Port of Portland Terminal 6 Auto Cargo and Vessel Forecast

Report to:

Port of Portland

The Tioga Group, Inc.
Hackett Associates, LLC.

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I. Introduction

Background

International and domestic auto shipments on pure auto carriers, combination vessels, ferries, or barges can include:

- New or used vehicles being delivered to dealers or customers.
- Construction or service vehicles moving between job sites.
- Military shipments.
- Rental fleets being repositioned.
- Personally owned vehicles (POVs) being relocated in conjunction with personal or business moves.

The United States Department of Transportation indicates that the Port of Portland is among the top 25 seaports in the country in 2024, on the basis of cargo tonnage.[i] In addition, the statistics collected by the Pacific Maritime Association (PMA) shows that the Port of Portland in 2024 had the second highest autos and trucks cargo volume, following Port Hueneme in southern California and ahead of the Port of Tacoma, Washington.[ii] It is possible and likely that carriers servicing Portland, notably *Hyundai Glovis*, will in the future send larger auto carrier vessels to Portland as they become available.

The Tioga Group, Inc. (Tioga) and Hackett Associates, LLC, (Hackett) were asked to review the Port of Portland's auto import and export history and provide estimated long-term forecasts of Terminal 6 import volume, export volume, and roll on/roll off (ro-ro) auto carrier vessel calls for the period from 2025 through 2045. Besides seeking an updated forecast for internal Port of Portland planning and marketing purposes, the Port is planning to apply for state and federal support through competitive grant programs to improve ro-ro facilities.

The Port of Portland's request was not for short-term forecasts, and so specific year results may be imprecise in the current uncertain context. Instead, the request from the Port of Tioga/Hackett was for a long-term forecast with several alternative scenarios for auto import and export vehicle cargo that might be expected to pass through the Port of Portland over a twenty-year period.

Import and export autos have been a major factor in recent Portland cargo growth, and past high-level auto import forecasts may be out of date due to changing industry dynamics and shifting U.S. import demand. The Port of Portland 2020, we are due for an update or refresh on an autos volume forecast. The most recent Port of Portland auto forecast was completed prior to the COVID-19 pandemic period in 2020,[iii] and the Port has changed its mix of auto import customers and agreements since then. It should also be noted that the forecast for auto imports refers to vehicles processed through the port and not just those destined for or produced within the local area. The port serves as a major point of entry for vehicles arriving in the United States, with many imported vehicles transported by rail to various destinations nationwide.

The prior Port of Portland Marine Cargo forecast summarized developments in auto imports and exports among the Pacific coast ports:

[i] 2024 Port Performance Freight Statistics Program: Annual Report to Congress
[ii] Pacific Maritime Association - 2024 PMA Annual Report
[iii] Port of Portland Marine Cargo Forecast 2020

"... the share of U.S. auto imports from Canada and Mexico is larger than it was prior to the recession, while the share of imports from overseas is lower. U.S. waterborne imports of autos peaked at 4.5 million units per year in 2006 and 2007, but averaged 4.2 million units per year from 2015 through 2018."

As described in more detail below, this new forecast has been undertaken at a time of high uncertainty. In the macroeconomic environment, a resurgence in economic activity followed the COVID-19 pandemic and associated supply chain constraints, and the country has seen rising inflation. To contain the risk of continued inflation, the Federal Reserve Bank recently raised interest rates, making financing of capital goods such as motor vehicles more expensive for businesses and households. More recently, the United States federal government's announcement of proposed new tariffs on imported autos, imported auto parts, and imported steel and aluminum, and subsequent changes, postponements, and negotiations, have introduced exceptional volatility in the current import and export auto outlook. The United States Trade Representative (USTR) has also announced proposed port call fees on foreign-built car carrier vessels as, further complicating vehicle trade prospects.

Approach

Future Port of Portland auto import and exports volumes will be a product of:

- Trade growth in autos and other vehicles.
- Portland's market share of auto and vehicle trade volumes.

Four forecast scenarios were developed, all starting with a base year of actual auto import and export volumes at T6 B601 from the full calendar year 2024, and from Port vessel call records in FY 24-25 YTD. As tariffs, vessel fees, and their impacts are a moving target at present, Tioga took a conservative forecasting approach by developing:

- A Baseline import and export forecast based on underlying population and vehicle sales demand, while incorporating the likelihood of non-auto tariffs and economic downtown within the first five-year period, at existing Portland trade shares.
- A High Growth, optimistic forecast that reflects favorable events and trends, such as increased in-migration to the Port's economic hinterland, and lower tariffs and vessel fees than presently proposed.
- A High-High Growth forecast that also includes increased market share as the port recaptures auto imports and exports previously shifted to other ports.
- A Low Growth, pessimistic forecast that incorporates general tariffs, economic downturn, auto-specific tariffs, and vessel fees.

To complete this updated auto forecast for the Port of Portland, Tioga and Hackett have undertaken a thorough analysis, including:

- Forecasts of Oregon and hinterland population and economic growth that will drive import volumes.
- Searches of industry publications for relevant announcements of auto import trade shifts, import strategies, terminal expansions, etc.
- Perspectives of current T6 operator Auto Warehousing.

A key goal of this work has been to better understand:

- The markets and hinterlands presently served through Portland.

- How Portland's auto traffic fits within the overall West Coast context. Although no other recent forecasts for auto imports and exports at West Coast ports could be located, a report produced for the Washington Public Ports Association (WPPA) and the Washington Freight Mobility Strategic Investment Board (FMSIB) in 2024 was considered.
- Import and export industry trends and drivers.

II. Port of Portland T6 Auto Import and Exports

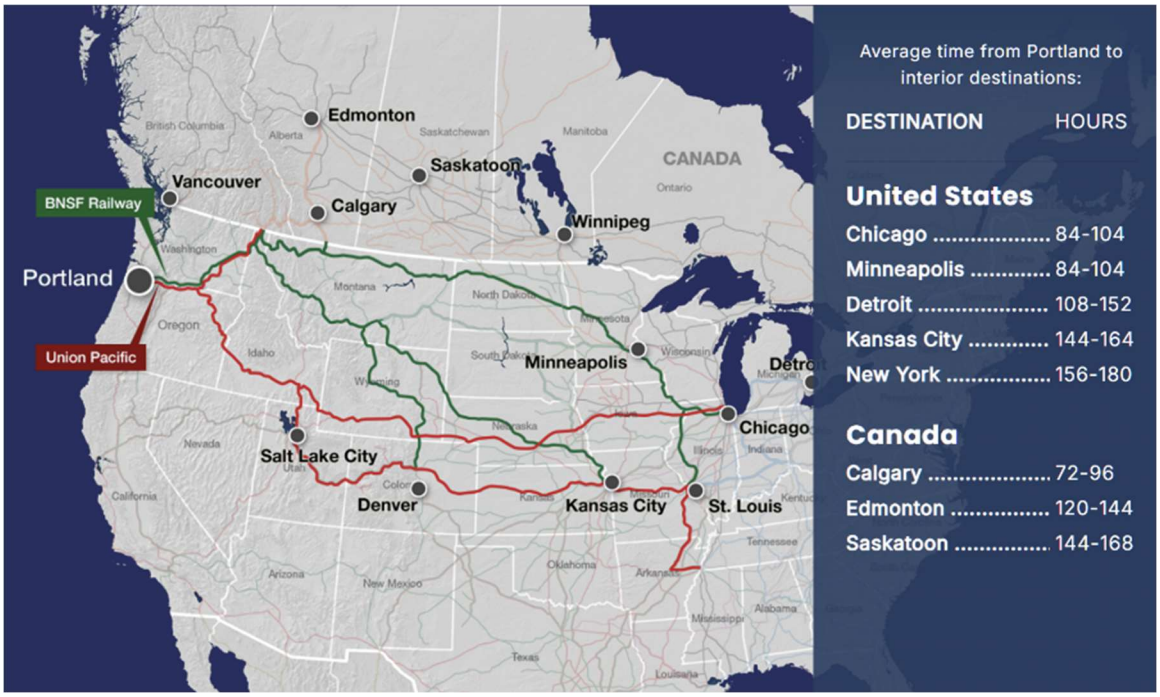
Context and Infrastructure

The Port of Portland is situated 105 miles inland from the Pacific Ocean via the Columbia River (Figure 1). The river has a depth of 55 feet for the first five miles and maintains a depth of 43 feet for the remainder. The Port of Portland is located north of the city and provides access to major interstate highways including the I-5 and I-84. The Port has an on-dock intermodal rail yard with connections to Class I railroads BNSF Railway and Union Pacific that facilitate the movement of cargo inland (Figure 2). The port serves a hinterland catchment area that includes the states of Oregon, Washington, and Idaho, although the Class I rail links provide access to the rest of the United States. Terminal 6 is a multi-use terminal that encompasses 419 acres. The terminal currently handles ro-ro auto, containers, and breakbulk cargoes.

Figure 1: Port of Portland Geographic Location

Source: Port of Portland

Figure 2: North American Rail Connections



Source: Port of Portland

The Port of Portland has two ro-ro marine terminal complexes:

- Terminal 6, a deepwater terminal on the Columbia River, comprising Berths 601 (Figure 3) and 607 (Figure 4), operated by Auto Warehousing Company (AWC), and handling multiple import and export vehicle brands.
- Terminal 4, near the confluence of the Columbia River and the lower Willamette River, operated by Toyota Logistics Services and handling Toyota vehicle brands.

