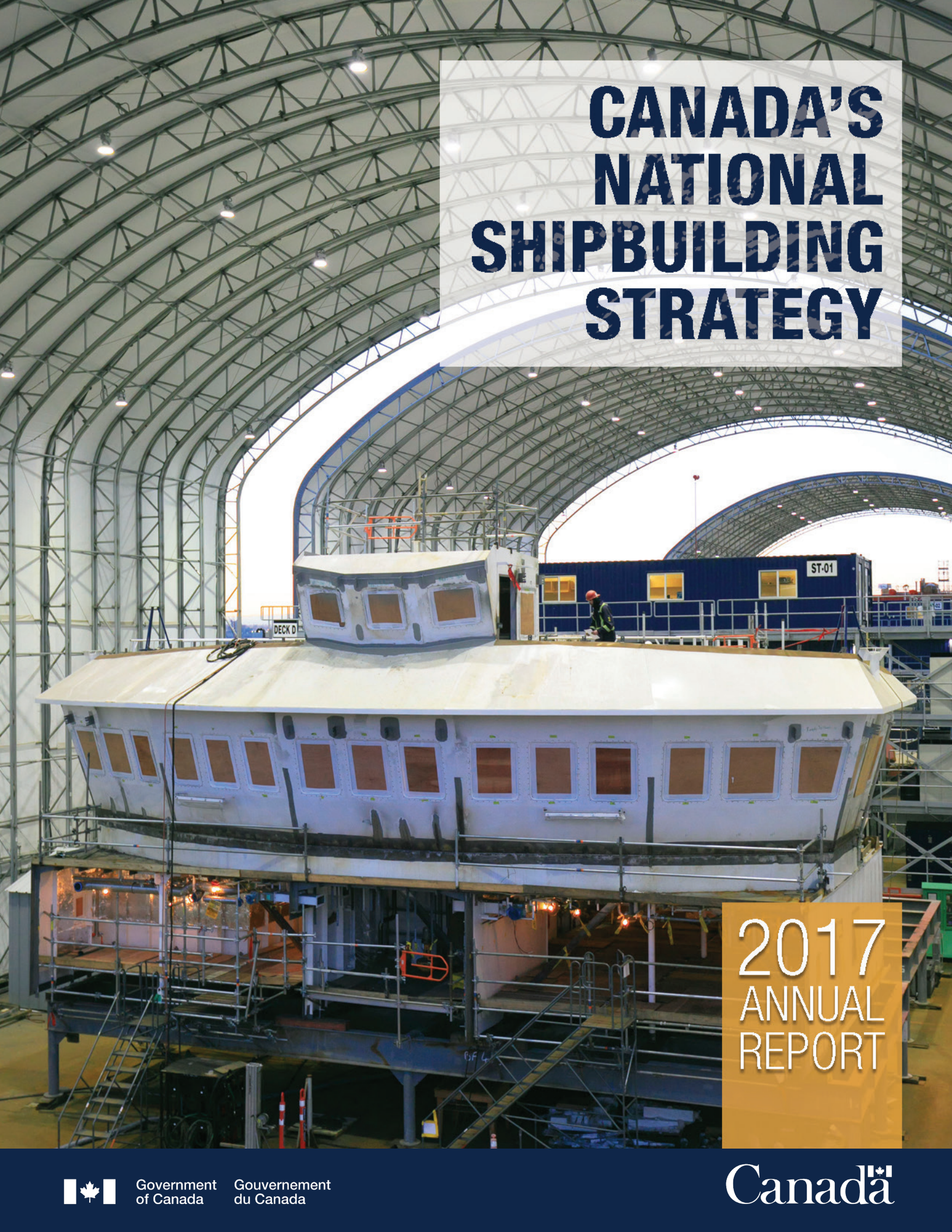



# CANADA'S NATIONAL SHIPBUILDING STRATEGY

## 2017 ANNUAL REPORT

Government of Canada | Gouvernement du Canada

Canada

# Ministerial message

As one of the ministers responsible for the delivery of the National Shipbuilding Strategy (NSS), I am pleased to present this second annual report on the Strategy's progress from January 1 to December 31, 2017.

Looking back on 2017, numerous significant milestones were reached and achievements were made on the construction of both large and small ships, as well as the repair, refit and maintenance of existing ships.

Through the NSS, the creation of long-term, well-paying jobs together with the resulting positive economic benefits should not be underestimated. Companies in communities across Canada are benefitting from contracts and subcontracts resulting from the Strategy. In the process, the NSS is doing what it was intended to do: equip the Royal Canadian Navy and the Canadian Coast Guard, create and sustain jobs for Canadians, and reinvigorate a world-class shipbuilding industry and the overall marine sector in general in this country.

In 2017, the first large vessel, the Offshore Fisheries Science Vessel (OFSV), CCGS *Sir John Franklin*, was launched at Seaspan's Vancouver Shipyards and moved to Victoria to complete construction and commence trials in advance of acceptance. This 63-metre research vessel will be used to gain a better understanding of the health of fish stocks and the ocean environment.

