

# 2021

## Economic Impact of **Port of Prince Rupert**

Prepared for Prince Rupert Port Authority  
Prepared by InterVISTAS Consulting Inc.



## Executive Summary

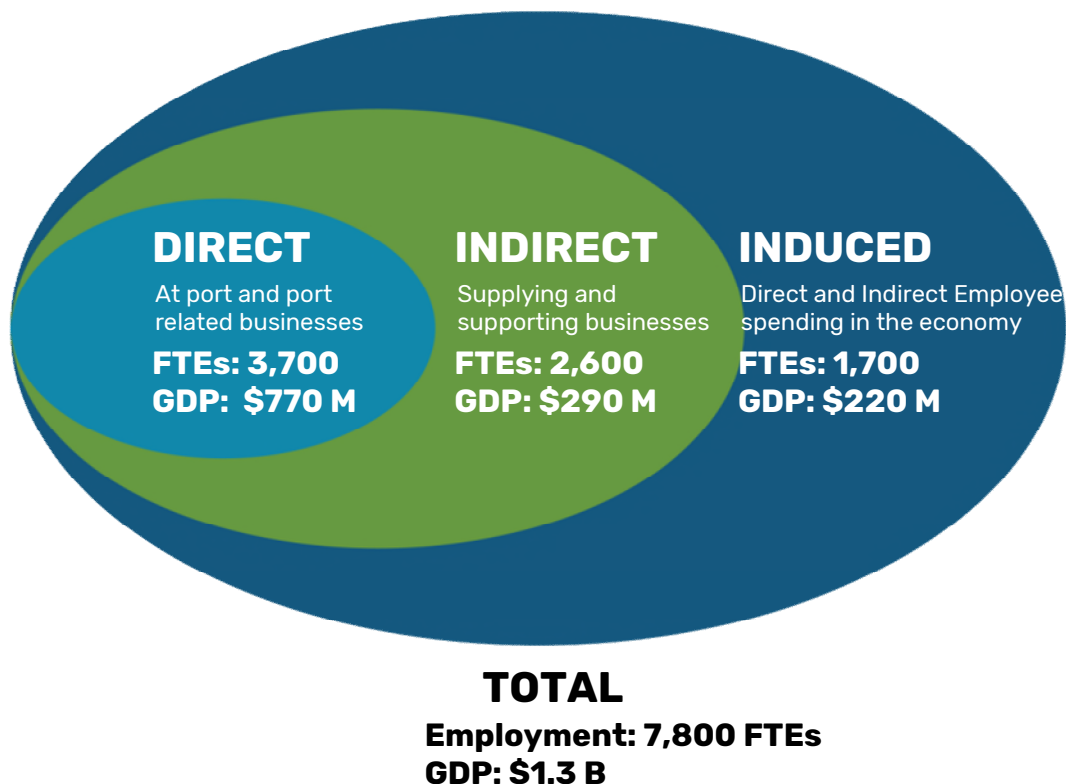
This report examines the economic contributions made by the Port of Prince Rupert (Port) in 2020 through the ongoing operations of port operators and partners. Its economic footprint within the local community, region, province, and country is termed the economic impact of the Port.

Economic impact as a measurement refers to the spending and employment associated with a sector of the economy, specific project, or change in government policy or regulation. The three major components of economic impact include: direct, indirect, and induced impacts which are illustrated and defined in **Figure ES-1**. These terms form the basis for the estimation of the total economic impact of Port operations

The Port resides within the traditional territory of the Ts'mysen First Nations, and forms part of an ever-growing transportation corridor initially developed by local Indigenous communities. This growth is particularly evident in recent years, where the Port experienced an increase in cargo throughput of 71% between 2016 and 2020. And despite the onset of the global COVID-19 pandemic, the Port has remained both resilient and competitive, facilitating a record cargo volume of 32.45 million tonnes in 2020.

Through its ongoing operations, the Port contributes significantly to the local, regional, and national economy. This is reflected with the estimated 3,700 full-time equivalents (FTEs) of employment that is directly supported by the Port, and the \$770 million directly contributed to British Columbia's Gross Domestic Product (GDP).

**Figure ES-1: Categories of Economic Impact Generated by the Port of Prince Rupert**





**Ongoing operations at the Port of Prince Rupert directly supports approximately 3,700 full-time equivalents of employment**





## Ongoing Economic Impact

The direct ongoing economic impacts are measured by the employment generated through the transportation of passengers and goods through the Port.<sup>1</sup> This employment is not only associated with terminal operations, but also from organizations involved in a variety of activities including rail, trucking, container handling, marine operations, administration, and Port concessionaires. The direct economic impacts are calculated based on comprehensive employment data provided by employers directly associated with their operations.

It is estimated that the annual direct impacts associated with the Port's ongoing operations total approximately 3,700 FTEs, with earnings of \$360 million in direct wages and salaries. This direct employment generates \$770 million in direct GDP and \$1.4 billion in direct economic output to the British Columbia economy annually.

Total economic impacts include the direct operations impacts, indirect impacts, and induced impacts. Including the indirect and induced multiplier impacts, total ongoing economic impacts of the Port supports an estimated 7,800 FTEs of employment. Total earnings of all employees are estimated at \$620 million in wages and salaries. Port operations also contribute \$1.3 billion and nearly \$2.3 billion in total GDP and total economic output, respectively, to the provincial economy. These impacts of ongoing Port operations are summarized in **Figure ES-2** below.

**Figure ES-2: Annual Total Ongoing Port of Prince Rupert Economic Impacts**

					
Impact	Employment (Jobs / FTEs)		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	3,900	3,700	\$360	\$770	\$1,400
Indirect	2,600	2,400	\$170	\$290	\$550
Induced	1,700	1,600	\$90	\$220	\$340
<b>Total in BC</b>	<b>8,100</b>	<b>7,800</b>	<b>\$620</b>	<b>\$1,270</b>	<b>\$2,290</b>

Notes:

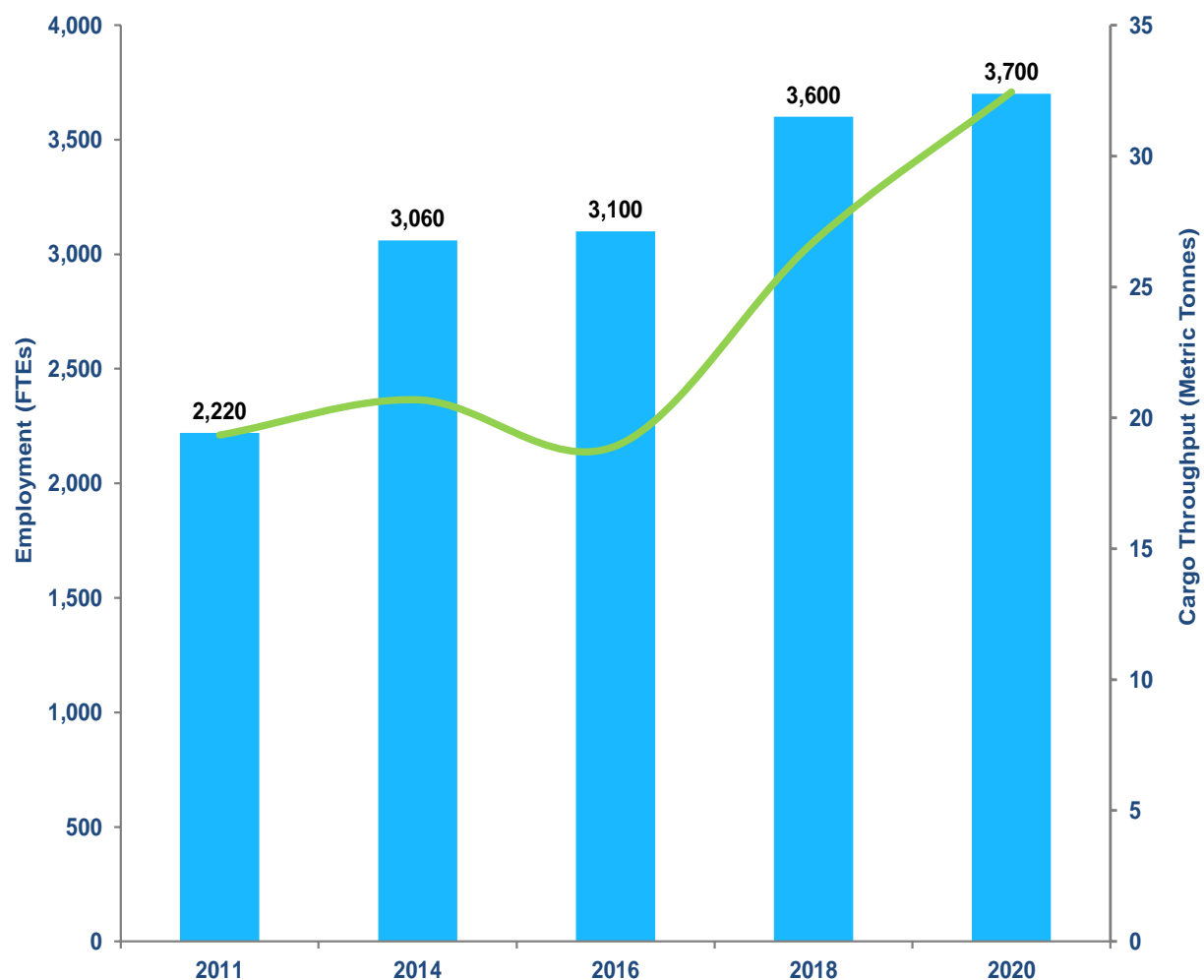
1. Totals may not sum as results are rounded to the nearest tenth or hundredth
2. Wages, GDP, and Economic Output are in 2021 prices
3. Results are based on a review of 2020 operations

<sup>1</sup> Due to the onset of the COVID-19 pandemic, the Port of Prince Rupert was unable to serve any cruise ship passengers in 2020. Passengers traveling with BC Ferries, however, were welcomed in the same year.

## Comparison of Direct Employment with Previous Studies

An examination of prior studies conducted over the course of the last decade reveal a continued growth of direct employment related to the ongoing operations of the Port. The Port serves as a strong contributor to the local and provincial economy and reached its highest ever level of direct employment supported in 2020 with an estimated 3,700 FTEs. **Figure ES-3** illustrates the comparison of direct employment with cargo throughput levels at the Port for 2011, 2014, 2016, 2018 and 2020.

**Figure ES-3: Direct FTEs and Port of Prince Rupert Cargo Tonnage Throughput (2011, 2014, 2016, 2018 and 2020)**



**Note:** The boundary to assess the economic impact of the Port of Prince Rupert changed in 2016 compared to the prior studies conducted in 2009, 2011 and 2014. In 2016, firms located on port lands, but whose industries and businesses that are deemed not to be related to moving cargo through the Port have not been included in the 2016 study. This study (2020), along with the 2018 study was conducted based on the 2016 study boundaries.



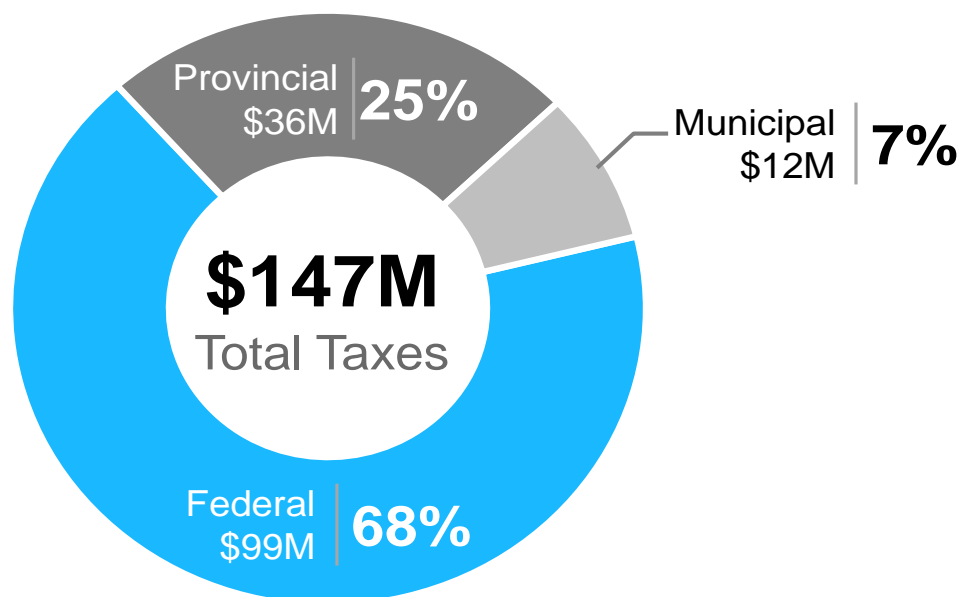
## Annual Tax Impacts

Ongoing Port operations contribute taxation revenues to all levels of government. Total annual taxes paid by employees and employers, as well as the Prince Rupert Port Authority (PRPA), is estimated at approximately \$147 million in 2020.

The majority of taxes collected, \$99 million (68% of total), accrue to the federal government primarily through personal income taxes. The provincial government received approximately \$36 million (25% of total tax revenue impacts) from income taxes, corporate income tax, and workers compensation dues.

The municipal governments collected the remaining \$12 million in tax revenue (7% of total tax revenue impacts) from PRPA and its tenants in the form of general municipal property tax assessments, PILT payments for non-leased federal crown land, and the BC Port Competitiveness Tax Grant.

**Figure ES-4: Annual Estimated Tax Revenues by Level of Government**



## Value of Trade Analysis

Similar to prior studies, InterVISTAS conducted an examination of all imported and exported goods that transited the port in 2020. An estimation of the value of these goods reveals that in 2020, the total exports (including bulk and container traffic) is calculated to be between \$7.9 billion to \$10.1 billion in 2021 dollars, given the three scenarios (low, medium, and high) for estimating the value of traffic. Total imports are estimated to be worth between approximately \$37 billion and \$66 billion.

**Figure ES-5** summarizes the total value of trade at the port for each of the three scenarios analyzed for 2020, in 2021 Canadian dollars.

The medium scenario for both trade exports and imports yields a total estimated trade value through the Port, which in 2020 was \$60 billion.

**Figure ES-5: Total Value of Trade Summary (including commodities and bulk), 2020**

Scenario	Trade Exports Total Value (2021 \$, Billions)	Trade Imports Total Value (2021 \$, Billions)	Total Trade Total Value (2021 \$, Billions)
Low	\$7.9	\$36.6	\$44.5
Medium	\$9.0	\$51.2	\$60.2
High	\$10.1	\$65.8	\$75.9

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# 1 Introduction

The Port of Prince Rupert (Port) generates important employment and economic benefits to the local, regional, and national economy. This report examines the current economic impacts of the operations and activities of the Port in 2020, which serves as a unique and challenging study year due to the onset of the global COVID-19 pandemic. Throughout the study timeframe, the Port of Prince Rupert continued its essential operations to provide economic stability in the region, while continuing to make investments in projects to expand and diversify port operations.

## 1.1 Port of Prince Rupert

The Port of Prince Rupert was first built in the early 20<sup>th</sup> century to connect the Grand Trunk Pacific Railway from Winnipeg to Prince Rupert. The Grand Trunk Pacific connected with the Grand Trunk Railway and formed Canada's second transcontinental railway. Shortly after construction of the railway in 1914, Canada was in a recession and entered the First World War. By 1919, the Grand Trunk Pacific was nationalized and absorbed by Canadian National Railway (CN) to avoid bankruptcy.

In 1972, the Port of Prince Rupert was declared a National Harbour and in 1975, construction of its first terminal, Fairview Terminal, was completed. The introduction of the Canada Marine Act in 1998 established the Prince Rupert Port Authority (PRPA) with a mandate to develop the Port to support and add competitive value to Canadian goods, manage federal crown lands and ensure the safe transit of vessels in and out of the harbour through effective oversight. The terminals at the Port have played an integral role in the economic development and growth of Western Canada.

