

Roberts Bank Terminal 2 Existing and Future Vessel Traffic Projections



**Salish Sea Workshop:
Vessel Oil Spill Risk Assessment and Management
Bellingham, Washington
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- Projections of vessel traffic are notoriously uncertain
- Personal experience with the projection of vessel traffic in the Strait of Juan de Fuca in the 90's for the period to 2025

Completely missed the explosion in size of container ships, and this is by the leading US container ship design firm responsible for the first post-panamax container ship design

Roberts Bank Terminal 2



Projected Vessel Traffic at Existing Roberts Bank Terminals

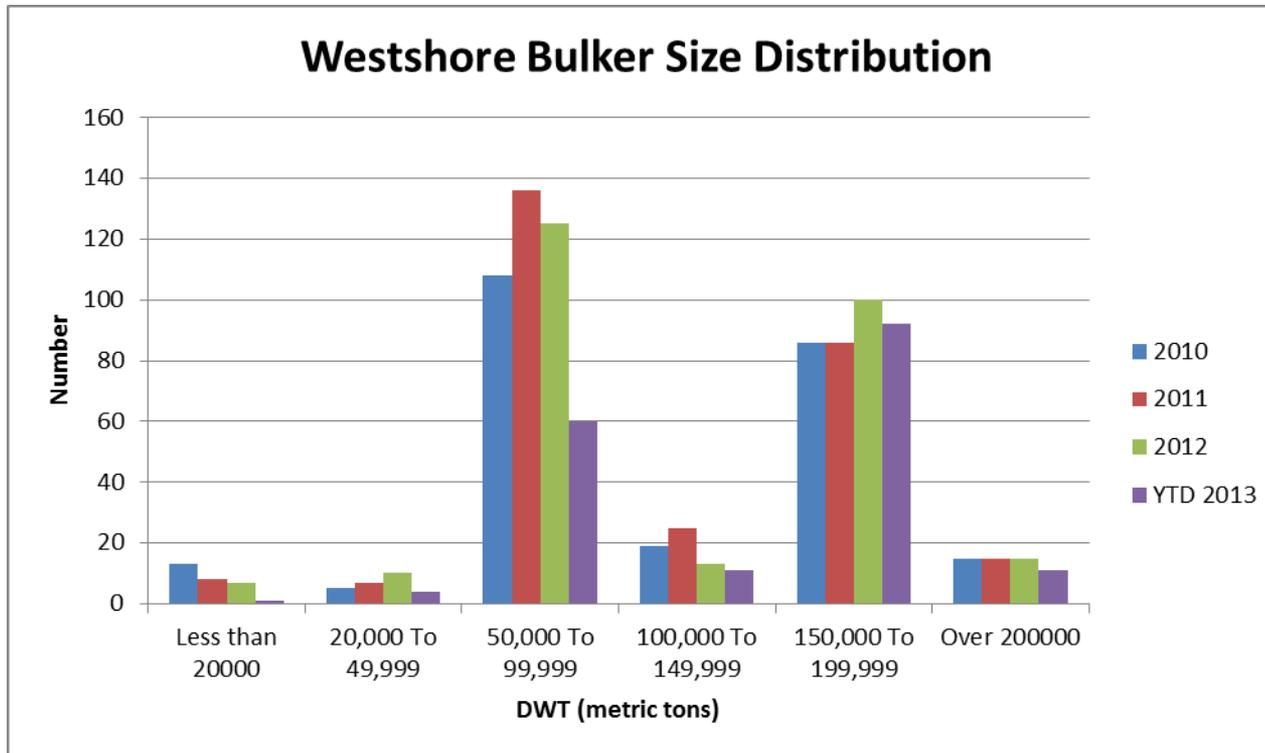


Annual Vessel Projections for Deltaport and Westshore Terminals

Case/Year	Prediction	Cargo Volume (Million)		Annual Ship Calls			Annual Ship Movements		
		Container	Coal	Container	Coal	Total	Container	Coal	Total
Year		TEU	Tonnes						
2010	Actual	1.54	24.7	245	246	491	594	492	1,086
2014	Prediction	1.74	25.0	260	250	510	624	500	1,124
2015	Prediction	2.02	26.0	260	260	520	624	520	1,144
2016	Prediction	2.28	27.0	312	270	582	728	540	1,268
2017	Prediction	2.55	28.0	364	280	644	832	560	1,392
2018	Prediction	2.85	29.0	364	290	654	832	580	1,412
2019	Prediction	3.00	30.0	364	300	664	832	600	1,432
2020	Prediction	2.40	31.0	312	310	622	728	620	1,348
2021	Prediction	2.40	32.0	312	320	632	728	640	1,368
2022	Prediction	2.40	33.0	312	330	642	728	660	1,388
2023	Prediction	2.40	34.0	312	340	652	728	680	1,408
2024	Prediction	2.40	35.0	312	350	662	728	700	1,428
2025	Prediction	2.40	35.0	260	350	610	624	700	1,324
2026	Prediction	2.40	35.0	260	350	610	624	700	1,324
2027	Prediction	2.40	35.0	260	350	610	624	700	1,324
2028	Prediction	2.40	35.0	260	350	610	624	700	1,324
2029	Prediction	2.40	35.0	260	350	610	624	700	1,324
2030	Prediction	2.40	35.0	260	350	610	624	700	1,324

The numbers for coal ships may be too high as it doesn't account for actual ship size growth experience at Westshore Terminals

Bulk Carrier Vessel Sizes



- Actual traffic included many Capesize vessels
- The double mode makeup of the population is expected to continue