The first Arctic and Offshore Patrol Ship (AOPS), HMCS *Harry DeWolf*, is being prepared to be launched later this year at Irving Shipbuilding Inc. (ISI) in Halifax, where construction is continuing on the second and third AOPS vessels, the future HMCS *Margaret Brooke* and *Max Bernays*. These vessels will provide armed, sea-borne surveillance of Canadian waters, including in Canada's Arctic.

At the same time, other Canadian shipyards would have ample opportunities to compete for small vessel construction, repair, refit and maintenance contracts under the second and third pillars of the strategy.

Despite this progress, the NSS has not been free of challenges. This strategy is a complex undertaking, spanning decades. In a short period of time, we have improved Canada's shipbuilding capacity, but it will take time for the NSS to hit its stride. We have had to revise schedules and project budgets set years ago and we are working closely with our shipyard partners to minimize production slowdowns.

Canada's shipbuilding requirements will not be met overnight, but our actions are helping to re-establish a marine industry that has not produced large federal vessels in decades. We continue to look at existing and emerging federal fleet requirements and will continue to make adjustments where we find the need to do so.

The NSS is a long-term commitment to building ships, generating economic growth and jobs and creating a sustainable marine sector. As such, the Strategy will continually evolve to meet Canada's shipbuilding requirements. We remain committed to working with our industry partners to continually improve it, while providing the men and women who so proudly serve our country with the equipment they need to do their important work.

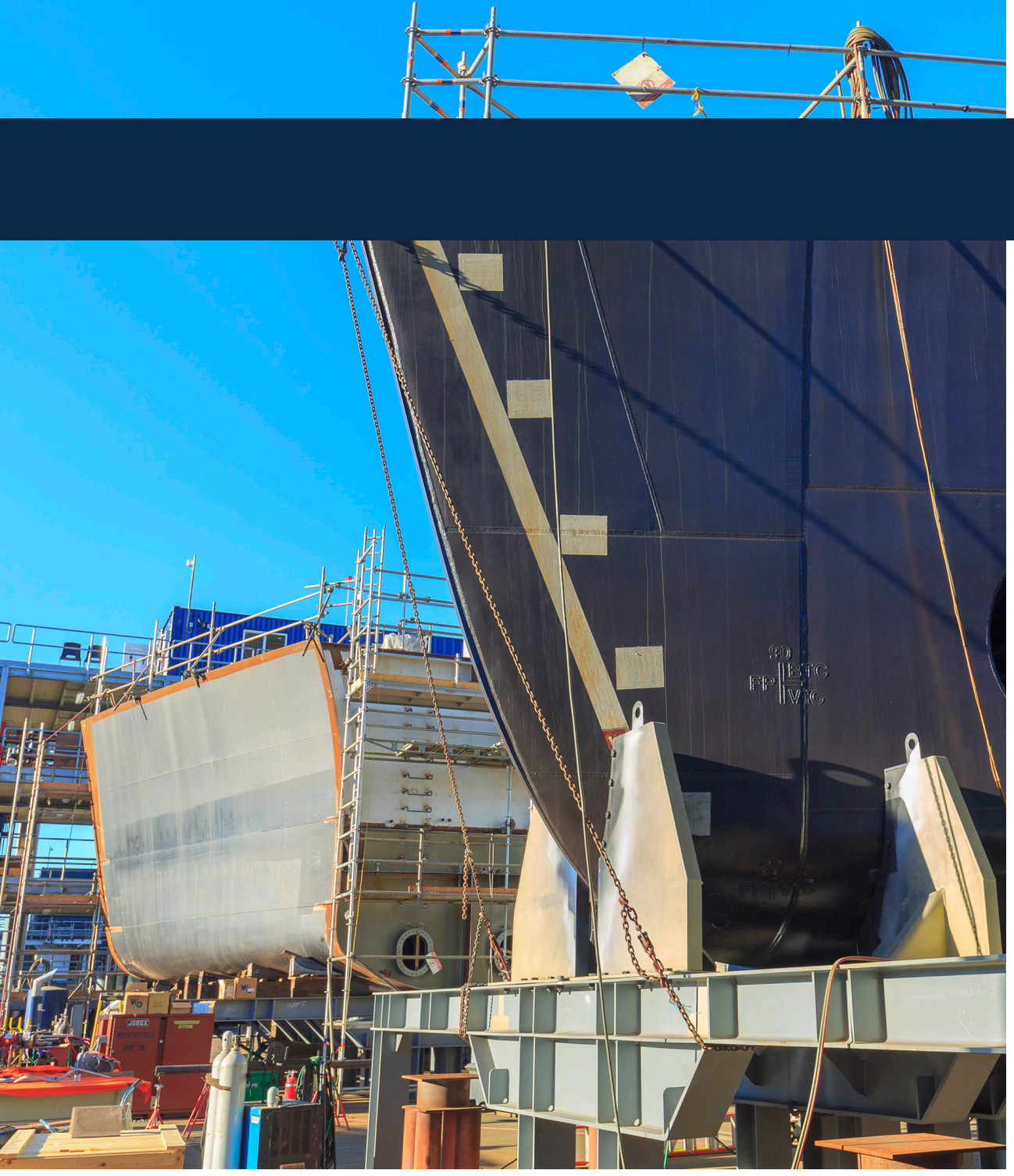
**The Honourable Carla Qualtrough**
**Minister of Public Services and Procurement and Accessibility**

