Appendix IR2020-7-A

Refinements to the Roberts Bank Terminal 2 Project Design

Appendix IR2020-7-A Refinements to the Roberts Bank Terminal 2 Project Design

Project design refinements since the economic impact assessment conducted for the EIS have resulted in changes to project construction and operation expenditures that contribute to the updated project economic impact estimates. Key project design refinements assumed for the updated analysis include the following:

- A 6-year construction period (CIAR Document #1210[1]) to commence in 2024 and conclude in 2030 (compared to a 5.5-year construction period assumed for the EIS, commencing in 2018 and concluding in 2023)
- First 30 years of project operation occurring from 2031 to 2060[2] (compared to 2024 to 2053 assumed for the EIS)
- Removal of the intermediate transfer pit
- Reduction of terminal footprint area, and changes to the causeway rail layout to optimize capacities between rail and wharf infrastructure
- Addition of a fish passage channel
- Refinement of habitat enhancement programs and other environmental management, mitigation, and follow-up programs

Updated 2020 pricing for construction and operation materials, goods, services, and updated labour rates have also contributed to updated construction and operation expenditures.

The revised project construction expenditure of $2.5 billion (or annual average of $422.4 million) and operational expenditure of $7.1 billion (or annual average of $237.4 million) applied to the updated economic impact analysis are current as of January 2021 (in 2020 dollars) and reflect project refinements since the economic impact assessment for the EIS. Project construction and operational expenditures and operational labour requirements that were used as inputs for the updated economic impact analysis reflect the semi-automation operating concept as described in section “Plans for semi-automation”.

A project contingency is included in the estimated capital expenditure for construction. The P50 scenario for contingency was used in the economic impact analysis as it is the most realistic capital expenditure scenario for the project.[3]

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[1]CIAR Document #1210 Roberts Bank Terminal 2 Project – Project Construction Update. Table 2-5 Construction Duration Comparison. https://iaac-aeic.gc.ca/050/documents/p80054/122934E.pdf

[2] Installation and commissioning of container handling equipment will occur, subsequent to completion of construction and prior to commencement of on-terminal activities during operation. A 30-year operation period represents the possible duration of a concession agreement with the terminal operator; however, regular maintenance of marine terminal infrastructure and container handling equipment replacement will extend the terminal life significantly beyond this 30-year period.

[3] P50 contingency is defined as the 50th percentile value where 50% of the sampled outcomes are less than or equal to the P50 value. This can also be viewed as the value that yields a 50% Level of Confidence where there is a 50% chance that this value will be exceeded and 50% chance that the value will not be exceeded.

Appendix IR2020-7-B

Updated Economic Impact Analysis Methods

Appendix IR2020-7-B Updated Economic Impact Analysis Methods

The updated analysis used three models to estimate economic impacts of the project at the national, provincial, and regional district, and municipal scales.

Statistics Canada input-output model

The Statistics Canada input-output model (IOM) was used to estimate project effects at the national level. The ratios and multipliers used in this study were based on the 2017 input-output multipliers maintained by Statistics Canada for each of the other provinces and Canada nationwide. These are the most current input-output multipliers and were updated to reflect price levels at the time of analysis (i.e., inflation adjustment for dollar values from 2017 to 2020); however, no other changes to the input-output multipliers have been assumed. Project expenditures on labour, goods, and services originating within Canada were used as inputs for the Statistics Canada IOM.

B.C. input-output model

Consistent with the economic impact assessment for the EIS, the B.C. input-output impact model (BCIOM) was used to estimate project impacts at the provincial and Metro Vancouver levels. BC Stats has updated the BCIOM since completion of the economic impact assessment for the EIS to reflect current provincial and regional economic conditions.[1] These updates have in part contributed to differences in modelled results between those estimated for the EIS and the updated economic impact analysis. The key updates to the BCIOM include the following:

- The updated BCIOM is derived from a snapshot of the structure of the B.C. economy in 2016 versus under the previous model, which is derived from a snapshot of the structure of the B.C. economy in 2011.
- The analysis from the updated BCIOM is based on the 2016 census, whereas the analysis from the previous model was based on the 2011 census.
- The updated BCIOM uses 2016 Supply and Use Tables that have been restructured from the previous 2011 model. Specifically, the updated BCIOM includes details on 488 commodities, 234 industry groups, and 293 final demand categories, versus the previous BCIOM, which included details on 727 commodities, 300 industry groups, and 172 final demand categories. In addition, the Supply and Use Tables data has been revised for some industries and commodities. These revisions affect the modelled output (results), such as higher indirect and induced multiplier impacts in some cases.
- The assumptions for saving rates and import ratios have been revised for the updated BCIOM.
- The updated BCIOM tax revenue estimates reflect the current structure and existing tax rates.
- Employment estimates generated by the updated BCIOM are calculated using information on average earnings in 2018.
- Impacts at the regional Metro Vancouver level were derived from the provincial impacts using information from the 2016 Place of Work Census tabulations, augmented by data from the Statistics Canada employment by industry data (latest year 2019). These updates have led to higher estimates of impacts within the Metro Vancouver region.

Municipal economic impact model

To assess municipal economic impacts associated with activities of the project, Inter*VISTAS* constructed a proprietary set of municipal economic impact models based on the theories and applications of Flegg and Webber

[1] BC Stats is the central statistical agency of the B.C. government, which undertakes economic analyses for internal B.C. government purposes. The BCIOM has been used to assist with estimating the economic impact of major projects in B.C. under provincial and/or federal environmental regulatory review processes.

(1995).[2] The municipal model examines the interactions of different industries within the local area and across B.C. and incorporates adjustments to the multipliers and ratios to be reflective of each respective municipality.[3] Specifically, the model was constructed from the B.C. provincial symmetric input-output table developed by Statistics Canada, adjusting the B.C. provincial aggregate 32-industry symmetric input-output table according to the following criteria:[4]

- The relative size of each industry at the municipal level is determined through applying industry location quotients to the provincial total employment for that industry. The location quotients are ratios based on a municipality's share of total provincial employment for that industry.[5]
- An estimate for the municipality's general propensity to import from other regions.[6] For this analysis, Inter*VISTAS* used a propensity to import estimate of 0.38, which was taken from the works of Davis (1986) for the Lower Mainland.[7] This is consistent with estimates from previous literature for other regions.

As with provincial and national economic multipliers, municipal economic multipliers for each of the 32 industries included in the model are calculated from the input-output table of economic activity from/to each sector through a process of matrix inversion. The resulting matrix is the table of multipliers. This is done separately for each municipality. The primary benefit of the municipal economic impact models is that they provide insight on more micro-level economic activity in the region.

