



# Canada's National Shipbuilding Procurement Strategy: *Potential Impact on Nova Scotia and other Regions*

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Prepared for:  
GREATER HALIFAX PARTNERSHIP

Prepared by:  
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## Preface

This research was undertaken by The Conference Board of Canada for the Greater Halifax Partnership. In keeping with Conference Board guidelines for financed research, the research design, as well as the content of this study, was determined by the Conference Board. The research was conducted by Marie-Christine Bernard, Associate Director of the Provincial Forecasting group, and Alicia Macdonald, Economist, Economic Forecasting and Analysis, under the direction of Pedro Antunes, Director of the Board's National and Provincial Forecasting group.

### **About the Conference Board of Canada**

The Conference Board of Canada is the foremost independent, not-for-profit applied research organization in Canada. We help build leadership capacity for a better Canada by creating and sharing insights on economic trends, public policy issues, and organizational performance. The Board's Economic Forecasting and Analysis division employs more than 25 professional economists, who bring together knowledge across regions and sectors in producing their forecasts. The forecasting group constructs and maintains econometric models of the national and regional economies and a one-of-a-kind, comprehensive quarterly database of the provincial economies in Canada. The Conference Board of Canada was established in 1954 and is affiliated with The Conference Board, Inc. of New York, which serves nearly 2,000 companies in 60 nations and has offices in Brussels and Hong Kong.

## Executive Summary

- The purpose of this study is to assess the potential economic impact of the National Shipbuilding Procurement Strategy on Nova Scotia and other regions in Canada under three scenarios:
  - The Halifax Shipyard is awarded a contract to construct combat vessels;
  - The Halifax Shipyard is awarded a contract to construct non-combat vessels;
  - The Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place.
- In the first scenario, where the shipyard builds the combat vessels, during the peak year of production real GDP in Nova Scotia is expected to increase by \$897 million and employment is forecast to increase by almost 11,500.
- From 2012 to 2030 (the “shock” period), an average employment gain of 8,400 is forecast for Nova Scotia. The national economic impact of the Halifax Shipyard building the combat vessels is much larger than the impact on Nova Scotia as other provinces also benefit from the offset requirements and the opportunity to supply goods and services required as inputs. Nationally, real GDP is expected to increase by \$1.5 billion in 2020 and employment is expected to increase by just over 16,000. The average annual increase in national employment over the shock period is expected to be 12,400.
- If the Halifax Shipyard wins the contract to construct non-combat vessels, during the peak year of production the boost to real GDP in Nova Scotia is estimated at \$733 million and employment is expected to increase by close to 10,000.
- The worst-case scenario looks at the impact on Nova Scotia if the Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place. In this scenario, after 2017, real GDP would decline by \$173 million and approximately 2,000 jobs would be lost. Even if commercial operations were maintained, these typically support few direct jobs and activity is irregular.

## 1.0 Introduction

The purpose of this study is to assess the economic impact of the Halifax Shipyard winning a major contract to supply Canada with replacements to its aging fleet of large ships operated by the Navy and Coast Guard. Three scenarios are considered in this project. The first scenario examines the impact of the Halifax Shipyard being awarded the contract to construct combat ships. In this scenario, the economic impact is calculated for the Nova Scotia economy and the national economy while multipliers for the remaining provinces are estimated. The second scenario looks at the economic impact of the Halifax Shipyard being awarded the contract to construct the non-combat vessels. The third, worst-case scenario looks at the impact on Nova Scotia if the Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place. In all three scenarios, Statistics Canada's inter-regional input-output model was used to quantify the direct and indirect (or supply-chain) impacts on the economy. The Conference Board of Canada's provincial forecasting model was used to derive the induced impacts to estimate the full economic impact on key indicators such as GDP, employment, incomes, and government revenues. Section 2 of this report provides a brief overview of the proposed combat and non-combat ship contracts. The methodology and key assumptions used to conduct the analysis are contained in Section 3. Section 4 contains the results of the study and Section 5 provides concluding remarks.

## 2.0 Halifax Shipyard Industry

The Halifax Shipyard is one of the city's key industries, employing over 1,200 people in 2010. Currently the shipyard has contracts under way worth \$219 million to build nine mid-shore patrol vessels for the Canadian Coast Guard and \$549 million to carry out a mid-life refit of seven Halifax-class navy frigates. But there is the potential to substantially increase activity at the shipyard if it successfully bids for a new contract under the National Shipbuilding Procurement Strategy (NSPS) for major combat ship replacement and maintenance. The NSPS is a component of the *Canada First* Defence Strategy, which sets out a detailed road map for modernizing the Canadian Forces. Under the NSPS, the federal government will invest approximately \$30 billion over the next 30 years to replace Canada's aging fleet of large ships operated by the Navy and the Canadian Coast Guard.

Ottawa issued a call for bids for two work packages in 2010, one of which includes about \$25 billion in combat vessel construction and the other about \$5 billion to build non-combat ships. The second package, which includes a Polar-class icebreaker, has the potential to grow in value as Ottawa adds more Coast Guard vessels.

This study examines the potential economic impact of the Halifax Shipyard under three scenarios. In the first scenario, it is assumed that the shipyard is awarded the \$25-billion contract to construct new combat vessels.<sup>1</sup> The direct, indirect, and induced economic impact on the Nova Scotia economy is calculated from 2012 to 2030 (the "shock" period).<sup>2</sup> However, it is not just the Nova Scotia economy that will benefit if the Halifax Shipyard is awarded the combat vessel contract. Under this scenario it is assumed that some of the maintenance work will be contracted to another shipyard and that all provinces will benefit from supply-chain impacts and money spent to meet the contract's offset requirements.<sup>3</sup> To capture these additional contributions, direct, indirect, and induced impacts were calculated for the national economy and for other regions.

In the second scenario, it is assumed that the Halifax Shipyard wins the \$5-billion contract to construct non-combat vessels. In this instance, the full economic benefit, including direct, indirect, and induced effects, is calculated only for the Nova Scotia economy. The worst-case scenario looks at the impact on Nova Scotia if the Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place.

