VESSEL TRAFFIC FORECAST TO 2040 FOR CANADA'S PACIFIC REGION

May 2025

ClearSeas

About Us

Clear Seas is a Canadian not-for-profit organization that provides independent fact-based information to enable governments, industry, and the public to make informed decisions on marine shipping issues. We work to build awareness and trust so that all people can feel a part of the marine sector. Our vision is a sustainable marine shipping sector that is safe, vibrant, and inclusive, both now and for future generations.

Clear Seas' research and publications are made available at clearseas.org

About this Report

Clear Seas completed research on Vessel Traffic Forecast to 2040 for Canada's Pacific Region using publicly available information to identify future traffic volumes at ports and terminals along the Pacific Coast. The intention of this report is to support informed conversations about the risks, opportunities and other implications of expected future changes in vessel traffic in this region.

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Message from the Executive Director

The waters on the Pacific Coast of Canada have served as travel and trade routes since time immemorial. In the last century, the growth of the ports – the gateway for trade with Asia – has enabled the economic growth of the entire continent. The port and terminal infrastructure in Canada is set to undergo a radical transformation over the next 25 years, with significant infrastructure investment planned or in progress to increase commodity exports and containerized freight. As a result of these projects, an increase in international shipping traffic through the Pacific region is expected: the focus of this study.

The systems for the safe and efficient movement of goods through Canada's ports involve multiple actors, both on water and on land. Each will need to adapt to accommodate the changing traffic patterns, such as more and different ships calling at new and existing facilities on the coast. What are the cumulative impacts of these changes on coastal ecosystems? Is the maritime supply chain prepared for this growth in trade? Will existing pollution prevention, preparedness, and response systems be sufficient?

Answering these questions and preparing for this change in shipping traffic requires coast-wide data. Currently, no such collection of data exists. To address this need, Clear Seas commissioned this research to serve as a comprehensive database, with support from the Canadian Coast Guard. With a set of comprehensive data to serve as a common basis of information, actors throughout the supply chain and along the coast can understand and prepare for the threats and opportunities presented by the anticipated changes in ship traffic.

First Nations have stewarded the waters these ships transit for generations. Indigenous communities continue to have an important role in managing and mitigating the risks presented by shipping. The data made available through this study can be applied in planning for and managing the changes and increases in ship traffic. Governments and industry stakeholders will also benefit from a shared understanding of this evolving maritime landscape.

Effective policy development, resource management, and infrastructure investment must be based on data-driven insights that account for the full scope of potential impacts. A cumulative approach, grounded in rightsholders' and stakeholders' interests, will help ensure that the future of shipping on the Pacific Coast is shaped by informed decision-making. This research makes an important contribution to this process.

Key Findings and Insights

The Vessel Traffic Forecast – Pacific Region (VTF-PR) research seeks to address a critical knowledge gap in understanding the future of commercial marine shipping along Canada's Pacific Coast. This report, which is the culmination of the research project, consolidates public information on proposed and approved development projects to create a dataset of ship traffic. By centralizing this information, the VTF-PR aims to support informed discussions about the risks, opportunities, and challenges associated with evolving shipping activities in the Pacific region.

This forecast is intended to serve as a foundation for discussion on the implications of additional vessel traffic in Canada's Pacific Region. The VTF-PR study is among the most comprehensive analysis of its kind, combining publicly available data to create projections for vessel traffic to 2040. This is the first forward-looking research in this area and follows Clear Seas' in-depth analysis of Vessel Traffic in Canada's Pacific Region published in 2021 using 2014-2016 data.

Context and Objectives

The VTF-PR's primary goal is to deliver a forward-looking assessment that equips governments, industry leaders, and communities with actionable insights into how development projects will shape vessel traffic patterns and volumes. This research also aims to assist planners anticipating changes to marine infrastructure, escort tug requirements, pilotage services, pollution response, salvage, search and rescue, and vessel traffic services, while fostering a shared understanding of the region's shipping future.

Study Methodology and Scope

The VTF-PR employs a detailed, multi-step methodology that includes identifying projects, vessel types, traffic scenarios, and marine routes. Using this framework, forecasts are generated to reflect vessel traffic based on the minimum and maximum numbers in the projects' planning applications. The analysis also includes an assessment of the number of tug escort trips required to accompany loaded tankers safely to the open ocean. The projects included in the assessment and the traffic routes that they will use are shown on the map in Figure 1.

The scope of the analysis includes all ocean-going commercial vessels over 300 gross tonnes and larger tugs (greater than 15 m) that tow or push barges calling on new port and terminal projects currently planned or in planning on Canada's Pacific Coast. Vessel types examined include bulk carriers, container ships, liquefied natural gas (LNG) carriers, liquefied petroleum gas (LPG) tankers and oil tankers. The study excludes cruise ships.

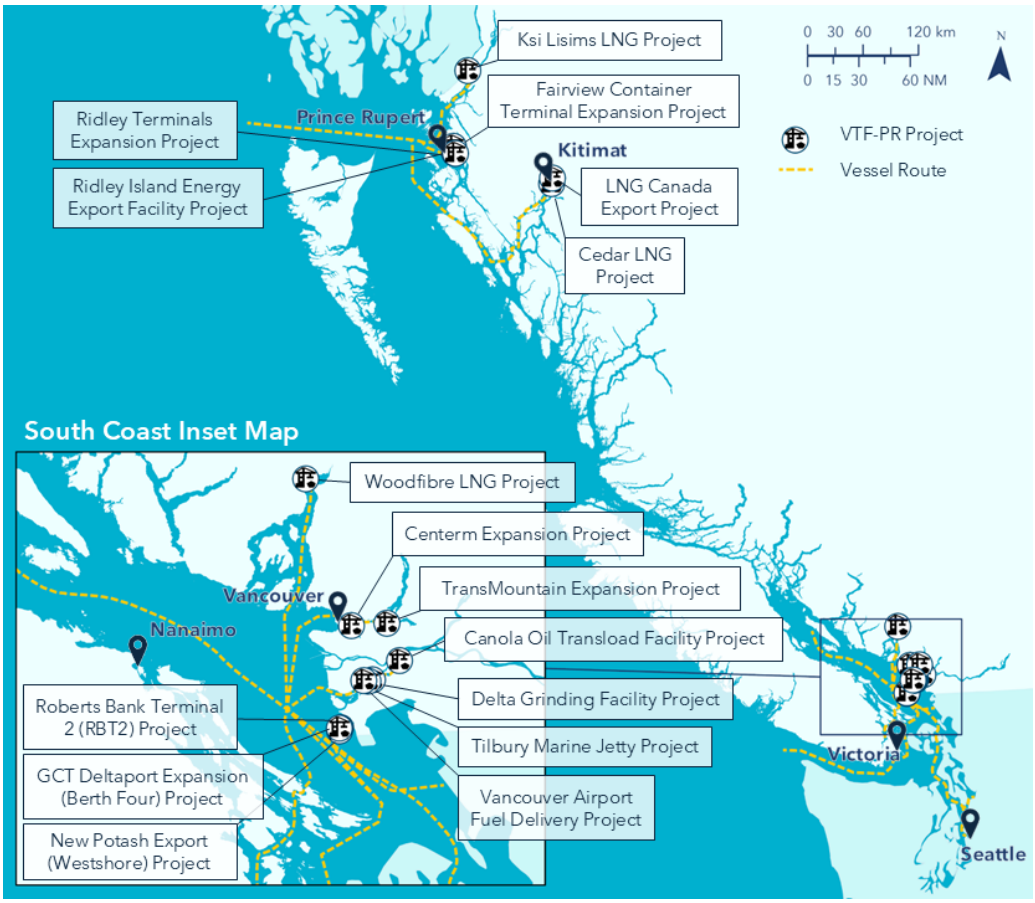

Figure 1. Projects included in the VTF-PR study with the shipping routes that they are projected to use.

To create a baseline for the forecasted increase in ship traffic, data from the 2021 report "Vessel Traffic on Canada's Pacific Coast" on international ship traffic was refreshed and updated using data from the Pacific Pilotage Authority (PPA) for the years 2016-2023. This baseline is presented in this executive summary to provide context for the traffic forecasts created as part of the VTF-PR research.

Vessel traffic movement data published by the PPA for the years 2016-2023 was processed and reclassified to align with the VTF-PR's forecasts. Each pilotage assignment contains data about the vessel, pilot pick-up location, and pilot drop-off location. For this analysis, a round-trip transit (entry and exit) to the North Coast or South Coast is defined as a vessel trip that includes a visit to any

terminal, port, or pilot station within the North or South Coast regions.[1] A vessel trip begins and ends when a vessel leaves a region via one of the main pilot pick-up/drop-off stations, namely Triple Island (Dixon Entrance, North Coast) and Brotchie Ledge (Juan de Fuca Strait, South Coast).

It is important to recognize that this forecast is limited in its ability to predict the future. The study methodology intentionally did not apply a probability factor to the likelihood of any of the projects going ahead nor does it alter start dates in an attempt to anticipate delays or accelerations in proposed timelines. It also does not consider new projects that have not commenced regulatory or environmental approval. Inevitably, geopolitics and economics will shift plans and timelines, and so the data is presented in a transparent and downloadable format so that users can create their own scenarios that adjust timings and probabilities based on the evolving economic and political climate.

Uncertainty is part of forecasting and any of the projects included in this report could proceed to completion, or not. At the time of this research, the Fairview Container Terminal Stage 1B (North) Expansion Project was included in the VTF-PR as a proposed project in the North Coast region. As of March 12, 2025, the project was cancelled by DP World.[2] However, the predicted vessel traffic from this proposed project is still included in the VTF-PR forecasts. In the future, other proposed development projects included in the VTF-PR could be cancelled and new projects could be proposed.

Significant traffic growth possible by 2040

The VTF-PR study predicts that a 60% increase in international vessel traffic is possible by 2040, increasing from a current average of 3,186 vessels per year calling on Canada's Pacific Coast, to 5,299 vessels per year by 2040 if all projects go ahead as planned. This projected growth is driven by a combination of projects already at an advanced stage of construction like the Trans Mountain Expansion (TMX) and LNG Canada as well as longer-term projects like Roberts Bank Terminal 2 container project and Ksi Lisims LNG facility.

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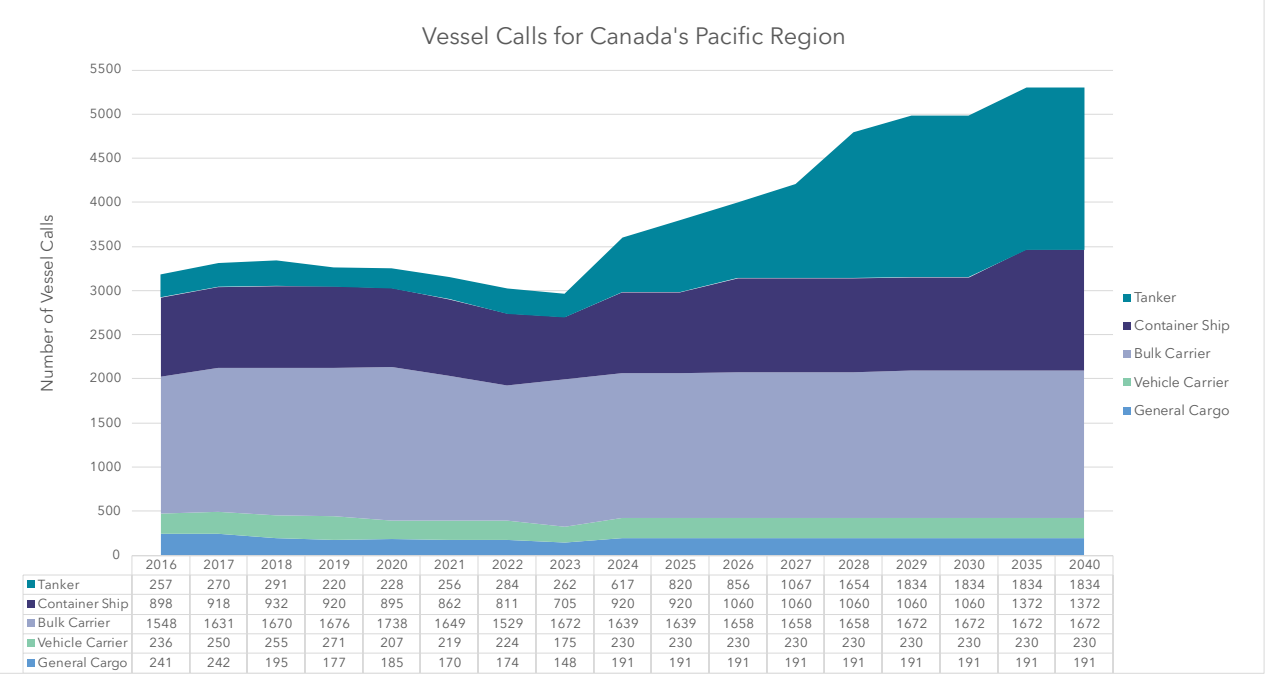
[1] Round-trip vessel transits were estimated in the North Coast region by assessing visits to ports and terminals in places like Kitimat, Prince Rupert, Dixon Entrance, and Hecate Strait, and in the South Coast region by assessing visits to ports and terminals in places like the Salish Sea, Juan de Fuca Strait, and south of Campbell River. For the purpose of this analysis, trips where vessels exclusively visit the west coast of Vancouver Island (e.g., Port Alberni), the north coast of Vancouver Island (e.g., Pine Island pilot station), or Washington State (e.g., Anacortes, Cherry Point) are not included in the North and South Coast regional traffic totals. Trips through the Inside Passage or to smaller ports and terminals on the west and north coasts of Vancouver Island were excluded as the counts are not necessary to provide traffic context for the development projects included in the VTF-PR analysis. Trips that only include visits to American ports and terminals were excluded as the PPA vessel movement data does not provide a complete assessment of vessel traffic, with only Canadian pilot movements reported.

[2] Project Termination Notice – Fairview Container Terminal Stage 1B (North) Expansion Project (Impact Assessment Agency of Canada): https://iaac-aeic.gc.ca/050/evaluations/document/161034?culture=en-CA



	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Tanker	257	270	291	220	228	256	284	262	617	820	856	1067	1654	1834	1834	1834	1834
Container Ship	898	918	932	920	895	862	811	705	920	920	1060	1060	1060	1060	1060	1372	1372
Bulk Carrier	1548	1631	1670	1676	1738	1649	1529	1672	1639	1639	1658	1658	1658	1672	1672	1672	1672
Vehicle Carrier	236	250	255	271	207	219	224	175	230	230	230	230	230	230	230	230	230
General Cargo	241	242	195	177	185	170	174	148	191	191	191	191	191	191	191	191	191

Figure 2. Forecast for vessel traffic in Canada's Pacific Region 2024 – 2040 based on the maximum number of vessels for each project added to the average traffic from 2016 – 2023.

Growth in vessel traffic is shown in Figure 2 and is forecasted to come primarily from tankers of all types including oil tankers, LNG tankers and LPG tankers. Tanker traffic of all types is forecasted to increase from an average of 258 vessels per year to as many as 1,834 vessel calls per year by 2040, a 611% increase. Container ship traffic is the second largest contributor to growth and could increase by 58% from an average of 867 vessels per year to 1,372.

Largest growth in international shipping forecast for North Coast

The VTF-PR forecasts a growth in importance of the North Coast of British Columbia for international shipping. Vessel traffic is forecast to increase by 217% from an average of 529 international vessels per year to 1,676 vessels per year by 2040 as shown in Figure 3.

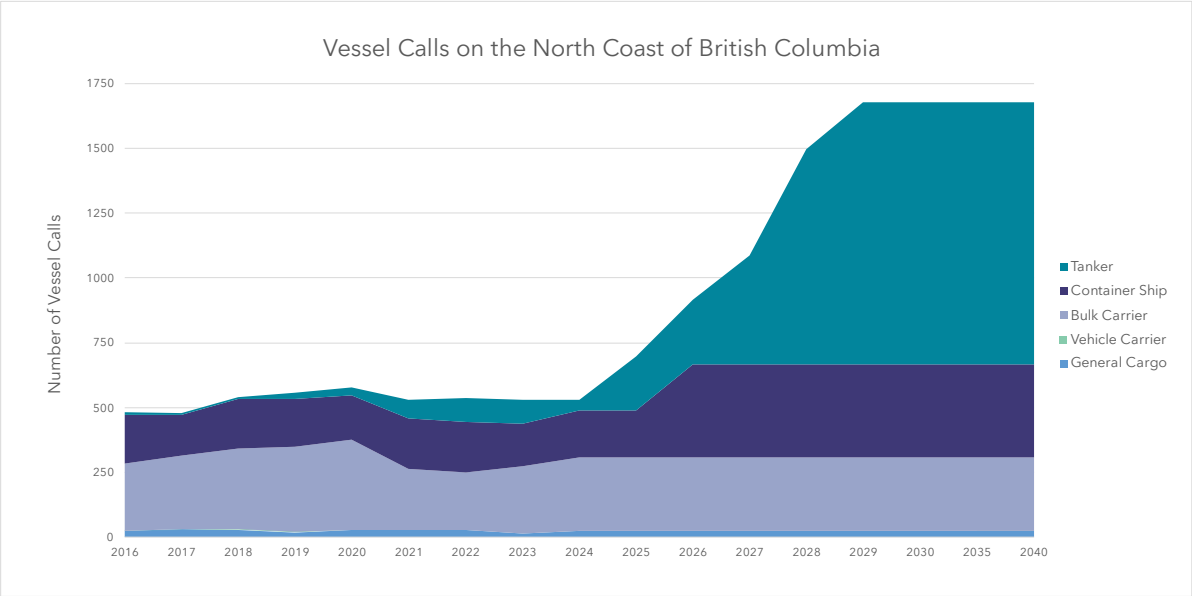


Figure 3. Forecast for vessel traffic on the North Coast of British Columbia 2024 – 2040 based on the maximum number of vessels for each project added to the average traffic from 2016 – 2023.

Growth in forecast vessel traffic on the North Coast is primarily driven by tankers, mainly LNG tankers, with a smaller contribution from LPG tankers and container ship traffic. Tankers are also the main driver of the more modest 45% increase in traffic on the South Coast shown in Figure 4. Vessel traffic is forecasted to grow from an average of 2,657 international vessel calls to 3,851 by 2040, driven primarily increases in the number of LNG tankers, oil tankers and container ships.

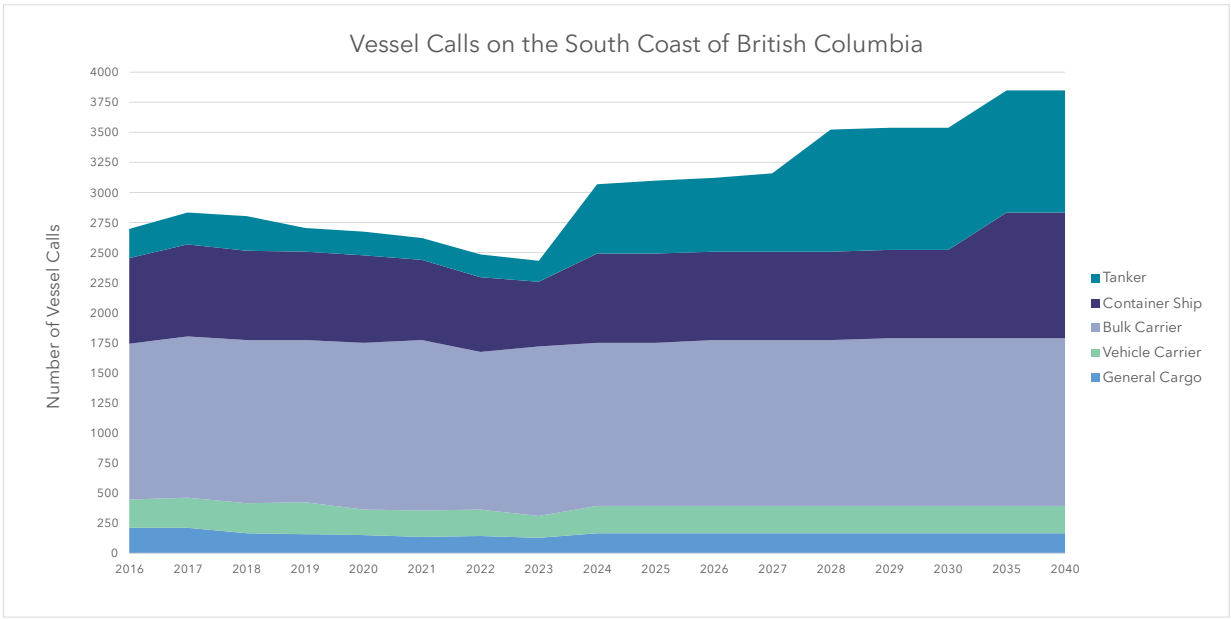


Figure 4. Forecast for vessel traffic on the South Coast of British Columbia 2024 – 2040 based on the maximum number of vessels for each project added to the average traffic from 2016 – 2023.

A large portion of the forecast growth in vessel traffic in both regions is forecasted to be routed outside of the current jurisdiction of the major Canadian port authorities in the region (the Prince Rupert Port

Authority and the Vancouver Fraser Port Authority) because of the remote locations of most of the LNG export projects in the forecast.

Tanker traffic growth comes primarily from LNG

The increase in tanker traffic predicted by the VTF-PR study comes primarily from LNG tankers. Figure 5 shows the breakdown by commodity with LNG tankers making up 61% (965 trips) of the 1,577-trip increase in tanker traffic.

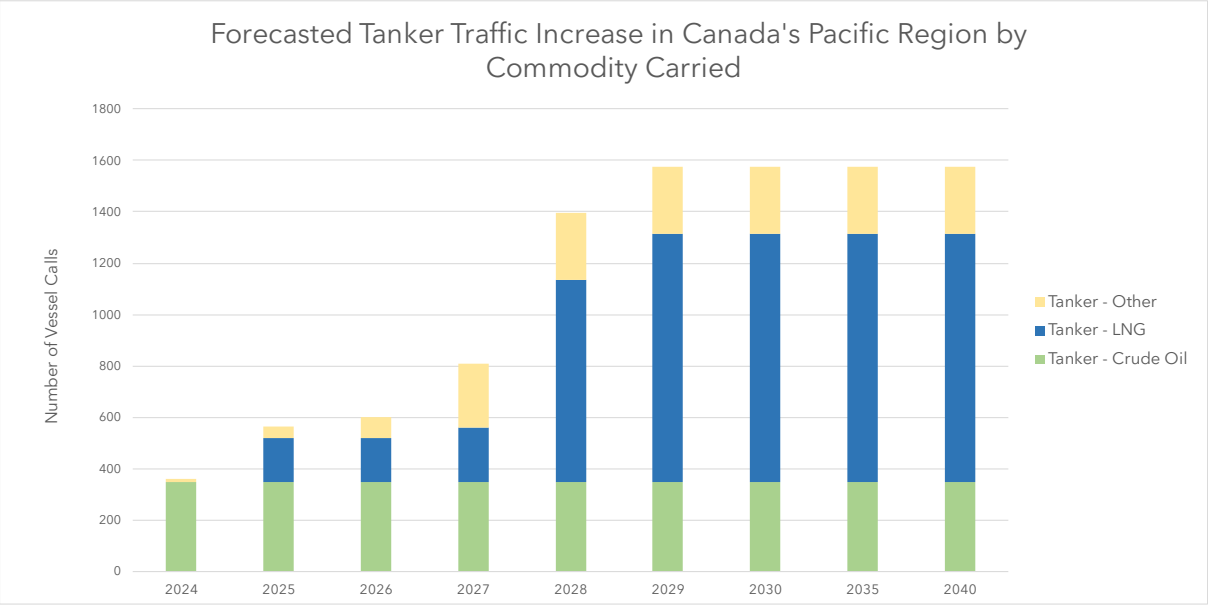


Figure 5. Forecasted increase in tanker traffic in Canada's Pacific Region 2024- 2040 by commodity carried.

Figure 6 shows the more detailed breakdown by project indicating that the LNG tanker traffic is made up by a combination of LNG Canada, LNG Canada expansion, Ksi Lisims LNG, and Cedar LNG on the North Coast, with Tilbury Marine Jetty and Woodfibre LNG providing the South Coast contribution. The 348 crude oil tankers per year for the Trans Mountain Expansion Project calling at Westridge Terminal in Burnaby, BC are the sole contributor to oil tanker traffic increase. The largest contributor to other tanker traffic is the Ridley Island Energy Export Facility (REEF) in Prince Rupert, with 171 out of the forecasted 264 tankers in the other tankers category.

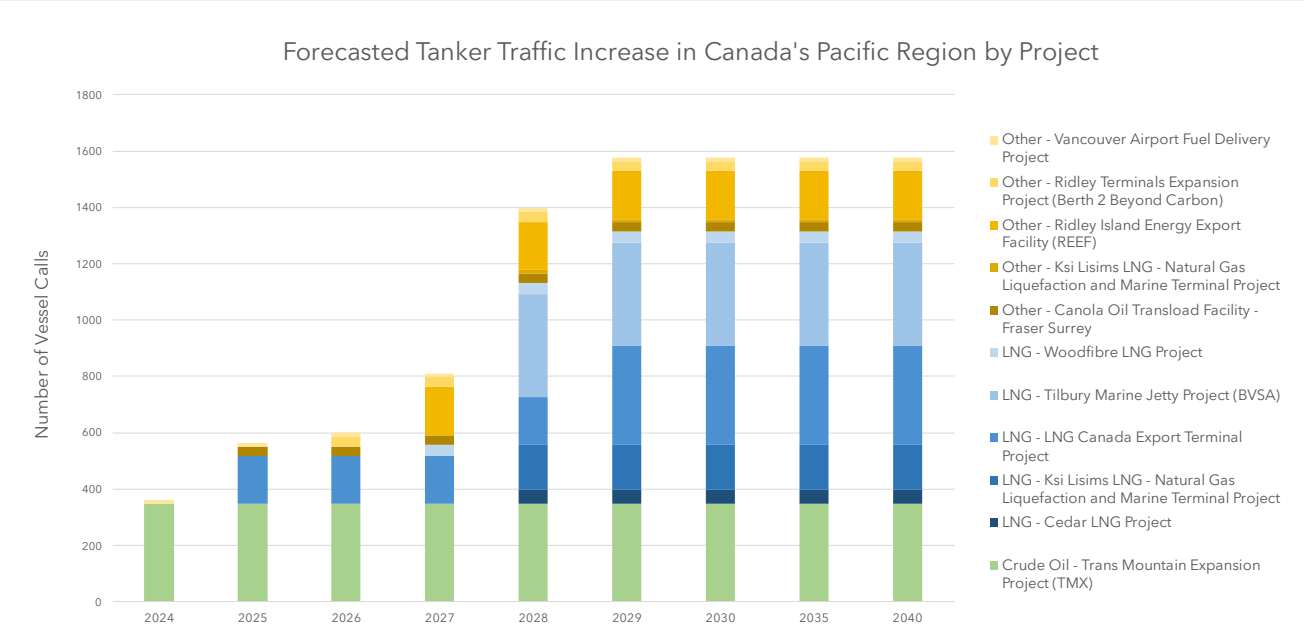


Figure 6. Forecasted increase in tanker traffic in Canada's Pacific Region 2024- 2040 by project.

The tanker traffic forecast and the historical baseline analysis in this report do not include oil tankers bound for U.S. refineries in the Salish Sea. For a detailed analysis of oil tanker traffic in the wider region, refer to Clear Seas' analysis of Vessel Traffic in Canada's Pacific Region and subsequent analysis, "**How will the TMX Pipeline Affect Marine Shipping in the Salish Sea?**"

Dramatic increase in escort tug traffic to keep tankers safe

Escort tugs that accompany loaded tankers from berth to the open sea are an important contribution to safety by providing assistance in the unlikely event that the tanker's engines or steering systems fail. Their job is to prevent the tanker from running aground and spilling its cargo or its fuel. But the tugs themselves are a contributor to environmental disturbance. Two tugs escort each laden tanker, and they must return to base after their escort duties are complete, further multiplying the impact of additional vessels.

The increase in escort tug traffic driven by the large increase in tanker traffic must be factored into ecosystem protection planning and into planning by tug owners and operators as they scale up their operations to provide these services. This increase in demand is particularly acute in the Salish Sea, where the VTF-PR study forecasts a factor of 10 increase in escort tug activity in the region by 2040 rising from around 280 escort movements in 2023 to over 2,000, as shown in Figure 7. The

number of escort tug trips in 2023 was estimated under the assumption that for each roundtrip voyage by a tanker over 40,000 deadweight tonnes, two escort tug trips would be counted.[3]

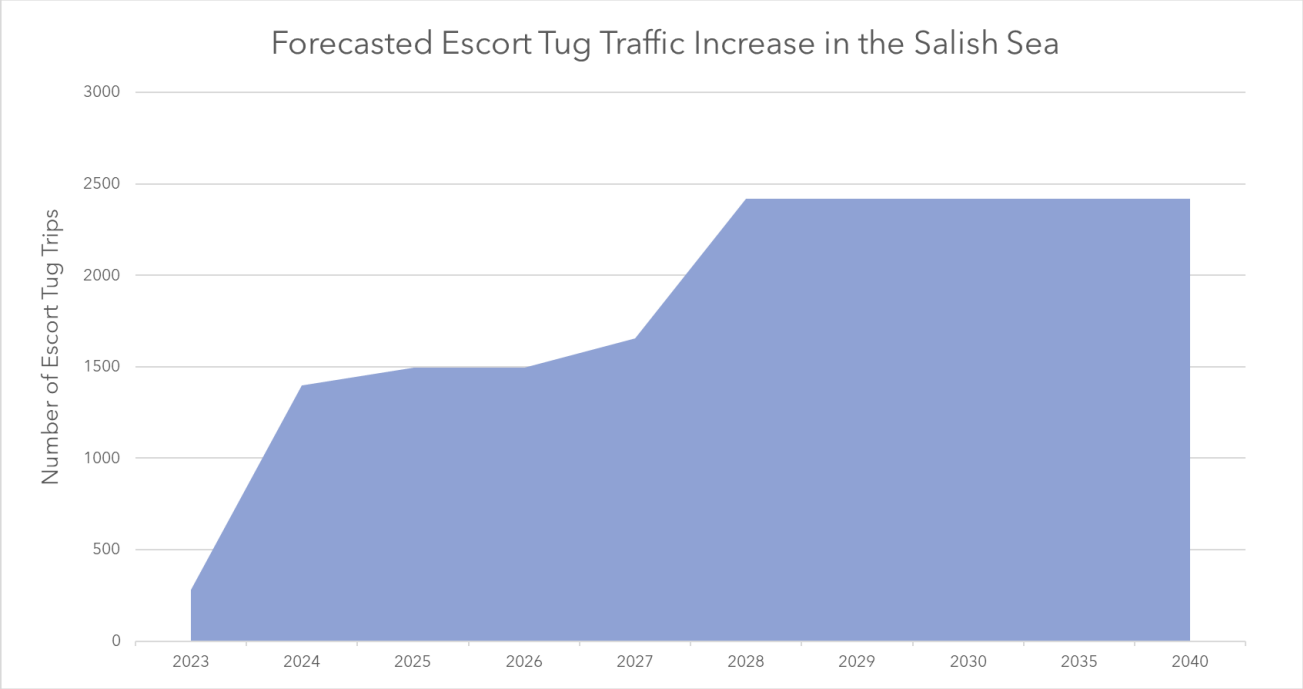


Figure 7. Forecasted increase in escort tug traffic in the Salish Sea 2023 – 2040.

A foundation for future stewardship

The VTF-PR provides a critical resource for addressing the complex challenges of marine spatial planning, vessel management, and environmental protection while upholding the Traditional Rights of Indigenous Peoples in Canada's Pacific region. By offering a holistic view of future vessel traffic patterns, this report provides visibility of the vessel traffic that could accompany the projects under construction or planned for Canada's Pacific region, should they go ahead. The presentation in a common format and a downloadable database provide valuable resources for planning and prediction in the years to come.

[3] Only vessel movements from 2023 were considered to generate this baseline of escort tug traffic. This approach was selected over taking an average of vessel movements from 2016-2023 because of recent changes in escort tug regulations.