The municipal economic models allocated direct economic activity to the municipalities. This also includes indirect and induced (multiplier) economic impacts in those municipalities with direct port activity. There will be multiplier impacts from port activity in the other municipalities. For the multiplier impacts in the remaining municipalities, these indirect and induced impacts are distributed based on their weighted employment shares relative to the Province of B.C. Indirect and induced weights for each industry are derived as follows:

- **Indirect weights** – the methodology reflects the share of total inputs used by the transportation and warehousing industry in the production of its final output by each of the 32 industries included in the model

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[2] Flegg, A, & Webber, C. (1995). On the Appropriate Use of Location Quotients in Generating Regional Input Output Tables. Regional Studies, 26(6), 547-561. https://doi.org/10.1080/00343409512331349173
[3] The provincial and federal input-output tables (and resulting multipliers) are carefully constructed, vetted, and updated. This research requires considerable resources and generally is only undertaken once each census period. Municipal economic models are not commonly developed in Canada. To fill this gap, Inter*VISTAS* developed models for each municipality with Port of Vancouver activities. Fortunately, Davis (1986) at the University of British Columbia had previously researched economic impacts by municipality in Metro Vancouver, although these results are somewhat dated. Inter*VISTAS*' models are based on that methodology, and updated with aggregate data for each municipality, especially using municipal employment data by economic sector. Although the municipal models have not been vetted as the provincial and federal input-output models have been, they provide reasonable indication of economic activity in each of the municipalities with direct port activities.
[4] The 2017 B.C. provincial symmetric input-output table was used, which is the most recent account available by Statistics Canada.
[5] This information comes from employment data from Statistics Canada's 2016 Census of Canada, the most recent available.
[6] Industry specific propensities are not available.
[7] Davis (1986). Income and Employment Multipliers for Seven British Columbia Regions. *Canadian Journal of Regional Science*, 9(1), 103-115. Inter*VISTAS* is not aware of any updated information. Since Davis' study, a notable development in Metro Vancouver, where the port operations are located, has been the expansion of economic activity into the suburbs, especially south of the Fraser River. Accordingly, we increased the propensity to import from other regions. This would be a worthy topic for future research to more firmly establish the propensity for Metro Vancouver.

- **Induced weights** – the methodology reflects the share of total provincial household final consumption expenditure within each of the 32 industries included in the model

The analysis relies on the updated provincial input-output model, with the municipal modelling aiming to reasonably allocate the provincial impacts to individual municipalities.

Data to construct the indirect and induced weights were collected from the provincial input-output table for the Province of B.C. The intent of the indirect weights is to capture an estimate for the portion of total municipal employment used to supply the transportation and warehousing sector. In this case, weights will be larger for industries that contribute a greater level of activity in the transportation and warehousing industry.[8] Likewise, the intent of the induced weights is to capture an estimate for the portion of total municipal employment impacted by general consumer consumption expenditures.[9] As with the indirect weights, these induced weights will be larger for industries where consumers spend a larger share of their total incomes. Municipalities with higher weighted indirect and induced employment shares will capture a greater amount of the remaining indirect and induced impacts generated by activity at RBT2.

Practical annual container capacity and operation employment estimates

The handling of import and export containers at the project terminal would generate employment and other economic benefits through activities that occur off-terminal, including services provided by ship handlers, truckers, harbour pilots, tug operators, Canada Border Services Agency, railways, transload and distribution facility operations, and container storage yards. Economic impacts from on-terminal and off-terminal activities during operation were estimated using the practical annual container capacity of 2.04 million TEUs. The port authority uses practical capacity—calculated as 85 per cent of maximum capacity—to forecast when increased terminal congestion and inefficiency would occur because terminals cannot reasonably operate at 100 per cent capacity for a sustained period, and the annual container trade cycle has peaks and valleys relating to retail and manufacturing seasonal norms. This practical annual container capacity was used to estimate annual direct employment levels for the various on-terminal activities over the 30-year operation period. Employment-per-TEU factors for each type of off-terminal activity were developed and multiplied by the practical annual container capacity to estimate the economic impacts associated with off-terminal activities during operation. The employment-per-TEU factors were developed using previous Port of Vancouver related employment and traffic data collected by Inter*VISTAS* Consulting Inc., along with data from relevant industry reports.[10] A productivity factor was applied in the estimation of employment per TEU to account for improvements in labour productivity over time.

[8] Agriculture or manufacturing, for example, versus finance or real estate.
[9] The economics of induced economic activities is a bit more complicated than general consumption expenditures but is not germane to the issues addressed here.
[10] Inter*VISTAS* has completed several studies for the port authority that involved conducting surveys of Port of Vancouver associated employment and other data collection. The survey data are documented in the reports entitled '2016 Port of Vancouver Containers Microstudy' (Inter*VISTAS* 2017) and 'Port of Vancouver – 2019 Annual Economic Impact Update' (Inter*VISTAS* 2020). Data collected for the microstudy included in-person observations of ongoing container activity, as well as interviews with relevant firms involved in container shipping at the port. In addition to referencing data collected from these studies, the off-terminal estimates incorporated industry traffic and employment statistics from the Rail Association of Canada and BC Maritime Employers Association.

Appendix IR2020-7-C
Detailed Updated Economic Impact Results

Appendix IR2020-7-C Detailed Updated Economic Impact Results

A breakdown of direct, indirect, induced, and total economic impacts at the municipal, regional district, provincial, and national levels for employment, labour income, GDP, economic output, and government revenues are included in this appendix.

1. Employment

Project employment impacts are a factor of the project's labour demand through construction and operation phases, while accounting for the expected availability of qualified labour locally and regionally.

Changes in direct employment include the following:

- Direct employment required to construct and operate the project
- Direct employment required to support off-terminal activities during operation

Changes in indirect employment include the following:

- Indirect employment associated with production of goods and services consumed through project construction, on-terminal and off-terminal activities during operation (direct supply)
- Workers in upstream businesses making goods and services (indirect supply) used in the production and direct supply of goods and services

Changes in induced employment include the following:

- Induced employment associated with the consumer or household spending of wages and incomes earned by workers directly and indirectly employed from project construction, on-terminal and off-terminal activities during operation