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<sup>1</sup> The Government of Canada has not announced the value of the contracts; thus the \$25 billion represents an estimate of the dollar value of the combat vessel contract. An estimate was also used for the dollar value of the non-combat vessel contract.

<sup>2</sup> The assumed timelines are derived from the notional schedule outlined in the National Shipbuilding Procurement Strategy Request for Proposal and extend from 2012 to 2042. Our analysis is confined to the 2012 to 2030 period.

<sup>3</sup> For more information on offsets and the assumptions made regarding their impact, refer to Section 3.2

## 3.0 Methodology and Key Assumptions

### 3.1 Methodology

The objective of this study is to quantify the economic impact of the Halifax Shipyard being awarded a federal government contract to construct new ships. The analysis evaluates the combined direct, indirect, and induced economic impacts, using the following parameters:

- **Direct impact** measures the value added<sup>4</sup> to the economy from the shipbuilding and repair industry that is attributed directly to the sector's employees, the wages earned, and the firms' revenues.
- **Indirect impact** measures the value-added that the "direct impact" firms generate within the economy through their demand for intermediate inputs or other support services. For example, activity in the shipbuilding and repair industry creates demand for architectural, engineering, and related services industries.
- **Induced impacts** are derived when employees of the aforementioned industries spend their earnings and owners spend their profits. These purchases lead to more employment, higher wages, and increased income and tax revenues, and can be felt across a wide range of industries.

As such, increased demand for the products and services of a specific industry will not only have direct impacts on the economy but will also spread through the economy through a series of multiplier effects. Indirect effects are first felt through an increase in demand for products and services from industries that are direct suppliers. Second-round induced effects produce a smaller but more widespread impact on all sectors of the economy, largely through a general increase in consumer spending.

In order to estimate the indirect impact of the shipbuilding industry on the Nova Scotia and the national economies, this analysis used Statistics Canada's inter-regional input-output (I-O) model.<sup>5</sup> In this case, the direct impacts were not available for confidentiality reasons, but the sum of direct and indirect impacts obtained provide important information about the impact of the shipbuilding industry on Nova Scotia and other regions in Canada.

The direct and indirect impacts result in a boost to wages and profits in the provincial economy, and the spinoff impact of these increases are the induced economic impacts. Because the I-O model does not capture induced impacts, the Conference Board's provincial forecasting model was used to assess the impact of the additional income on Nova Scotia's economy. The direct and indirect effects obtained

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<sup>4</sup> Value-added or net output is the difference between total revenue and the sum of expenses on parts, materials, and services used in the production process. Summing the value-added across all industries in a region will yield the GDP in that region.

<sup>5</sup> For more information about Statistics Canada's inter-regional input-output model see: Erik Poole, *A Guide to Using the Statistics Canada Input-Output Model*, 58-E (June 1993; revised September 1999).

from the I-O simulations, along with the additional induced impacts from the Conference Board's provincial forecasting model, were used to estimate the total economic impact on the Nova Scotia economy under each scenario over the 2012–30 period.

In the first scenario, it is assumed that Nova Scotia is awarded the combat vessel contract and will need to contract some of its maintenance work to a shipyard in British Columbia. As such, to assess the impact on the national economy it was necessary to obtain a second simulation from Statistics Canada's I-O model that reflects an increase in both Nova Scotia's and British Columbia's shipbuilding and repair industries. The results from this I-O simulation were used to assess the indirect impact on the national economy, and the Conference Board's national forecasting model was then used to assess the additional induced economic impacts. These I-O results, combined with the results from the national model, were used to construct economic multipliers for the other provinces to determine the impact on real GDP for across all regions in Canada.

### 3.2 Key Assumptions

The assumed timelines for spending on the combat and non-combat ships are largely based on the notional schedule outlined by the National Shipbuilding Procurement Strategy Request for Proposal. The spending was converted into inflation-adjusted 2002 dollars to match the base year for Statistics Canada's Provincial Economic Accounts.

In order to proceed with the analysis, it was also necessary for the Conference Board to make assumptions on how the owner of the Halifax Shipyard would fulfill its offset obligations. With most Canadian defence programs, the prime contractor that successfully wins a bid worth more than \$100 million is obliged to spend an amount equal to the value of the contract in the Canadian economy. The Industrial and Regional Benefits (IRB) policy was created 25 years ago to ensure that Canadian small and medium-sized companies benefit from federal Crown projects. If a portion of the work is not actually performed in Canada or a product is imported, the prime contractor needs to undertake business activities in Canada to compensate for the work performed outside the country. In other words, the prime contractor must provide industrial benefits to Canada equal to or greater than the value of the contract won. These offsets can take different forms such as investments in machinery and equipment and structures, investment in research and development, or the purchase of goods and services not related to the contract.

The prime contractor that manages the contract to develop either the combat vessels or the non-combat ships will be subject to the IRB policy. For example, some of the parts necessary to build the ships, including military hardware, may not be manufactured in Canada. Assumptions about the offsets were necessary in order to include them in the economic impact analysis. We have assumed that the majority of the design and build of the ships takes place in Canada and that 30 per cent of the value of the contract is imported, requiring an equivalent amount in offsets. The confidentiality of commercial business transactions limits the amount of information available on the IRB process and, in turn, on how businesses fulfilled their commitments under the IRB policy in previous contracts. However, Industry Canada, the agency responsible for administering the IRB policy, indicates that businesses usually use

different levers to meet their IRB obligations. The assumption that we formulated for the impact analysis is that the prime contractor will favour, in fairly equal proportion, investing in research and development, undertaking special studies, investing in non-residential construction, purchasing machinery and equipment, and purchasing goods and services not related to the contract. The offsets could benefit all regions of Canada, but we have assumed that Nova Scotia will benefit disproportionately. In the combat vessel scenario, the offsets at the national level will average \$275 million annually (all figures are in real terms) from 2012 to 2030, peaking at \$384 million in 2020. In the non-combat scenario, the offsets will average \$102 million annually from 2012 to 2030, peaking at \$272 million in 2015. We estimated that roughly 30 per cent of the offsets will accrue to Nova Scotia, with the balance shared among other provinces based on their relative economic weight.