For this analysis in support of the Port's planned 2025 USDOT MARAD PIDP grant application, the analysis was limited to Terminal 6, and focused on Berth 601, the location of the proposed project. The Terminal 6 auto facility provides direct on-dock links between ocean vessels, rail, and auto carrier trucks. Berth 601 encompasses 130 acres while Berth 607 encompasses 62 acres, and both have a 35-foot draft. Both are served by BNSF Railway and UP Railroad (Figure 3 and Figure 4).

Figure 3: Port of Portland Terminal 6 Berth 601

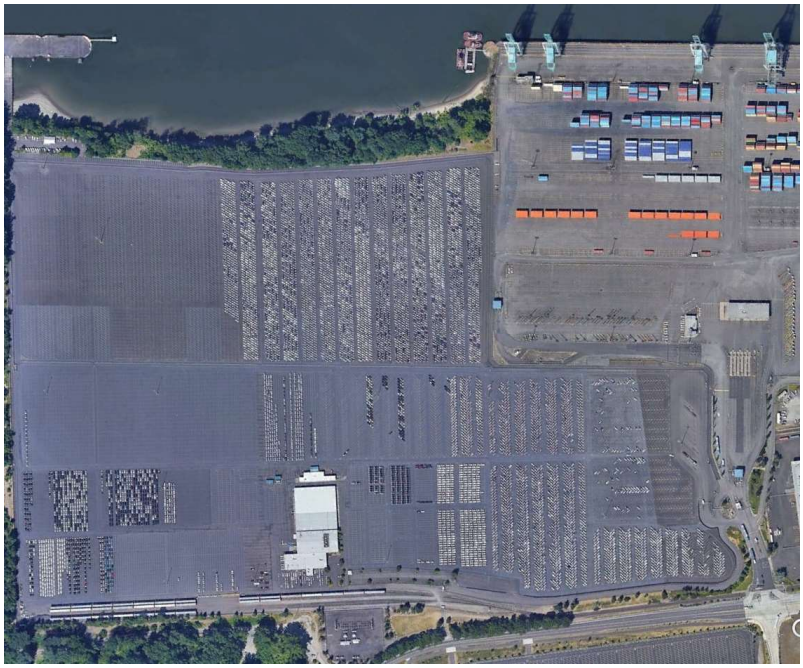
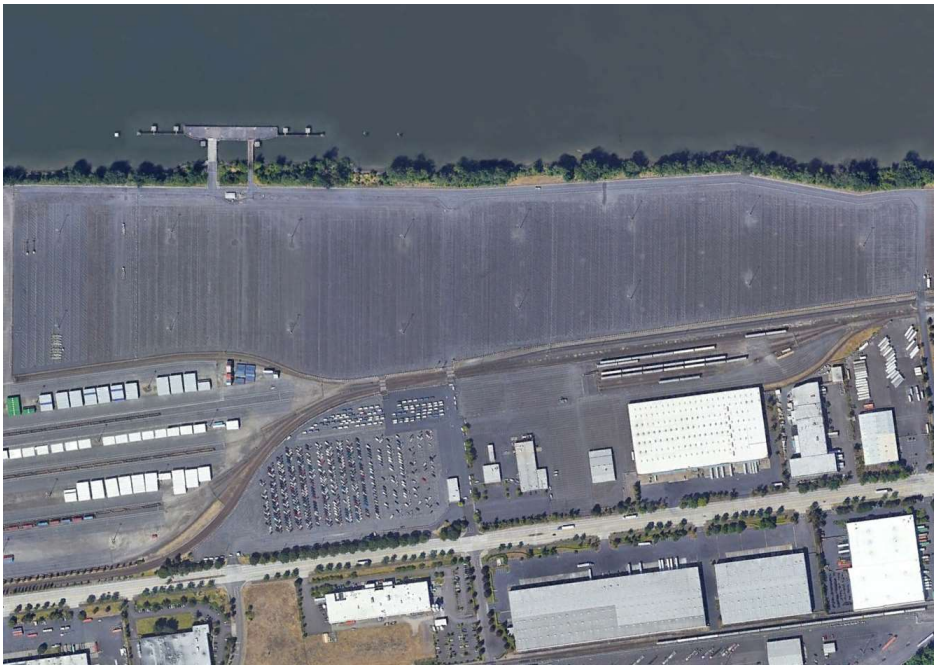


Figure 4: Port of Portland Terminal 6 Berth 607



As noted in a recent report:

> "Previously, B601 and B607 at the Port were leased to separate tenants. As of today, both berths are now leased to Auto Warehousing Company (AWC), a long-standing partner and cornerstone of Port's auto logistics network. For over 30 years, AWC has provided critical vehicle processing, storage, and distribution services for global automakers including Ford, Hyundai, and General Motors."

> "Initially focused on imports, most notably Hyundai, AWC has since expanded its operations to include exports of American-made vehicles. In 2016, the company partnered with the Port on a 18.9-acre staging yard in the Rivergate Industrial District, supported by a Connect Oregon grant. In 2023, AWC began handling GM auto imports at Terminal 6, facilitating the distribution of approximately 160,000 vehicles annually to inland US markets via BNSF and Union Pacific rail lines." [iv]

The planned ACES (Auto Cargo Expansion and Safety) project is part of a larger long-term program to increase auto imports and exports through T6 and specifically the Berth 601 auto facility. The program was first identified in the Port's 2010 Transportation Improvement Plan. As part of the program, in 2011 the Port applied for and was awarded a $2.24 million State of Oregon Connect Oregon IV grant for a capital project to expand the Berth 601 (B601) auto processing facility. That project met and exceeded expectations: the number of vehicles at T6 B601 grew from 47,000 in 2010 to 123,000 in 2014.

In 2015, the Port of Portland applied for and was awarded a second State of Oregon Connect Oregon grant. This second project constructed a 19-acre $6.7 million auto staging facility across the street from the Terminal 6 entrance in the Port of Portland's Rivergate Industrial District. The staging facility improved logistical efficiency and increase the capacity to export vehicles from the Port's Berth 601 auto import/export facility.

The State of Oregon Department of Transportation (ODOT) has been an important partner in development and expansion of facilities and throughput capacity on the land-side. The Port of Portland T6 marine terminal was one of the first on the Pacific Coast to have dedicated on-dock rail facilities connecting the marine terminal directly to Class I railroad networks.

As a result, the Port of Portland continues to be a very competitive facility for auto imports by providing time-saving direct rail service through the Columbia River rail corridor to midwestern rail hubs including Chicago, Kansas City, and Memphis. The result of this network node advantage is that inland destinations for auto imports to the Port of Portland have increased from about 75% to 80% of total Port of Portland auto imports. The remaining 20% of auto imports provide for the Pacific Northwest states, including Oregon, Washington, Idaho, and parts of Western Montana.

Figure 5 below shows the extent of the T6 cargo complex, including the B601 dedicated auto facility and the B607 multi-use cargo area that can serve auto movements.

[iv] Berth 601 / 607 Integration Memo, Port of Portland, July 2025.

Figure 5: T6 Cargo Complex

West Coast Auto Trade

The Port of Portland competes with multiple West Coast ports for vehicle imports and exports.

Imports

Imports account for most vehicle tonnage. As Table 1 shows, Portland is a major west coast import point. Most west coast auto ports saw reduced volume during the pandemic years, but Portland's slump was more drastic than most. Tacoma picked up a major volume increment in 2023 when Hyundai moved its import trade from Portland to Tacoma. Aberdeen/Grays Harbor lost the Stellantis cargo starting in 2020, and did not re-emerge as a coastal force until 2024.

Table 1: West Coast Import Tonnage

Metric Tons	IMPORT					
	2019	2020	2021	2022	2023	2024
Portland	**611,132**	**364,166**	**383,766**	**358,369**	**446,254**	**680,491**
San Diego	346,214	174,818	162,944	224,134	208,630	295,947
LA + LB	637,134	579,585	588,846	629,910	740,572	759,055
Port Hueneme	554,893	450,201	492,507	618,475	690,780	806,492
San Francisco	2,990	15,238	8,643	8,407	13,246	3,681
Oakland	104,636	124,845	127,915	147,179	181,677	66,873
Richmond	132,060	113,390	74,885	86,552	110,669	116,466
Benicia	256,823	231,420	187,491	197,839	280,971	365,101
Vancouver	136,550	139,601	114,716	128,145	146,806	128,245
Aberdeen/Grays Harbor	56,840	9,601	-	-	5,926	62,331
Tacoma	294,439	240,581	249,766	307,040	520,199	560,932
Seattle	59	3	4	646	10	4,106
Total	**3,133,767**	**2,443,449**	**2,391,484**	**2,706,696**	**3,345,740**	**3,849,720**

The share shift between competing ports is apparent in Table 2. By 2024, Portland has regained most of it's pandemic-era share loss.

Table 2: West Coast Import Shares

Coastal Share	IMPORT					
	2019	2020	2021	2022	2023	2024
Portland	**20%**	**15%**	**16%**	**13%**	**13%**	**18%**
San Diego	11%	7%	7%	8%	6%	8%
LA + LB	20%	24%	25%	23%	22%	20%
Port Hueneme	18%	18%	21%	23%	21%	21%
San Francisco	0%	1%	0%	0%	0%	0%
Oakland	3%	5%	5%	5%	5%	2%
Richmond	4%	5%	3%	3%	3%	3%
Benicia	8%	9%	8%	7%	8%	9%
Vancouver	4%	6%	5%	5%	4%	3%
Aberdeen/Grays Harbor	2%	0%	0%	0%	0%	2%
Tacoma	9%	10%	10%	11%	16%	15%
Seattle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Exports

A comparison of Table 3 with Table 1 reveals how much smaller the export volumes are compared to the import flow. In 2019, San Francisco was the dominant auto export port due to the large volume of Teslas shipped from the company's Fremont plant. The Tesla volume declined after that peak, however, and Portland re-emerged as the major export location (Table 4). Aberdeen/Grays Harbor lost its export volume after 2019.