## 1.2 The Current Port of Prince Rupert

The Port of Prince Rupert currently has six main terminals in operation. The different types of commodities that are moved through each terminal are described as follows:

- **Fairview Container Terminal.** Fairview is operated by DP World, and is the first dedicated intermodal ship-to-rail container terminal in North America. With service to CN's North American network, the terminal offers connectivity to central Canada and Midwestern United States. It has two main berths and an annual throughput capacity of 1.35 million twenty-foot equivalent units (TEUs).
- **Prince Rupert Grain Terminal.** Operated by Prince Rupert Grain, the terminal handles exports of wheat, barley, and canola, among others, from the Canadian prairies. It is the largest grain terminal in Canada, with an operating capacity of 7 million tonnes per year.
- **Ridley Island Propane Export Terminal.** AltaGas operates the country's first propane export facility. Up to 600,000 bbls or 1.2 million tonnes of propane can be stored at the terminal annually, with 50-60 rail cars of liquid propane from BC and Alberta offloaded at the terminal each day.
- **Ridley Terminals.** This dry bulk terminal is operated by Ridley Terminals Inc., with a focus on coal exports. The terminal has an annual throughput capacity of 18 million tonnes, handling metallurgical coal, thermal coal, and petroleum coke from reserves in BC and Alberta.
- **Westview Wood Pellet Terminal.** Operated by Pinnacle Renewable Energy Inc, it is the first purpose-built wood pellet export facility in North America. The terminal has the capacity to receive, store and ship up to 1.25 million tonnes of wood pellets each year, primarily for use in electricity generation.



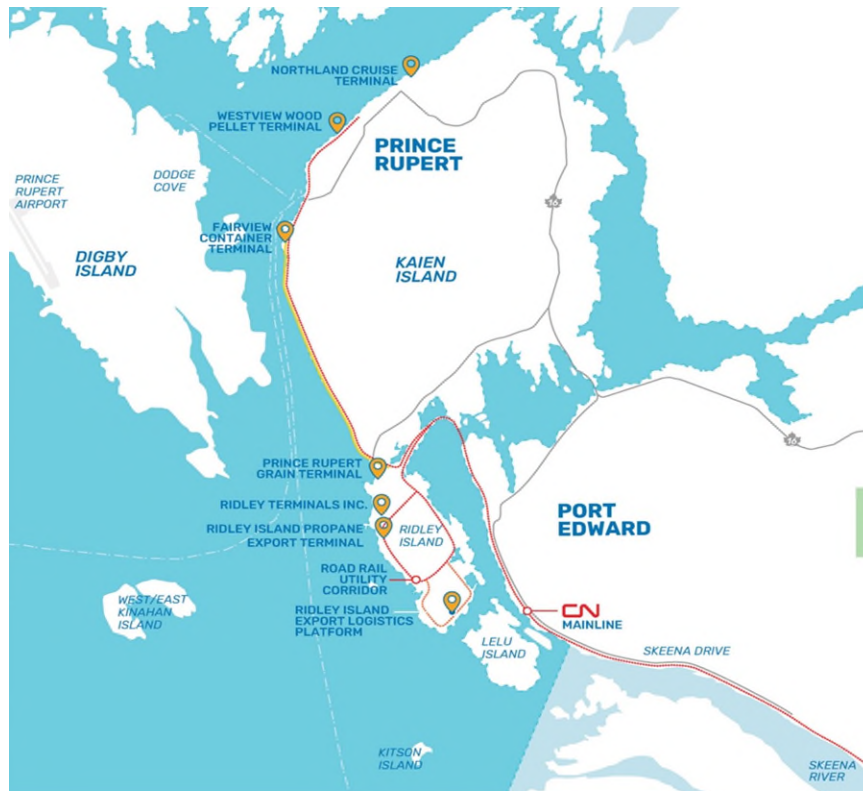
- **Northland Cruise Terminal.** PRPA operates the cruise dock and passenger facility. The terminal can facilitate a maximum of 100,000 passengers from cruise ships (or up to 60 cruise ships per season), as well as passengers from Atlin Terminal (for small cruises), BC Ferries Terminal (car ferry to Vancouver Island) and Alaska Marine Highway System Terminal (car ferry to Alaska).

### 1.3 Prince Rupert Industry and Economy

A map of the Port of Prince Rupert is shown in **Figure 1-1**. In 2020, the City of Prince Rupert had a population of approximately 13,500, which reflects a 2.1% increase from 12,800 in 2016.<sup>2</sup> According to the 2016 Statistics Canada Census Data, the Prince Rupert labour force totalled an estimated 6,395 people, with a medium household income of approximately \$73,600 per annum.<sup>3</sup> At the provincial level, British Columbia has a population of approximately 5.1 million and a real GDP of \$309 billion in 2019.<sup>4</sup>

Port operations play a significant role in Northern BC by providing the necessary transport and linkages to major industries in Canada. The Port is a major employer of related organizations which contributes to the growth of the overall economy of British Columbia.

**Figure 1-1: Map of the Port of Prince Rupert and Surrounding Area**



**Notes:**

Pembina Prince Rupert Terminal was not included in the calculation of economic impacts as it was commissioned in April 2021.

<sup>2</sup> <https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates>

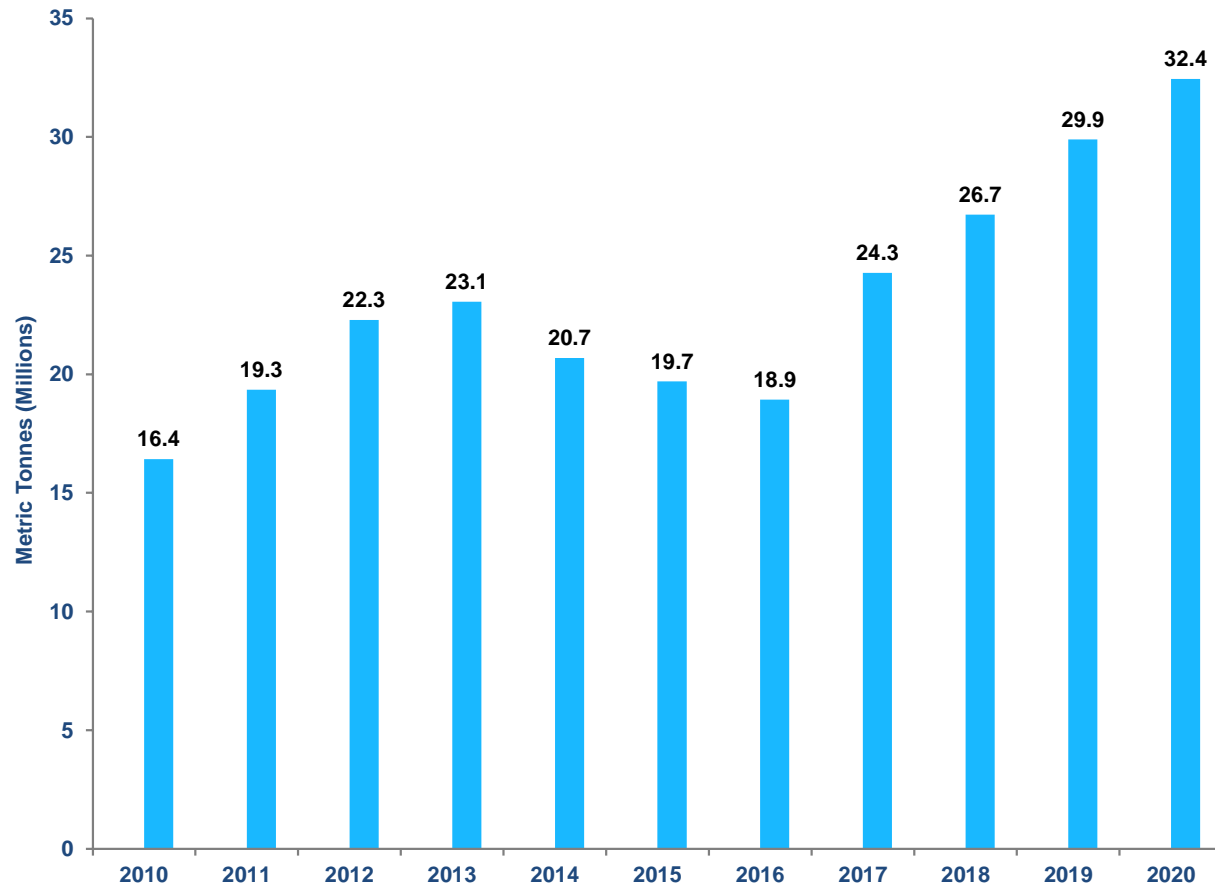
<sup>3</sup> Census Profile, 2016 Census for Prince Rupert

<sup>4</sup> British Columbia Economic Accounts (<https://www2.gov.bc.ca/gov/content/data/statistics/economy/bc-economic-accounts-gdp>)

## 1.4 Cargo Operations

Marine transportation continues to serve an integral role in an increasingly global market. Despite the onset of the COVID-19 pandemic in early 2020, the Port has remained a key facilitator of trade in and out of Western Canada and nationally, recording approximately 32.4 annual metric tonnes of cargo throughput in 2020. Since 2016, the Port has experienced an increase in traffic of 71% through to 2020. **Figure 1-2** illustrates cargo throughput at the Port from 2010 to 2020.

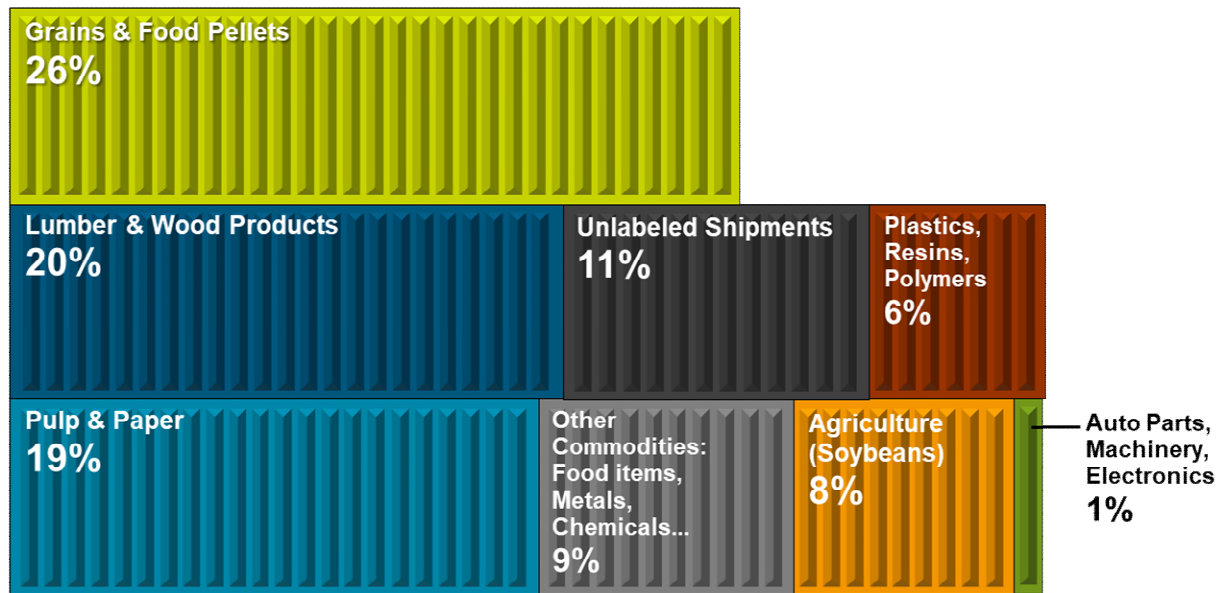
**Figure 1-2:**  
**Total Cargo Throughput at the Port of Prince Rupert (2010-2020)**



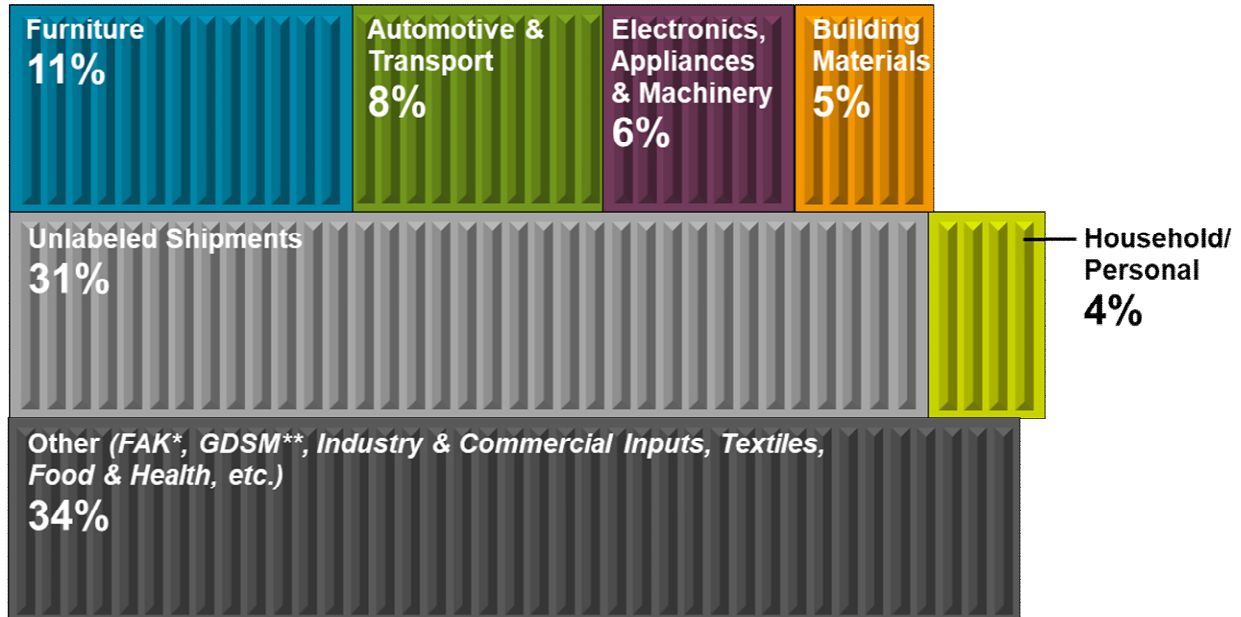
Source: Prince Rupert Port Authority Monthly Traffic Summary

**Figure 1-3** illustrates the composition of the top container export commodities transiting through the Port in 2020. Compared to 2018, container export tonnage decreased by approximately 7%. Conversely, imported container tonnage increased in the same timeframe by 8%. An illustration of the import commodities, by type, is included in **Figure 1-4**. **Figure 1-5** displays the make-up of bulk tonnage transiting the port in 2020, which increased by 29% between 2018 and 2020.

**Figure 1-3: Top Container Export Commodities, 193,640 laden TEUs, 2020**



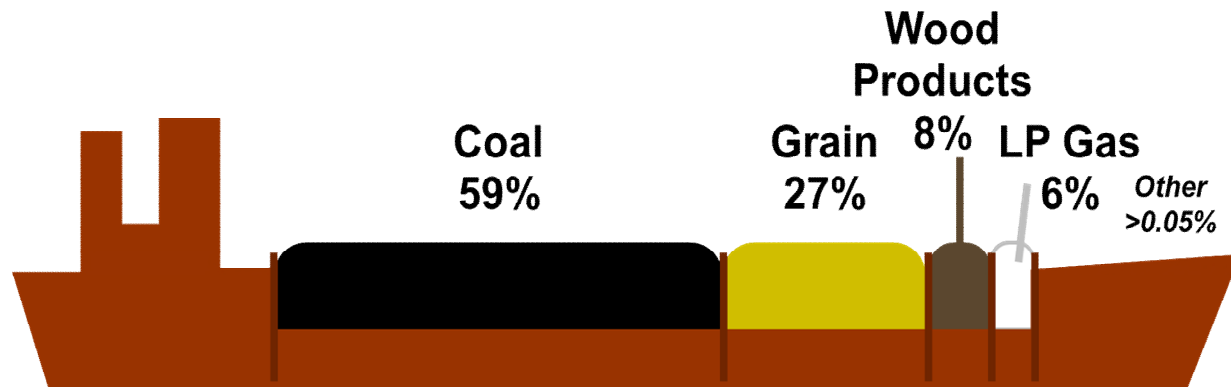
**Figure 1-4: Top Container Import Commodities, 643,575 laden TEUs, 2020**



\*FAK: Freight, All Kinds

\*\*GDMSM: General Department Store Merchandise

**Figure 1-5: 2020 Bulk Traffic Breakdown, 21 Million Tonnes**



## 1.5 Sustaining Growth through COVID-19

Despite the acute effects of COVID-19 on tourism-related industries tied to cruise and ferry operations, the Port of Prince Rupert facilitated a record volume of 32.4 million tonnes of trade in 2020 (a 9% increase compared to 2019). This increase was driven largely by growth in cargoes and terminals related to wood pellets (33%), coal (26%), and propane (79%). The continued essential operations provided by Port operations provide a foundation for economic stability in the region, ensuring that supply chains remain robust, and goods make it to market in a timely manner.

