PORT METRO VANCOUVER (PMV)

Preliminary Container Traffic Projections for Port Metro Vancouver: 2011 to 2030

Container Capacity Improvement Program (CCIP) Project Definition Report (PDR) Phase - Executive Summary

09409

09409-01-GE-REP-90006-500

27-May-11

WorleyParsons Canada
400 - 233 West 1st Street
North Vancouver, BC
V7M 1B3 Canada
Phone: +1 604 985 6488
Facsimile: +1 604 985 2581
www.worleyparsons.com

WorleyParsons
resources & energy

PORT METRO VANCOUVER (PMV)
PRELIMINARY CONTAINER TRAFFIC PROJECTIONS FOR PORT METRO VANCOUVER: 2011 TO 2030
CONTAINER CAPACITY IMPROVEMENT PROGRAM (CCIP) PROJECT DEFINITION REPORT (PDR) PHASE - EXECUTIVE SUMMARY

PROJECT 09409 - PRELIMINARY CONTAINER TRAFFIC PROJECTIONS FOR PORT METRO VANCOUVER: 2011 TO 2030

FILE LOC.: NORTH VANCOUVER, BC

REV	DESCRIPTION	ORIG	REVIEW	WORLEY-PARSONS APPROVAL	DATE	CLIENT APPROVAL	DATE
0	Issued for review	T. Smyth	J. McKinnell	W. Major	27-May-11		1 Jun 11

PORT METRO VANCOUVER (PMV)
PRELIMINARY CONTAINER TRAFFIC PROJECTIONS FOR PORT METRO VANCOUVER: 2011 TO 2030
CONTAINER CAPACITY IMPROVEMENT PROGRAM (CCIP) PROJECT DEFINITION REPORT (PDR) PHASE - EXECUTIVE SUMMARY

Disclaimer

This Document presents the conceptual work of WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc. performed to recognized principles and practices appropriate for conceptual work and the terms of reference provided by the WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc. contractual Customer, Port Metro Vancouver (the "Customer"). This Document may not be relied upon for detailed implementation or any other purpose not specifically identified within this Document. This Document is confidential and prepared solely for the use of the Customer. The contents of this Document may not be relied upon by any party other than the Customer, and neither WorleyParsons Canada Services Ltd. or Seaport Consultants Canada Inc. its subconsultants nor their respective employees assume any liability for any reason, including, but not limited to, negligence, to any other party for any information or representation herein. The extent of any warranty or guarantee of this Document or the information contained therein in favour of the Customer is limited to the warranty or guarantee, if any, contained in the contract between the Customer and WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc.

The projections of WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc.contained in this report are contingent upon factors over which WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc. have no control and the projections are by their nature uncertain. WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc. provide no warranties that actual events will not vary from the projections of WorleyParsons Canada Services Ltd. and Seaport Consultants Canada Inc.

1. EXECUTIVE SUMMARY

This report provides preliminary reviews and projections of Port Metro Vancouver (PMV) container traffic as part of the Container Capacity Improvement Program (CCIP). It is based on the data available as of early 2011 and it utilizes components of a number of past traffic projections: one developed for Vancouver Port Authority (VPA) in 2004 and several for ports around the world in 2009 and 2010. It is a preliminary review produced over a two-week period and intended primarily for the internal use of WorleyParsons Canada Services Ltd. (WorleyParsons) and Port Metro Vancouver. It was also conducted at a time of considerable instability in which the long-term outlook for the world economy and that of Canada is far from clear. This Executive Summary provides a broad overview of the work conducted and the results.

The projections contained in this report are contingent upon factors over which WorleyParsons and Seaport Consultants Canada Inc. (Seaport) have no control and the projections are by their nature uncertain. WorleyParsons and Seaport provide no warranties that actual events will not vary from these projections.

1.1 Summary of Work

World container traffic has grown rapidly for several decades to reach a level of approximately 525 million twenty-foot equivalent container units (TEU) in 2010. The container volumes of the continental USA and Canada have increased at more modest rates to reach a peak of about 46 million TEU in 2007 followed by a decline to a trough of 38 million TEU in 2009. While West Coast USA and Canada traffic increased considerably in 2010, the total container traffic of these countries in 2010 will likely prove to be below the 2007 peak when the data becomes available later in 2011. In the case of Canada, its container traffic reached about 4.8 million TEU in 2010, by a tiny margin a new peak. Much of the growth was in Western Canada with total traffic reaching about 2.9 million TEU.