## 4.0 Findings

### 4.1 Combat Vessels

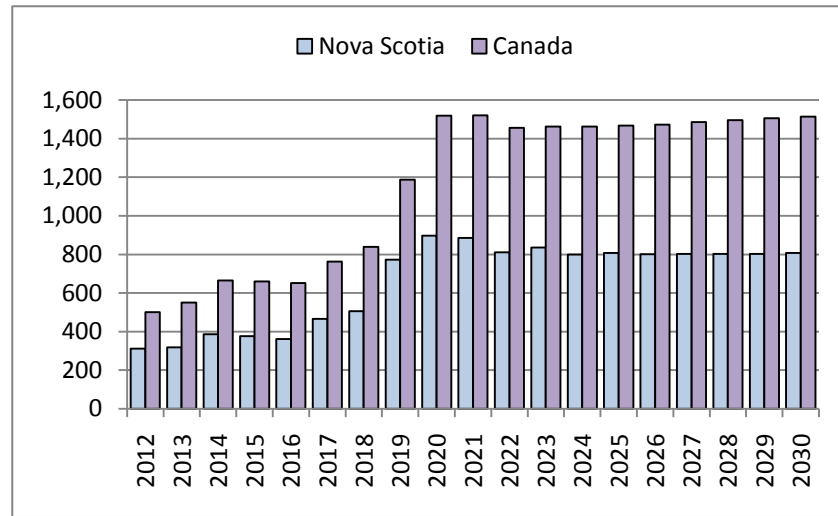
If the Halifax Shipyard is successful in its bid for the \$25-billion contract to construct combat vessels, there will be a significant boost to the Nova Scotia economy starting in 2012. Not only will Nova Scotia benefit, but thanks to the extra demand generated by the shipyard and the offset requirements associated with the contract, the entire country is expected to benefit. (See Chart 1.)

In this scenario, it is estimated that due to capacity constraints, 40 per cent of the maintenance work will need to be contracted to a shipyard in British Columbia. As such,

British Columbia will benefit if the Halifax Shipyard builds the combat vessels. Ontario and Quebec will also experience a sizable economic boost from the indirect demand that cannot be fulfilled in Nova Scotia and from the share of the offset spending that will be invested in these provinces. Table 1 provides a summary of the economic benefit for each region of the country for every \$1,000 spent on shipbuilding and repair in Nova Scotia.

**Chart 1**

**Increase in Real GDP – Combat Vessel Scenario**  
(2002 \$ millions)



Sources: The Conference Board of Canada; Statistics Canada.

**Table 1**

**Increase in Real GDP for every \$1,000 in Procurement in Nova Scotia Shipbuilding\***

Nova Scotia	Other Atlantic Canada	Quebec	Ontario	Prairies	British Columbia
\$799	\$20	\$89	\$196	\$82	\$108

Sources: The Conference Board of Canada; Statistics Canada.

\*assumes 40 per cent of the maintenance work would be contracted out to B.C. and that N.S. would receive 30 per cent of the offsets; includes the sum of direct, indirect, induced and offset impacts. Indirect benefits are from Statistic's Canada's IO model and the induced and offset benefits were shared out using each provinces relative economic weight. Results for N.S. are based on our detailed analysis of the impact of the project on the provincial economy. Multiplier effects reported in this table are averages over the shock horizon.

Investment spending on new combat vessels is expected to peak in 2020 and will translate into a total boost to real GDP in Nova Scotia of \$897 million that year. The total economic multiplier, including direct, indirect, induced, and offset impacts is 0.82 in Nova Scotia. The multiplier is less than unity since many inputs into the shipbuilding process will be contracted to firms outside the province. Additionally, Nova Scotia is expected to receive just 30 per cent of the offset spending, with the remainder distributed among the other provinces. Since a large portion of the economic benefit is expected to be realized outside Nova Scotia, the impact of a successful bid on the national economy is fairly large relative to the impact in Nova Scotia. Thanks to the spillover effects and offset requirements, the Canadian economy is expected to be lifted by \$1.5 billion in 2020. Table 2 details the forecast boost to real GDP and employment in each region of the country in 2020.

<b>Table 2</b>						
<b><i>Economic Impact in 2020 by Region*</i></b>						
	<b>Nova Scotia</b>	<b>Other Atlantic Canada</b>	<b>Quebec</b>	<b>Ontario</b>	<b>Prairies</b>	<b>British Columbia</b>
<b>GDP (\$2002 millions)</b>	\$897	\$24	\$112	\$196	\$102	\$135
<b>Employment</b>	11,495	233	855	1,619	383	1,558
Sources: The Conference Board of Canada; Statistics Canada.						
*assumes 40 per cent of the maintenance work would be contracted out to B.C. and that N.S. would receive 30 per cent of the offsets.						
Results for NS based on detailed analysis of the impact of the project on NS's economy.						