# Table of contents

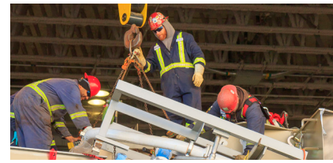
# The 2017 National Shipbuilding Strategy annual report

The National Shipbuilding Strategy (NSS) is Canada's 30 year plan to renew the fleets of the Royal Canadian Navy and the Canadian Coast Guard. The primary objectives of the Strategy are to equip the fleets of the Royal Canadian Navy and the Canadian Coast Guard in a timely and affordable manner, build a sustainable marine sector in Canada and maximize economic benefits for Canada, including job creation.

This report provides an update on the National Shipbuilding Strategy from January 1 to December 31, 2017, providing details on the progress of NSS projects, as well as data regarding new contracts and contract amendments signed during 2017. It also addresses some of the key challenges faced by the Strategy to date, and mitigating measures being put in place to address those challenges.



# The year in review



## KEY ACHIEVEMENTS

During the reporting period, progress on the National Shipbuilding Strategy has been made in the following areas:

- New NSS contracts amounting to almost $1.3 billion were awarded in 2017 throughout the country. These contracts are estimated to contribute about $1.3 billion ($218 million annually) to Canada's gross domestic product (GDP), and will create or maintain about 2,374 jobs annually during the period covering 2017 to 2022 in the Canadian economy. NSS contracts awarded between 2012 and 2017 are estimated to contribute approximately $8.9 billion ($812 million annually) to our GDP and create or maintain 8,788 jobs annually into the Canadian economy during the period covering 2012 to 2022.

- Over $216 million in contracts were awarded to Canadian suppliers by ISI and Seaspan's Vancouver Shipyards. Of that amount, almost $148 million was awarded to small and medium-sized enterprises (SMEs).[1] During the reporting period, an additional 57 new Canadian firms, three-quarters (44) of which are SMEs, were hired by the shipyards for work on NSS-related projects.

- NSS spending in 2017 from previously awarded contracts is estimated to have contributed over $1.8 billion to Canada's GDP and created or maintained over 20,000 jobs in the Canadian economy in 2017.

- Indigenous participation in Canada's shipbuilding industry resulted in approximately 383 Indigenous people receiving training, 60 people returning to school for additional training and 258 employed in various shipbuilding-related jobs.

[1] Companies with fewer than 250 full-time employees

# Large ship construction

- Almost $65 million worth of new large-ship construction was contracted in 2017 to both ISI and Seaspan's Vancouver Shipyards.
- The large ship construction contracts issued in 2017 will contribute approximately $86 million ($14 million annually) to Canada's gross domestic product and will create or maintain approximately 150 jobs annually in the period between 2017 and 2022.
- Work undertaken on previously awarded contracts in large ship construction is estimated to have contributed close to $1.2 billion of GDP, and created or maintained 12,574 jobs in 2017.
- The Offshore Fisheries Science Vessel (OFSV), the first large vessel designed and built under the National Shipbuilding Strategy, was launched at Seaspan's Vancouver Shipyards and moved to Victoria for completion, trials and acceptance in early 2019. The OFSV is a 63-metre research vessel that will be used to gain a better understanding of the ocean environment, including the health of fish stocks.
- Steel was cut in February 2017 for the third OFSV being built for the Canadian Coast Guard. Seaspan's Vancouver Shipyards now has all three OFSVs under construction.
- A Request for Proposals (RFP), issued to 12 pre-qualified companies for the design and design team of the Canadian Surface Combatant fleet, closed on November 30, 2017. The RFP invited companies to participate in a single, open and competitive process to select an existing warship design and a design team to work with ISI and the government.
- In December, mega-block three of the first Arctic and Offshore Patrol Ship (AOPS)—the future HMCS *Harry DeWolf*—was moved to the land level exterior production area at ISI to be joined to the first two mega-blocks to make up the entire vessel.
- In December, ISI began the construction of the third Arctic and Offshore Patrol Ship (AOPS), the future HMCS *Max Bernays*.

# Small ship construction

- Almost $20 million of new small ship construction activity was awarded to Canadian shipyards.
- The small ship construction contracts issued in 2017 will contribute approximately $19 million ($3 million annually) to Canada's gross domestic product and will create or maintain approximately 36 jobs annually in the period between 2017 and 2022.
- Work undertaken on previously awarded contracts in small vessel construction is estimated to have contributed $18.3 million to GDP, and created or maintained 205 jobs in 2017.
- The first two search and rescue (SAR) lifeboats were accepted by the Canadian Coast Guard in November and December. A total of 12 SAR lifeboats were contracted to Chantier Naval Forillon and Hike Metal Products.