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Acronyms and Abbreviations

AIS	Automatic identification system
ATB	Articulated tug and barge
BC	British Columbia
BVS	Bunker vessel scenario
EA	Environmental assessment
EAC	Environment assessment certificate
EAO	Environmental Assessment Office
EIS	Environmental impact statement
EPIC	EAO Project Information Centre
DFO	Fisheries and Oceans Canada
FEED	Front-end engineering design
FID	Final investment decision
FLNG	Floating liquefaction, storage, and offloading barge
GDP	Gross domestic product
GBFS	Granulated blast furnace slag
GGBFS	Ground granulated blast furnace slag
IAAC	Impact Assessment Agency of Canada
LNG	Liquefied natural gas
LPG	Liquefied petroleum gas
m^2	Square metres
m^3	Cubic metres
mtpa	Million tonnes per annum
NGL	Natural gas liquid
PER	Project and environmental review
PPA	Pacific Pilotage Authority
PRPA	Prince Rupert Port Authority
t/d	Tonnes per day
TERMPOL	Technical Review Process of Marine Terminal Systems and Transshipment Sites
TEU	Twenty-foot equivalent units
US	United States
VFPA	Vancouver Fraser Port Authority
VTF-PR	Vessel Traffic Forecast – Pacific Region
YVR	Vancouver International Airport

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Vessel Traffic Forecast to 2040 for Canada's Pacific Region

1.0 Introduction

Clear Seas identified the impact of changing vessel traffic conditions and the associated services needed to maintain a safe maritime environment as a key issue affecting marine shipping in Canada. To obtain a better understanding of the changing vessel traffic conditions, Clear Seas commenced a vessel traffic forecasting project. This report assesses forecast vessel traffic in the Pacific Region. Future reports may assess other areas of Canada.

Within Canada's Pacific Region, resource and terminal expansion projects with a marine shipping component are under review by the Impact Assessment Agency of Canada (IAAC), and/or the Province of British Columbia or have recently been approved. The changes in vessel traffic following approval of multiple projects could significantly impact the maritime shipping landscape over the next 10 to 40 years. The goal of the Vessel Traffic Forecast – Pacific Region (VTF-PR) is to provide information about the potential increases to support maritime sector participants in adapting to a rapidly evolving marine landscape.

1.1 VTF-PR Objectives

The VTF-PR assesses vessel traffic from major resource and terminal expansion projects in Canada's Pacific Region with a marine shipping component. The VTF-PR objectives included developing an assessment methodology that could be applied to potential future work, including scenarios based on likelihood of project occurrence, projects entering the decommissioning phase, and applications to other Canadian maritime regions. The Great Lakes, St. Lawrence, Atlantic and Arctic regions would also benefit from vessel traffic forecasting assessments and are expected to be the subject of future studies.

The specific research objectives of the VTF-PR include:

- Create vessel traffic projections for Canada's Pacific Region from projects in the Pacific Northwest with a marine shipping component.
- For the projects identified, document anticipated changes to the maritime response and the operational environment. This includes:
    - New response measures (e.g., new equipment or equipment in new locations),
    - New marine industries (e.g., liquefied natural gas [LNG] bunkering) and
    - New or expanded applications of marine technology (e.g., increased tug escort operations).

- Review vessel traffic forecasting methodologies applied in other studies and outline next steps and recommendations for expanding the VTF-PR to consider additional scenarios and other Canadian maritime regions.

1.2 Information Sources

The VTF-PR relies on publicly available data. References are provided at the end of the report. Project proponents were not interviewed for the VTF-PR. Information sources used in the VTF-PR include, but are not limited to:

- Environmental assessments under the Environmental Assessment Act [1] available from British Columbia (BC) Environmental Assessment Office (EAO) Project Information Centre (EPIC) [2].
- Impact assessments under the Impact Assessment Act [3] available from the IAAC, Canadian Impact Assessment Registry [4].
- Salish Sea Marine Emissions Tool [5].
- Regulatory reviews by Canada Port Authorities including the PRPA and VFPA [6].
- Annual reports, statistics, and other documents available from Canada Port Authorities.
- Annual reports and industry notices published by the Pacific Pilotage Authority (PPA).
- Transportation in Canada, TERMPOL Review Reports, and documents published by Transport Canada.

The VTF-PR has attempted to use the latest vessel traffic projections for each project. Vessel traffic projections are often in project descriptions filed as part of impact or environmental assessment submissions. Forecasts are sometimes updated throughout the assessment process. Identifying the latest project vessel traffic forecast can be challenging without knowledge of the relevant regulatory filings, the IAAC Canadian Impact Assessment Registry, or BC EAO EPIC website.

Other organizations have undertaken projects to forecast vessel traffic in similar regions. Friends of the San Juans has published several reports documenting projected vessel traffic numbers in the Salish Sea region and released their most recent update in September 2024.

2.0 Forecast Methodology

This section summarizes the methodology used to generate the vessel traffic forecasts for the VTF-PR. The methodology to create the VTF-PR includes the following steps:

1. Identify Projects

2. Identify Vessel Traffic Types
3. Identify Vessel Traffic Scenarios
4. Identify Project Start Dates
5. Identify Marine Route Segments
6. Identify Escort Tug Requirements
7. Calculate Vessel Calls

Project details in the VFR-PR are taken from IAAC Canadian Impact Assessment Registry or BC EAO EPIC website. Some projects in BC require both federal and provincial approval. Cooperation and substitution are enabled under the Impact Assessment Act [3] and the Environmental Assessment Act [1] and by agreements signed by the BC EAO, the IAAC or other parties, including Indigenous groups [7] [8]. Not all major projects are subject to impact or environmental or assessment by the IAAC [9] or BC EAO [10]. The IAAC Canadian Impact Assessment Registry includes projects not subject to an impact or environmental assessment (i.e., projects on federal lands). For these projects, details are obtained from other publicly available information or approval processes (e.g., reviews by Canadian port authorities).

2.1 Step 1 – Identify Projects

Clears Seas established a list of projects to be considered for the VTF-PR. Publicly available databases were checked for additional projects under review or recently approved that could impact vessel traffic in the Pacific Region. Information source included:

- Environmental assessments under the Environmental Assessment Act available from BC EAO Project Information Centre (EPIC) [2].
- Impact assessments under the Impact Assessment Act available from the IAAC, Canadian Impact Assessment Registry [4].
- The Salish Sea Marine Emissions Tool [5].

Projects in Washington State were assessed by checking projects on the Northwest Seaport [11], Port of Bellingham [12], and Port of Port Angeles [13] websites.

The final list of projects considered is in Table 4.

2.2 Step 2 – Identify Vessel Traffic Types

The vessel types and subtypes used to categorize ship traffic are from a previous study completed by Clear Seas [14]. The term vessel is defined in the *Canada Shipping Act, 2001* [15]. The vessel type and subtypes used to categorize vessel traffic are provided in Table 1 and are described further in the following sections.

Table 1 - Vessel type and subtype used in the VTF-PR

Vessel Type	Vessel Subtype
Cargo	Bulk Carrier
	Container Ship
	Vehicle Carrier
Tanker	Small Tanker (<50 k deadweight tonnage)
	Large Tanker (>50 k deadweight tonnage)
	LNG / Liquefied Petroleum Gas Carrier
	LNG Bunker Vessel
Tug	Tug
	Tug and Barge

2.2.1 Cargo Vessels

The cargo vessel type includes the following vessel subtypes.

Bulk Carriers are vessels designed to transport large quantities of dry bulk (e.g., coal, iron ore, grain, aggregates, etc.). Bulk carriers are designed primarily to maximize cargo capacity and reduce the transport cost per tonne [16]. Bulk carrier capacity is in terms of deadweight tonnage measured in metric tonnes.

Container Ships are vessels designed to transport shipping containers. Container vessels are designed for a high transit speed and rapid loading / unloading. Vessel dimensions are driven by the standard container dimension and the number of containers to be transported [16]. Container ship capacity is measured in twenty-foot equivalent units (TEUs).

Vehicle Carriers are vessels designed to transport cars, other vehicles and equipment, laden trucks, trains and rolling stock [16]. Vehicle carrier capacity may be in deadweight tonnage, gross tonnage, or car-equivalent units [17]. No projects considered in the VTF-PR involve vehicle carriers.

2.2.2 Tanker Vessels

Tanker vessels include crude oil tankers, product tankers, chemical tankers and other specialty tankers [16]. Consistent with a 2021 Clear Seas study [14] the VTF-PR defines small tankers with a capacity less than 50,000 deadweight tonnage and large tankers with a capacity greater than 50,000 deadweight tonnage.

LNG carriers and LPG carriers are included under the tanker vessel type. There are approximately 600 LNG carrier and 1,500 LPG carriers in service [16]. Sizes are based on their cubic metre (liquid) gas capacity [16]. Most LNG carriers are between 120,000 m^3 and 180,000 m^3, but can range in size to 266,000 m^3 [16]. LPG carriers are smaller than LNG carriers with capacities up to 100,000 m^3 with approximately 50 percent under 5,000 m^3 capacity [16].

Bunkering is the transfer of marine fuel from a storage vessel to another vessel's fuel tanks [18]. Bunkering can use traditional marine fuels, LNG, or other new marine fuels (e.g., methanol) as they become available [19]. Traditional and LNG bunkering services are provided in the Port of Vancouver. Bunkering service was recently added to the North Coast with the Prince Rupert Marine Fuels Project commencing operations in 2024. The Tilbury Marine Jetty Project, once completed, will provide facilities to load LNG bunker vessels. Cedar LNG also plans facilities to load LNG bunker vessels [20]. The LNG Canada Export Terminal Project has facilities to fuel LNG-fuelled escort tugs.

The VTF-PR considers LNG bunker vessels a tanker subtype. This follows the Port of Vancouver definition of LNG carrier being "a ship designed to carry liquefied natural gas, (barges and articulated tugs and barges [ATB]) when being used for this purpose" [18]. Like LNG / LPG carriers, LNG bunker vessel sizes are based on their cubic metre (liquid) gas capacity.

LNG-fuelled vessels operate on Canada's Pacific Coast and are fuelled from shore by truck or by bunkering vessel. Two proponents proposed LNG bunkering vessels for Canada's Pacific Coast. Cryopeak LNG Solutions Corporation announced plans in 2021 for a 4,000 m^3 LNG bunker barge [21]. Seaspan is building three 7,600 m^3 LNG bunkering vessels [22]. Seaspan's first two LNG bunkering vessels were delivered in 2024 with the third vessel arriving in 2025 [23].

2.2.3 Tug and Barge Vessels

Tug and barge traffic includes tugs towing barges and articulated tugs and barges (ATBs).

2.3 Step 3 – Identify Vessel Traffic Scenarios

The VTF-PR considers high and low vessel traffic cases, to define a range of traffic in different scenarios. There are different ways a project may contribute to the high or low case.

The project provides a range for the projected vessel traffic (e.g., Cedar LNG Project or Ksi Lisims LNG Project). The higher estimate will be considered in the maximum case and the lower estimate in the minimum case. If a project provides only one vessel traffic projection it is used in both the maximum and minimum vessel traffic forecasts.

The project has multiple vessel traffic scenarios (e.g., Tilbury Marine Jetty Project). The scenario with the higher overall number of vessel calls is considered in the high case with the lower overall number of vessel calls considered in the low case. The number of transits by each vessel type might vary between scenarios.

The project has multiple phases or stages of development. In the case of the LNG Canada Export Terminal Project, Phase 1 is the minimum case and Phase 2 is the maximum case. For the Delta Grinding Facility, Stage 1 has higher overall traffic, with traffic decreasing if Stage 2 proceeds. Therefore Stage 2 is considered in the minimum case and Stage 1 the maximum case.

There are different estimates of vessel traffic for the project. In the case of the Roberts Bank Terminal 2 [RBT2] Project multiple forecasts were completed. The regulator and proponent chose to base their findings on different forecasts. The VTF-PR considers both estimates for RBT2.

The VTF-PR does not consider all vessel traffic scenarios or combinations of scenarios, only the minimum and maximum scenarios which capture the other possible scenarios. The scenarios for each project are in Table 2. The VTF-PR has not adjusted the estimated vessel calls for each project, other than updating tug escort requirements to current tug escort policies. The VTF-PR has not confirmed that the vessel calls and vessel size distribution provided by each project align with the stated throughput(s) for each project.

Table 2 - Forecast case and scenario for projects in BC

Project	Reference(s) for Vessel Traffic Scenario
Canola Oil Transload Facility – Fraser Surrey	One traffic scenario is provided in the PER report [24]
Cedar LNG	Project description provides a range of projected vessel traffic [25]
Centerm Expansion Project	One traffic scenario is provided in the Marine Transportation Impact Study [26]
Delta Grinding Facility	Stage 2 as described in the Delta Grinding Facility Project Description [27]
Fairview Container Terminal Stage 1B (North) Expansion Project	Estimates provided for Stage 1 and Stage 2 in the Comprehensive Study Report [28]
GCT Deltaport Expansion - Berth Four Project	One traffic scenario is provided in the Detailed Project Description [29]
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	The Marine Use section provides a range of projected vessel traffic [30]
LNG Canada Export Terminal	The TERMPOL Review Process Report on the LNG Canada Project provides a projected range of vessel traffic [31]
New Potash Export - Westshore	The New Cargo Export Project – Vessel Cargoes provides a projected range of vessel traffic [32] [33]
Roberts Bank Terminal 2	The Federal Review Panel Report summarizes the vessel traffic forecasts completed [34]
Tilbury Marine Jetty Project	Two scenarios and a range of projected vessel traffic is provided in the Tilbury Marine Jetty Bunkering Vessel Call Frequency [35] and Bunker Vessel Scenario Summary Report [36]
Trans Mountain Expansion	One traffic scenario is provided in the Volume 8A [37]
Vancouver Airport Fuel Delivery	Chapter 2: Project Information [38]
Ridley Island Energy Export Facility Project	Draft Environmental Effects Evaluation [39]
Woodfibre LNG	Executive Summary [40]

2.4 Step 4 – Identify Project Start Dates

A start date for vessel traffic from each project is based on publicly available information. Some projects considered in the VTF-PR are operational in 2024 (i.e., Centerm Expansion Project, Trans Mountain Expansion Project, and Vancouver Airport Fuel Delivery Project). Other projects considered in the VTF-PR planned to be operational by 2024 but remain subject to regulatory approval or sanctioning by the proponent. The VTF-PR considers these delays and assumes revised start dates for these projects (see project details in Section 4.0).

2.5 Step 5 – Identify Marine Route Segments

Vessel routes are taken from regulatory filings and other sources. The routes are approximate and representative of the routes to each project location. Actual vessel routes may vary, if required, as determined by the BC Coast Pilots in consultation with the vessel, considering the type and size of vessel, environmental conditions, and other marine traffic and users. To align with operational protocols, namely escort tug policies, the VTF-PR summarizes the forecast vessel traffic according to the marine route segments in Figure 1 and Figure 2.

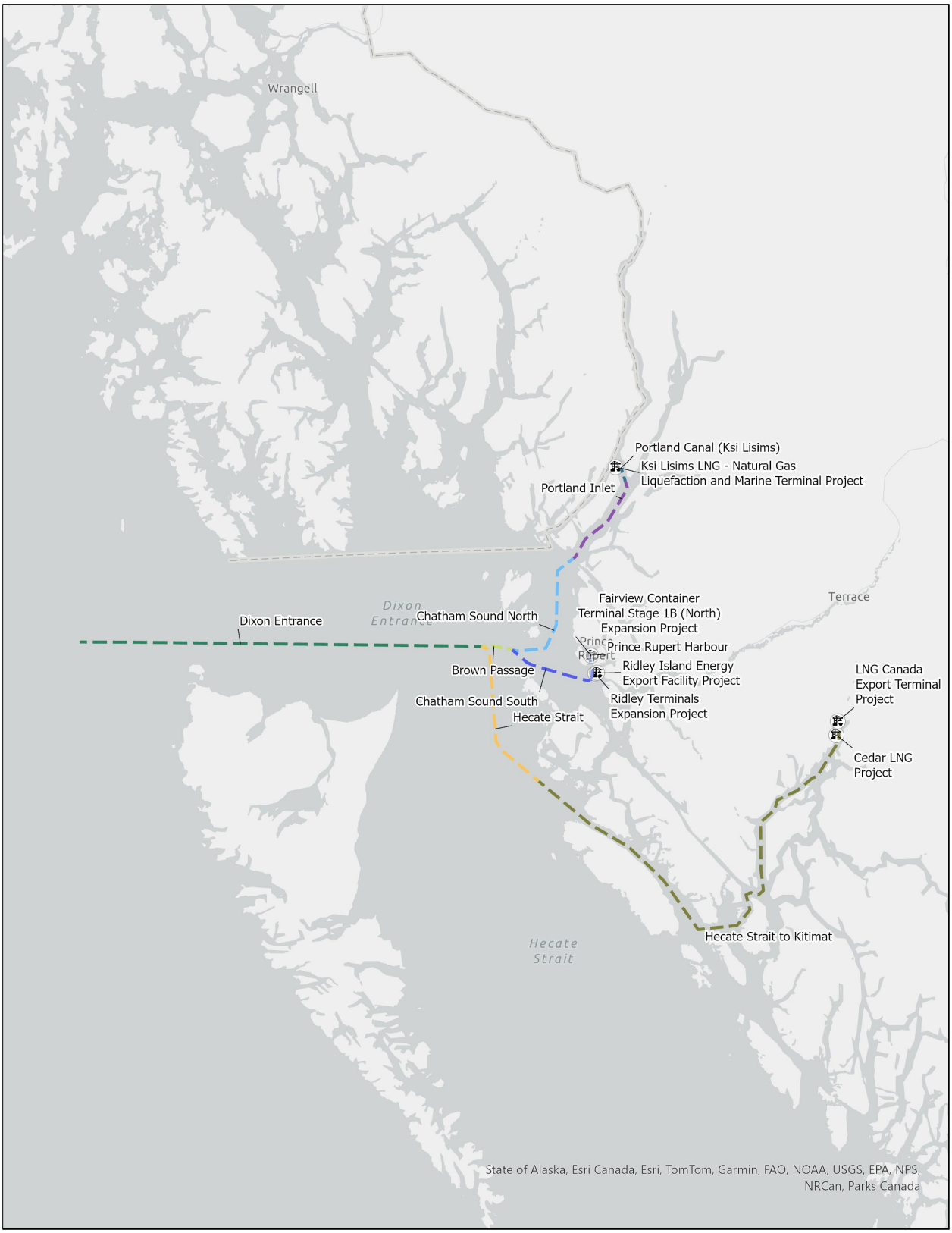

Figure 1 - Marine Route Segments, BC North Coast

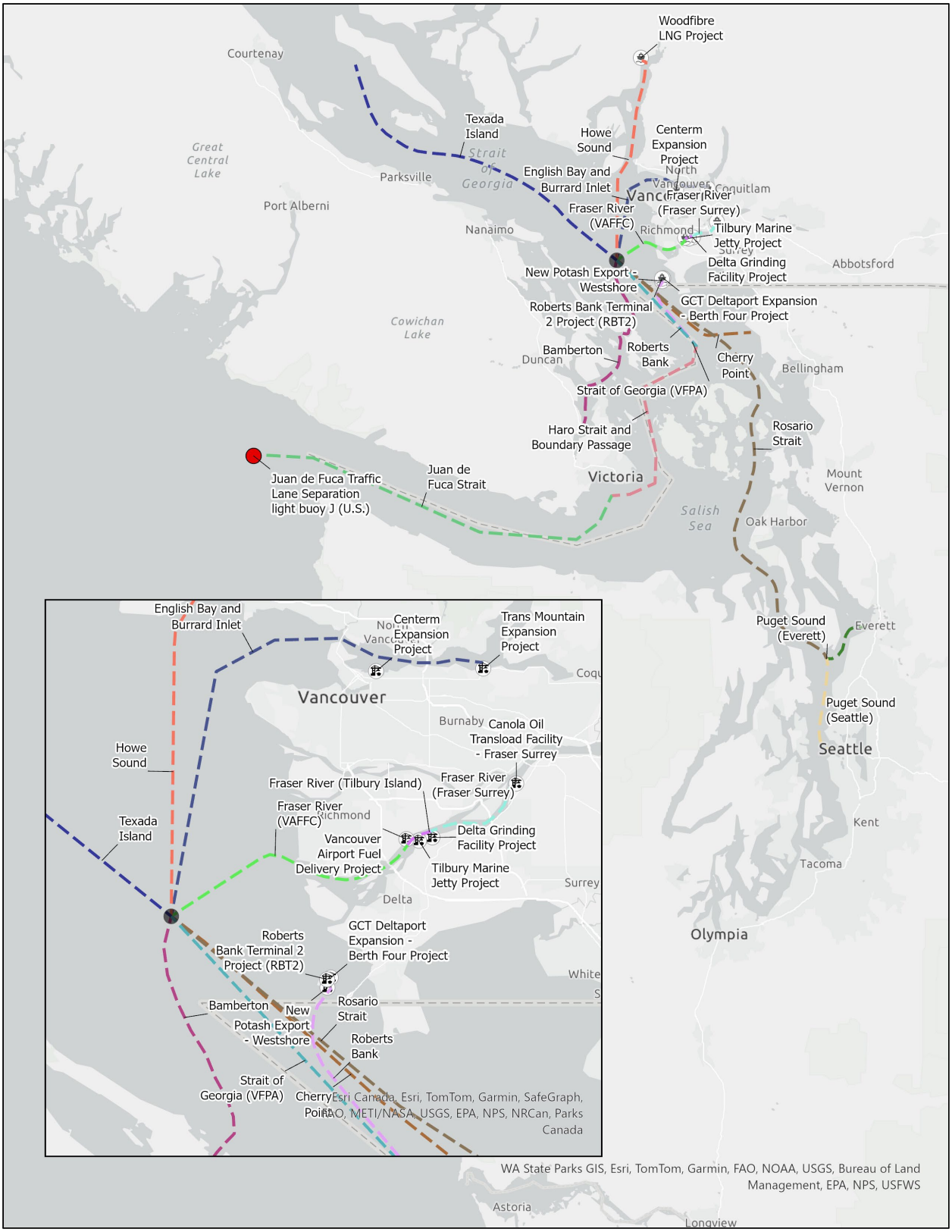

Figure 2 - Marine Route Segments, BC South Coast

2.6 Step 6 – Identify Escort Tug Requirements

The VTF-PR includes an estimate of escort tug traffic for the projects considered. The escort tug policies considered are in Table 3. The escort tug policies are assumed to apply and supersede other estimates in regulatory applications. For some projects where there is no escort tug requirement for the associated marine routes, a voluntary commitment to use escort tugs has been made. Other projects under review may be required to employ escort tugs.

The number of escort tugs under some policies depends on metocean conditions, daylight, size of vessel being escorted, type and volume of cargo. The VTF-PR counts the minimum number of escort tugs required per vessel transit through each applicable route segment. The actual number of escort tugs utilized may be greater and will depend on the factors listed above. A greater number of escort tug transits may occur as tugs reposition or return to their home ports.

Table 3 - Tug escort policies considered in the VTF-PR

Guidance	Authority	Date	Geographic Area	Minimum No. Tugs Required	Maximum No. Tugs Required
PPA Notice Number: 02/2019 [41]	PPA	25-Feb-19	Prince Rupert	1	1
PPA Notice Number: 07/2019 [42]	PPA	05-Nov-19	English Bay, Strait of Georgia, Boundary Pass, Haro Strait & Juan de Fuca Strait	1	1
PPA Notice Number: 04/2023 [43]	PPA	19-Apr-23	DP World Fairview Container Terminal, Prince Rupert, BC	2	3
BC NCWMG SSB No. 26/2023 [44]	TC	20-Dec-23	North Coast, waterways between Kitimat and Browning Entrance	1	1
VFPA TCZ-1 [18]	VFPA	Jan-24	TCZ-1	1	4
VFPA TCZ-2 [18]	VFPA	Jan-24	TCZ-2	2	4
VFPA TCZ-3 [18]	VFPA	Jan-24	TCZ-3	2	4
VFPA TCZ-4 (ATB) [18]	VFPA	Jan-24	TCZ-4	1	1
VFPA TCZ-4 (Tanker) [18]	VFPA	Jan-24	TCZ-4	2	2
VFPA TCZ-4 (LNG Carrier) [18]	VFPA	Jan-24	TCZ-4	3	3
PPA Notice Number: 02/2024 (Tanker) [45]	PPA	14-Mar-24	Fraser River	2	3
PPA Notice Number: 02/2024 (LNG Carrier) [45]	PPA	14-Mar-24	Fraser River	3	3
PPA Notice Number: 03/2022 [43]	PPA	30-Apr-24	North Coast, waterways between Kitimat and Browning Entrance	1	1
Woodfibre (commitment) [46]	n/a	n/a	Howe Sound	3	3
Ridley Island Energy Export Facility (commitment) [39]	n/a	n/a	Port of Prince Rupert and other areas, as required	1	1

2.7 Step 7 – Calculate Vessel Calls

The VTF-PR estimates vessel calls for the projects considered. For existing terminals, only new vessel calls which are an increase over existing vessel traffic are considered.

The VTF-PR assumes all projects are approved and proceed to operation. This assumption is conservative and a breakdown of project vessel traffic forecasts, by regulatory and commercial status, is provided in Section 4.0 for comparison.

Projects are assumed to achieve their operational throughput and associated vessel calls in the first year of operation after commissioning. While this may be true of some projects, other projects or commodities have a period over which marine terminal throughput increases to achieve the expected operational capacity while others may not achieve the full operational capacity, depending on economic conditions.

2.7.1 Forecast Year

The minimum operational life for each project is considered in the VTF-PR (see Section 3.0). Some projects have stated in their impact or environmental assessments a minimum operation of 20 years. Other projects have not stated a minimum duration of operation or service life. For these projects, a minimum operating life of 20 years is assumed. Most projects will operate beyond 25 to 30 years. However, this is not guaranteed.

The VTF-PR provides vessel forecasts for 2030 and 2040. The original scope of the report was to provide vessel traffic projections to 2050 and 2060. There will be considerable uncertainty in vessel forecasts beyond 10 to 20 years. To provide meaningful vessel traffic forecast beyond 2030 to 2040 requires a more holistic view of port operations on Canada's Pacific Coast. This may include assessments of the considerations described below.

Technical factors:

- Changes in vessel types and size (e.g., larger container vessels or cruise ships). This has been a source of debate in terms of the vessel forecasts for the GCT Deltaport Expansion – Berth 4 Project and Roberts Bank Terminal 2 Project.

- Changes in product handling (e.g., containerization of products traditionally transported in bulk). For example, DP World Fraser Surrey has adopted containerized loading of mineral concentrate. Projects proposed for Prince Rupert will continue to see an increase in the containerized handling of exports from Canada.

- Changes in modes of transportation (e.g., short-sea shipping). DP World now offers short-sea shipping between its terminals on Canada's west coast and other terminals in the US.

- Efficiencies and automation of cargo handling (e.g., autonomous ports or vessels).

- The transportation infrastructure and services supporting Canada's ports and marine terminals, including assessments of increases in capacity and practical limitations. Canada's

two principal Class 1 railways, Canadian National Railway Company and Canadian Pacific Kansas City Limited both have projects planned to increase rail capacity.

- As available industrial riparian land on Canada's west coast continues to decrease, there will be a continued push to increase the efficiency of existing terminals and transportation infrastructure.

- Changes in the Canadian maritime regulatory regime including future shipping in the Arctic with less sea ice.

Environmental and social factors:

- Considerations regarding cumulative effects for future project and port development.

- Future terminal development may be restricted in some areas. Canada introduced a moratorium on crude oil shipments on the North Coast. Future assessments may determine that other activities should be limited in certain areas.

- Indigenous and stakeholder inputs on existing and future terminal developments. Some activities may shift to different areas of Canada's west coast. The Port of Nanaimo now has an automobile import terminal, whereas none existed previously on Vancouver Island.

Economic factors:

- Geopolitical events and changes in market conditions. For example, the sanctions on potash exports from Belarus affect Canada's potash exports. There is increased demand for fertilizer exports to South America, which has resulted in new fertilizer logistics. There has been a shift in grain exports from Canada's east coast to Canada's west coast.

- Canadian demand for goods (e.g., container imports).

- Global trends in the demand for different Canadian exports (e.g., LNG or potash) and available natural resources (e.g., natural gas) and limitations on permitted resource extraction or permitted export.

- The current volumes of different commodities handled and forecast demand for those commodities. This includes emerging exports (e.g., LNG, LPG, or hydrogen) and commodities that may continue to see reduced demand (e.g., forestry products or sulphur) or be phased out (e.g., thermal coal).

Port and project-specific factors:

- Financial investment decisions and Canada's competitiveness relative to other jurisdictions.

- Projects not meeting their projected throughputs or not meeting their original service life projections.

- The extent to which existing terminals could be expanded and throughputs increased.

- Available port lands and the growth in marine shipping that could be supported.

3.0 Projects Considered for the VTF-PR

The VTF-PR considers projects in BC or Washington State that may affect vessel traffic in Canada's Pacific Region. Canada's Pacific Region is defined as the waters extending to 200 nautical miles from the Canada's west coast, also known as Canada's exclusive economic zone. This includes the Strait of Juan de Fuca, which is a shared waterway jointly managed by Canadian and US authorities.

3.1 Projects Included in VTF-PR

Projects considered are those under regulatory review or which have recently received regulatory approval. Projects assessed include new "greenfield" marine terminals and "brownfield" projects that increase the utilization and throughput of existing terminals. Table 4 lists projects considered in the VTF-PR, indicating the federal impact assessment status provided by IAAC, or provincial environmental assessment status provided by the BC EAO.

Project names referenced in the VTF-PR are taken from the IAAC Canadian Impact Assessment Registry (see Appendix A). If the Project is not in the IAAC Canadian Impact Assessment Registry, the project name is taken from the BC EAO EPIC website (see Appendix B). The VTF-PR project name is used for consistency.

Projects in Washington State from the BC and Washington State border through Puget Sound to Port Angeles are considered in the VTF-PR. Projects at locations further south along the Washington State coast, including Grays Harbor and ports along the Columbia River, are not assessed. As explained in Section 3.2, projects identified in Washington State are not forecast to increase traffic in the Pacific Region and are not considered further in the VTF-PR.

Table 4 - Projects considered in the VTF-PR

VTF-PR Project Name	IAAC Data			BC EAO Data			
	Type of Review	**Responsible Agency**	**Review Status**	**Type of Review (BC Legislation)**	**Federal Involvement**	**Review Phase**	**EAC Status**
Canola Oil Transload Facility - Fraser Surrey [47]	Project on federal lands	VFPA with TC [48]	Completed Project and Environmental Review (PER) Process Permit May 2, 2023 [24] Notice of Determination July 13, 2023 [48]	no record	no record	no record	no record
Cedar LNG Project[49]	Impact assessment by substitution	IAAC [50]	Completed Decision Statement March 15, 2023 [51] [52]	2002 Environmental Assessment Act	Substituted (Provincial Lead) [53]	Post Decision - Pre-Construction	Certificate Issued March 13, 2023 [53] Post Decision - Pre-Construction [53]
Centerm Expansion Project	Project on federal lands	VFPA [54]	Completed.	2002 Environmental Assessment Act	None	Post Decision - Pre-Construction	Certificate Not Required
Delta Grinding Facility Project	Environmental assessment by substitution under CEAA 2012	IAAC [55]	In progress [55]	2018 Environmental Assessment Act	Substitution [56]	Application Development and Review	In Progress Pre-Application [56]
Fairview Container Terminal Stage 1B (North) Expansion Project [47] [57]	Project on federal lands	Prince Rupert Port Authority (PRPA) with Fisheries and Oceans Canada (DFO) [58]	In progress [58]	no record	no record	no record	no record
GCT Deltaport Expansion - Berth Four Project [29]	Impact assessment by Review Panel	IAAC [59]	In progress Impact Statement [59]	2018 Environmental Assessment Act	Coordination [60]	Application Development and Review	In Progress Process Planning [60]
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project [61]	Impact assessment by substitution	IAAC [62]	In progress [62]	2018 Environmental Assessment Act	Substitution [63]	Application Development and Review	In Progress Application Development and Review [63];
LNG Canada Export Terminal Project [64]	Environmental assessment by substitution under CEAA 2012	IAAC [65]	Completed Amended Decision Statement April 6, 2021 [65]	2002 Environmental Assessment Act	Substituted (Provincial Lead) [66]	Post Decision - Construction	Certificate Issued June 17, 2015 [66] Post Decision - Construction [66]
New Potash Export - Westshore	Project on federal lands	VFPA [67]	Completed	no record	no record	no record	no record
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon) [68]	Project on federal lands	DFO [69]	Completed Notice of Determination August 2, 2022 [69]	no record	no record	no record	no record
Roberts Bank Terminal 2 Project [70]	Environmental assessment by Review Panel under CEAA 2012	IAAC [71]	Completed Order in Council April 19, 2023 [72] Decision Statement April 20, 2023 [73]	2002 Environmental Assessment Act	Panel (CEAA 2012) [74]	Application Review	Certificate Issued September 28, 2023 [74] Post Decision - Pre-Construction [74]
Tilbury Marine Jetty Project [75]	Environmental assessment by substitution under CEAA 2012	IAAC [76]	Completed [76] Decision Statement July 3, 2024 [77]	2002 Environmental Assessment Act	Substituted (Provincial Lead) [78]	Certificate Issued	Certificate Issued March 27, 2024 [78] Complete

VTF-PR Project Name	IAAC Data			BC EAO Data			
	Type of Review	**Responsible Agency**	**Review Status**	**Type of Review (BC Legislation)**	**Federal Involvement**	**Review Phase**	**EAC Status**
Trans Mountain Expansion Project [79]	Environmental assessment under CEAA 2012	NEB (now CER) [80] [81]	Completed Order in Council June 18, 2019 [82] Certificate OC-65 June 20, 2019 [83]	2002 Environmental Assessment Act	Equivalent – NEB [84]	Post Decision - Construction	Certificate Issued January 10, 2017 [84] Post Decision - Construction
Vancouver Airport Fuel Delivery [85]	Project on federal lands	VFPA [86]	Completed Decision Statement December 16, 2013 [86]	2002 Environmental Assessment Act	Comprehensive Study [86]	Post Decision - Construction	Certificate Issued December 11, 2013 [86] Post Decision - Construction [86]
Ridley Island Energy Export Facility Project (Vopak Pacific Canada) [87]	Project on federal lands	ECCC [88] with PRPA and TC [88]	Completed Notice of Determination November 10, 2022 [88]	2002 Environmental Assessment Act	None [89]	Application Review	Certificate Issued April 20, 2022 [89] Post Decision - Construction [89]
Woodfibre LNG Project[1] [90]	Environmental assessment by substitution under CEAA 2012	IAAC [91]	Completed Amended Decision Statement August 4, 2023 [91]	2002 Environmental Assessment Act	Substituted (Provincial Lead) [92]	Post Decision - Construction	Certificate Issued October 26, 2015 [92] Post Decision – Construction [92]

Notes:

Woodfibre LNG was also reviewed by the Squamish Nation [93].