The cancellation of the summer cruise season in 2020 and beyond led to a significant reduction in ridership and passenger volumes. Crew and passenger visitor spending from cruise vessels calling on Canadian ports traditionally serves as a significant source of visitor spending and economic activity. At the time of this report's release, the Government of Canada has announced the restart of cruise vessels to begin in November 2021.<sup>5</sup> While the Port remains resilient through its ongoing trade activity through the Prince Rupert gateway, PRPA will continue to work alongside the cruise industry and stakeholders to plan for the return of visiting cruise passengers once the no-sail order is lifted.

<sup>5</sup> <https://www.canada.ca/en/transport-canada/news/2021/07/government-of-canada-aims-to-restart-cruise-ship-season-in-canada.html>

## 1.6 What is Economic Impact?

*Economic impact* is a measure of the spending and employment associated with a sector of the economy, a specific project (such as the construction of a new facility), or a change in government policy or regulation. Economic impact can be measured in various ways. Two of the most popular ways to assess economic impact are in terms of the dollar value of industrial output produced, or in terms of full-time equivalents (FTE) of employment generated.<sup>6</sup> Other measures are gross domestic product (GDP) and value of capital used and/or created. All of these are used to express the gross level of activity or expenditure from a sector of the economy, a specific project or a change in policy or regulation. These measures can be useful in developing an appreciation of projects, investments, and economic sectors.<sup>7</sup> The different measurements of economic impact, including employment, income, gross domestic product (GDP) and economic output, are explained in **Figure 1-6**.

**Figure 1-6: Measurements of Economic Impact**

<b>Employment</b> <i>(Full Time Equivalents)</i>	<ul style="list-style-type: none"> <li>• Full-time equivalents (FTE) or person years of employment generated. Because many jobs may be only part-time or seasonal, the number of jobs is greater than the number of FTEs.</li> </ul>
<b>Wages</b>	<ul style="list-style-type: none"> <li>• Includes wages, salaries, and benefits associated with employment tied to the sector, project or policy/regulatory change.</li> </ul>
<b>Gross Domestic Product (GDP)</b>	<ul style="list-style-type: none"> <li>• A measure of the money value of final goods and services produced locally as a result of economic activity. This measure does not include the value of intermediate goods and services used up to produce the final goods and services.</li> </ul>
<b>Economic Output</b>	<ul style="list-style-type: none"> <li>• The dollar value of industrial output produced. Sometimes referred to as “economic activity,” it reflects the spending (i.e., capital improvement plus revenue) by firms, organizations and individuals. In the case of organizations that do not generate revenue, annual operating expenses are counted.</li> </ul>

<sup>6</sup> A full-time equivalent (FTE) of employment accounts for part-time and seasonal employment.

<sup>7</sup> Economic impact is different from a cost-benefit analysis that weighs benefits against costs.



## 1.7 Port of Prince Rupert Economic Impact

The three major components of economic impact are *direct*, *indirect*, and *induced* impacts. These distinctions are used as a base for the estimation of total economic impact of a port. Each of these three components requires different tools of analysis. Employment impact analysis determines the economic impact in terms of jobs created and salaries and wages paid out. In the case of the port, the direct, indirect, induced, and total numbers of FTEs created at the port are examined to produce a snapshot of the port's operations.

- **Direct impacts** account for the economic activity of the target sector itself. Direct employment impacts are measured by counting those individuals who work in a particular sector of the economy. In the case of a port, all of those people who work in marine-related capacity either on-site or off-site would be considered direct employment (e.g., cargo handling, terminal maintenance, truck drivers and rail crew, equipment mechanics and repair, tug crews, government inspectors).
- **Indirect impacts** are those that result because of the direct impacts. For a port, indirect impacts encompass the economic activities of supplier firms that serve port users. Indirect employment includes the portion of employment in supplier industries which are dependent on sales to the marine transport sector. An example would be an electrical contractor that provides services to a terminal.
- **Induced impacts** are economic impacts created by the spending of wages, salaries, and profits earned in the course of the direct and indirect economic activities. Induced employment is employment generated from expenditures by individuals employed indirectly or directly. For instance, if a PRPA employee decides to re-model his/her home, this would result in additional (induced) employment hours in the general economy. The home renovation project would support hours of induced employment in the construction industry, the construction materials industry, etc. Induced impact is often called the household-spending effect.

**Total** impacts are the sum of direct, indirect, and induced effects.

## 2 Methodology

### SUMMARY

- **77%** of port tenants and operators responded to the employment survey.
- **92%** of total direct FTEs were covered by survey responses.
- Statistics Canada, Industry Accounts Division: Input-Output Multipliers for British Columbia, 2017, were used in the analysis. The most currently available data at the time this analysis was prepared.

### 2.1 Introduction

InterVISTAS conducted this economic impact study during the spring of 2021. The study estimates the economic impact of the Port of Prince Rupert operations during 2020.

To calculate the direct employment impacts, the study team surveyed all the employers associated with Port operations (e.g., rail, trucking, ferry, container handling, port authority operations, port concessionaires, etc.). The survey produced estimates of the number of individuals employed in directly related occupations, as well as the total amount of wages paid to all employees. The firms surveyed as part of this study are located both on Port lands (on-site) and throughout the Port gateway (off-site). The employment survey was used to classify the total direct employment and average wages paid by business type.

InterVISTAS estimates the indirect and induced effects using economic multipliers developed by Statistics Canada. InterVISTAS utilizes a proprietary model to conduct multiplier analysis and estimate indirect and induced impacts. In addition, the wages, GDP, and economic output impacts were also estimated using these economic multipliers.

We used the data from the survey to calculate the associated tax impacts (government revenue) generated by operations that occur at the Port.

### 2.2 Estimating Current Economic Impact

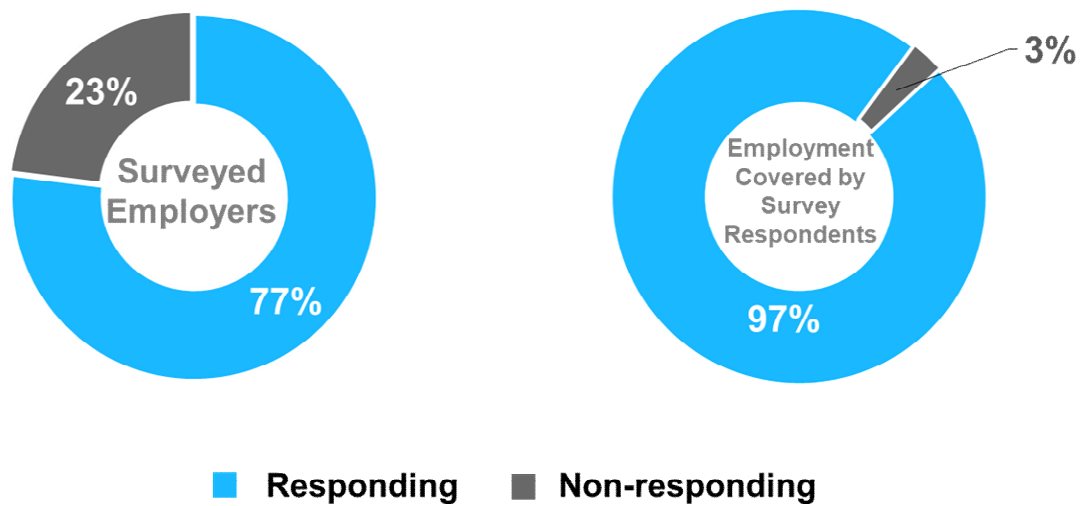
The direct employment base related to ongoing Port operations are measured first. Employment figures are generally more understandable by the public than more abstract measures, such as economic output or GDP. Employment figures also have the advantage of being a more accurate measure, both because the firms are more likely to provide data on employment, as opposed to information on revenues, wages and other monetary amounts, and because there is less chance of double counting economic activity.

The economic impact study then assesses the indirect and induced (or “multiplier”) employment supported by Port operations, as well as economic activity in terms of economic output and GDP using Statistics Canada multipliers and ratios. The direct tax revenue generated annually by Port operations is also estimated.

## 2.3 Surveying Direct Employment

Employment attributable to ongoing Port operations was measured by surveying 47 tenants and other related businesses and organizations economically linked to moving goods at the Port throughout the Prince Rupert Gateway. The surveyed firms included on-site and off-site businesses that fall under three categories: general,<sup>8</sup> trucking and rail. Specifics of the survey methodology are contained in **Appendix A**, including a description of the sampling techniques. E-mail and telephone follow-ups were conducted to ensure a strong response rate. In total, 77% of the businesses and organizations contacted responded to the survey, representing 97% of total jobs covered by the survey. A summary is provided in **Figure 2-1**.

**Figure 2-1: Response Rate for the Port of Prince Rupert Economic Impact Employment Survey**



<sup>8</sup> The general survey category is comprised of a variety of firm types including but not limited to: terminal operators, federal government agencies, emergency response, marine surveyors, construction, and transloading.

## 2.4 Inferring Employment

For firms where their survey was not fully completed, employment and other metrics were conservatively estimated using a proven and accepted methodology. This includes referencing the survey results for firms of similar business types or using past employment surveys, as well as a review of publicly available information. There may be firms that were not surveyed because their existence was not known. Employment for these non-surveyed firms was not estimated because there was no basis for assessment. We expect that the volume of missed employment would be minimal.

Employment was “inferred” for firms that did not respond to the survey. Approximately 3% of total direct surveyed employment (or 130 jobs) was inferred.

## 2.5 Estimating Indirect and Induced Impacts Using Economic Multipliers

Measurement of indirect and induced economic activity is difficult. While it might be possible to conduct a survey of such employers, the survey would need to cover thousands of firms for indirect employment. For induced employment, the entire economy would need to be scrutinised. In addition to the time and financial resources needed to conduct such surveys, the quality of responses would be suspect.

As an alternative to costly and inaccurate surveys, indirect and induced effects are typically measured using economic multipliers.<sup>9</sup> Multipliers are derived from economic/statistical/accounting models of the general economy. They come in a variety of forms and differ greatly in definition and application. Thus, great care must be exercised in choosing the appropriate set of multipliers to use<sup>10</sup>. In addition, the use of multiplier analysis is limited by several factors, these being:

- the accuracy of the structure and parameters of the underlying model;
- the level of unemployment in the economy;
- the assumption of constant returns to scale in production;
- the assumption that the economy's structure is static over time; and
- the assumption that there are no displacement effects.

For this study, InterVISTAS applied economic multipliers and ratios for the Province of British Columbia based on Statistics Canada's 2017 Interprovincial Input-Output model, the most recent available at the time of this study. The multipliers and ratios are based on a highly detailed accounting of provincial economic structures or relationships. The model tracks how the goods and services produced by industry are used by other industries and final users. The provincial multipliers were updated with Consumer Price Indices to account for inflation.<sup>11</sup>

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<sup>9</sup> The multipliers used for the analysis are based on Statistics Canada economic multipliers for British Columbia from the 2017 Interprovincial Input-Output model, the most recent data available. These multipliers were updated with Consumer Price Indices to account for inflation.

<sup>10</sup> Multiplier impacts must be interpreted with caution since they may be illusory when the economy experiences high employment and output near industry capacity. When they are reported, it is recommended that the reader be reminded of the limitations on the use of multipliers. Mindful of these limitations, this study has undertaken multiplier analysis to estimate indirect and induced employment.

<sup>11</sup> Changes to Statistics Canada's Input-Output multipliers and associated impacts are further discussed in **Section 6**.

## 2.6 Study Time Frame

The employment survey was conducted between March 2021 and July 2021. The results reflect employment and operations as a current snapshot of Port operations.

## 2.7 Jobs versus Full Time Equivalents

Traditionally, one measures employment by the number of jobs. However, when part-time and/or seasonal workers are used, this can be a misleading measure resulting in an overstatement of economic impact. Whenever possible, employment impacts are measured both in terms of the number of jobs and the number of full-time equivalents (FTEs).<sup>12</sup> In our model, hours worked by part-time and/or seasonal employees are converted into FTEs.

## 2.8 Estimating Tax Revenues

The tax revenue contributions to the federal, provincial, and municipal levels of government that are associated with port operations are also estimated. This includes taxes paid by employers and employees (such as payroll taxes), and PRPA (such as payment in lieu of taxes). Estimated tax revenues are for calendar year 2020.

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<sup>12</sup> One person year is equal to 1,832 hours of work. See **Appendix C** for a detailed calculation of the number of hours per full-time equivalent. Person years are the same as full time equivalents (FTEs).



## 3 Port of Prince Rupert Economic Impacts

### SUMMARY

- In terms of the direct impact of port activity, the Port of Prince Rupert generated 3,900 jobs or 3,700 full-time equivalents, and directly contributed \$770 million GDP in 2020.
- Together with indirect and induced impacts (suppliers and spending in the wider economy), 8,100 jobs or 7,800 FTEs are generated by the Port of Prince Rupert across Canada, and \$1.3 billion in GDP.

### 3.1 Introduction

This section describes the direct employment associated with activities that occur at Port of Prince Rupert. Jobs and full-time equivalents (FTEs) are presented. Wages, GDP, and economic output associated with this direct employment are also estimated. FTEs are broken down by full-time versus part-time and seasonal employment, employment by industry, and employment by job category.

The economic impact of the Port of Prince Rupert extends beyond the Port's direct operations and activities, as other sectors of the economy are dependent on these employers' businesses. This includes indirect impacts in businesses that supply the goods and services to the direct activities linked to the port, and induced impacts resulting from direct and indirect employees spending their wages in the general economy. Therefore, the total economic impact of the port includes the sum of direct, indirect, and induced effects. The indirect and induced impacts were estimated using Statistics Canada's economic multipliers.

### 3.2 Direct Economic Impacts

Direct employment related to ongoing Port operations amounts to 3,900 direct jobs, including contract employment. After adjusting for part-time and seasonal employment, the 3,900 jobs equate to 3,700 FTEs.

Port employees and related firms receive an estimated \$360 million in wages, providing an average of \$97,000 per FTE. Employment figures are summarized in **Figure 3-1** for wages, as well as jobs and FTEs.