Table 3: West Coast Export Tonnage

Metric Tons	EXPORT					
	2019	2020	2021	2022	2023	2024
Portland	**116,093**	**64,612**	**64,291**	**58,234**	**51,282**	**30,055**
San Diego	39	796	185	-	-	-
LA + LB	12,673	8,877	8,597	8,452	5,885	4,063
Port Hueneme	30,367	25,059	20,688	32,412	11,673	6,294
San Francisco	260,932	197,660	119,850	44,569	18,285	14,979
Oakland	327	170	78	22	75	153
Richmond	-	-	-	-	-	-
Benicia	-	-	570	592	5	-
Vancouver	-	-	-	-	-	-
Aberdeen/Grays Harbor	24,900	21	-	-	-	-
Tacoma	1,933	1,025	1,267	1,909	4,175	3,934
Seattle	415	590	62	11	15	-
Total	**447,679**	**298,810**	**215,588**	**146,201**	**91,396**	**59,477**

Table 4: West Coast Export Shares

Coastal Share	EXPORT					
	2019	2020	2021	2022	2023	2024
Portland	**26%**	**22%**	**30%**	**40%**	**56%**	**51%**
San Diego	0%	0%	0%	0%	0%	0%
LA + LB	3%	3%	4%	6%	6%	7%
Port Hueneme	7%	8%	10%	22%	13%	11%
San Francisco	58%	66%	56%	30%	20%	25%
Oakland	0%	0%	0%	0%	0%	0%
Richmond	0%	0%	0%	0%	0%	0%
Benicia	0%	0%	0%	0%	0%	0%
Vancouver	0%	0%	0%	0%	0%	0%
Aberdeen/Grays Harbor	6%	0%	0%	0%	0%	0%
Tacoma	0%	0%	1%	1%	5%	7%
Seattle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Total Volumes and Shares

Because the import volumes dominate, the total charts (Table 5, Table 6) show the same overall pattern as the import charts.

Table 5: Total West Coast Auto Tonnage

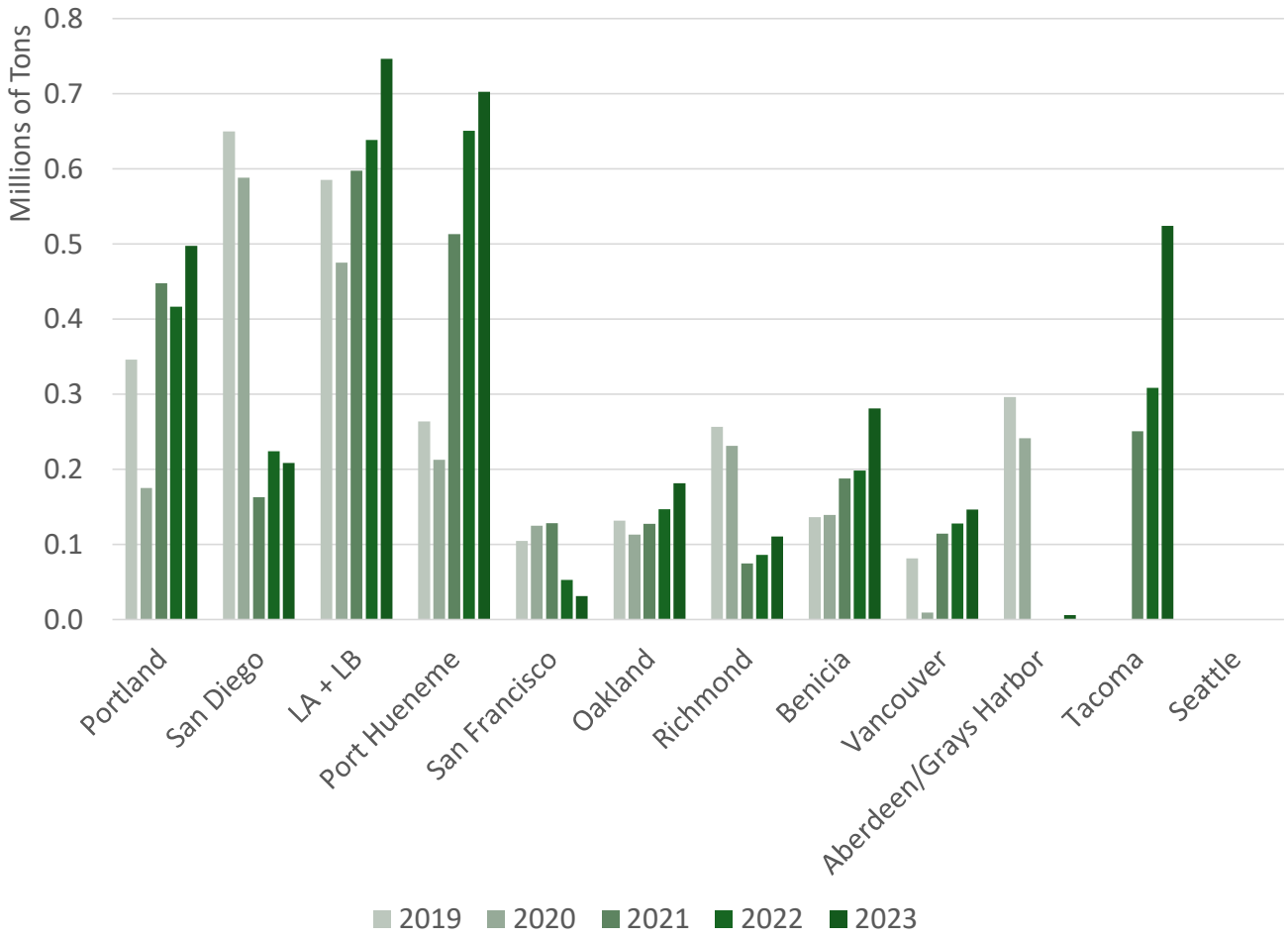
Metric Tons	Total					
	2019	2020	2021	2022	2023	2024
Portland	**727,224**	**428,779**	**448,057**	**416,602**	**497,536**	**710,545**
San Diego	346,254	175,614	163,130	224,134	208,630	295,947
LA + LB	649,807	588,462	597,442	638,362	746,457	763,118
Port Hueneme	585,259	475,260	513,195	650,888	702,453	812,787
San Francisco	263,922	212,898	128,493	52,976	31,531	18,660
Oakland	104,963	125,015	127,993	147,201	181,752	67,026
Richmond	132,060	113,390	74,885	86,552	110,669	116,466
Benicia	256,823	231,420	188,060	198,431	280,975	365,101
Vancouver	136,550	139,601	114,716	128,145	146,806	128,245
Aberdeen/Grays Harbor	81,740	9,622	-	-	5,926	62,331
Tacoma	296,371	241,606	251,033	308,949	524,374	564,865
Seattle	474	593	66	657	26	4,106
Total	**3,581,446**	**2,742,259**	**2,607,072**	**2,852,897**	**3,437,136**	**3,909,197**

Table 6: Total West Coast Auto Cargo Shares

Coastal Share	Total					
	2019	2020	2021	2022	2023	2024
Portland	**20%**	**16%**	**17%**	**15%**	**14%**	**18%**
San Diego	10%	6%	6%	8%	6%	8%
LA + LB	18%	21%	23%	22%	22%	20%
Port Hueneme	16%	17%	20%	23%	20%	21%
San Francisco	7%	8%	5%	2%	1%	0%
Oakland	3%	5%	5%	5%	5%	2%
Richmond	4%	4%	3%	3%	3%	3%
Benicia	7%	8%	7%	7%	8%	9%
Vancouver	4%	5%	4%	4%	4%	3%
Aberdeen/Grays Harbor	2%	0%	0%	0%	0%	2%
Tacoma	8%	9%	10%	11%	15%	14%
Seattle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 6 indicates that Portland, LA/LB, and Port Hueneme have been the largest West Coast ports, with San Francisco declining as Teslas moved elsewhere or were produced at foreign plants, and Tacoma rising on diversions from Portland.

Figure 6: Auto Cargo Shifts



The total domestic movements are small compared to the import and export volumes, but are more prominent at some ports:

- Seattle and Tacoma ferry and barge service terminals handle vehicle shipments to and from Alaska.
- Oakland, San Diego, and Long Beach handle domestic moves between Hawaii, Guam, and the mainland.

Discharges of imports and domestic movements account for over 90% of the total. Ordinarily, these import/discharge volumes dictate vessel sizes, vessel fleet composition, and service frequency. Exports and loaded domestic moves are accommodated on the same vessels and services in the reverse directions.

Portland's share of the overall West Coast markets has remained relatively stable in recent years (Figure 1). There are two main components in Portland's share.

Pacific Northwest share of the West Coast

With inland transportation costs being an important factor in delivered vehicle cost at destination, major importers tend to serve the three primary West Coast port regions and their associated inland hinterlands.

Port terminals in each region also transfer vehicles to and from rail cars to serve inland markets. The shares in Table 6 have remained relatively stable, with significant shifts likely attributable to changing importer rail service strategies.