3.2 Projects Excluded from VTF-PR

The VTF-PR does not consider projects that have not made a formal regulatory submission, are not forecast to impact vessel traffic in the Pacific Region, or for which vessel traffic projections and marine routes are not available. The projects described in this section may be revisited as part of forecast updates or as further information becomes available.

3.2.1 Swamp Point Aggregate Mine, near Stewart, BC

Swamp Point Aggregate Mine consists of an aggregate quarry and ship loading facility, located 50 kilometres south of Stewart, BC [75]. The first aggregate shipment, to the Port of Prince Rupert, was in May 2015 and continued until December 2017. The mine halted production between 2018 to 2020 and there were no shipments. In 2020 the mine was closed for care and maintenance.

The mine is permitted to produce 3.3 million tonnes of aggregate per year [147]. At full production, with improvements to material handling and vessel loading, the Swamp Point Project would increase vessel traffic in Portland Canal and Portland Inlet including large vessels, to Panamax size, and trips by small supply and crew boats and barge traffic [150]. No updates were found regarding operations resuming [148].

3.2.2 Proposed Second Terminal, Prince Rupert, BC

The PRPA and DP World Canada are undertaking a feasibility study of a new container terminal at the Port of Prince Rupert [94]. The proposed second terminal would add 2 million twenty-foot equivalent units (TEUs) of annual capacity to the Port of Prince Rupert [94]. The project is forecast to be completed in 2030 to 2031 [94]. The project is at the feasibility study stage and no formal regulatory submissions have been made. No vessel traffic projections are provided.

3.2.3 Tilbury Phase 2 LNG Expansion, Delta, BC

FortisBC Holdings Inc. (FortisBC) proposes to expand its existing LNG facility on Tilbury Island [95]. The Tilbury Phase 2 LNG Expansion comprises a new LNG storage tank with a working volume of 142,400 m^3 and new liquefaction capacity of up to 7,700 t/d of LNG production [96]. The project remains in the regulatory review process by the BC EAO [95] and IAAC [97]. There are no project cargo vessels / barges anticipated for operations. FortisBC is not proposing to include an assessment of marine shipping [98].

3.2.4 Prince Rupert Marine Fuels Project, Prince Rupert, BC

The Prince Rupert Marine Fuels Project was developed by Wolverine Terminals ULC [99] and introduces bunkering services to the Prince Rupert area. Prince Rupert Marine Fuels Project includes a marine berth, rail barge and a fuel distribution barge [100]. Construction of the Prince Rupert Marine Fuels Project was completed in 2023. Operations are expected to commence in 2024 [101] [102].The project is not included in the VTF-PR because bunkering activities are forecast to be limited to the local area of Prince Rupert, not extending to nearby marine routes.

3.2.5 DP World Nanaimo Duke Point Terminal Expansion, Nanaimo, BC

The DP World Nanaimo Duke Point Terminal Expansion [47] in Nanaimo, BC includes an extension of the existing berth from 182 metres to 325 metres and construction of a new truck gate, warehouse and administration and maintenance building [103]. The terminal's container yard storage area will be expanded to create an operational capacity of 280,000 shipping containers. Construction is forecast to take one year to complete [99]. The project on federal lands being reviewed by the Nanaimo Port Authority with DFO and TC [104]. The review remains in progress [104]. No vessel traffic projections are provided.

3.2.6 Trigon Pacific LPG Project, Prince Rupert, BC

The proposed Trigon Pacific LPG Project was announced in November 2023. The project plans to use storage space dedicated to coal, as well as the existing berth one and ship loading arms for LPG export [105]. Trigon plans to be in operation by late 2027 or early 2028 [105]. Vessel loading operations will occur approximately once every four to nine days, which at full capacity results in approximately 42 to 83 carriers per year depending on customer demand [105]. No applications for project review have been made.

3.2.7 SeaPort Sound Plant Modernization Project, Tacoma, WA

SeaPort Sound Terminal, LLC (SeaPort Sound), is proposing the SeaPort Sound Terminal Plant Modernization Project at the SeaPort Sound Terminal on the Hylebos Waterway in Tacoma, Washington. The SeaPort Sound Terminal is used to transfer bulk liquids. The Project will remove existing refinery infrastructure and replace it with new storage tanks, piping, and associated equipment. The Project will increase the storage capacity at the terminal for low-carbon fuels [106] by approximately 10 percent [107].

The City of Tacoma issued the Shoreline Permit Decision and Final Environmental Impact Statement on November 30, 2023. The Shoreline Permit is approved, subject to conditions [107]. Work at the site is expected to start in the spring of 2024, and must be underway by January 5, 2026 [107]. The project is expected to result in an additional three vessel calls, on average, per month, representing a 6 percent increase [106]. The VTF-PR did not find information on the routes the vessels were forecast to take beyond the Hylebos Waterway.

3.2.8 Terminal 5 Modernization, Seattle, WA

On March 29, 2024 SSA Terminals (Seattle Terminals), LLC (SSAT/ST), a joint venture between SSA Terminals and Terminal Investment Ltd. (TiL), and The Northwest Seaport Alliance announced the opening of Phase 2 of the Terminal 5 Modernization Program [108]. Terminal 5 is in Seattle on the Western Duwamish Waterway. The Terminal 5 Modernization Program included improvements to serve larger container vessels [109]. Terminal 5 received up to 195 to 235 container vessel calls per year between 2010 and 2013, about one call every two days or about 18 per month [110]. With the project, fewer vessel calls are anticipated due to the upgraded terminal's ability to accommodate larger ships [110]. Traffic utilizing Terminal 5 before the improvements was shifted to another terminal [111].

3.2.9 Terminal 46, Seattle, WA

Terminal 46 is a maritime property in Seattle Harbor offering over 42 acres of cargo lay-down space for shippers [112]. Terminal 46 has evolved from near-dock storage facility, facilitating the movement of containerized cargo, into an automobile import terminal to handle increased Canadian-bound cargo [113]. Terminal 46 opened on March 27, 2024 [74]. No vessel traffic projections were found for the project.

3.2.10 Cherry Point Refinery Renewable Diesel Optimization, Cherry Point, WA

In 2021 BP announced improvements to their Cherry Point Refinery [114]. The improvements included three projects: Hydrocracker Improvement Project, Cooling Water Infrastructure Project, Renewable Diesel Optimization. The Renewable Diesel Optimization project is a $45 million dollar investment that will more than double the refinery's renewable diesel production capability to an estimated 2.6 million barrels a year [114]. The project was completed in 2022 [115]. No vessel traffic projections were found for the improvements.

Separately, an environmental impact statement (EIS) was completed for the terminal in 2022. Over a 20-year period (1998–2017) the terminal averaged 304 vessel calls per year, ranging from a low of 247 calls in 1998 to an anomalous high of 416 calls in 2007, a number that substantially exceeded the next highest number of vessel calls recorded in a year (379 calls in 2008) [116]. Under a higher forecast case the terminal may receive up to 420 vessel calls per in 2030. However, a low (5 more vessel calls compared to 2005) or medium-range vessel traffic forecast (33 more calls compared to 2005) is more likely [116].

The Cherry Point Refinery is not included in the VFT-PR because it is an existing terminal operation. A sensitivity analysis comparing the possible, high, medium, and low vessel traffic forecasts in the 2022 Cherry Point Dock Final EIS could be included in updates to the VTF-PR.

3.2.11 M-5 Coastal Connector - Bellingham Shipping Terminal, Bellingham, WA

In 2021 the US Department of Transportation, Maritime Administration announced the M-5 Coastal Connector. The project supports transporting goods on barges between Bellingham, Washington; Southern Oregon; and San Diego, California [117]. Related to the project the Port of Bellingham received funding to upgrade the Bellingham Shipping Terminal [118]. No project-specific vessel traffic projections were found for the M-5 Coastal Connector or Bellingham Shipping Terminal improvements.

3.2.12 Construction Vessel Traffic

The VTF-PR does not assess construction-related vessel traffic. Not all projects provide estimates of vessels required during construction. Most vessel traffic related to construction is already reflected in existing vessel traffic for the Pacific Region. Remote projects may introduce vessel traffic to areas that do not have ongoing infrastructure projects.

3.2.13 Berthing and Harbour Tugs

Commercial vessels, other than tugs and barges, will require berthing or harbour tugs to assist during berthing and departure. The number of harbour tugs required depends on the type and size of vessel being assisted and the metocean conditions at the terminal. For most projects within the larger ports and harbours along Canada's west coast, this service is provided by the existing harbour tug fleet. Projects that are remote or require tugs to be on standby while vessels are at berth, may require dedicated harbour tugs. Harbour tugs are usually based near the project they serve and rarely transit long distances.

3.2.14 Other Vessel Traffic

Other vessels required during operations may include vessels to transport personnel, or vessels to transport supplies to the marine terminal. This does not include dredging or maintenance by marine contractors which would occur infrequently. Not all projects provide estimates of vessels required during operations. However, more remote projects, not connected by major highways, will be reliant on marine transportation during operation (e.g., Woodfibre LNG or Ksi Lisims LNG).

4.0 Project Details

The following section describes the details for each project, including each project's vessel traffic projection and schedule to the start of operations. Using the methodology described in Section 2.0, these project details are collated and used to create the forecasts in Section 5.0.

Project details are taken from the IAAC Canadian Impact Assessment Registry or EPIC website. If a project is not subject to review by one of these agencies, the fields are left blank or information is obtained from other sources.

The following details are collated according to data provided by the IAAC (see Appendix A):

- **Status:** The IAAC status (i.e., in progress, suspended, completed, terminated).
- **Posting Date:** The date the assessment was posted to the Canadian Impact Assessment Registry.
- **Title:** The name of the project.
- **Type:** The type of federal review applicable to the assessment.
- **Proponent:** The name of the organization proposing the project.
- **Province:** The Canadian province the project is located in.
- **Location Name:** The name of the project location.
- **Longitude:** Longitude in decimal degrees.
- **Latitude:** Latitude in decimal degrees.
- **Responsible Agency:** The federal government agency responsible for leading the assessment.
- **Type Description:** The type of project.
- **IAAC URL:** The link to the project details page in the Canadian Impact Assessment Registry.

The following details are collated according to data provided by the BC EAO (see Appendix B):

- **Name**: The name of the project.
- **Proponent(s):** The name of the organization proposing the project, or the name of the holder of the certificate or order operating the project.
- **Type:** The major types used to classify projects (see Part 2 to Part 8 of the *Reviewable Projects Regulation* [119]).
- **Subtype:** The subtypes are used to further classify projects per tables in each part of *Reviewable Projects Regulation* [119]. Subtype is dependent on type (see above).
- **Project Description:** A short text description of the proposed project.
- **Environmental Assessment Legislation:** The Act that the environmental assessment decision was made under.
- **Federal Involvement:** Indicates how the federal government is involved in the project (i.e., to be determined; none; substituted; review panel; coordinated; comprehensive study; screening).
- **Project Phase:** The current phase of the environmental assessment process.
- **Environmental Assessment Decision:** The decision made by the EAO on the assessment of the project.
- **Environmental Assessment Decision Date:** The date the last environmental assessment decision was made on the Project.
- **Latitude:** Latitude in decimal degrees.
- **Longitude**: Longitude in decimal degrees.
- **EPIC Project URL:** The link to the project details page in EPIC.

The VTF-PR also includes a further category used by the BC EAO on the EPIC website but not included in the project data for download:

- **Nature of Project:**
    - **"new project"** – means a proposed project, or a project for which construction has begun but that has not started regular operations [119];
    - **"existing project"** – means a constructed or substantially constructed project, whether operational or not, but does not include a project that has permanently ceased operations and has been abandoned [119].

In addition to the details provided by the BC EAO and IAAC databases, these details are also collated for each project:

- **Project Website:** The project's website (if available).
- **Project Location:** The navigable water closest to the project's marine facilities.
- **Terminal Type:** The type of terminal (e.g., bulk terminal, container terminal, LNG export terminal, etc.)
- **Project Phase(s):** The potential number of phases of project development.
- **Operating Life:** The documented minimum years of operational service life projected for the project.
- **Construction Duration:** The projected duration for construction documented for the project.

- **Documented Start Date:** The documented start date for the project from project or other publicly available references.
- **VTF-PR FID Date:** The documented commercial or FID status of the project from publicly available information sources or, if no status is available, the assumed date for the VTF-PR.
- **VTF-PR Operating Life:** The minimum project life, in years, assumed in the VTF-PR.
- **VTF-PR Forecast Start Date (earliest):** The earliest start date for the project phase assumed in the VTF-PR.
- **VTF-PR Forecast End Date (earliest):** The earliest end date for the project phase assumed in the VTF-PR.

There is variability in some data depending on the information source selected. Inconsistencies in data, or assumptions made, are noted.

4.1 Canola Oil Transload Facility - Fraser Surrey

The Canola Oil Transload Facility – Fraser Surrey involves redeveloping a portion of DP World's existing Fraser Surrey Terminal at Berth 10 to load canola oil. Construction will take approximately 20 months to complete. Project details are in Table 5.

Table 5 - Canola Oil Transload Facility - Fraser Surrey, project details

Item	Description
Project website	LINK [120]
Project location	Fraser River
Terminal type	Bulk liquids terminal
Project phase(s)	1
BCEAO project name	no record
IAAC name	Canola Oil Transload Facility - Fraser Surrey
Operating life (years, min)	no record
Comments	20 year (minimum) design life assumed
Construction duration (years, min)	no record; construction underway [121]
Documented start date	2024 [122]
Comments	See Section 2.3.4 of PER Application [122]
VTF-PR operating life (years, min)	20
VTF-PR forecast start date (earliest)	2025
Comments	Assume documented start date plus one year
VTF-PR forecast end date (earliest)	2045

Vessels calling at DP World Fraser Surrey are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 6. Escort tug policies are assumed to apply and will be required in Haro Strait and Boundary Pass as well as the Fraser River. Only one vessel traffic projection is provided in the project's application to the VFPA [122] and is used in both the minimum and maximum forecasts.

Table 6 - Canola Oil Transload Facility – Fraser Surrey, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)	Vessel 3 (minimum and maximum cases)
Design Vessel Particulars			
Vessel type	Tanker	Tug	Tug
Vessel subtype	Small Tanker (<50k DWT)	Escort Tug	Escort Tug
Commodity	Canola Oil		
Vessel class (min)	Handysize		
Vessel size (min)	10,000 DWT		
Vessel class (max)	Handymax		
Vessel size (max)	48,000 DWT		
Design vessel class (max)	Handymax		
Design vessel size (max)	48,000 DWT		
Reference	Project Environmental Review Application No. 22-017 [122]		
Escort Tug Policies (tugs, min)			
PPA Notice Number: 07/2019		1	0
PPA Notice Number: 02/2024 (Tanker)		0	2
VFPA TCZ-4 (tanker)		0	2
Vessel Traffic Forecast			
Project scenario	Application	Application	Application
Navigation start	Buoy J	Haro Strait and Boundary Pass	Fraser River
Navigation end	DP World Fraser Surrey	Haro Strait and Boundary Pass	Fraser River
Forecast case	MIN/MAX	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	33 [122]	33	33
Escort tugs per transit (min)	0	1	2
Escort tug transits (min)	0	33	66
Vessel calls or one-way transits (annual)	33	33	66
Forecast start date (earliest)	2025	2025	2025
Forecast end date (earliest)	2045	2045	2045
Forecast Vessel Calls			
2023	0	0	0
2024	0	0	0
2025	33	33	66
2026	33	33	66
2027	33	33	66
2028	33	33	66
2029	33	33	66
2030	33	33	66
2035	33	33	66
2040	33	33	66

4.2 Cedar LNG Project

The Cedar LNG Project is a proposed a natural gas liquefaction facility and marine terminal in Kitimat, BC [53]. Project details are in Table 7.

Table 7 - Cedar LNG Project, project details

Item	Description
Project website	LINK [123]
Project location	Kitimat Arm
Terminal type	LNG terminal
Project phase(s)	1
BCEAO project name	Cedar LNG
BCEAO nature	New Construction [53]
IAAC name	Cedar LNG Project
Operating life (years, min)	25 [20]
Operating life (years, max)	40
Comments	See Assessment Report [20]
Construction duration (years, min)	3
Construction duration (years, max)	4
Comments	See Project Overview [124]
Documented start date	2028
Comments	See project website and news release [125]
VTF-PR operating life (years, min)	25
VTF-PR forecast FID date (min)	2024
Comments	See project website and news release 1]
VTF-PR forecast start date (earliest)	2028
Comments	Assume documented start date 1]
VTF-PR forecast end date (earliest)	2053

Cedar LNG forecast approximately 40 to 50 LNG carrier calls per year [20]. Vessels calling on Cedar LNG are assumed to originate from the Pacific Ocean via Dixon Entrance. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 8. Escort tug policies, namely the BC North Coast Waterway Management Guidelines [44], are assumed to apply. A range of LNG carrier calls is provided in the project's application, with the low and high projections used in the minimum and maximum forecasts, respectively.

Table 8 - Cedar LNG Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum case)	Vessel 2 (minimum case)	Vessel 3 (maximum case)	Vessel 4 (maximum case)
Design Vessel Particulars				
Vessel type	Tanker	Tug	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug	LNG/LPG Carrier	Escort Tug
Commodity	LNG		LNG	
Vessel class (min)	LNG Carrier		LNG Carrier	
Vessel size (min)	180,000 m^3		180,000 m^3	
Vessel class (max)	LNG Carrier		LNG Carrier	
Vessel size (max)	180,000 m^3		180,000 m^3	
Design vessel class (max)	LNG Carrier		LNG Carrier	
Design vessel size (max)	216,000 m^3 t		216,000 m^3 t	
Reference	Project Description Summary [25]		Project Description Summary [25]	
Escort Tug Policies (tugs, min)				
PPA Notice Number: 03/2022		1		1
BC NCWMG SSB No. 26/2023		1		1
Vessel Traffic Forecast				
Project scenario	Application	Application	Application	Application
Navigation start	Dixon Entrance	Browning Entrance	Dixon Entrance	Browning Entrance
Navigation end	Kitimat Arm	Kitimat Arm	Kitimat Arm	Kitimat Arm
Forecast case	MIN	MIN	MAX	MAX
Projected vessel calls (annual)	40 [25]	40	50 [25]	50
Escort tugs per transit (min)	0	1	0	1
Escort tug transits (min)	0	40	0	50
Vessel calls or one-way transits (annual)	40	40	50	50
Forecast start date (earliest)	2028	2028	2028	2028
Forecast end date (earliest)	2053	2053	2053	2053
Forecast Vessel Calls				
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	40	40	50	50
2029	40	40	50	50
2030	40	40	50	50
2035	40	40	50	50
2040	40	40	50	50

4.3 Centerm Expansion Project

The Centerm Expansion Project includes container capacity and related off-terminal improvements for the Centerm container terminal (Centerm) in Vancouver, BC. Construction was completed as of spring 2023 [126]. Project details are in Table 9.

Table 9 - Centerm Expansion Project, project details

Item	Description
Project website	no record
Project location	Burrard Inlet
Terminal type	Container terminal
Project phase(s)	1
BCEAO project name	Centerm Expansion
BCEAO nature	New Construction [127]
IAAC name	Amendment to the permit expiry date for the approved Centerm Expansion Project1F1F[4]
Operating life (years, min)	no record
Comments	20 year (minimum) design life assumed.
VTF-PR operating life (years, min)	20
VTF-PR forecast start date (earliest)	2023
Comments	Project commenced operations 2023 [126]
VTF-PR forecast end date (earliest)	2043

Vessels calling at Centerm are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 10. Escort tug policies under the VFPA Port Information Guide for TCZ-1 apply.

Before expansion, Centerm handled approximately 470 container vessel movements annually. Container vessel movements are forecast to increase to 600 per year [26]. Only one vessel traffic projection is provided in the project's application and is used in both the minimum and maximum forecasts.

[4] Latest record available for the project in the IAAC database.

Table 10 - Centerm Expansion Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)
Design Vessel Particulars		
Vessel type	Cargo	Tug
Vessel subtype	Container Ship	Escort Tug
Commodity	Containers	
Vessel class (min)	post-Panamax	
Vessel size (min)	8,000 TEU	
Vessel class (max)	New Panamax	
Vessel size (max)	14,000 TEU	
Design vessel class (max)	New Panamax	
Design vessel size (max)	14,000 TEU	
Reference	Marine Transportation Impact Study [26]	
Escort Tug Policies (tugs, min)		
VFPA TCZ-1		1
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Buoy J	First Narrows
Navigation end	DP World Centerm	First Narrows
Forecast case	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	52 [26]	52
Escort tugs per transit (min)	0	1
Escort Tug Transits (min)	0	52
Vessel calls or one-way transits (annual)	52	52
Forecast start date (earliest)	2023	2023
Forecast end date (earliest)	2043	2043
Forecast Vessel Calls		
2023	52	52
2024	52	52
2025	52	52
2026	52	52
2027	52	52
2028	52	52
2029	52	52
2030	52	52
2035	52	52
2040	52	52

4.4 Delta Grinding Facility Project

The Delta Grinding Facility Project is proposed a grinding facility that includes a marine terminal for the importation of raw materials. Delta Grinding Facility is to be on Tilbury Island, in Delta, BC on the South Arm of the Fraser River [128]. The Project will be developed in two stages [27].

The Project is in the regulatory process with application information requirements established in late 2022. For the VTF-PR, Stage 1 is assumed to be approved, at the earliest, in 2026, and operational in 2028. Stage 2 depends on market conditions [27] and is assumed to enter operation after 2030. Project details, for both phases, are in Table 11. Details for Phase 1 are in Table 12 and Table 13. Details for Phase 2 are in Table 14.

Table 11 - Delta Grinding Facility Project, project details

Item	Description
Project website	no record
Project location	Fraser River
Terminal type	Dry bulk terminal
Project phase(s)	2
BCEAO project name	Delta Grinding Facility
BCEAO nature	New Construction [56]
IAAC name	Delta Grinding Facility Project
Operating life (years, min)	40
Comments	See Project Description [27]

Table 12 - Delta Grinding Facility Project (Phase 1, minimum), project details

Item	Description
Construction duration (years, min)	2.7
Comments	See Project Description; 12 months preparation plus 20 months [27]
Documented start date	2020
Comments	See Project Description [27]
VTF-PR operating life (years, min)	40
VTF-PR forecast FID date (min)	2025
Comments	Assumed date; project is in Application Development and Review
VTF-PR forecast start date (earliest)	2029
Comments	Assumed based on VTF-PR forecast FID date (earliest) plus construction duration (min) plus a one year buffer
VTF-PR forecast end date (earliest)	2033 (assuming on Stage 2 proceeds)

Table 13 - Delta Grinding Facility Project (Phase 1, maximum), project details

Item	Description
Construction duration (years, min)	2.7
Comments	See Project Description; 12 months preparation plus 20 months [27]
Documented start date	2020
Comments	See Project Description [27]
VTF-PR operating life (years, min)	40
VTF-PR forecast FID date (min)	2025
Comments	Assumed date; project is in Application Development and Review
VTF-PR forecast start date (earliest)	2029
Comments	Assumed based on VTF-PR forecast FID date (earliest) plus construction duration (min) plus a one year buffer
VTF-PR forecast end date (earliest)	2069 (assumes Stage 2 does not proceed)

Table 14 - Delta Grinding Facility Project (Phase 2), project details

Item	Description
Construction duration (years, min)	3.3
Comments	See Project Description [27]
Documented start date	Dependent on market
Comments	Construction of Stage 2is dependent on market conditions. [27]
VTF-PR operating life (years, min)	40
VTF-PR forecast FID date (min)	2029
Comments	Assumed no FID for Stage 2 until after Stage 1 (one year buffer added); see Project Description
VTF-PR forecast start date (earliest)	2034
Comments	Assumed no FID for Stage 2 until after Stage 1 (one year buffer added); see Project Description
VTF-PR forecast end date (earliest)	2074

4.4.1 Stage 1 Inbound Vessel Traffic

Granulated blast furnace slag (GBFS) import during Stage 1 will result in approximately 10 calls per year by Panamax vessels or 14 by Handymax vessels to Plumper Sound where the GBFS will be transloaded to barges and delivered to the marine terminal at the Delta Cement Plant and Delta and Surrey depots [27]. Gypsum from Mexico is delivered by vessel before being transloaded in Plumper Sound to barges for delivery to the Delta Cement Plant. Crushed limestone from Texada Island will be delivered by barge to the Delta Cement Plant marine terminal [27].

4.4.2 Stage 1 and Stage 2 Outbound Vessel Traffic

During both Stage 1 and Stage 2, the final product will be delivered to customers by truck and barge [27]. Ground granulated blast furnace slag (GGBFS) will be transported by barge to consumers in the Lower Mainland and Pacific Northwest [27]. This will result in 54 barges leaving the Delta Cement Plant [27]. The distribution of the 54 barges across the Pacific Northwest is not provided. The VTF-PR assumes the 54 transits are equally distributed across three routes [129]. This is a conservative assumption.

4.4.3 Stage 2 Inbound Vessel Traffic

Delivery of raw materials during Stage 2, specifically GBFS and gypsum, will be to the new marine terminal using self-unloading Panamax or Handymax-sized vessels. The same numbers of bulk carriers in Stage 1 are projected, except that they will now offload at the Delta Grinding Facility instead of transloading to barges [27].

4.4.4 VTF-PR Vessel Traffic

Vessels for the Delta Grinding Facility Project use a variety of routes with a variety of starting and end points. Escort tug policies are assumed to not apply.

Stage 1 vessel traffic is projected to be greater than Stage 2 vessel traffic [27]. A range is provided for the Stage 1 vessel traffic. The greater estimate of vessel traffic for Stage 1 is used for the maximum case in the VTF-PR. The design vessels and projected vessel traffic for Phase 1, maximum, are in Table 13.

For the minimum case in the VTF-PR, the smaller projection of Stage 1 vessel traffic is used. Stage 2 also assumed to proceed, lowering vessel traffic further (Stage 1 traffic is assumed to cease when Stage 2 commences). The Phase 1, minimum, and Phase 2 vessel traffic projections are in Table 12 and Table 14.

Table 15 - Delta Grinding Facility Project (Phase 1, min), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum case)	Vessel 2 (minimum case)	Vessel 3 (minimum case)	Vessel 4 (minimum case)	Vessel 5 (minimum case)	Vessel 6 (minimum case)
Design Vessel Particulars						
Vessel type	Cargo	Cargo	Cargo	Cargo	Cargo	Cargo
Vessel subtype	Bulk Carrier	Tug and Barge	Tug and Barge	Tug and Barge	Tug and Barge	Tug and Barge
Commodity	GBFS	GBFS	GBFS	Gypsum	Crushed Limestone	Ground GBFS (GGBFS)
Vessel class (min)	Handymax	Barge	Barge	Barge	Barge	Barge
Vessel size (min)	45,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Vessel class (max)	Panamax	Barge	Barge	Barge	Barge	Barge
Vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Design vessel class (max)	Panamax	Barge	Barge	Barge	Barge	Barge
Design vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Reference	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]
Vessel Traffic Forecast						
Project scenario	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1
Navigation start	Buoy J	Plumper Sound	Plumper Sound	Plumper Sound	Texada Island	Delta Cement Plant
Navigation end	Plumper Sound	Delta Cement Plant	Delta and Surrey Depots	Delta Cement Plant	Delta Cement Plant	Pacific Northwest
Forecast case	MIN	MIN	MIN	MIN	MIN	MIN
Vessel calls or one-way transits (annual)	10 [27]	75 [27]	30 [27]	4 [27]	5 [27]	54 [27]
Forecast start date (earliest)	2029	2029	2029	2029	2029	2029
Forecast end date (earliest)	2033	2033	2033	2033	2033	2033
Forecast Vessel Calls						
2023	0	0	0	0	0	0
2024	0	0	0	0	0	0
2025	0	0	0	0	0	0
2026	0	0	0	0	0	0
2027	0	0	0	0	0	0
2028	0	0	0	0	0	0
2029	10	75	30	4	5	54
2030	10	75	30	4	5	54
2035	0	0	0	0	0	0
2040	0	0	0	0	0	0

Table 16 - Delta Grinding Facility Project (Phase 1, max), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (maximum case)	Vessel 3 (maximum case)	Vessel 4 (maximum case)	Vessel 5 (maximum case)	Vessel 6 (maximum case)
Design Vessel Particulars						
Vessel type	Cargo	Cargo	Cargo	Cargo	Cargo	Cargo
Vessel subtype	Bulk Carrier	Tug and Barge	Tug and Barge	Tug and Barge	Tug and Barge	Tug and Barge
Commodity	GBFS	GBFS	GBFS	Gypsum	Crushed Limestone	GGBFS
Vessel class (min)	Handymax	Barge	Barge	Barge	Barge	Barge
Vessel size (min)	45,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Vessel class (max)	Panamax	Barge	Barge	Barge	Barge	Barge
Vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Design vessel class (max)	Panamax	Barge	Barge	Barge	Barge	Barge
Design vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Reference	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]
Vessel Traffic Forecast						
Project scenario	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1	Application; Stage 1
Navigation start	Buoy J	Plumper Sound	Plumper Sound	Plumper Sound	Texada Island	Delta Cement Plant
Navigation end	Plumper Sound	Delta Cement Plant	Delta and Surrey Depots	Delta Cement Plant	Delta Cement Plant	Pacific Northwest
Forecast case	MAX	MAX	MAX	MAX	MAX	MAX
Projected vessel calls (annual)	14 [27]	75 [27]	30 [27]	4 [27]	5 [27]	54 [27]
Escort tugs per transit (min)	0	0	0	0	0	0
Escort tug transits (min)	0	0	0	0	0	0
Vessel calls or one-way transits (annual)	14	75	30	4	5	54
Forecast start date (earliest)	2029	2029	2029	2029	2029	2029
Forecast end date (earliest)	2069	2069	2069	2069	2069	2069
Forecast Vessel Calls						
2023	0	0	0	0	0	0
2024	0	0	0	0	0	0
2025	0	0	0	0	0	0
2026	0	0	0	0	0	0
2027	0	0	0	0	0	0
2028	0	0	0	0	0	0
2029	14	75	30	4	5	54
2030	14	75	30	4	5	54
2035	14	75	30	4	5	54
2040	14	75	30	4	5	54

Table 17 - Delta Grinding Facility Project (Phase 2), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum case)	Vessel 2 (minimum case)	Vessel 3 (minimum case)	Vessel 4 (minimum case)
Design Vessel Particulars				
Vessel type	Cargo	Cargo	Cargo	Cargo
Vessel subtype	Bulk Carrier	Tug and Barge	Tug and Barge	Tug and Barge
Commodity	GBFS	GBFS	GBFS	Gypsum
Vessel class (min)	Handymax	Barge	Barge	Barge
Vessel size (min)	45,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Vessel class (max)	Panamax	Barge	Barge	Barge
Vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Design vessel class (max)	Panamax	Barge	Barge	Barge
Design vessel size (max)	65,000 DWT	8,000 DWT	8,000 DWT	8,000 DWT
Reference	Project Description [27]	Project Description [27]	Project Description [27]	Project Description [27]
Vessel Traffic Forecast				
Project scenario	Application; Stage 2	Application; Stage 2	Application; Stage 2	Application; Stage 2
Navigation start	Buoy J	Buoy J	Texada Island	Delta Cement Plant
Navigation end	Delta Cement Plant	Delta Cement Plant	Delta Cement Plant	Pacific Northwest
Forecast case	MIN	MIN	MIN	MIN
Vessel calls or one-way transits (annual)	10 [27]	1 [27]	5 [27]	54 [27]
Forecast start date (earliest)	2034	2034	2034	2034
Forecast end date (earliest)	2074	2074	2074	2074
Forecast Vessel Calls				
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
2029	0	0	0	0
2030	0	0	0	0
2035	10	1	5	54
2040	10	1	5	54

4.5 Fairview Container Terminal Stage 1B (North) Expansion Project

Phase 2B Stage 1A has been completed, with plans to complete Phase 2B Stage 1B of the expansion project to add 200,000 TEUs capacity to the Fairview Container Terminal for a total capacity of 1.8 million TEUs [130]. Phase 2B Stage 1B expansion will relocate administrative buildings away from the active container loading and unloading area, increasing space for container storage and transit. Project details are in Table 18.

