entire domestic sector, including ferry operations and the Canadian Coast Guard. It includes support services for the movement of domestic vessels, and for administrative and regulatory activities.

Regional Roles:

Western Canada is dominated by tug/barge operations.

BC Coast serves mainly the forest industry, moving logs and wood chips, and substantial quantities of dry and liquid bulk commodities;

McKenzie River transportation is seasonal, and provided by Northern Transportation Company Ltd. (NTCL).

Eastern Arctic resupply is seasonal, and provided by domestic ship operators based near Montreal. Mineral extraction and transport by water to smelters in the South is a recent development.

Great Lakes and Saint Lawrence includes the Seaway, dominated by bulk commodities, and services to remote Quebec communities on the Lower North Shore.

Atlantic Canada is dominated by oil and gas exploration and production support; there are general cargo and passenger services to Newfoundland and Labrador communities.

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RECOMMENDATION TO AMEND THE *COASTING TRADE ACT*

On June 25, 2014, the federal Minister of Transport launched a review of the *Canada Transportation Act* (the Act). The Act is the federal policy framework for the country's transportation system. The Review's mandate was to examine current and future issues in transportation and make recommendations as to how government policy should respond to these issues.

The Final Report of the Review, which was chaired by David Emerson, was submitted to the Minister of Transport in December 2015 and tabled in Parliament in February 2016.

Among its many recommendations, grouped under 52 headings, the Review (Emerson Report) contained a proposal to abolish the requirements for vessels moving between domestic points to be Canadian-registered ("flagged") and Canadian-crewed.

The result would be to open up this marine traffic to foreign operators.

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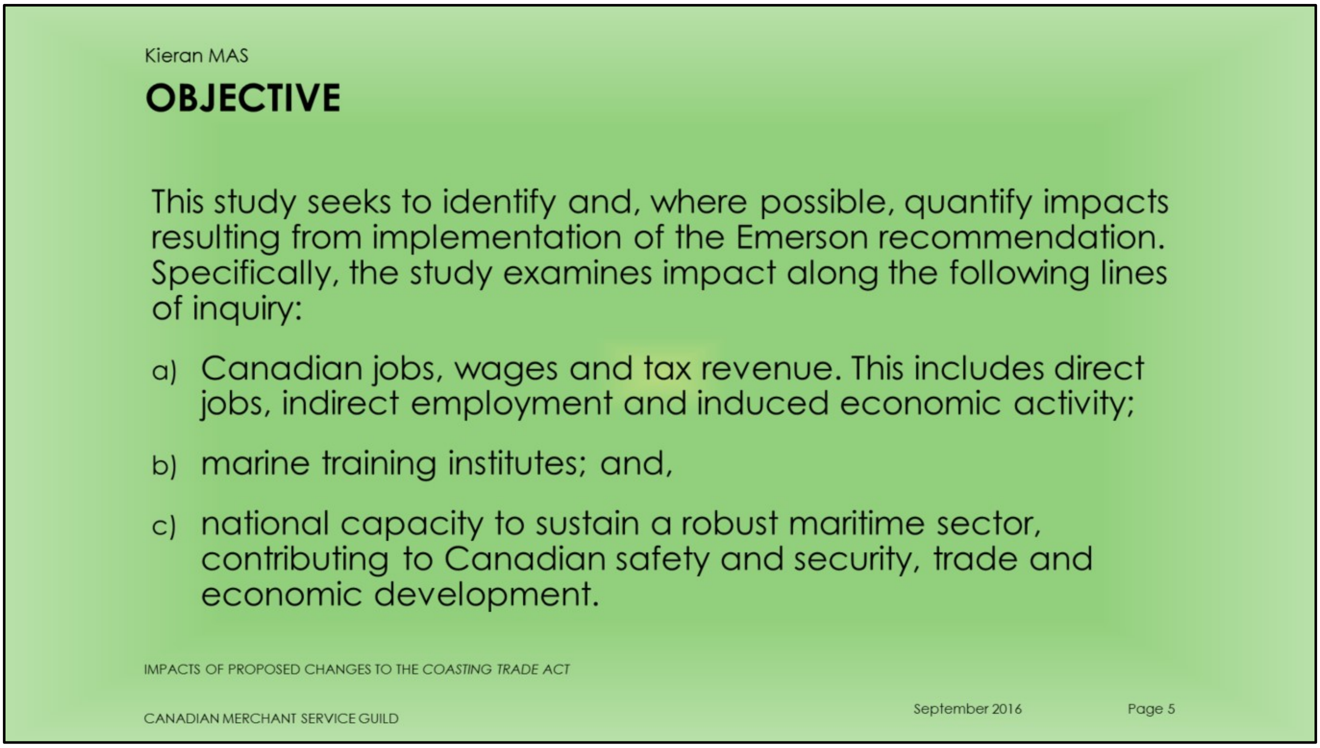
Further information on the *Coasting Trade Act* and extracts from the Emerson report are in Appendix Slide 4.



These three lines of inquiry define the structure of the remaining sections of this report.

METHODOLOGY

Different approaches were used for each of the three lines of inquiry.

Jobs, Wages and Tax Revenue

i. Information from previous studies
ii. Employment and income data from the National Household Survey of Statistics Canada
iii. Results from mathematical modelling developed specifically for this project:
    1. derived figures for impact on Coasting Trade (Freight Only) jobs, wages and taxes;
    2. support and on-shore jobs, wages and taxes within the Coasting Trade (Freight Only) category, derived by extrapolation from existing regional research on employment; and,
    3. impact on other economic activity, measured by estimates of impact on effects of incomes in the two categories above.