# Repair, refit and maintenance

- Almost $1.2 billion in new or amended ship repair, refit and maintenance contracts was awarded for the Canadian Coast Guard and the Royal Canadian Navy.
- This includes an initial contract for up to eight years and $800 million, with options to extend up to 35 years and $5.2 billion to the joint venture of Thales Canada Inc. and Thales Australia Ltd. for in-service support, including refit, repair and maintenance and training for the Arctic and Offshore Patrol Ships (AOPS) and Joint Support Ships (JSS).
- The repair, refit and maintenance contracts issued in 2017 will contribute approximately $1.2 billion ($201 million annually) to Canada's gross domestic product and will create or maintain approximately 2,187 jobs annually in the period between 2017 and 2022.
- Work undertaken on previously awarded contracts in repair, refit and maintenance-related activity is estimated to have contributed $667.5 million of GDP, and created or maintained 7,233 jobs in the Canadian economy in 2017.

# 2017 year in review

2017 Year in Review

## ECONOMIC BENEFITS

2017-22

**2,374+ jobs**
created or maintained annually

Small ship construction **36** jobs

Large ship construction **150** jobs

Repair, refit, and maintenance projects **2,187** jobs

Repair, refit and maintenance **$1.18B**

Contracts awarded in 2017

**$1.27B**

Large ship construction **$65M**

Small ship construction **$20M**

**$216M**
in subcontracts awarded

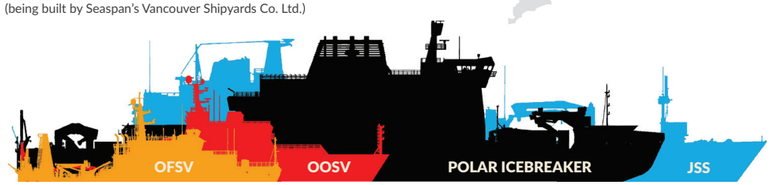
**57+ new firms**
added to supply chain
in 2017

2017-22

**$1.3B**
in Gross Domestic Product*

*GDP is one of the primary indications used to gauge the health of Canada's economy. It represents the dollar value of all goods and services produced over a specific time period.

### NON-COMBAT VESSELS
(being built by Seaspan's Vancouver Shipyards Co. Ltd.)

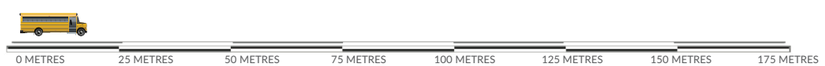



3 x Offshore Fisheries Science Vessels

1 x Offshore Oceanographic Science Vessel

1 x Polar icebreaker

2 x Joint Support Ships




### COMBAT VESSELS
(being built by Irving Shipbuilding Inc.)


5 or 6 x Arctic and Offshore Patrol Ships

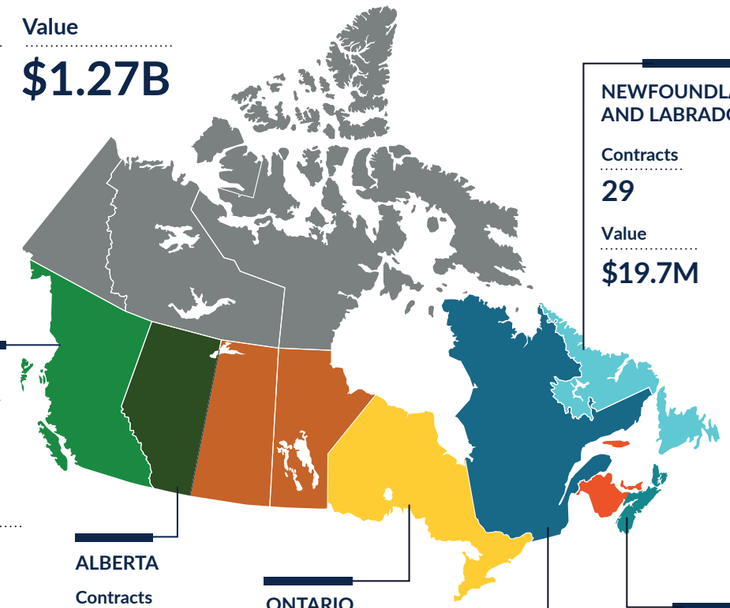
15 x Canadian Surface Combatants

## NSS CONTRACTS AWARDED BY THE GOVERNMENT OF CANADA

January 1 - December 31, 2017

**Total**

| Contracts | Value |
|---|---|
| 167 | $1.27B |



**BRITISH COLUMBIA**
Contracts: 36
Value: $145M

**ALBERTA**
Contracts: 3
Value: $0.45M

**ONTARIO**
Contracts: 19
Value: $808M

**QUEBEC**
Contracts: 39
Value: $48.5M

**NEWFOUNDLAND AND LABRADOR**
Contracts: 29
Value: $19.7M

**NOVA SCOTIA**
Contracts: 41
Value: $247M

## ECONOMIC BENEFITS

The NSS shipyards are meeting and exceeding their economic leveraging commitments to Canada. Under the NSS, shipyards have an obligation to respect the investments required as part of both the Industrial and Technological Benefits Policy and Value Proposition investments.