Table 18 - Fairview Container Terminal Stage 1B (North) Expansion Project, project details

Item	Description
Project website	LINK [57]
Project location	Prince Rupert Harbour
Terminal type	Container terminal
Project phase(s)	1
BCEAO project name	no record
IAAC name	Fairview Container Terminal Stage 1B (North) Expansion Project
Operating life (years, min)	no record
Comments	20 year (minimum) design life assumed
Construction duration (years, min)	no record
Comments	See project website [130]
Documented start date	no record
Comments	See project website [130]
VTF-PR operating life (years, min)	20
VTF-PR forecast FID date (min)	Construction not started
Comments	See project website [130]
VTF-PR forecast start date (earliest)	2026
Comments	Construction not started; assume completion 2 years from 2024
VTF-PR forecast end date (earliest)	2046

Stage 2 was forecast to increase vessel calls at the terminal by four arrivals per week (i.e., 208 vessel calls per year) [28]. A 2021 report commissioned for the PRPA found there were 187 container vessels calls in 2018 [131] when the PRPA handled 1,036,009 TEUs [132]. The 2018 data indicates approximately 40 additional container vessel calls are required to facilitate the 200,000 TEUs increase in capacity from Phase 2B Stage 1B.

The PRPA handled 1,035,642 TEU in 2022 and less in 2023. Considering some vessel traffic increase may have been realized from improvements completed (e.g., Phase 2B Stage 1A) and the number of container vessel calls to achieve the TEU throughput in 2018, approximately 140 additional container vessel calls are forecast for the Fairview Container Terminal operating at 1.8 million TEUs capacity.

In lieu of further information regarding the current and planned operation of Fairview Container Terminal, a range of 40 to 140 container vessel calls is assumed for the VTF-PR minimum and maximum cases.

Vessels calling at Fairview Container Terminal are assumed to originate from the Pacific Ocean, entering via Dixon Entrance. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 16. The escort tug policy for container vessels calling at Fairview Terminals is assumed to apply.

Table 19 - Fairview Container Terminal Stage 1B (North) Expansion Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (maximum case)	Vessel 3 (minimum case)	Vessel 4 (minimum case)
Design Vessel Particulars				
Vessel type	Container Ship	Escort Tug	Container Ship	Escort Tug
Vessel subtype	Containers	N/A	Containers	N/A
Commodity	Ultra-Large Container Ship (ULCS)	n/a	Ultra-Large Container Ship (ULCS)	n/a
Vessel class (min)	not provided	n/a	not provided	n/a
Vessel size (min)	Ultra-Large Container Ship (ULCS)	n/a	Ultra-Large Container Ship (ULCS)	n/a
Vessel class (max)	not provided	n/a	not provided	n/a
Vessel size (max)	Ultra-Large Container Ship (ULCS)	n/a	Ultra-Large Container Ship (ULCS)	n/a
Design vessel class (max)	not provided	n/a	not provided	n/a
Design vessel size (max)	Container Ship	Escort Tug	Container Ship	Escort Tug
Reference	Comprehensive Study Report [28]	n/a	Comprehensive Study Report [28]	n/a
Escort Tug Policies (tugs, min)				
PPA Notice Number: 04/2023		2		2
Vessel Traffic Forecast				
Project scenario	Comprehensive Study Report	Application	Comprehensive Study Report	Application
Navigation start	Dixon Entrance	Prince Rupert Harbour	Dixon Entrance	Prince Rupert Harbour
Navigation end	DP World Fairview	Prince Rupert Harbour	DP World Fairview	Prince Rupert Harbour
Forecast case	MAX	MAX	MIN	MIN
Projected vessel calls (annual)	140	140	40	40
Escort tugs per transit (min)	0	2	0	2
Escort tug transits (min)	0	280	0	80
Vessel calls or one-way transits (annual)	140	280	40	80
Forecast start date (earliest)	2026	2026	2026	2026
Forecast end date (earliest)	2046	2046	2046	2046
Forecast Vessel Calls				
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	140	280	40	80
2027	140	280	40	80
2028	140	280	40	80
2029	140	280	40	80
2030	140	280	40	80
2035	140	280	40	80
2040	140	280	40	80

4.6 GCT Deltaport Expansion - Berth Four Project

The Deltaport Expansion, Berth Four Project (DP4) is an expansion of the existing GCT Deltaport Terminal (Deltaport) to add a fourth berth and additional land-based container storage and handling to increase terminal capacity by 2 million TEU per year [133]. Short-sea shipping had been considered but was removed from the project scope [134]. Project details are in Table 20.

Table 20 - GCT Deltaport Expansion - Berth Four Project, project details

Item	Description
Project website	LINK [29]
Project location	Strait of Georgia
Terminal type	Container terminal
Project phase(s)	1
BCEAO project name	GCT Deltaport Expansion - Berth Four
BCEAO nature	New Construction [60]
IAAC name	GCT Deltaport Expansion - Berth Four Project
Operating life (years, min)	100
Comments	See Detailed Project Description [133]
Construction duration (years, min)	2
Construction duration (years, max)	5
Comments	See Detailed Project Description [133]
Documented start date	2034
Comments	See Request for Extension of Time Limit [135]
VTF-PR operating life (years, min)	100
VTF-PR forecast FID date (min)	2027
Comments	GCT received a 24-month extension to the impact statement phase to May 31, 2027 [136]
VTF-PR forecast start date (earliest)	2034
Comments	Assume documented start date

GCT Deltaport can handle vessels up to the size of very large container vessel but current vessels calling are predominantly post-Panamax. By 2035, the mix of shipping service vessels is projected to be 75 percent New Panamax size and 25 percent very large container vessel size. Only a small increase in vessel traffic is projected due to the expected increase in the size of vessels calling at GCT Deltaport [133] [137]. Annual container vessel calls would increase from 364 (2020) to 416 (2035) [133].

On July 18, 2023, the IAAC extended the three-year time limit for GCT Canada Limited Partnership to provide the information or studies required for the project's impact assessment [136]. GCT, in their request for an extension, outlined a revised schedule [135]. Construction is not forecast to

begin until 2030. Preliminary construction (Stage 1) is 2 to 3 years. Stage 2 construction is 4 to 5 years overlapping Stage 1.

Vessels calling at Deltaport are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels and estimated vessel traffic for the project are in Table 21. Only one vessel traffic projection is provided in the project's application and is used in both the minimum and maximum forecasts. Escort tug policies are assumed to not apply to container vessels calling at Deltaport.

Table 21 - GCT Deltaport Expansion - Berth Four Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)
Design Vessel Particulars		
Vessel type	Cargo	Cargo
Vessel subtype	Container Ship	Container Ship
Commodity	Containers	Containers
Vessel class (min)	Post-Panamax	ULCV
Vessel size (min)	10,000 TEU	18,000 TEU
Vessel class (max)	post-Panamax	ULCV
Vessel size (max)	10,000 TEU	18,000 TEU
Design vessel class (max)	post-Panamax	ULCV
Design vessel size (max)	10,000 TEU	18,000 TEU
Reference	Detailed Project Description [133]	Detailed Project Description
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Buoy J	Buoy J
Navigation end	Roberts Bank	Roberts Bank
Forecast case	MIN/MAX	MIN/MAX
Vessel calls or one-way transits (annual)	39 [133]	13
Forecast start date (earliest)	2034	2034
Forecast end date (earliest)	2134	2134
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2035	39	13
2040	39	13

4.7 Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project

The Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project (Ksi Lisims LNG) is a proposed floating liquefied natural gas production, storage, and offloading facility (FLNG) and marine terminal at Wil Milit at the northern end of Pearse Island on Portland Canal. [63] LNG will be exported by LNG carriers [138] and condensate will be loaded onto conventional natural gas liquids (NGL) product vessels [1]. The Ksi Lisims LNG is under regulatory review. The project schedule [30] has construction starting in 2025 with commissioning complete in 2028. Project details are in Table 22.

Table 22 - Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project, project details

Item	Description
Project website	LINK [61]
Project location	Portland Canal
Terminal type	LNG terminal
Project phase(s)	1
BCEAO project name	Ksi Lisims LNG
BCEAO nature	New Construction [63]
IAAC name	Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project
Operating life (years, min)	30
Comments	See Project Description [139]
Construction duration (years, min)	3
Construction duration (years, max)	4
Comments	See Project Description [139]
Documented start date	2028
Comments	2029 or 2028 according to the project website [140]
VTF-PR operating life (years, min)	30
VTF-PR forecast FID date (min)	2024
Comments	See project website [140]
VTF-PR forecast start date (earliest)	2028
Comments	Assume latest documented start date
VTF-PR forecast end date (earliest)	2058

Berthing tugs will assist berthing and unberthing LNG carriers and NGL product vessels. Tug moorage at Wil Milit or at a nearby location will be determined during front-end engineering design (FEED) and informed by the Project's engagement with regulatory authorities and local Indigenous communities [138]. Vessels calling at Ksi Lisims LNG are assumed to originate from the Pacific, entering via Dixon Entrance. The design vessels, and estimated vessel traffic for the project are in Table 23. A range of LNG carrier and NGL product vessel calls is estimate in the project's application, with the low and high projections used in the minimum and maximum forecasts, respectively.

Table 23 - Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (minimum case)	Vessel 3 (maximum case)	Vessel 4 (minimum case)
Design Vessel Particulars				
Vessel type	Tanker	Tanker	Tanker	Tanker
Vessel subtype	LNG/LPG Carrier	LNG/LPG Carrier	Small Tanker (<50k DWT)	Small Tanker (<50k DWT)
Commodity	LNG	LNG	Condensate	Condensate
Vessel class (min)	LNG Carrier	LNG Carrier	NGL Product Vessel	NGL Product Vessel
Vessel size (min)	140,000 m^3	140,000 m^3	5,000 m^3	5,000 m^3
Vessel class (max)	LNG Carrier	LNG Carrier	NGP Product Vessel	NGP Product Vessel
Vessel size (max)	185,000 m^3	185,000 m^3	30,000 m^3	30,000 m^3
Design vessel class (max)	LNG Carrier	LNG Carrier	NGP Product Vessel	NGP Product Vessel
Design vessel size (max)	217,000 m^3	217,000 m^3	30,000 m^3	30,000 m^3
Reference	Project Overview [138]	Project Overview [138]	Project Overview [138]	Project Overview [138]
Vessel Traffic Forecast				
Project scenario	Application	Application	Application	Application
Navigation start	Dixon Entrance	Dixon Entrance	Dixon Entrance	Dixon Entrance
Navigation end	Pearse Island	Pearse Island	Pearse Island	Pearse Island
Forecast case	MAX	MIN	MAX	MIN
Vessel calls or one-way transits (annual)	160 [138]	140 [138]	12 [138]	8 [138]
Forecast start date (earliest)	2028	2028	2028	2028
Forecast end date (earliest)	2058	2058	2058	2058
Forecast Vessel Calls				
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	160	140	12	8
2029	160	140	12	8
2030	160	140	12	8
2035	160	140	12	8
2040	160	140	12	8

4.8 LNG Canada Export Terminal Project

The LNG Canada Export Terminal Project includes the construction and operation of a natural gas liquefaction facility and marine terminal in Kitimat, BC. For the marine terminal, an existing wharf is being redesigned to accommodate up to two LNG carriers at a time [141]. An adjacent tug berth facility is also being constructed [142].

Phase 1 of the project is nearing completion and is forecast to start operation in 2025 [143]. At full build out, the project would receive up to 350 LNG carriers per year, or approximately two transits per day (one arriving, one leaving) [144]. Project details, for both phases, are in Table 24. Details for Phase 1 are in Table 25 and for Phase 2 are in Table 26.

Table 24 - LNG Canada Export Terminal Project, project details

Item	Description
Project website	LINK [64]
Project location	Kitimat Arm
Terminal type	LNG terminal
Project phase(s)	2
BCEAO project name	LNG Canada Export Terminal
BCEAO nature	New Construction [66]
IAAC name	LNG Canada Export Terminal Project
Operating life (years, min)	25
Comments	See Project Description [145]

Table 25 - LNG Canada Export Terminal Project (Phase 1), project details

Item	Description
Construction duration (years, min)	Construction in progress
Comments	See project website [143]
Documented start date	2025
Comments	See project website [143]
VTF-PR operating life (years, min)	25
VTF-PR forecast start date (earliest)	2025
Comments	Assume documented start date
VTF-PR forecast end date (earliest)	2050

Table 26 - LNG Canada Export Terminal Project (Phase 2), project details

Item	Description
Construction duration (years, min)	4
Construction duration (years, max)	5
Comments	Assumed, based on Phase 1; see Project Description [145]
Documented start date	not provided
Comments	See project website [143]
VTF-PR operating life (years, min)	25
VTF-PR forecast FID date (min)	2025
Comments	Assumed; project approved; Phase 2 FID pending [143]
VTF-PR forecast start date (earliest)	2029
Comments	Assumed based on FID in 2025 and 4-years construction
VTF-PR forecast end date (earliest)	2054

Vessels calling LNG Canada are assumed to originate from the Pacific Ocean, entering via Dixon Entrance. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 22 and Table 23. Escort tug policies, namely the BC North Coast Waterway Management Guidelines, are assumed to apply.

One vessel traffic projection is provided for Phase 1 and another for Phase 2. The minimum case for the VTF-PR includes the Phase 1 vessel traffic project and assumes Phase 2 does not proceed (see Table 27). The maximum cases for the VTF-PR assumes Phase 2 proceeds and the increase in LNG carrier traffic from Phase 2 (see Table 28) is added to the Phase 1 vessel traffic.

Table 27 - LNG Canada Export Terminal Project (Phase 1), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)
Design Vessel Particulars		
Vessel type	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug
Commodity	LNG	
Vessel class (min)	LNG Carrier	
Vessel size (min)	125,000 m^3	
Vessel class (max)	LNG Carrier	
Vessel size (max)	265,000 m^3	
Design vessel class (max)	LNG Carrier	
Design vessel size (max)	265,000 m^3	
Reference	TERMPOL Review Process Report on the LNG Canada Project [31]	
Escort Tug Policies (tugs, min)		
PPA Notice Number: 03/2022		1
BC NCWMG SSB No. 26/2023		1
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Dixon Entrance	Triple Island
Navigation end	Kitimat Arm	Kitimat Arm
Forecast case	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	170 [31]	170
Escort tugs per transit (min)	0	1
Escort tug transits (min)	0	170
Vessel calls or one-way transits (annual)	170	170
Forecast start date (earliest)	2025	2025
Forecast end date (earliest)	2050	2050
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	170	170
2026	170	170
2027	170	170
2028	170	170
2029	170	170
2030	170	170
2035	170	170
2040	170	170

Table 28 - LNG Canada Export Terminal Project (Phase 2), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (maximum case)
Design Vessel Particulars		
Vessel type	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug
Commodity	LNG	
Vessel class (min)	LNG Carrier	
Vessel size (min)	125,000 m^3	
Vessel class (max)	LNG Carrier	
Vessel size (max)	265,000 m^3	
Design vessel class (max)	LNG Carrier	
Design vessel size (max)	265,000 m^3	
Reference	TERMPOL Review Process Report on the LNG Canada Project [31]	
Escort Tug Policies (tugs, min)		
PPA Notice Number: 03/2022		**1**
BC NCWMG SSB No. 26/2023		**1**
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Dixon Entrance	Triple Island
Navigation end	Kitimat Arm	Kitimat Arm
Forecast case	MAX	MAX
Projected vessel calls (annual)	180 [31]	180
Escort tugs per transit (min)	0	1
Escort tug transits (min)	0	180
Vessel calls or one-way transits (annual)	180	180
Forecast start date (earliest)	2029	2029
Forecast end date (earliest)	2054	2054
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	180	180
2030	180	180
2035	180	180
2040	180	180

4.9 New Potash Export – Westshore

The New Potash Export – Westshore, will introduce potash export to the Westshore Terminal in Delta, BC. The project is part of the BHP Jansen mine development and is designed to ship up to 4.5 mtpa of potash, displacing (approximately) an equivalent amount of coal export capacity. The project's PER permit was approved April 11, 2022 [146]. Construction is in progress and estimated to be complete in late 2026 [146]. Project details are in Table 29.

Table 29 - New Potash Export – Westshore, project details

Item	Description
Project website	LINK [146]
Project location	Strait of Georgia
Terminal type	Dry bulk terminal
Project phase(s)	1
BCEAO project name	no record
BCEAO nature	no record
IAAC name	New Potash Export - Westshore
Operating life (years, min)	no record
Comments	20 year (minimum) design life assumed
Construction duration (years, min)	Construction in progress
Comments	Scheduled completion late 2026 [146]
Documented start date	2026
Comments	Scheduled completion late 2026 [146]
VTF-PR operating life (years, min)	20
VTF-PR forecast start date (earliest)	2026
Comments	Assume 2027 based on late 2026 completion
VTF-PR forecast end date (earliest)	2046

The project estimates an increase of between 7 and 19 vessel calls per year over existing traffic. Vessels calling at Westshore Terminals are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels, and estimated vessel traffic for the project are in Table 30. Escort tug policies are assumed to not apply. A range of cargo vessel calls is provided in the project's application [32], with the low and high projections used in the minimum and maximum forecasts, respectively (see Table 30).

Table 30 - New Potash Export – Westshore, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1	Vessel 2
Design Vessel Particulars		
Vessel type	Cargo	Cargo
Vessel subtype	Bulk Carrier	Bulk Carrier
Commodity	Potash	Potash
Vessel class (min)	Handysize	Handysize
Vessel size (min)	10,000 DWT	10,000 DWT
Vessel class (max)	post-Panamax	post-Panamax
Vessel size (max)	120,000 DWT	120,000 DWT
Design vessel class (max)	post-Panamax	post-Panamax
Design vessel size (max)	120,000 DWT	120,000 DWT
Reference	New Cargo Export Project – Vessel Cargoes [32]	New Cargo Export Project – Vessel Cargoes [32]
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Buoy J	Buoy J
Navigation end	Roberts Bank	Roberts Bank
Forecast case	MAX	MIN
Vessel calls or one-way transits (annual)	19 [32]	7 [32]
Forecast start date (earliest)	2026	2026
Forecast end date (earliest)	2046	2046
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	0	0
2026	19	7
2027	19	7
2028	19	7
2029	19	7
2030	19	7
2035	19	7
2040	19	7

4.10 Ridley Terminals Expansion Project

Ridley Terminals Expansion (Berth Two Beyond Carbon) Project includes the construction and operation of a new shipping berth to expand the existing Trigon Terminal in Prince Rupert, BC for bulk and liquid gas export [69]. Along with the new berth, additional train unloading equipment, storage facilities and other infrastructure will be developed [68]. The Project's marine berth is under construction [68]. The complete Berth Two Beyond Carbon project is forecast to be operational in 2027 [68]. Project details are in Table 31.

Table 31 - Ridley Terminals Expansion Project, project details

Item	Description
Project website	LINK [147]
Project location	Chatham Sound
Terminal type	Bulk liquids terminal
Project phase(s)	1
BCEAO project name	no record
BCEAO nature	no record
IAAC name	Ridley Terminals Expansion Project
Operating life (years, min)	no record
Comments	20 year (minimum) design life assumed
Construction duration (years, min)	Construction in progress
Comments	Scheduled completion late 2025 [68]
Documented start date	2026
Comments	Marine construction scheduled for completion in late 2025 [68]
VTF-PR operating life (years, min)	20
VTF-PR forecast FID date (min)	Construction in progress
Comments	Marine construction scheduled for completion in late 2025 [68]
VTF-PR forecast start date (earliest)	2026
Comments	Assume documented start date; upland improvements not forecast to be complete until 2028/2029
VTF-PR forecast end date (earliest)	2046

Vessels calling at the terminal are forecast to be between Supramax (48,000 – 60,000 deadweight tonnage) and Panamax (65,000 – 80,000 deadweight tonnage). A maximum of three vessels per month is estimated [68]. Vessels calling at the Trigon Terminal are assumed to originate from the Pacific Ocean, entering via Dixon Entrance. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 27. Only one vessel traffic projection is provided in the project description and is used in both the minimum and maximum VTF-PR forecasts. The escort tug policies in place for gas carriers calling at Ridley Island are assumed to apply to the project.

Table 32 - Ridley Terminals Expansion Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1	Vessel 2
Design Vessel Particulars		
Vessel type	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug
Commodity	Other Bulk Liquids	
Vessel class (min)	Supramax	
Vessel size (min)	45,000 DWT	
Vessel class (max)	Panamax	
Vessel size (max)	55,000 DWT	
Design vessel class (max)	Panamax	
Design vessel size (max)	55,000 DWT	
Reference	Berth Two Beyond Carbon [68]	
Escort Tug Policies (tugs, min)		
PPA Notice Number: 02/2019	0	1
Vessel Traffic Forecast		
Project scenario	Application	Application
Navigation start	Dixon Entrance	Dixon Entrance
Navigation end	Ridley Island	Ridley Island
Forecast case	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	36 [68]	36
Escort tugs per transit (min)	0	1
Escort tug transits (min)	0	36
Vessel calls or one-way transits (annual)	36	36
Forecast start date (earliest)	2026	2026
Forecast end date (earliest)	2046	2046
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	0	0
2026	36	36
2027	36	36
2028	36	36
2029	36	36
2030	36	36
2035	36	36
2040	36	36

4.11 Roberts Bank Terminal 2 Project (RBT2)

The Roberts Bank Terminal 2 Project (RBT2) is a new container terminal proposed for Roberts Bank in Delta, BC. The new three-berth marine container terminal would provide additional capacity of 2.4 million TEUs per year [74]. The existing tug basin will be expanded to accommodate additional tugs [148]. The Roberts Bank Terminal 2 Project received regulatory approval September 28, 2023 [74]. Construction is forecast to take place from 2027 to 2033 [149] with operations commencing in 2033 [149]. Project details are in Table 33.

Table 33 - Roberts Bank Terminal 2 Project (RBT2), project details

Item	Description
Project website	LINK [150]
Project location	Strait of Georgia
Terminal type	Container terminal
Project phase(s)	1
BCEAO project name	Roberts Bank Terminal 2
BCEAO nature	New Construction [74]
IAAC name	Roberts Bank Terminal 2 Project
Operating life (years, min)	75
Comments	See Federal Review Panel Report [34]
Construction duration (years, min)	5
Comments	Construction start in late 2020s, completion in the mid-2030s [151]
Documented start date	2035
Comments	Construction start in late 2020s, completion in the mid-2030s [151]
VTF-PR operating life (years, min)	75
VTF-PR forecast FID date (min)	2024
Comments	Construction start in late 2020s, completion in the mid-2030s [151]
VTF-PR forecast start date (earliest)	2035
Comments	Assume documented start date
VTF-PR forecast end date (earliest)	2110

In the Federal Review Panel Report for the Roberts Bank Terminal 2 Project [34] the Review Panel for the Roberts Bank Terminal 2 Project (Panel) based its decision on 1.5 container ship movements per day. The Panel notes that the number of movements (i.e., two-way transits) for 2035 would be 520. This estimate is used in the VTF-PR maximum case (see Table 34). The lower number of 468 container vessel movements estimated by the VFPA is also considered in the VTF-PR minimum case (see Table 34).

Vessels calling at Deltaport are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 34. Escort tug policies are assumed to not apply.

Table 34 - Roberts Bank Terminal 2 Project (RBT2), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (minimum case)
Design Vessel Particulars		
Vessel type	Cargo	Cargo
Vessel subtype	Container Ship	Container Ship
Commodity	Containers	Containers
Vessel class (min)	Panamax	Panamax
Vessel size (min)	12,000 TEU	12,000 TEU
Vessel class (max)	Maersk Triple-E	Maersk Triple-E
Vessel size (max)	18,000 TEU	18,000 TEU
Design vessel class (max)	Maximum Design Vessel	Maximum Design Vessel
Design vessel size (max)	25,000 TEU	25,000 TEU
Reference	Federal Review Panel Report [34]	Federal Review Panel Report [34]
Vessel Traffic Forecast		
Project scenario	Application	Review Report
Navigation start	Buoy J	Buoy J
Navigation end	Roberts Bank	Roberts Bank
Forecast case	MAX	MIN
Vessel calls or one-way transits (annual)	260 [34]	234 [34]
Forecast start date (earliest)	2035	2035
Forecast end date (earliest)	2110	2110
Forecast Vessel Calls		
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2035	260	234
2040	260	234

4.12 Tilbury Marine Jetty Project

The Tilbury Marine Jetty Project (Tilbury Marine Jetty) at Tilbury Island on the Fraser River in Delta, BC includes the berthing and transferring of LNG to marine barges and carriers for delivery to local fuel markets and offshore export markets. The supply of LNG for Tilbury Marine Jetty is from the existing adjacent FortisBC Tilbury LNG Plant [78]. Project details are in Table 35.

Table 35 - Tilbury Marine Jetty Project, project details

Item	Description
Project website	LINK [75]
Project location	Fraser River
Terminal type	LNG terminal
Project phase(s)	1
BCEAO project name	Tilbury Marine Jetty
BCEAO nature	New Construction [78]
IAAC name	Tilbury Marine Jetty Project
Operating life (years, min)	30
Comments	See Section 1.0: Overview of Proposed Project Proponent Description [152]
Construction duration (years, min)	3
Comments	See Section 1.0: Overview of Proposed Project Proponent Description [152]
Documented start date	2015
Comments	See Section 1.0: Overview of Proposed Project Proponent Description [152]
VTF-PR operating life (years, min)	30
VTF-PR forecast FID date (min)	2025
Comments	Assumed to be late 2024 or early 2025; BC EAO and federal approval in 2024 [153], [154]
VTF-PR forecast start date (earliest)	2028
Comments	Assume documented construction schedule; bunker operations forecast to start before LNG carrier loading
VTF-PR forecast end date (earliest)	2058

The project received regulatory approvals in 2024. No FID has been made. The construction phase was estimated to be 36 months with a floating temporary bunker berth entering service before the main LNG jetty [152]. The VTF-PR does not consider the early operation of the floating temporary bunker berth and assumes all vessel traffic starts when construction is complete.

The project first estimated up to 137 calls at the jetty (i.e., 68 LNG carrier calls and 69 bunker vessel calls), resulting in 274 transits annually [152]. The project assumed 68 LNG Carrier round-trip transits and 50 Bunker vessel round-trips transits in the marine shipping area (Fraser River to Buoy J) for a total of 118 total LNG vessel round-trip transits. The remaining bunker vessel calls to other areas (assumed to be within the Port of Vancouver) [36].

The project proposed a second scenario, the Bunker Vessel Scenario (BVS), with up to 365 LNG vessel calls per year (730 transits). The BVS is based on increased demand for LNG bunkering and bunker vessels with a smaller cargo capacity. The BVS forecasts 307 bunker vessel calls and 58 LNG carriers calls [36]. The application scenario and BVS are considered in the project's environmental assessment [155].

Vessels calling at Tilbury Marine Jetty are assumed to originate from the Pacific Ocean, entering via Buoy J. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 33 and Table 34. Escort tug policies are assumed to apply to the LNG carriers and will be required in Haro Strait and Boundary Pass as well as the Fraser River. The vessel traffic estimate in the project application assumed LNG bunker vessels would require escort tugs. The BVS assumed LNG bunker vessels would not require escort tugs.

The vessel traffic estimate in the project application has a lower traffic forecast compared to the BVS when escort tugs are excluded, so we have chosen to use the BVS as the VTF-PR maximum case (see Table 36). The original vessel traffic estimate from the application is used for the VTF-PR minimum case (see Table 36).

Table 36 - Tilbury Marine Jetty Project (EAC Application), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (min case)	Vessel 2 (min case)	Vessel 3 (min case)	Vessel 4 (min case)	Vessel 5 (min case)	Vessel 6 (min case)	Vessel 7 (min case)	Vessel 8 (min case)
Design Vessel Particulars								
Vessel type	Tanker	Tug	Tug	Tanker	Tug	Tug	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug	Escort Tug	LNG Bunker Vessel	Escort Tug	Escort Tug	LNG Bunker Vessel	Escort Tug
Commodity	LNG			LNG			LNG	
Vessel class (min)	LNG Carrier			LNG Bunker Vessel			LNG Bunker Vessel	
Vessel size (min)	100,000 m^3 [35]			12,000 m^3 [36] [35]			12,000 m^3	
Vessel class (max)	LNG Carrier			LNG Bunker Vessel			LNG Bunker Vessel	
Vessel size (max)	100,000 m^3			12,000 m^3			12,000 m^3	
Design vessel class (max)	LNG Carrier			LNG Bunker Vessel			LNG Bunker Vessel	
Design vessel size (max)	100,000 m^3			12,000 m^3			12,000 m^3	
Reference	Tilbury Marine Jetty Bunkering Vessel Call Frequency [35]			Bunker Vessel Scenario Summary Report [36]			Bunker Vessel Scenario Summary Report [36]	
Escort Tug Policies (tugs, min)								
PPA Notice Number: 07/2019		1	0		1	0		0
PPA Notice Number: 02/2024 (LNG Carrier)		0	3		0	3		32F2F[5]
VFPA TCZ-4 (LNG Carrier)		0	3		0	3		3
Vessel Traffic Forecast								
Project scenario	Application	Application	Application	Application	Application	Application	Application	Application
Navigation start	Buoy J	Haro Strait and Boundary Pass	Fraser River	Buoy J	Haro Strait and Boundary Pass	Fraser River	Tilbury Island	Fraser River
Navigation end	Tilbury Island	Haro Strait and Boundary Pass	Fraser River	Tilbury Island	Haro Strait and Boundary Pass	Fraser River	VFPA	Fraser River
Forecast case	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
Projected vessel calls (annual)	68 [36]	68 [36]	68 [36]	50 [36]	50 [36]	50 [36]	19 [36]	19 [36]
Escort tugs per transit (min)	0	1	3	0	1	3	0	3 [36]
Escort tug transits (min)	0	68	204	0	50	150	0	57
Vessel calls or one-way transits (annual)	68	68	204	50	50	150	19	57
Forecast start date (earliest)	2028	2028	2028	2028	2028	2028	2028	2028
Forecast end date (earliest)	2058	2058	2058	2058	2058	2058	2058	2058
Forecast Vessel Calls								
2023	0	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0	0
2028	68	68	204	50	50	150	19	57
2029	68	68	204	50	50	150	19	57
2030	68	68	204	50	50	150	19	57
2035	68	68	204	50	50	150	19	57
2040	68	68	204	50	50	150	19	57

[5] The EAC Application scenario assumed LNG bunker vessels required escort tugs in the Fraser River [156, Tbl. 24]. The BVS assumes the LNG bunker vessels do not require escort tugs [156, Tbl. 24].

Table 37 - Tilbury Marine Jetty Project (BVS), design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (maximum case)	Vessel 2 (maximum case)	Vessel 3 (maximum case)	Vessel 4 (maximum case)
Design Vessel Particulars				
Vessel type	Tanker	Tug	Tug	Tanker
Vessel subtype	LNG/LPG Carrier	Escort Tug	Escort Tug	LNG Bunker Vessel
Commodity	LNG			LNG
Vessel class (min)	LNG Carrier			LNG Bunker Vessel
Vessel size (min)	100,000 m^3			4,000m3
Vessel class (max)	LNG Carrier			LNG Bunker Vessel
Vessel size (max)	100,000 m^3			7,500 m^3
Design vessel class (max)	LNG Carrier			LNG Bunker Vessel
Design vessel size (max)	100,000 m^3			7,500 m^3
Reference	Tilbury Marine Jetty Bunkering Vessel Call Frequency [35]			Bunker Vessel Scenario Summary Report [36]
Escort Tug Policies (tugs, min)				
PPA Notice Number: 07/2019		1	0	
PPA Notice Number: 02/2024 (LNG Carrier)		0	3	
VFPA TCZ-4 (LNG Carrier)		0	3	
Vessel Traffic Forecast				
Project scenario	BVSA	BVSA	BVSA	BVSA
Navigation start	Buoy J	Haro Strait and Boundary Pass	Fraser River	Fraser River
Navigation end	Tilbury Island	Haro Strait and Boundary Pass	Fraser River	Fraser River
Forecast case	MAX	MAX	MAX	MAX
Projected vessel calls (annual)	58 [36]	58 [36]	58 [36]	307 [36]
Escort tugs per transit (min)	0	1	3	0
Escort tug transits (min)	0	58	174	0
Vessel calls or one-way transits (annual)	58	58	174	307
Forecast start date (earliest)	2028	2028	2028	2028
Forecast end date (earliest)	2058	2058	2058	2058
Forecast Vessel Calls				
2023	0	0	0	0
2024	0	0	0	0
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	58	58	174	307
2029	58	58	174	307
2030	58	58	174	307
2035	58	58	174	307
2040	58	58	174	307

4.13 Trans Mountain Expansion Project

The Trans Mountain Expansion Project included the expansion at the Westridge Marine Terminal [84]. The Westridge Marine Terminal has been expanded into a three-berth complex. The new complex increases loading capacity to three Aframax-sized tankers [157]. The Westridge Marine Terminal entered service in May 2024 [158] [159] and approximately 20 vessels per month have been calling at the terminal [160]. Project details are in Table 38.