**Figure 3-1: Annual Direct Economic Impacts of Operations at the Port of Prince Rupert**

					
Impact	Employment (Jobs / FTEs)		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	3,900	3,700	\$360	\$770	\$1,400

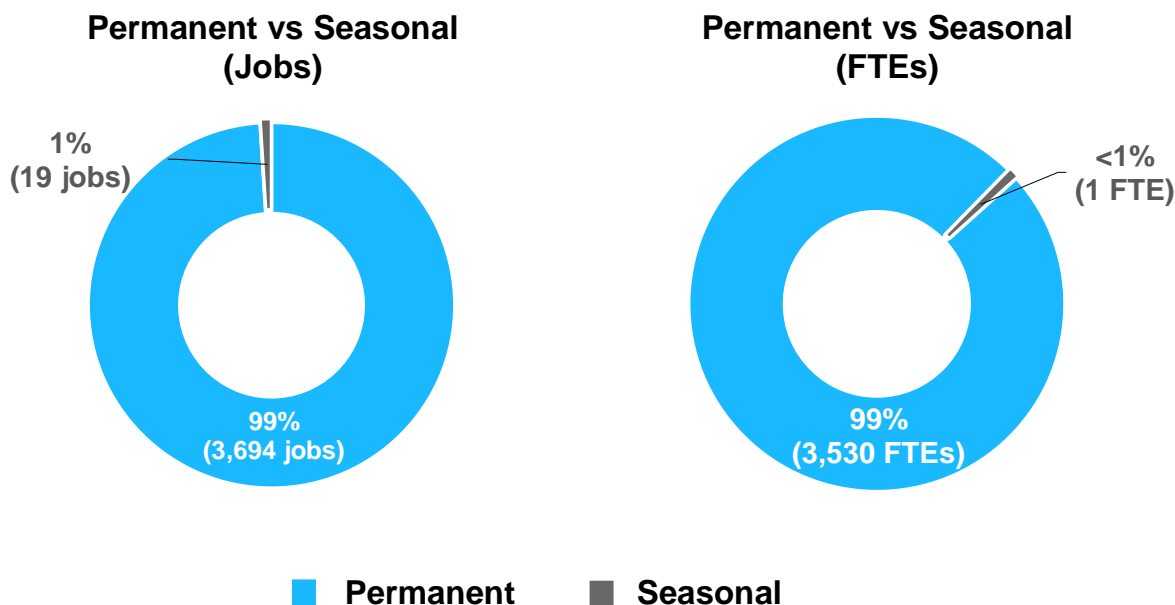
Notes:

1. Wages, GDP, and Economic Output are in 2021 prices
2. Results are based on a review of 2020 operations
3. Figures are rounded to the nearest tenth or hundredth.

### 3.2.1 Direct Employment at the Port of Prince Rupert

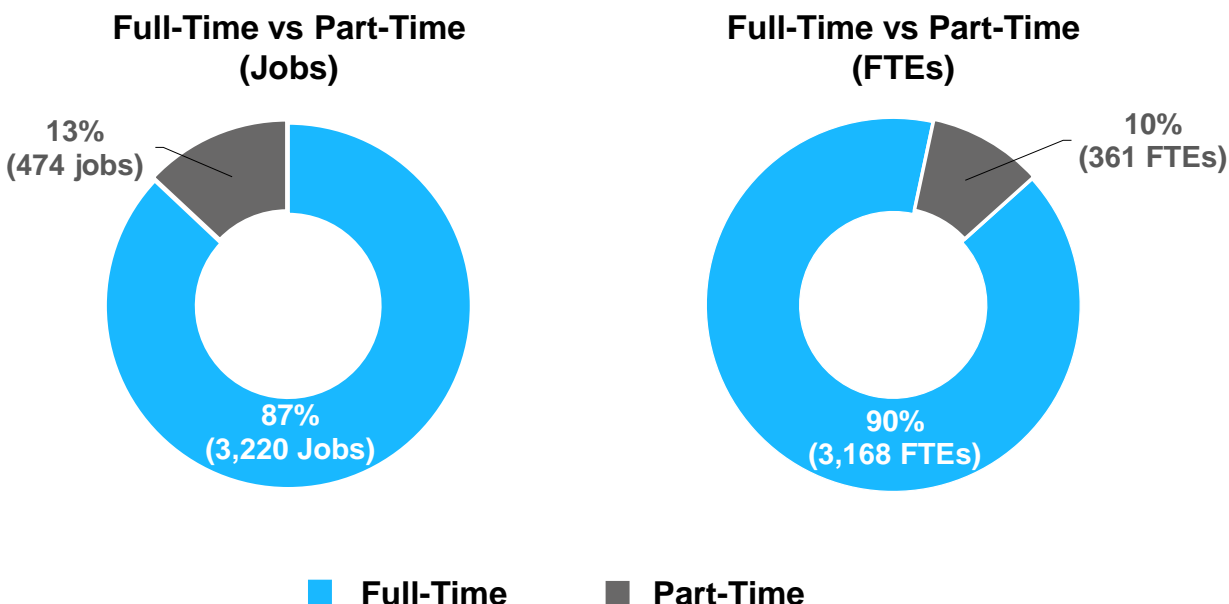
The Port of Prince Rupert has a strong base of permanent employment, as shown in **Figure 3-2**. Based on surveyed direct jobs in 2020,<sup>13</sup> approximately 99% (3,700 jobs) of employment are permanent positions, while the remaining 1% of surveyed jobs (20 jobs) are seasonal positions. The majority of employment taking place at the Port is also full-time work accounting for 87% of surveyed permanent jobs (3,220 jobs), as displayed in **Figure 3-3**. This demonstrates that the Port and its related businesses are a source of stable, year-round employment.

**Figure 3-2: Permanent versus Seasonal Employment at the Port of Prince Rupert**



<sup>13</sup> As per **Section 2.3**, approximately 3,730 jobs were surveyed, with the remaining 3% of jobs estimated inferred. Contracted individuals and firms account for approximately 10 jobs.

**Figure 3-3: Full-Time Versus Part-Time Permanent Employment at the Port of Prince Rupert**



Some employers contract out services to individuals and other firms. Based on responses to the survey, it is estimated that contracted individuals and firms account for approximately 10 jobs. See **Appendix E** for more discussion.

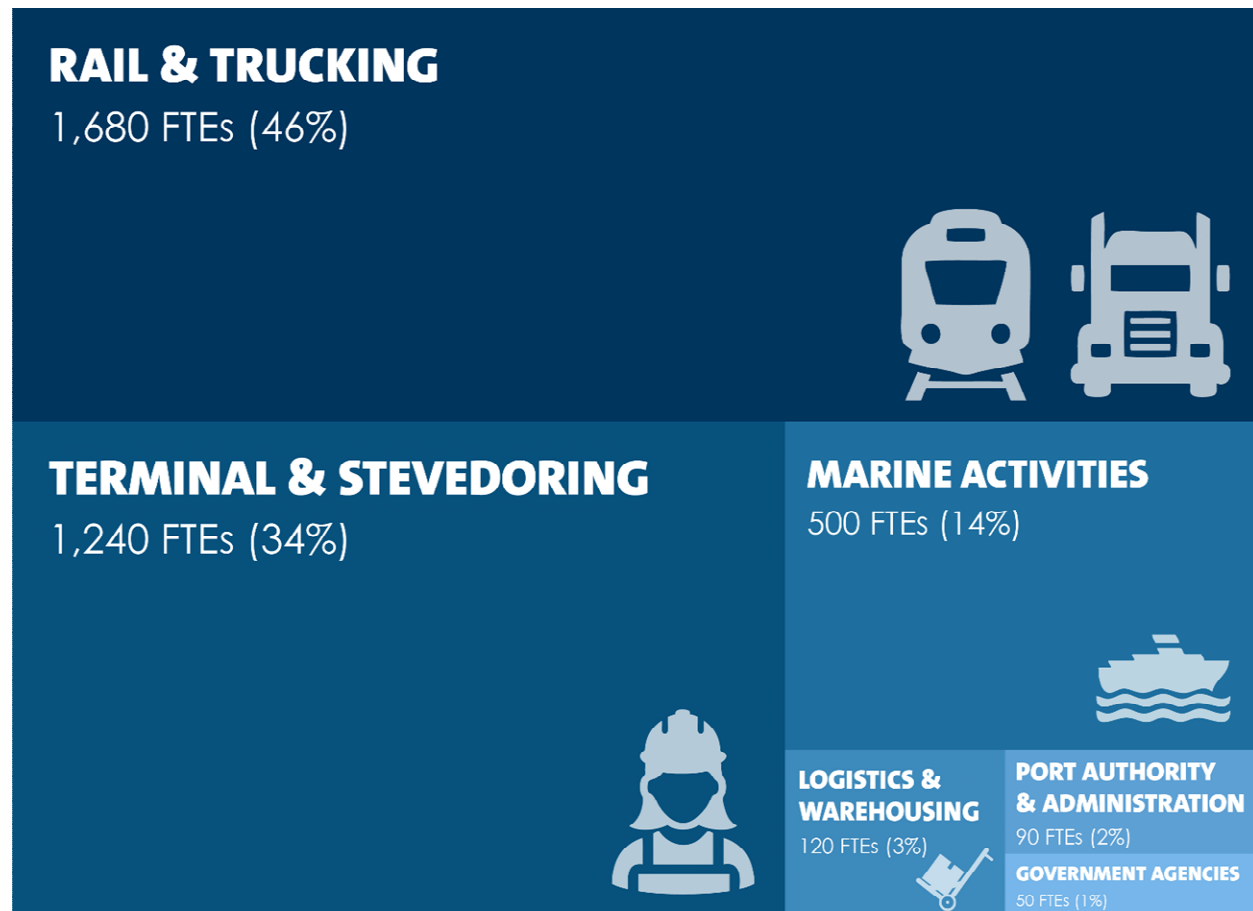
### Direct Employment by Industry Type

A breakdown of direct employment at the Port, by industry type, provides insight into the different industries directly related to the port. The following summary details direct employment of each industry:

- **Rail & Trucking** account for 1,680 FTEs at the Port accounting for 46% of direct employment.
- **Terminal and Stevedoring** account for the second highest proportion of direct Port employment (1,240 direct FTEs or 34% of direct employment). This area of employment supports the loading, unloading, and checking of cargo to and from vessels, as well as the storage of these goods on the dock and in the terminal.
- **Marine Activities** contribute a total of 500 FTEs (14% of direct employment). This broad group includes tug towage operations, marine pilot activities, ship repair and maintenance and ferry operations.
- **Logistics & Warehousing** employment contributed 120 FTEs of employment, or 3% of the total direct FTEs at the port.
- **Port Authority & Administration** accounts for 90 FTEs (2% of direct employment) and includes jobs related to the administration and management of the port itself.
- **Government Agencies** provide 50 FTEs (1% of direct employment) by providing essential services such as food inspection, border services, coast guard, fire rescue and policing.

A breakdown of direct employment at the Port, by industry, is illustrated in **Figure 3-4**.

**Figure 3-4: Direct Employment by Industry Type at the Port of Prince Rupert**



### 3.3 Indirect and Induced Employment Impacts of Port Operations





The previous sections discussed how direct employment related to ongoing Port operations was measured. However, the employment impact of the port does not end there, as other sectors of the economy are dependent on these employers' businesses. Indirect employment is generated by suppliers to the businesses directly related to the Port. In addition, there may be a general stimulus to the province-wide economy when direct (and indirect) employees spend their wages. These employment effects are referred to as induced employment that support employment in other economic sectors of the province. Total employment effects therefore equal the sum of direct, indirect, and induced effects.

## 3.4 Total Employment

Ongoing Port operations generate a total of 7,800 FTEs and \$620 million in wages, including induced and indirect effects.

**Figure 3-5** summarizes the direct, indirect, induced, and total impact of employment and wages in the surrounding regional economy attributable to ongoing Port operations.

**Figure 3-5: Annual Direct, Indirect, Induced and Total Employment Impacts of the Port of Prince Rupert**

					
Impact	Employment (Jobs / FTEs)		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	3,900	3,700	\$360	\$770	\$1,400
Indirect	2,600	2,400	\$170	\$290	\$550
Induced	1,700	1,600	\$90	\$220	\$340
<b>Total in BC</b>	<b>8,100</b>	<b>7,800</b>	<b>\$620</b>	<b>\$1,270</b>	<b>\$2,290</b>

Notes:

1. Totals may not sum as results are rounded to the nearest tenth or hundredth
2. Wages, GDP, and Economic Output are in 2021 prices
3. Results are based on a review of 2020 operations



## 4 Tax Impacts

### SUMMARY

- The Port of Prince Rupert is also an important generator of taxation revenues, with approximately \$147 million paid by employers and employees, as well as the port authority, to all levels of government.
- The majority of taxes collected (68%) accrue to the federal government, estimated to be \$99 million.
- The provincial government received an estimated \$36 million in tax revenues (25% of total).
- Municipal governments also benefit through the collection of property taxes and payments-in-lieu of taxes amounting to approximately \$12 million (7% of total).

### 4.1 Introduction

This section documents the estimated contribution to government revenues resulting from current direct Port operations and associated economic activity. This includes revenues received by federal, provincial, and municipal governments.

Tax revenue consists of contributions paid by the port employers and employees to the different levels of government. They include income and payroll taxes and social insurance contributions (such as employment insurance premiums). This also includes payments in lieu of taxes paid by PRPA, and property taxes paid by tenants to the municipal government.

For each category, taxes paid to the federal, provincial, and local governments are separately identified.

The purpose of this section is to present the tax revenue contributions resulting from the activity attributable to Port operations. As with all such studies, a conceptual decision must be made as to how broad a definition of economic activity should be used in measuring the impacts. For this study, a relatively narrow definition has been taken, for example, the following *have not* been included:

- Taxes associated with indirect or induced employment (i.e., multiplier effects).
- Consumption taxes (e.g., GST and PST) paid by Port employees when they spend their income.
- Excise or import taxes on cargo.
- Taxes paid by the port users outside of the Port.

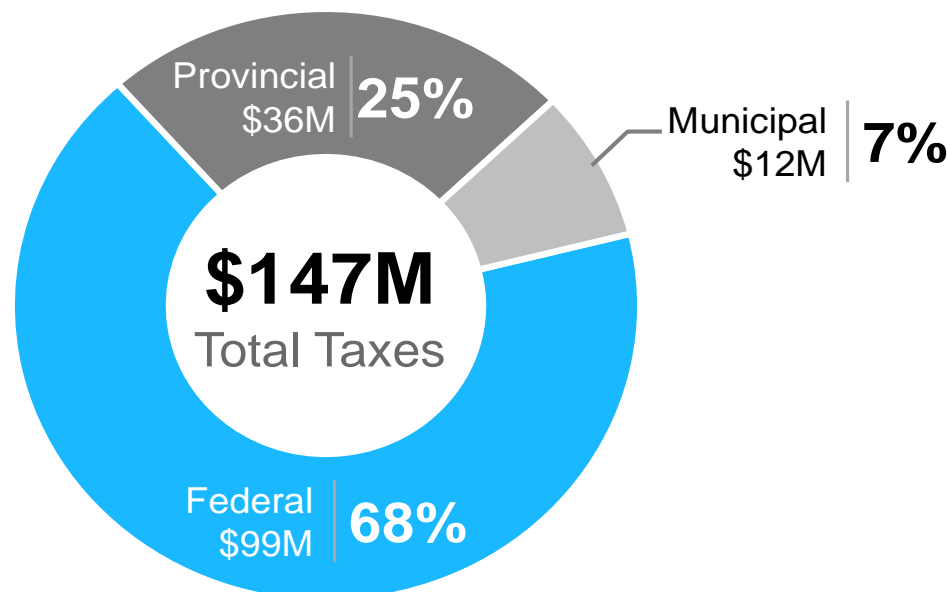
It would be exceedingly complex to broaden the scope of the tax base in this analysis to include taxes generated by indirect and induced employment. The level of detail collected on direct employment by the survey is critical to the tax analysis while such information is not available for the indirect and induced employment. This being the case, impacts and speculation about the general economy would be complex and averages would not necessarily be precise or accurate. Therefore, the tax analysis in this report is limited to revenues attributable to direct employment.

## 4.2 Tax Contributions by Level of Government

Ongoing economic activity at the Port generates tax revenue for all levels of government. In 2020, total tax contributions from Port-related direct employment to all levels of government were approximately \$147 million. **Figure 4-1** provides a breakdown of tax impacts by level of government.

