

The Stages of Warship Procurement

The procurement process for defence equipment, and especially for naval equipment, is a tremendously complex, complicated, and prolonged undertaking. In recent decades, the bureaucracy surrounding the process has only increased, in part due to the substantial sums of money involved. The Government of Canada has, for several years, spoke of simplifying and streamlining the procurement process, with the Liberal government of Prime Minister Justin Trudeau proposing (in 2019) to concentrate it within one office called Defence Procurement Canada, though this centralization was never achieved. Instead, the procurement process continues to follow the 2014 Defence Procurement Strategy. The Independent Review Panel for Defence Acquisition (IRPDA), created in 2015, is also involved, offering independent advice and overseeing major projects with values in excess of \$100 million. In 2018, the government also introduced the ‘Defence Investment Plan,’ to further augment existing strategy¹ by streamlining the costing, approval, and project governance processes of smaller and less complex projects. Still, defence procurement remains an onerous and formidable process, partly due to the sheer number of actors involved in its many stages.

Under the National Shipbuilding Strategy (NSS), the process for maritime procurement involves four central federal departments: the Department of National Defence (DND), Public Services and Procurement Canada (PSPC), the Department of Fisheries and Oceans (DFO)/Canadian Coast Guard (CCG), and Innovation, Science and Economic Development (ISED). Each department has differing responsibilities with respect to major naval or maritime procurement projects. DND and the CCG are tasked with defining requirements, developing specifications, and analyzing options and their cost estimates. Securing funding and policy approval is also within their purviews, as is providing technical expertise and managing the integration of services and equipment during the procurement or project. Meanwhile, PSPC is responsible for leading the industry and stakeholder engagement prior to and during the process, developing the procurement strategy, spearheading the solicitation process, overseeing the price and technical benefits evaluations, and managing the consequent performance of the contract, vendor, and procurement. Finally, ISED assumes responsibility for administering the Industrial and Technological Benefits (ITB) Policy, offering recommendations on the policy’s application to the procurement project, and determining – with aid from Global Affairs Canada – the evaluation criteria to capitalize on the economic benefits from the contracts and export elements of that criteria.²

The procurement process for the Canadian Surface Combatant (CSC) provides a case study to briefly examine the complexity of the defence procurement process, from the Identification and Options Analysis phases through to the Definition, Implementation, and, finally, Close-Out stages.³ The first stage of the procurement process is the Identification Stage. Here, the RCN identifies a capability gap. The RCN brings this capability gap to DND for it to act as the project’s sponsor and advocate to the government for funding.

¹ See Government of Canada, Department of National Defence, “Defence Investment Plan 2018 | Part II: Transforming the way National Defence works,” <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/defence-investment-plan-2018/defence-works.html>.

² Government of Canada, “Defence Procurement Strategy,” updated November 3, 2021, <https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/samd-dps/index-eng.html>.

³ Some procurement projects are organized differently. For instance, the procurement strategy for the Arctic and Offshore Patrol Ship has followed a “design then build” approach.

After approval for the project is given, the Options Analysis Stage involves evaluating and ultimately determining how to procure what the RCN needs. Discussion ensues about the type of design that would best fulfill the Navy's requirements (e.g., a frigate, coastal defence vessel, destroyer, etc.), the number of vessels that would be needed, and whether the vessel(s) would be constructed in Canada (and, if so, where) or purchased off-the-shelf internationally.⁴

Different actors, in these discussions, can have different motives and objectives. For instance, while the RCN may emphasize the capabilities of the vessel and timeliness of its procurement, the Treasury Board may prioritize the project's budget, and the Canadian government may stress economic benefits, the creation of jobs, and industrial strategies. Cost, understandably, is a key consideration during this phase, with evaluations made on the project's cost parameters, as well as the funding the government is willing to allot to the project. A further cost consideration in this Options Analysis Stage is how the cost of the naval project measures against those of comparable builds elsewhere, which can be complicated comparisons to make given that different countries include different components in their costings. Once these factors have been considered and decided upon, and the project's general parameters have been outlined in a Statement of Requirements document, the government then disseminates a Request for Proposals, specifying the build's conditions, noting the parameters for funding, and requesting the submission of proposals. Parties interested in undertaking the procurement project thus submit their designs, which are subsequently analyzed and evaluated with a points-based scoring process that examines the industrial, financial, and technical elements and benefits of the proposals. The government thereby selects a design, called the Total Ship Reference Point (TSRP). For the CSC project, the Government of Canada received bids from three companies and ultimately selected the BAE's Type 26-frigate design proposal as its base design, awarding the contract in 2019.⁵