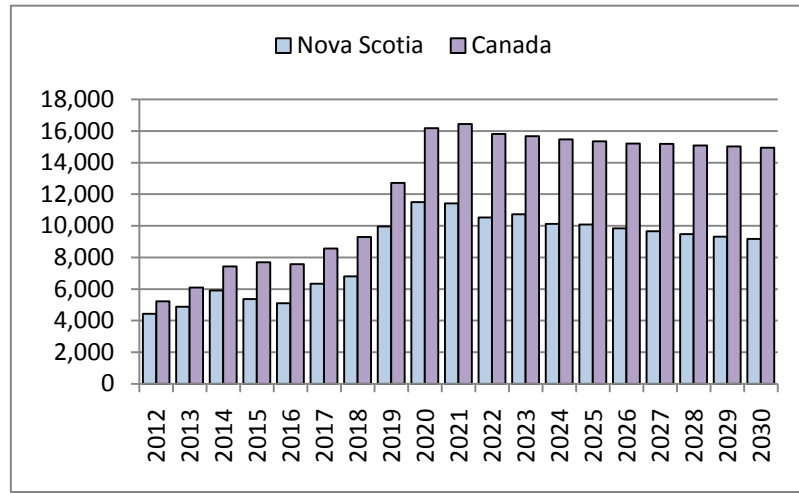
In Nova Scotia, the manufacturing industry is expected to experience the largest gain, with real GDP up by \$687 million in 2020. The construction industry will benefit from 2012 to 2014 as the new structures required to build the vessels are constructed. Wholesale and retail trade as well as community, business, and personal services are also expected to benefit, with a notable increase in activity expected in these industries. Real GDP in 2020 is forecast to increase by \$57 million for wholesale and retail trade and by \$67 million for community, business, and personal services.

In this scenario, employment gains in Nova Scotia are expected to peak in 2020 at just under 11,500 while national employment is expected to be up by over 16,000. (See Chart 2.) Over the shock period (2012 to 2030), an average annual employment gain of 8,400 is forecast for Nova Scotia, while the average increase in national employment is expected to be 12,400 per year. In Nova Scotia, the largest increase in employment will be in the manufacturing sector, where close to 7,400 new jobs are expected in 2020. An additional 2,000 jobs are forecast in other commercial services, and employment in wholesale and retail trade is expected to increase by roughly 1,100.

Employment gains and output expansion will drive income and profit gains in the province. In 2020, personal income in Nova Scotia is expected to increase by \$545 million because of construction of the combat vessels. By 2030, the boost to personal income will reach \$634 million. Corporate profits are expected to increase by \$141 million in Nova Scotia in 2020, increasing to \$145 million by 2030. The gain in corporate profits and personal income will push tax revenue collected in Nova Scotia up by \$355 million in 2020 and by \$392 million in 2030.<sup>6</sup> (See Chart 3.) The impact on other key indicators in Nova Scotia under the combat vessel scenario can be found in Appendix A.

**Chart 2**

**Increase in Employment – Combat Vessel Scenario**



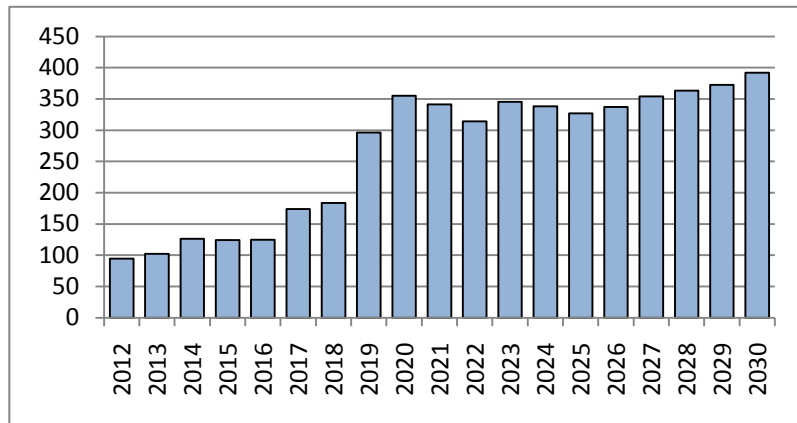
Sources: The Conference Board of Canada; Statistics Canada.

#### 4.2 Non-Combat Vessels

The second scenario considers the economic impact of the Halifax Shipyard winning the \$5-billion contract to construct non-combat vessels. In this scenario, the majority of the benefit will occur during the first seven years of the analysis. In the non-combat scenario, shipbuilding is expected to ramp up in 2014 and remain strong through 2018. Real GDP remains elevated from 2019 to 2030, but the gains are more subdued. The economy will also benefit from construction of the new facilities required if the shipyard is awarded this contract. Construction is expected to take place from 2012 to 2014, providing an immediate boost to real GDP. (See Chart 4.)

**Chart 3**

**Increase in Tax Revenue\* – Combat Vessel Scenario**  
(\$ millions)



Sources: The Conference Board of Canada; Statistics Canada.