- The federal government was the largest recipient of tax revenue, receiving an estimated \$99 million (68% of total tax revenue impacts). The vast majority of that total is attributable to taxes paid by employers and employees such as income tax, corporate income tax, EI contributions and CPP contributions.
- The provincial government received \$35 million (25% of total tax revenue impacts). This total is from income taxes, corporate income tax, and workers compensation dues.
- The municipal governments collected the remaining \$12 million in tax revenue (7% of total tax revenue impacts) from PRPA and its tenants in the form of general municipal property tax assessments, PILT payments for non-leased federal crown land, and the BC Port Competitiveness Tax Grant.

**Figure 4-1: Annual Estimated Tax Revenues of the Port of Prince Rupert by Level of Government**



## 4.3 Summary of Tax Contributions by Tax Payer

Ongoing economic activity at the Port generates tax revenue from different taxpayers is presented in **Figure 4.2**.

**Figure 4-2: Estimated Tax Revenue, by Level of Government and Taxpayer**

<b>Taxpayer</b>	<b>Federal (\$million)</b>	<b>Provincial (\$million)</b>	<b>Municipal (\$million)</b>	<b>Total (\$million)</b>
PRPA	3.3	-	2.2	5.5
Employers or Employees	95.9	35.5	9.8	141.3
<b>Total</b>	<b>99.3</b>	<b>35.5</b>	<b>11.9</b>	<b>146.8</b>

Note: Totals may not sum due to rounding. Detailed discussion of the tax envelopes is provided in **Appendix F**.

## 5 Value of Trade Analysis

### 5.1 Introduction

With six terminals in operation that handle containers, logs, grain, coal, wood pellets, and cruise passengers, the Port of Prince Rupert is a significant gateway for international trade. The Port connects Western Canada and the North American market to international markets, in particular the Asia Pacific. This section presents an estimate of the value of trade transiting the Port in 2020.

While all import and export goods travelling through the Port are included in this analysis, the issue of incomplete container data has continued from previous years and has resulted in a larger than intended “Other” category for container-shipped goods.

### 5.2 Methodology

In order to estimate the total value of imports and exports transiting the Port, the following steps are taken:

#### 5.2.1 Check Port traffic data

The TEU and tonnage volumes are provided by the PRPA for both bulk cargo, shown by commodity, and for containerized cargo, shown by major commodity group and accompanied by the detailed description tables (imports and exports).<sup>14</sup> While the total TEU counts for containerized import and export goods is known, the TEU counts from the detailed description tables tends to fall short of the grand totals. Once the detailed commodities have been sorted into the major commodity groups, the percent-of-total TEUs for each commodity is compared between the detailed and grand total tables for each of import and export container commodities, to ensure the detailed TEUs were categorized correctly. Once this is complete, the detailed TEUs are scaled up to the total TEU count.

#### 5.2.2 Calculate tonnage scenarios for containerized goods

Container traffic is recorded in TEUs and must be converted to metric tonnes in order to calculate the total traffic value. Three scenarios (high, medium, and low) were analyzed to show the range of potential values dependent on the average load per container, i.e., the average tonnes per TEU, as the average load of containers varies. The assumptions used to estimate the average tonnes per TEU for each of the three scenarios are shown in **Table 5-1**.

**Table 5-1 - Assumptions on Average Tonnes per TEU**

Scenario	Average tonnes/TEU
High	18 tonnes
Medium	14 tonnes
Low	10 tonnes

Notes: The assumptions on average tonnes per TEU were determined based on the average load per TEU indicated in related literature and data reviewed by InterVISTAS.

The total container traffic in tonnes was estimated for each of the three scenarios by converting the container traffic volume from TEU to tonnes using the assumptions above.

<sup>14</sup> Containerized goods were categorized into broader product type categories based on descriptions provided in the port data. As some descriptions were very general, goods were classified into categories that best fit their description.

### 5.2.3 Get commodity prices

Once the goods categories have been derived from the TEU traffic volumes and the summary of container traffic, research and analysis is conducted to determine average prices (in Canadian Dollars CAD) per metric tonne for each category of product transported in 2020. A conservative approach is taken that assumes the same average price for both bulk and containerized commodities. The sources for the commodity prices used in the analysis are outlined in **Appendix H**. U.S. dollar figures have been converted to Canadian Dollars, and all dollar figures have been adjusted for inflation to 2021 dollars using the Bank of Canada Inflation Calculator.<sup>15,16</sup>

New in this year's study are the shipments of Liquid Propane Gas (LPG) from Ridley Terminal. Exports to Asia Pacific started in May 2019. Given that this commodity is new to the Port, the price per tonne was sourced from the Canada Energy Regulator in order to provide a Canadian-specific price for this commodity's value.<sup>17,18</sup>

### 5.2.4 Estimate the total value of trade passing through the Port

The annual value of each category of goods is then calculated for bulk traffic and container traffic by multiplying the annual tonnes by the average annual commodity prices for 2020. The value of trade of both bulk and container goods are summed together for each of the three container-weight scenarios to determine the value of trade of the total traffic at the Port of Prince Rupert. The total traffic is provided for each of the three scenarios in the container value analysis and is shown in 2021 dollars.

## 5.3 Value of Trade Analysis: Bulk and Container Traffic

### 5.3.1 Bulk Traffic

The total annual value per bulk commodity is estimated given the annual bulk traffic volumes and the average annual commodity prices per tonne for 2020 by multiplying the total annual tonnage by the average annual price per tonne for each product type for each year. Summing the total annual value of each commodity type then generates the total value of bulk goods exported and imported through the Port of Prince Rupert for 2020.<sup>19</sup> These figures have been adjusted for inflation to 2021 dollars.

### 5.3.2 Container Traffic

In analyzing the total value of container traffic moving through the Port of Prince Rupert, three scenarios (high, medium, and low) were analyzed to show the range of potential values dependent on the average load per container, i.e., the average tonnes per TEU, as the average load of containers vary. The assumptions used to estimate the average tonnes per TEU for each of the three scenarios are shown in **Table 5-1** on the previous page.

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<sup>15</sup> USD prices converted to CAD using the Bank of Canada's 2020 annual exchange rate of \$1 US = \$1.3415 CA.  
<https://www.bankofcanada.ca/rates/exchange/annual-average-exchange-rates/>

<sup>16</sup> From the Bank of Canada Inflation Calculator for May 2020 – May 2021: \$1 (2020) = \$1.036 (2021).  
<https://www.bankofcanada.ca/rates/related/inflation-calculator/>

<sup>17</sup> <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2019/market-snapshot-new-propane-export-terminal-in-british-columbia-allows-canadian-propane-direct-access-asian-markets.html>

<sup>18</sup> Canada Energy Regulator, Natural Gas Liquids (Propane), average price CDN cents per litre for Jan – Dec 2020.  
<https://apps.cer-rec.gc.ca/CommodityStatistics/Statistics.aspx?language=english>

<sup>19</sup> A high and low analysis was not conducted for the value of bulk traffic, as it is assumed that market prices prevail for these commodities.



The total annual value of containerized goods per type of product is then estimated given the annual container traffic volumes in tonnes and the average annual commodity prices per tonne for 2020. This was done by multiplying the total annual tonnage by the average annual price per tonne for each product type. The values for container goods have been inflated to 2021 dollars.

### 5.3.3 Total Traffic

The value of trade of both bulk and container goods are summed together for each of the three scenarios to determine the value of trade of the total traffic at the Port of Prince Rupert. The total traffic is provided for each of the three scenarios in the container value analysis and shown in 2021 dollars.

## 5.4 Summary of Findings

The analysis of the value of trade at the Port of Prince Rupert conducted by InterVISTAS reveals that in 2020 the total exports, including bulk and container traffic, moving through the Port is estimated to be between C\$7.9 billion to \$10.1 billion (2021 dollars), given the three scenarios for estimating the value of container traffic. Total imports are estimated to be between C\$36.6 billion and \$65.8 billion (2021 dollars).

**Table 5-2** summarizes the total value of trade at the Port for each of the three scenarios analyzed for 2020 in 2021 dollars.

**Table 5-2 - Total Value of Trade Summary (bulk and containers), 2020 traffic**

Scenario	Trade Exports Total Value (2021 \$, Billions)	Trade Imports Total Value (2021 \$, Billions)	Total Trade Total Value (2021 \$, Billions)
Low	\$7.9	\$36.6	\$44.5
Medium	\$9.0	\$51.2	\$60.2
High	\$10.1	\$65.8	\$75.9

### 5.4.1 Exports (Bulk)

Bulk tonnage increased 29% between 2018 and 2020 and bulk value increased 19% (2021 \$ vs 2019 \$). The tonnage increase was largely due to the strength of increases in thermal coal, barley, and the introduction of liquid propane shipments in 2019:

- Thermal coal tonnage increased 46% between 2018-2019 and again by 67% between 2019 and 2020, for a **two-year increase of 143% between 2018 and 2020**. This increase represents 3.1 million tonnes of traffic, bringing the 2020 total to 5.2 million tonnes. The value of thermal coal traffic rose 39% from 2018 (2021 \$ vs 2019 \$, respectively), due to a drop in the price per tonne of this commodity.
- Barley tonnage increased 130% from 2018 to 2019 and 65% from 2019 to 2020, for a **two-year increase of 295% between 2021 \$ and 2019 \$, respectively**. The price of barley increased slightly between 2018 and 2020, resulting in a total value increase of 288% for this commodity between studies.
- Liquid propane gas shipments started in May 2019. In 2020, 1.2 million tonnes were transported, adding an estimated \$439 million (2021 \$) to the total bulk value of 2020 for the Port.

## 5.4.2 Exports (Containers)

Container export tonnage decreased 7% in 2020 vs 2018 and container export value decreased 8% (2021 \$ vs 2019 \$). Highlights include:

- Pulp & paper tonnage increased 29% from 2018 which resulted in a value increase of 30% (2021 \$ vs 2019 \$).
- Grains value rose 16% (2021 \$ vs 2019 \$) on the strength of an increased price per tonne on a 5% gain in tonnage traffic.
- Cut lumber tonnage decreased 31% from 2018 and value decreased 21% (price per tonne for wood products rose between studies).
- Plastics tonnage increased significantly since 2018 (252%) resulting in an increase of 258% in value.
- Commodities in the Other category saw tonnage decrease by 28% and value decrease by 34%. The price per tonne of “all US Exports” from WiserTrade dropped between study periods.

## 5.4.3 Imports (Containers)

The imports total container value is up 29% from 2018, while the TEUs are up 8%, indicating that most of the increase is due to the change in commodity values. Some key goods categories do have price/tonne increases coupled with TEU volume increases, for example:

- Household/Personal: large increase in both TEUs and price/tonne
- Building Materials: increase in both TEUs and price/tonne
- Chemicals: large increase in TEUs, small price/tonne increase
- Electronics: large increase in TEUs, small decrease in price/tonne

The value of the “Other” group of commodities rose 4% (2021 \$ vs 2019 \$) in 2020 with the tonnage increasing 18%. Comparing figures between years for this category must be done carefully, keeping an eye on the makeup of this category as it can change from year to year and affect the results. In 2020, the “Other” category contains the largest share of imports tonnage, comprising 55% of the year’s total. Of note is that a significant volume of the 2020 imports (31% of total TEUs) had no commodity descriptions, growing from previous years. Of the remaining “Other” category volume the majority of these shipment descriptions in 2020’s data were very detailed, or contained a wide variety of goods in a single shipment, to be categorized in a useful manner.

## 5.5 Recommendation

After a review of the value of trade analysis results for each of the three scenarios, InterVISTAS conservatively recommends the result from the “Medium Scenario” for exports and “Low Scenario” for imports to PRPA, wherein the total value of trade at the Port of Prince Rupert in 2020 is \$9.0 billion for exports and \$36.6 billion for imports.

This recommendation is based on a comparison of the Port’s value of trade analysis results to the statistics reported by the Port of Vancouver, which exports similar types of commodities to similar markets.

### 5.5.1 Exports

When comparing the traffic of loaded containers that are exported at the two ports, the Port of Prince Rupert (with a total of 193,640 export loaded TEUs in 2020) comprises approximately 18% of the Port of Vancouver’s export volume of loaded containers (equivalent to a total of 1,043,069 TEUs

in 2020).<sup>20</sup> Similarly, when comparing the total tonnage and the total dollar value of loaded containers exported from the Ports, the results from the “Medium Scenario” reveal that the Port of Prince Rupert comprises approximately 19% and 15%, respectively, of the total tonnage and the total dollar value of loaded containers exported at PoV.<sup>21</sup> The results from the other scenarios show a greater variation from the ratio of the Port of Prince Rupert’s and Port of Vancouver’s TEU traffic statistics, as shown in **Table 5-3**. Thus, the similarities of the ratio of the total value and total TEU of container traffic of the Port of Prince Rupert in comparison to that of Port of Vancouver indicates that the results from the “Medium Scenario” best estimates the value of trade of container traffic at the Port of Prince Rupert.

### 5.5.2 Imports

When comparing import traffic at the two ports, the Port of Prince Rupert (643,575 TEUs) reaches approximately 36% of the Port of Vancouver’s laden import container volume (1,797,852 TEUs). The “Low Scenario” tonnage and value for the Port of Prince Rupert are 52% and 173% of the respective values loaded at the Port of Vancouver. Results for all three import scenarios are shown in **5-4**.

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<sup>20</sup> Port of Prince Rupert Performance Statistics, YE Dec 2020 and Port of Vancouver Cargo Statistics Report, YE Dec 2020.

<sup>21</sup> Port of Vancouver Cargo Statistics Report YE Dec 2020.

**Table 5-3 - Comparison of Port of Prince Rupert with Port of Vancouver Container Traffic Statistics, Export Loaded Containers**

Comparator (2020)	Port of Vancouver	Port of Prince Rupert			Ratio of Port of Prince Rupert to Port of Vancouver		
		High	Medium	Low	High	Medium	Low
<b>Tonne/TEU*</b>	9.4	18.0	14.0	10.0	18.0	14.0	10.0
<b>Total Container Exports TEU</b>	1,043,069	193,640	193,640	193,640	18.6%	18.6%	18.6%
<b>Total Container Tonnage (millions)</b>	14.2	3.5	2.7	1.9	24.5%	19.0%	13.6%
<b>Total Container Value** (billions, 2021 dollars)</b>	\$23.5	\$4.7	\$3.7	\$2.6	20.0%	15.6%	11.1%

Sources: Port of Prince Rupert Performance Statistics YE Dec 2020, Port of Vancouver Cargo Statistics Report YE Dec 2020, InterVISTAS Analysis for Port of Prince Rupert.

Notes:

\*Port of Vancouver (PoV) tonne/TEU ratio is based on the ratio of total container tonnage and total TEUs of loaded containers at PMV, while Port of Prince Rupert tonne/TEU ratio is based on the assumptions used in InterVISTAS' value of trade analysis.

\*\* Port of Vancouver (PoV) Total Container Value is calculated using the ratio of the total value of traffic at PoV (\$240 billion in 2020, as per PoV's annual report) and the total tonnage at PoV (145,495,142 as per PoV statistics).

**Table 5-4 - Comparison of Port of Prince Rupert with Port of Vancouver Container Traffic Statistics, Import Loaded Containers**

Comparator (2020)	Port of Vancouver	Port of Prince Rupert			Ratio of Port of Prince Rupert to Port of Vancouver		
		High	Medium	Low	High	Medium	Low
<b>Tonne/TEU*</b>	9.4	18.0	14.0	10.0	18.0	14.0	10.0
<b>Total Container Imports TEUs</b>	1,797,852	643,575	643,575	643,575	35.8%	35.8%	35.8%
<b>Total Container Tonnage (millions)</b>	12.4	11.6	9.0	6.4	93.4%	72.7%	51.9%
<b>Total Container Value** (billions, 2021 dollars)</b>	\$20.4	\$63.5	\$49.4	\$35.3	310.7%	241.7%	172.6%

Sources: Port of Prince Rupert Performance Statistics YE Dec 2020, Port of Vancouver Cargo Statistics Report YE Dec 2020, InterVISTAS Analysis for Port of Prince Rupert.

Notes:

\*Port of Vancouver (PoV) tonne/TEU ratio is based on the ratio of total container tonnage and total TEUs of loaded containers at PMV, while Port of Prince Rupert tonne/TEU ratio is based on the assumptions used in InterVISTAS' value of trade analysis.