METHODOLOGY

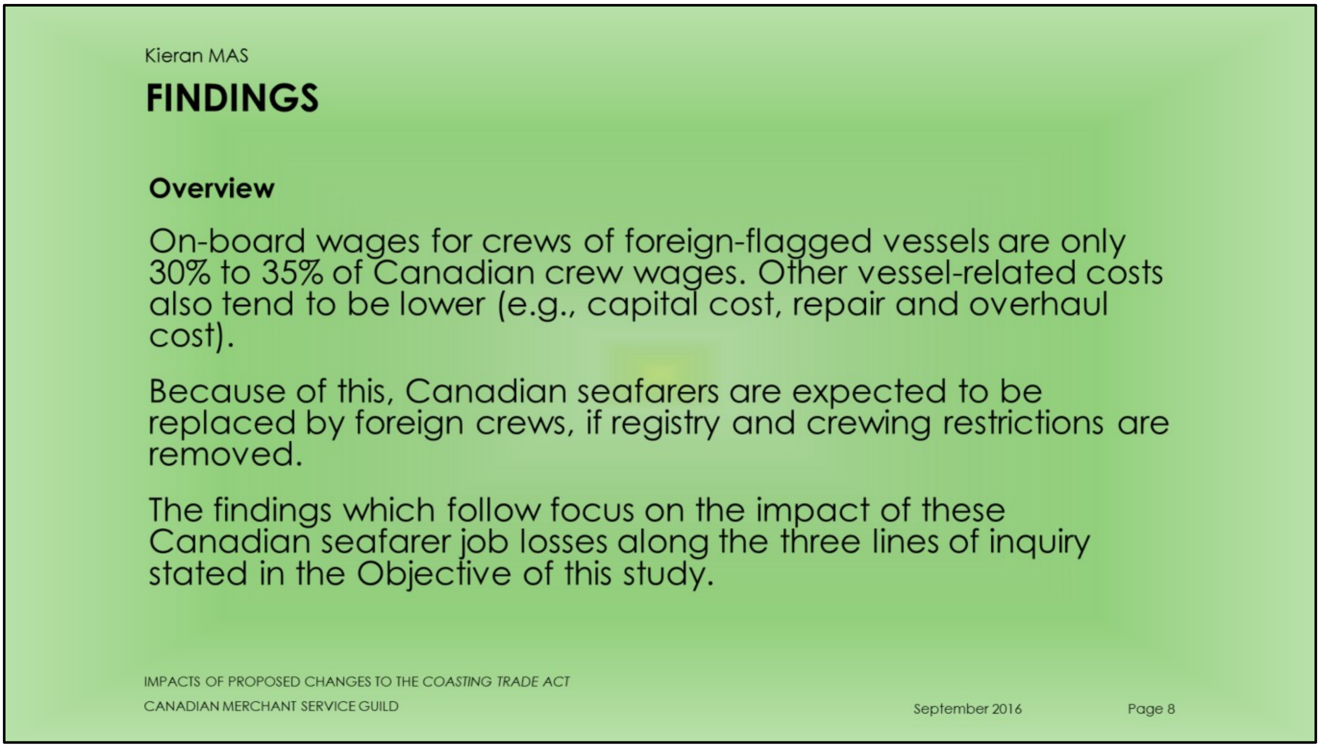
Marine Training Institutes

i. Estimates of marine institute jobs and income derived from employment and activity data provided by Canada's marine training institutes. The Canadian Association of Marine Training Institutes (CAMTI) helped in the collection of this information.

ii. Input from the institutes included information on cadet programs, and on certificate upgrade and renewal programs.

Robust Maritime Sector

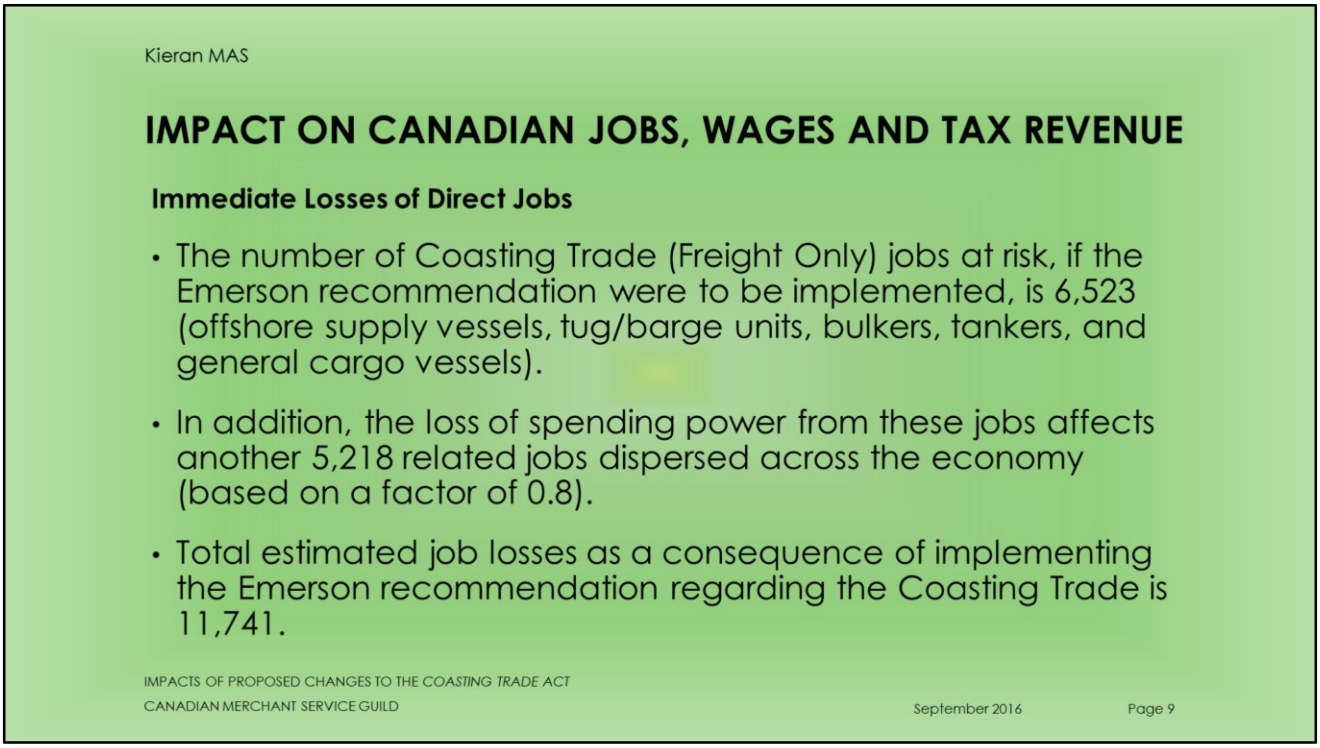
i. Literature search of relevant public policy issues, discussions with industry stakeholders, examination of the role of the on-board labour pool for staffing key positions elsewhere in the sector, and review of relevant sovereignty and security issues in Canada's North.



In 2015, a comparative study of ships' crew wages between Canada and foreign flags was conducted by the Institut maritime du Québec (IMQ), in association with Ernst & Young, for the St. Lawrence Ship Operators.

Foreign wages vary with flag of origin. For example, Philippine crews are paid slightly less, and European crews slightly more than the typical flag of convenience wages. The on-board wages for foreign crews referenced in the above slide are based on a foreign flag of convenience vessel operating under agreements with the International Transport Workers Federation (ITF).

The sectors vulnerable to foreign competition are commercial cargo operations (bulk ships, tug/barge units, tankers and northern navigation), and offshore supply and service vessels. Ferry services, harbour tugs and pilots are not considered to be vulnerable.



Other jobs dependent on the spending power of Coasting Trade (Freight Only) jobs are estimated using a factor determined by the Ontario Marine Transportation (OMT) Study in 2009 by MariNova. That factor is 0.8 related jobs per Coasting Trade (Freight Only) job (Page 111 of the OMT study).

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IMPACT ON CANADIAN JOBS, WAGES AND TAX REVENUE

Coasting Trade Jobs (Freight Only) and Related Jobs

Occupational Classification				
Deck Officers	Engineer Officers	Non-licensed Crew	Other Admin Occupa-tions	Total
2,315	1,075	2,775	358	6,523
Related Job Losses (80% factor)				5,218
Total				11,741

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Coasting Trade (Freight Only) represents jobs on-board ships and certain dependent on-shore jobs; these jobs would be lost under the Emerson proposal.

The methodology and the development of these estimates are described in <u>Appendix Slide 10.</u>

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IMPACT ON CANADIAN JOBS, WAGES AND TAX REVENUE

- The proposed changes to the *Coasting Trade Act,* which result in a loss of 6,523 Coasting Trade (Freight Only) jobs, would represent a loss in wages of $472 million and tax revenue of $97 million.
- The 5,218 jobs dependent on the spending power of the wages cited above add $274 million to wage losses and $51 million to tax losses, bringing total losses to approximately 12,000 jobs, $746 million wages and $148 million tax revenue.