Table A summarizes growth rates to provide a concise overview of patterns in the development of the container trade since 1985. The tabulation ranges from the most general, the world, to PMV. Of note in the table, world traffic has grown quite consistently at some 10% a year while growth in Canada and the USA has typically been between 5% and 7% a year. The container traffic of West Coast Canada and of PMV has grown more rapidly but with considerable volatility. The growth has been such that the West Coast ports of Prince Rupert and PMV have taken an increasing share of the total Canadian market since 1985.

PORT METRO VANCOUVER (PMV)
PRELIMINARY CONTAINER TRAFFIC PROJECTIONS FOR PORT METRO VANCOUVER: 2011 TO 2030
CONTAINER CAPACITY IMPROVEMENT PROGRAM (CCIP) PROJECT DEFINITION REPORT (PDR) PHASE - EXECUTIVE SUMMARY

Table A Container Traffic Annual Growth Rates (%/a)

Period	World	USA and Canada	USA	Canada			PMV
				West Coast	East Coast	Total	
1985 - 1990	10.7	5.8	5.6	16.6	5.0	7.4	16.6
1990 - 1995	10.7	6.4	6.7	6.3	1.7	3.0	6.3
1995 - 2000	11.0	7.3	6.9	18.7	7.1	11.1	18.7
2000 - 2005	10.6	7.3	7.3	11.7	3.3	7.1	11.7
2005 - 2010	N/A	N/A	N/A	6.0	-0.9	2.8	3.3
1985 - 2010	N/A	N/A	N/A	11.7	3.2	6.2	11.2
2005 - 2009	4.0	-2.7	-3.1	3.1	-3.5	0.1	0.1
1985 - 2009	9.6	5.0	4.9	11.5	2.9	5.9	10.9

Regarding PMV:

- In 2010 it exceeded by a small margin its previous peak in 2007 to reach about 2.5 million TEU.
- The overall container activity level of the port is driven by the volume of laden inbound containers.
- The majority of the imports and exports of the port are in trades with Asia.
- Most of the growth in containerized imports has come from growth in the overall tonnage of cargo, and many import groups are 100% containerized.
- Much of the growth in containerized exports has come from increasing degrees of containerization with quite modest growth in overall export tonnage.
- Approximately 60% of laden import containers are destined directly to elsewhere in Canada and approximately 10% to the United States, virtually all by rail. Container traffic with bill of lading destinations of British Columbia makes up only 30% of the port's inbound containers, and a portion of these containers are transloaded in Metro Vancouver into vans or domestic containers for transport to ultimate destinations outside British Columbia, some of which is by rail.
- The opposite is true of exports: about 70% of containerized exports originate in British Columbia, including cargoes from elsewhere in Canada that are stuffed into containers in Metro Vancouver.

A variety of approaches and data were considered regarding the container traffic projections for PMV. A top-down approach was chosen from an evaluation of historical data and the relationships between container traffic and economic variables. In summary, the approach comprises:

- Considering that the main market for PMV is that of Canada and projecting PMV traffic as a share of this market.
- Developing projections for total Canadian container traffic from growth parameters that include Canadian gross domestic product (GDP) and the relationships between container traffic growth and GDP growth observed in the Canadian data between 1985 and 2010 expressed as a TEU growth / GDP growth multiplier.
- Estimating the share of PMV in the total Canadian market over 1985 to 2010 and projecting market shares into the future. While the market share has grown quite consistently for 25 years, the projection involves increases in market shares at declining rates over time. Two approaches were taken:
  - A direct approach that utilizes the share of PMV in the Canadian market.
  - An approach that projects the West Coast Canada container traffic as a share of the Canadian market, makes assumptions about Port of Prince Rupert container volumes and projects PMV container traffic as the residual.

In reviewing shares of the Canadian market, it became evident that the share of PMV alone has fallen in recent years while the overall West Coast share has followed its long-term upward trend. This indicates that the Port of Prince Rupert has captured a share of PMV's traditional market in Canada.

Table B summarizes three scenarios for the projection of Canadian container traffic:

- Base Case:
  - 2010 - 2015, GDP growth of 2.5% a year (consistent with historical growth and recent projections) and a TEU growth / GDP growth multiplier of 2.5 (consistent with long-term averages).
  - 2015 - 2030, GDP growth of 2.2% a year (lower because of declining productivity) and a declining TEU growth / GDP growth multiplier to reflect a levelling off of globalization and a modest fall in consumption growth.
- Low Case:
  - 2010 - 2015, GDP growth of 2.3% a year (lower end of recent projections) and a TEU growth / GDP growth multiplier of 2.2 (lower range of 5-year averages since 1985).