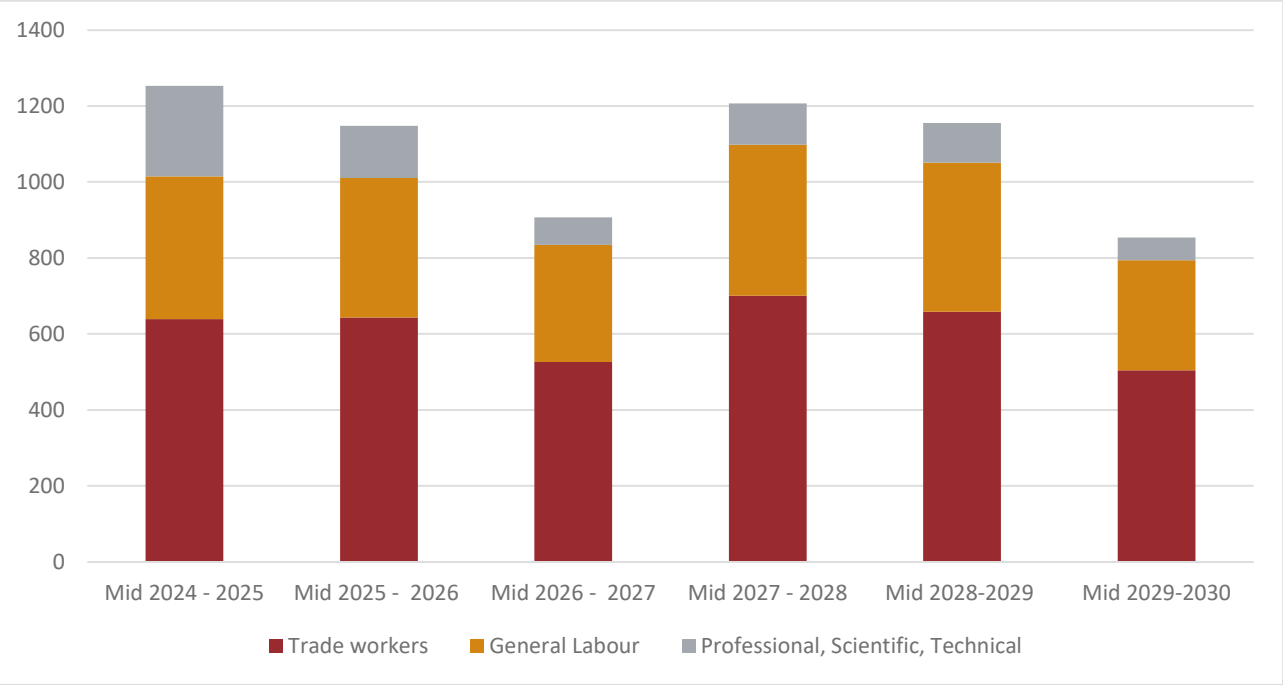
1.1 Employment – construction

Total employment generated during construction is estimated at 18,050 person-years[1] (PY) (or an annual average of 3,008 PY). Of this total, an estimated 6,524 PY (or an annual average of 1,087 PY) of direct construction employment would be generated, all occurring within the City of Delta (**Table IR2020-7-C1.1**).

Figure IR2020-7-C1 shows the distribution of total direct employment for project construction by year, and general occupational category. Tradespersons and operators would account for the largest share of labour, more than 50% each year, and an estimated 56% over the construction period. General labourers are expected to account for an estimated 32% of employment and managerial, scientific, and technical professions (which include project design and management positions) will comprise approximately 12% of the construction workforce.

[1] Person-years reflects full-time equivalent employment (FTEs). These two terms are interchangeable in that a person year and FTE both reflect part-time and seasonal employment, using a measure of paid hours per year. One person-year is equivalent to the number of hours that an individual would work on a full-time basis for one year. Person-years and FTEs are calculated by dividing total hours worked by the average annual hours worked in full-time jobs. Employment reported in person-years was used as many industries are represented in the economic impact modelling and there is a range of full-time, part-time, and temporary employment arrangements. Person-years takes into account the number of hours worked in one year by full-time, part-time, and temporary employees, as well as self-employed persons, and accounts for overall averages of full-time hours worked in one year in the respective industry sectors. In this way, the use of person-years accounts for these differences across industries to provide a consistent approach to measuring employment activity and is a more accurate account of employment generated than jobs, since for example, in real terms, one person-year could be one person working for a full year (one job), or four people working for three months (four jobs).

Figure IR2020-7-C1: Direct employment during construction (person-years)



Project construction is also expected to generate local and regional employment within supplier industry businesses from which the port authority and contractors will directly purchase goods and services, as well as indirect employment due to direct suppliers buying goods and services produced locally and regionally, as inputs for their production activities. The project's purchased goods and services would include, for example, concrete products, sand, gravel, riprap, fuel, food supplies, reinforcing steel, structural steel, piping, general building supplies, and engineering and transport services.

The total estimated indirect employment associated with the project's expenditures on goods and services in constructing the project is estimated at 7,716 PY (or annual average of 1,286 PY), consisting of 4,300 PY of indirect employment within Metro Vancouver businesses directly supplying goods and services to the project, and businesses further upstream in the supply chain (**Table IR2020-7-C1.1**). Of this amount, 2,844 PY of employment would be from the six identified municipalities. A smaller percentage (12%) or 890 PY (annual average of 148 PY) of indirect employment would occur outside of Metro Vancouver but within B.C., while close to a third of indirect employment would occur outside of B.C. in the rest of Canada.

Induced employment associated with spending would support an estimated 1,271 PY of employment in Metro Vancouver, with 61% (or 771 PY) to be generated for the six identified municipalities. More than half of the project-associated indirect and induced labour requirements during construction are expected to be sourced from the Metro Vancouver labour supply.

Table IR2020-7-C1.1: Estimated employment: construction (person-years)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	6,524 (1,087)	814 (136)	107 (18)	7,446 (1,241)
Surrey	0 (0)	698 (116)	210 (35)	908 (151)
Richmond	0 (0)	260 (43)	96 (16)	355 (59)
City of Vancouver	0 (0)	882 (147)	303 (51)	1,185 (198)
City of Langley	0 (0)	36 (6)	10 (2)	47 (8)
Township of Langley	0 (0)	154 (26)	44 (7)	199 (33)
Sub-total - municipalities[b]	**6,524** **(1,087)**	**2,844** **(474)**	**771** **(128)**	**10,140** **(1,689)**
Metro Vancouver	6,524 (1,087)	4,300 (717)	1,271 (212)	12,096 (2,016)
Rest of British Columbia	1 (0)	890 (148)	854 (142)	1,745 (290)
Rest of Canada	0 (0)	2,525 (421)	1,685 (281)	4,210 (702)
TOTAL	**6,525** **(1,087)**	**7,716** **(1,286)**	**3,810** **(635)**	**18,050** **(3,008)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated to the six identified municipalities.

Project employment effects on local labour market balance within Metro Vancouver will depend on the capacity of the local labour force to meet project labour demand for construction.[2] Metro Vancouver is a large metropolitan economy with numerous projects either under construction or proposed, that will draw upon the local labour force. In the coming few years, and under a scenario of post-pandemic economic recovery, continued investment in major infrastructure projects in Metro Vancouver is expected. Non-residential construction investment (and associated construction employment) is expected to increase in 2021, remain at relatively high levels across the province to 2024, and decline in 2025, as most major projects (such as the Pattullo Bridge replacement project and highway works such as Highway 1 upgrades and expansion) are expected to complete construction (Buildforce Canada 2020).