The Options Analysis Stage follows the Definition Stage. Here, designers make alterations to designs to accommodate specific national regulations and requirements – for instance, regarding weapon systems, pollution control, or crew accommodations – or operational needs. For the RCN, this process is called the “Canadianization” of vessels. To Canadianize the CSC, the “parent design,” or the initial design providing the framework and foundation of the eventual vessel, was examined and tweaked to produce what is essentially a design which, while largely similar to the Type 26, has diverged in many important respects.⁶ The Definition Stage seeks to determine the differences the vessel will have. Here, engineers at the selected shipyard – in the CSC's case, Irving Shipbuilding – and RCN project managers assess and evaluate the project design. The ship

⁴ For the CSC, Canada selected Irving Shipyard in Halifax as the builder through an earlier competition. Thus, despite who won the contract, the CSCs will be constructed in their shipyard.

⁵ Initially, the CSC procurement project was organized so that two contracts would be granted, one for the design and another for the combat systems integration package. The government thus received submissions from 12 qualified bidders in those two streams, before narrowing down the field by instructing the bidders to then divide into teams. Some companies subsequently withdrew their bids, and, eventually, only three teams offered bids. The successful team was comprised of Lockheed Martin, the prime and combat system integrator, and BAE Systems, the owner of the selected Type 26 Global Combat Ship design.

⁶ See Justin Katz, “For Navy's new frigate, design changes carry risks and rewards,” *Breaking Defense*, January 24, 2022, <https://breakingdefense.com/2022/01/fremm-or-frigate-after-promises-to-congress-how-far-should-the-navys-design-stray/>.

design, supplier engagement, and production engineering pursuits undertaken to prepare for a vessel's construction are all included in the definition contract work.

Together, the shipyard and RCN project managers produce a second ship design, offering a more detailed and fleshed-out level of design, followed by simulations of the vessel's build. This stage also involves efforts to firm-up the supply chains and acquire long-lead items that must be purchased before construction commences, so that all required materials are available when and as needed. The production processes are established and confirmed, and a test module is created prior to the vessel's construction. A critical element to determine in this stage is the size of the vessel, which both impacts and is impacted by the roles the ship will be expected to fulfill and how it will fulfill them. While increasing a vessel's size, for instance, may increase its capabilities, it will also increase its power generation requirements. A further consideration in this stage is the weapons that will be included, with consideration given to their weight, power requirements, and placement, in addition to the degree to which they will be interoperable with allied vessels' capabilities. Weapon control, communication, fire suppression, and various other computer systems also must be decided upon and integrated into the design, allowing for, in this phase, the adjustment and tweaking of cash flow projections, cost estimates, and production engineering documentation as the vessel nears construction. It is these questions and considerations with which the CSC project is currently grappling.

Once the vessel and its structure are defined, the project transitions into its Implementation Stage, marking the commencement of its actual construction. The major decisions about the vessel have been made at this stage. The shipyard has established the requisite supply chains and ordered the electronics, weapon systems, long-lead time materials, etc. In the CSC's case, this Implementation Stage proceed in sections, with specific delivery schedules for the initial three ships and their required shore infrastructure, followed by further groups of ships, each with their own contracts. As the project is completed, it enters its Close-out Stage, which is the point at which the final vessel has been constructed, completed its builder's trials and RCN acceptance trials, and has been delivered to the Navy. At this point, final bills and tallies can be completed, and the process is effectively complete. Given the complexity of shipbuilding and naval procurement projects, this stage often occurs years following the Navy's initial documentation of a capability gap.

This overview is a simplification of a far more extensive and intricate process. At each stage, various government departments offer input into budgets, industrial and regional benefits, and risk assessments, with discussions also simultaneously occurring with and between industry. For the CSC, each stage has entailed the negotiation and signing of contracts between the Government of Canada and Irving Shipyards to confirm that the funding required to support the project is available. Irving itself negotiated contracts with Lockheed Martin and other suppliers. Any defence procurement process is thus a lengthy and time-consuming undertaking, with warships being particularly slow to procure given their size, complexity, and infrequency of construction in Canada. As Canadian shipyards rebuild capacity and hire the personnel needed to perform such massive procurement undertakings, and as the government rebuilds the expertise of its procurement personnel, it is hoped that each individual project will require less time and be less expensive. It is also hoped that new shipbuilding procurement projects will enable naval equipment manufacturers in Canada to continue to employ Canadians and produce equipment. Indeed, these were broad aims of the National Shipbuilding Strategy as a whole – creating a long-term naval

procurement plan to replace the boom-bust cycle of Canadian shipbuilding with a more continuous and regular procurement capability.