- 2015 - 2030, GDP growth of 2.0% a year for 2015 to 2020 and 1.8% a year for subsequent years (stagnation due to demographic reasons) and a lower TEU growth / GDP growth multiplier that remains within the lowest 5-year averages since 1985.

- High Case:
  - 2010 - 2015, GDP growth of 2.7% a year (slightly above most recent projections) and a TEU growth / GDP growth multiplier of 2.8 (equal to the highest 5-year value since 1985).
  - 2015 - 2030, GDP growth of 2.5% a year for 2015 to 2020 and 2.3% a year for subsequent years (slightly higher economic growth due to continuation of the resource cycle) and slightly higher TEU growth / GDP growth multipliers than the base case up to 2020.

Table B Growth Parameters for Canada Traffic Projection

Case and Period		Components of Traffic Growth		
From	To	GDP Growth (%/a)	TEU / GDP Multiplier	TEU Growth (%/a)
Base Case				
2010	2015	2.5	2.5	6.0
2015	2020	2.2	2.2	4.0
2020	2025	2.2	2.0	4.0
Beyond	2025	2.2	1.5	3.0
Low Case				
2010	2015	2.3	2.2	5.0
2015	2020	2.0	2.1	4.0
2020	2025	1.8	2.0	3.0
Beyond	2025	1.8	1.5	2.0
High Case				
2010	2015	2.7	2.8	7.0
2015	2020	2.5	2.5	6.0
2020	2030	2.3	2.0	4.0
Beyond	2025	2.3	1.5	3.0

Table C summarizes the resulting projections for Canada.

Table C Projections of Canadian Container Traffic 2011 to 2030

Year	Actual	Projected		
		Low Case	Base Case	High Case
Volume (Million TEU)				
1985	1.05			
1990	1.50			
1995	1.74			
2000	2.95			
2005	4.16			
2010	4.79	4.79	4.79	4.79
2011		5.03	5.08	5.13
2012		5.28	5.38	5.48
2013		5.55	5.71	5.87
2014		5.82	6.05	6.28
2015		6.11	6.41	6.72
2016		6.36	6.67	7.12
2017		6.61	6.93	7.55
2018		6.88	7.21	8.00
2019		7.15	7.50	8.48
2020		7.44	7.80	8.99
2025		8.62	9.49	10.94
2030		9.52	11.00	12.68
Growth Rates (%/a)				
1985 - 1990	7.4			
1990 - 1995	3.0			
1995 - 2000	11.1			
2000 - 2005	7.1			
2005 - 2010	2.8			
2010 - 2015		5.0	6.0	7.0

Year	Actual	Projected		
		Low Case	Base Case	High Case
2015 - 2020		4.0	4.0	6.0
2020 - 2025		3.0	4.0	4.0
2025 - 2030		2.0	3.0	3.0
2010 - 2030		3.5	4.2	5.0

Two projections were developed for PMV: one based on the PMV share of the Canadian market and the other based on the West Coast share of the Canadian market and assumptions about Port of Prince Rupert traffic.

In the direct approach to PMV container traffic projections, the principal assumptions are:

- Base Case for PMV:
  - The base case projection for Canada.
  - A PMV share of the Canadian market of 60% by 2030, up from 52% in 2010. The market shares were projected to follow a logarithmic pattern with declining rates of increase year by year.
- Low Case for PMV:
  - The low case projection for Canada.
  - A PMV share of the Canadian market of 58% by 2030.
- High Case for PMV:
  - The high case projection for Canada.
  - A PMV share of the Canadian market of 62% by 2030.

Table D summarizes the direct traffic projections for PMV for 2011 to 2030. In each case, the historic traffic volumes are shown for 1985 to 2010 and growth rates are shown for both the historic data and the three projections. In the base case, container traffic is projected to reach 4.4 million TEU by 2020 with a low case - high case range of 3.4 to 4.8 million TEU. By 2030, the base case is 6.6 million TEU and the range 5.5 to 7.9 million TEU. The growth rates between 2010 and 2030 are about 5% a year for the base case, 4% a year for the low case, and 6% a year for the high case.