Metro Vancouver's labour supply is expected to have capacity to accommodate the project's construction labour demand due to the relative size of project construction labour requirements (annual average of 1,087 PY) compared to Metro Vancouver's trades, transport, equipment operators, and other related occupations labour force size, which is currently comprised of 170,600 workers (Statistics Canada 2020), and approximately 41,640

[2] As indicated in Section 19.7.1 of the EIS (CIAR Document #181), a balanced labour market is determined by its ability to meet labour demands while sustaining its labour cost increases within prevailing inflation conditions. A 5% natural rate of unemployment is a measure used to help assess labour market balance.

job openings are expected in the region's construction industry from 2019 to 2029 (Government of British Columbia 2019), due to replacement of existing workers and economic growth. In addition, high worker re-allocation rates (defined as the sum of worker hiring rates and separation rates, with separation rates based on workers quitting, being laid off, or retiring) within Metro Vancouver's large construction labour force, and a large pool of part-time workers is expected to further support the availability of local labour through higher participation rates in response to a tightening labour market. In the event that sourcing labour from Metro Vancouver becomes difficult, contractors would augment local labour supply through additional recruitment from labour pools outside of Metro Vancouver.

1.2 Employment – on-terminal activities during operation

The volume of container traffic is the driving factor in determining on-terminal employment during operation, along with the dock worker dispatch process developed by the BC Maritime Employers Association and the International Longshoremen's and Warehousemen's Union, with this process matching the dock workforce to cargo handling demand at various facilities in the Port of Vancouver on a shift-to-shift basis.

An estimated 25,512 PY (or annual average of 850 PY) direct long-term jobs associated with on-terminal activities would be generated in the province, with 99% of this employment or 25,326 PY (annual average of 844 PY) located in Delta (**Table IR2020-7-C1.2**). Project operation on-terminal workforce is expected to be about 90% longshore workers and 10% administrative and management. Due to the wage levels of the large number of unionized longshore jobs, the project would bring well paid jobs for the general population (as indicated in section 19.1.3 of the Federal Review Panel Report (CIAR Document #2062[3]).

An estimated 7,757 PY of indirect employment (annual average of 259 PY) is expected to be generated by businesses in Metro Vancouver supplying goods and services to the project during operation. An estimated 4,994 PY (or 64%) of this indirect Metro Vancouver labour would be generated to the six identified municipalities.

An additional 6,425 PY of induced employment (or annual average of 214 PY) would be supported in Metro Vancouver, through businesses supplying household goods and services purchased from the incomes of direct and indirect workers associated with project operation, of which 3,988 PY (or annual average of 133 PY) are anticipated to be generated to the six identified municipalities.

[3] CIAR Document #2062 Report of the Review Panel, Vancouver Fraser Port Authority Roberts Bank Terminal 2 Project. https://iaac-aeic.gc.ca/050/evaluations/document/134942

Table IR2020-7-C1.2: Estimated employment: on-terminal activities during operation (person-years)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	25,326 (844)	1,085 (36)	754 (25)	27,165 (906)
Surrey	0 (0)	1,533 (51)	1,024 (34)	2,558 (85)
Richmond	0 (0)	532 (18)	465 (16)	998 (33)
City of Vancouver	0 (0)	1,501 (50)	1,476 (49)	2,977 (99)
City of Langley	0 (0)	68 (2)	51 (2)	119 (4)
Township of Langley	0 (0)	274 (9)	217 (7)	491 (16)
Sub-total - municipalities[b]	**25,326** **(844)**	**4,994** **(166)**	**3,988** **(133)**	**34,307** **(1,144)**
Metro Vancouver	25,326 (844)	7,757 (259)	6,425 (214)	39,508 (1,317)
Rest of British Columbia	186 (6)	1,585 (53)	1,280 (43)	3,051 (102)
Rest of Canada	0 (0)	1,481 (49)	1,216 (41)	2,697 (90)
TOTAL	**25,512** **(850)**	**10,823** **(360)**	**8,921** **(298)**	**45,256** **(1,508)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated to the six identified municipalities.

1.3 Employment – off-terminal activities during operation

The handling of import and export containers at the new terminal during operation would generate employment and other economic benefits through activities that occur off-terminal. An estimated 262,697 PY (or an annual average of 8,757 PY) of total direct employment would be generated from off-terminal activities over the 30-year operation period, allocated to rail carriers, trucking companies, warehousing and transload facilities, and other off-terminal operation services (**Table IR2020-7-C1.3**). The majority—175,848 PY (or annual average of 5,862 PY)—of direct employment are anticipated to be generated within Metro Vancouver of which 107,913 PY would be generated within the six identified municipalities. The remaining 86,848 PY (annual average of 2,895 PY) of direct employment would be generated within the rest of B.C. and outside of B.C. and within the rest of Canada.

132,189 PY (or annual average of 4,406 PY) of indirect employment is anticipated to be generated through goods and services produced across Canada, via spending of business operations that support handling of project containers. Of this total, 74,250 PY (or annual average of 2,475 PY) of indirect employment would be generated in Metro Vancouver, of which 26,863 PY (or annual average of 895 PY) would be generated in the six identified municipalities.

An additional 79,396 PY (or 2,647 PY annually) of induced employment nationwide would be generated through businesses supplying household goods and services purchased from the incomes of direct and indirect off-terminal workers, of which 39,143 PY (or close to 50%) would be generated within Metro Vancouver.

Table IR2020-7-C1.3: Estimated employment: off-terminal activities during operation (person-years)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	14,314 (477)	723 (24)	474 (16)	15,511 (517)
Surrey	20,066 (669)	6,577 (219)	2,694 (90)	29,337 (978)
Richmond	24,325 (811)	4,503 (150)	1,224 (41)	30,053 (1,002)
City of Vancouver	44,746 (1,492)	14,508 (484)	3,703 (123)	62,956 (2,099)
City of Langley	567 (19)	42 (1)	4 (0.1)	613 (20)
Township of Langley	3,894 (130)	510 (17)	89 (3)	4,493 (150)
Sub-total - municipalities[b]	**107,913 (3,597)**	**26,863 (895)**	**8,188 (273)**	**142,963 (4,765)**
Metro Vancouver	175,848 (5,862)	74,250 (2,475)	39,143 (1,305)	289,241 (9,642)
Rest of British Columbia	16,244 (541)	14,450 (482)	8,881 (296)	39,575 (1,319)
Rest of Canada	70,604 (2,353)	43,490 (1,450)	31,372 (1,046)	145,466 (4,849)
TOTAL	**262,696 (8,756)**	**132,190 (4,407)**	**79,396 (2,647)**	**474,282 (15,810)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated to the six identified municipalities.

2. Labour income

Labour income from the project would be generated through direct, indirect, and induced employment during project construction, project on-terminal and off-terminal activities during operation.