Canada's Industrial and Regional Benefits Policy is playing an important role in leveraging Canada's defence spending to generate economic benefits for Canada. This approach requires defence contractors and their major suppliers to invest 100% of the contract value in Canada.

With this policy, shipyards must undertake business activity in Canada equal to the value of the contract and invest in targeted areas such as: work in Canada directly related to the procurement, opportunities for Canadian suppliers, innovation through research and development activities in Canada and new export opportunities.

The economic impact of the NSS work is generating significant benefits throughout the Canadian economy.

Irving Shipbuilding's Halifax Shipyard has an Industrial and Regional Benefits (IRB) obligation of $2.5 billion, of which $966 million has been completed to date and another $652 million is under way for the Arctic and Offshore Patrol Ships project.

On the West coast, Seaspan's Vancouver Shipyards (VSY) is making progress on its IRB obligations for the vessels under the NSS non-combat package, including the Offshore Fisheries Science Vessels, Offshore Oceanographic Science Vessel and Joint Support Ships. To date, VSY has completed $398 million in IRBs with $284 million in activities under way as part of their total IRB obligation of $794 million across these three programs. Current obligations are based on the value of contracts awarded to date for design and engineering, equipment and systems integration, and ship construction. Additionally, both shipyards are investing 0.5% of the value of their National Shipbuilding Strategy contracts under the Value Proposition commitments they made to benefit the greater Canadian marine industry in the areas of human resources development, technology investment and industrial development.

The NSS Value Proposition is designed to benefit the greater Canadian marine industry and help ensure its long-term sustainability. These investments will help to strengthen and grow Canada's marine industry as a whole.

The shipyards continued to be active in realizing their commitments in 2017, with Irving Shipbuilding's Halifax Shipyard providing $2.6 million and Seaspan's Vancouver Shipyards $1.3 million of funding to approved National Shipbuilding Strategy Value Proposition recipients. Overall they have identified investments of more than $15 million to date which will contribute to strengthening and growing Canada's marine industry.

## STRONG, SECURE, ENGAGED

In June 2017, the Government of Canada released a new defence policy for Canada–*Strong, Secure, Engaged*–with a 20-year funding commitment in Canadian Armed Forces capabilities. The long-term investment will ensure the full complement of 15 Canadian Surface Combatants, as well as acquire five to six Arctic and Offshore Patrol Ships. The policy further confirms that two Joint Support Ships will be built, and it commits to the acquisition of "new or enhanced naval intelligence, surveillance, and reconnaissance systems, upgraded armament, and additional systems for current and future platforms allowing for more effective offensive and defensive naval capabilities."

# NSS challenges

When measured against its stated objectives, the NSS has generated numerous positive results, particularly regarding the building of a sustainable marine sector and generating economic benefits for Canada. However, challenges still remain regarding the objective of equipping the fleets of the Royal Canadian Navy and the Canadian Coast Guard in a timely and affordable manner.

It should be noted that prior to the NSS, Canada had not undertaken a significant marine procurement since the delivery of the Canadian Patrol Frigates (CPF) in the 1990s. While Canada has fundamentally reconstructed its capacity to build large ships on both coasts in new and modernized facilities, it has also faced with a number of challenges, particularly with respect to project budgets, schedules, and anticipated production slowdowns at the main shipyards.

## PROJECT BUDGETS

Project budgets, set years ago with the information available at the time, require updating.

Original budgets were set without a standardized approach, and these preliminary figures were never updated to reflect refinements in build estimates, requirements and plans, inflation, and changes in exchange rates, labour rates and material costs, which have been significant over the last decade.

The Government of Canada has acknowledged that budgets would need to be revisited. For example, in 2017, the government released a revised budget for the 15 Canadian Surface Combatants, estimated at $56–$60 billion.

Work is under way to improve costing for other shipbuilding programs. A revised costing approach, informed by engagement with the industry, will provide standardized and more accurate budgeting, as well as regularly refreshed estimates.

## PROJECT SCHEDULES

Project schedules are another area of challenge. Similar to cost estimates, schedules were established years ago, based on projections and guided by limited recent experience in the planning of shipbuilding projects.

With the information now available from actual construction progress, initial estimates have proven to be overly optimistic and with whole new classes of ships being built in new shipyards by new workforces, the first ships being designed and built have encountered schedule delays.

The Government of Canada is continuously working with Seaspan's Vancouver Shipyards and Irving Shipyards Inc. to monitor project schedules and assess the impact of any potential adjustments to timelines.