The import/discharge shares in Table 4 vary more than the totals, with the Pacific Northwest gaining share in 2023-2024 at the expense of other regions. The Tioga/HA Bay Area Cargo Forecast of 2018 noted that the main Northern California ro-ro ports of Richmond and Benicia were approaching capacity and the shift to the Pacific Northwest may have been attributable to overflow rail diversions.

The Pacific Northwest lost export/loaded share. Domestic vehicles are primarily assembled in Midwest and Eastern states[v] and can be moved by rail to any of the West Coast ports with comparable economics. The loss of Pacific Northwest outbound share to Southern California is likely due to a shift in export rail strategy.

Portland's share of Pacific Northwest

Importers and exporters can and do periodically change ports and terminals within each port region. The importers in the region move different sales growth records, and different railroad relationships. Importers may also shift their import offerings and the location where a given model is assembled. All of these factors can lead to significant year-to-year volume and share shifts.

For example, there was a steep drop-off in ro-ro shipments through Aberdeen/Grays Harbor between 2020 and 2022. The change can be seen visually in Figure 6. This decline was apparently due to a shift of Stellantis shipments.

Imports

Table 7 and Table 8 show the import tonnage and share shifts between PNW auto ports. The striking changes are the downturn and recovery at Aberdeen/Grays Harbor, and the share shift from Portland to Tacoma.

Table 7: PNW Port Vehicle Import Tonnages

Metric Tons	IMPORT					
	2019	2020	2021	2022	2023	2024
Portland	**611,132**	**364,166**	**383,766**	**358,369**	**446,254**	**680,491**
Vancouver	136,550	139,601	114,716	128,145	146,806	128,245
Aberdeen/Grays Harbor	56,840	9,601	-	-	5,926	62,331
Tacoma	294,439	240,581	249,766	307,040	520,199	560,932
Seattle	59	3	4	646	10	4,106
Total	**1,099,018**	**753,952**	**748,253**	**794,200**	**1,119,195**	**1,436,104**

Table 8: Portland Share of PNW Imports

PNW Shares	IMPORT					
	2019	2020	2021	2022	2023	2024
Portland	**56%**	**48%**	**51%**	**45%**	**40%**	**47%**
Vancouver	12%	19%	15%	16%	13%	9%
Aberdeen/Grays Harbor	5%	1%	0%	0%	1%	4%
Tacoma	27%	32%	33%	39%	46%	39%
Seattle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

[v] Tesla being an exception.

Exports

The PNW exports are shown in Table 9 and Table 10. As noted above, Portland and Aberdeen/Grays Harbor export volumes declined and have not recovered.

Table 9: PNW Auto Export Tonnage

Metric Tons	EXPORT					
	2019	2020	2021	2022	2023	2024
Portland	**116,093**	**64,612**	**64,291**	**58,234**	**51,282**	**30,055**
Vancouver	-	-	-	-	-	-
Aberdeen/Grays Harbor	24,900	21	-	-	-	-
Tacoma	1,933	1,025	1,267	1,909	4,175	3,934
Seattle	415	590	62	11	15	-
Total	**143,341**	**66,248**	**65,620**	**60,153**	**55,473**	**33,988**

Table 10: PNW Port Export Shares

PNW Shares	EXPORT					
	2019	2020	2021	2022	2023	2024
Portland	**81%**	**98%**	**98%**	**97%**	**92%**	**88%**
Vancouver	0%	0%	0%	0%	0%	0%
Aberdeen/Grays Harbor	17%	0%	0%	0%	0%	0%
Tacoma	1%	2%	2%	3%	8%	12%
Seattle	0%	1%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Total

Overall (Table 11), PNW auto volumes dropped by about a third between 2019 as the pandemic set in, and recovered starting in 2023.

Table 11: PNW Total Volumes

Metric Tons	Total					
	2019	2020	2021	2022	2023	2024
Portland	**727,224**	**428,779**	**448,057**	**416,602**	**497,536**	**710,545**
Vancouver	136,550	139,601	114,716	128,145	146,806	128,245
Aberdeen/Grays Harbor	81,740	9,622	-	-	5,926	62,331
Tacoma	296,371	241,606	251,033	308,949	524,374	564,865
Seattle	474	593	66	657	26	4,106
Total	**1,242,359**	**820,201**	**813,873**	**854,353**	**1,174,668**	**1,470,092**

Portland's share declined (Table 12), largely due to the loss of export cargo (Table 9).

Table 12: PNW Overall Shares

PNW Shares	Total					
	2019	2020	2021	2022	2023	2024
Portland	**59%**	**52%**	**55%**	**49%**	**42%**	**48%**
Vancouver	11%	17%	14%	15%	12%	9%
Aberdeen/Grays Harbor	7%	1%	0%	0%	1%	4%
Tacoma	24%	29%	31%	36%	45%	38%
Seattle	0%	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Competing Port Terminals

To determine which vehicles are imported (or exported) through which ports and terminals, the consultant team examined a number of sources. Some ports, such as Hueneme, published lists of automakers that import vehicles through their port, making this easy to determine. In other cases, the team was able to find this information through terminal operator websites. However, many ports and terminal operators do not openly publish this information. Accordingly, the consultant team used Google Maps to examine the areas around known auto terminals to see which automakers had facilities at these terminals. The team was able to complete a significant amount of the data using this method (Table 13), yet data for some ports and terminals still could not be found as of this version date, so the list reflects only what is known to exist at these facilities and may be incomplete.

Table 13: Auto Import Ports and Operators

Port	Terminal	Operator	Auto Brands
Antioch, CA		Amports	GM
Benicia, CA		Amports	VW, Porsche, Bentley, Mazda, Toyota, GM, Vinfast
Freeport, TX		Amports	
Grays Harbor, WA	T4	Pasha Stevedoring and Terminals	
Long Beach		Toyota Logistics Services	Toyota
Port Hueneme		Glovis America	BMW, Subaru, Kia, Hyundai
Port Hueneme	Pacific RoRo Terminal	Wallenius Wilhelmsen	Suzuki, Jaguar, Land Rover, Volvo, Mitsubishi
Portland	T4	Toyota Logistics Services	Toyota
Portland	T6	Auto Warehousing Company	Ford, Hyundai, Subaru, GM, Honda
San Diego		Toyota Logistics Services	Toyota
San Diego	National City	Pasha Stevedoring and Terminals	
Tacoma		Auto Warehousing Company	Honda, Mazda, BMW, Isuzu, GM, Subaru
Vancouver, WA		Auto Warehousing Company	Subaru
Baltimore	Atlantic	Amports	
Baltimore	Dundalk	Amports	
Baltimore	Dundalk	Ports America	
Baltimore	Dundalk	Wallenius Wilhelmsen	
Baltimore	Fairfield	Amports	BMW
Baltimore	Fairfield/Masonville	Amports	Mercedes-Benz
Baltimore	Fairfield	Amports	Fiat/Chrysler
Providence/Davisville		North Atlantic Distribution	
NY/NJ		FAPS Inc.	Tesla, Stellantis, Ferrari, Ford, GM, Maserati, Nissan, Polestar, Infiniti, Volvo
NY/NJ		Toyota	Toyota
NY/NJ		Toyota	Lexus
NY/NJ		BMW	BMW, Mini, Rolls Royce
Houston	Turning Basin/City Docks	Ports America	Volkswagen
Savannah/New Brunswick	Colonel's Island	International Auto Processing	
Savannah/New Brunswick	Colonel's Island	Mercedes-Benz USA	Mercedes-Benz
Savannah/New Brunswick	Colonel's Island	Wallenius Wilhelmsen	
Savannah/New Brunswick	Colonel's Island	BMW of North America	BMW
Miami			
Charleston	Columbus St Terminal		
Virginia	Newport News	CP&O	
San Francisco	Pier 80		
Philadelphia	Packer Avenue	Glovis America	Hyundai
Jacksonville		Gulf Terminal International	Toyota
Jacksonville		First Coast Terminals	
Jacksonville		SSA Atlantic	
Jacksonville		APS Stevedoring	Hyundai
Jacksonville	Dames Point	Amports	
Jacksonville	Blount Island	Amports	
Vancover, BC	Annacis Auto Terminal	Wallenius Wilhelmsen	

Major Terminal Operators and Carriers

As Table 13 indicates there are a number of active ro-ro terminal operators, some of which also operate ro-ro vessels. A partial list is provided below.

Auto Warehousing Company

Auto Warehousing Company (AWC) is a Tacoma-based vehicle logistics and processing firm with over 50 years of experience in the automotive and rail industries. At the Port of Portland, AWC serves as a core tenant and operational partner, supporting the region's auto import and export activities. AWC manages vehicle flow through T6, coordinating with APS Stevedoring for vessel operations and with BNSF and Union Pacific for inland rail transport. AWC also oversees large-scale storage operations, including an 18.9-acre staging yard developed in partnership with the Port and supported by a Connect Oregon grant. Their proprietary Vehicle Information

Processing System (VIPS) provides real-time inventory tracking and logistics data to automakers and logistics providers. Beginning in 2023, AWC has been the sole tenant at B601 and B607 at T6.[vi]

Amports

Amports is a major ro-ro auto processing terminal operator in the US, operating ro-ro terminals in Baltimore, Jacksonville, Antioch, CA, Benicia, CA, and Freeport, TX. They also operate inland ro-ro facilities with rail connections to major ports. They offer auto processing services, as well as stevedoring services at California ports.

American Roll-On Roll-Off Carrier (ARC)

ARC is a U.S.-flag ro-ro carrier operating in international trades. ARC links East Coast U.S. ports with ports in Western Europe and Western South America, and with other European and Asian ports via transshipment.