Table D Direct Projections of PMV Traffic 2011 to 2030

Item and Year	Actual	Projected		
		Low Case	Base Case	High Case
Volume (Million TEU)				
1985	0.18			
1990	0.38			
1995	0.52			
2000	1.23			
2005	2.14			
2010	2.51	2.51	2.51	2.51
2011		2.66	2.69	2.72
2012		2.81	2.88	2.94
2013		2.97	3.08	3.18
2014		3.14	3.29	3.44
2015		3.32	3.51	3.72
2016		3.47	3.68	3.98
2017		3.63	3.86	4.25
2018		3.80	4.04	4.55
2019		3.97	4.23	4.86
2020		4.15	4.43	5.20
2025		4.92	5.55	6.56
2030		5.53	6.61	7.87
Growth Rates (%/a)				
1985 - 1990	16.6			
1990 - 1995	6.3			
1995 - 2000	18.7			
2000 - 2005	11.7			
2005 - 2010	3.3			
2010 - 2015		5.7	6.9	8.1
2015 - 2020		4.6	4.7	6.9

PORT METRO VANCOUVER (PMV)
PRELIMINARY CONTAINER TRAFFIC PROJECTIONS FOR PORT METRO VANCOUVER: 2011 TO 2030
CONTAINER CAPACITY IMPROVEMENT PROGRAM (CCIP) PROJECT DEFINITION REPORT (PDR) PHASE - EXECUTIVE SUMMARY

Item and Year	Actual	Projected		
		Low Case	Base Case	High Case
2020 - 2025		3.4	4.6	4.8
2025 - 2030		2.4	3.5	3.7
2010 - 2030		4.0	4.9	5.9

Three scenarios were developed for the West Coast approach to PMV container traffic projections. The following were assumed for the Port of Prince Rupert for all scenarios:

- Acquisition of a third container service by mid-2011 that brings total traffic to 400,000 TEU in 2011 (traffic in 2010 was 343,000 TEU but it has declined considerably in most months since its July 2010 peak).
- Traffic reaches 500,000 TEU in 2012 and grows in line with West Coast traffic up to a capacity limit of 700,000 TEU and remains at this level until the Fairview Container Terminal is expanded.
- At 600,000 TEU, Prince Rupert Port Authority (PRPA) expands Fairview over 3 years to a two-berth terminal with a capacity of 2 million TEU a year.
- Capture of a new container service every 3 years that adds an increment of 150,000 TEU of traffic; traffic otherwise grows in line with West Coast traffic.

The following parameters were used for the scenarios.

- Base Case:
  - The base case projection for Canada.
  - A West Coast share of the Canadian market of 68% by 2030, up from 60% in 2010. The market shares again were projected to follow a logarithmic pattern with declining rates of increase.
- Low Case:
  - The low case projection for Canada.
  - A West Coast share of the Canadian market of 66% by 2030.
- High Case:
  - The high case projection for Canada.
  - A West Coast share of the Canadian market of 70% by 2030.

Table E summarizes the projections for the West Coast and PMV.

Table E Projections of PMV Container Traffic via West Coast 2011 to 2030

Item and Year	West Coast				PMV			
	Actual	Projected			Actual	Projected		
		Low Case	Base Case	High Case		Low Case	Base Case	High Case
Volume (Million TEU)								
1985	0.18				0.18			
1990	0.38				0.38			
1995	0.52				0.52			
2000	1.23				1.23			
2005	2.14				2.14			
2010	2.86	2.86	2.86	2.86	2.51	2.51	2.51	2.51
2011		3.02	3.06	3.09		2.62	2.66	2.69
2012		3.19	3.27	3.34		2.69	2.77	2.84
2013		3.38	3.49	3.61		2.85	2.96	3.07
2014		3.57	3.73	3.90		3.01	3.16	3.31
2015		3.77	3.98	4.21		3.18	3.37	3.58
2016		3.94	4.17	4.50		3.32	3.47	3.82
2017		4.12	4.37	4.81		3.47	3.67	4.11
2018		4.31	4.57	5.14		3.63	3.87	4.29
2019		4.50	4.79	5.49		3.80	3.94	4.58
2020		4.70	5.01	5.86		3.85	4.12	4.89
2025		5.57	6.27	7.39		4.43	4.94	5.95
2030		6.25	7.45	8.84		4.72	5.76	6.92
Growth Rates (%/a)								
1985 - 1990	16.6				16.6			
1990 - 1995	6.3				6.3			
1995 - 2000	18.7				18.7			
2000 - 2005	11.7				11.7			

Item and Year	West Coast				PMV			
	Actual	Projected			Actual	Projected		
		Low Case	Base Case	High Case		Low Case	Base Case	High Case
2005 - 2010	6.0				3.3			
2010 - 2015		5.7	6.9	8.0		4.8	6.0	7.3
2015 - 2020		4.5	4.7	6.9		3.9	4.1	6.5
2020 - 2025		3.4	4.6	4.7		2.8	3.7	4.0
2025 - 2030		2.4	3.5	3.6		1.3	3.1	3.1
2010 - 2030		4.0	4.9	5.8		3.2	4.2	5.2

Table F compares the two projections for PMV. In general, the projections that take into consideration the overall West Coast traffic and assumptions about the Port of Prince Rupert result in container traffic projections for PMV in 2030 that are about 1 million TEU lower than the direct approach and growth rates that are just under 1% a year lower. The projection range of the two approaches is smaller for 2020: between 4.1 and 4.4 million TEU a year in the base cases.