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IMPACT ON CANADIAN JOBS, WAGES AND TAX REVENUE

Job Losses and Impact on Wages and Taxes

Summary	Industry Categories	Total Jobs	Total Wages	Personal Income tax	Estimated Average Tax Paid
Loss of Jobs, Wages and Taxes	Coasting Trade (Freight Only)	6,523	$ 472,316,000	$ 97,105,000	20.6%
	Related	5,218	$ 273,889,000	$ 50,733,000	18.5%
	Total	**11,741**	**$ 746,204,000**	**$ 147,838,000**	

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Details supporting the results shown in this table are in Appendix Slide 12.

Coasting Trade (Freight Only) wages are taken from the NHS data for each occupation.

Average wages for the Related jobs are based on the average annual wages for all employed Canadians.

Most jobs in this study are located in BC, Ontario, Quebec and Newfoundland and Labrador. Consequently, average wages for these provinces and the federal/provincial income tax rates in each were applied to the respective average taxable wages to determine the effective tax paid. The resulting amount was then expressed as a percentage of total wages for each type of job, and weighted average estimates were calculated.

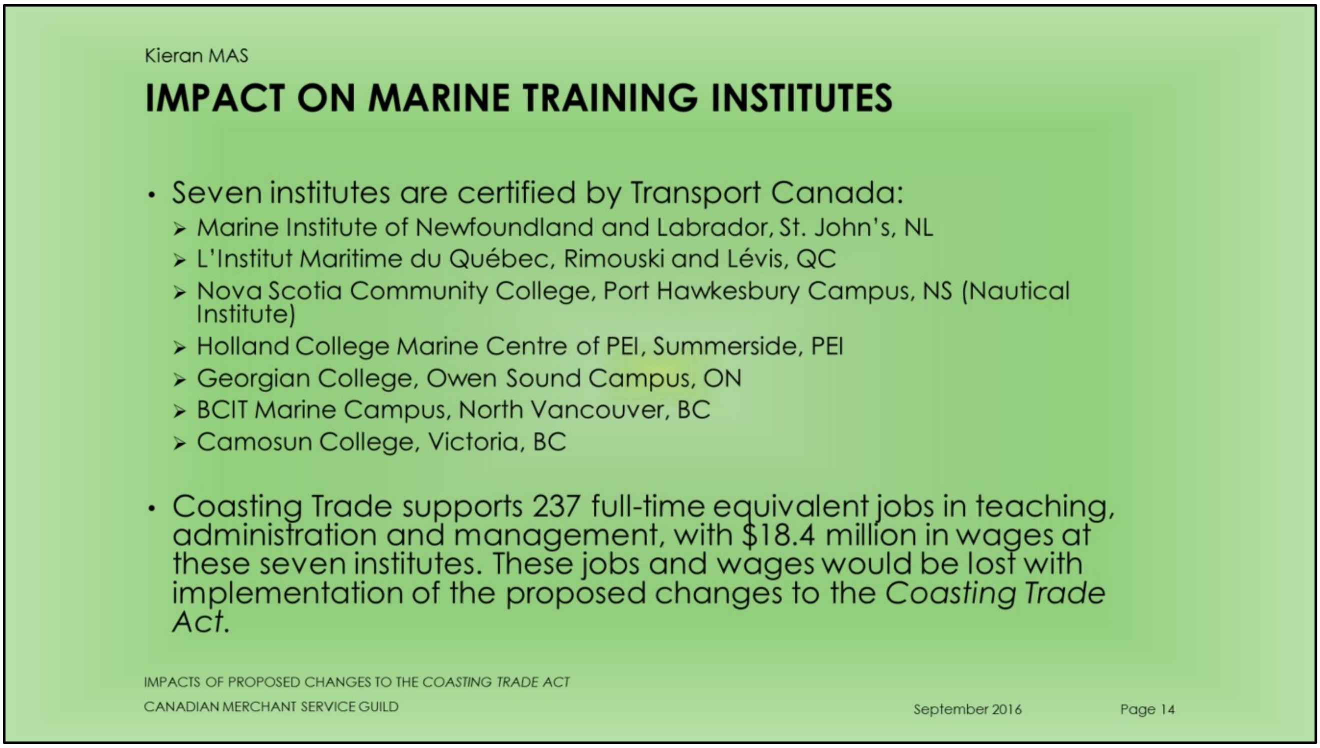
Other taxes such as sales, fuel, business and property were not estimated, but if taken into account in a more detailed evaluation would only increase the impact.

Fluctuations in Coasting Trade capacity could result from the shifting of vessels from Canada to foreign locations. Foreign-flagged shipping lines operating in other parts of the world, that would now be operating in Canada, would have the option of shifting capacity away from Canada, should market conditions in other parts of the world make that attractive. In these circumstances, Canadian shippers might experience capacity constraints that do not currently occur in the system, given the fact that domestic shipping lines operating Canadian-flagged vessels cannot easily shift their capacity elsewhere.

If capacity fluctuations persisted or frequently recurred, shippers might make other choices for getting their product to market. This could involve modal shifts, use of US ports, or sourcing product from other alternative, non-Canadian locations.

No attempt has been made to quantify the losses resulting from such possible impacts, since their extent remains unknown and would surely be affected by both market behaviour and public policy decisions yet to be determined.

In such cases, however, the result could be a shrinkage of the Coasting Trade itself, with the job, wage and tax revenue losses that would ensue.



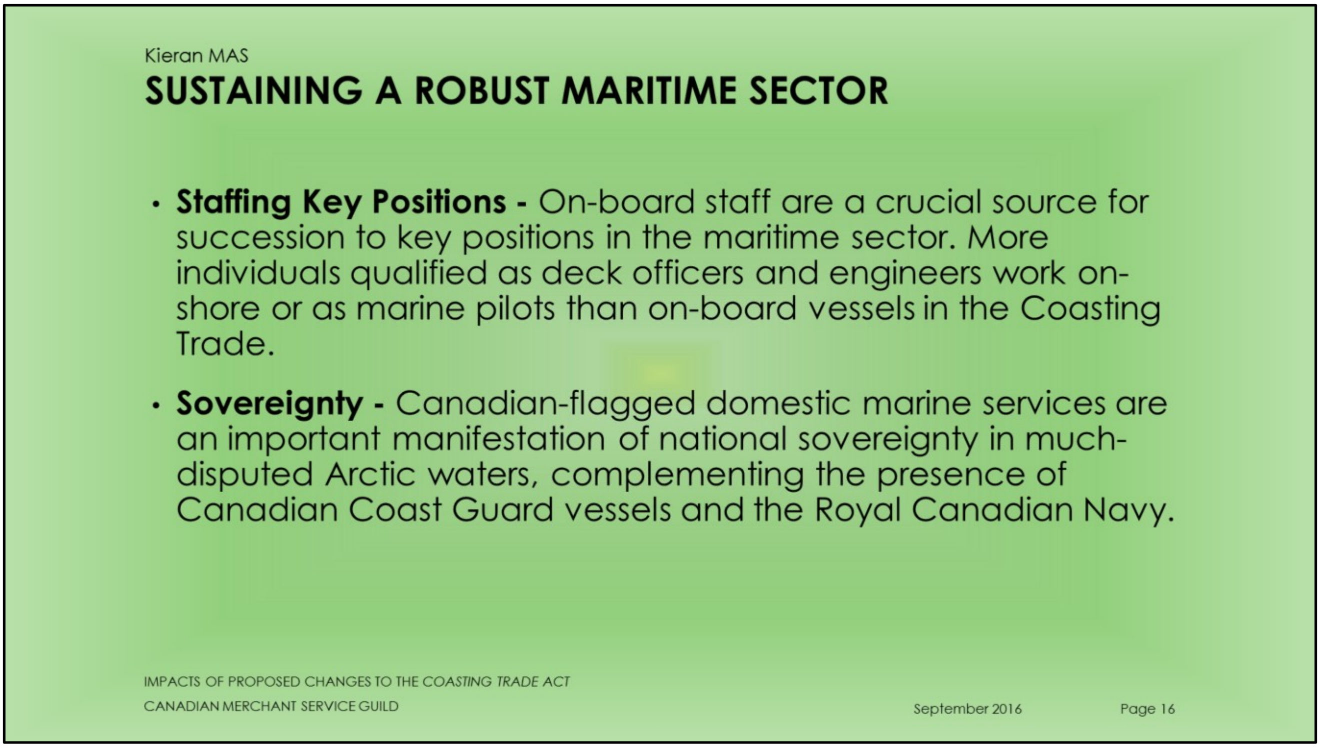
A summary of the programs offered at each Institute and estimates of student enrolment and employment are in Appendix Slide 14.