## PRODUCTION SLOWDOWNS

Modern shipbuilding is done in a production-line environment, with ships at increasing states of completion as they move from station-to-station through the facility. Any break or slowdown in production flow leads to inefficiencies. Significant slowdowns can result in workforce layoffs.

The National Shipbuilding Strategy provides flexibilities and options for minimizing the impacts of production slowdowns. For example, in order to mitigate slowdowns at Seaspan's Vancouver Shipyards, Canada has advanced the start of Joint Support Ship construction, with the assembly of blocks to set to begin earlier.

Planning is also under way to address a projected production fluctuation at Irving Shipbuilding Inc. between the construction of the Arctic and Offshore Patrol Ships and the Canadian Surface Combatants. The government expects to have a better sense of potential options in 2018, once it has finalized the schedule for the Arctic and Offshore Patrol Ships and selected the Canadian Surface Combatant design and design team.

The government is responding to the challenges by making adjustments to address them in a way that continues to support the overall vision of the Strategy.

Much has changed in the eight years since the National Shipbuilding Strategy was first launched. Not only has the Canadian marine industrial landscape changed, so has the government's understanding and appreciation of managing a complex program such as the NSS. This is not to say that all mitigation plans have or will be successful, but with the ongoing implementation of the enhancements to the Strategy announced in 2016 and with the engagement of Canada's marine industry, the NSS is in a better position moving forward.

## LOOKING FORWARD

The National Shipbuilding Strategy is helping to build a sustainable shipbuilding industry in Canada, while delivering technologically advanced ships to the Royal Canadian Navy and the Canadian Coast Guard. The process of renewing these fleets is one component of a 30-year project, which also includes executing small ship construction procurements and repair, refit and maintenance efforts to support their needs. Progress has taken place in a number of areas and is expected to increase as we look forward.

2017 saw the launch of the first large vessel in a quarter century, and progress in a number of areas is expected to increase as we move forward.

The coming year will see the launch of the first Arctic and Offshore Patrol Ship (AOPS), as well as the continued construction of the second and third AOPS and steel cutting for the fourth. Completion, trials and acceptance of the first Offshore Fisheries Science Vessel is expected early 2019, with the second and third vessels expected later in 2019. Construction of the JSS, the future HMCS *Protecteur* and the HMCS *Preserver* will commence in June 2018.

With the request for proposals process to select a design and design team for the Canadian Surface Combatant closing in 2017, bid evaluations are ongoing with a decision expected in 2018. Construction of the first ship is targeted to begin in the early 2020s.

Since 2010, the capacities and capabilities of Canada's shipbuilding industry have improved while the government's large ship construction projects have continued to mature. The optimization of the large ship construction delivery will be an area of focus for 2018 to ensure that the Strategy remains efficient and to maximize benefits for Canada and industry.

In order to support the Department of National Defence and the Canadian Coast Guard's operational requirements, Canadian shipyards will continue to undertake the construction and delivery of vessels under 1,000 tonnes, including the delivery of the next set of Search and Rescue Lifeboats.

Industry workshops hosted by Public Services and Procurement Canada began in 2017 and will continue through 2018 across Canada. These workshops will help advance the development of National Repair Refit and Maintenance and Small Vessel Construction program strategies and ensure they align with industry best practices, capabilities and capacity while supporting NSS objectives.

Over the coming years, the Coast Guard will procure additional small vessels to renew its fleet, including Near Shore Fishery Research Vessels, Special Navaids Vessels and Specialty Vessels. The Department of National Defence is in the process of procuring four new Naval Large Tugs to support the RCN fleet. The Request for Proposals is scheduled for release in summer 2018, with the contract award in 2019.

When the new National Shipbuilding Strategy ships enter service, in-service support will be required, and over the course of the next year, Vessel Life Extension work and In-Service Support efforts will continue across the country. More than $60 million of activity is expected to be undertaken over the next year in regions across Canada to support the Canadian Coast Guard, Transport Canada and the Royal Canadian Mounted Police.

## CONCLUSION

After eight years, the National Shipbuilding Strategy has made great strides, while experiencing more than a few challenges. Nevertheless, it is proving its worth in the long-term goal of equipping the Royal Canadian Navy and the Canadian Coast Guard with the ships they need to serve Canadians. The NSS is revitalizing our marine industry, supporting Canadian technological innovation and bringing jobs and prosperity to many communities across the country.