Table 38 - Trans Mountain Expansion, project details

Item	Description
Project website	LINK [157]
Project location	Burrard Inlet
Terminal type	Bulk liquids terminal
Project phase(s)	1
BCEAO project name	Trans Mountain Expansion
BCEAO nature	New Construction [84]
IAAC name	Trans Mountain Expansion Project
Operating life (years, min)	50
Comments	See Volume 2 [161]
VTF-PR operating life (years, min)	50
VTF-PR forecast start date (earliest)	2024
Comments	Operations commenced 2024; first marine shipments in Q2 2024
VTF-PR forecast end date (earliest)	2074

Vessels calling at Westridge Marine Terminal are assumed to originate from the Pacific Ocean, entering via Buoy J. One or more escort tugs are required between Buoy J and the Westridge Marine Terminal. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 39. The VTF-PR only includes the increase in vessel traffic from the expansion and not the vessel traffic that has historically called at the terminal.

Only one vessel traffic projection is provided in the project's application and is used in both the minimum and maximum forecasts (Table 39). Aframax tankers loading at Westridge Marine Terminal cannot be fully loaded due to draft limitations through Burrard Inlet. The effect of the draft restrictions on cargo capacity were considered by Trans Mountain when estimating the extent of tanker traffic that might result from the Project.

Table 39 - Trans Mountain Expansion, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)	Vessel 3 (minimum and maximum cases)
Design Vessel Particulars			
Vessel type	Tanker	Tug	Tug
Vessel subtype	Large Tanker (>50k DWT)	Escort Tug	Escort Tug
Commodity	Crude Oil		
Vessel class (min)	Panamax		
Vessel size (min)	<75,000 DWT		
Vessel class (max)	Aframax		
Vessel size (max)	120,000 DWT		
Design vessel class (max)	Aframax		
Design vessel size (max)	120,000 DWT		
Reference	Volume 8A [37]		
Escort Tug Policies (tugs, min)			
PPA Notice Number: 07/2019		1	0
PPA Notice Number: 02/2024 (Tanker)		0	2
VFPA TCZ-4 (tanker)		0	2
Vessel Traffic Forecast			
Project scenario	Application	Application	Application
Navigation start	Buoy J	Buoy J	English Bay
Navigation end	Burrard Inlet	English Bay	Burrard Inlet
Forecast case	MIN/MAX	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	348 [37]	348	348
Escort tugs per transit (min)	0	1	2
Escort tug transits (min)	0	348	696
Vessel calls or one-way transits (annual)	348	348	696
Forecast start date (earliest)	2024	2024	2024
Forecast end date (earliest)	2074	2074	2074
Forecast Vessel Calls			
2023	0	0	0
2024	348	348	696
2025	348	348	696
2026	348	348	696
2027	348	348	696
2028	348	348	696
2029	348	348	696
2030	348	348	696
2035	348	348	696
2040	348	348	696

4.14 Vancouver Airport Fuel Delivery Project

The Vancouver Airport Fuel Delivery Project is a new fuel delivery system for Vancouver International Airport (YVR). The system includes a marine terminal and fuel receiving facility on the South Arm of the Fraser River [162]. The project is complete [163] and began commercial operations in late 2023 [164]. Project details are in Table 40.

Table 40 - Vancouver Airport Fuel Delivery Project

Item	Description
Project website	no record
Project location	Fraser River
Terminal type	Bulk liquids terminal
Project phase(s)	1
BCEAO project name	Vancouver Airport Fuel Delivery
BCEAO nature	New Construction [165]
IAAC name	Vancouver Airport Fuel Delivery - Amendment request to extend the validity of PER No. 15-1043F3F[6]
Operating life (years, min)	60
Comments	See Chapter 6: Assessment of Social and Economic Effects [166]
VTF-PR operating life (years, min)	60
VTF-PR forecast start date (earliest)	2023
Comments	Operations commenced in 2023 [163].
VTF-PR forecast end date (earliest)	2083

The marine terminal is designed to handle small shipments from barges and large shipments from Panamax class tanker vessels [162]. Vessel activity is projected based on fuel demand projected for YVR [162]. Vessels calling at the Vancouver Airport Fuel Delivery Project are assumed to originate from Cherry Point, Washington State. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 41.

It is required that at least one escort tug accompany each cargo barge, and at least two tugs accompany each aviation fuel tanker to the marine terminal from Sand Heads Anchorage, or from the point at which River Pilots board the vessels [167]. Under the VFPA Port Information Guide, all tug and barge combinations in product in the Fraser River require an additional tethered escort tug in addition to the pushing or towing tug [18].

A range of tanker calls is provided in the project's application, with the low and high projections used in the VTF-PR minimum and maximum forecasts, respectively.

[6] Latest record available for the project in the IAAC database.

Table 41 - Vancouver Airport Fuel Delivery Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum case)	Vessel 2 (minimum case)	Vessel 3 (minimum case)	Vessel 4 (minimum case)	Vessel 5 (maximum case)	Vessel 6 (maximum case)	Vessel 7 (maximum case)	Vessel 8 (maximum case)
Design Vessel Particulars								
Vessel type	**Tanker**	**Tug**	**Tug**	**Tug**	**Tanker**	**Tug**	**Tug**	**Tug**
Vessel subtype	Large Tanker (>50k DWT)	Escort Tug	Tug and Barge	Escort Tug	Large Tanker (>50k DWT)	Escort Tug	Tug and Barge	Escort Tug
Commodity	Aviation Fuel		Aviation Fuel		Aviation Fuel		Aviation Fuel	
Vessel class (min)	Handysize		Towed Barge		Handysize		Towed Barge	
Vessel size (min)	10,000 DWT		4,200 DWT		10,000 DWT		4,200 DWT	
Vessel class (max)	Panamax		Articulated Tug and Barge (ATB)		Panamax		Articulated Tug and Barge (ATB)	
Vessel size (max)	60,000 DWT		20,000 DWT		60,000 DWT		20,000 DWT	
Design vessel class (max)	Panamax		Articulated Tug and Barge (ATB)		Panamax Tanker		Articulated Tug and Barge (ATB)	
Design vessel size (max)	60,000 DWT		20,000 DWT		60,000 DWT		20,000 DWT	
Reference	Chapter 2: Project Information [38]		Chapter 2: Project Information [38]		Chapter 2: Project Information [38]		Chapter 2: Project Information [38]	
Escort Tug Policies (tugs, min)								
PPA Notice Number: 02/2024 (Tanker)		2		0		2		0
VFPA TCZ-4 (tanker)		2		0		2		0
VFPA TCZ-4 (ATB)		0		1		0		1
Vessel Traffic Forecast								
Project scenario	Application	Application	Application	Application	Application	Application	Application	Application
Navigation start	Cherry Point	Fraser River	Cherry Point	Fraser River	Cherry Point	Fraser River	Cherry Point	Fraser River
Navigation end	VAFFC	Fraser River	VAFFC	Fraser River	VAFFC	Fraser River	VAFFC	Fraser River
Forecast case	MIN	MIN	MIN	MIN	MAX	MAX	MAX	MAX
Projected vessel calls (annual)	12 [162]	12 [162]	26 [162]	26 [162]	12 [162]	12 [162]	52 [162]	52 [162]
Escort tugs per transit (min)	0	2	0	1	0	2	0	1
Escort tug transits (min)	0	24	0	26	0	24	0	52
Vessel calls or one-way transits (annual)	12	24	26	26	12	24	52	52
Forecast start date (earliest)	2023	2023	2023	2023	2023	2023	2023	2023
Forecast end date (earliest)	2083	2083	2083	2083	2083	2083	2083	2083
Forecast Vessel Calls								
2023	12	24	26	26	12	24	52	52
2024	12	24	26	26	12	24	52	52
2025	12	24	26	26	12	24	52	52
2026	12	24	26	26	12	24	52	52
2027	12	24	26	26	12	24	52	52
2028	12	24	26	26	12	24	52	52
2029	12	24	26	26	12	24	52	52
2030	12	24	26	26	12	24	52	52
2035	12	24	26	26	12	24	52	52
2040	12	24	26	26	12	24	52	52

4.15 Ridley Island Energy Export Facility Project

The Vopak Pacific Canada Project was officially amended as the Ridley Island Energy Export Facility Project on December 21, 2023 [168] [89]. Ridley Island Energy Export Facility Project is a bulk liquids storage facility that stores LPG, Light Diesel, gasoline, and methanol on Ridley Island, south of Prince Rupert [169]. The Ridley Island Energy Export Facility Project received regulatory approval in 2022 [89] and received FID in May 2024. Early construction (i.e., site clearing) is ongoing [170]. Construction is scheduled to be complete in late 2025 [99]. Project details are in Table 42.

Table 42 - Ridley Island Energy Export Facility Project, project details

Item	Description
Project website	LINK [171]
Project location	Chatham Sound
Terminal type	Bulk liquids terminal
Project phase(s)	1
BCEAO project name	Ridley Island Energy Export Facility (formerly Vopak Pacific Canada)
BCEAO nature	New Construction [89]
IAAC name	Vopak Pacific Canada
Operating life (years, min)	50 [172]
Comments	See Section 2: Project Description [39]
Construction duration (years, min)	2
Comments	See project website [173]
Documented start date	2026
Comments	See project website; forecast late 2026 [173]
VTF-PR operating life (years, min)	20
VTF-PR forecast FID date (min)	2024
Comments	FID May 2024; see company website [173]
VTF-PR forecast start date (earliest)	2027
Comments	Assume 2027 based on late 2026 completion
VTF-PR forecast end date (earliest)	2047

Ridley Island Energy Export Facility includes an offshore jetty with two parallel multi-buoy systems with the capability of berthing two cargo-carrying vessels at the same time. Panamax tankers with capacities of 85,000 m^3 or 80,000 deadweight tonnage are forecast to call on average every 12 days or 30 times per year. Vessels calling at the Ridley Island Energy Export Facility are assumed to originate from the Pacific Ocean, via Dixon Entrance. The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 43. Only one vessel traffic projection is provided in the project description and is used in both the minimum and maximum VTF-PR forecasts. The escort tug policies in place for gas carriers calling at Ridley Island are assumed to apply to the project. The project has also committed to tug escort for the other tankers forecast to call at Ridley Island Energy Export Facility.

Table 43 - Ridley Island Energy Export Facility Project, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)	Vessel 3 (minimum and maximum cases)	Vessel 4 (minimum and maximum cases)	Vessel 5 (minimum and maximum cases)	Vessel 6 (minimum and maximum cases)
Design Vessel Particulars						
Vessel type	Tanker	Tug	Tanker	Tug	Tanker	Tug
Vessel subtype	LNG/LPG Carrier	Escort Tug	Small Tanker (<50k DWT)	Escort Tug	Large Tanker (>50k DWT)	Escort Tug
Commodity	Liquid Petroleum Gas (LPG)		Methanol		CPP	
Vessel class (min)	Very Large Gas Carrier (VLGC)		Medium-Range Tanker		Panamax	
Vessel size (min)	60,000 DWT		50,000 DWT		80,000 DWT	
Vessel class (max)	Very Large Gas Carrier (VLGC)		Medium-Range Tanker		Panamax	
Vessel size (max)	60,000 DWT		50,000 DWT		80,000 DWT	
Design vessel class (max)	Maximum Design Vessel		Maximum Design Vessel		Maximum Design Vessel	
Design vessel size (max)	80,000 DWT		80,000 DWT		80,000 DWT	
Reference	Draft Environmental Effects Evaluation [39]		Draft Environmental Effects Evaluation [39]		Draft Environmental Effects Evaluation [39]	
Escort Tug Policies (tugs, min)						
PPA Notice Number: 02/2019	0	1	0	0	0	0
Ridley Island Energy Export Facility (commitment)	0	0	0	1	0	1
Vessel Traffic Forecast						
Project scenario	Application	Application	Application	Application	Application	Application
Navigation start	Dixon Entrance	Triple Island	Dixon Entrance	Triple Island	Dixon Entrance	Triple Island
Navigation end	Ridley Island	Ridley Island	Ridley Island	Ridley Island	Ridley Island	Ridley Island
Forecast case	MIN/MAX	MIN/MAX	MIN/MAX	MIN/MAX	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	25 [39]	25	116 [39]	116	30 [39]	30
Escort tugs per transit (min)	0	1	0	0	0	0
Escort tug transits (min)	0	25	0	0	0	0
Vessel calls or one-way transits (annual)	25	25	116	0	30	0
Forecast start date (earliest)	2027	2027	2027	2027	2027	2027
Forecast end date (earliest)	2047	2047	2047	2047	2047	2047
Forecast Vessel Calls						
2023	0	0	0	0	0	0
2024	0	0	0	0	0	0
2025	0	0	0	0	0	0
2026	0	0	0	0	0	0
2027	25	25	116	116	30	30
2028	25	25	116	116	30	30
2029	25	25	116	116	30	30
2030	25	25	116	116	30	30
2035	25	25	116	116	30	30
2040	25	25	116	116	30	30

4.16 Woodfibre LNG

The Woodfibre Liquefied Natural Gas Project (Woodfibre LNG) is a natural gas liquefaction facility and marine terminal at the former Woodfibre Pulp Mill site approximately seven kilometres southwest of Sḵwx̱wú7mesh (Squamish), BC [174]. On November 1, 2023, an EAC was approved. Formal construction activities began on November 2, 2023, and the expected time of completion is Q4 of 2027 [99]. Project details are in Table 44.

Table 44 - Woodfibre LNG, project details

Item	Description
Project website	LINK [90]
Project location	Howe Sound
Terminal type	LNG terminal
Project phase(s)	1
BCEAO project name	Woodfibre LNG
BCEAO nature	New Construction [92]
IAAC name	Woodfibre LNG Project
Operating life (years, min)	25 [175]
Comments	See Updated Project Description [176]
Construction duration (years, min)	Construction in progress
Comments	See project website [177]
Documented start date	2027
Comments	See project website [177]
VTF-PR operating life (years, min)	25
VTF-PR forecast FID date (min)	Construction in progress
Comments	Project approved; construction in progress [178]
VTF-PR forecast start date (earliest)	2027
Comments	Assume documented start date
VTF-PR forecast end date (earliest)	2052

Upon completion, the Woodfibre LNG marine terminal will include one LNG carrier berth, able to accommodate one LNG carrier [179]. Approximately 40 LNG carriers per year are forecast to call at the terminal [175]. Vessels calling at Woodfibre are assumed to originate from the Pacific Ocean, entering via Buoy J. Escort tugs will be required in Haro Strait and Boundary Pass as well as Howe Sound. Escort tug requirements for Howe Sound have not been formalized but are discussed in the project's application.

The design vessels, escort tug policies, and estimated vessel traffic for the project are in Table 45. Only one vessel traffic projection is provided in the project's application and is used in both the minimum and maximum forecasts.

Table 45 - Woodfibre LNG, design vessel particulars, escort tug policies, and forecast vessel traffic

Item	Vessel 1 (minimum and maximum cases)	Vessel 2 (minimum and maximum cases)	Vessel 3 (minimum and maximum cases)
Design Vessel Particulars			
Vessel type	**Tanker**	**Tug**	**Tug**
Vessel subtype	LNG/LPG Carrier	Escort Tug	Escort Tug
Commodity	LNG		
Vessel class (min)	LNG Carrier		
Vessel size (min)	125,000 m^3		
Vessel class (max)	LNG Carrier		
Vessel size (max)	180,000 m^3		
Design vessel class (max)	LNG Carrier		
Design vessel size (max)	180,000 m^3		
Reference	Executive Summary [40]		
Escort Tug Policies (tugs, min)			
PPA Notice Number: 07/2019	0	1	0
Woodfibre (commitment)	0	0	3
Vessel Traffic Forecast			
Project scenario	Application	Application	Application
Navigation start	Buoy J	Haro Strait and Boundary Pass	Howe Sound
Navigation end	Woodfibre	Haro Strait and Boundary Pass	Howe Sound
Forecast case	MIN/MAX	MIN/MAX	MIN/MAX
Projected vessel calls (annual)	40 [40]	40	40
Escort tugs per transit (min)	0	1	3
Escort tug transits (min)	0	40	120
Vessel calls or one-way transits (annual)	40	40	120
Forecast start date (earliest)	2027	2027	2027
Forecast end date (earliest)	2052	2052	2052
Forecast Vessel Calls			
2023	0	0	0
2024	0	0	0
2025	0	0	0
2026	0	0	0
2027	40	40	120
2028	40	40	120
2029	40	40	120
2030	40	40	120
2035	40	40	120
2040	40	40	120

5.0 VTF-PR Findings

The minimum and maximum cases for all projects are combined to provide forecasts for the Pacific Region and for each marine route segment.

Combining the minimum cases for all projects, 3,869 vessel calls, or one-way vessel transits, are forecast for the Pacific Region in 2030 and 4,047 in 2040 (see Table 46). Combining the maximum cases for all projects, 4,572 vessel calls, or one-way vessel transits, are forecast for the Pacific Region in 2030 and 4,884 in 2040 (see Table 47). These totals include escort tug transits.

Not including escort tugs transits and combining the minimum cases for all projects, 1,438 vessel calls, or one-way vessel transits, are forecast for the Pacific Region in 2030 and 1,616 in 2040 (see Table 48). Combining the maximum cases for all projects, 2,022 vessel calls, or one-way vessel transits, are forecast for the Pacific Region in 2030 and 2,334 in 2040 (see Table 49).

The VTF-PR findings, with and without escort tug traffic, are provided for the BC North Coast (see Table 50 to Table 53) and BC South Coast (see Table 54 to Table 57).

The VTF-PR findings, not including escort tug traffic, are also filtered by the following vessel types:

- Cargo (see Table 58 and Table 59)
- Tanker (see Table 60 and Table 61)
- Tug (i.e., tug and barge, excluding escort tugs) (see Table 62 and Table 63)

Graphs for the Pacific Region, the BC North Coast and the BC South Coast are in Appendix C. Graphs for selected marine route segment are in Appendix D.

Table 46 - Vessel calls, all segments, case is 'minimum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Vancouver Airport Fuel Delivery Project	88	88	88	88	88	88	88	88	88	88
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	120	120	120	120	120	120	120
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	666	666	666	666	666
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Cedar LNG Project	0	0	0	0	0	80	80	80	80	80
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**192**	**1,584**	**2,056**	**2,255**	**2,797**	**3,691**	**3,869**	**3,869**	**4,047**	**4,047**

Table 47 - Vessel calls, all segments, case is 'maximum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	140	140	140	140	140	140	140	140	140	140
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	420	420	420	420	420	420	420
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	597	597	597	597	597
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Cedar LNG Project	0	0	0	0	0	100	100	100	100	100
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	360	360	360	360
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**244**	**1,636**	**2,108**	**2,619**	**3,161**	**4,030**	**4,572**	**4,572**	**4,884**	**4,884**

Table 48 - Vessel calls, all segments, case is 'minimum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Vancouver Airport Fuel Delivery Project	38	38	38	38	38	38	38	38	38	38
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	137	137	137	137	137
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**90**	**438**	**641**	**724**	**935**	**1,260**	**1,438**	**1,438**	**1,616**	**1,616**

Table 49 - Vessel calls, all segments, case is 'maximum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	64	64	64	64	64	64	64	64	64	64
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**116**	**464**	**667**	**862**	**1,073**	**1,660**	**2,022**	**2,022**	**2,334**	**2,334**

Table 50 - Vessel calls, BC North Coast, case is 'minimum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	120	120	120	120	120	120	120
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Cedar LNG Project	0	0	0	0	0	80	80	80	80	80
Total	0	0	340	532	874	1,102	1,102	1,102	1,102	1,102

Table 51 - Vessel calls, BC North Coast, case is 'maximum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	420	420	420	420	420	420	420
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Cedar LNG Project	0	0	0	0	0	100	100	100	100	100
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	360	360	360	360
Total	0	0	340	832	1,174	1,446	1,806	1,806	1,806	1,806

Table 52 - Vessel calls, BC North Coast, case is 'minimum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Total	0	0	170	246	417	605	605	605	605	605

Table 53 - Vessel calls, BC North Coast, case is 'maximum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Total	0	0	170	346	517	739	919	919	919	919

Table 54 - Vessel calls, BC South Coast, case is 'minimum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Vancouver Airport Fuel Delivery Project	88	88	88	88	88	88	88	88	88	88
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	666	666	666	666	666
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	192	1,584	1,716	1,723	1,923	2,589	2,767	2,767	2,945	2,945

Table 55 - Vessel calls, BC South Coast, case is 'maximum' escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	140	140	140	140	140	140	140	140	140	140
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	597	597	597	597	597
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	244	1,636	1,768	1,787	1,987	2,584	2,766	2,766	3,078	3,078

Table 56 - Vessel calls, BC South Coast, case is 'minimum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Vancouver Airport Fuel Delivery Project	38	38	38	38	38	38	38	38	38	38
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Tilbury Marine Jetty Project EAC Application)	0	0	0	0	0	137	137	137	137	137
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	90	438	471	478	518	655	833	833	1,011	1,011

Table 57 - Vessel calls, BC South Coast, case is 'maximum' escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	64	64	64	64	64	64	64	64	64	64
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**116**	**464**	**497**	**516**	**556**	**921**	**1,103**	**1,103**	**1,415**	**1,415**

Table 58 - Vessel calls, all segments, case is 'minimum', vessel type is 'cargo', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	10	10	0	0
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	16	16
Total	**52**	**52**	**52**	**99**	**99**	**99**	**109**	**109**	**401**	**401**

Table 59 - Vessel calls, all segments, case is 'maximum', vessel type is 'cargo', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	68	68	68	68
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**52**	**52**	**52**	**211**	**211**	**211**	**279**	**279**	**591**	**591**

Table 60 - Vessel calls, all segments, case is 'minimum', vessel type is 'tanker', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	12	12	12	12	12	12	12	12	12	12
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	137	137	137	137	137
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Total	**12**	**360**	**563**	**599**	**810**	**1,135**	**1,135**	**1,135**	**1,135**	**1,135**

Table 61 - Vessel calls, all segments, case is 'maximum', vessel type is 'tanker', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	12	12	12	12	12	12	12	12	12	12
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Total	**12**	**360**	**563**	**599**	**810**	**1,397**	**1,577**	**1,577**	**1,577**	**1,577**

Table 62 - Vessel calls, all segments, case is 'minimum', vessel type is 'tug', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	26	26	26	26	26	26	26	26	26	26
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	168	168	0	0
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	54	54
Total	**26**	**26**	**26**	**26**	**26**	**26**	**194**	**194**	**80**	**80**

Table 63 - Vessel calls, all segments, case is 'maximum', vessel type is 'tug', escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	52	52	52	52	52	52	52	52	52	52
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	114	114	114	114
Total	**52**	**52**	**52**	**52**	**52**	**52**	**166**	**166**	**166**	**166**

The projects considered are all at different stages of regulatory approval, commercial consideration, execution or operation. The VTF-PR finding are filtered for the following four project status categories:

- Project Completed (see Table 64 to Table 67)
- FID / Construction in Progress (see Table 68 to Table 71)
- Regulatory Approvals Received / No FID (see Table 72 to Table 75)
- Regulatory Approvals in Progress (see Table 76 to Table 79)

The projects that are complete and operational are already contributing to an increase in vessel traffic. For the projects that have made a positive FID or for which construction has commenced also have a high likelihood of being completed and entering operation. For the remaining projects that have not made a positive FID or are in the regulatory approval process there is less certainty they will be completed and enter operation.

It is challenging to quantify the likelihood projects will enter operation. The likelihood depends on many factors including, but not limited to, regulatory approval, permitting after regulatory approval, the project's construction and cost being practicable, the project proponents securing funding, and overall market demand. There are projects in the Pacific Region that have received regulatory approval, received a positive FID, and started construction, but have not been completed or entered operation (e.g., Kitimat LNG). Even if projects enter operation, there is no guarantee they will reach maximum projected vessel traffic. Many terminals in the Pacific Region operate below capacity.

Table 64 - Vessel calls, all segments, case is 'minimum', status is "project completed", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Vancouver Airport Fuel Delivery Project	88	88	88	88	88	88	88	88	88	88
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Total	**192**	**1,584**	**1,584**	**1,584**	**1,584**	**1,584**	**1,584**	**1,584**	**1,584**	**1,584**

Table 65 - Vessel calls, all segments, case is 'maximum', status is "project completed", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	140	140	140	140	140	140	140	140	140	140
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Trans Mountain Expansion Project	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Total	**244**	**1,636**	**1,636**	**1,636**	**1,636**	**1,636**	**1,636**	**1,636**	**1,636**	**1,636**

Table 66 - Vessel calls, all segments, case is 'minimum', status is "project completed", escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Vancouver Airport Fuel Delivery Project	38	38	38	38	38	38	38	38	38	38
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
Total	**90**	**438**	**438**	**438**	**438**	**438**	**438**	**438**	**438**	**438**

Table 67 - Vessel calls, all segments, case is 'maximum', status is "project completed", escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Vancouver Airport Fuel Delivery Project	64	64	64	64	64	64	64	64	64	64
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Trans Mountain Expansion Project	0	348	348	348	348	348	348	348	348	348
Total	**116**	**464**	**464**	**464**	**464**	**464**	**464**	**464**	**464**	**464**

Table 68 - Vessel calls, all segments, case is 'minimum', status is "FID / construction in progress", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	120	120	120	120	120	120	120
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Cedar LNG Project	0	0	0	0	0	80	80	80	80	80
Total	**0**	**0**	**472**	**599**	**1,141**	**1,221**	**1,221**	**1,221**	**1,221**	**1,221**

Table 69 - Vessel calls, all segments, case is 'maximum', status is "FID / construction in progress", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	420	420	420	420	420	420	420
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Island Energy Export Facility	0	0	0	0	342	342	342	342	342	342
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Cedar LNG Project	0	0	0	0	0	100	100	100	100	100
Total	**0**	**0**	**472**	**911**	**1,453**	**1,553**	**1,553**	**1,553**	**1,553**	**1,553**

Table 70 - Vessel calls, all segments, case is 'minimum', status is "FID / construction in progress", escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Total	**0**	**0**	**203**	**250**	**461**	**501**	**501**	**501**	**501**	**501**

Table 71 - Vessel calls, all segments, case is 'maximum', status is "FID / construction in progress", escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Island Energy Export Facility	0	0	0	0	171	171	171	171	171	171
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
Total	**0**	**0**	**203**	**362**	**573**	**623**	**623**	**623**	**623**	**623**

Table 72 - Vessel calls, all segments, case is 'minimum', status is "regulatory approvals received / no FID", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	666	666	666	666	666
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Total	**0**	**0**	**0**	**0**	**0**	**666**	**666**	**666**	**900**	**900**

Table 73 - Vessel calls, all segments, case is 'maximum', status is "regulatory approvals received / no FID", escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	597	597	597	597	597
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	360	360	360	360
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Total	**0**	**0**	**0**	**0**	**0**	**597**	**957**	**957**	**1,217**	**1,217**

Table 74 - Vessel calls, all segments, case is 'minimum', status is “regulatory approvals received / no FID”, escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	137	137	137	137	137
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Total	**0**	**0**	**0**	**0**	**0**	**137**	**137**	**137**	**371**	**371**

Table 75 - Vessel calls, all segments, case is 'maximum', status is “regulatory approvals received / no FID”, escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Total	**0**	**0**	**0**	**0**	**0**	**365**	**545**	**545**	**805**	**805**

Table 76 - Vessel calls, all segments, case is 'minimum', status is “regulatory approvals in progress”, escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**0**	**0**	**0**	**72**	**72**	**220**	**398**	**398**	**342**	**342**

Table 77 - Vessel calls, all segments, case is 'maximum', status is “regulatory approvals in progress”, escort tugs are included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**0**	**0**	**0**	**72**	**72**	**244**	**426**	**426**	**478**	**478**

Table 78 - Vessel calls, all segments, case is 'minimum', status is “regulatory approvals in progress”, escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**0**	**0**	**0**	**36**	**36**	**184**	**362**	**362**	**306**	**306**

Table 79 - Vessel calls, all segments, case is 'maximum', status is “regulatory approvals in progress”, escort tugs are not included

VTF-PR Project Name	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Total	**0**	**0**	**0**	**36**	**36**	**208**	**390**	**390**	**442**	**442**

6.0 Interpretation of Study Results

This VTF-PR focused on vessel traffic growth from new marine terminal projects. Traffic to existing terminals is not included. Some projects included in the VTF-PR are already operational. These factors need to be considered if combining the VTF-PR forecasts with actual vessel traffic counts (e.g., AIS data).

Vessel calls, or one-way vessel transits from the VTF-PR, cannot be doubled to approximate a total number of vessel movements in the Pacific Region. Some tug escort policies only require tug escort while in product (i.e., loaded). Actual escort tug movements may be greater given the VTF-PR counts the minimum escort tugs required under each tug escort policy. Some vessels may also go to anchor one or more times or visit multiple terminals. There are projects not included in the VTF-PR, due to insufficient information, which may proceed and contribute to additional vessel traffic in the Pacific Region (see Section 3.2). Other projects in the VTF-PR may not proceed or reach full capacity. These factors must be considered when applying the VTF-PR findings.

Most of the information referenced in the VTF-PR is from regulatory applications. The regulatory applications or submissions are completed under statutory requirements and to guidelines or requirements published by the organization(s) receiving and reviewing the application. Across the many applications different terminology, methodologies, inputs, and assumptions are used by each project. While this is unavoidable because of the varying interests of each group, best practices or standardization for certain terminology or methodologies could be developed. Vessel types and subtypes could also be aligned with automatic identification system (AIS) categories for future comparison with actual vessel traffic data.

The VTF-PR incorporates many data types (i.e., fields) and entries. If the VTF-PR is expanded to other parts of Canada, the number of data types and entries will expand further. The terminology used by regulatory bodies varies due to governing statutes (e.g., phase of environmental or impact assessment). The need to incorporate data from different sources consistently and summarize data according to different parameters is best achieved in a database. The different fields used by different authorities could be mapped for consistency. The database could also be published in a GIS format. A pan-Canadian VTF-PR database could be considered.

Historical forecasts for other projects and studies have used different geographic boundaries. It is also noted that the geographic "fence" locations used to analyze AIS data, or actual vessel traffic, do not lend themselves well to forecasts. The VTF-PR forecasts traffic by route segments that align with marine operational requirements to more accurately reflect the escort tug requirements in the Pacific Region. Using this methodology, future traffic forecasts could include a further refinement of the marine route segments and include other vessel types (e.g., pilot vessels). If all project forecasts followed a similar methodology, vessel traffic forecasts could be more easily compared.

Forecasts beyond 10 to 20 years based on available present-day project data are unlikely to be reliable. To provide meaningful vessel traffic forecasts beyond 2030 to 2040 requires a view of port operations on Canada's west coast that examines available land and terminal capacity and the macroeconomic factors which may affect the growth or decline of different cargoes on Canada's west coast, with corresponding impact on vessel traffic in the Pacific Region. It is recommended

that medium to long-term forecasts be considered independent of the project-based forecast methodology used for the VTF-PR.