Each of the institutes was contacted to assess potential impact in terms of jobs and wages on the understanding that quantitative information would be shown only in aggregate. Licenced deck officers and engineer officers working at these institutes are included in the generic jobs estimates in previous slides.

The Canadian Coast Guard College in Sydney, NS trains Coast Guard officers. Since it is assumed that this institute would not see a reduction in demand for graduates under the proposed changes to the Coasting Trade Act, it is excluded from this study.

MARINE TRAINING INSTITUTES

- Most cadets graduating from training institutes become officers in the merchant service, beginning a career path toward Master or Chief Engineer.
- Working on-board ships is essential to progress; at least 8-10 years of combined sea service and applied education is needed to qualify as Master or Chief Engineer.
- After qualifying as a Master or Chief Engineer, some remain at sea, but others switch to on-shore positions (harbour masters, inspectors, investigators, ships' agents, etc.), and others become marine pilots.
- Merchant service is a crucial part of the *raison d'etre* of the marine training institutes; the loss of so many Canadian marine jobs would have catastrophic implications not only for those institutes, but also for young Canadians seeking post graduate training and careers at sea.



Key positions derived from on-board staff include Transport Canada safety inspectors and marine policy and planning officers, federal investigators and regulators, port officials, marine pilots, shipping agents, and freight logistics staff.

In Nunavut, Northern Quebec, Labrador and Northwest Territories, domestic marine traffic and services are manifestations of Canadian sovereignty. Equity participation in the northern resupply services by the indigenous population is an important means for their engagement in the region's economy.

The vessels conducting northern resupply are staffed by experienced officers and crew who know the waters and understand the unique needs of the communities at which they call. Any foreign crewing resulting from the implementation of the Emerson recommendation would alter these conditions and require extra measures to ensure security and continuity of service.

There are conflicting claims over ownership and control of the Northern passages involving Russia, China, Scandinavia, Japan and the United States. The domestic vessels involved in the sea lift augment Canadian presence (complementing Coast Guard and Canadian Forces), and hence the legitimacy of its territorial claims.

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SUSTAINING A ROBUST MARITIME SECTOR

- **Strategic Sea Lift -** Coasting Trade services are the principal remaining source of qualified mariners, should the need arise to rapidly expand Canadian marine strategic sea-lift capability for either domestic or international purposes. Elimination of this pool of qualified personnel, as a consequence of proposed amendments to the *Coasting Trade Act*, could contribute to increased security risk exposure. The strong American aversion to such a measure in regard to their own Coasting Trade demonstrates the importance attached to restrictions on ownership and crewing of domestic vessels.
- **Reciprocity** – The Emerson report recognizes that reciprocity is an essential element to the successful implementation of its recommendation concerning the Coasting Trade. Because American reciprocity is a non-starter, a Canadian initiative to unilaterally liberalize its own Coasting Trade would be disastrous.

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Since the disappearance of a Canadian merchant service operating in international waters, the domestic marine sector is now the principal source of Canadian mariners for expanding strategic sea lift.

The US places a very high value on maintaining its strategic sea lift capacity. It is a principal reason for strict control of ownership, shipbuilding and crewing in the US domestic maritime sector. This is unlikely to change, and means reciprocity with Canada regarding liberalization of coasting trade restrictions will not happen.

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SUMMARY OF FINDINGS

The Emerson recommendation to abolish Canadian vessel registration and crewing requirements puts at risk:

- 12,000 jobs;
- $746 million in wages, per year;
- $148 million in tax revenue, per year;
- market share and profitability of Canadian-owned shipping lines;
- Other jobs among supply and service industries that support the Coasting Trade;
- a crucial source of qualified and experienced personnel for key positions in the maritime sector;
- the viability of Canada's marine training institutes; and,
- strategic safeguards related to Canadian sovereignty and maritime security.

Acknowledgements

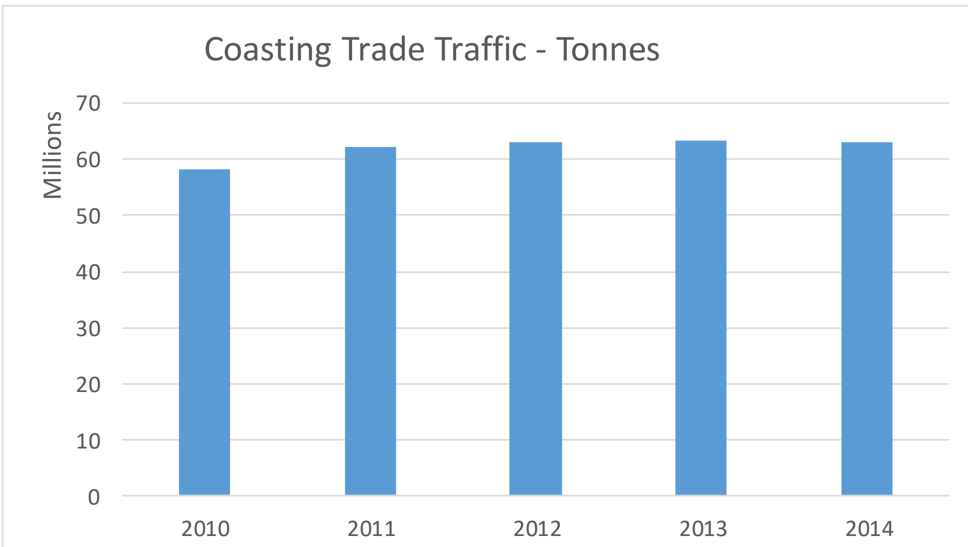
Organization	Contact
Antares Consulting	Mike Fournier , President
BC Ferry and Marine Workers' Union	Graeme Johnston, President
BCIT Marine Campus	Philip McCarter, Associate Dean
Canadian Association of Marine Training Institutes (CAMTI)	Catherine Dutton, Head
Canadian Shipowners Association (CSA)	Kirk Jones, President
CargoM	Magali Amiel, Chargée de projets senior
Comité sectoriel de main d'oeuvre - industrie maritime	Claude Mailloux, Executive Director
Georgian College	Colin MacNeil, Coordinator Marine Programs
Georgian College	Heidi Pries, Operations Manager
Great Lakes Pilotage Authority	Diane Couture, Director of Operations
Holland College Marine Centre	Steve MacFarlane, Program Manager
Institut maritime du Québec	Daniel Dion, Directeur
ILWU Local 400 - Marine Section	Terry Engler, President
ILWU Local 400 - Marine Section	Paul Lumsden, Secretary Treasurer
International Transport Workers' Federation	Peter LaHay, ITF Coordinator
Laurentian Pilotage Authority	Sylvia Masson, Senior Director of Operations
Marine Training Institute of Newfoundland and Labrador	Catherine Dutton, Head
MariNova Consulting Ltd.	James Frost, President
MTQ Maritime Transport Secretariat	Rachid Raffa, Transport Analyst
Nova Scotia Community College Nautical Institute	Vivek Saxena, Academic Chair
Pacific Pilotage Authority	Kevin Obermeyer, CEO
Shipping Federation of Canada	Michael Broad, President
SODES	Nicole Trépanier, President
St. Lawrence Seaway Management Corp.	Jean Aubry-Morin, Executive Vice President, External relations
St. Lawrence Ship Operators	Martin Fournier, Executive Director
Syndicat des Métallos, locale 9599	Bruno Gagnon, Vice-Président
Unifor, Local 4401	James MacDougall, President