\*\* Port of Vancouver (PoV) Total Container Value is calculated using the ratio of the total value of traffic at PoV (\$240 billion in 2020, as per PoV's annual report) and the total tonnage at PoV (145,495,142 as per PoV statistics).

## 6 Comparison of 2020 Results to Previous 2018 Study

### 6.1 Survey Responses & Direct Employment Estimates

The 2020 survey response rate is 77%, which is higher than the response rate from the 2018 study of 62%. This year, we received completed surveys from firms that did not provide a response previously. The survey responses provided by these firms are used in the analysis and replaced the conservative estimates made for previous studies using the best available data at that time.

Direct trucking employment estimates are also adjusted based on historical truck move data and assumptions provided by PRPA, as well as current survey responses provided by trucking firms. Previous trucking employment estimates made use of assumptions from past studies that no longer reflected current local and non-local truck movements. More robust trucking data available in 2020 is used for the trucking employment estimates in the current study.

### 6.2 Changes in Statistics Canada Multipliers Over Time

Input-output multipliers change every year due to changes in economic conditions, as well as changes in the underlying data. For instance, decreased local manufacturing and growth in imports from outside the local/regional will affect the multipliers. As the economy gets more global as we progress forward in time, the rise in imports generates smaller multipliers. In addition, increases in productivity leads to decreases in the direct employment (and wages) per dollar of output. Lower payroll means lower induced effects.

Data sources used for the Input-Output multipliers also revise estimates and definitions from year-to-year. Statistics Canada made a change to the 2014 Input-Output multipliers, which had been used as the basis of the analysis in the previous 2018 Port of Prince Rupert Economic Impact Study as it was the most current multipliers available at that time. Since then, the multipliers for 2014 have been revised by Statistics Canada to be consistent with the revised underlying 2014 Supply and Use Tables used to develop the Input-Output multipliers. As a result, the impacts of direct wages, GDP, and economic output, as well as the indirect and induced impacts, for 2018 should be lower than what was previously stated in the report.

**Figure 6-1** provides a comparison of the economic impact results from the previous 2018 study and the current 2020 study. The growth in the 2020 impacts compared to the revised 2018 impacts (using the revised multipliers by Statistics Canada) is more in line with the change in surveyed employment and port operations over the two years. The comparison of 2020 impacts and the revised 2018 impacts shows an increase in the Port of Prince Rupert's direct, indirect, and induced economic impacts over the two years.

**Figure 6-1: Comparison of Economic Impact of Port of Prince Rupert in British Columbia (2018 vs. 2020)**

Metric	2018 Report	2018 REVISED	2020	% Change (2018 Report vs. 2018 REVISED)	% Change (2020 vs. 2018 Report)	% Change (2020 vs. 2018 REVISED)
<b>Employment Impacts (Jobs)</b>						
Direct Impacts	3,700	3,700	3,900	0.0%	5.4%	5.4%
Indirect Impacts	2,700	2,300	2,600	-14.8%	-3.7%	13.0%
Induced Impacts	1,900	1,500	1,700	-21.1%	-10.5%	13.3%
<b>Total Employment Impacts (Jobs)</b>	<b>8,300</b>	<b>7,400</b>	<b>8,100</b>	<b>-10.8%</b>	<b>-2.4%</b>	<b>9.5%</b>
<b>Employment Impacts (Full-Time Equivalents)</b>						
Direct Impacts	3,600	3,600	3,700	0.0%	2.8%	2.8%
Indirect Impacts	2,600	2,200	2,400	-15.4%	-7.7%	9.1%
Induced Impacts	1,800	1,400	1,600	-22.2%	-11.1%	14.3%
<b>Total Employment Impacts (Full-time Equivalents)</b>	<b>8,000</b>	<b>7,100</b>	<b>7,800</b>	<b>-11.3%</b>	<b>-2.5%</b>	<b>9.9%</b>
<b>Wages (\$ Millions)</b>						
Direct Impacts	\$ 310	\$ 300	\$ 360	-3.2%	16.1%	20.0%
Indirect Impacts	\$ 170	\$ 150	\$ 170	-11.8%	0.0%	13.3%
Induced Impacts	\$ 90	\$ 70	\$ 90	-22.2%	0.0%	28.6%
<b>Total Wages</b>	<b>\$ 570</b>	<b>\$ 520</b>	<b>\$ 620</b>	<b>-8.8%</b>	<b>8.8%</b>	<b>19.2%</b>
<b>GDP (\$ Millions)</b>						
Direct Impacts	\$ 760	\$ 620	\$ 770	-18.4%	1.3%	24.2%
Indirect Impacts	\$ 290	\$ 250	\$ 290	-13.8%	0.0%	16.0%
Induced Impacts	\$ 210	\$ 180	\$ 220	-14.3%	4.8%	22.2%
<b>Total GDP</b>	<b>\$ 1,260</b>	<b>\$ 1,040</b>	<b>\$ 1,270</b>	<b>-17.5%</b>	<b>0.8%</b>	<b>22.1%</b>
<b>Economic Output (\$ Millions)</b>						
Direct Impacts	\$ 1,480	\$ 1,230	\$ 1,400	-16.9%	-5.4%	13.8%
Indirect Impacts	\$ 580	\$ 500	\$ 550	-13.8%	-5.2%	10.0%
Induced Impacts	\$ 330	\$ 280	\$ 340	-15.2%	3.0%	21.4%
<b>Total Economic Output</b>	<b>\$ 2,380</b>	<b>\$ 2,000</b>	<b>\$ 2,290</b>	<b>-16.0%</b>	<b>-3.8%</b>	<b>14.5%</b>

Note: Total may not add up due to rounding. 2018 Wages, GDP, and Economic Output are in 2019 prices, while 2020 Wages, GDP, and Economic Output are in 2021 prices.





- The results shown in the column "2018 Report" utilize Statistics Canada multiplier and ratios for 2014 for the Province of British Columbia that were available at the time of the completion of the 2018 study.
- The results shown in the column "2018 Revised" utilize the updated Statistics Canada multiplier and ratios for 2014 for the Province of British Columbia that are currently available from Statistics Canada



## 7 Summary

Despite the unique challenges the COVID-19 pandemic presented in early 2020 and beyond, the Port has remained a catalyst for economic growth and continues to expand its economic footprint within the community, region, province, and country. The ongoing Port operations in 2020 directly supported an estimated 3,700 FTEs of employment, with approximately \$770 million directly contributed to British Columbia's GDP. **Figure 7-1** summarizes the total economic impact of the Port's ongoing activities in 2020.

**Figure 7-1: Annual Total Ongoing Economic Impacts of the Port of Prince Rupert**

					
Impact	Employment (Jobs / FTEs)		Wages (\$ Millions)	GDP (\$ Millions)	Output (\$ Millions)
Direct	3,900	3,700	\$360	\$770	\$1,400
Indirect	2,600	2,400	\$170	\$290	\$550
Induced	1,700	1,600	\$90	\$220	\$340
<b>Total in BC</b>	<b>8,100</b>	<b>7,800</b>	<b>\$620</b>	<b>\$1,270</b>	<b>\$2,290</b>

Notes:

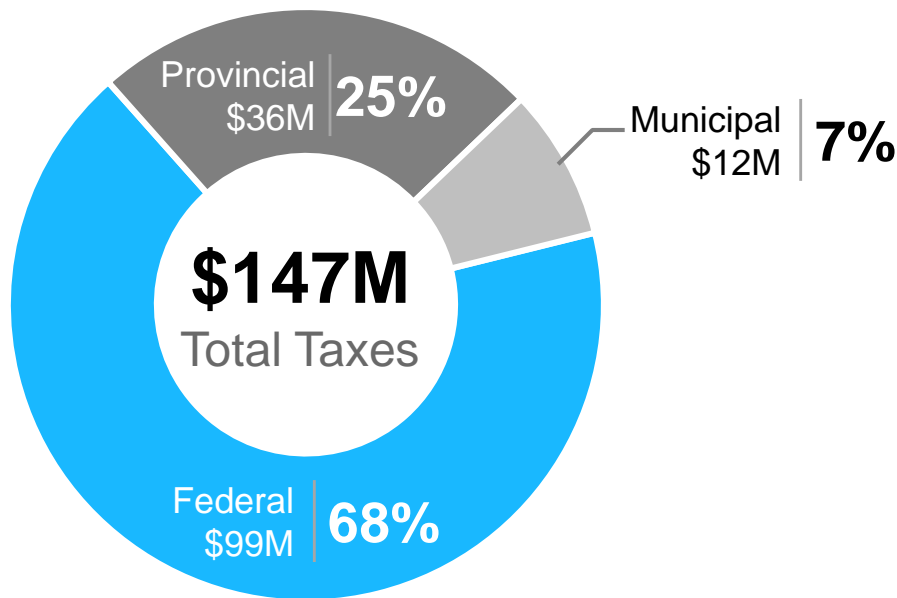
1. Totals may not sum as results are rounded to the nearest tenth or hundredth
2. Wages, GDP, and Economic Output are in 2021 prices
3. Results are based on a review of 2020 operations

Furthermore, the Port's ongoing activities generate taxation revenues that flow to all levels of government. These taxes are paid by employees and employers, as well as PRPA. Tax revenues attributable to the Port's ongoing activities in 2020 are estimated to total \$147 million.

- The majority of taxes collected accrue to the federal government, primarily through personal income taxes. In 2020, this figure is estimated at \$99 million (68% of total).
- The provincial government received an estimated \$36 million (25% of total) from income taxes, corporate income tax, and workers compensation dues.
- The municipal government collected the remaining \$12 million in tax revenue (7% of total) from PRPA and its tenants in the form of general municipal property tax assessments, PILT payments for non-leased federal crown land, and the BC Port Competitiveness Tax Grant.

The annual estimated tax revenues from Port operations by level of government is illustrated in **Figure 7-2**.

**Figure 7-2: Annual Estimated Tax Revenues by Level of Government**



Ongoing Port operations in 2020 facilitated a significant volume of imported and exported goods. An estimation of the value of these goods by InterVISTAS reveals that in 2020, the total exports at the Port (including bulk and container traffic) is calculated to be between \$7.9 billion and \$10.1 billion in 2021 dollars. Total imports are estimated to be worth between \$37 billion and \$66 billion, given the three scenarios (low, medium, and high) for estimating the value of traffic. A summary of the results is shown in **Figure 7-3**.

**Figure 7-3: Total Value of Trade Summary (including commodities and bulk), 2020**

Scenario	Trade Exports Total Value (2021 \$, Billions)	Trade Imports Total Value (2021 \$, Billions)	Total Trade Total Value (2021 \$, Billions)
Low	\$7.9	\$36.6	\$44.5
Medium	\$9.0	\$51.2	\$60.2
High	\$10.1	\$65.8	\$75.9

# Appendix A: Employment Survey

## Identification of the Survey Population

A total of 47 firms received employment surveys for the Port of Prince Rupert economic impact study. The different types of employment surveys distributed to tenants located on-site and directly related employers located off-site include: General Survey, Rail Survey and Ground Transport Survey.

**Figure A-1: Total Number of Firms Surveyed**

Type of Survey	Number of Firms Surveyed	Number of Responding Firms	Response Rate
General	46	35	76%
Rail	1	1	100%
<b>Total</b>	<b>47</b>	<b>36</b>	<b>77%</b>

## Questionnaire Design

The basic questionnaire was designed to obtain information, and to be as clear and easy to understand as possible for respondent firms. The basic questionnaire provided to port tenants contained questions in the following areas:

### General Information

- Name of firm, address
- Contact person's name and title
- Phone number
- Email address
- Firm located on site
- Principal business activity

### Trucking Activity to/from the Port

- Name(s) of trucking firm(s)
- Local and non-local round trips count

### Total Employment Numbers

- Total employees (April 2020)

- Full-time permanent employees
- Part-time permanent employees
- Full-time seasonal employees
- Part-time seasonal employees
- Average hours and weeks for part-time and seasonal employees

### **Payroll and Wage**

- Total payroll excluding benefits; or
- Average wage per employee

### **Business Related to the Port of Prince Rupert**

- Proportion of firm's business revenues related to the Port of Prince Rupert (2020)

### **Goods Movement**

- Total Port throughput in tonnes
- Laden and empty container TEUs

### **Employment by Location**

- A selection of job locations, from local to nation-wide, was presented

### **Employment by Trade**

- A selection of job trades was provided to categorize employment

### **Outsourcing and Contracting Out**

- Number of individuals on contract
- Average hours and weeks for individuals on contract
- Number and names of firms on contract
- Average annual hours for firms on contract

### **Future Employment Base at the Port of Prince Rupert**

- Whether the firm's employment is expected to increase, decrease, or remain the same over the next five years

### **Capital Investment**

- Current and future capital investment

## **Property Taxes & Other Taxes**

- Total property taxes paid (2020)

## **Comments or Questions**


Space provided for respondent comments or questions about the survey.

## **Conducting the Survey**

The survey was built using the online platform Alchemer, and an offline PDF version was offered as well. A link to the survey was mailed out electronically by InterVISTAS Consulting, with a cover letter from PRPA. The letter explained the purpose of the study, the confidentiality of responses and encouraged members of the port business community to participate.


Following the initial electronic mail-out of the survey link and throughout the following weeks, non-responding firms were contacted by telephone to follow-up on the completion of the survey. InterVISTAS staff managed the survey follow-up for onsite tenants and offsite firms. Firms were encouraged to complete the survey and new copies of the e-mail were offered if the originals were lost. Some survey responses were collected via a telephone interview with firms.

## Appendix B: Sample Survey



**PRINCE RUPERT**  
Port Authority  
CANADA'S LEADING EDGE

**PRINCE RUPERT PORT AUTHORITY**  
**Economic Impact Study**  
*Employment Survey*



**InterVISTAS**  
a company of Royal HaskoningDHV



**PRINCE RUPERT PORT AUTHORITY**  
Economic Impact Study  
Employment Survey

## Contact Information

*\*Required Question*

**Name of Company\*:**

---

**Address of the Company\*:**

---

**Contact Person\*:**

---

**Phone Number** (in 123-456-7890 format)\*:

---

**Email\*:**

---

**Is your company located on-site?**  
(i.e., on Port of Prince Rupert lands)\*

☐ Yes

☐ No



## Q1. Type of Business

Please indicate your principal business activity. If you are involved in more than one of the businesses below, please choose the one that best describes your business (i.e., contributes the largest proportion of revenues).

- |  |   |
|--|---|
| <input type="radio"/> Automobiles                  | <input type="radio"/> Ship Chandler                               |
| <input type="radio"/> Berthing Tugs                | <input type="radio"/> Shipping Agent - Exporter:<br>_____         |
| <input type="radio"/> Break-bulk Terminal Operator | <input type="radio"/> Shipping Agent - Importer:<br>_____         |
| <input type="radio"/> Bulk Terminal Operator       | <input type="radio"/> Stevedoring                                 |
| <input type="radio"/> Container Terminal Operator  | <input type="radio"/> Tug/Tow/Barge                               |
| <input type="radio"/> Cruise                       | <input type="radio"/> Waste Disposal/Ship Cleaning                |
| <input type="radio"/> Customs Broker               | <input type="radio"/> Trucking                                    |
| <input type="radio"/> Dredging                     | <input type="radio"/> Rail  |
| <input type="radio"/> Freight Forwarder            | <input type="radio"/> Producer                                    |
| <input type="radio"/> Government Agency            | <input type="radio"/> Warehouser                                  |
| <input type="radio"/> Marina                       | <input checked="" type="radio"/> Other - Please specify:<br>_____ |
| <input type="radio"/> Pilotage                     |   |
| <input type="radio"/> Ship Broker                  |   |
| <input type="radio"/> Ship Building & Repair       |   |

## Q2: Trucking Activity to/from the Port of Prince Rupert

Does your firm use trucking services to transport goods to/from the Port of Prince Rupert?

