

THE ENGINEERING PROFESSION'S POSITION

- The federal government has an important role to play in improving the safety of those involved in the fishing industry and should therefore undertake a review of the regulatory framework affecting the design, construction, and modification of small fishing vessels to ensure the framework results in safe and efficient vessels.
- Federal departments should recognize the authority of provincial and territorial engineering regulators, specifically within regulatory fishing vessel frameworks, to ensure public safety and that where engineering work is being performed in Canada, that work must be performed by an engineer licensed in the province or territory where the work is being completed.
- Any new regulatory framework requires unbiased and transparent naval architectural expertise conducted by or under the supervision of a professional engineer licensed to practice in Canada.
- The federal government should incorporate climate adaptation and mitigation strategies within fishing vessel regulatory frameworks to align with its [Net-Zero Emissions by 2050](#) initiative. This will have the additional benefits of ensuring the ongoing economic viability of fishing businesses.

The challenge(s)

A small fishing vessel (SFV) is defined by Transport Canada as a vessel with an overall length of not more than 24.4 meters and of not more than 150 gross tonnage. The current regulatory framework that governs the design of SFVs in Canada has evolved over time to permit unsafe and non-environmentally conscious vessels and design practices. Currently, a design must: meet a simple length restriction imposed by the Department of Fisheries and Oceans Canada (DFO) aimed at reducing the catch capacity of the vessel; and meet the minimum static stability requirements of Transport Canada's [Fishing Vessel Safety Regulations](#).

As a result of the existing framework, some vessels have been designed to bypass the DFO's intention of limiting vessel catch capacity by significantly increasing their width and depth. By increasing vessel width, the static stability requirement is easily met since static stability is a function of vessel width. Consequently, vessels with extreme proportions have emerged, with length-to-beam (L/B) ratios of over 4.0 being reduced to 2.0 or lower over time. However, Transport Canada does not specify a maximum stability specification. Generally, wider vessels tend

to have greater stability. However, it is possible for a vessel to be excessively stable, which may seem counterintuitive. For example, vessels with wide beams designed to increase catch capacity may have such extreme proportions that they become a safety hazard due to excessive stability. An excessively stable vessel has motions that are so extreme that crew members must tie themselves to the vessel to avoid being thrown around. This has resulted in several motion reduction strategies being employed for which there is no regulatory framework.

The regulatory framework governing SFV has resulted in numerous instances of loss of lives, capsized vessels, and environmental damage due to fuel spills. The sinking of Ryan's Commander in 2004, designed by an unlicensed practitioner, is a notorious example of the contradiction between DFO and Transport Canada regulations, as outlined in the Transportation Safety Board of Canada (TSB) report.¹ The TSB's May 2022 report on the 2020 sinking of the Sarah Anne, which resulted in loss of life, noted that many small vessels lack stability studies. One of the contributing factors to the Sarah Anne's loss was the absence of a stability assessment.² The TSB's 2023 report on the sinking of the Chief William Saulis links federal inaction on imposing stricter stability standards for SFVs to the

vessel's sinking. The report highlights the need for mandatory stability assessments for modified vessels and notes that such assessments were not required during the 2017 inspection by Transport Canada inspectors. The vessel capsized in 2020, killing all six crew members.³ These incidents underscore the need for engineering oversight of fishing vessel stability modifications.

In addition to the adverse impact on vessel safety caused by the regulatory framework, the evolution of design towards low L/B ratios has resulted in excessive fuel consumption and a resulting increase in greenhouse gas emissions. A regulatory framework that would result in more conventional L/B ratios would result in safer vessels with fuel consumption as low as 33% of current levels.

In Canada, the regulation of engineering, including naval architecture, is regulated by provincial and territorial associations of professional engineers, as mandated by provincial and territorial laws and regulations. However, the federal government is exempt from those laws. In the case of SFVs, Transport Canada accepts the work of non-licensed individuals who perform engineering work but are not required to follow the requirements and standards established by provincial and territorial engineering regulators. Although Transport Canada is not responsible for governing who practices naval architecture in Canada, it is responsible for reviewing work submitted by vessel designers and producing the required stability analysis. However, the current regulations do not provide adequate measures to ensure safe vessels. Transport Canada is not accountable for ensuring the accuracy or safety of the analysis or the data used in the analysis, which places vessel operators, fishers, and crew members at risk.

Recommendations to the federal government

To improve the safety of those involved in this industry, the current regulatory framework must be reviewed to ensure that vessels require an

assessment conducted under the supervision of a licensed engineer. The federal government has an important role to play in improving the safety of those involved in the industry and should therefore open a consultation on fishing vessel design, including the design of vessel modifications and the design of motion mitigation technologies.

Engineers Canada and the engineering profession uphold that all design must be performed under the supervision of a professional engineer. Professional engineers who are involved in the design of fishing vessels are mandated and held accountable by the terms of their license to ensure that the welfare of the public and the environment are paramount in their work. Unlicensed practitioners have no such accountability.

How Engineers Canada will contribute

Engineers Canada will:

- Advocate for a public consultation regarding the small fishing vessel regulatory framework, to ensure that the process is conducive to the design of safer vessels.
- Continue to work with federal departments such that they recognize the authority of provincial and territorial engineering regulators, specifically within regulatory fishing vessel frameworks, and to ensure that where engineering work is being performed in Canada, that work must be done by an engineer licensed in the province or territory where the work is being completed.
- Advocate for climate adaptation and mitigation strategies within fishing vessel regulatory frameworks to support the federal government's Net-Zero Emissions by 2050 initiative, the Department of Fisheries and Ocean's climate change target strategy, and Transport Canada's Sustainable Development Strategy.

¹ The contribution of the regulatory contradiction between DFO length restrictions and Transport Canada's stability requirements was highlighted by the Transportation Safety Board of Canada in its Marine Investigation Report M04N0086 "Capsizing and Loss of Life: Small Fishing Vessel Ryan's Commander – 5 Nautical Miles East of Cape Bonavista, Newfoundland and Labrador, 19 September 2004".

² Transportation Safety Board of Canada (2022). "Marine transportation safety investigation report M20A0160 – Sinking and subsequent loss of life, Fishing Vessel Sarah Anne, Placentia Bay, Newfoundland and Labrador – 25 May 2020"

³ Transportation Safety Board of Canada (2023). "Marine transportation safety investigation report M20A0434 – Sinking with loss of life, Fishing vessel Chief William Saulis – 15 Dec 2020".