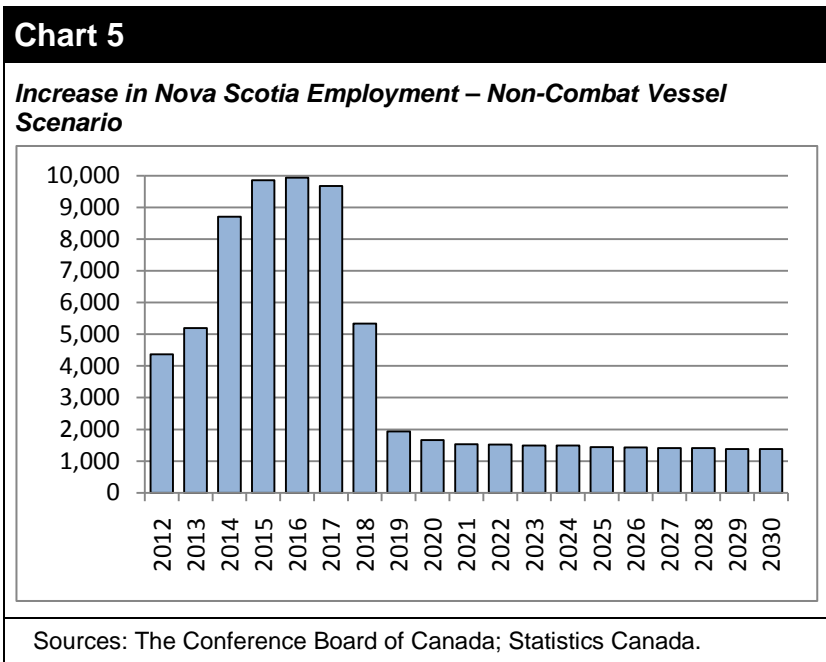
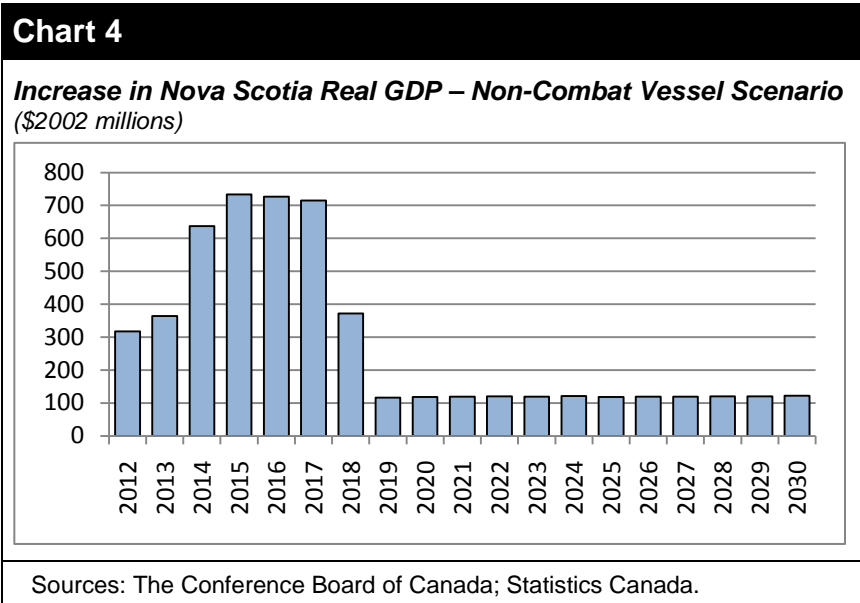
\*Tax revenue measures the increase in federal and provincial personal income tax, corporate tax and indirect taxes from the increase in Nova Scotia's economic activity.

<sup>6</sup> The Conference Board's forecasting model captures corporate taxes, provincial and federal income taxes, and indirect taxes.

Nova Scotia’s manufacturing sector will be the main beneficiary of the contract, with real GDP in the industry expected to increase by over \$500 million annually from 2015 to 2017. The construction sector is also expected to benefit during the first few years as industrial structures are put in place. The increased demand generated by the shipbuilding industry will also benefit wholesalers, with a boost of around \$40 million expected in wholesale and retail trade output during the peak year of the project. Shipbuilding will increase the demand for services such as telecommunications and legal and accounting services, boosting GDP in these industries. Overall, the increase in real GDP is forecast to peak at \$733 million in 2015. Real GDP is expected to be boosted by about \$120 million annually over the 2019–30 period, when work shifts from shipbuilding to maintenance of the vessels.

Employment will get a sizable boost if the shipyard is awarded the non-combat vessel contract. Employment gains are expected to peak at just under 10,000 in 2015 and are forecast to remain elevated, by approximately 1,500 positions annually over the 2019–30 period. (See Chart 5.)

Over 6,000 new jobs annually in the manufacturing industry are expected during the peak building years of 2015 to 2017. In



2013 and 2014, when construction activity is strongest, about 700 new jobs will be created in the construction industry. Peak contract years will also result in about 3,000 additional jobs in services industries.

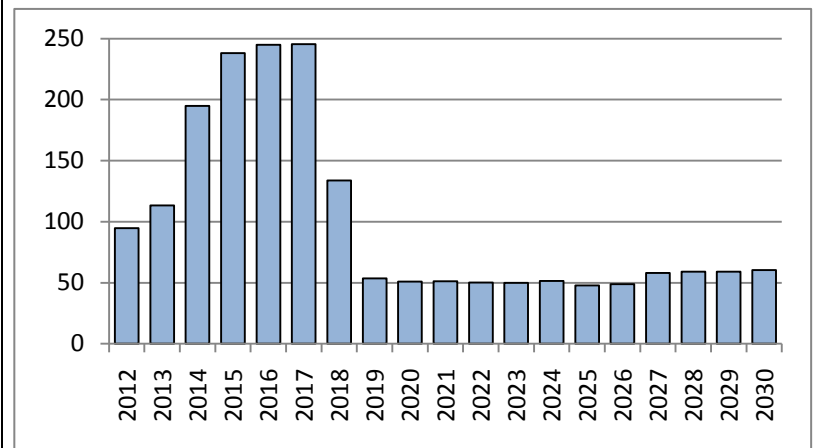
The increase in real GDP and employment that occurs in this scenario provides a sizable boost to income and, therefore, tax collection. At their peak levels, personal income is expected to increase by \$420 million while corporate profits are forecast to climb by \$87 million. The Conference Board’s provincial model captures corporate, income, and indirect taxes, the sum of which is expected to increase by \$258 million in 2017, thanks to the boost to income and profits. (See Chart 6.) Detailed shock results for the Nova Scotia economy in the non-combat vessel scenario can be found in Appendix B.

### 4.3 Halifax Shipyard is not Successful at Winning New Contracts

In this worst-case scenario the Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place. In this scenario, after 2017, real GDP would decline by \$173 million and approximately 2,000 jobs would be lost. Even if commercial operations were maintained, these typically support few direct jobs and activity is irregular.

**Chart 6**

**Increase in Tax Revenue\* – Non-combat vessel scenario**  
(\$ millions)



Sources: The Conference Board of Canada; Statistics Canada.

\*Tax revenue measures the increase in federal and provincial personal income tax, corporate tax and indirect taxes from the increase in Nova Scotia’s economic activity.

The loss of economic activity associated with the shipyard will have a negative impact on a wide range of economic indicators including personal income, corporate profits, and government tax revenues. The high-wage manufacturing sector will be hardest hit, with real GDP in the industry expected to fall by \$123 million and 1,300 jobs forecast to disappear. Wholesale and retail trade will also be hit hard, with real output expected to decline by about \$12 million and employment forecast to fall by about 250. Full results displaying the impact of this scenario can be found in Appendix C.