☐ No ☐ Yes

If Yes, please complete the following table on trucking activity related to your firm. If your firm operates trucks and does not contract out trucking services to another firm, please indicate this.

	Name of Trucking Firm	Trucking Firm Contact Information	Average number of <u>Local</u> round trips from Port terminals per week	Average number of <u>Non-Local</u> round trips from Port terminals per week
Firm 1				
Firm 2				
Firm 3				

## Q3: Number of Employees

Please state the number of permanent & seasonal staff employed by your company in 2020 at the Port. This should include employees both on-site at the Port and off-site (only where off-site employees are involved with directly providing service to the Port, e.g. administrative employees at an off-site location).

Please break down the employment into permanent, seasonal, full-time and part-time. *This should not include employment for work done on contract.\**

	Permanent Employees Full Time	Permanent Employees Part Time	Seasonal Employees Full Time	Seasonal Employees Part Time
Number of Employees				


Please indicate how many hours per week **part-time employees** worked in 2020, as well as how many weeks **seasonal employees** worked in 2020, on average.

	Number of Weeks per Year	Number of Weekly Hours
Permanent Part-Time		
Seasonal Part-Time		

## Q4: Annual Payroll

Please state the total gross payroll paid by your company in 2020 for the employees included in Question 3 at your company.

This figure should include all full-time, part-time and seasonal employees. If you are unable to estimate payroll for 2020, please provide figures for your last financial period, and indicate which period that was.

 Total payroll includes gross (pre-tax) wages or salaries, including overtime pay, commissions, allowances and bonuses.

**Total Payroll (2020):**

\_\_\_\_\_

**Financial Period (if not 2020):**

\_\_\_\_\_

**Alternatively**, if you are unable to answer this question, please provide an estimate of the average annual wage/salary per employee (including overtime pay, commissions, allowances and bonuses), or select one of the options below.

**Average annual wage/salary per employee**

\_\_\_\_\_

**OR, Provide an Average Salary Range**

- ☐ Less than \$20,000 per year
- ☐ Between \$20,000 and \$40,000 per year
- ☐ Between \$40,000 and \$60,000 per year
- ☐ Between \$60,000 and \$80,000 per year
- ☐ Between \$80,000 and \$100,000 per year
- ☐ More than \$100,000 per year

## Q5: Business Related to the Port of Prince Rupert

For the total number of employees indicated in Question 3, how much of this is attributable to the Port of Prince Rupert? That is, please estimate the percentage of your employment involved in port-related activities.

*For example, a freight forwarder or customs broker might attribute only 20% as that is the proportion of their business that involves shipping out of the Port of Prince Rupert (the other 80% of their business utilises truck or rail for carriage of shipments to other exit and entry points). Alternatively, if your firm is located onsite at the port or if your firm's existence is completely dependent on the Port's operations, please indicate a 100% relationship.*

Please estimate the amount of your employment that is related to the Port of Prince Rupert.

**% Port-Related Employment in 2020\*** \_\_\_\_\_

**A.** For the percentage of your business related to port operations, please provide a breakdown of revenues related to domestic coastal trade versus international trade.\*

	Proportion (%) of Revenues
Related to <b><u>Domestic Coastal Trade</u></b>	
Related to <b><u>International Trade</u></b>	

\*\*\* Total should sum up to 100% \*\*\*

**B.** For your **marine operations**, are you primarily an import or export terminal, or both? Please provide the percentage related to imports versus exports.\*

	Proportion (%) of Operations
Related to <b><u>Imports</u></b>	
Related to <b><u>Exports</u></b>	

\*\*\* Total should sum up to 100% \*\*\*

## Q6: Goods Movement

Does your firm transport its own commodities or containers to the Port?

*The purpose of this question is to assist us in attributing employment to specific commodity types and the container trade*

☐ **No**

☐ **Yes**

If Yes, what was your firm's total port throughput in 2020? If your firm transports its own containers, please provide the total port throughput in terms of laden TEUs versus empty TEUs.

	Throughput
Total Port Throughput <i>in tonnes</i>	
Total Port <u>Laden</u> Container Throughput <u>in TEUs</u>	
Total Port <u>Empty</u> Container Throughput <u>in TEUs</u>	

## Q7: Employment by Location

Please provide a breakdown of the total jobs in Question 3 by location and identify the percentage of employment dedicated to your commodities transported to or through the port, or number of jobs, at each location.

*For example, a company might have 50 employees located in Prince Rupert, but only 10 of them perform port traffic related activities.*

	Total Number of Employees in Each Location	% of Employees Related to the Port
<b>Local: Prince Rupert &amp; Prince Edward</b>		
<b>Other Northwestern BC: Kitimat, Terrace, Smithers</b>		
<b>Greater Prince George</b>		
<b>Other Northern BC</b>		
<b>Other BC</b>		
<b>Other Canada</b>		



## Q8: Employment by Trade

In order to reflect the diversity of employment associated with the Port, please provide us with a breakdown of your total employees, by position.

		Number <u>or</u> % of Employees
<b>General</b>	Managerial or Clerical	
	Sales or Customer Service	
<b>Seaport and Related Support Trades</b>	Pilots	
	Stevedores	
	Warehouse Labour	
	Construction or Maintenance Trades	
	Seamen & Officers	
	Inspectors or Security Agents	
<b>Ground Transportation</b>	Drivers or Delivery	
	Dispatchers or Call Centre	
<b>Other Trades</b>	Shipper	
	Freight Forwarder or Customs Broker	
	Engineer or Mechanic	
	General Labour (i.e., production)	
	Other, please specify	
	Other, please specify	

**NOTE: THE SUM OF EMPLOYEES BY TRADE LISTED IN QUESTION 8 SHOULD EQUAL THE NUMBER OF TOTAL EMPLOYEES IN QUESTION 3.**

## Q9: Outsourcing and Contracting Out

Since we do not want to exclude any employment from the Port, we would like you to briefly comment on whether your firm contracts out any important services.

### A. Individuals on Contract:

If you pay some individuals through a contract, as opposed to through payroll, please indicate the number of such employees, how many hours per week worked in 2020, as well as how many weeks worked in 2020, on average.

	Number of Contract Employees	Number of Weeks per Year	Number of Weekly Hours
Contract Employees			

### B. Firms on Contract:

If you outsource or contract out any work to other companies (e.g., cleaning services, IT, ground handling, etc.), please complete the following table, indicating the functions you outsource to third party companies, and provide an estimate of the annual contracted hours of work completed in 2020. Also, please specify the company's name(s) and indicate whether they are located at the port (i.e. located on-site). This will allow us to avoid any double counting of work performed by other companies which may also be surveyed as a part of this study.

*Please do not include contract services to trucking firms answered in Question 3.*

	Function	Name of Firm	Located On-Site?		Number of Hours Performed by the Company in 2020
			Yes	No	
1			( )	( )	
2			( )	( )	
3			( )	( )	
4			( )	( )	
5			( )	( )	



## Q10: Future Employment Base at the Port of Prince Rupert

Over the next 5 years, do you expect your firm's employment base to:

- ☐ **Increase**
- ☐ **Not Change**
- ☐ **Decrease**

**Increase** by approximately how many employees?

\_\_\_\_\_

Why is an increase expected?

**Decrease** by approximately how many employees?

\_\_\_\_\_

Why is a decrease expected?

## Q11: Capital Investment

### A. Current Capital Investment:

Please estimate approximately the current value of your facilities and capital investments that are intended to service traffic at the Port.

By current value we mean the amount you estimate it would cost to replace your facilities and capital today.

#### Current Value of Facilities and Capital Investment

---

### B. Future Investments:

Please estimate the total amount that you expect to invest in your facilities and capital used to transport your commodities to/from the Port (land, buildings and equipment) over the next five years.

#### Expected value of investment on facilities and capital over the next five years:

---

Can you comment briefly on the type of capital investment that will be undertaken by your company in the near-term?

## Q12: Property Taxes paid in 2020

Please indicate the amount of property taxes paid by your firm in 2020, *if your firm is located at the Port of Prince Rupert.*

#### Total Property Taxes Paid (2020):

---

## Comments or Questions

If you have any comments or questions about the survey, please write them here:

---

## Thank You!

Thank you for your participation in this survey.

Please enter your responses to this questionnaire online at:

<http://InterVISTAS.PRPA-EI-Study-Employment-Survey-2021.alchemer.com/s3/>

Or you can return the completed survey by email:

**Email:** [celina.estrella@intervistas.com](mailto:celina.estrella@intervistas.com), **Subject:** Port of Prince Rupert EI

You will receive an email confirming receipt of your completed survey.

If you have any questions, please call Celina Estrella, at 604-717-1873.

## Appendix C: Calculation of Person Years

The following are details of calculations for the average number of hours per person year or full-time equivalent (FTE).

**Table C-1: Full-time Equivalent Hours per Year**

<b>Calculation of FTE hours per year:</b>		
	365	days per year
Less:	(104)	weekend days
	(11)	legal holidays
	(15)	average vacation days
	(6)	sick leave
	229	days per person year
	*8	hours per work day
	<b>1,832</b>	<b>hours per person year</b>

Workdays vary anywhere from 6.5 to 8 hours; however, in order to be conservative, an 8-hour workday was assumed.<sup>22</sup> Similarly, numbers of vacation and sick leave days may also vary.

---

<sup>22</sup> Essentially, we are using a measure of paid hours per year. Using a measure of productive hours per year with 6.5-hour workdays (8 hours less 1 hour for lunch less two 15-minute work breaks) would give 1,489 hours per person year. Using this lower figure would result in inferring a greater number of FTEs from seasonal and part-time jobs. Using the 1,832 figure, we infer a lower number of FTEs.

## Appendix D: Inferred Employment

Because not all employers could fully respond to our requests for information in the survey, we inferred employment data to replace that which otherwise would be missing. This allows us to estimate the total amount and type of employment, which provides the basis for other estimates of economic impact. In total, 130 jobs were inferred for non-responding firms.

InterVISTAS' approach is to utilize information from responding firms for each type of business and use it, along with publicly available information on individual non-responding firms and responses from previously completed surveys, to make inferences. This approach is generally deemed to be the best approach, and indeed is often used for developing the national income and products account (i.e., partial survey with inference for non-surveyed or non-responding firms based on responses of surveys received). The approach was conservative in that, unlike the national income and products account inference, we assumed that the non-responding firms were smaller than respondents.<sup>23</sup>

The employment data in this report was constructed from a combination of two sources:

1. **Employment reported by employers on surveys submitted to InterVISTAS.**
2. **Employment inferred for employers who did not provide a survey response.** Inferred employment was based on employment information from firms in each business type that did respond to the survey. The mean employment of respondents in each business type was calculated, excluding outliers, and then adjusted downwards. For example, especially large firms were excluded from the "mean without outliers" to obtain conservative results. This "adjusted mean" employment for each business type was then applied to the non-respondent firms.

---

<sup>23</sup> As with the national income and products account approach, we recognize and discard outliers in the survey respondents when making inferences for non-respondents.



## Appendix E: Contract Employment

Some firms contract out services that they do not have expertise in providing or when there are cost advantages to doing so. For example, many port firms contract out janitorial, elevator and maintenance services. The employment survey asked firms to identify whether they contracted out some of their work, and to estimate the number of annual hours involved.

Contract work was separated into two distinct categories in the employment survey: 1) individual “employees” paid through a contract, rather than via payroll, and 2) contracting out services to other firms.

The employment results for individuals on contract were derived by counting the number of individual positions for the number of *jobs* and dividing the total hours of employment by 1,832 to estimate person years. The employment results for firms on contract were derived by dividing the total hours of employment by 1,832 to estimate person years.

At the Port in 2020, contracted individuals and firms account for approximately 10 jobs.

# Appendix F: Tax Revenues Attributable to Port Employers (2020)

## Introduction

This appendix describes the employment and other assumptions on which tax revenue calculations are based. As well, the approaches used to estimate employer and employee contributions to local, provincial, and federal governments are presented. All estimates are for the 2020 calendar year, unless otherwise stated.

Some of the taxes pose conceptual questions about how much, or if any, tax revenue from a particular source should be attributed to firms serving the Port of Prince Rupert. These questions are highlighted and simplifying assumptions are put forth.

## Employment at the Port

The majority of tax calculations in this report depend on direct employment and total wages. The total direct employment, in jobs, used for these calculations is 3,860 jobs. The total payroll is estimated at \$357 million.

## Personal Income Tax

**Tax base and rates.** Under the *Income Tax Act* federal income tax is paid on taxable income at a rate that increases with taxable income.

Provincial income tax was formerly calculated as a percentage of federal tax, but most provincial governments have begun collecting taxes on a sliding scale.

## Estimation Method and Results

Because the tax rate is progressive, the tax paid by a group of employees depends on the distribution of income among those employees. Unfortunately, the distribution of income is not known, and average incomes must be used.

Each employee is assumed to pay tax as a single tax filer. Estimated personal income tax payable is \$51.7 million in federal tax and about \$20.2 million in provincial tax.

The average tax rates used are derived from the more detailed calculations of taxes payable shown in **Table F-1**. In those calculations, assumptions have been made about income from non-employment sources, tax deductions from income (e.g., RPP and RRSP contributions), and tax credits applied against tax otherwise payable (e.g., CPP, EI and charitable contributions). Average credits are calculated from Revenue Canada, *General Income Tax Forms, 2021*.