Source: Westshore Terminals, personal communication
2013 data is through August

Other potential Port Metro Vancouver Projects



Project	Cargo Volume	Ship Type	Annual Ship Calls
Fraser Surrey Docks Direct Coal Transfer - Ships from Texada Island	8.0 Mtonnes	bulker	80
Richardson Grain Elevator (terminal expansion and ship capacity increases)	5.0 Mtonnes	bulker	12
Neptune Terminals Coal Expansion	6.0 Mtonnes	bulker	60

In addition there are about 100 additional chemical carriers projected by 2030.

PMV has recently announced the planned expansion of the Centerm facility from 900,000 TEU to 1.8 MTEU

Kinder Morgan TMEP – about 350 additional tankers per year

These would be perceived as tankers by the Washington State VETA system

Potential Roberts Bank Terminal 2 Traffic



Annual Vessel Projections for RBT2			
Year	Prediction	Million TEU	Annual Ship Calls
2025 (estimated)	Prediction	2.40	260

260 arrivals considered an upper bound on the numbers by HEC

Existing PMV Traffic

Foreign Vessel Traffic

Vessel Type		2011	2012	2013	% Change
Bulk Carrier	Vessel Arrivals	1,487	1,433	1,455	2%
	GRT*	52,022,467	51,135,729	55,370,980	8%
Container	Vessel Arrivals	817	835	830	-1%
	GRT	49,155,509	53,146,386	53,843,908	1%
Ro-Ro	Vessel Arrivals	261	303	292	-4%
	GRT	12,006,123	14,388,523	14,167,975	-2%
Tanker	Vessel Arrivals	206	213	231	8%
	GRT	4,617,298	5,499,689	5,722,651	4%
Passenger	Vessel Arrivals	200	207	241	16%
	GRT	14,454,571	14,769,324	17,480,324	18%
Miscellaneous	Vessel Arrivals	53	89	117	31%
	GRT	269,993	227,056	518,620	128%
GRAND TOTAL	Vessel Arrivals	3,024	3,080	3,166	3%
	GRT	132,525,961	139,166,707	147,104,458	6%

* Gross Registered Tonnage in Metric Tonnes

Source: PMV Statistics Overview 2013

In addition, about 7300 ferry arrivals per year at Tsawwassen terminal (BC Ferries)

- Number of ship arrivals to Vancouver region is expect to increase due to new projects
- International shipping brings international standards requiring vigilance to maintain local high standards
- New ships / ship types / sizes lead to new problems
 - Examples
- Rare events – a single new event ccan change the picture
- Unforeseen events in current studies
 - Crude by rail
 - Collapse of oil prices