Table F Comparison of Projections for PMV 2011 to 2030

Item and Year	Low Case		Base Case		High Case	
	Direct	West Coast	Direct	West Coast	Direct	West Coast
Volume (Million TEU)						
2010	2.51	2.51	2.51	2.51	2.51	2.51
2011	2.66	2.62	2.69	2.66	2.72	2.69
2012	2.81	2.69	2.88	2.77	2.94	2.84
2013	2.97	2.85	3.08	2.96	3.18	3.07
2014	3.14	3.01	3.29	3.16	3.44	3.31
2015	3.32	3.18	3.51	3.37	3.72	3.58
2016	3.47	3.32	3.68	3.47	3.98	3.82
2017	3.63	3.47	3.86	3.67	4.25	4.11
2018	3.80	3.63	4.04	3.87	4.55	4.29
2019	3.97	3.80	4.23	3.94	4.86	4.58
2020	4.15	3.85	4.43	4.12	5.20	4.89
2025	4.92	4.43	5.55	4.94	6.56	5.95

Item and Year	Low Case		Base Case		High Case	
2030	5.53	4.72	6.61	5.76	7.87	6.92
Growth Rates (%/a)						
2010 - 2015	5.7	4.8	6.9	6.0	8.1	7.3
2015 - 2020	4.6	3.9	4.7	4.1	6.9	6.5
2020 - 2025	3.4	2.8	4.6	3.7	4.8	4.0
2025 - 2030	2.4	1.3	3.5	3.1	3.7	3.1
2010 - 2030	4.0	3.2	4.9	4.2	5.9	5.2

Uncertainties and sensitivity analyses include:

- We are living in rather turbulent times that could have many effects on trade and container traffic growth. These include the ongoing aftermath of the financial crisis and high energy prices.
- The Port of Prince Rupert and assumptions about its market.
  - If PRPA does not expand the Fairview container terminal and its capacity is 700,000 TEU a year, the projections of the two approaches of this study for PMV (direct and West Coast) are very close to each other
  - The ability of Prince Rupert to serve the inland Canadian market requires further examination from the point of views of container shipping lines and Canadian importers and exporters
- Rapid growth in commodity exports from Canada. Most of the growth in containerized commodity exports from PMV over the last 15 years has resulted from increasing degrees of containerization rather than growth in total commodity exports. In the forest products sector, this has resulted in a major decline in break-bulk exports and several highly underutilized break-bulk shipping terminals. The issue is: What happens at PMV if there is a major shift of western Canada commodity exports from the US market to Asia (primarily China)? This does not require new productive capacity, just a trade shift leading to rapid growth in export container volumes through PMV. Some cargoes may move back from containerization to bulk and break-bulk modes, partially alleviating pressure on export container capacity, but the net effect could be to change the balance of the container trade so that once again export cargoes drive overall container activity in PMV.
- The possibility of increasing Asian trade via the Suez Canal and Europe in the more distant future.

1.2 Conclusions

The study reached the following conclusions:

a) PMV container traffic growth has historically been high by the standards of Canada and the West Coast of North America and will probably continue to grow more rapidly than that of Canada because of the dominance in Canada of the trade with East and Southeast Asia.

b) The principal market of PMV is that of Canada, and it is the size of the Canadian market and PMV's share of it that primarily determines the container traffic volumes of the port.

c) The two projection approaches of the study resulted in:

   i) A base case traffic volume of 4.1 to 4.4 million TEU by 2020 and 5.8 to 6.6 million TEU by 2030 (growth rates to 2030 of 4% to 5% a year).

   ii) A low case traffic volume of 3.9 to 4.2 million TEU by 2020 and 4.7 to 5.5 million TEU by 2030 (growth rates to 2030 of 3% to 4% a year).

   iii) A high case traffic volume of 4.9 to 5.2 million TEU by 2020 and 6.9 to 7.9 million TEU by 2030 (growth rates to 2030 of 5% to 6% a year).

d) The Port of Prince Rupert has taken a share of the Vancouver market in Canada and has the potential to take an increasing share with its existing Fairview Container Terminal, expansions of the Fairview Container Terminal and possibly development of new container terminals in the port.

e) The ability of the Port of Prince Rupert to serve the Canadian market requires more detailed study to be definitive.