Coasting Trade Characteristics

Traffic Volume (from Transport Canada Annual Report of 2015, and Statistical Addendum)

- Total traffic handled at Canadian ports in 2014 (latest year available) was 476 million tonnes
- Coasting Trade handled 63 million tonnes in the same year and is more or less steady over the last six years

Figure App3- 1: Coasting Trade Trend



Fleet

- As indicated in the following table, fleet composition has been stable over the past 20 years, varying between 180 and 190 vessels

Table App3 - 1: Domestic Fleet Characteristics

Transport Canada Statistical Addendum 2015
Table M9: Canadian Registered Fleet by Vessel type, 1995, 2005 and 2015

Type of Carriers	Gross Tons (,000)			Number of Vessels		
	1995	2005	2015	1995	2005	2015
Dry Bulk	1,300	1,089	1,343	74	61	70
Tankers	187	743	666	27	27	29
General Cargo	91	105	105	15	17	17
Ferries	344	398	425	60	73	67
Other	33	38	36	7	6	6
Total	1,955	2,373	2,575	183	184	189

Note: Self-propelled vessels of 1,000 gross tons and over, including government-owned ferries, but excluding tugs used in offshore supply
Source: Transport Canada vessel registration data

Figure App3 - 2: Offshore Supply Tug

Photo from Maersk Supply Services Web Site

- Most of the larger vessels are concentrated in Eastern Canada
- Tankers operate mainly in Atlantic Canada and in the St. Lawrence and Great Lakes
- Domestic bulkers (both self-unloading and gearless) are designed to operate in the Seaway locks and lay up for maintenance during the winter closure of the Seaway
- Tug/barge units appear in all regions
- Canadian-registered offshore supply tugs are a separate class that is concentrated in Atlantic Canada, and numbers approximately 24.

- Although classed as tugs, these offshore supply vessels are specialized for maneuverability and stability to service offshore platforms in a wide range of conditions, some very hostile.
- These vessels are larger than most tugs, and have both towing and cargo carrying capability. Propulsion systems are robust. Crews are among the most experienced on account of the challenges to maintain safety and efficiency.

Employment

Estimates of jobs in the Coasting Trade have been derived largely from information found in the North American Industry Classification System (NAICS) Canada 2012.

Coasting Trade activities are included in the following categories:

- 21 - Mining, Quarrying, and Oil and Gas Extraction
- 4831 – Deep Sea, Coastal and Great Lakes Water Transportation;
- 4832 - Inland Water Transportation
- 4883 – Support Activities for Water Transportation

The mining sector is included because some of the offshore oil and gas exploration and production companies in Eastern Canada directly employ officers and crews.

Regional Characteristics

Western Canada is dominated by tug and barge operations:

- BC Coastal operators serve mainly the forest industry, moving logs and wood chips;
- McKenzie River transportation is seasonal, and provided by Northern Transportation Company Ltd. (NTCL) – 100% aboriginal-owned, serving remote communities. At this time there is an open bidding process underway for the sale of the business, including its real property and marine assets.

Eastern Arctic resupply is seasonal, and served by domestic ship operators based in the vicinity of Montreal. Two services, NEAS and Desgagnés Transarctik, involve partnerships with aboriginal business interests, and together provide scheduled services with a fleet of 11 vessels. FedNav also operates two handysize vessels that serve mining operations in the North.

Ontario and Quebec includes the Great Lakes and Saint Lawrence Gateway including the Seaway, and services to remote Quebec communities in the Lower North Shore. This dominates the traffic volume, accounting for about half of the total tonnage.

Atlantic Canada Coasting Trade is dominated by oil and gas exploration and production support; also, marine services to Newfoundland and Labrador (e.g. Oceanex and Woodwards) are significant.

Ferry services are also important, but outside the scope of this analysis.

Introduction – CTA Review 2015 Background

The Canadian Merchant Service Guild

The Canadian Merchant Service represents the majority of ships' officers and pilots in the Canadian maritime industry, and provides a voice for the interests of Canadian Ships' Officers with 3,800 members, of which there are 1,900 deck officers and 1,200 engineer officers. The objectives of the Guild are to promote the social, economic, cultural, educational and material interests of its members.

Table App4 - 1: CMSG Membership 2016

CMSG Membership 2016	**Deck Officers**	**Engineer Officers**	**Occup-ations of Interest**	Marine Pilots	Other	Grand Total
Western Branch	853	256	1,109	122	9	1,240
Eastern Branch	1,052	945	1,997	309	275	2,581
Total	**1,905**	**1,201**	**3,106**	431	284	3,821

Source: CMSG Data

Marine Pilots are shown separately, because the requirements for their services are not likely to be reduced by changes to the *Coasting Trade Act*.

The *Coasting Trade Act*

The *Coasting Trade Act* (the *Act*) has been in force since 1992. Its origins trace back to the *British North America Act* of 1867, giving Parliament authority over navigation and shipping. In 1869 legislation restricting the Coasting Trade to domestic and British ships was passed.

The *Canada Shipping Act (1936)* continued the British vessel exemption, introduced a 25% tariff on imported foreign vessels for the Coasting Trade and required Canadian crews for the Coasting Trade.

A Royal Commission was established in 1955 to inquire into all matters related to the Coasting Trade in Canada. The Commission, chaired by Justice W.F. Spence, reported in 1957 but did not recommend restricting Coasting Trade to vessels built and registered in Canada. The Howard Darling inquiry of 1970, however, recommended that all Coasting Trade activities be restricted to Canadian ships, including associated activities extending over the continental shelf.

The recommendations of Darling were finally implemented some twenty years later by the passing of the *Coasting Trade Act (1992)*. The *Act* excluded "British" ships, thus reserving the Coasting Trade to Canadian-owned and crewed vessels, but with the flexibility of a waiver system for the use of foreign vessels if the Canadian fleet could not meet the specialized service requirements of shippers.

CTA Review 2015 – Emerson Report

The CTA Review Final Report (Emerson Report) included a chapter on marine transportation pursuant to its interpretation of its mandate dealing with trade competitiveness, governance and service delivery models. This section of the report covered four major topics: ports, short sea shipping, the Canadian Coast Guard and pilotage. Material in the Report regarding *The Coasting Trade Act,* contained under the short sea shipping topic, is summarized below.