2.1 Labour income – construction

An estimated $1.6 billion (or an annual average of $266 million) in total labour income (including wages, salaries, and benefits) is anticipated to be generated during construction. Direct labour income associated with 6,524 PY of direct employment is estimated at $642 million or annual average of $107 million, all generating within the City of Delta (**Table IR2020-7-C2.1**). An additional $698 million in indirect labour income is anticipated to be generated (or annual average of $116 million), of which $429 million would be generated in Metro Vancouver businesses directly supplying goods and services to the project, and to businesses further up the supply chain. Of this amount, $280 million (or $47 million annually) would be generated in the six identified municipalities. A smaller

percentage of indirect labour income ($78 million) would occur outside of Metro Vancouver but within B.C., while $191 million (or $32 million annually) would be generated outside of B.C. in the rest of Canada.

Induced labour income would be more evenly split nationally, provincially, and regionally, with $96 million (or $16 million annually) in induced labour income generating to Metro Vancouver, and of this, the majority ($57 million, or $10 million annually) generating to the six identified municipalities.

Annual direct labour income levels (including benefits) for constructing the project will be comparable to compensation on a full-time equivalent basis for other major industrial construction projects in the province, in the range of $98,340 per full-time equivalent job.

Table IR2020-7-C2.1: Estimated labour income: construction ($millions)[a,b]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$642 ($107)	$73 ($12)	$6 ($1)	$721 ($120)
Surrey	$0 ($0)	$71 ($12)	$16 ($3)	$87 ($15)
Richmond	$0 ($0)	$27 ($4)	$7 ($1)	$34 ($6)
City of Vancouver	$0 ($0)	$90 ($15)	$23 ($4)	$113 ($19)
City of Langley	$0 ($0)	$4 ($1)	$1 ($0.1)	$5 ($1)
Township of Langley	$0 ($0)	$16 ($3)	$3 ($1)	$19 ($3)
Sub-total - municipalities[c]	**$642 ($107)**	**$280 ($47)**	**$57 ($10)**	**$979 ($163)**
Metro Vancouver	$642 ($107)	$429 ($71)	$96 ($16)	$1,167 ($194)
Rest of British Columbia	$0.04 ($0.01)	$78 ($13)	$66 ($11)	$144 ($24)
Rest of Canada	$0 ($0)	$191 ($32)	$96 ($16)	$287 ($48)
TOTAL	**$642 ($107)**	**$698 ($116)**	**$258 ($43)**	**$1,598 ($266)**

a. Inclusive of wages, salaries. and benefits.
b. Vertical column and horizontal row results may not sum to total due to rounding.
c. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

2.2 Labour income – on-terminal activities during operation

On-terminal activities during operation are expected to generate approximately $4.1 billion in direct wages and salaries (or an annual average of $137 million), with almost all of this income generating to the City of Delta (**Table IR2020-7-C2.2**). The majority of labour income would be earned by longshore workers. Annual salaries (including benefits) for on-terminal workers is expected to average approximately $168,000.

An additional $1.2 billion (or annual average of $40 million) of indirect and induced labour income would be generated in Metro Vancouver workers from on-terminal operation, and of this amount, $744 million (or an annual average of $25 million) would be generated in the six identified municipalities. Total indirect and induced labour income to the rest of B.C. and the rest of Canada would be $221 million (or $7.4 million annually) and $182 million (or $6 million annually), respectively.

Table IR2020-7-C2.2: Estimated labour income: on-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$4,098 ($137)	$93 ($3)	$46 ($2)	$4,237 ($141)
Surrey	$0 ($0)	$135 ($5)	$82 ($3)	$218 ($7)
Richmond	$0 ($0)	$47 ($2)	$37 ($1)	$84 ($3)
City of Vancouver	$0 ($0)	$133 ($4)	$119 ($4)	$252 ($8)
City of Langley	$0 ($0)	$6 ($0.2)	$4 ($0.1)	$10 ($0.3)
Township of Langley	$0 ($0)	$24 ($1)	$17 ($0.6)	$42 ($1)
Sub-total - municipalities[b]	**$4,098 ($137)**	**$438 ($15)**	**$306 ($10)**	**$4,842 ($161)**
Metro Vancouver	$4,098 ($137)	$683 ($23)	$502 ($17)	$5,282 ($177)
Rest of British Columbia	$19 ($1)	$128 ($4)	$93 ($3)	$240 ($8)
Rest of Canada	$0 ($0)	$107 ($4)	$75 ($2)	$182 ($6)
TOTAL	**$4,117 ($138)**	**$918 ($31)**	**$670 ($22)**	**$5,705 ($191)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

2.3 Labour income – off-terminal activities during operation

Total direct labour for off-terminal activities during operation is expected to earn approximately $27.1 billion in wages and salaries or an annual average of $903 million (**Table IR2020-7-C2.3**). Of this total, approximately $16.5 billion in wages (or an annual average of $550 million) would be injected into the Metro Vancouver economy. Of this regional amount, $10.1 billion (or an annual average of $335 million) in wages would be generated in the six identified municipalities. An additional $1.8 billion (or annual average $61 million) and $8.8 billion (or an annual average $293 million) in direct labour income would be generated in the rest of B.C. and the rest of Canada, respectively.

An estimated $9.8 billion (or annual average of $328 million) of indirect and induced labour income would be generated in Metro Vancouver from off-terminal activities during operation, and of this amount, $2.5 billion (or an annual average of $83 million) would be generated in the six identified municipalities. Total indirect and induced labour income to the rest of B.C. would be $1.85 billion (or $63 million annually). Induced and indirect labour income to the rest of Canada would be more substantial at $5.36 billion (or $179 million annually).

Table IR2020-7-C2.3: Estimated labour income: off-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$1,299 ($43)	$55 ($2)	$25 ($1)	$1,379 ($46)
Surrey	$1,881 ($63)	$536 ($18)	$160 ($5)	$2,577 ($86)
Richmond	$2,321 ($77)	$357 ($12)	$73 ($2)	$2,751 ($92)
City of Vancouver	$4,168 ($139)	$1,034 ($34)	$213 ($7)	$5,415 ($181)
City of Langley	$46 ($2)	$3 ($0.1)	$0.2 ($0.01)	$48 ($2)
Township of Langley	$336 ($11)	$36 ($1)	$5 ($0.2)	$377 ($13)
Sub-total - municipalities[b]	**$10,051 ($335)**	**$2,022 ($67)**	**$476 ($16)**	**$12,548 ($418)**
Metro Vancouver	$16,503 ($550)	$6,800 ($227)	$3,043 ($101)	$26,346 ($878)
Rest of British Columbia	$1,821 ($61)	$1,222 ($41)	$629 ($21)	$3,672 ($123)
Rest of Canada	$8,781 ($293)	$3,571 ($119)	$1,790 ($60)	$14,142 ($472)
TOTAL	**$27,105 ($904)**	**$11,593 ($387)**	**$5,462 ($182)**	**$44,161 ($1,473)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

3. Gross domestic product

The project will contribute to GDP through household income (including wages, salaries, benefits, and income earned by proprietors of unincorporated businesses) and profits and other income earned by corporations. The GDP estimates do not include the value of intermediate goods and services used to produce the final goods and services.