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Appendix A – IAAC Project Details

Table A-1 - IAAC project details

VTF-PR Name	IAAC Status	IAAC Posting Date (YYYY-MM-DD)	IAAC Title	IAAC Type of Review	IAAC Proponent(s)	IAAC Location	IAAC Responsible Agency	IAAC Type Description	IAAC Project URL
Canola Oil Transload Facility - Fraser Surrey	Completed	2023-01-03	Canola Oil Transload Facility - Fraser Surrey	Project on federal lands	DP World Fraser Surrey Inc.	Canola Oil Transload Facility - Fraser Surrey	VFPA	Ports and Harbours; Other, not otherwise specified	https://iaac-aeic.gc.ca/050/evaluations/proj/84210?culture=en-CA
Cedar LNG Project	Completed	2019-09-18	Cedar LNG Project	Impact assessment by substitution	Cedar LNG Partners LP	Kitimat	IAAC	Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/80208?culture=en-CA
Centerm Expansion Project	Completed	2020-04-07	Amendment to the permit expiry date for the approved Centerm Expansion Project	Project on federal lands	Vancouver Fraser Port Authority	Centerm Expansion Project - Amendment PER No. 15-012-03 (Condition 47 - Extended Hours)	VFPA	Ports and Harbours; Railways	https://iaac-aeic.gc.ca/050/evaluations/proj/80591?culture=en-CA
Delta Grinding Facility Project	In progress	2019-03-18	Delta Grinding Facility Project	Environmental assessment by substitution under CEAA 2012	Heidelberg Materials Canada Limited	Tilbury Island, Delta	IAAC	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/80168?culture=en-CA
Fairview Container Terminal Stage 1B (North) Expansion	In progress	2022-03-04	Fairview Container Terminal Stage 1B (North) Expansion	Project on federal lands	DP World Canada	Fairview Container Terminal	PRPA	Railways; Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/83412?culture=en-CA
GCT Deltaport Expansion - Berth Four Project	In progress	2020-09-28	GCT Deltaport Expansion - Berth Four Project	Impact assessment by Review Panel	GCT Canada Limited Partnership	Delta	IAAC	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/81010?culture=en-CA
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	In progress	2021-07-21	Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	Impact assessment by substitution	Nisga'a Nation, Rockies LNG Limited Partnership and Western LNG LLC	Wil Milit on Pearse Island	IAAC	Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/82797?culture=en-CA
LNG Canada Export Terminal Project	Completed	2013-04-02	LNG Canada Export Terminal Project	Environmental assessment by substitution under CEAA 2012	LNG Canada Development Inc.	District of Kitimat	IAAC	Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/80038?culture=en-CA
New Potash Export - Westshore	Completed	2021-11-15	New Potash Export - Westshore	Project on federal lands	Westshore Terminals Limited Partnership	New Potash Export - Westshore	VFPA	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/83164?culture=en-CA
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	Completed	2021-11-03	Ridley Terminals Expansion Project	Project on federal lands	Ridley Terminals Inc.	Ridley Island	DFO	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/83137?culture=en-CA

VTF-PR Name	IAAC Status	IAAC Posting Date (YYYY-MM-DD)	IAAC Title	IAAC Type of Review	IAAC Proponent(s)	IAAC Location	IAAC Responsible Agency	IAAC Type Description	IAAC Project URL
Roberts Bank Terminal 2 Project	Completed	2013-09-23	Roberts Bank Terminal 2 Project	Environmental assessment by Review Panel under CEAA 2012	The Vancouver Fraser Port Authority	Delta	IAAC	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/80054?culture=en-CA
Tilbury Marine Jetty Project	In progress	2015-05-22	Tilbury Marine Jetty Project	Environmental assessment by substitution under CEAA 2012	Tilbury Jetty Limited Partnership	Tilbury Island, Delta	IAAC	Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/80105?culture=en-CA
Trans Mountain Expansion Project	Completed	2013-12-20	Trans Mountain Expansion Project	Environmental assessment under CEAA 2012	Trans Mountain Pipeline ULC	Edmonton	NEB	Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/80061?culture=en-CA
Vancouver Airport Fuel Delivery Project	Completed	2022-12-14	Vancouver Airport Fuel Delivery - Amendment request to extend the validity of PER No. 15-104	Project on federal lands	Vancouver Airport Fuel Facilities Corporation	Vancouver Airport Fuel Delivery - Amendment request to extend the validity of PER No. 15-104	VFPA	Oil and Gas; Ports and Harbours	https://iaac-aeic.gc.ca/050/evaluations/proj/84169?culture=en-CA
Vopak Pacific Canada (Ridley Island Energy Export Facility Project)	Completed	2021-07-06	Vopak Pacific Canada	Project on federal lands	Vopak Development Inc. Canada	Ridley Island	ECCC	Ports and Harbours; Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/81744?culture=en-CA
Woodfibre LNG Project	Completed	2013-12-17	Woodfibre LNG Project	Environmental assessment by substitution under CEAA 2012	Woodfibre LNG Limited Partnership (formerly Woodfibre LNG Limited)	Howe Sound	IAAC	Oil and Gas	https://iaac-aeic.gc.ca/050/evaluations/proj/80060?culture=en-CA

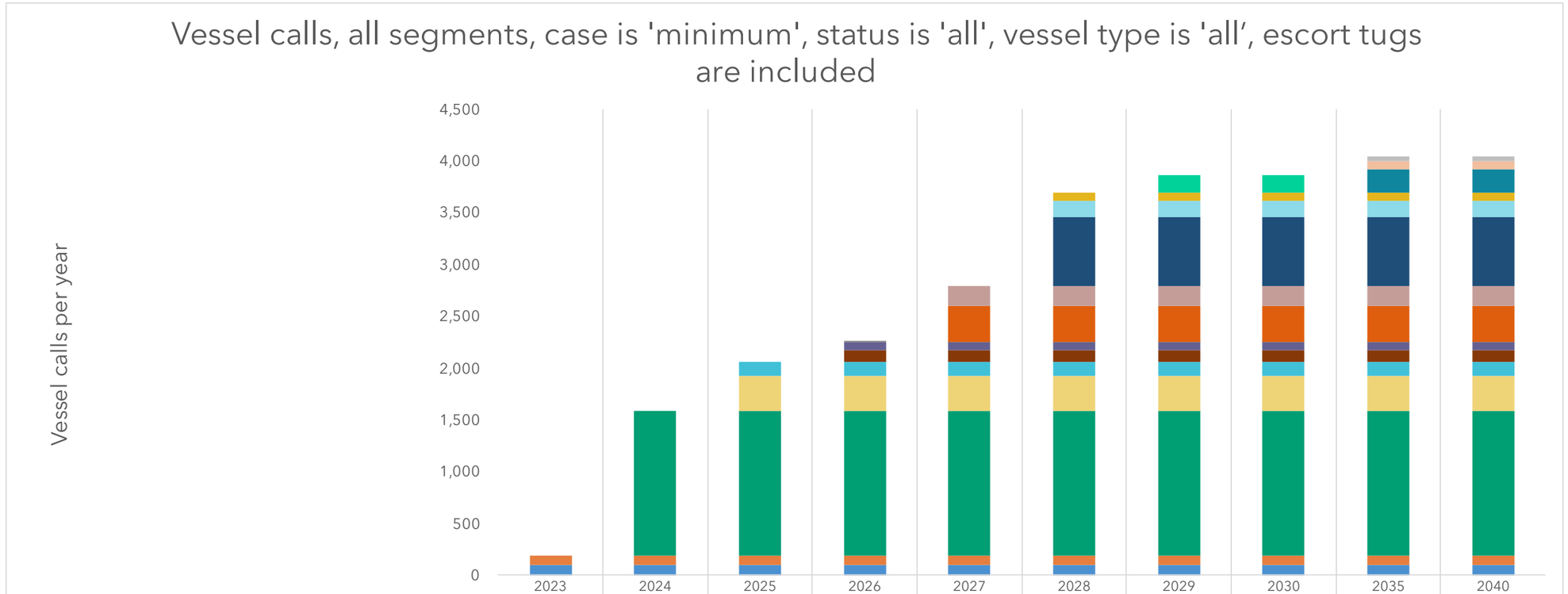
Appendix B – BC EAO Project Details

Table B-1 - BC EAO project details

VTF-PR Name	BC EAO Project Name	BC EAO Proponent(s)	BC EAO Type	BC EAO Subtype	BC EAO Region	BC EAO EA Legislation	BC EAO Federal Involvement	BC EAO Project Phase	BC EAO EA Decision	BC EAO EA Decision Date (YYYYMMDD)	BC EAO EPIC Project URL
Canola Oil Transload Facility - Fraser Surrey	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record
Cedar LNG Project	Cedar LNG	Cedar LNG Partners LP	Energy-Petroleum & Natural Gas	Natural Gas Processing Plants	Skeena	2002 Environmental Assessment Act	Substituted (Provincial Lead)	Post Decision - Pre-Construction	Certificate Issued	20230313	https://projects.eao.gov.bc.ca/p/5d64644c2f3e4f00223e81c0/project-details
Centerm Expansion Project	Centerm Expansion	Vancouver Fraser Port Authority	Transportation	Marine Port Facilities	Lower Mainland	2002 Environmental Assessment Act	None	Post Decision - Pre-Construction	Certificate Not Required	20190129	https://projects.eao.gov.bc.ca/p/5c50eee297a31e0024f07c1f/project-details
Delta Grinding Facility Project	Delta Grinding Facility	Heidelberg Materials Canada Limited	Industrial	Non-metallic Mineral Products Industries	Lower Mainland	2018 Environmental Assessment Act	Substitution	Application Development and Review	In Progress	0	https://projects.eao.gov.bc.ca/p/5c82a7f3f7883500246b2f33/project-details
Fairview Container Terminal Stage 1B (North) Expansion Project	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record
GCT Deltaport Expansion - Berth Four Project	GCT Deltaport Expansion - Berth Four	GCT Canada Limited Partnership	Transportation	Marine Port Projects	Lower Mainland	2018 Environmental Assessment Act	Coordination	Application Development and Review	In Progress	0	https://projects.eao.gov.bc.ca/p/5f7229183f4bc0002165e839/project-details
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	Ksi Lisims LNG	Nisga'a Nation, Rockies LNG Limited Partnership and Western LNG LLC	Energy-Petroleum & Natural Gas	Natural Gas Processing Plants	Skeena	2018 Environmental Assessment Act	Substitution	Application Development and Review	In Progress	0	https://projects.eao.gov.bc.ca/p/60edc23bc69c5e0023a12539/project-details
LNG Canada Export Terminal Project	LNG Canada Export Terminal	LNG Canada Development Incorporated	Energy-Petroleum & Natural Gas	Energy Storage Facilities	Skeena	2002 Environmental Assessment Act	Substituted (Provincial Lead)	Post Decision - Construction	Certificate Issued	20150617	https://projects.eao.gov.bc.ca/p/588511d0aaecd9001b826192/project-details
New Potash Export - Westshore	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record

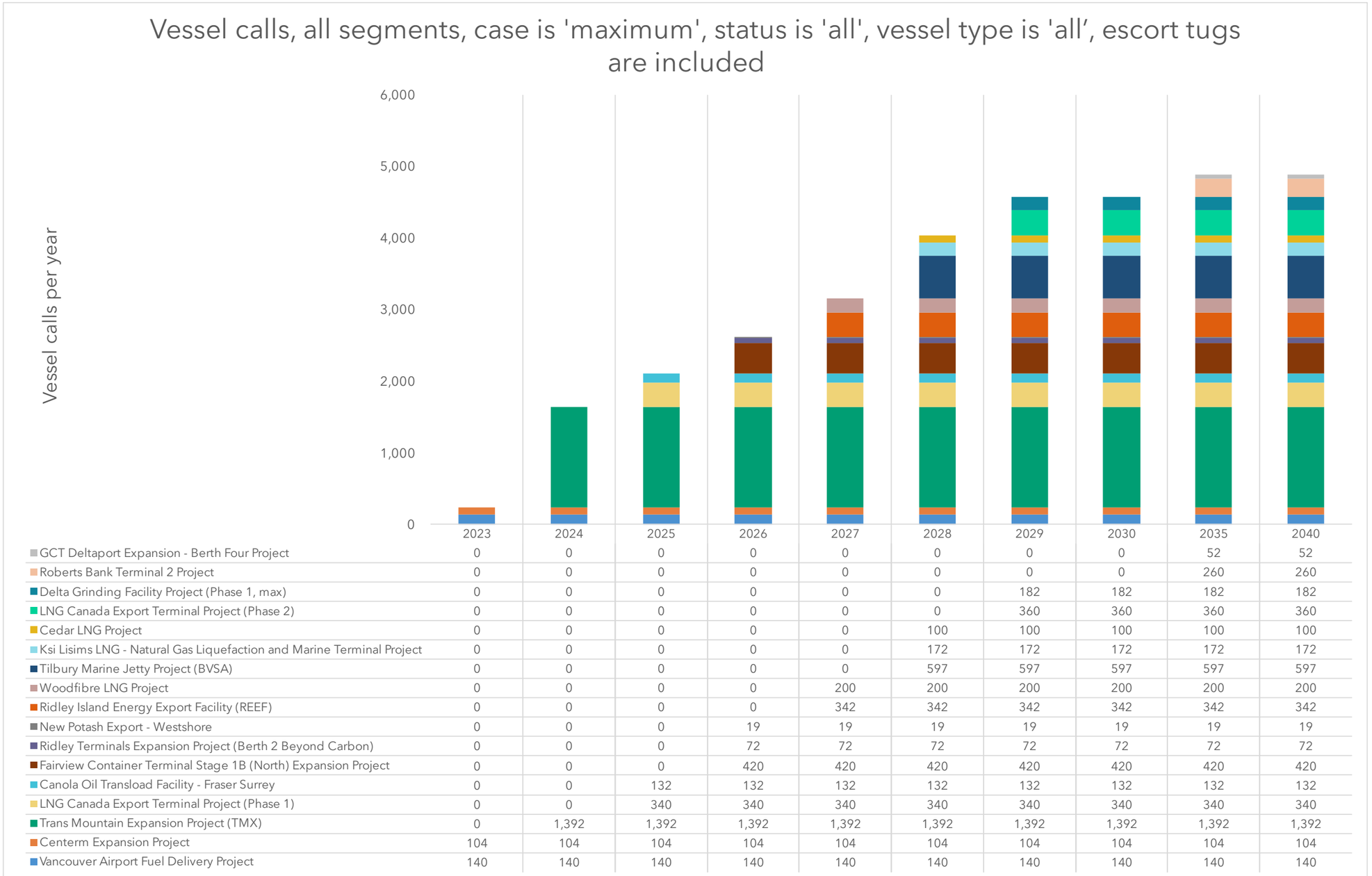
VTF-PR Name	BC EAO Project Name	BC EAO Proponent(s)	BC EAO Type	BC EAO Subtype	BC EAO Region	BC EAO EA Legislation	BC EAO Federal Involvement	BC EAO Project Phase	BC EAO EA Decision	BC EAO EA Decision Date (YYYYMMDD)	BC EAO EPIC Project URL
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record	no record
Roberts Bank Terminal 2 Project	Roberts Bank Terminal 2	Vancouver Fraser Port Authority	Transportation	Railways	Lower Mainland	2002 Environmental Assessment Act	Panel (CEAA 2012)	Application Review	Certificate Issued	20230928	https://projects.eao.gov.bc.ca/p/588511e3aaecd9001b8274d4/project-details
Tilbury Marine Jetty Project	Tilbury Marine Jetty	Tilbury Jetty LP	Transportation	Marine Port Facilities	Lower Mainland	2002 Environmental Assessment Act	Substituted (Provincial Lead)	Referral	Certificate Issued	20240327	https://projects.eao.gov.bc.ca/p/58851208aaecd9001b829b58/project-details
Trans Mountain Expansion Project	Trans Mountain Expansion	Trans Mountain Pipeline ULC	Energy-Petroleum & Natural Gas	Transmission Pipelines	Lower Mainland	2002 Environmental Assessment Act	Equivalent - NEB	Post Decision - Construction	Certificate Issued	20170110	https://projects.eao.gov.bc.ca/p/5885121eaaecd9001b82b274/project-details
Vancouver Airport Fuel Delivery Project	Vancouver Airport Fuel Delivery	Vancouver Airport Fuel Facilities Corporation	Energy-Petroleum & Natural Gas	Transmission Pipelines	Lower Mainland	2002 Environmental Assessment Act	Comprehensive Study	Post Decision - Construction	Certificate Issued	20131211	https://projects.eao.gov.bc.ca/p/5885117caaecd9001b820cd6/project-details
Vopak Pacific Canada (Ridley Island Energy Export Facility Project)	Vopak Pacific Canada	Ridley Island Energy Export Facility GP Inc., on behalf of Ridley Island Energy Export Facility Limited Partnership	Energy-Petroleum & Natural Gas	Energy Storage Facilities	Skeena	2002 Environmental Assessment Act	None	Application Review	Certificate Issued	20220420	https://projects.eao.gov.bc.ca/p/5b61e3726952ca0024cf687c/project-details
Woodfibre LNG Project	Woodfibre LNG	Woodfibre LNG General Partner Inc.	Energy-Petroleum & Natural Gas	Energy Storage Facilities	Lower Mainland	2002 Environmental Assessment Act	Substituted (Provincial Lead)	Post Decision - Construction	Certificate Issued	20151026	https://projects.eao.gov.bc.ca/p/588511e1aaecd9001b8272e7/project-details

Appendix C – Forecasts for Pacific Region, BC North Coast and BC South Coast



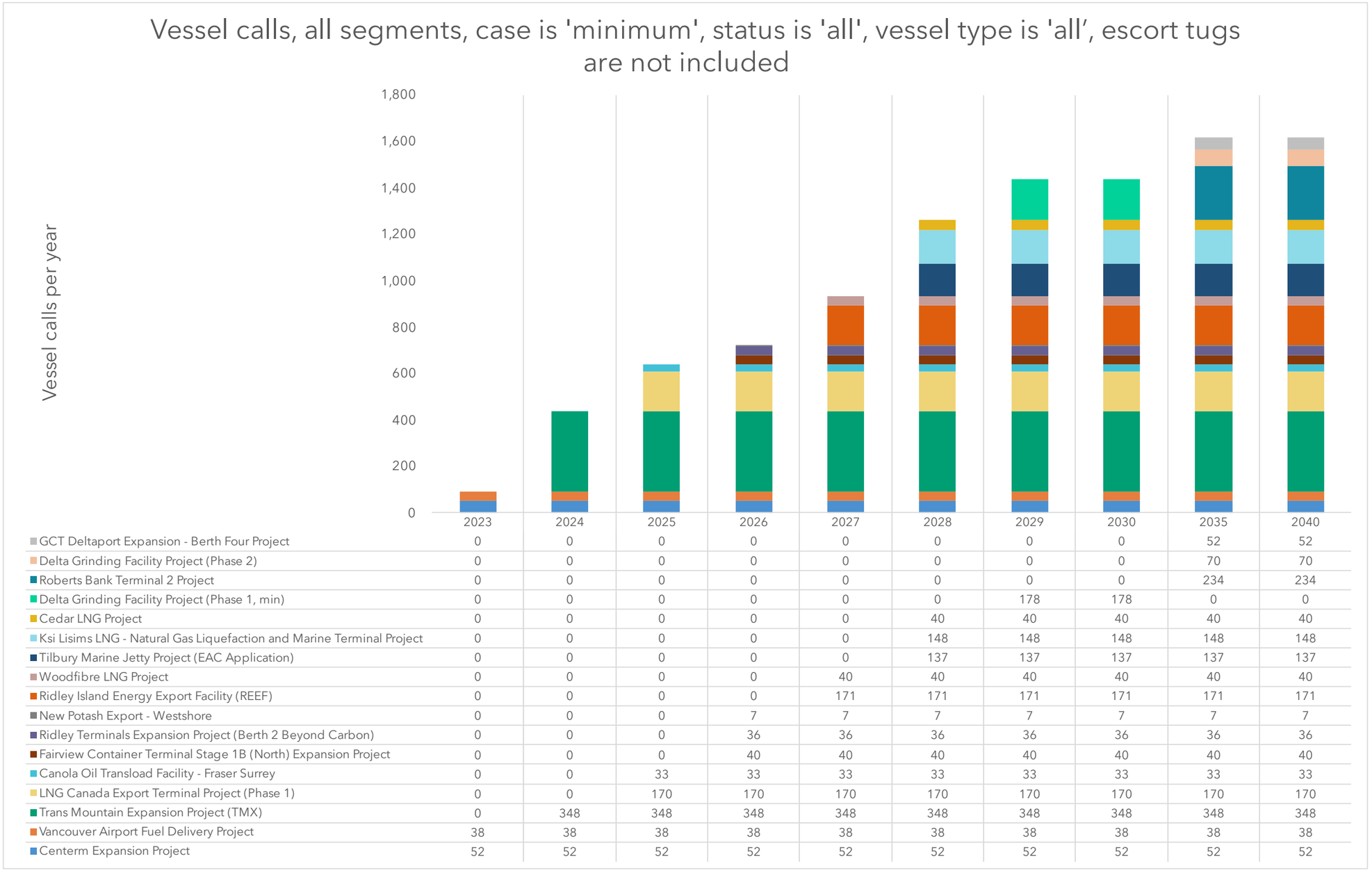
	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Cedar LNG Project	0	0	0	0	0	80	80	80	80	80
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	666	666	666	666	666
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Ridley Island Energy Export Facility (REEF)	0	0	0	0	342	342	342	342	342	342
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	120	120	120	120	120	120	120
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Trans Mountain Expansion Project (TMX)	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Vancouver Airport Fuel Delivery Project	88	88	88	88	88	88	88	88	88	88
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104

Figure C-1 - Vessel calls, all segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are included



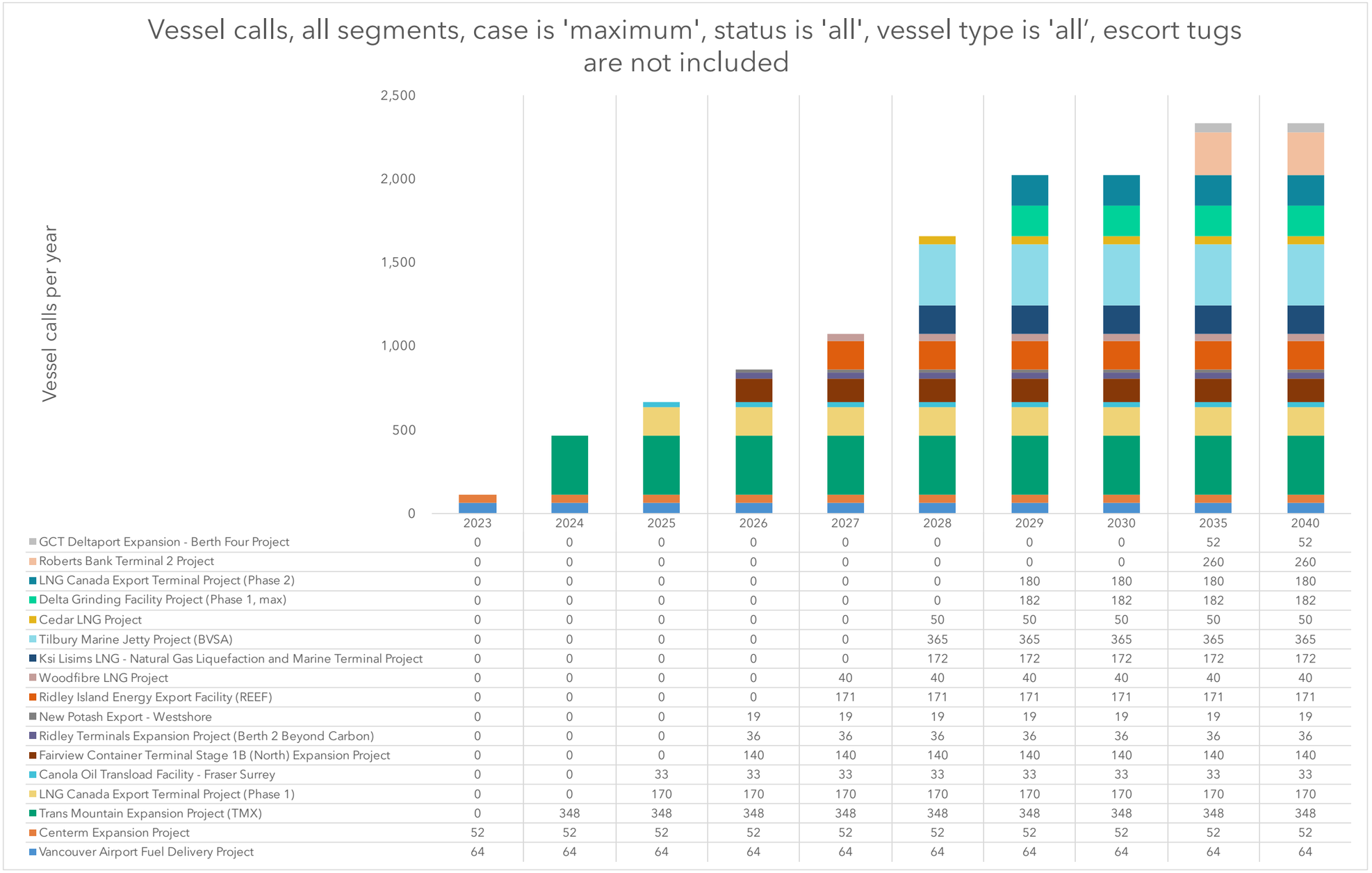
	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	360	360	360	360
Cedar LNG Project	0	0	0	0	0	100	100	100	100	100
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	597	597	597	597	597
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
Ridley Island Energy Export Facility (REEF)	0	0	0	0	342	342	342	342	342	342
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	420	420	420	420	420	420	420
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340
Trans Mountain Expansion Project (TMX)	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Vancouver Airport Fuel Delivery Project	140	140	140	140	140	140	140	140	140	140

Figure C-2 - Vessel calls, all segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	137	137	137	137	137
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Ridley Island Energy Export Facility (REEF)	0	0	0	0	171	171	171	171	171	171
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Vancouver Airport Fuel Delivery Project	38	38	38	38	38	38	38	38	38	38
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52

Figure C-3 - Vessel calls, all segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are not included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
Ridley Island Energy Export Facility (REEF)	0	0	0	0	171	171	171	171	171	171
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Vancouver Airport Fuel Delivery Project	64	64	64	64	64	64	64	64	64	64

Figure C-4 - Vessel calls, all segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are not included

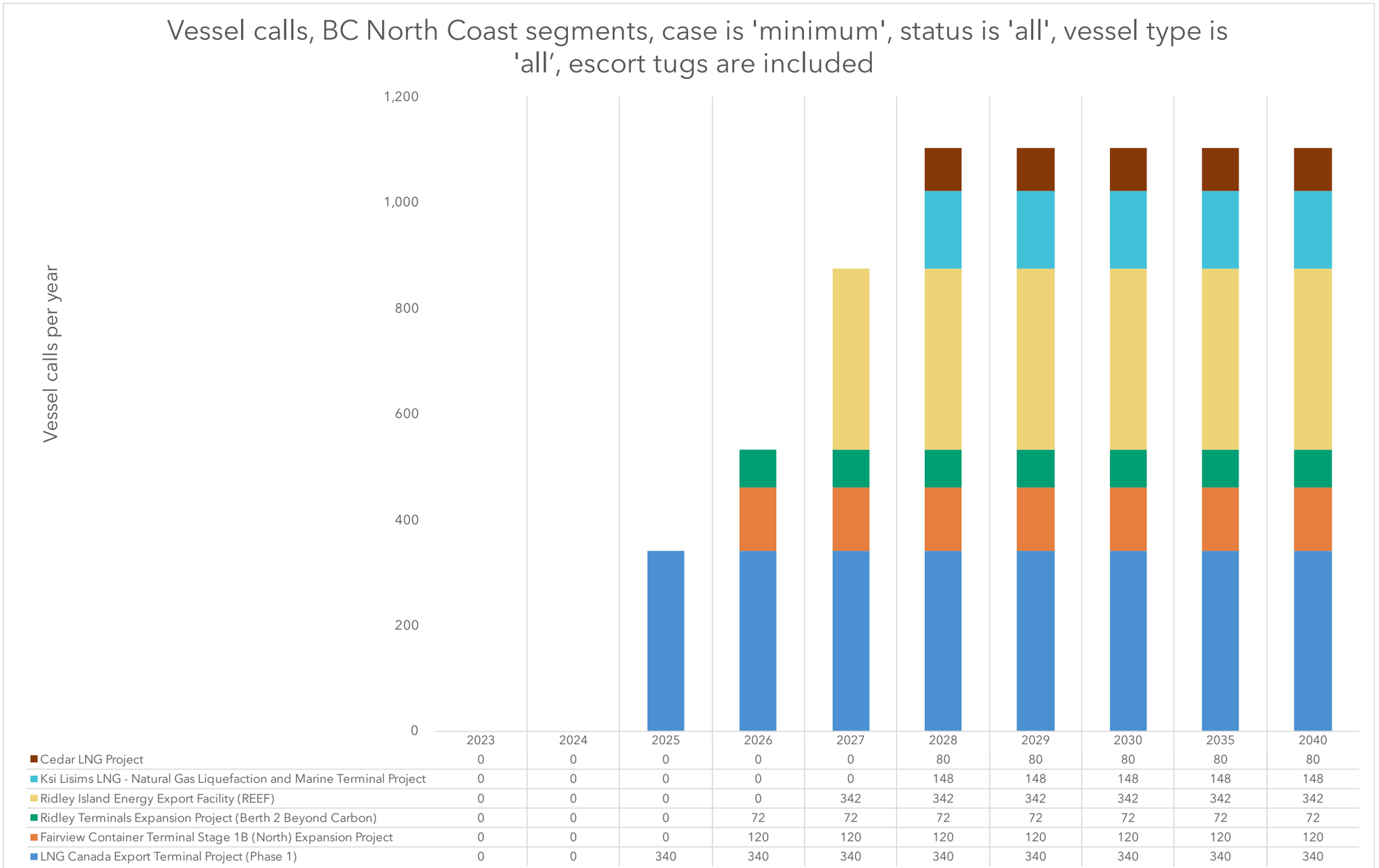
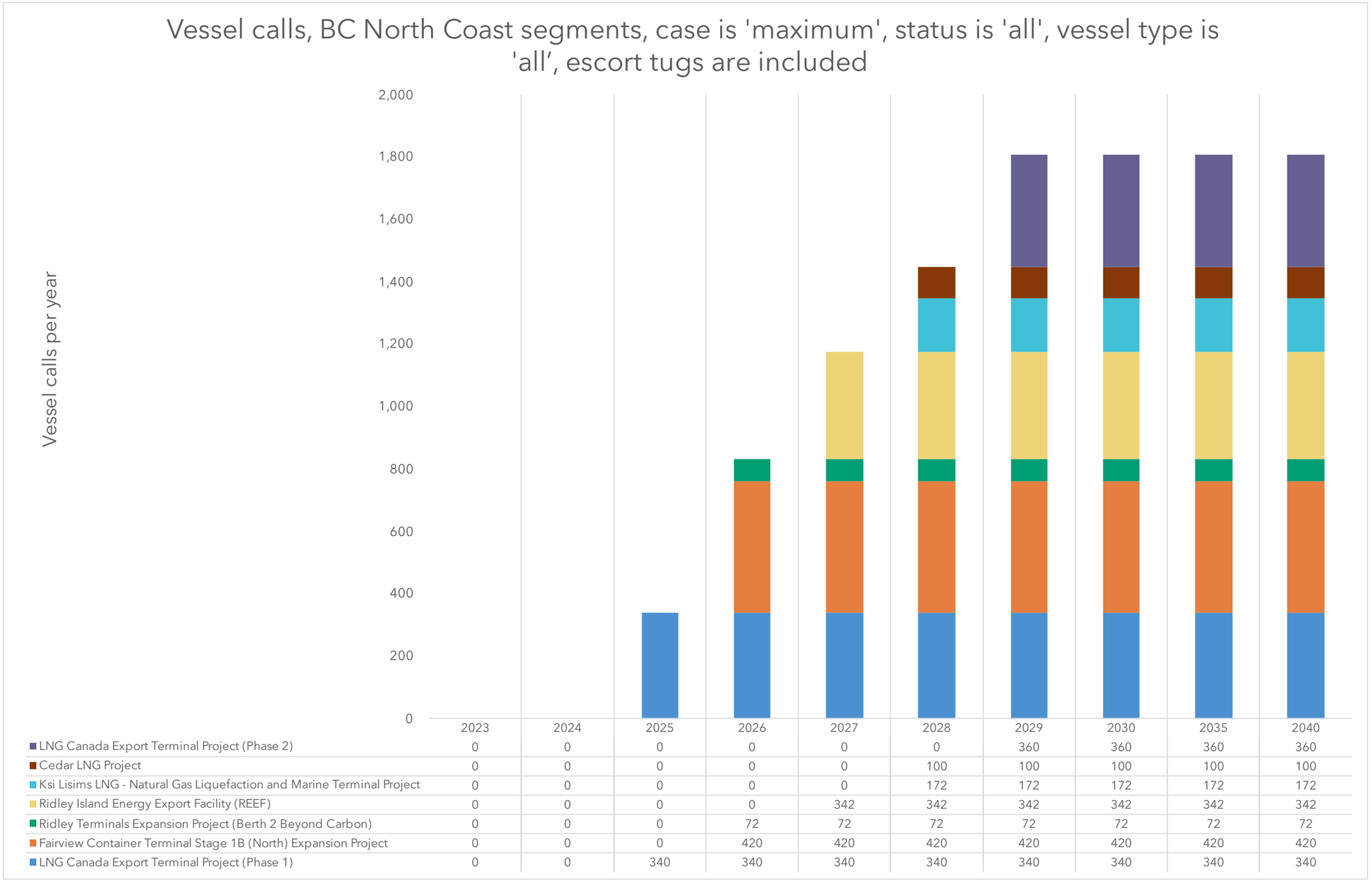


Figure C-5 - Vessel calls, BC North Coast segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	360	360	360	360
Cedar LNG Project	0	0	0	0	0	100	100	100	100	100
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Ridley Island Energy Export Facility (REEF)	0	0	0	0	342	342	342	342	342	342
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	72	72	72	72	72	72	72
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	420	420	420	420	420	420	420
LNG Canada Export Terminal Project (Phase 1)	0	0	340	340	340	340	340	340	340	340

Figure C-6 - Vessel calls, BC North Coast segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are included