Foreign Automotive Preparation Service (FAPS), Inc.

FAPS, Inc. operates at Port Newark, NJ, and is the main vehicle preparation service at the terminal. They offer services including inspections and refinishing, and are partnered with automakers including Nissan, Lexus, Toyota, and BMW.

Grimaldi Group

The Grimaldi Group manages a ro-ro vessel fleet serving ports in Europe, North and South America, Africa, and Asia. The ro-ro division of Grimaldi operates multiple brands, including Grimaldi Lines, Finn lines, Minoan Lines, and Atlantic Container Line.

Pasha Stevedoring and Terminals

Pasha operates auto terminals at Gray's Harbor and San Diego. Pasha also operates vessels on routes to Hawaii and Guam.

Toyota Logistics Services

Toyota Logistics Servies is the terminal operating arm of Toyota. The company operates Terminal 4 at Portland, and terminals at Long Beach and San Diego.

Glovis America

Glovis America is a subsidiary of Hyundai Glovis, which is a major ocean carrier for ro-ro ships. Glovis vessels regularly call at the Port of Portland (e.g. *Glovis Courage* or *Glovis Sunrise*, Table 14). Glovis provides shipping both as a non-vessel operating carrier and with their own fleet of ships. They also operate terminal facilities for Hyundai and Kia vehicles at ports including Hueneme and Philadelphia.

[vi] Berth 601 / 607 Integration Memo, Port of Portland, July 2025.

Wallenius Wilhelmsen

The Wallenius Wilhelmsen group handles both ro-ro shipping and logistics, operating a fleet of 125 vessels and eight marine terminals (including at Hueneme, Baltimore, Brunswick, Charleston, and Savannah). The company is based in Norway and provides ro-ro shipping services worldwide.

"K" Line

The "K" Line is a Japanese ocean carrier, whose ro-ro division operates 95 car carrying vessels worldwide. In addition to vessel transport, "K" Line also offers auto logistics services, and also handles bulk cargo. "K" Line "Highway" vessels regularly call at Portland (e.g. *Tianjin Highway* or *Southern Highway*, Table 14).

NYK

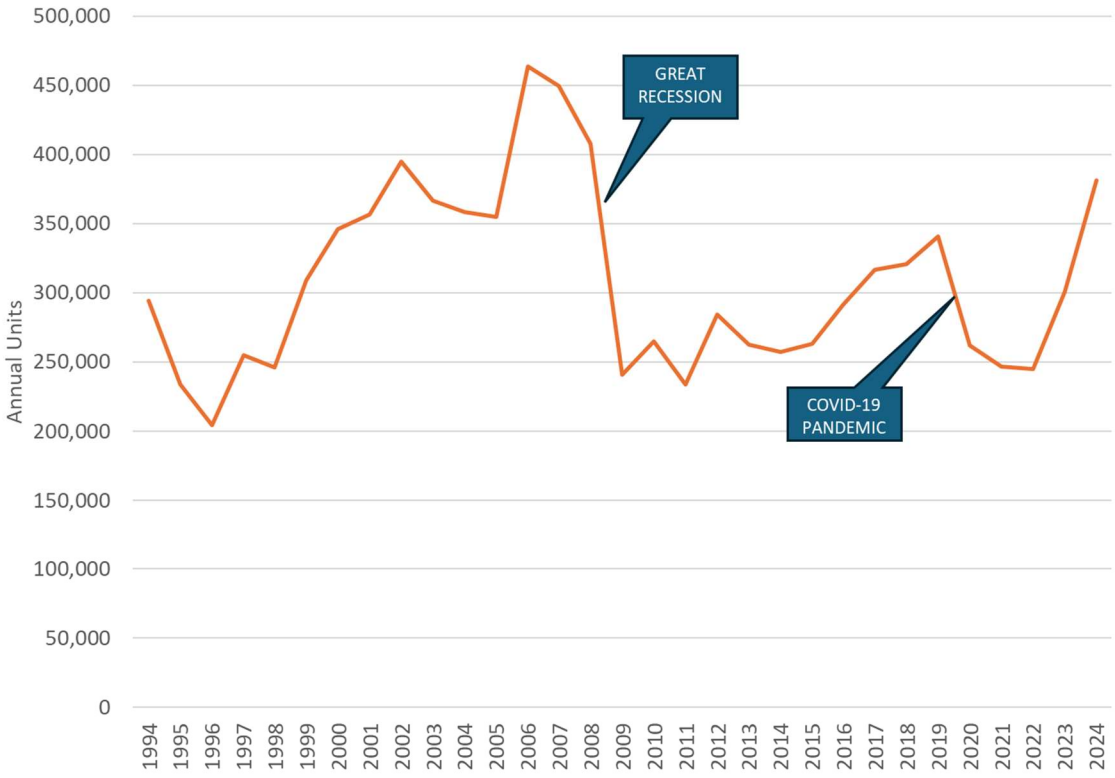
Nippon Yusen Kaisha (NYK) is another major Japanese ocean carrier, operating a 120 -vessel fleet worldwide. They also offer auto logistics services for inland transportation and are expanding their services from carrying cars from Japan to overseas destinations to also include overseas coastal operations. Their automotive division is also constructing vehicle terminals in locations around the world. NYK

Auto Import and Export Volumes

The T6 annual volumes show that T6 auto volumes have remained near a "floor" of 150,000 units for the past 30 years, which includes 2023 with the transition away from the Hyundai and into the GM volumes.

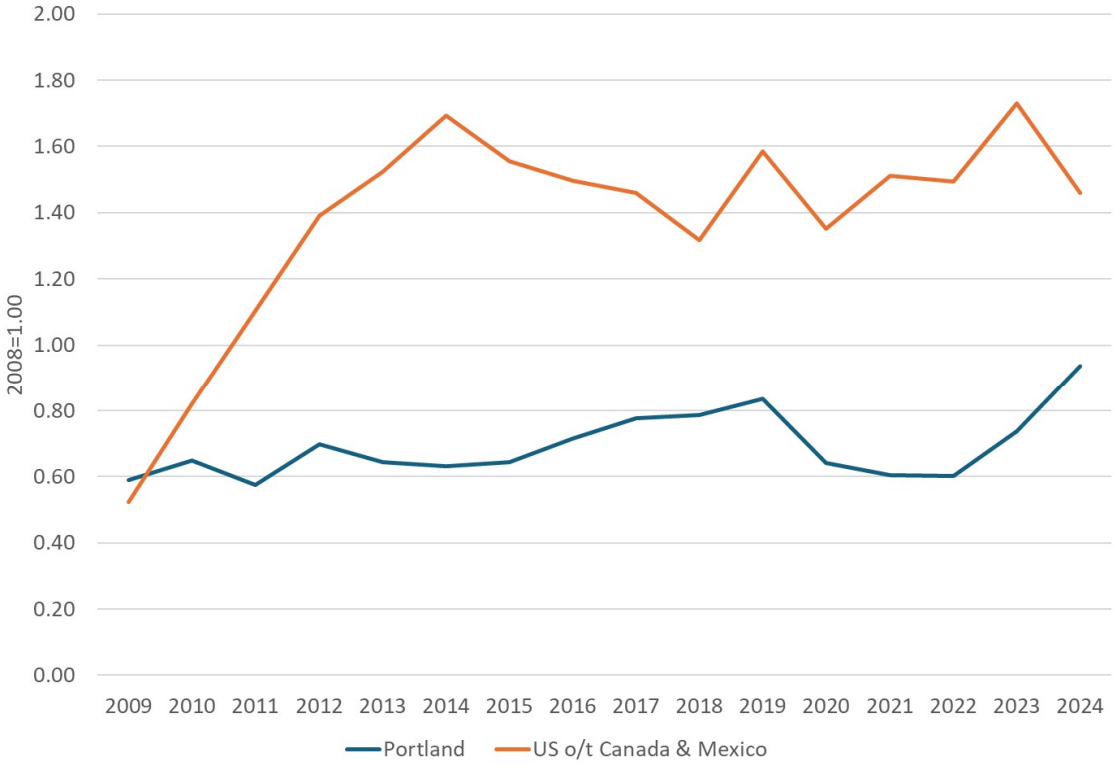
Portland's total historical auto volume from 1994 to 2024 including both terminals is shown in Figure 7. The overall pattern for auto volumes at the Port of Portland follows broad economic cycles, with profound effects from the Great Recession and the COVID-19 pandemic. The chart shows strong growth leading up to the recession, post-recession recovery, a pandemic-induced decline, and post-pandemic recovery. At the Port of Portland, the cessation of Hyundai imports at T6 B607 resulted in the Port of Portland converting the B607 terminal to an extension of a multi-cargo use facility. Most recently, in 2024, auto cargo volumes have been at the highest level since the 2007-08 economic cycle peak. Terminal 6 volumes have doubled from the post-COVID supply chain environment.