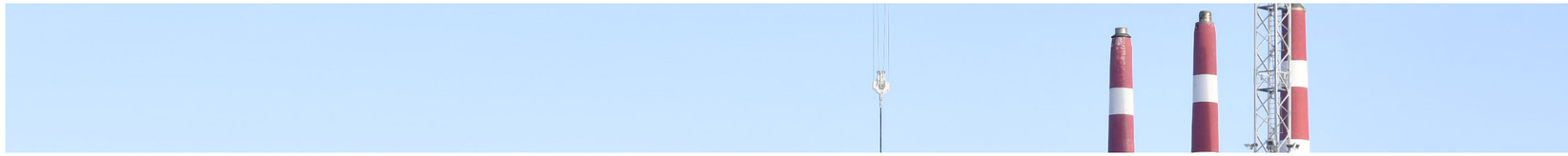
The successes have included the modernization of two Canadian shipyards, as well as significant new investment in the Canadian marine sector and its supply chain. Furthermore, the construction of two new classes of large vessels and numerous projects for small vessel construction and maintenance are currently under way across the country, all to support the work of the Royal Canadian Navy and the Canadian Coast Guard.

While the Strategy is still in its early stages of implementation, the economic benefits are already substantial and will continue to produce benefits for Canada, including opportunities for Indigenous peoples and other under-represented segments of the workforce to receive training and long-term work.

The NSS is a complex procurement program and remains a constant work in progress. The government is learning to appreciate and better understand the complexities of managing such a large procurement program. The capacities and capabilities of Canada's shipbuilding industry have changed over the years and federal needs continue to evolve.

Moving forward, the Government of Canada will continue to work with Canada's marine sector to ensure that the NSS is optimized to deliver on evolving federal marine requirements. The government will ensure that the National Shipbuilding Strategy will continue to deliver on its commitment to equip the Royal Canadian Navy and the Canadian Coast Guard with the ships they need to serve Canadians and to revitalize our marine industry, support Canadian technological innovation, and bring jobs and prosperity to communities across Canada.

# Appendix – Status of large vessel projects



## ARCTIC AND OFFSHORE PATROL SHIPS


Full production of the first vessel, the future HMCS *Harry DeWolf*, began in September 2015 and significant progress has been made on the construction of the second vessel, the future HMCS *Margaret Brooke*. Steel for the third vessel, the future HMCS *Max Bernays*, was cut in December 2017.

### THE YEAR AHEAD

Work continues on the construction of the first three Arctic and Offshore Patrol Ships, and steel will be cut for the fourth vessel, the future HMCS *William Hall*, during the year. The launch of the first vessel is expected to take place in 2018, with final delivery expected in 2019. Activities related to baseline review and scope (five or six vessels) will be finalized in 2018.

The Arctic and Offshore Patrol Ships will conduct armed sea-borne surveillance in Canada's waters, including in the Arctic. They will enhance the government's ability to assert Canadian sovereignty and provide surveillance and support to other government departments. The project includes funding for jetty infrastructure in Halifax and Esquimalt, and a berthing and fuelling facility in Nunavut.

| | |
|---|---|
| **Shipyard of build** | ISI |
| **Client department** | Department of National Defence |
| **Status** | Construction in progress |
| **Scope** | Five or six vessels |
| **Project budget** | $3.5 billion[2] |

[2] For five vessels

## CANADIAN SURFACE COMBATANT[3]

In November 2017, a Request for Proposals (RFP) issued to 12 pre-qualified companies for the design and design team for the Canadian Surface Combatant fleet closed. The RFP called for a single open and competitive process to select an existing warship design and design team to work with ISI. The winning design will be modified to the extent necessary to satisfy the requirements of the Royal Canadian Navy, and maximize the opportunity for Canadian content.

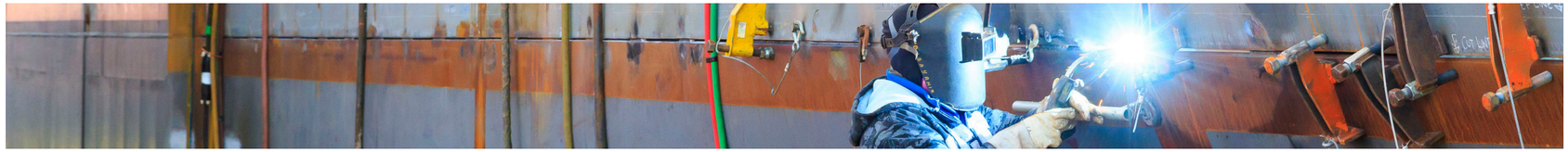
### THE YEAR AHEAD

The bidding process for the selection of the CSC design and design team closed November 30, 2017. The RFP process has now entered the bid evaluation stage, scheduled to be completed in 2018. A period of due diligence will then occur prior to the contracts being awarded in early 2019: first, the Prime Contract by Canada to ISI and second, the subcontract by ISI to the winning bidder.