Coasting Trade Act

The *Coasting Trade Act* governs the operation of foreign-registered vessels in Canadian maritime services. Under the *Coasting Trade Act*, Canadian commercial marine activities are reserved for Canadian registered, duty paid ships, unless a suitable and adequate Canadian registered ship is not available for that activity or capable of performing the required tasks. In such cases, a vessel from the international fleet can be made available for a limited time following application and approval for a Coasting Trade license. This allows shippers to temporarily import a vessel into Canada and get temporary work permits for the vessel's crew. (pg. 214, CTA Report)

As they do in the air sector, many countries limit foreign-owned, registered, and crewed vessels from carrying shipments between two domestic points (referred to as "coasting trade" or "cabotage"). Historically, both Canada and the United States have particularly restrictive cabotage rules that predate World War I. In most cases, marine cargo moving between two Canadian or two American ports must be transported by a ship owned and registered in Canada—or the United States, as the case may be—and owned and crewed by nationals of the same country. (pg. 214, CTA Report).

Short Sea Shipping is a commonly used expression for the class of movements of which domestic cabotage is one form. "Shortsea shipping is typically defined as the commercial shipment of cargo and/or passengers by domestic and international shipping carriers operating in coastal and inland waters" (Page 214)

Recommendation 4 of the Emerson Report:

"The review recommends that the Government of Canada act to increase the competitiveness of the Canadian shipping and competition in the Shortsea shipping market by:

a. promoting Shortsea shipping as a mechanism to alleviate congestion in urban areas and reduce Canada's growing greenhouse gas and air pollution emission levels, especially through ports along the Great Lakes-St. Lawrence Seaway systems;
b. modernizing recruiting and training of Canadian seafarers, and improving processes for attracting and certifying foreign workers with needed skill sets;
c. **phasing-out the operating restrictions on the basis of reciprocity in the *Coasting Trade Act*, beginning immediately with container services; eliminating restrictions altogether within a transition period of no more than seven years;**
d. phasing-out all remaining duties on imported vessels within a transition period of no more than seven years to respect Canadian ship-owners' recent investments in specialized vessels;
e. aligning regulations governing Canadian-flagged ship operators to put them on a competitive basis with international operators who would be gaining access to Canada's domestic trades."

Coasting Trade Jobs

Development of the table in Slide 10 uses various sources as described below.

Table App10 - 1: Coasting Trade Jobs by Industry Categories

NHS Employment by NOC and NAIC 2010 (2011 Census)	Deck Officers	Engineer Officers	Non-licensed Crew	On-shore staff[1]	Total
Total - All industries	6,135	3,260	5,530		14,925
Did not work in 2010-11	-470	-360	-440		-1,270
Unrelated categories	-490	-715	-705		-1,910
Total seafarer labour pool	5,175	2,185	4,385		11,745
Other support categories	-1,485	-735	-885		-3,105
Sub-total	3,690	1,450	3,500		8,640
Exclude non-navigation categories	-1,375	-375	-725		-2,475
Coasting Trade (Freight Only)	2,315	1,075	2,775		6,165
Coasting Trade - derived from Quebec data				358	358
Summary	**2,315**	**1,075**	**2,775**	**358**	**6,523**

Note 1: onshore staff is estimated to be 5.8% of on-board employees. See Appendix Slide 13

Table App10-1 summarizes the steps involved in identifying the number deck officers, engineer officers, non-licensed crew that would be susceptible to displacement by foreign competition without protection from the *Coasting Trade Act*.

The starting point is total work force in the selected occupations in all industries, 14,925 people. This is reduced to account for those who did not work in 2010 and those who declared themselves no longer participating in the workforce, 1,270 across Canada. The next adjustment eliminated industries that were considered to be unrelated to transportation, e.g. manufacturing, retail and wholesale, banking etc.; this reduces the total of officers and crew to 11,745, as shown in table A15-1.

The total seafarer labour pool is 11,745 individuals, as shown above. The industry categories included in that total are identified in Table App10 - 2, below.

All of the industry categories shown in table App10 - 2 employ, at least to some extent, deck officers, engineer officers and unlicensed crew. Those labelled “Total Seafarer Labour Pool” include industry categories that have a direct linkage to cabotage even though they may not be exclusively engaged in Coastwise or Great Lakes shipping. Four-digit NAICS codes are used to enable isolating a level of detail that would permit excluding ferry services.

Table App10 - 2: Industries Comprising Coasting Trade, Support and Non-navigation Categories

Coasting Trade		Other Support	
4831	Deep Sea, coastal and Great Lakes water transportation	22	Utilities
4832	Inland water transportation	61	Educational services
21	Mining, quarrying, and oil and gas extraction	71	Arts, entertainment and recreation
4883	Support activities for water transportation	81	Other services (except public administration)
4885	Freight transportation arrangement	91	Public administration
561	Administrative and support services	4872	Scenic and sightseeing transportation, by water

In respect of the "Other Support" categories, analysis at the level of individual employers would be required in order to identify those employees vulnerable to abrogation of the *Coasting Trade Act*. For example, NAICS 61 - Educational services includes Marine Training Institutes, and, because of their importance to provision of qualified licensed mariners, the Institutes were contacted directly for supplementary information.

The NAICS 91 – Public administration category covers a very large sector that employs a significant number of licensed mariners, including Canadian Coast Guard, investigation, inspection and regulation activities in all aspects of maritime jurisdiction. This latter group of investigators, inspectors and regulators draws from the pool of licensed mariners that have served their time on board vessels.