## 5.0 Conclusion

If the Halifax Shipyard is awarded the combat vessel contract, it is estimated that the increase in Nova Scotia's real GDP will peak at \$897 million in 2020. In this scenario, employment is expected to increase by almost 11,500 positions during the peak year of the project. Given that a large portion of the benefits will accrue outside Nova Scotia, the impact on the national economy will be much higher; national real GDP is expected to increase by \$1.5 billion in 2020 and employment is expected to increase by just over 16,000.

In the scenario where the shipyard is awarded the contract to construct non-combat vessels, the boost to real GDP is expected to peak at \$733 million in 2015. This boost to real GDP is expected to increase employment in 2015 by close to 10,000 positions. After the primary shipbuilding activity is completed, the Nova Scotia economy can expect an average boost to real GDP of \$120 million over the 2019–30 period as maintenance on the vessels is carried out at the Halifax Shipyard.

In our worst-case scenario, the Halifax Shipyard is unsuccessful in winning any new public or commercial contracts beyond those currently in place. In this scenario, after 2017, real GDP would decline by \$173 million and approximately 2,000 jobs would be lost.

## Appendix A – Combat Vessel Scenario<sup>7</sup>

**Table 3**

**Nova Scotia Key Economic Indicators** (level difference shock minus control except where otherwise indicated)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at market prices (millions of constant \$2002)	344	352	426	417	399	514	559	854	991	977	896	923	883	893	884	887	886	887	891
GDP at market prices (millions of current \$)	387	394	493	491	494	608	683	1,060	1,281	1,268	1,190	1,231	1,212	1,236	1,257	1,278	1,289	1,306	1,335
Real GDP at basic prices (millions of constant \$2002)	312	319	386	377	361	466	506	773	897	885	812	836	799	808	801	803	803	803	807
Personal income (millions of current \$)	165	191	239	222	218	278	308	458	545	563	542	572	562	582	589	600	610	621	634
Personal disposable income (millions of current \$)	113	129	164	147	143	182	205	303	351	363	352	374	369	384	388	388	395	407	412
Population of labour force age	72	355	747	1,216	1,683	2,166	2,710	3,358	4,214	5,209	6,232	7,231	8,221	9,175	10,110	11,021	11,912	12,783	13,637
Labour force	2,454	2,706	3,275	2,973	2,840	3,531	3,800	5,543	6,400	6,393	5,944	6,083	5,784	5,795	5,693	5,629	5,557	5,496	5,452
Employment	4,423	4,880	5,909	5,354	5,094	6,337	6,799	9,966	11,495	11,419	10,530	10,728	10,115	10,080	9,840	9,666	9,478	9,311	9,177
Unemployment rate (level difference in rate)	-0.4	-0.5	-0.6	-0.5	-0.5	-0.6	-0.6	-1.0	-1.1	-1.1	-1.0	-1.0	-1.0	-1.0	-1.0	-0.9	-0.9	-0.9	-0.9
Total indirect taxes (millions of current \$)	40	42	50	53	51	77	83	135	158	150	133	149	150	138	143	149	154	162	169
Federal personal income tax collections (millions of current \$)	24	27	34	33	33	41	42	64	84	85	81	84	84	86	88	90	91	93	98
Provincial personal income tax collections (millions of current \$)	15	19	21	22	24	31	35	53	63	67	63	66	63	64	65	75	76	73	74
Corporate profits (millions of current \$)	44	40	61	46	50	74	68	128	141	113	104	134	117	110	118	117	119	128	145
Corporate taxes (million of current \$)	15	14	21	16	17	26	24	45	49	39	36	47	41	38	41	41	41	45	50
Multiplier	0.82	0.81	0.83	0.80	0.80	0.84	0.81	0.81	0.80	0.82	0.82	0.84	0.80	0.81	0.81	0.80	0.80	0.80	0.81

Sources: The Conference Board of Canada; Statistics Canada.

<sup>7</sup> In all three scenario's the results reflect the gross output to GDP multiplier.

**Table 4**

**Nova Scotia Real GDP by Industry and Labour Market** (level difference shock minus control except where otherwise indicated)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at basic prices (millions of \$2002)	312	319	386	377	361	466	506	773	897	885	812	836	799	808	801	803	803	803	807
Agriculture and other primary	5	4	3	2	0	2	2	5	5	3	1	3	2	3	3	4	5	6	7
Manufacturing	205	192	234	291	277	346	381	580	687	674	614	620	605	614	607	612	614	615	616
Construction	29	49	64	9	11	16	16	15	20	28	31	30	27	25	23	26	24	23	22
Utilities	6	5	5	4	3	6	6	10	11	10	8	9	8	9	9	9	9	10	10
Information and cultural industries	7	6	8	7	5	8	8	8	9	9	8	9	8	9	10	10	10	10	10
Transportation and warehousing	5	7	7	7	7	7	7	7	8	8	12	13	11	8	9	5	6	6	7
Wholesale and retail trade	16	23	21	17	16	26	27	54	57	52	45	51	48	47	49	46	47	49	50
Finance, insurance and real estate	13	7	11	13	14	20	20	32	32	33	30	34	29	30	28	27	25	24	23
Community, business and personal services	27	26	33	28	27	36	38	60	67	69	63	67	61	63	62	63	62	61	61
Public administration and defense	4	7	8	7	10	7	9	7	10	13	16	13	13	14	12	10	10	9	8
Total Employment	4,423	4,880	5,909	5,354	5,094	6,337	6,799	9,966	11,495	11,419	10,530	10,728	10,115	10,080	9,840	9,666	9,478	9,311	9,177
Agriculture and other primary sector	39	33	28	15	3	15	12	36	34	22	11	20	12	17	21	27	33	38	46
Manufacturing	2,402	2,302	2,816	3,402	3,236	3,942	4,272	6,292	7,397	7,252	6,593	6,557	6,297	6,284	6,105	6,029	5,920	5,802	5,686
Construction	490	865	1,147	247	233	281	288	275	353	467	516	512	465	427	387	425	396	369	345
Utilities	26	23	23	19	17	26	27	46	50	45	37	41	36	39	38	39	39	40	40
Transportation and warehousing	86	109	112	114	117	113	115	114	127	120	171	188	173	125	132	81	84	87	96
Wholesale and retail trade	348	526	480	394	356	540	581	1,085	1,171	1,068	928	1,027	958	946	962	895	898	914	934
Finance, insurance and real estate	92	60	82	101	108	147	152	234	240	242	223	247	214	218	208	199	184	175	167
Other commercial service industries	909	902	1,146	992	931	1,203	1,270	1,815	2,040	2,089	1,914	2,019	1,845	1,903	1,888	1,886	1,846	1,817	1,801
Public administration and defense	31	60	75	70	93	70	82	68	84	114	137	116	114	121	99	86	77	70	63
Unemployment	-1,969	-2,174	-2,634	-2,380	-2,254	-2,805	-2,999	-4,423	-5,095	-5,026	-4,586	-4,644	-4,332	-4,285	-4,146	-4,037	-3,921	-3,816	-3,725