**Table F-1: British Columbia Single Tax Filer Income Tax Calculation – 2020**

BC - British Columbia Single Tax Filers Income Tax Calculation																				
Income																				
Employment	\$	5,000.00	\$	10,000.00	\$	15,000.00	\$	20,000.00	\$	25,000.00	\$	30,000.00	\$	35,000.00	\$	40,000.00	\$	45,000.00	\$	50,000.00
TOTAL	\$	5,000.00	\$	10,000.00	\$	15,000.00	\$	20,000.00	\$	25,000.00	\$	30,000.00	\$	35,000.00	\$	40,000.00	\$	45,000.00	\$	50,000.00
Deductions																				
RSP	\$	766.11	\$	203.11	\$	162.43	\$	182.25	\$	222.05	\$	285.02	\$	393.35	\$	485.07	\$	665.50	\$	821.79
RPP	\$	20.99	\$	13.44	\$	9.85	\$	16.76	\$	47.05	\$	192.29	\$	382.07	\$	425.42	\$	543.45	\$	646.92
Carrying Charges	\$	857.46	\$	383.15	\$	239.67	\$	146.88	\$	150.92	\$	163.73	\$	190.05	\$	200.64	\$	225.64	\$	228.45
Union	\$	45.67	\$	153.91	\$	193.00	\$	238.36	\$	101.60	\$	91.94	\$	84.91	\$	81.20	\$	80.07	\$	80.02
TOTAL	\$	1,690.24	\$	753.60	\$	604.96	\$	494.24	\$	521.63	\$	730.98	\$	1,056.38	\$	1,192.33	\$	1,532.67	\$	1,785.18
Taxable Income	\$	3,309.76	\$	9,247.40	\$	14,395.04	\$	19,505.76	\$	24,478.37	\$	29,269.02	\$	33,949.62	\$	38,807.67	\$	43,477.33	\$	48,214.82
Credits																				
Basic Federal	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00	\$	13,229.00
Basic Provincial	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00	\$	11,070.00
CCP	\$	45.67	\$	153.91	\$	193.00	\$	238.36	\$	101.60	\$	91.94	\$	84.91	\$	81.20	\$	80.07	\$	80.02
BI	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Charity	\$	0.74	\$	0.26	\$	0.99	\$	17.08	\$	32.02	\$	55.25	\$	67.32	\$	107.06	\$	140.82	\$	190.29
Fed. Total	\$	13,275.41	\$	13,382.17	\$	13,427.99	\$	13,374.43	\$	13,362.63	\$	13,376.19	\$	13,381.23	\$	13,417.26	\$	13,457.90	\$	13,507.30
Prov. Total	\$	11,116.41	\$	11,223.17	\$	11,268.99	\$	11,215.43	\$	11,203.63	\$	11,217.19	\$	11,222.23	\$	11,258.26	\$	11,298.90	\$	11,348.30
Federal Tax Credit Rate		15%		15%		15%		15%		15%		15%		15%		15%		15%		15%
Provincial Tax Credit Rate		5.06%		5%		5%		5%		5%		5%		5%		5%		5%		5%
Federal Credits	\$	1,991.31	\$	2,007.33	\$	2,014.20	\$	2,006.17	\$	2,004.39	\$	2,006.43	\$	2,007.18	\$	2,012.59	\$	2,018.68	\$	2,026.10
Provincial Credits	\$	562.49	\$	567.89	\$	570.21	\$	567.50	\$	566.90	\$	567.59	\$	567.84	\$	569.67	\$	571.72	\$	574.22
Tax Payable																				
Federal - Bracket 1	\$	496.46	\$	1,887.11	\$	2,159.26	\$	2,925.86	\$	3,671.76	\$	4,390.35	\$	5,092.44	\$	5,821.15	\$	6,521.60	\$	7,232.22
Federal - Bracket 2	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Federal - Bracket 3	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Federal - Bracket 4	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Federal - Bracket 5	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
Federal Total	\$	496.46	\$	1,887.11	\$	2,159.26	\$	2,925.86	\$	3,671.76	\$	4,390.35	\$	5,092.44	\$	5,821.15	\$	6,521.60	\$	7,232.22
Basic Federal	\$	-	\$	-	\$	145.06	\$	919.70	\$	1,687.36	\$	2,383.92	\$	3,095.26	\$	3,808.56	\$	4,502.92	\$	5,206.13
BC - British Columbia - Bracket 1	\$	167.47	\$	467.92	\$	728.39	\$	986.99	\$	1,238.61	\$	1,481.01	\$	1,717.85	\$	1,963.67	\$	2,194.51	\$	2,194.51
BC - British Columbia - Bracket 2	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
BC - British Columbia - Bracket 3	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
BC - British Columbia - Bracket 4	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
BC - British Columbia - Bracket 5	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
BC - British Columbia - Bracket 6	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
BC - British Columbia Total	\$	167.47	\$	467.92	\$	728.39	\$	986.99	\$	1,238.61	\$	1,481.01	\$	1,717.85	\$	1,963.67	\$	2,194.51	\$	2,194.51
Basic Provincial	\$	-	\$	-	\$	158.18	\$	418.49	\$	671.70	\$	913.42	\$	1,150.01	\$	1,394.06	\$	1,662.37	\$	1,924.66
TOTAL TAX PAYABLE	\$	-	\$	-	\$	360.24	\$	1,335.19	\$	2,339.66	\$	3,297.35	\$	4,235.27	\$	5,120.56	\$	6,165.29	\$	7,230.79
Average Rate of Tax		0.0%		0.0%		2.3%		6.9%		9.6%		11.3%		12.0%		13.4%		14.2%		15.0%
Federal		0.0%		0.0%		1.0%		4.7%		6.8%		8.1%		9.1%		10.8%		10.8%		11.0%
Provincial		0.0%		0.0%		1.3%		2.2%		2.7%		3.1%		3.0%		3.0%		3.0%		4.2%

## Corporate Income Tax (Federal and Provincial)

All corporations are liable to pay federal income tax under the *Income Tax Act*. The tax rate varies by type and size of company and by province. Provincial governments also levy a corporation income tax on any company having a permanent establishment in that province.

### Estimation Method and Results

1. To calculate tax liability precisely is very difficult. It requires knowledge of the total tax base, and the proportion of the tax base attributable to the provinces. Therefore, an approximate method has been used.
2. In British Columbia, the federal corporate income tax collected per employee was \$2,781 and the provincial corporate income tax collected per employee was \$2,012 in 2020.
3. Assuming all companies pay tax at the average rate per employee calculated above, the 2020 corporation income tax liability of the Port employment sector is estimated to be \$10.3 million toward federal revenues and \$7.5 million toward provincial revenues. The estimated total corporate income tax revenue is roughly \$17.8 million as shown in **Table F-2**.

**Table F-2: Estimated Corporate Income Tax Paid by Firms within the Port**

Government	Revenue (\$Million)
Federal	10.305
Provincial	7.453
<b>Total</b>	<b>17.758</b>

## Employment Insurance Premiums

**Tax base and rates.** In 2020, employees in Canada paid employment insurance (EI) premiums equal to 1.58% of earnings up to a maximum of \$890 per year. (Maximum insurable earnings are \$56,300). Employers paid EI premiums equal to 1.4 times employee premiums.

### Estimation Method and Results

The employee premium rate is applied to total payroll costs for employees earning less than \$56,300 per year. The maximum contribution was used for employees earning more than \$56,300 per year. Estimated employee payments were approximately \$3.4 million in 2019.

The employer rate is applied to the employee payments. Estimated employer payments were \$4.8 million in 2020.

## Canada Pension Plan Contributions

**Tax base and rates.** In 2020, employee contributions for the Canada Pension Plan (CPP) were 5.45% of pensionable earnings. Pensionable earnings are actual earnings less \$3,500 to a maximum of \$58,100. The maximum annual employee contribution is \$3,166.45. The employer contribution is the same as the employee contribution.

## Estimation Method and Results

The employee contribution rate is applied to average payroll for employees who are earning less than \$58,100 a year. The maximum contribution was used for employees earning more than the maximum pensionable earnings. Estimated employer and employee contributions are approximately \$12.2 million each, for a total of just over \$24 million.

## Workplace Compensation Board of British Columbia (WCB)

**Tax base and rates.** Employers in each province are required to make contributions to the WCB to help offset the cost of on-the-job injuries. Employers are classified into industry groups. The contribution rate for each group is based on the injury costs associated with all companies in that group. The group contribution rate varies widely among industries and provinces. Some major companies are not included in the general "rateable" method of contribution but simply pay the actual cost of their claims plus an allowance for WCB administration costs. As it is not generally known which firms contribute in this manner, nor the value of their claims, an estimate based on reported payroll has been made for all firms.

**Conceptual issues.** It is possible that some companies are self-insured, and their payments could be viewed as a business expense rather than a tax. However, we have chosen to include their contribution because they are required to be part of this government-mandated program.

## Estimation Method and Results

The contribution rates for each employment classification at the Port have been applied to the total payroll for that group. Port employees paid an estimated \$7.9 million to the WCB in 2020.

## Medical Services Plan (MSP)

MSP premiums were eliminated as of January 1, 2020, and therefore it is estimated that no MSP contributions were made through Port employment for this study.

## Marine Navigation Service Fees

The Marine Navigation Services Fee (MNSF) was officially introduced in 1996 as a user fee for navigational services provided by the Canadian Coast Guard. Subsequently revised on July 1, 1997, and again on October 1, 1998, the MNSF is assessed on all vessels operating in Canadian waters with the exception of fishing vessels, "government ships" and pleasure craft as defined by the MNSF Fee schedule. Barges operating in Canadian waters in the Western Region are exempt from payment.

As such, the MNSF applies to foreign flagged vessels, including cruise ships and tugs serving port waterways in 2020. There were 517 ship arrivals in 2020 at Port of Prince Rupert. Approximately 9 tugs were in operation in Port waters. With this level of activity, total MNSF fees at Port of Prince Rupert are estimated to amount to \$1,292,569.

## PILT & Property Taxes Paid to Government

Governments levy property taxes to help them finance local services. PRPA did not pay property taxes; however, they did pay \$2.2 million in PILT (payments in lieu of taxes). Other property taxes

paid by the Port tenants are estimated to be \$9.8 million.<sup>24</sup> Total payments to the municipality amount to \$11.9 million in 2020.

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<sup>24</sup> Data on property taxes paid by the Port, Port of Prince Rupert's tenants are current as of 2020.

## Appendix G: Glossary of Terms

**Breakbulk:** Breakbulk cargo is commodity cargo that must be loaded individually in a ship's cargo. The goods can be packaged in bags, cases, crates, drums, barrels, or kept together by baling and placed onto pallets. Typical breakbulk commodities include paper, lumber, steel, and machinery.

**Bulk:** Bulk cargo is commodity cargo that is transported in large quantities and unpackaged. Typical bulk commodities include coal, grain, and chemicals.

**Container:** A container is a standardized re-sealable box used to transport goods. Containers are designed in standard sizes so that it can be loaded and sealed intact onto container ships, railroad cars, planes, and trucks. A common size for containers is 20 feet by 8 feet by 8 feet, also known as a Twenty-foot Equivalent Unit (TEU).

**Contract Work:** Any work which is done for a company by an individual who is not on the payroll or work done for a company by another company. Generally speaking, firms will contract out work in areas in which they do not have expertise or when there are cost advantages to doing so.

**Direct Employment:** Direct employment is employment that can be directly attributable to the operations in an industry, firm, etc. It is literally a head count of those people who work in a sector of the economy. In the case of the port, all of those people who work in a marine related capacity would be considered direct employment.

**Economic Activity:** (also Output, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, the process of transforming the factors of production into goods and services desired for consumption.

**Economic Output:** (also Economic Activity, Production) The end product of transforming inputs into goods. The end product does not necessarily have to be a tangible good (for example, knowledge), nor does it have to create utility (for example, pollution). Or, more generally, it is defined as the process of transforming the factors of production into goods and services desired for consumption.

**Employment Impact:** Employment impact analysis determines the economic impact of employment in terms of jobs created and salaries and wages paid out. In the case of the port, the direct, indirect, induced, and total number of jobs or person years created at the port is examined to produce a snapshot of port operations.

**Full Time Equivalent (FTE):** (also Person Year) One full time equivalent (FTE) year of employment is equivalent to the number of hours that an individual would work on a full-time basis for one year. In this study, we have calculated one full time equivalent year to be equivalent to 1,832 hours. Full time equivalent years are useful because part time and seasonal workers do not account for one full time job.<sup>25</sup>

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<sup>25</sup> *The Dictionary of Modern Economics*, David W. Pearce, General Editor, The MIT Press, Cambridge Mass., 1984



**Gross Domestic Product:** (GDP, also value-added) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and services.

**Ground Transportation:** Ground Transportation at the port includes any vehicles which transport passengers from the port to the cities or from the cities to the port. This would include taxicab service, limousine service and shuttle service.

**Indirect Employment:** Indirect employment is employment which results because of direct employment. For the port, it would include that portion of employment in supplier industries which are dependent on sales to the air transport sector. In some cases, contract work would be considered indirect employment.

**Induced Employment:** Induced employment is employment created because of expenditures by direct and indirect employees.

**Multiplier Analysis:** Analysis using economic multipliers in which indirect and induced economic impacts is quantified. Essentially, a multiplier number is applied to the "directly traceable economic impact" to produce indirect, induced, and total effects (see Multiplier.)

**Multiplier:** Economic multipliers are used to infer indirect and induced effects from a particular sector of the economy. They come in a variety of forms and differ in definition and application. A multiplier is a number which would be multiplied by direct effects in order to calculate indirect or induced effects. In the case of the port, as in many other cases, multipliers can lead to illusory results, and thus must be used with great care.

**Seasonality:** Seasonality results when the supply and demand for a good is directly related to the season in which is consumed. For example, ski resorts experience changes in net income as a result of seasonality. Ports and port services also experience seasonality as a result of vacation times for families (typically during the summer) and/or temperatures abroad (typically at Christmas time). As a result of seasonality in demand for flights, some air carriers increase frequency of flights to certain areas during the busy season.

**Tenant:** A firm which pays a lease to a leasing company or to the port authority directly.

**Value-Added:** (also GDP) A measure of the money value of final goods and services produced as a result of economic activity in the nation. This measure is net of the value of intermediate goods and services used up to produce the final goods and service.

## Appendix H: Sources for Commodity Prices

Commodity	Sources/Assumptions
Alfalfa Pellets	WISERTrade Database (US Vessel Exports data) for "Alfalfa (Lucerne) Meal And Pellets"
Animal Skins	WISERTrade Database (US Vessel Containerized Exports data) price for "Raw Hides & Skins Of Bovine Or Equine Animals"
Auto/Machine Parts	WISERTrade Database (US Vessel Container Exports data) average price for auto/machine parts
Barley	Agriculture & Agrifood Canada, Crops, G003 Supply & Dispositions Table Report
Building Materials	WISERTrade Database (US Vessel Containerized Exports data) average price for building materials
Canola	Canola Council of Canada, Canola Seed
Canola Meal	Canola Council of Canada, Canola Meal
Cars	WISERTrade Database (US Vessel Exports data) average price for vehicles
Chemical Compounds & Minerals	WISERTrade Database (US Vessel Containerized Exports data) average price for chemicals
Coal	Wiser Trade Data Vessel Exports HS=270111
Electronics	WISERTrade Database (US Vessel Containerized Exports data) average price for electrical equipment
Feed Barley	WISERTrade Database (US Vessel Exports data) for "Barley"
Furniture	WISERTrade Database (US Vessel Imports data) for "Furniture"
Grain Pellets	WISERTrade Database (US Vessel Exports data) for "Pellets Of Wheat And Of Other Cereals"
Household/Personal	WISERTrade Database (US Vessel Exports data) average price for household items
Logs	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for solid wood.
Liquid Petroleum Gas	Canada Energy Regulator, Propane Export Price, 2020 average for British Columbia
Metallurgical Coal	WISERTrade Database (US Vessel Exports Data) HS=270112

Commodity	Sources/Assumptions
Machinery	WISERTrade Database (US Vessel Containerized Exports data) average price for machinery
Medical Supplies	WISERTrade Database (US Vessel Exports data) for "Medical, Surgical, Dental Or Vet Inst, No Elec, Pt"
Metals	WISERTrade Database (US Vessel Containerized Exports data) average price for aluminum, copper, steel
Misc. Food Items	WISERTrade Database (US Vessel Containerized Exports data) average price for food items
Oats	Agriculture & Agrifood Canada, Crops, G003 Supply & Dispositions Table Report
Office Supplies	WISERTrade Database (US Vessel Exports data) average price for office supplies
Oil	WISERTrade Database (US Vessel Containerized Exports data) for "Oil (Not Crude) From Petrol & Bitum Mineral Etc."
Other	WISERTrade Database (US Vessel Exports data) for all U.S. exports
Petroleum Coke	WISERTrade Database (U.S. Vessel Exports Data) HS=2704
Plastic/Plastic Scraps/ Chemical Resin, Polymer, Etc.	WISERTrade Database (US Vessel Containerized Exports data) average price for plastics
Pulp/Paper	WISERTrade Database (US Vessel Exports data) average price for pulp and paper
Shipping Materials	WISERTrade Database (US Vessel Containerized Exports data) price for "Containers (Boxes, Bags Etc), Closurers Etc, Plast"
Soya Beans	Agriculture & Agrifood Canada, Crops, G003 Supply & Dispositions Table Report
Thermal Coal	2019 figure from Focus Economics link, 2020 was unavailable at time of analysis. <a href="http://www.focus-economics.com/commodities/energy/thermal-coal">http://www.focus-economics.com/commodities/energy/thermal-coal</a> ;
Textiles	WISERTrade Database (US Vessel Containerized Exports data) price for "Worn Clothing And Other Worn Textile Articles"
Wax	WISERTrade Database (US Vessel Exports data) for "Other Mineral Waxes, Nesoi"
Wheat	Alberta Wheat Commission/Prices & Data Quotes (pdqinfo.ca) for average of N&S ALTA - 1CWRS 13.5 on 31Dec2020 (Canadian Western Red Spring)
Wood Chips	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for wood chips.

Commodity	Sources/Assumptions
Wood Pellets	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for wood chips.
Wood Products - Cut Lumber	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for solid wood.
Wood Products - General/Unspecified	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for solid wood.
Wood Products - Log	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for solid wood.
Wood Products - Processed	Timber Pricing Branch, Ministry of Forests, Lands & Natural Resource Operations and Rural Development. Coast Selling Price System, Average Log Prices - Old Growth. YE Dec 2020. Based on conversion for solid wood.



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