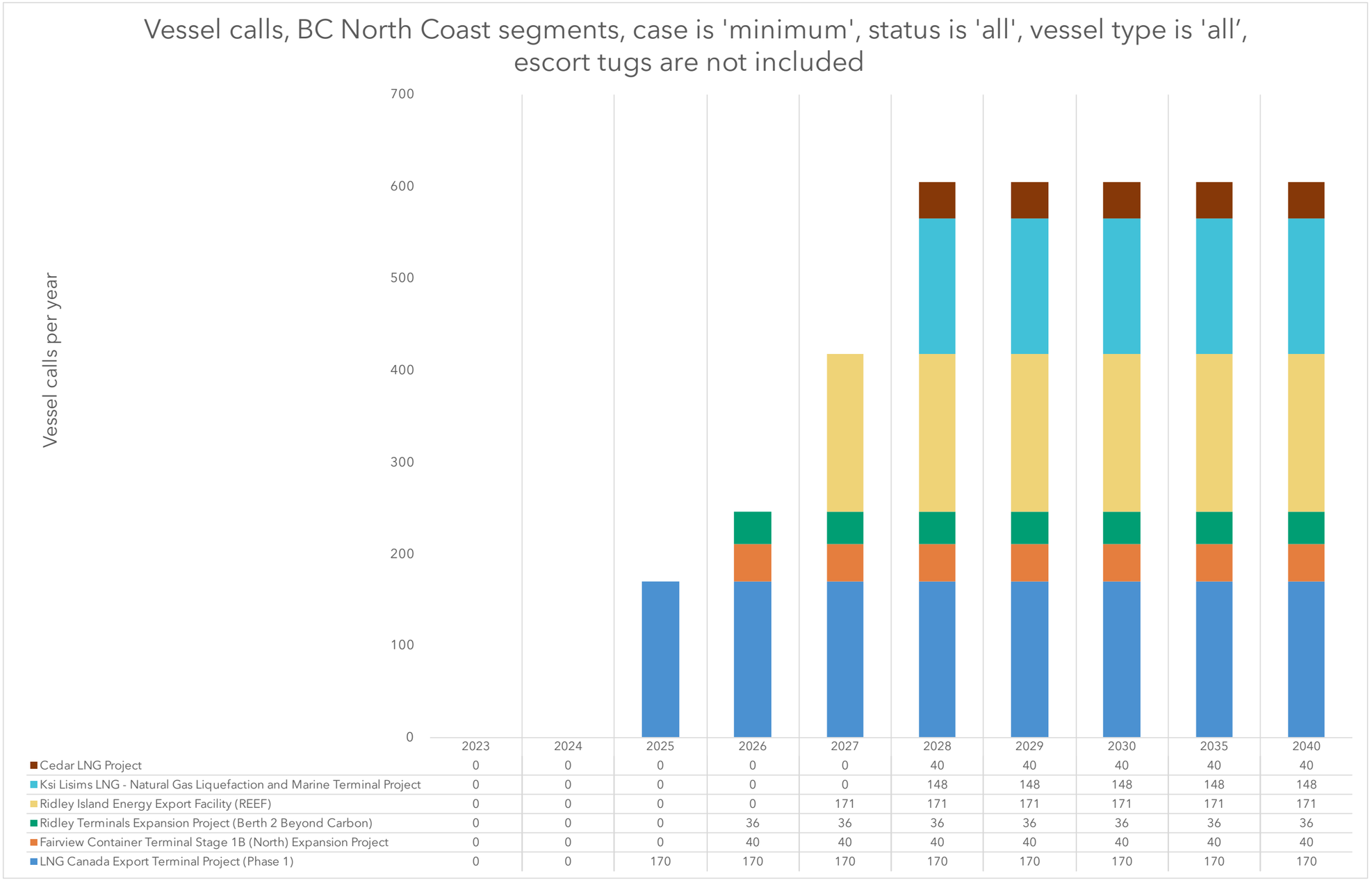
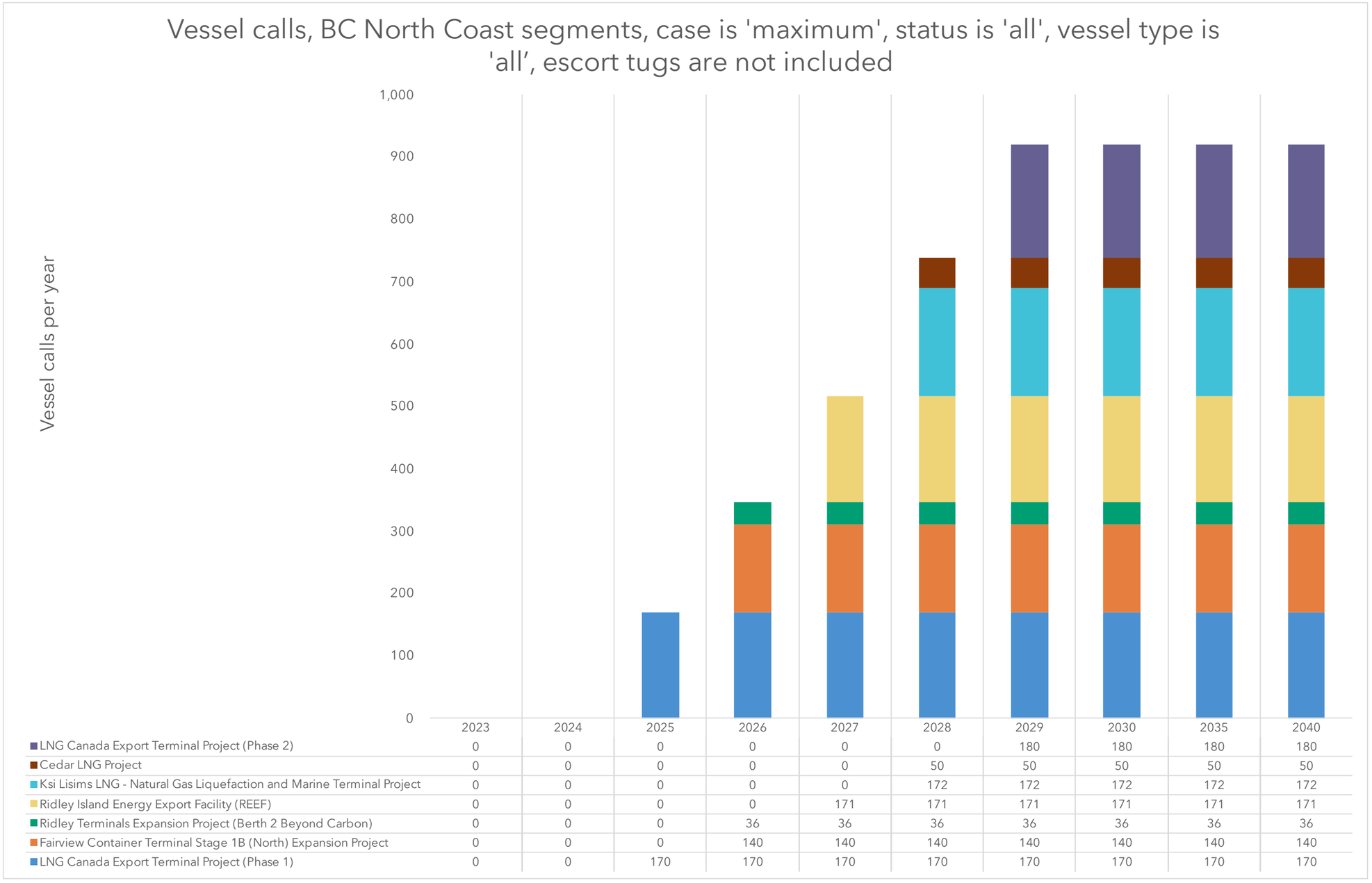
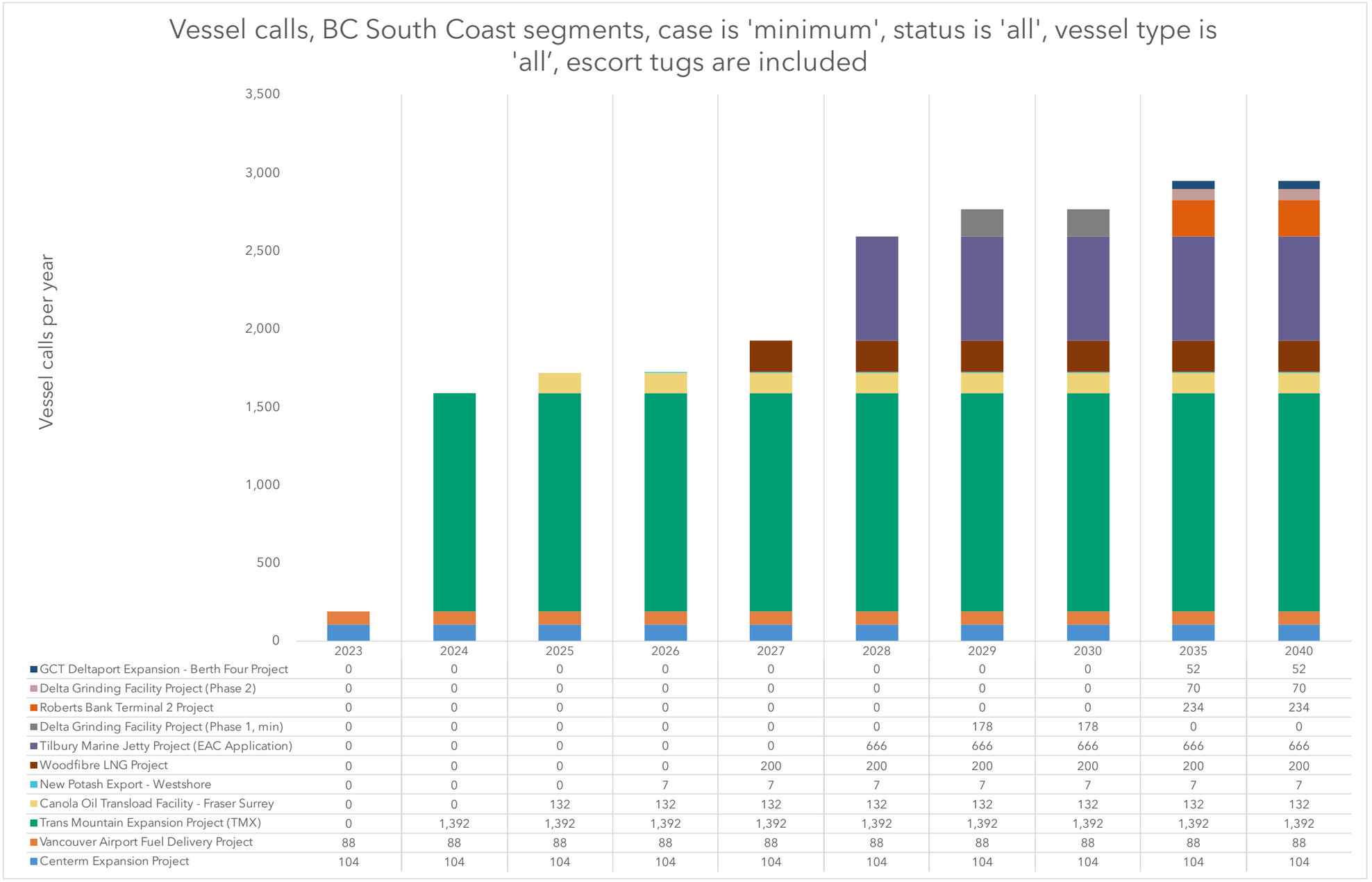


Figure C-7 - Vessel calls, BC North Coast segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are not included



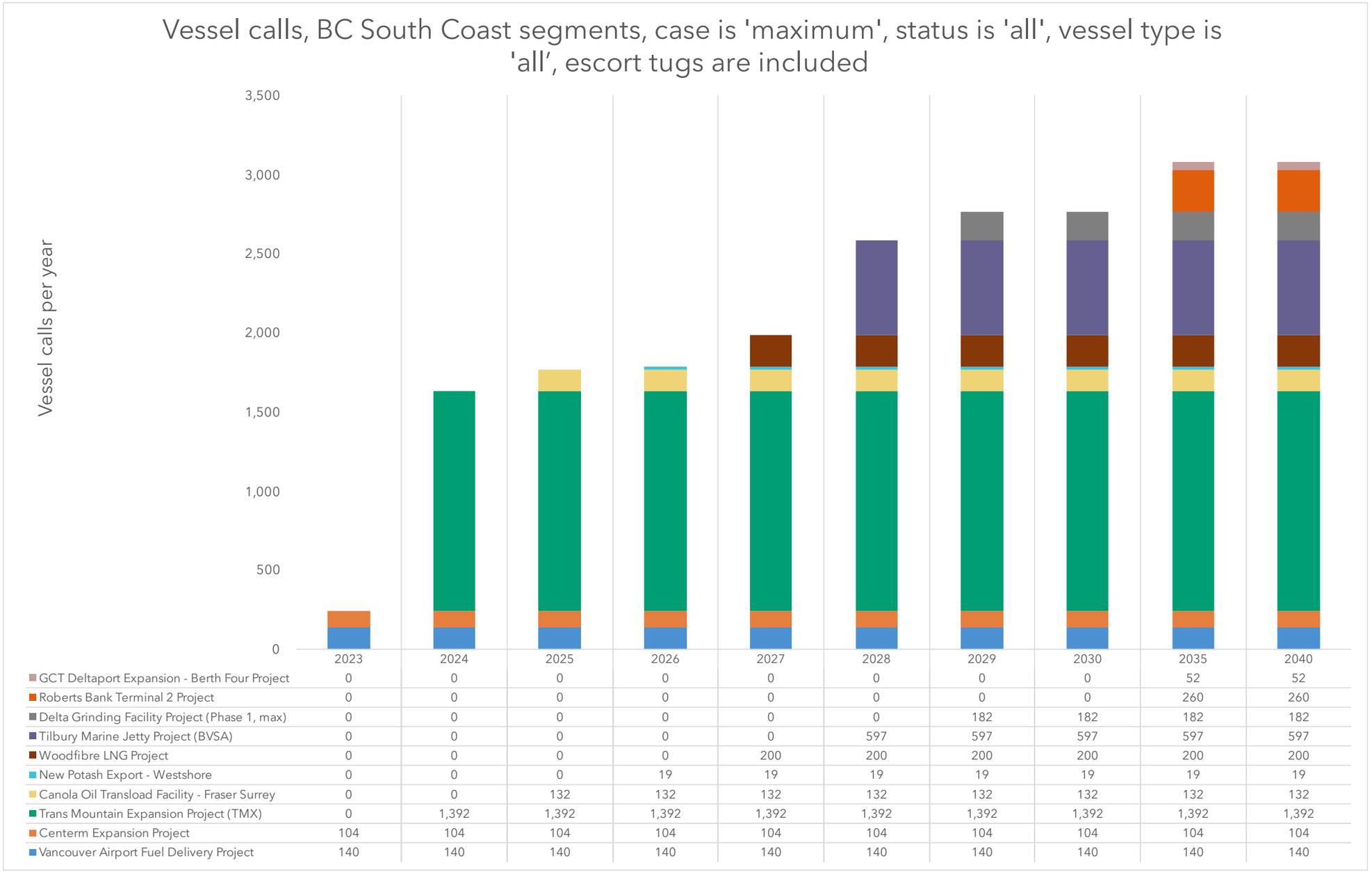
	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Ridley Island Energy Export Facility (REEF)	0	0	0	0	171	171	171	171	171	171
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170

Figure C-8 - Vessel calls, BC North Coast segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are not included



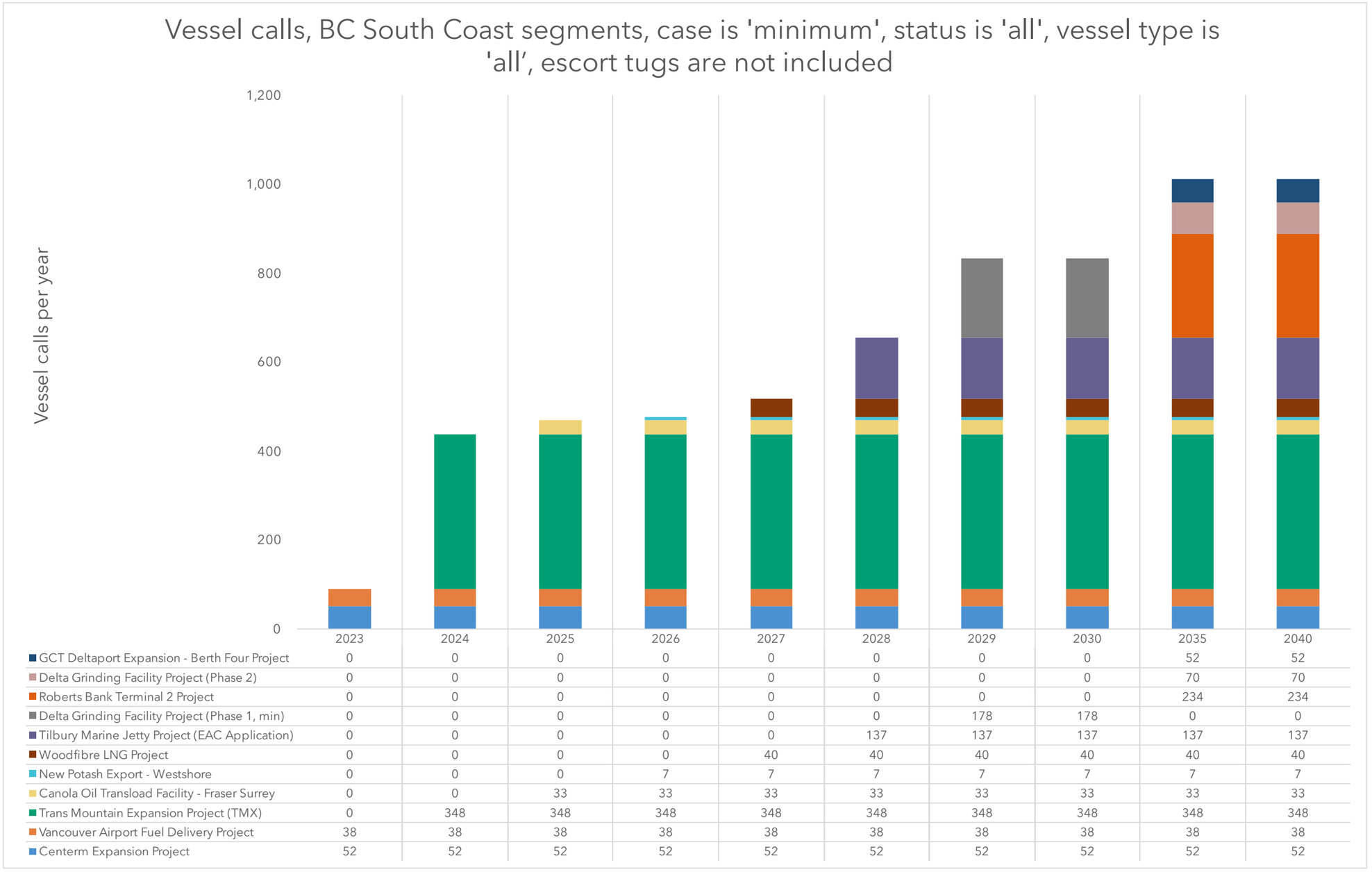
	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	666	666	666	666	666
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Trans Mountain Expansion Project (TMX)	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Vancouver Airport Fuel Delivery Project	88	88	88	88	88	88	88	88	88	88
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104

Figure C-9 - Vessel calls, BC South Coast segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are included



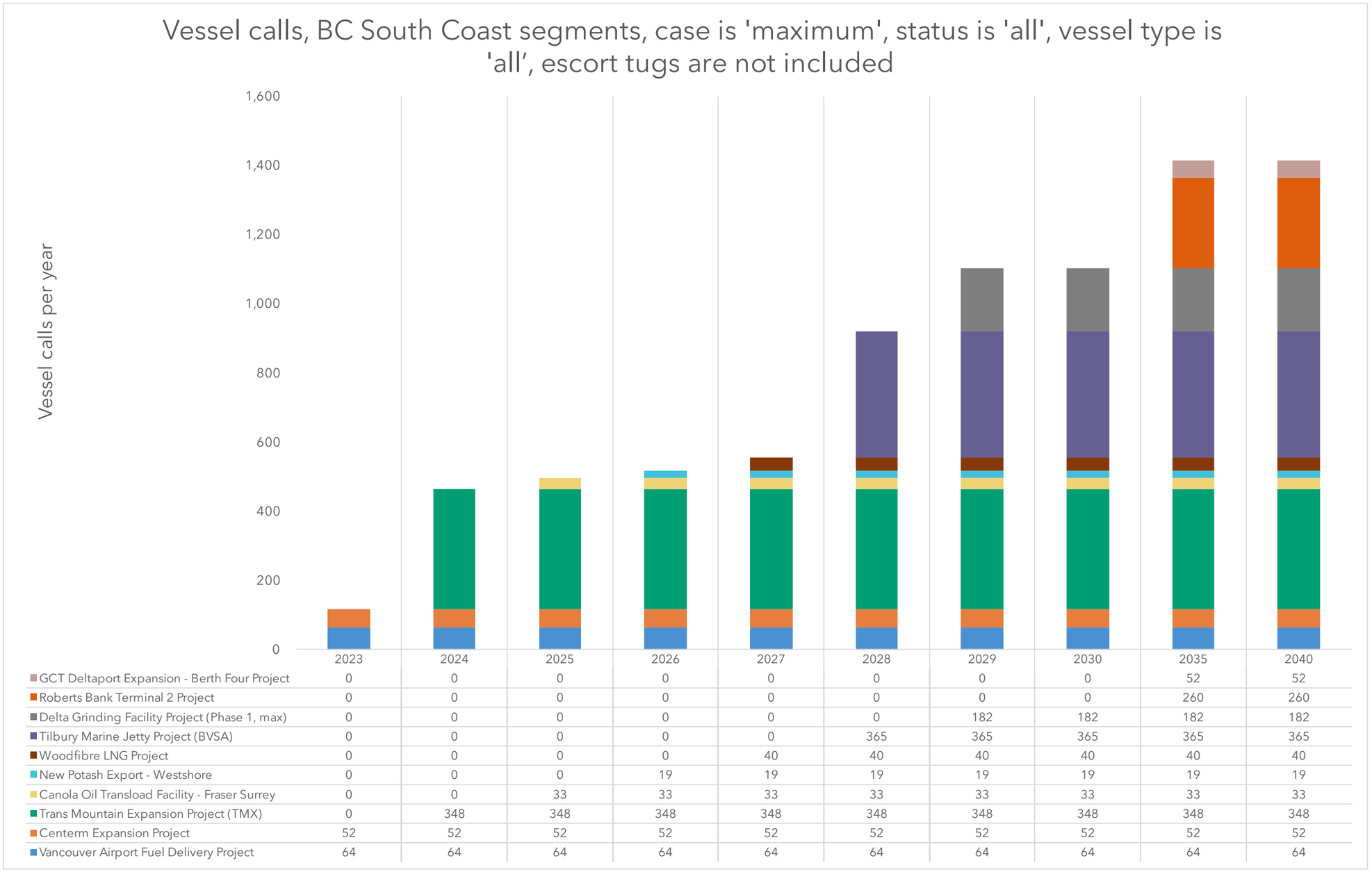
	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	597	597	597	597	597
Woodfibre LNG Project	0	0	0	0	200	200	200	200	200	200
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Canola Oil Transload Facility - Fraser Surrey	0	0	132	132	132	132	132	132	132	132
Trans Mountain Expansion Project (TMX)	0	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392	1,392
Centerm Expansion Project	104	104	104	104	104	104	104	104	104	104
Vancouver Airport Fuel Delivery Project	140	140	140	140	140	140	140	140	140	140

Figure C-10 - Vessel calls, BC South Coast segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	70	70
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	178	178	0	0
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	137	137	137	137	137
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Vancouver Airport Fuel Delivery Project	38	38	38	38	38	38	38	38	38	38
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52

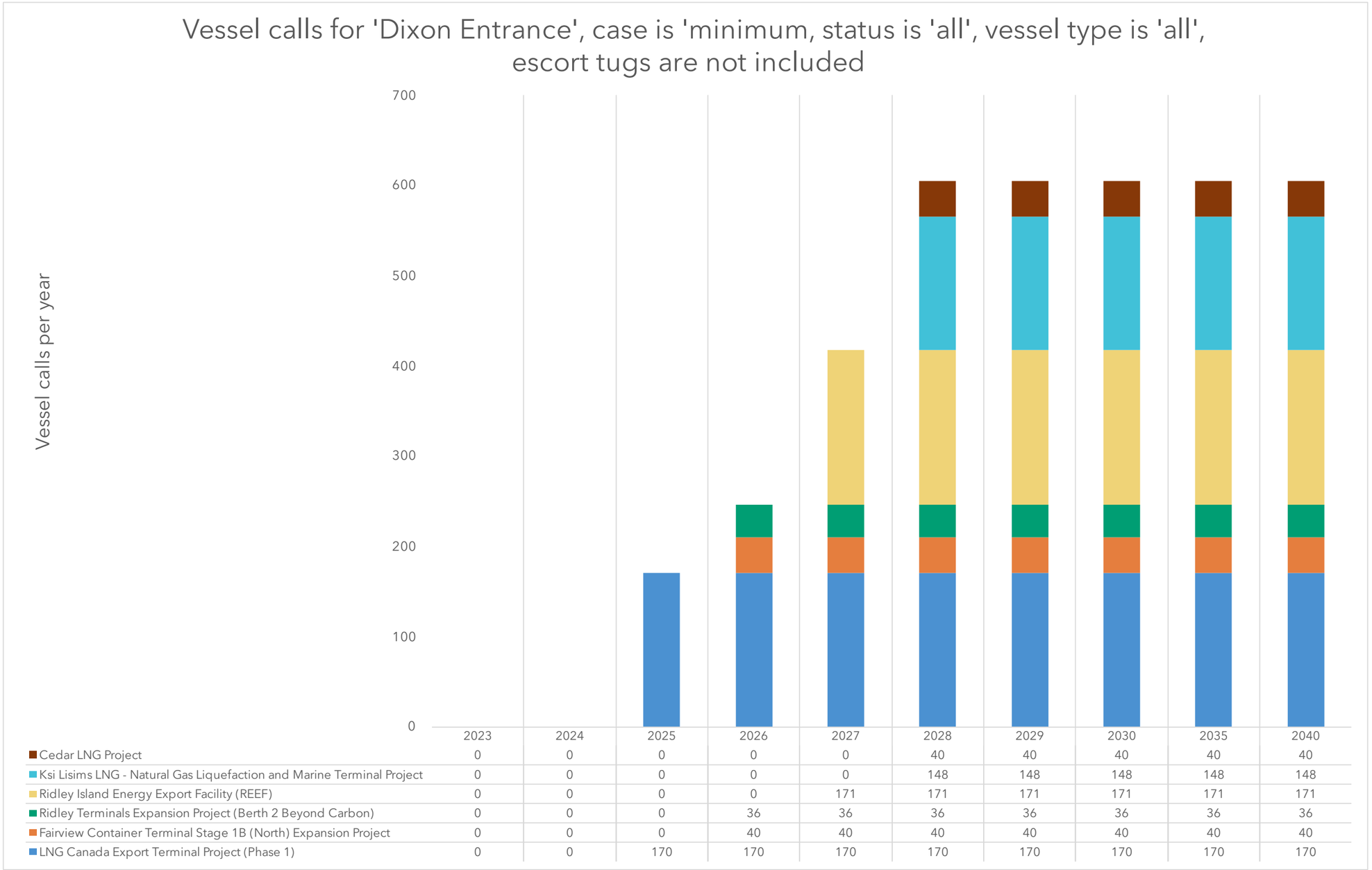
Figure C-11 - Vessel calls, BC South Coast segments, case is 'minimum', status is 'all', vessel type is 'all', escort tugs are not included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	182	182	182	182
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	365	365	365	365	365
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52
Vancouver Airport Fuel Delivery Project	64	64	64	64	64	64	64	64	64	64

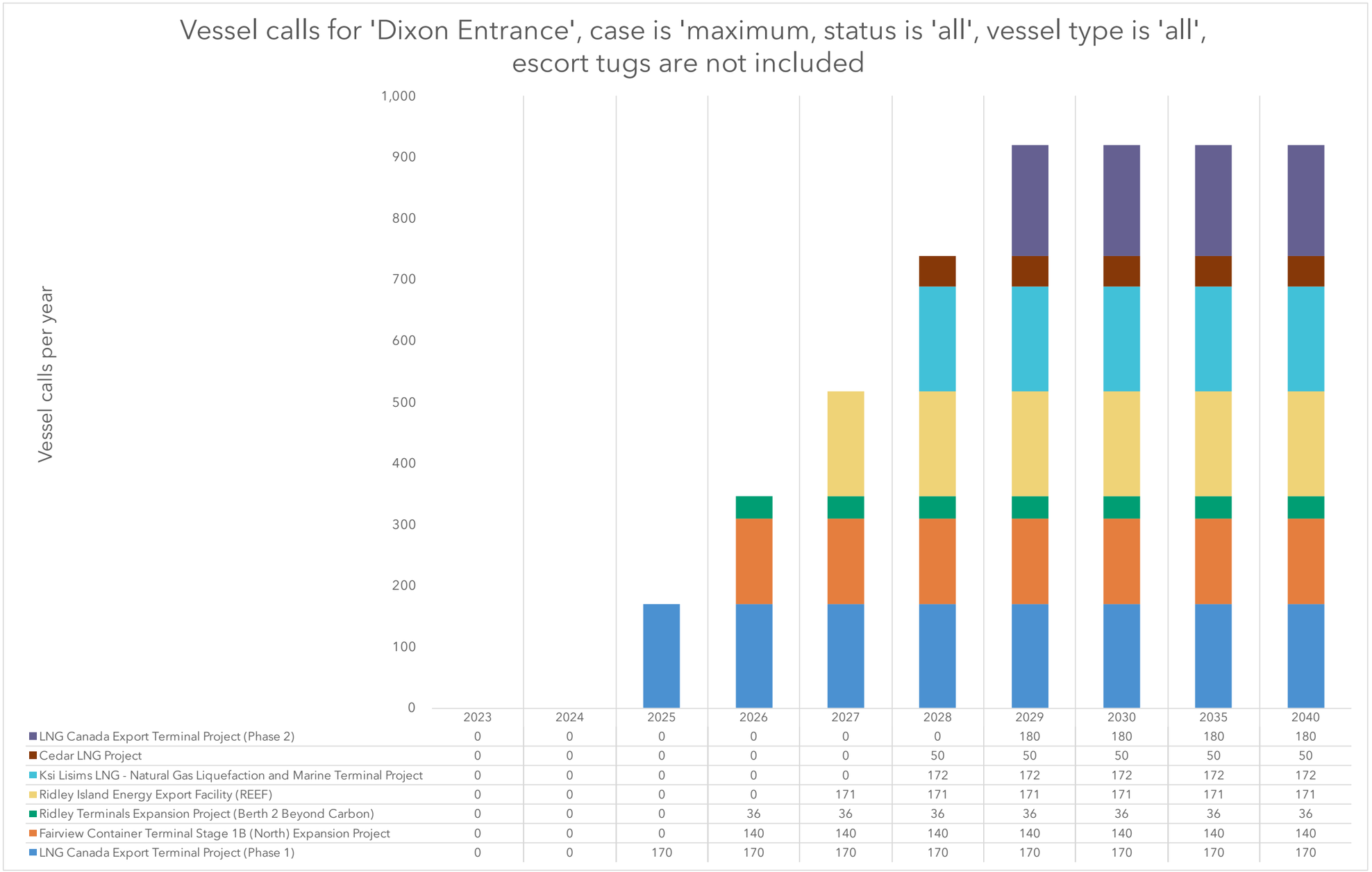
Figure C-12 - Vessel calls, BC South Coast segments, case is 'maximum', status is 'all', vessel type is 'all', escort tugs are not included

Appendix D – Forecasts for Select Marine Route Segments



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Cedar LNG Project	0	0	0	0	0	40	40	40	40	40
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	148	148	148	148	148
Ridley Island Energy Export Facility (REEF)	0	0	0	0	171	171	171	171	171	171
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	40	40	40	40	40	40	40
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170

Figure D-1 - Vessel calls for 'Dixon Entrance', case is 'minimum, status is 'all', vessel type is 'all', escort tugs are not included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
LNG Canada Export Terminal Project (Phase 2)	0	0	0	0	0	0	180	180	180	180
Cedar LNG Project	0	0	0	0	0	50	50	50	50	50
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project	0	0	0	0	0	172	172	172	172	172
Ridley Island Energy Export Facility (REEF)	0	0	0	0	171	171	171	171	171	171
Ridley Terminals Expansion Project (Berth 2 Beyond Carbon)	0	0	0	36	36	36	36	36	36	36
Fairview Container Terminal Stage 1B (North) Expansion Project	0	0	0	140	140	140	140	140	140	140
LNG Canada Export Terminal Project (Phase 1)	0	0	170	170	170	170	170	170	170	170