Sources: The Conference Board of Canada; Statistics Canada.

## Appendix B – Non-Combat Vessel Scenario

**Table 5**

**Nova Scotia Key Economic Indicators** (level difference shock minus control except where otherwise indicated)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at market prices (millions of constant \$2002)	350	402	703	810	803	789	411	128	131	132	133	132	133	130	132	132	133	133	134
GDP at market prices (millions of current \$)	399	466	797	958	956	948	524	150	161	151	159	157	171	175	174	173	171	179	185
Real GDP at basic prices (millions of constant \$2002)	317	364	637	733	727	715	372	116	119	119	120	119	121	118	119	120	120	120	122
Personal income (millions of current \$)	163	203	346	402	417	420	251	110	100	97	101	102	105	105	108	110	113	113	117
Personal disposable income (millions of current \$)	111	138	232	266	272	273	170	78	71	70	72	73	75	76	77	78	80	81	83
Population of labour force age	71	345	803	1,492	2,314	3,196	4,015	4,563	4,865	5,070	5,236	5,385	5,519	5,642	5,757	5,867	5,974	6,078	6,178
Labour force	2,422	2,874	4,805	5,430	5,490	5,375	3,046	1,206	1,058	992	991	980	982	959	959	953	959	943	950
Employment	4,365	5,190	8,704	9,850	9,931	9,670	5,337	1,939	1,659	1,530	1,521	1,493	1,488	1,440	1,432	1,413	1,416	1,381	1,385
Unemployment rate (level difference in rate)	-0.4	-0.5	-0.8	-0.9	-0.9	-0.9	-0.5	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Total indirect taxes (millions of current \$)	40	49	83	107	106	106	55	25	23	24	23	23	23	20	20	27	27	27	28
Federal personal income tax collections (millions of current \$)	23	29	51	61	62	63	32	13	12	12	12	13	13	13	13	13	14	14	15
Provincial personal income tax collections (millions of current \$)	15	18	33	40	46	47	26	11	10	10	10	10	10	10	10	12	12	11	11
Corporate profits (millions of current \$)	47	48	79	87	87	83	58	16	17	15	15	14	15	15	16	18	18	19	18
Corporate taxes (million of current \$)	16	17	28	30	30	29	20	5	6	5	5	5	5	5	6	6	6	7	6
Multiplier	0.83	0.80	0.83	0.83	0.84	0.82	0.83	0.81	0.82	0.83	0.84	0.83	0.84	0.82	0.83	0.81	0.81	0.81	0.82

Sources: The Conference Board of Canada; Statistics Canada.

**Table 6**

**Nova Scotia Real GDP by Industry and Labour Market** (level difference shock minus control except where otherwise indicated)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at basic prices (millions of \$2002)	317	364	637	733	727	715	372	116	119	119	120	119	121	118	119	120	120	120	122
Agriculture and other primary	7	9	16	13	10	7	5	1	1	1	2	2	3	2	2	2	2	3	3
Manufacturing	206	223	417	538	517	519	268	85	85	85	85	85	84	82	84	84	83	83	83
Construction	22	40	42	17	18	13	9	4	2	3	4	4	3	3	3	4	4	3	3
Utilities	9	9	23	28	25	25	10	4	3	4	4	4	4	4	4	4	4	4	4
Information and cultural industries	4	6	8	9	10	10	6	2	1	1	2	2	2	2	2	2	2	2	2
Transportation and warehousing	10	10	15	17	17	17	10	3	2	3	4	3	3	3	3	3	2	3	3
Wholesale and retail trade	20	24	42	41	41	39	22	6	8	9	8	8	8	8	8	8	8	9	9
Finance, insurance and real estate	17	20	33	27	33	31	16	4	6	5	4	5	6	6	5	6	5	6	6
Community, business and personal services	22	22	41	44	54	53	26	8	10	8	7	7	8	8	8	8	9	8	9
Public administration and defense	6	6	8	16	11	9	3	2	1	2	2	2	2	2	2	2	2	2	2
Total Employment	4,365	5,190	8,704	9,850	9,931	9,670	5,337	1,939	1,659	1,530	1,521	1,493	1,488	1,440	1,432	1,413	1,416	1,381	1,385
Agriculture and other primary sector	56	75	118	102	79	60	43	12	8	7	15	12	18	15	15	15	15	16	18
Manufacturing	2,413	2,652	4,882	6,232	6,039	6,006	3,253	1,183	1,009	919	908	893	873	845	844	822	800	785	768
Construction	374	704	766	358	348	253	164	75	48	55	70	66	48	55	47	62	59	55	53
Utilities	42	44	106	128	121	117	53	23	16	19	18	18	18	17	17	17	17	17	17
Transportation and warehousing	152	165	252	289	285	280	173	55	38	48	55	45	48	39	38	36	35	36	37
Wholesale and retail trade	450	550	918	908	911	866	505	168	173	180	160	162	158	156	159	158	161	161	167
Finance, insurance and real estate	120	152	240	215	251	237	130	43	48	36	28	37	43	41	40	41	39	42	41
Other commercial service industries	706	793	1,343	1,473	1,787	1,761	980	354	306	251	251	243	268	257	256	247	275	254	271
Public administration and defense	52	55	78	146	110	91	36	27	13	16	17	17	15	15	14	14	14	14	14
Unemployment	-1,943	-2,316	-3,899	-4,420	-4,441	-4,295	-2,291	-734	-602	-539	-530	-513	-507	-480	-473	-460	-457	-437	-435

Sources: The Conference Board of Canada; Statistics Canada.