The Canadian Surface Combatant fleet will be capable of meeting multiple threats on both the open ocean and the highly complex coastal environment. These ships will ensure that Canada can continue to monitor and defend its waters and make significant contributions to international naval operations. This fleet will replace the Royal Canadian Navy's Iroquois class destroyers and the Halifax class frigates.

| | |
|---|---|
| **Shipyard of build** | ISI |
| **Client department** | Department of National Defence |
| **Status** | Bid evaluation phase |
| **Scope** | 15 vessels |
| **Project budget** | $56 billion to $60 billion[4] |

[3] Artist rendering only. Not actual design.
[4] For 15 vessels



## OFFSHORE FISHERIES SCIENCE VESSELS

The Offshore Fisheries Science Vessels are being built by Seaspan's Vancouver Shipyards. Construction on all three Offshore Fisheries Science Vessels is under way, and they will be the first large vessels delivered under the National Shipbuilding Strategy. In December 2017, a launch ceremony was held for OFSV 1, the future CCGS *Sir John Franklin*, following which, the ship was moved to Victoria to complete construction work and trials. The third and final Offshore Fisheries Science Vessel began construction in February 2017.

### THE YEAR AHEAD

Construction on all three Offshore Fisheries Science Vessels is expected to continue throughout the year ahead. Delivery of OFSV-1 is expected to take place in early 2019.

The Offshore Fisheries Science Vessels will provide an important platform from which scientific research and ecosystem-based management can be performed. These "floating laboratories" will contribute to Canada's stewardship of fishery and ocean resources and will replace CCGS *Teleost*, CCGS *Alfred Needler* and the decommissioned CCGS W.E. *Ricker* on Canada's west and east coasts.

| | |
|---|---|
| **Shipyard of build** | Seaspan's Vancouver Shipyards |
| **Client department** | Fisheries and Oceans Canada and the Canadian Coast Guard |
| **Status** | Construction in progress |
| **Scope** | Three vessels |
| **Project budget** | $687 million[5] |

[5] For three vessels

## OFFSHORE OCEANOGRAPHIC SCIENCE VESSEL

In November 2015, Canada awarded the initial construction engineering contract to Seaspan's Vancouver Shipyards to commence the work required prior to the start of construction.

### THE YEAR AHEAD

Over the coming year, the Offshore Oceanographic Science Vessel project will continue with construction engineering, including the functional/production design stages. A construction contract will be negotiated once the required engineering work has been advanced.

The Offshore Oceanographic Science Vessel will support oceanographic, fishery, geological and hydrographic survey missions, contributing directly to our understanding of the oceans and the impacts of climate change. It will be outfitted for scientific research on ocean currents and on the seabed. This ship will replace the oldest vessel in the Canadian Coast Guard's fleet, CCGS *Hudson*, which operates on Canada's east coast.

| | |
|---|---|
| **Shipyard of build** | Seaspan's Vancouver Shipyards |
| **Client department** | Fisheries and Oceans Canada and the Canadian Coast Guard |
| **Status** | Definition stage |
| **Scope** | One Offshore Oceanographic Science Vessel |
| **Project budget** | $331 million (under review) |

## JOINT SUPPORT SHIP

The Joint Support Ships are being built by Seaspan's Vancouver Shipyards based on the TKMS Bonn/Berlin design and will include Canadian modifications. The initial design review work is now complete, and design and procurement activity has started on competitively selecting the major equipment and systems to be installed in the first ship. The design and production work will entail integration of all equipment and suppliers and regulatory approval for ship construction. At the completion of the work, a vessel design ready for full production and construction will be delivered.

### THE YEAR AHEAD

In order to advance the Joint Support Ship (JSS) schedule, the start of the JSS block construction has been advanced to summer 2018. This is expected to advance the JSS schedule by an estimated four and eight months respectively.

The Joint Support Ships (JSS) will increase the range and endurance of naval task groups, permitting them to remain at sea for significant periods of time without returning to port for replenishment. The JSS will also provide a home base for helicopter maintenance and operation, a limited sealift capability and support to operations ashore. They will replace the Royal Canadian Navy's retired Protecteur-class auxiliary oiler replenishment vessels.

| | |
|---|---|
| **Shipyard of build** | Seaspan's Vancouver Shipyards |
| **Client department** | Department of National Defence |
| **Status** | Design and production engineering phase |
| **Scope** | Two Support Ships |
| **Project budget** | $3.4 billion[6] |

[6] For two vessels. New cost estimate revised in 2018.

## POLAR ICEBREAKER


Canada has committed to keeping CCGS *Louis S. St-Laurent* in service at least until the delivery of the Polar Icebreaker.

### THE YEAR AHEAD

No activities are planned until work on other projects has advanced.

The Polar Icebreaker will replace Canada's current largest and most capable icebreaker, CCGS *Louis S. St-Laurent*. It will become one of the most powerful conventional icebreakers in the world. Expected to be Canada's "flagship" in the Canadian Arctic, the Polar Icebreaker will significantly enhance on-water capability in the Arctic. It will be able to consistently operate farther north, in more difficult ice conditions, and for longer periods than is currently the case.

| | |
|---|---|
| **Shipyard of build** | Seaspan's Vancouver Shipyards |
| **Client department** | Fisheries and Oceans Canada and Canadian Coast Guard |
| **Status** | Design is complete. Project will commence following the Navy's Joint Support Ships |
| **Scope** | One vessel |
| **Project budget** | $1.3 billion (under review) |