Figure D-2 - Vessel calls for 'Dixon Entrance', case is 'maximum, status is 'all', vessel type is 'all', escort tugs are not included

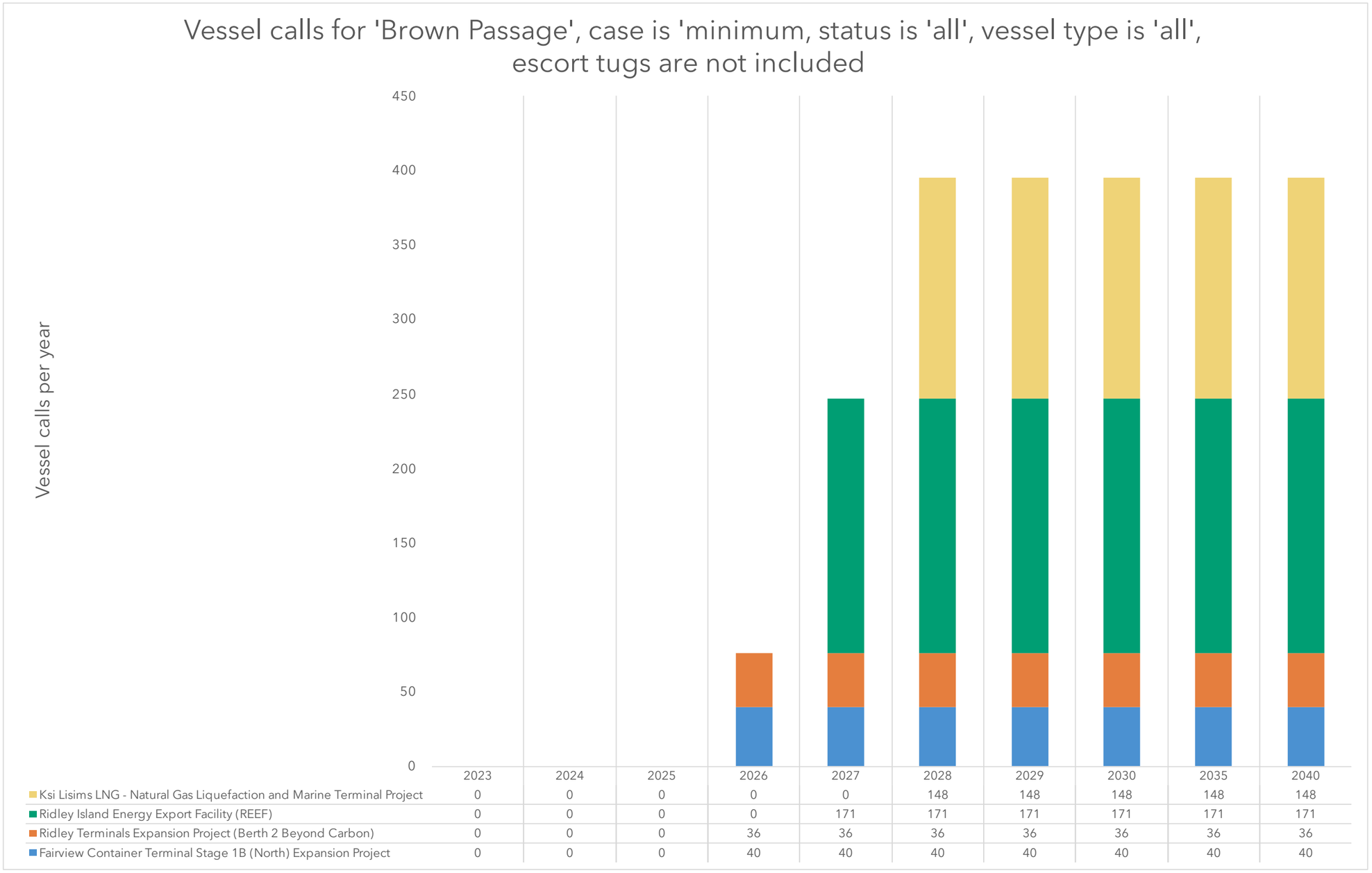


Figure D 3 - Vessel calls for 'Brown Passage', case is 'minimum, status is 'all', vessel type is 'all', escort tugs are not included

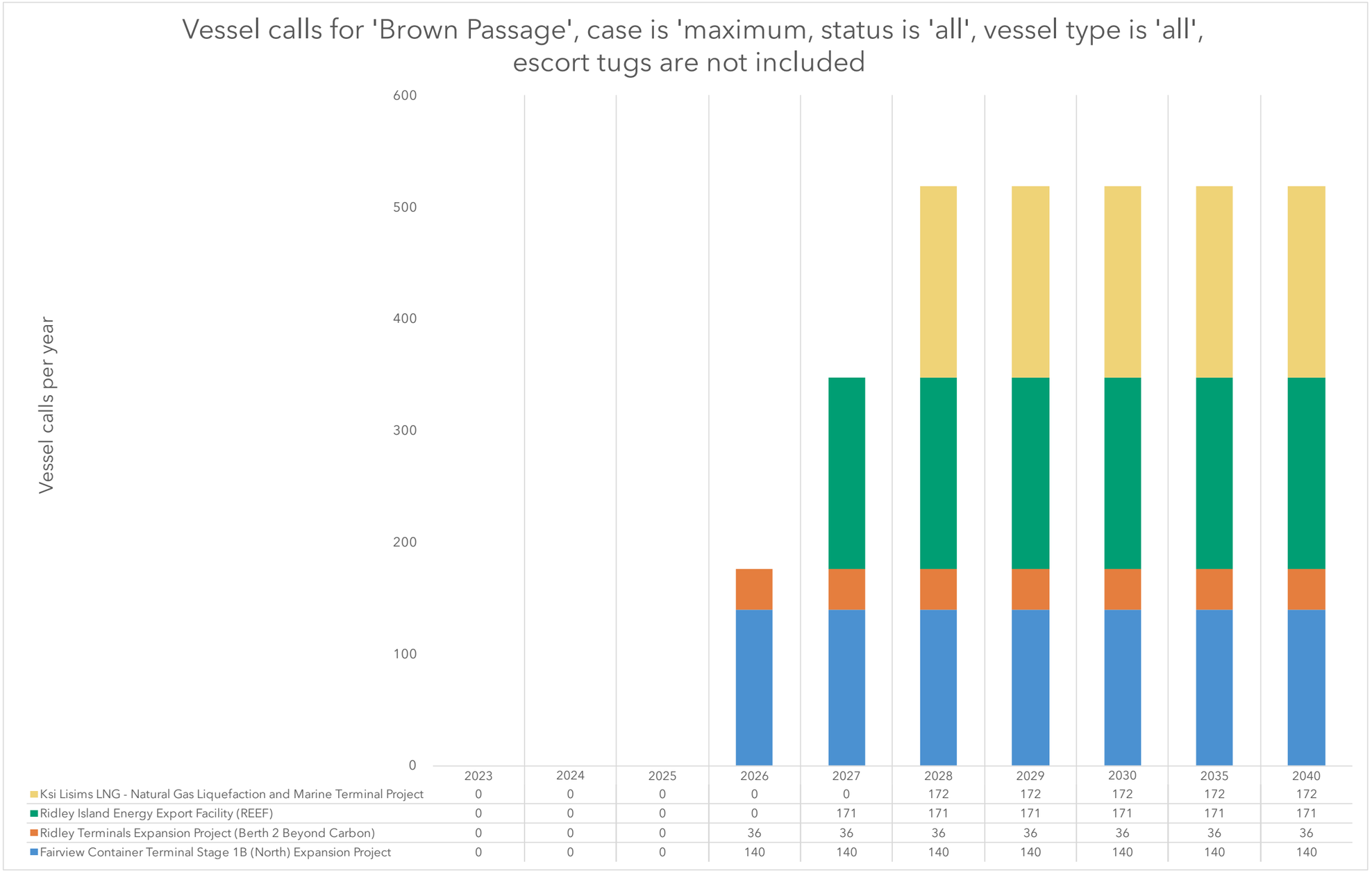


Figure D-4 - Vessel calls for 'Brown Passage', case is 'maximum, status is 'all', vessel type is 'all', escort tugs are not included

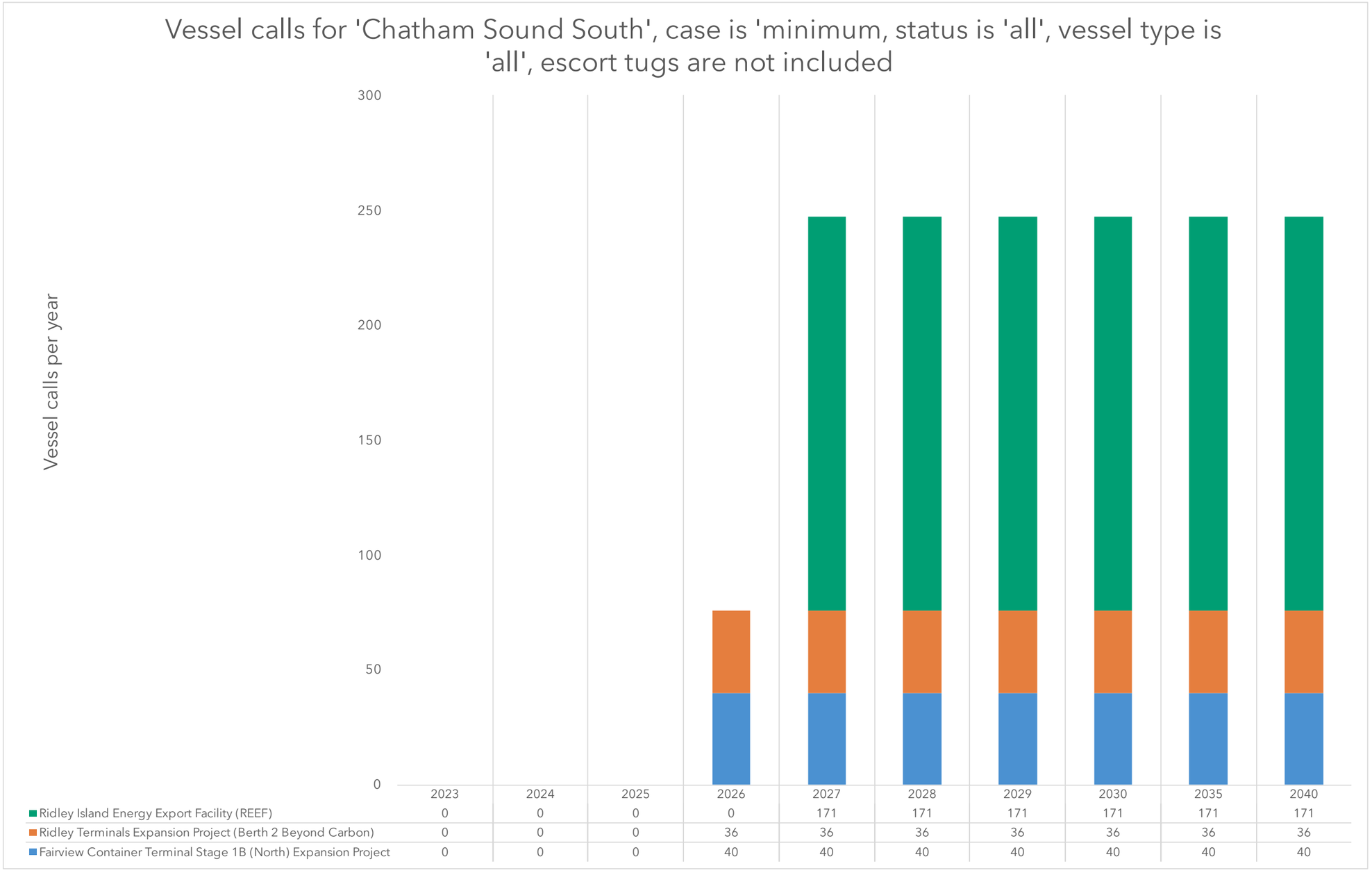


Figure D-5 - Vessel calls for 'Chatham Sound South', case is 'minimum, status is 'all', vessel type is 'all', escort tugs are not included

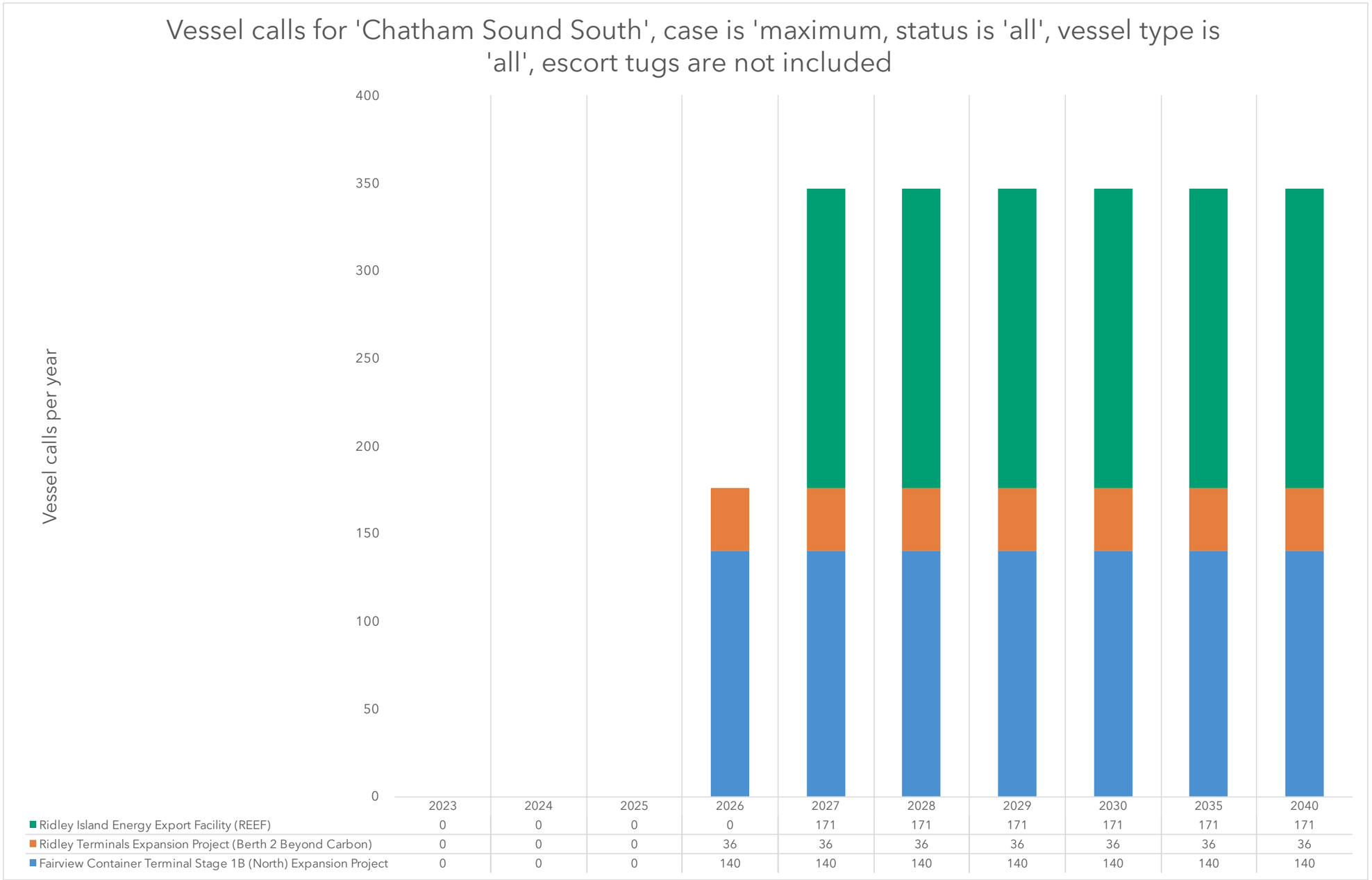


Figure D-6 - Vessel calls for 'Chatham Sound South', case is 'maximum, status is 'all', vessel type is 'all', escort tugs are not included

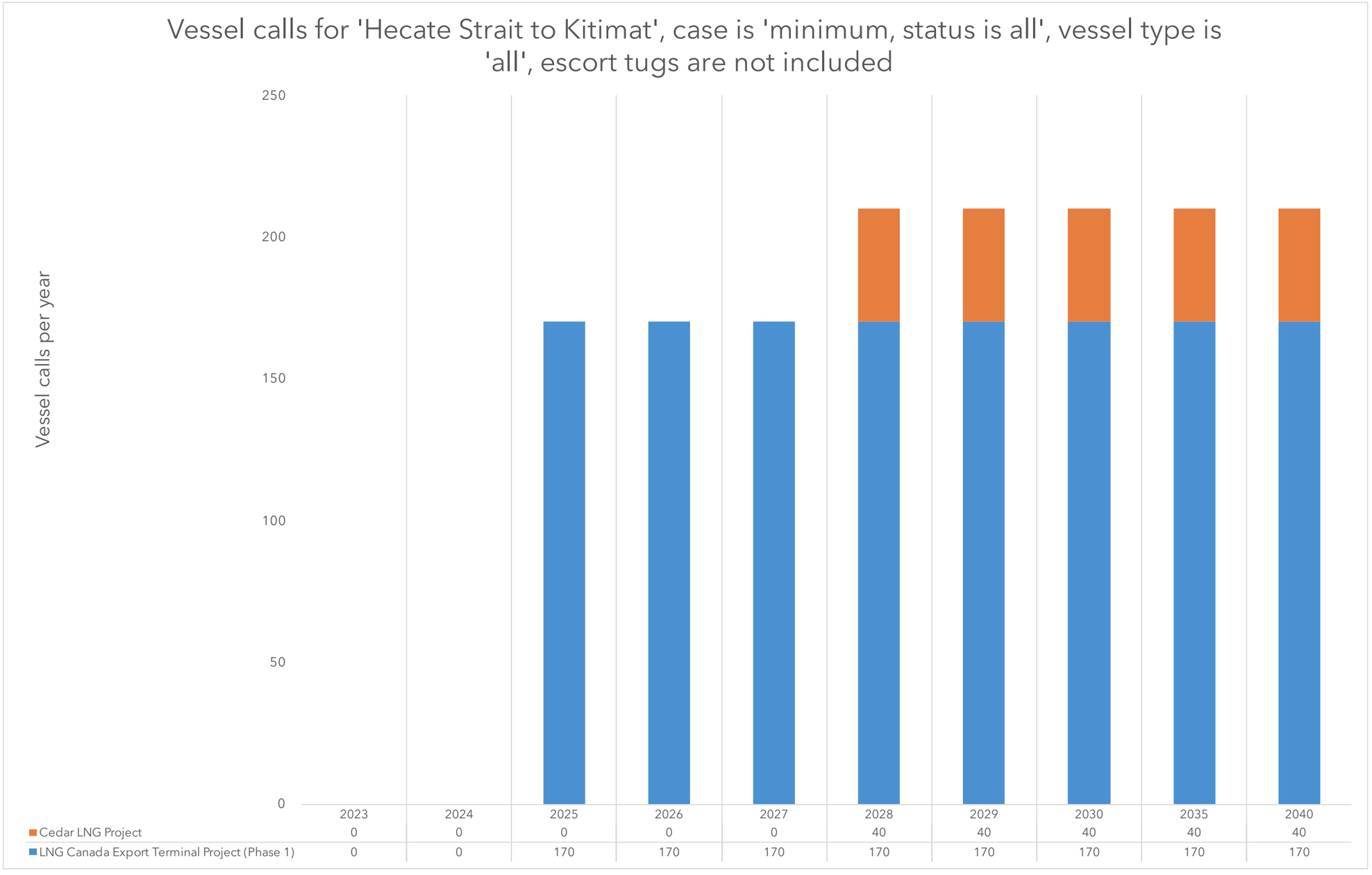


Figure D-7 - Vessel calls for 'Hecate Strait to Kitimat', case is 'minimum, status is all', vessel type is 'all', escort tugs are not included

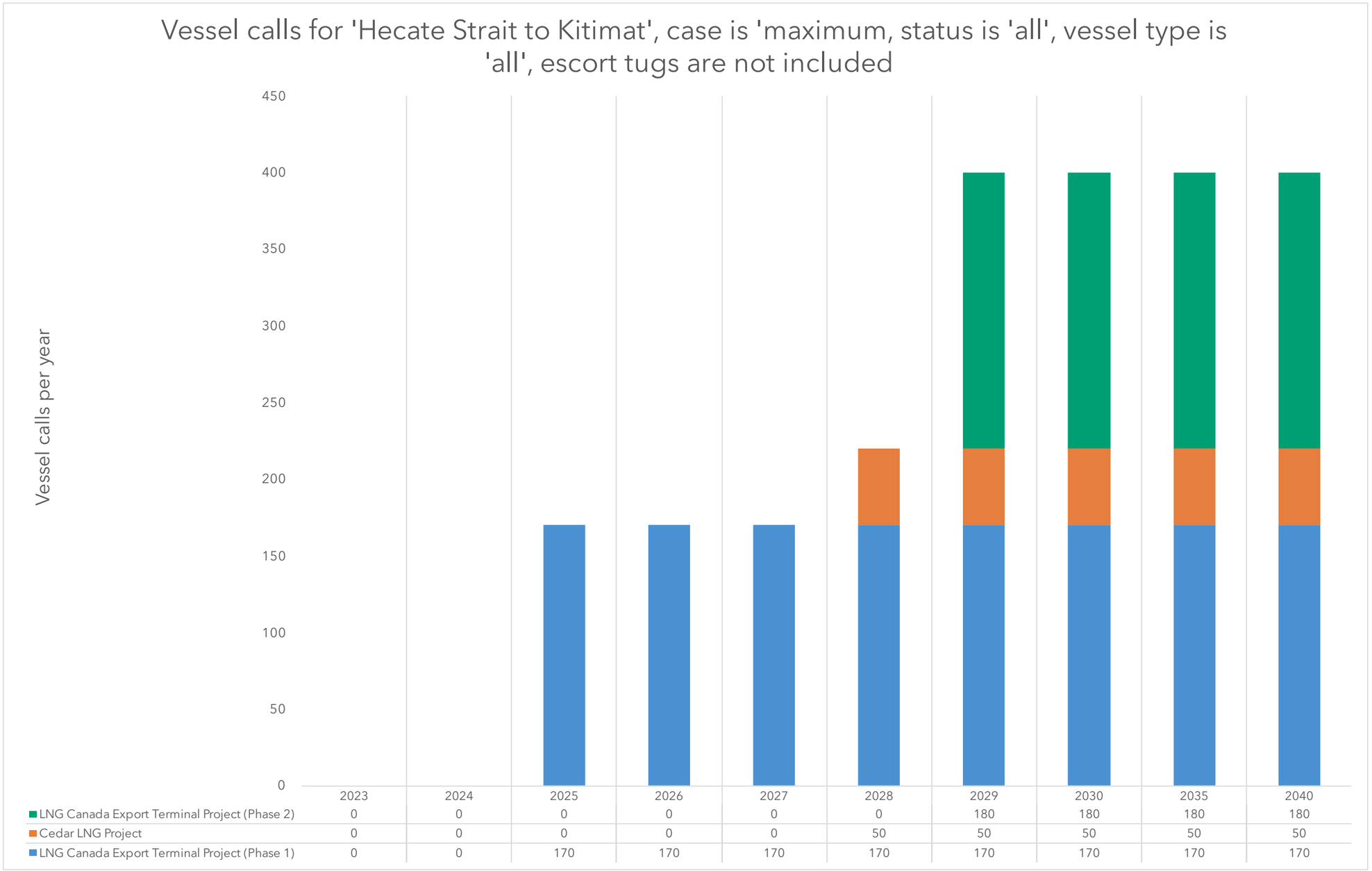
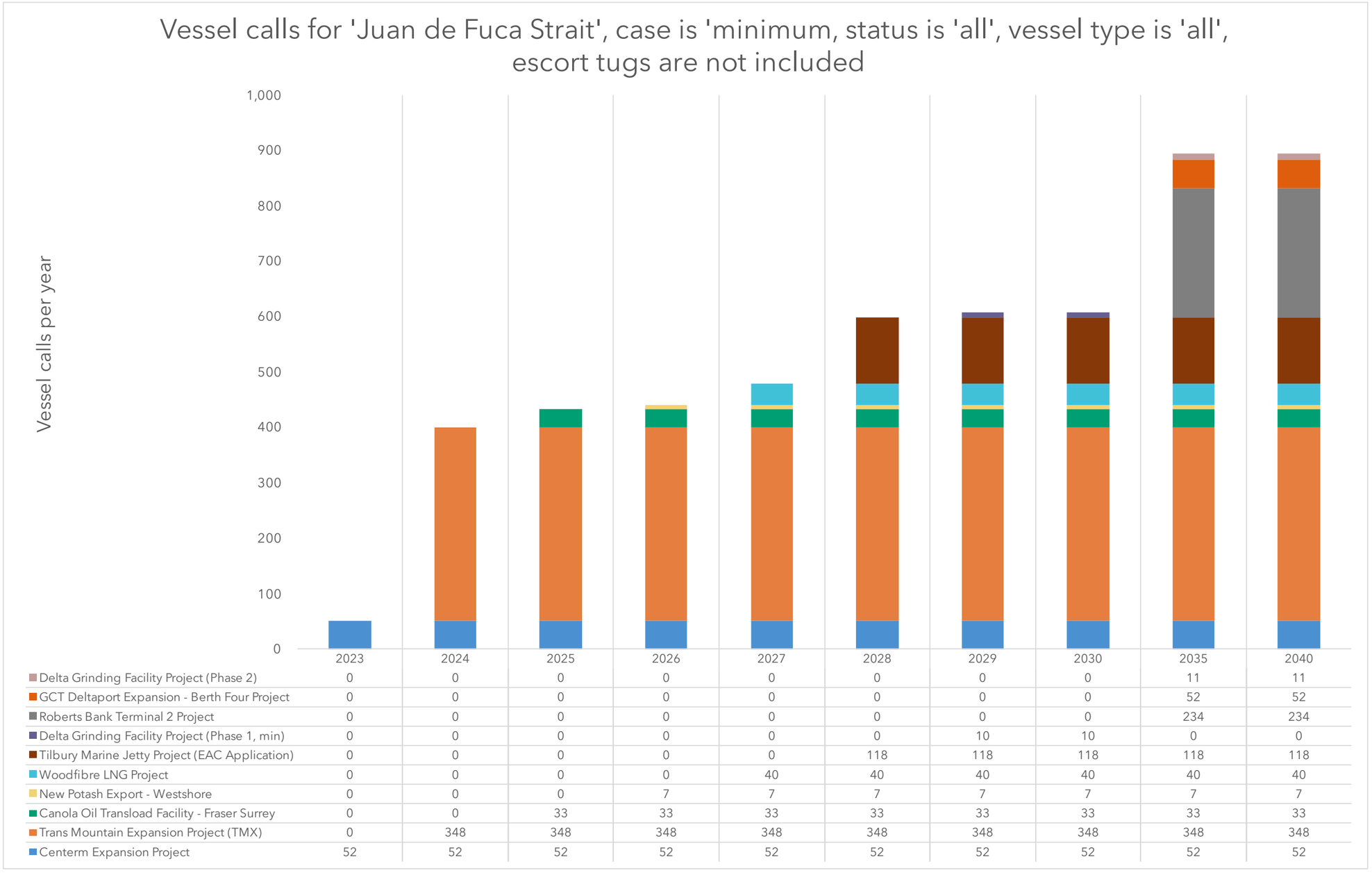
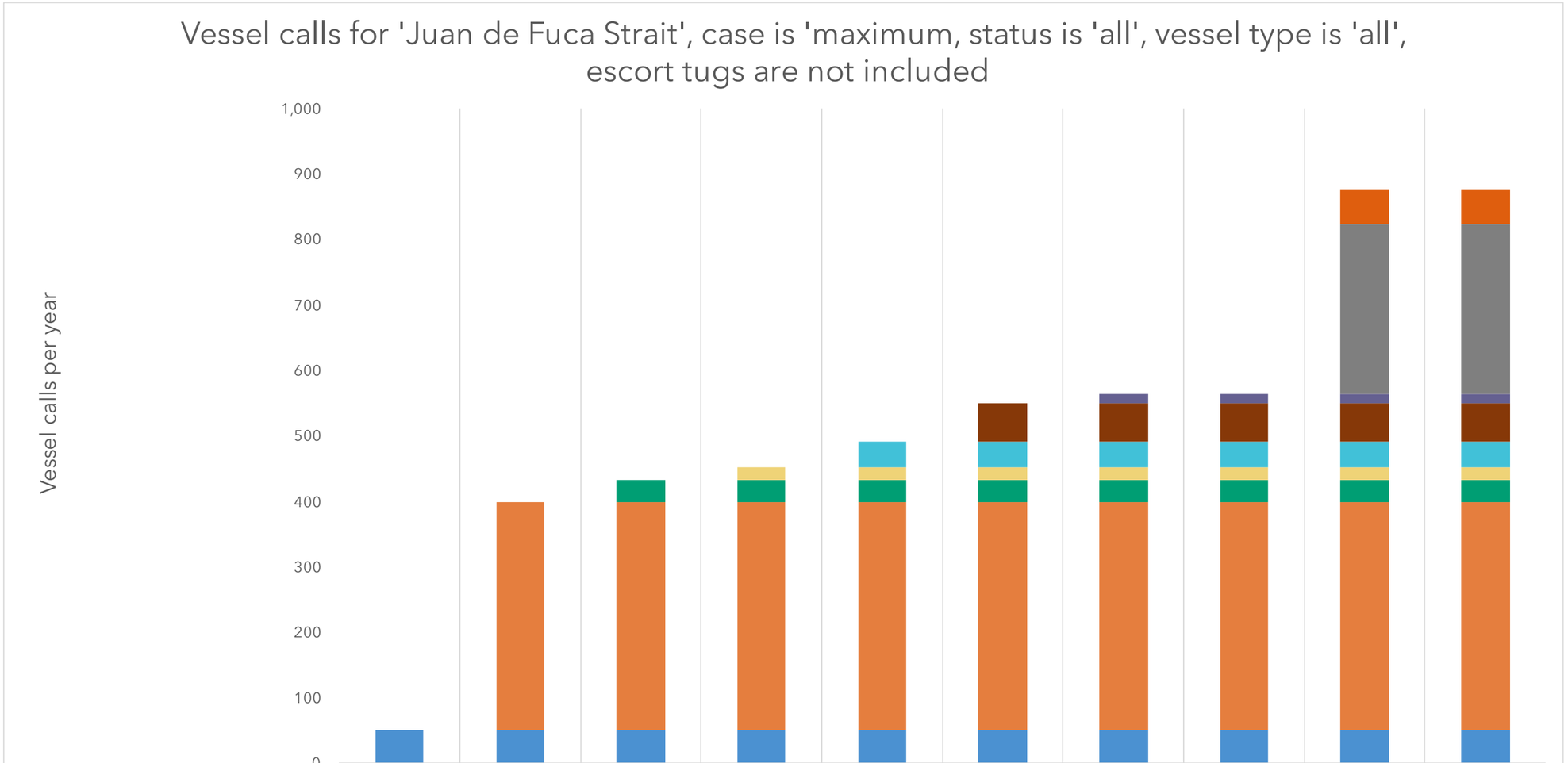


Figure D-8 - Vessel calls for 'Hecate Strait to Kitimat', case is 'maximum, status is 'all', vessel type is 'all', escort tugs are not included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Delta Grinding Facility Project (Phase 2)	0	0	0	0	0	0	0	0	11	11
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	234	234
Delta Grinding Facility Project (Phase 1, min)	0	0	0	0	0	0	10	10	0	0
Tilbury Marine Jetty Project (EAC Application)	0	0	0	0	0	118	118	118	118	118
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	7	7	7	7	7	7	7
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52

Figure D-9 - Vessel calls for 'Juan de Fuca Strait', case is 'minimum, status is 'all', vessel type is 'all', escort tugs are not included



	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
GCT Deltaport Expansion - Berth Four Project	0	0	0	0	0	0	0	0	52	52
Roberts Bank Terminal 2 Project	0	0	0	0	0	0	0	0	260	260
Delta Grinding Facility Project (Phase 1, max)	0	0	0	0	0	0	14	14	14	14
Tilbury Marine Jetty Project (BVSA)	0	0	0	0	0	58	58	58	58	58
Woodfibre LNG Project	0	0	0	0	40	40	40	40	40	40
New Potash Export - Westshore	0	0	0	19	19	19	19	19	19	19
Canola Oil Transload Facility - Fraser Surrey	0	0	33	33	33	33	33	33	33	33
Trans Mountain Expansion Project (TMX)	0	348	348	348	348	348	348	348	348	348
Centerm Expansion Project	52	52	52	52	52	52	52	52	52	52

Figure D-10 - Vessel calls for 'Juan de Fuca Strait', case is 'maximum, status is 'all', vessel type is 'all', escort tugs are not included

Clear Seas

2025