## Appendix C – No New Contract Scenario

**Table 7**

**Nova Scotia Key Economic Indicators** (level difference shock minus control except where otherwise indicated)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at market prices (millions of constant \$2002)	-191	-191	-183	-192	-188	-191	-192	-190	-185	-189	-188	-190	-191
GDP at market prices (millions of current \$)	-256	-257	-235	-259	-257	-256	-255	-278	-277	-292	-285	-282	-279
Real GDP at basic prices (millions of constant \$2002)	-173	-173	-166	-173	-170	-173	-174	-172	-167	-171	-170	-172	-173
Personal income (millions of current \$)	-90	-98	-99	-109	-110	-117	-120	-124	-123	-131	-134	-138	-143
Personal disposable income (millions of current \$)	-60	-65	-64	-72	-73	-78	-80	-82	-81	-87	-90	-95	-97
Population of labour force age	-36	-171	-346	-534	-730	-927	-1,126	-1,323	-1,515	-1,701	-1,885	-2,067	-2,247
Labour force	-1,143	-1,200	-1,155	-1,226	-1,185	-1,211	-1,199	-1,187	-1,128	-1,153	-1,137	-1,137	-1,133
Employment	-2,084	-2,175	-2,082	-2,200	-2,113	-2,149	-2,114	-2,080	-1,962	-1,997	-1,956	-1,945	-1,927
Unemployment rate (level difference in rate)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total indirect taxes (millions of current \$)	-22	-23	-24	-26	-27	-29	-29	-26	-26	-29	-30	-31	-33
Federal personal income tax collections (millions of current \$)	-13	-15	-16	-15	-15	-16	-17	-19	-19	-19	-19	-19	-20
Provincial personal income tax collections (millions of current \$)	-10	-10	-11	-13	-13	-13	-13	-14	-14	-14	-14	-15	-15
Corporate profits (millions of current \$)	-26	-23	-26	-27	-25	-26	-28	-31	-30	-32	-29	-27	-28
Corporate taxes (million of current \$)	-9	-8	-9	-9	-9	-9	-10	-11	-11	-11	-10	-9	-10
Multiplier	0.83	0.83	0.80	0.83	0.82	0.83	0.83	0.83	0.81	0.82	0.82	0.83	0.83

Sources: The Conference Board of Canada; Statistics Canada.

**Table 8****Nova Scotia Real GDP by Industry and Labour Market** (level difference shock minus control except where otherwise indicated)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Real GDP at basic prices (millions of \$2002)	-173	-173	-166	-173	-170	-173	-174	-172	-167	-171	-170	-172	-173
Agriculture and other primary	-5	-4	-3	-3	-3	-4	-4	-4	-4	-4	-5	-5	-4
Manufacturing	-123	-124	-124	-124	-123	-124	-122	-123	-124	-123	-122	-124	-123
Construction	-6	-8	-7	-8	-8	-8	-8	-7	-7	-7	-7	-7	-7
Utilities	-6	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
Information and cultural industries	-3	-2	-2	-2	-1	-1	-1	-2	-1	-2	-2	-2	-2
Transportation and warehousing	-4	-4	-3	-3	-3	-2	-2	-3	-3	-3	-3	-3	-3
Wholesale and retail trade	-12	-12	-11	-14	-14	-16	-16	-13	-13	-15	-15	-16	-16
Finance, insurance and real estate	-5	-6	-5	-6	-5	-5	-7	-6	-4	-5	-4	-4	-5
Community, business and personal services	-8	-9	-7	-9	-7	-8	-8	-9	-6	-7	-7	-7	-8
Public administration and defense	1	-2	-1	-3	-1	-2	-1	-2	-2	-3	-2	-1	-1
Total Employment	-2,084	-2,175	-2,082	-2,200	-2,113	-2,149	-2,114	-2,080	-1,962	-1,997	-1,956	-1,945	-1,927
Agriculture and other primary sector	-33	-32	-24	-25	-24	-24	-24	-26	-26	-29	-29	-29	-28
Manufacturing	-1,300	-1,332	-1,356	-1,342	-1,312	-1,305	-1,274	-1,262	-1,242	-1,209	-1,182	-1,167	-1,136
Construction	-107	-131	-131	-141	-140	-140	-134	-125	-113	-117	-118	-112	-106
Utilities	-25	-23	-21	-21	-20	-21	-21	-21	-20	-20	-20	-21	-20
Transportation and warehousing	-55	-58	-45	-46	-39	-34	-34	-43	-42	-47	-46	-44	-43
Wholesale and retail trade	-246	-249	-220	-277	-288	-327	-323	-268	-264	-287	-295	-298	-294
Finance, insurance and real estate	-37	-42	-35	-44	-37	-40	-52	-45	-34	-36	-28	-29	-36
Other commercial service industries	-288	-295	-239	-283	-240	-240	-243	-270	-208	-233	-224	-236	-258
Public administration and defense	6	-14	-10	-22	-12	-18	-10	-19	-13	-21	-15	-11	-7
Unemployment	940	975	927	974	928	938	915	894	834	844	819	808	794

Sources: The Conference Board of Canada; Statistics Canada.