Figure 7: Port of Portland Total Auto Volume (T4 and T6)



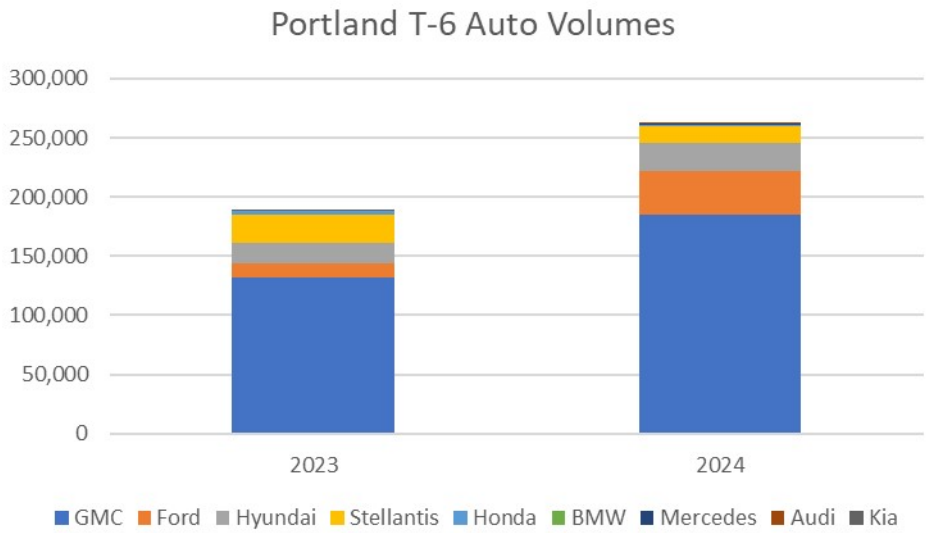
A comparison with total U.S. imports and exports (Figure 8) shows slower pre-2014 growth at Portland, but comparable growth and volatility thereafter for both Portland and the nation as a whole.

Figure 8: Index of Portland vs. U.S. Auto Imports and Exports



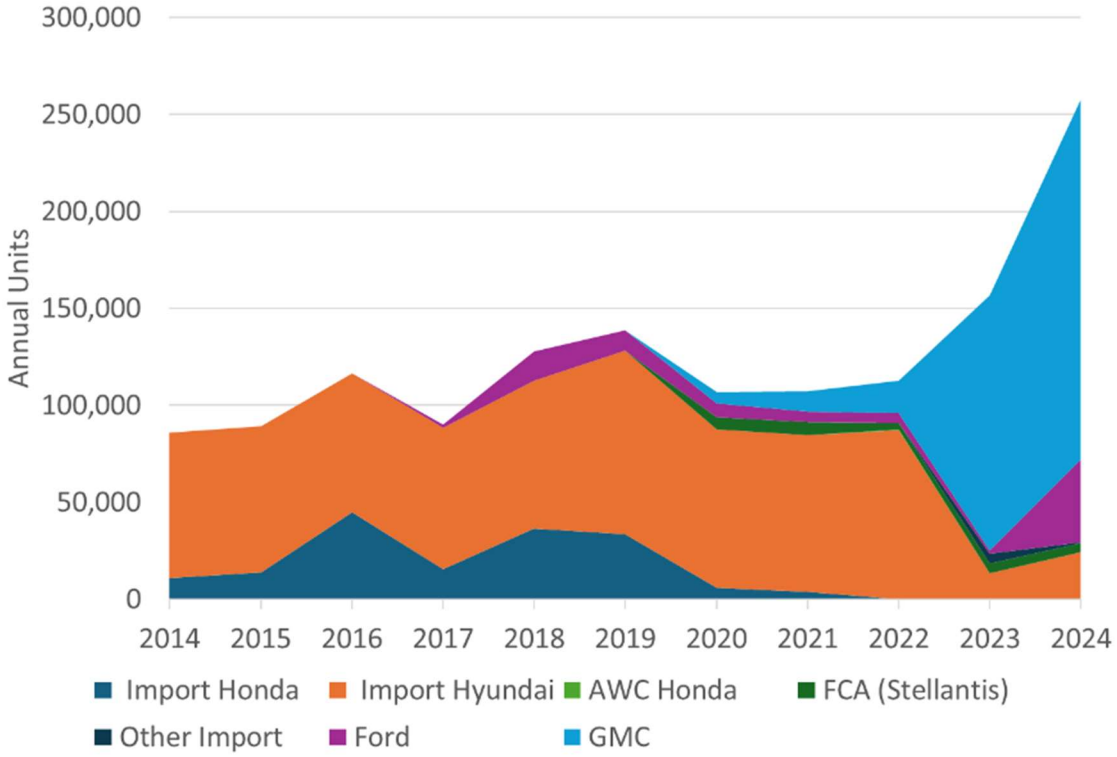
AWC handles a mix of import and export brands at T6 (Figure 9), with the largest volumes generated by General Motors (GM), primarily imports. Ford and Hyundai have been the other major participants.

Figure 9: Port of Portland Total T6 Auto Volumes by Brand



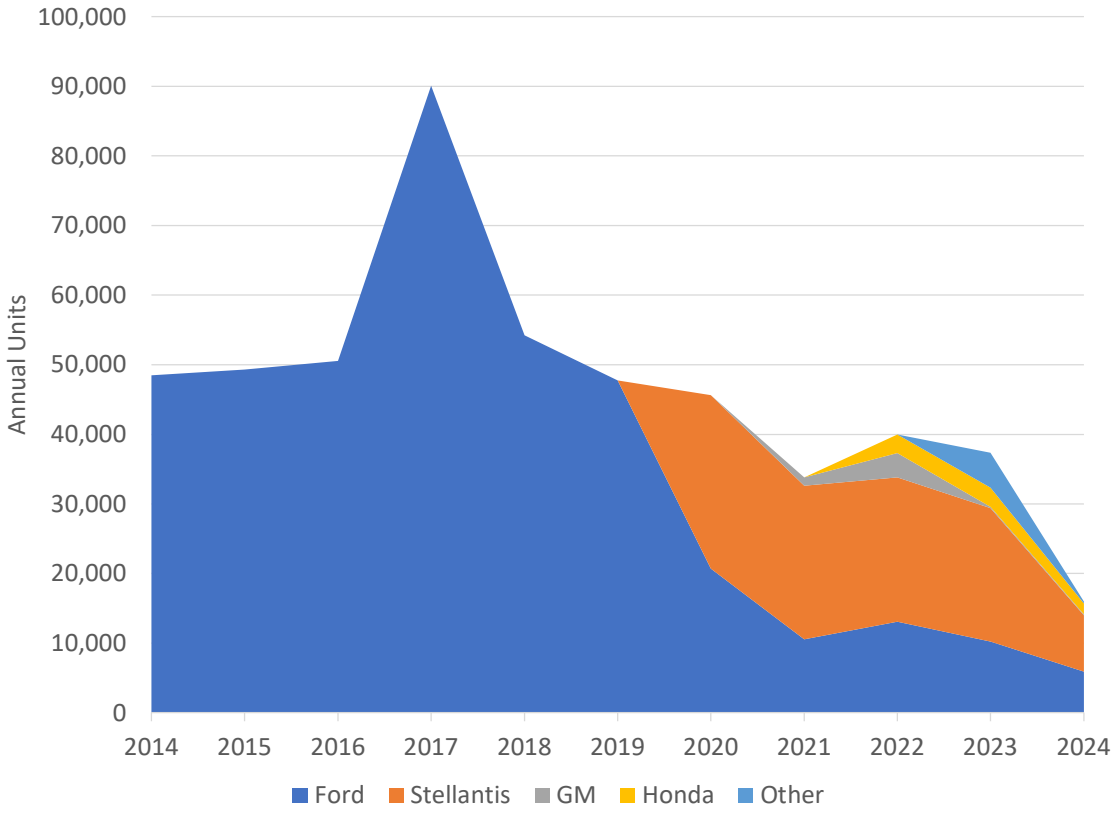
As Figure 10 shows, the import motor vehicle brand mix has varied over time. This variation is normal for multi-brand terminals as importers shift strategies and have more or less success in the marketplace.

Figure 10: Port of Portland Berth 601-607 Imports



Export brand participation has varied as well (Figure 11). Total export volumes have declined in recent years. Ford exports have declined while Stellantis (Fiat-Chrysler-Jeep) exports now constitute a larger share. There is no specific evidence to indicate a significant shift in exported Ford vehicles from Portland to a competing port (or a return in 2024), and the decline may be due to a broader strategic realignment by Ford and/or changes in the automotive export landscape.

Figure 11: Port of Portland Berth 601-607 Exports



Port of Portland T6 Vessel Service

Ro-Ro Vessels

Ro-ro auto terminals such as Berth 601 are served by ro-ro vehicle carrier vessels, also known as Pure Car and Truck Carrier (PCTC) vessels. These are ramp-equipped, multi-deck vessels that accommodate cars, trucks; "high and heavy" loads, such as agricultural and construction machinery; and other cargo that can be rolled on and off the vessel. Figure 12 shows an example of a ro-ro vessel that has called at T6, the *Glovis Sunrise*.

Figure 12: Ro-ro Vessel Glovis Sunrise

Source: Glovis USA

The ro-ro vessels that call U.S. West Coast ports are commonly 200m in length overall (LOA), and 30-35m in beam (width), with design drafts of 9-10m. Such vessels have capacities of 5,000-8,000 car equivalent units (CEU). The CEU metric is based on a compact car typical of imports in the 1960s, so larger, more modern vehicles commonly take up more than 1 CEU in capacity.