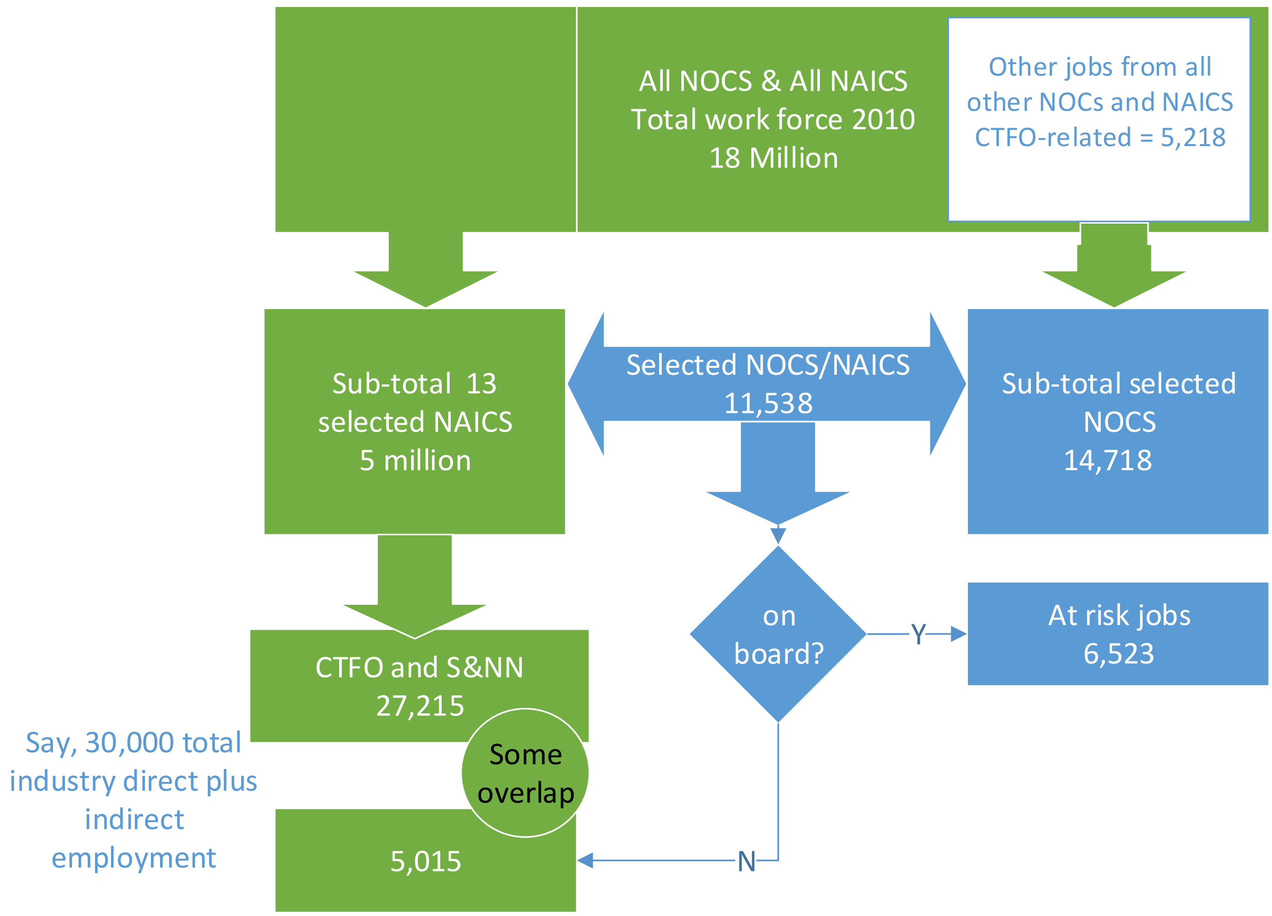
The main focus is on the categories in which employment is most directly and very highly dependent on protection afforded by the *Coasting Trade Act*. These are the categories shaded in light green in table App10 - 2. They are: 4831 - deep Sea, coastal and Great Lakes water transportation; 4832 - inland water transportation; and, 21 - mining, quarrying, and oil and gas extraction.

The other categories are considered to be indirectly associated with marine transportation by providing onshore operational and administrative support to both domestic and international shippers and carriers.

Note on Methodology

The mathematical modelling methodology to identify jobs at risk is illustrated in Figure App10 - 1. As mentioned previously, detailed employment estimates are not directly discernible from the National Household Survey. However, modelling this data with other sources produced meaningful and reliable information needed for this study.

Figure App10 - 1: Illustration of Employment Groupings



Note: CTFO is an abbreviation for Coasting Trade (Freight Only), and S&NN is an abbreviation for support and non-navigation industry categories.

The diagram is for those readers who are interested in a technical assessment of methodology. Key observations for the general reader are:

1. total employment in the Coasting Trade (Freight Only) plus non-navigation and other support categories in Canada is around 30,000 jobs;
2. navigation jobs (deck officers, engineer officers and crew) in water transportation and oil/gas categories are isolated from all jobs in non-navigation industry categories (support activities for water transportation, freight transportation arrangement, and certain administrative and support services);

3. the number of jobs onboard Coasting Trade vessels is determined by parsing the data in the NHS survey to provide the basic input to the models by which all other estimates are determined.

Employment in Support and Non-Navigation Categories

A study conducted by the Québec Sectoral Committee for Maritime Industry Labour (CSMOIM) is the main reference used to estimate jobs in the Coasting Trade (Freight Only) category that could be affected if carriers were to move their administrative and other on-shore activities outside of the country.

The CSMOIM data were gathered by an extensive survey and validated with additional sources of information from Transport Canada and Statistics Canada. The full report is cited in the bibliography section of this report. The data shown in table App10 - 3 below are taken directly from that report. It should be noted that the breakdown of occupations is compatible with the National Occupational Classification System (NOCS) of Statistics Canada, yet richer in detail. Similarly, the description of industries is reconcilable with the North American Industry Classification System (NAICS), yet also richer in detail. Jobs in companies that operate vessels either domestically or internationally are classified as "Direct". The "Indirect" jobs are those in other companies that support maritime commerce in various ways.

Table App10 - 3: Quebec Employment in Maritime Industries by Occupation and by Industry

		Direct			Indirect				Domestic
Occupation Areas	2013 Employment in Quebec	Ship Operator	Cruise	Ferries	Ports	Port Services	Marine Services	Total	15.3%
Bridge	Deck officers	552	274	138			33	997	552
	Deck crew	1,051	840	323			12	2,226	1,051
	Cook	201	124	12				337	201
	Pilot						179	179	
	Other bridge jobs	81	70		6			157	
Engine Room	Eng. officer	523	33	86			5	647	523
	Eng. crew	244	16	42			1	303	244
On-shore[1]	Managers	490	103	38	81	342	950	2,004	75
	Support services	360	77	111	193	671	472	1,884	55
	Longshore worke	36	7	60		1,350	6	1,459	6
	Repair	24	41	8	99	966	443	1,581	4
	Security	14	9		26	48	500	597	2
	Material handlers	38	198	19	92	370	132	849	6
	Total	3,614	1,792	837	497	3,747	2,733	13,220	2,719
	Sub-total			6,243			6,977		
On-shore as % of onboard for ship operators							**5.8%**		

1. These include domestic and international companies; the domestic proportion is estimated on the basis of domestic tonnage as a % of total tonnes (15.3% applied to on-shore jobs among ship operators).
Source: Étude sectorielle sur les effectifs maritimes au Québec - Rapport Final, 2013-11-7 , Page 78

The CSMOIM study found that there were 13,220 jobs in Québec related to maritime commerce. Among those 3,614 are employed by ship operators, 2,571 of which work entirely in the Coasting Trade, and the remaining 1,043 work partly in the Coasting Trade.

Other studies were examined, but due to differences in purpose and methodologies, it was found that they were not applicable to our purpose. These include The Great Lakes Economic Impact Study conducted by Martin and Associates and the Ontario Marine Transportation Study carried out in 2009 by MariNova.

To determine what proportion of the 1,043 jobs could be considered as Coasting Trade jobs, a factor based on the percentage of domestic versus total tonnage of cargo was used.

Tables M 15 and M 16 of Statistical Addendum to Transportation in Canada 2015 provide the data for this estimate. These tables show that Canadian ports during 2014 handled 476.2 million tonnes of cargo. Domestic traffic in the same year was 63.1 million tonnes. While all international traffic is counted only once in the port statistics, Coasting Trade traffic is counted twice, at both the point of loading and at the point of discharge. Adjusting for this, domestic traffic represents 63.1 million tonnes out of 413.1 million tons, or 15.3%.

Review of other studies (noted in the Bibliography) suggest that this estimate is within a reasonable range of what could one could expect for Québec.

Thus, 15.3% of the total number of jobs that work partly in the Coasting Trade (1,043) are considered to be affected. The resulting figure is 148 jobs, or 5.8% of the total number working on board ships. This 5.8% factor is then applied to the total Canadian industry to estimate the number of administrative and support positions that would be vulnerable. In total, this comes to 358 positions across Canada.