3.1 Gross domestic product – construction

Over $2.3 billion in GDP would be generated from construction activities (or an annual average of $387 million), of which $1.6 billion (or annual average of $275 million) and $176 million (or annual average of $29 million) would be produced in the Metro Vancouver and rest of B.C. economies, respectively (**Table IR2020-7-C3.1**). The majority ($1.3 billion or 80%) of Metro Vancouver GDP represents GDP for the six identified municipalities. Construction would account for a total of $498 million (or annual average of $83 million) in GDP outside of B.C. in the rest of Canada.

Table IR2020-7-C3.1: Estimated gross domestic product: construction ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$775 ($129)	$93 ($16)	$9 ($2)	$877 ($146)
Surrey	$0 ($0)	$116 ($19)	$34 ($6)	$151 ($25)
Richmond	$0 ($0)	$43 ($7)	$16 ($3)	$59 ($10)
City of Vancouver	$0 ($0)	$147 ($25)	$50 ($8)	$197 ($33)
City of Langley	$0 ($0)	$6 ($1)	$2 ($0.3)	$8 ($1)
Township of Langley	$0 ($0)	$26 ($4)	$7 ($1)	$33 ($5)
Sub-total - municipalities[b]	**$775 ($129)**	**$431 ($72)**	**$118 ($20)**	**$1,324 ($221)**
Metro Vancouver	$775 ($129)	$674 ($112)	$200 ($33)	$1,649 ($275)
Rest of British Columbia	$0 ($0)	$121 ($20)	$55 ($9)	$176 ($29)
Rest of Canada	$0 ($0)	$307 ($51)	$191 ($32)	$498 ($83)
TOTAL	**$775 ($129)**	**$1,102 ($183)**	**$446 ($74)**	**$2,323 ($386)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

3.2 Gross domestic product – on-terminal activities during operation

Project on-terminal operation would account for approximately $7.6 billion in national GDP (or an annual average of $253 million), of which close to $6.9 billion (or annual average of $230 million) and $361 million (or annual average of $12 million) would be produced within Metro Vancouver and rest of B.C. economies, respectively (**Table IR2020-7-C3.2**). $6.2 billion (or annual average of $208 million) of Metro Vancouver GDP would be produced in the six identified municipalities. On-terminal operation would account for a total of $325 million (or annual average of $11 million) in GDP outside of B.C. in the rest of Canada.

Table IR2020-7-C3.2: Estimated gross domestic product: on-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$5,133 ($171)	$120 ($4)	$57 ($2)	$5,309 ($177)
Surrey	$0 ($0)	$195 ($6)	$133 ($4)	$328 ($11)
Richmond	$0 ($0)	$68 ($2)	$60 ($2)	$128 ($4)
City of Vancouver	$0 ($0)	$191 ($6)	$191 ($6)	$383 ($13)
City of Langley	$0 ($0)	$9 ($0.3)	$7 ($0.2)	$15 ($1)
Township of Langley	$0 ($0)	$35 ($1)	$28 ($1)	$63 ($2)
Sub-total - Municipalities[b]	**$5,133 ($171)**	**$618 ($19)**	**$476 ($16)**	**$6,226 ($208)**
Metro Vancouver	$5,133 ($171)	$970 ($32)	$792 ($26)	$6,895 ($229)
Rest of British Columbia	$25 ($1)	$200 ($7)	$137 ($5)	$362 ($13)
Rest of Canada	$0 ($0)	$180 ($6)	$145 ($5)	$325 ($11)
TOTAL	**$5,158 ($172)**	**$1,350 ($45)**	**$1,074 ($36)**	**$7,582 ($253)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

3.3 Gross domestic product – off-terminal activities during operation

$81.9 billion in national GDP would be generated from off-terminal activities during operation (or an annual average of $2.7 billion), of which $8.8 billion (or annual average of $293 million) and $40.9 billion (or annual average of $1.4 billion) would be produced in the B.C. and Metro Vancouver economies, respectively (**Table IR2020-7-C3.3**). Close to 43% ($17.4 billion or an annual average of $648 million) of Metro Vancouver GDP would be produced in the six identified municipalities. Off-terminal activity during operation would account for a total of $32.2 billion (or annual average of $1.1 billion) in GDP outside of B.C. in the rest of Canada.

Table IR2020-7-C3.3: Estimated gross domestic product: off-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$1,952 ($65)	$81 ($3)	$35 ($1)	$2,068 ($69)
Surrey	$2,466 ($82)	$684 ($23)	$194 ($6)	$3,345 ($111)
Richmond	$3,041 ($101)	$470 ($16)	$94 ($3)	$3,605 ($120)
City of Vancouver	$6,099 ($203)	$1,459 ($49)	$292 ($10)	$7,849 ($262)
City of Langley	$57 ($2)	$3 ($0.1)	$0.2 ($0.01)	$60 ($2)
Township of Langley	$427 ($14)	$43 ($1)	$5 ($0.2)	$476 ($16)
Sub-total - municipalities[b]	**$14,042 ($467)**	**$2,740 ($91)**	**$621 ($21)**	**$17,403 ($580)**
Metro Vancouver	$26,000 ($867)	$10,215 ($340)	$4,718 ($157)	$40,933 ($1,364)
Rest of British Columbia	$5,880 ($196)	$1,896 ($63)	$1,020 ($34)	$8,796 ($293)
Rest of Canada	$21,582 ($719)	$6,308 ($210)	$4,263 ($142)	$32,153 ($1,071)
TOTAL	**$53,462 ($1,782)**	**$18,419 ($613)**	**$10,001 ($333)**	**$81,882 ($2,728)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

4. Economic output (revenues)

Direct economic output or contracting revenues will occur from direct expenditures of the project on goods and services for project construction and operation, and off-terminal activity during operation. Contract revenues will also occur from indirect expenditures on production inputs of the project-associated direct supplier industries. Induced output would occur to businesses and institutions that would service the household spending requirements of construction, on-terminal and off-terminal direct and indirect employees. Direct, indirect, and induced goods and services contracting revenues take into account municipal, Metro Vancouver, provincial, and national business capabilities and capacities.