Portland Vessel Calls

The most common size of vessel calling at Berths 601-607 in FY 24-25 was 200m LOA and 32m beam, with capacities of 5,059-6,697 CEU. The largest was a single call by the *Glovis Poseidon* at 232m LOA and 32m beam, with capacity of 8,011 CEU. (Table 14)

Table 14: Portland Berth 601-607 Vessel Calls FY 24-25 YTD

Vessel	LOA	Beam	Draft (summer)	Age	DWT	Capacity
Da Feng Gang He Shun Hao	164	28	8.7	1999	10,810	3,578
Viking Drive	164	28	8.7	2000	10,813	3,587
Viking Emerald	167	28	8.6	2012	12,459	4,200
Viking Diamond	167	28	8.6	2011	12,572	4,200
Pegasus Ace	175	29	8.5	1998	14,348	3,027
Lapis Arrow	176	31	8.8	2006	12,105	4,900
Soo Shin	179	32	9.1	1999	16,669	4,330
Grand Pace	179	32	6.8	1999	16,669	5,170
Sang Shin	179	32	9.1	1999	16,669	5,170
Grand Vision	180	32	7.2	1995	12,300	5,060
Tianjin Highway	180	32	9.4	2005	15,461	5,036
Morning Midas	183	32	9.0	2006	12,250	4,943
K. Asian Beauty	184	31	8.8	1994	13,308	4,363
Dream Beauty	187	30	8.3	2006	15,119	3,494
Southern Highway	188	28	8.5	2008	12,892	3,893
Western Highway	188	28	8.5	2007	12,980	3,893
Violet Ace	189	32	9.1	2011	13,370	4,914
Delhi Highway	199	32	10.1	2011	18,891	6,120
Noble Ace	199	32	10.0	2011	18,946	6,203
Euphrates Highway	199	32	10.0	2012	18,668	6,215
Eurasian Highway	199	32	10.0	2012	18,709	6,215
Glovis Courage	199	32	10.0	2013	20,661	6,500
Gravity Highway	199	32	10.0	2014	21,000	6,500
Glovis Supreme	199	35	10.0	2013	20,138	7,280
Glovis Sunrise	199	35	10.0	2014	20,056	7,300
Glovis Cougar	199	32	11.0	2012	22,532	6,700
Jiuyang Bonanza	199	32	7.7	2006	19,670	6,210
Glovis Cardinal	199	32	11.2	2012	22,342	6,700
Grand Mark	199	32	9.1	2000	20,670	6,200
RCC Compass	200	21	10.0	2013	21,000	6,500
Triumph Ace	200	32	9.6	2000	20,131	5,059
Athens Highway	200	32	10.0	2008	18,809	6,200
California Highway	200	32	10.0	2010	18,644	6,215
Platinum Ray	200	32	10.0	2000	21,400	6,260
Glovis Companion	200	32	9.7	2010	18,671	6,340
RCC Antwerp	200	32	10.0	2013	21,000	6,500
Morning Cornet	200	32	10.0	2007	21,051	6,500
Liberty Promise	200	32	10.0	2010	21,359	6,545
Liberty Pride	200	32	10.0	2009	21,233	6,545
Glovis Caravel	200	32	10.0	2012	20,434	6,697
Lake Fuxian	200	32	9.7	2009	17,245	5,233
RCC Europe	200	32	10.0	2009	21,000	6,658
Neptune Barcelona	200	32	8.7	2022	17,416	6,868
Siem Copernicus	200	32	10.0	2014	21,000	3,930
Liberty Passion	200	32	10.0	2017	20,352	6,500
Liberty King	200	32	10.0	1998	21,505	6,402
Glovis Spring	200	35	10.0	2016	19,638	7,409
Glovis Star	200	36	10.6	2016	20,970	7,700
Saic Anji Harmony	200	38	9.9	2024	18,000	7,000
Glovis Sunshine	200	38	10.0	2024	19,322	7,000
Saic Anji Eternity	200	38	9.9	2024	18,000	7,117
Glovis Poseidon	232	32	10.0	2011	27,003	8,011

Many of the vessels listed in Table 14 and others of the same type and size also called at other U.S. West Coast ro-ro terminals, including San Diego, Long Beach, Los Angeles, Hueneme, Benicia, Richmond, Vancouver, WA, Gray's Harbor, Tacoma, and Seattle (Table 15).

Table 15: Recent Ro-ro Calls at Other West Coast Ports

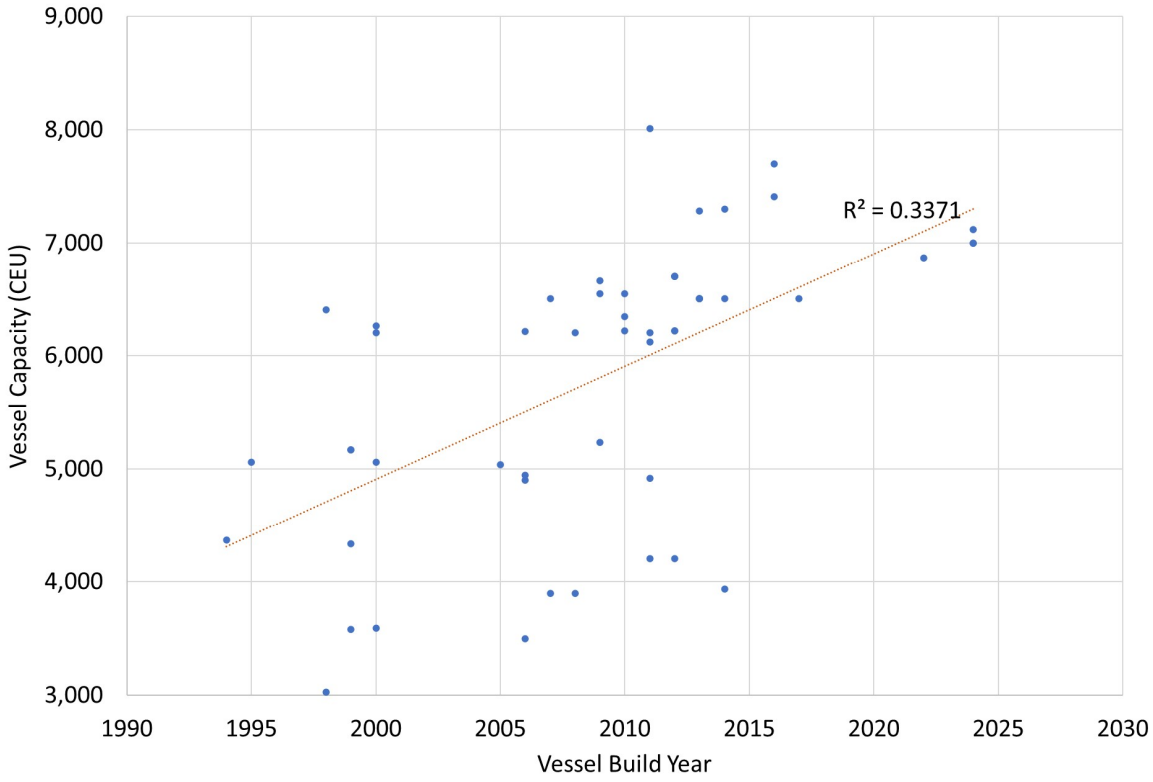
Vessel	LOA	Beam	Draft (summer)	Year Built	Capacity
Port of Tacoma					
*Lapis Ace	199.9	38	10	2024	7,033
Talisman	240.6	32	12	2000	5,496
Port of Aberdeen					
*Noble Ace	199.0	32	10	2011	6,203
*Violet Ace	189.0	32	9	2011	4,914
Glovis Crown	200.0	32	10	2014	6,600
*Glovis Star	200.0	36	11	2016	7,700
Neptune Barcelona	200.0	32	9	2022	6,868
Silver Sky	182.8	32	9	2010	4,943
*Saic Anji Harmony	199.9	38	10	2024	7,000
Port of Vancouver (WA)					
Harvest Leader	200.0	35	11	2014	7,700
Hermes Leader	200.0	35	11	2015	7,700
King Quest	199.9	32	10	2017	6,700
Delphinus Leader	199.9	32	10	1998	6,340
Port of Benicia (Carquinez Strait)					
Glovis Champion	200.0	32	10	2013	6,500
New Century 2	200.0	32	9	2001	6,000
Amber Arrow	199.9	32	10	2004	6,658
Columbia Highway	200.0	32	10	2008	6,237
Genius Highway	200.0	32	10	2014	6,500
Crystal Ray	200.0	32	10	2000	6,522
Blue Ridge Highway	180.0	32	9	2009	5,036
Wisdom Ace	200.0	32	10	2013	6,109
Port of Hueneme					
Themis Leader	199.9	32	10	2010	6,501
Sumire Leader	199.9	38	10	2023	7,000
*Saic Anji Eternity	199.9	38	10	2024	7,117
Grand Legacy	200.0	32	10	2009	6,402
Hermes Leader	200.0	35	11	2015	7,700
Gemini Leader	199.9	32	10	2009	6,502
Port of Long Beach					
Themis Leader	199.9	32	10	2010	6,501
Talisman	240.6	32	12	2000	5,496
Port of Richmond (CA)					
Hermes Leader	200.0	35	11	2015	7,700
Mercury Leader	186.0	28	9	2010	4,115
King Quest	199.9	32	10	2017	6,700
Port of San Diego					
Sumire Leader	199.9	38	10	2023	7,000
Themis Leader	199.9	32	10	2010	6,501
Morning Cherry	200.0	32	10	2013	6,215
*Lapis Arrow	176.0	31	9	2006	4,900

***Vessel has also recently called at Portland**

Vessels on Order

As is typical of cargo vessels in general, the newer ro-ro vessels that have called at T6 are typically larger than older ones (Figure 13).