Therefore, the total number of direct positions at stake is as follows:

Deck officers	2,315
Engineer officers	1,075
Non-licensed crew	2,775
On shore	358
Total	6,523

Other Related Jobs

The Ontario Marine Transportation Study of April 2009 estimated induced employment using a factor of 0.8 induced jobs for every direct or indirect job (page 111 of the Phase 1 report). The same factor was employed in this study. Induced employment (i.e. other jobs) accounts for jobs that are generated by the spending power of the incomes of those employed in the Coasting Trade (Freight Only) category. It is estimated that there are 5,218 of these other related jobs.

Methodology for Deriving Wages and Taxes

Estimation of Wages

The National Household Survey Data (NHS) included 2010 income statistics that permitted computation of average incomes for each subset that was examined. The incomes were adjusted upward by the cumulative increase in Consumer Price Index (CPI) for the period 2010 to 2016, which is 111% according to Statistics Canada. Average income estimates for deck officers, engineer officers and unlicensed crew are based on the Coasting Trade national average annual wage for each occupation.

Table App12 - 1: Average Annual Wage Estimates Employed $ 2016

Occupations (per NHS data)	Average Wage
Deck officers	$ 84 587
Engineer officers	$ 95 997
Engine and deck crew	$ 55 909
Cooks	$ 51 830
On-shore staff	$ 57 212
All other	$ 47 245

Note: Engine and deck crew, and cooks, are combined to make the category non-licensed crew that is used throughout this report.

The methodology for estimating wages has three steps.

1) Annual wages ($ 2016) for deck officers, engineer officers and non-licensed crew (made up of engine and deck crew, and cooks for the three industry categories (deep-sea and Great Lakes marine transportation, inland marine transportation, and oil and gas extraction) are estimated as weighted averages across the three industry sectors and calculated separately for each occupational classification.
2) Annual wages for on-shore staff in the Coasting Trade were estimated as a weighted average across the support services and non-navigation industry categories for all of Canada.
3) The Canadian average for all employed workers in all industries was used to represent annual wages for all other related employment.

Each of the respective averages so obtained was applied to the number of employees identified as being Coasting Trade (Freight Only) or other related jobs. In the case of Coasting Trade (Freight Only) jobs, the calculation was occupation-specific, and the results were summed to give the total income estimates shown in Slide 12.

Estimation of Income Taxes

Four provinces account for well over 80% of the licensed officers and non-licensed crew employed in Canada. Newfoundland and Labrador, Québec, Ontario and British Columbia wages and tax rates were used to estimate taxes. For each occupation, average annual wages and average annual income tax was determined for each jurisdiction.

Incomes are reduced by a fixed amount ($12,000 per year for the examples calculated here) to arrive at a conservative estimate of deductions related to taxable income. Federal and provincial tax rates taxes in effect for 2016 are applied for each jurisdiction. The income tax calculated in this manner was divided by the total wages to determine tax paid as a percentage of wages for each occupational group in each jurisdiction.

Finally, an overall composite weighted average tax factor was determined for incomes of each of the three occupational classifications, and applied as shown in Slide 12.

Marine Training Institutes

Canadian Marine Training Institutes				
Institute	**Campus Location(s)**	**Programs**	**Cadet Enrolment**	
			1st year	Avg. last 3 yrs.
Marine Institute of Nfld. and Labrador	St. John's, Nfld. (Memorial University)	Cadet Officer Programs: Nautical Science and Marine Engineering Technical Certificate Programs: Bridgewatch Rating and Marine Diesel Mechanics (Engine Room Rating) Officer Certification Upgrading Required Safety (Marine Emergency Duties or MED) and Simulation Courses (Transport Canada)	96	90
L'Institute maritime du Québec	Rimouski, Qué. Lévis, Qué.	Cadet Officer Programs: Bridge and Engineering Officer Certification Upgrading Courses Required Safety (MED) and Simulation Courses (Transport Canada) Entry Level Marine Training: Bridgewatch Rating and Engine Room Rating	88	82
Nova Scotia Community College	Port Hawsbury Campus (Nautical Institute)	Cadet Officer Programs: Marine Navigation Technology Diploma and Advanced Diploma; Marine Engineering Technology Diploma and Advanced Diploma Entry Level Marine Training: Bridgewatch Rating and Engine Room Rating Officer Certification Upgrading Required Safety (MED) and Simulation Courses (Transport Canada)	36	36

Canadian Marine Training Institutes				
Institute	**Campus Location(s)**	**Programs**	**Enrolment**	
			1st year	Avg. last 3 yrs.
Holland College Marine Centre of PEI	Summerside, PEI	Entry Level Marine Training: Marine Navigation and Marine Engineering Deck Officer Certification Upgrading Required Safety (MED) and Simulation Courses (Transport Canada)	Cadet Programs Not Offered	
Georgian College, Ontario	Owen Sound Campus	Cadet Officer Programs: Marine Technology- Navigation and Marine Engineering Technology Marine and Officer Upgrading Certification Required Safety (MED) and Simulation Courses (Transport Canada)	58	51
BCIT Marine Campus	North Vancouver, BC	Cadet Diploma Programs: Marine Engineering and Nautical Sciences Marine and Officer Upgrading Certification Required Safety (MED) and Simulation Courses (Transport Canada)	32	32
Camosun College	Victoria, BC	Marine Navigation Certification and Officer Upgrading Certification Required Safety (MED) Courses (Transport Canada)	Cadet Programs Not Offered	

The total enrolment of new cadets in the current year amounts to 310, and the average over the last three years is 291.

Job Redundancy Estimates

The following assumptions were used as a basis for determining job losses at Canadian Marine Training Institutes if the *Coasting Trade Act* was changed to eliminate the requirement for Canadian certified seafarers in the Coasting Trade.

- Marine institutes would no longer offer the Cadet, Rating and Certificate Upgrade programs.
- Faculty directly associated with the delivery of these programs would be released.
- Recruitment efforts for cadets and ratings would be terminated.
- The requirement for work-term placements would be reduced and eventually terminated as students work their way through the program(s) to its conclusion.
- Management positions associated with the Transport Canada programs would not be required.
- Overall administrative support and management would be reduced or disbanded (depending upon the stand alone, or shared campus nature of each institution).
- The requirement for student processing from registration to graduation would be reduced or eliminated.
- Some aspects of marine training would be maintained by some, but not all, institutions to meet international requirements, such as the MED Refreshers, specialized simulation, security and similar courses.

Based on these assumptions, each Institute provided estimates of staff surplus and associated average wages that would result from disbanding the Canadian merchant marine. The information was provided under conditions of confidentiality, with the undertaking that only aggregate data, representing the total for all Institutes, would be reported.

The total number of jobs that would be lost, is 237 Full Time Equivalents (FTE), covering instructors (both full-time and part-time), management, administrative and technical support staff. The total annual wages for this group is $18.4 million.

Other Comments

The total annual intake represents 310 cadets, most of whom complete the three or four-year program. This represents between 5% and 10% of the on-board work force. Some concerns have been expressed that the cadet programs are not generating sufficient graduates to meet demand. Some institutes report, however, difficulty in finding placement for cadets, especially for the required one-year internship necessary to obtain a certificate of competency (C of C). Aside from this limitation being a factor in limiting new student enrolment, it may suggest that sufficient cadets are being graduated from the institutes.

Foreign student enrolment is not a reasonable alternative for the institutes. The whole point of the training is to obtain a C of C to work on-board ships upon completion of the cadet program. Obtaining a C of C in Canada requires that the applicant be a Canadian Citizen, according to Section 88(1) of the *Canada Shipping Act.*

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