4.1 Economic output – construction

An estimated $2.5 billion (or annual average of $419 million) in direct economic output would be generated in Metro Vancouver businesses supplying goods and services for project construction, specifically those in the City of Delta (**Table IR2020-7-C4.1**). Another $2 billion (or an annual average of $339 million) in indirect revenues would be generated for upstream supply industries, of which approximately $1.2 billion (or an annual average of $197 million) would be generated for supplier industries in Metro Vancouver (with $779 million or an annual average of $130 million generating to supplier industries in the six identified municipalities). The indirect goods and services supply effects outside of Metro Vancouver in the rest of B.C. and elsewhere in Canada in support of project construction activities are expected to be modest due to the size of the supplier sector in Metro Vancouver supporting the Port of Vancouver.

Table IR2020-7-C4.1: Estimated economic output: construction ($millions)[a]

	Total direct (annual average)	**Total indirect (annual average)**	**Total induced (annual average)**	**TOTAL (annual average)**
City of Delta	$2,515 ($419)	$228 ($38)	$20 ($3)	$2,763 ($460)
Surrey	$0 ($0)	$189 ($32)	$71 ($12)	$260 ($43)
Richmond	$0 ($0)	$71 ($12)	$32 ($5)	$103 ($17)
City of Vancouver	$0 ($0)	$239 ($40)	$102 ($17)	$342 ($57)
City of Langley	$0 ($0)	$10 ($2)	$4 ($1)	$13 ($2)
Township of Langley	$0 ($0)	$42 ($7)	$15 ($3)	$57 ($9)
Sub-total - municipalities[b]	**$2,515 ($419)**	**$779 ($130)**	**$244 ($41)**	**$3,538 ($590)**
Metro Vancouver	$2,515 ($419)	$1,174 ($196)	$413 ($69)	$4,102 ($684)
Rest of British Columbia	$0 ($0)	$221 ($37)	$148 ($25)	$369 ($62)
Rest of Canada	$0 ($0)	$641 ($107)	$360 ($60)	$1,001 ($167)
TOTAL	**$2,515 ($419)**	**$2,036 ($340)**	**$921 ($154)**	**$5,472 ($913)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

4.2 Economic output – on-terminal activities during operation

An estimated $7.2 billion (or annual average of $240 million) of direct economic output would be generated from on-terminal activities during operation in the City of Delta (**Table IR2020-7-C4.2**). Approximately $2.4 billion (or an annual average of $80 million) in indirect economic output would be generated for upstream supply industries, of which close to $1.7 billion (or an annual average of $56 million) would be generated in Metro Vancouver. Of this Metro Vancouver total, $1.1 billion in indirect output would be generated in the six identified municipalities. Total indirect output for the rest of B.C. and Canada would be relatively small at $357 million (or $12 million annually) and $359 million (or $12 million annually), respectively. Total induced output is estimated at $2.3 billion (or an annual average of $77 million), mainly due to household spending by marine terminal employees.

Table IR2020-7-C4.2: Estimated economic output: on-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$7,193 ($240)	$232 ($8)	$104 ($3)	$7,529 ($251)
Surrey	$0 ($0)	$330 ($11)	$287 ($10)	$618 ($21)
Richmond	$0 ($0)	$115 ($4)	$131 ($4)	$245 ($8)
City of Vancouver	$0 ($0)	$325 ($11)	$414 ($14)	$739 ($25)
City of Langley	$0 ($0)	$15 ($0.5)	$14 ($0.5)	$29 ($1)
Township of Langley	$0 ($0)	$59 ($2)	$61 ($2)	$120 ($4)
Sub-total - municipalities[b]	**$7,193 ($240)**	**$1,076 ($37)**	**$1,011 ($34)**	**$9,280 ($309)**
Metro Vancouver	$7,193 ($240)	$1,672 ($56)	$1,695 ($56)	$10,560 ($352)
Rest of British Columbia	$45 ($1)	$357 ($12)	$339 ($11)	$741 ($24)
Rest of Canada	$0 ($0)	$359 ($12)	$280 ($9)	$639 ($21)
TOTAL	**$7,238 ($241)**	**$2,388 ($80)**	**$2,314 ($76)**	**$11,940 ($397)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

4.3 Economic output – off-terminal activities during operation

An estimated $48.1 billion (or an annual average of $1.6 billion) of direct economic output would be generated in Metro Vancouver from off-terminal activity during operation, which comprises approximately 84% of the expected impact for B.C. (**Table IR2020-7-C4.3**). Of this Metro Vancouver amount, $26.9 billion (or $896 million annually) would be generated in the identified six municipalities. Another $18.8 billion (or an annual average of $625 million in revenues) would be generated for upstream supply industries in Metro Vancouver, of which $4.9 billion (or an annual average of $165 million) would be generated in the six identified municipalities. The indirect and induced goods and services supply effects in the rest of B.C. and outside of B.C. in the rest of Canada, are expected to be $6.3 billion and $19.3 billion, respectively.

Table IR2020-7-C4.3: Estimated economic output: off-terminal activities during operation ($millions)[a]

	Total direct (annual average)	Total indirect (annual average)	Total induced (annual average)	TOTAL (annual average)
City of Delta	$3,979 ($133)	$164 ($5)	$69 ($2)	$4,212 ($140)
Surrey	$5,012 ($167)	$1,359 ($45)	$362 ($12)	$6,732 ($224)
Richmond	$5,721 ($191)	$849 ($28)	$161 ($5)	$6,731 ($224)
City of Vancouver	$10,915 ($364)	$2,449 ($82)	$476 ($16)	$13,840 ($461)
City of Langley	$166 ($6)	$9 ($0.3)	$1 ($0.02)	$175 ($6)
Township of Langley	$1,091 ($36)	$106 ($4)	$12 ($0.4)	$1,209 ($40)
Sub-total - municipalities[b]	**$26,884 ($897)**	**$4,936 ($165)**	**$1,082 ($36)**	**$32,900 ($1,097)**
Metro Vancouver	$48,100 ($1,603)	$18,762 ($625)	$9,926 ($331)	$76,788 ($2,560)
Rest of British Columbia	$9,272 ($309)	$3,688 ($123)	$2,627 ($88)	$15,587 ($520)
Rest of Canada	$33,437 ($1,115)	$12,455 ($415)	$6,846 ($228)	$52,738 ($1,758)
TOTAL	**$90,809 ($3,027)**	**$34,905 ($1,163)**	**$19,399 ($647)**	**$145,113 ($4,837)**

a. Vertical column and horizontal row results may not sum to total due to rounding.
b. Municipal impacts illustrate the proportion of the total impacts in Metro Vancouver that are estimated to be generated in the six identified municipalities.

5. Government revenues

Federal and provincial government revenues generated by the project include personal and corporate income taxes and taxes on products as a result of project spending on labour, goods, and services. Regional and local government revenues will also be generated through municipal and regional district taxes.

5.1 Government revenues – construction

Approximately $481.9 million in tax revenues is expected to be directed to governments during construction, with $216.6 million coming from direct construction expenditures. Of this total, approximately $246 million would be federal taxes, approximately $203 million would be provincial taxes, and approximately $32 million would be local government taxes (**Table IR2020-7-C5.1**). Personal income tax payments to the federal and provincial governments are anticipated to account for the largest portion of the tax revenues, with approximately $128 million (or 69%) of personal income tax coming from labour incomes of direct construction workers and the remainder in connection with the labour incomes of indirect and induced workers during construction.

Table IR2020-7-C5.1: Estimated government revenues by tax type and government: construction ($millions)[a,b]

	Total direct	Total indirect	Total induced	TOTAL
Total federal government taxes	***108***	***91.6***	***46.5***	***246.2***
Personal income tax	91.8	67.9	19.2	178.9
Corporate income tax	11.8	18.8	4.7	35.4
Net taxes on products	3.7	4.3	21.5	29.5
Indirect taxes on factors of production	0.7	0.6	1.1	2.4
Total provincial taxes	***99.7***	***62.3***	***41.3***	***203.3***
Personal income tax	36.4	27.5	7.8	71.7
Corporate income tax	8.7	13.8	3.5	26
Net taxes on products	50.5	17.1	22.6	90.2
Indirect taxes on factors of production	4.1	3.9	7.4	15.4
Total municipal/regional district taxes	***8.9***	***7.9***	***15.6***	***32.4***
Municipal sales tax	0.1	0.3	1.1	1.5
Property, business, and other municipal taxes	8.8	7.6	14.5	30.9
TOTAL	**216.6**	**161.9**	**103.4**	**481.9**

a. Estimates reflect revenues from direct, indirect, and induced economic impacts to municipalities, Metro Vancouver, and the rest of B.C. as a result of project construction expenditures.
b. Vertical column and horizontal row results may not sum to total due to rounding.

In addition to government revenues generated from direct, indirect, and induced economic impacts to municipalities, Metro Vancouver, and the rest of B.C., approximately $12.6 million in indirect revenue and $25.1 million in induced government revenues (for a total of approximately $37.7 million in revenues) would also

be generated as a result of direct, indirect, and induced economic impacts to the rest of Canada from project construction expenditures.[4]

5.2 Government revenues – on-terminal activities during operation

Just under $1.9 billion in tax revenues is expected to be directed to governments during on-terminal operation, with approximately $1.2 billion coming from direct on-terminal expenditures during operation. Of this total, approximately $854 million would be comprised of federal taxes, $878 million would be provincial taxes, and $140 million would be local government taxes (**Table IR2020-7-C5.2**). Personal income tax payments are anticipated to account for the largest portion of federal tax revenues, while personal income tax and net taxes on products would account for the largest portion of provincial revenues.

Table IR2020-7-C5.2: Estimated government revenues by tax type and government: on-terminal activities during operation ($millions)[a,b]

	Total Direct	Total Indirect	Total Induced	TOTAL
Total federal government taxes	***551.9***	***137.1***	***165.1***	***854.2***
Personal income tax	432.6	102.8	72.7	608.1
Corporate income tax	91.5	28.7	17.1	137.3
Net taxes on products	22	5.6	75.3	102.9
Indirect taxes on factors of production	5.8	0.03	0.06	5.9
Total provincial taxes	***584***	***148.3***	***145.6***	***877.9***
Personal income tax	167.9	40.8	29.5	238.2
Corporate income tax	67.1	74.1	12.5	153.7
Net taxes on products	313.4	23.6	78.4	415.4
Indirect taxes on factors of production	35.6	9.8	25.2	70.6
Total municipal/regional district taxes	***76.3***	***9.1***	***55.1***	***140.6***
Municipal sales tax	1.6	0.18	2.4	4.3
Property, business, and other municipal taxes	74.7	8.9	52.6	136.3
TOTAL	**1,212.2**	**294.5**	**365.8**	**1,872.7**

a. Estimates reflect revenues from direct, indirect, and induced economic impacts to municipalities, Metro Vancouver, and the rest of B.C. as a result of expenditures from project on-terminal activities during operation.
b. Vertical column and horizontal row results may not to total due to rounding.

In addition to government revenues generated from direct, indirect, and induced economic impacts to Metro Vancouver and the rest of B.C. from on-terminal activities during operation, approximately $9.8 million in indirect revenues and $19.3 million in induced government revenues (for a total of $29 million) would be generated as a result direct, indirect, and induced economic impacts to the rest of Canada from project on-terminal expenditures during operation.

[4] Taxes generated from project economic impacts to the rest of Canada are calculated using indirect and induced tax multipliers and are not broken down by tax types.

5.3 Government revenues – off-terminal activities during operation

The total tax revenues derived from direct off-terminal activities during operation is expected to amount to approximately $12.8 billion (annual average of $428 million) with close to $7.9 billion coming from direct off-terminal operational activity expenditures (**Table IR2020-7-C5.3**). Of the total taxes, approximately $6.2 billion would be federal taxes, $5.5 billion would be provincial government taxes, and close to $1.2 billion would be local government taxes. Personal income tax payments to the federal and provincial governments will account for 40% of the total taxes.

Table IR2020-7-C5.3: Estimated government revenues by tax type and government: off-terminal activities during operation ($millions)[a,b]

	Total direct	Total indirect	Total induced	TOTAL
Total federal government taxes	***3,739.5***	***1,568.5***	***894.5***	***6,202.6***
Personal income tax	2,178.4	1,047.9	435.3	3,661.8
Corporate income tax	1,257.6	417.9	106.2	1,781.9
Net taxes on products	259.2	82.6	327.5	669.4
Indirect taxes on factors of production	44.1	19.9	25.2	89.4
Total provincial taxes	***3,571.4***	***1,108.5***	***799.2***	***5,479.3***
Personal income tax	848.8	417.9	176.4	1,442.9
Corporate income tax	922.2	184.8	77.9	1,185
Net taxes on products	1,515.8	377	381.8	2,274.6
Indirect taxes on factors of production	284.8	128.8	163.1	576.8
Total municipal/regional district taxes	***569.6***	***258.5***	***334***	***1,162.1***
Municipal sales tax	8.3	4.5	12.5	25.4
Property, business, and other municipal taxes	561.3	254	321.5	1,136.9
TOTAL	**7,880.6**	**2,935.6**	**2,027.8**	**12,844.3**

a. Estimates reflect revenues from direct, indirect, and induced economic impacts to municipalities, Metro Vancouver, and the rest of B.C. as a result of expenditures from off-terminal activities during operation.
b. Vertical column and horizontal row results may not sum to total due to rounding.

In addition to government revenues generated from economic impacts to Metro Vancouver and the rest of B.C. from off-terminal activities during operation, approximately $3.4 billion in direct revenue, $296 million in indirect and, $501 million in induced government revenues (for a total of $4.2 billion) would be generated as a result of direct, indirect, and induced economic impacts to the rest of Canada from off-terminal expenditures during operation.

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