Figure 13: Increasing Size of Ro-ro Vessels, T6 Calls FY 24-25



The pandemic-induced slowdown in worldwide auto production and shipping resulted in a slowdown in new ro-ro vessel construction. Orders for new ro-ro vessels have since rebounded, with over 170 vessels known to be on order as of early 2025 (Table 16). Based on available data and Tioga's estimates, 114 of the 171 ro-ro vessels on order will be 200m LOA, with beams of up to 38m. About 33%, or 57 vessels on order, will likely be longer, up to 236m LOA, with capacities of up to 11,700 CEU. Delivery of these larger vessels is expected to begin in 2025 and ramp-up into 2026-2029. Berths 601-607 have had one 200m+ vessel call in FY 24-25 (*Glovis Poseidon* Voyage 67, Table 14).

Table 16: Ro-Ro Vessel Orderbook

Planned Delivery Year	CEU	LOA*	Shipyard Nation	Planned Delivery Year	CEU	LOA*	Shipyard Nation	Planned Delivery Year	CEU	LOA*	Shipyard Nation	Planned Delivery Year	CEU	LOA*	Shipyard Nation
2025	7,000	200	China	2025	9,000	228	China	2026	7,500	200	China	2027	7,580	200	Korea
2025	7,000	200	China	2025	7,500	200	China	2026	7,500	200	China	2027	7,580	200	Korea
2025	7,000	200	China	2025	7,000	200	China	2026	7,500	200	China	2027	7,580	200	Korea
2025	7,500	200	China	2025	7,000	200	China	2026	7,580	200	Korea	2027	7,000	200	Japan
2025	7,000	200	China	2025	7,000	200	China	2026	7,580	200	Korea	2027	7,000	200	Japan
2025	9,200	228	China	2025	7,000	200	China	2026	9,000	228	China	2027	10,800	236	China
2025	9,200	228	China	2026	7,000	200	China	2026	9,000	228	China	2027	10,800	236	China
2025	9,200	228	China	2026	10,800	236	China	2026	9,000	228	China	2027	9,350	228	China
2025	9,200	228	China	2026	10,800	236	China	2026	7,400	200	China	2027	9,350	228	China
2025	9,300	228	China	2026	7,000	200	China	2026	7,400	200	China	2027	9,350	228	China
2025	7,000	200	China	2026	7,000	200	China	2026	7,400	200	China	2027	11,700	234	China
2025	8,600	200	China	2026	7,800	200	China	2026	7,400	200	China	2027	11,700	234	China
2025	8,600	200	China	2026	7,800	200	China	2026	7,500	200	China	2027	11,700	234	China
2025	7,000	200	China	2026	9,300	228	China	2026	9,350	228	China	2027	11,700	234	China
2025	7,000	200	China	2026	7,000	200	China	2026	9,350	228	China	2028	7,600	200	China
2025	7,050	200	China	2026	7,000	200	China	2026	9,350	228	China	2028	7,600	200	China
2025	7,050	200	China	2026	7,050	200	China	2027	10,800	236	China	2028	7,600	200	China
2025	7,000	200	China	2026	7,050	200	China	2027	10,800	236	China	2028	7,600	200	China
2025	9,000	228	China	2026	7,000	200	China	2027	10,800	236	China	2028	10,800	236	China
2025	9,000	200	China	2026	7,000	200	China	2027	10,800	236	China	2028	10,800	236	China
2025	9,000	200	China	2026	7,000	200	China	2027	10,800	236	China	2028	10,800	236	China
2025	9,000	228	China	2026	9,000	200	China	2027	10,800	236	China	2028	10,800	236	China
2025	9,000	200	China	2026	9,000	228	China	2027	7,800	200	China	2028	10,800	236	China
2025	8,600	200	China	2026	9,000	200	China	2027	7,800	200	China	2028	7,580	200	Korea
2025	8,600	200	China	2026	9,000	200	China	2027	7,600	200	China	2028	11,700	234	China
2025	8,600	200	China	2026	9,000	228	China	2027	7,600	200	China	2028	11,700	234	China
2025	7,000	200	Japan	2026	9,000	200	China	2027	9,000	228	China	2028	11,700	234	China
2025	7,000	200	Japan	2026	9,000	228	China	2027	9,000	228	China	2028	11,700	234	China
2025	9,100	200	China	2026	8,600	200	China	2027	9,000	228	China	2029	7,600	200	China
2025	9,100	200	China	2026	8,600	200	China	2027	9,000	228	China	2029	7,600	200	China
2025	7,000	200	Japan	2026	10,800	236	China	2027	9,000	228	China	2029	7,600	200	China
2025	7,000	200	Japan	2026	7,000	200	Japan	2027	10,800	236	China	2029	7,600	200	China
2025	7,000	200	China	2026	9,100	200	China	2027	10,800	236	China	2030	7,600	200	China
2025	7,000	200	Japan	2026	9,100	200	China	2027	10,800	236	China	2030	7,600	200	China
2025	7,500	200	China	2026	9,100	200	China	2027	10,800	236	China	2030	7,600	200	China
2025	7,500	200	China	2026	9,100	200	China	2027	7,000	200	Japan	2030	7,600	200	China
2025	7,500	200	China	2026	7,000	200	Japan	2027	7,000	200	Japan	2030	7,600	200	China
2025	7,580	200	Korea	2026	7,000	200	Japan	2027	9,100	200	China	2031	7,600	200	China
2025	7,800	200	China	2026	7,000	200	Japan	2027	9,100	200	China	2031	7,600	200	China
2025	7,800	200	China	2026	7,000	200	China	2027	7,000	200	China	2031	7,600	200	China
2025	9,000	228	China	2026	7,000	200	Japan	2027	7,000	200	Japan	2031	7,600	200	China
2025	9,000	228	China	2026	7,000	200	Japan	2027	7,000	200	Japan	2031	7,600	200	China
2025	9,000	228	China	2026	7,000	200	Japan	2027	7,000	200	Japan	* Estimated where not given			

Tioga's conservative vessel analysis was based on the 200m LOA vessels typically used to serve US West Coast ports. As noted by the Port, however:

> "Currently, about 95% of the vessels in the auto carrier fleet are 200 meters (656 feet) or less, with the majority being constructed more than 10 years ago. This lack of new capacity in the market has led to shortages, which has created a wave of orders for new, larger ships."
>
> "Glovis is anticipating 28 new vessels to be added to their fleet between now and 2028 that will increasingly come to call at T6. Currently, the largest vessels on order measure 236 meters (774 feet)."[vii]

[vii] Berth 601 / 607 Integration Memo, Port of Portland, July 2025.

Auto Cargo Forecast Factors

Trade Growth

As the Port has noted:

> "...AWC is looking to take on more property at T6. Their plan is nothing but more growth and are actively seeking out customers to fill that area."[viii]

Tioga considered a number of factors that will or could affect the long-term prospects for auto import trade growth at the Port of Portland. As explained in more detail below, these factors included:

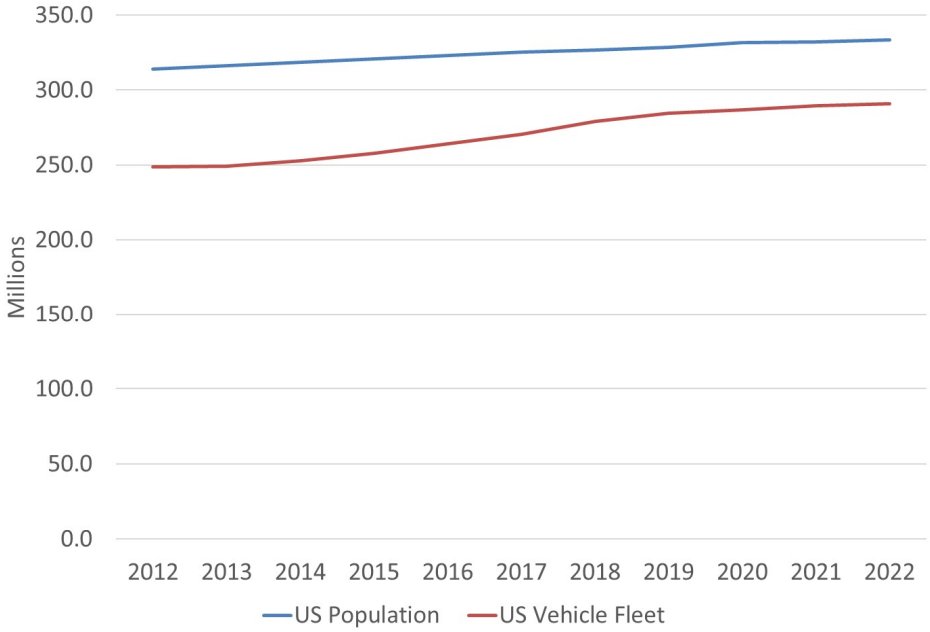
- **Population Growth.** Regional and national population growth are the major drivers of long-term auto sales, and are the basis for the forecast.
- **Tariff Impacts.** Tariffs in general will raise consumer prices and reduce the ability of consumers to purchase new capital items, notably cars. Auto-specific tariffs (on autos, auto parts, or steel and aluminum) will increase the price of both imported and domestic vehicles by various amounts and reduce demand. Tariff impacts were considered in the Baseline and Low Growth forecast scenarios.
- **Near-shoring/Reshoring.** Shifts in import auto production from Asia or Europe to Mexico or Canada ("near-shoring") or to the U.S. ("reshoring") would reduce waterborne imports in favor of domestic surface transportation by truck or rail.
- **Economic Conditions.** Adverse economic conditions, potentially including recession, will reduce vehicles sales, and are considered in the Baseline and Low Growth Forecasts.
- **Ride-sharing and Autonomous Vehicle Impacts.** Some observers have suggested that the growth of ride-sharing options and robotaxis, and the potential introduction of private autonomous vehicles will reduce private vehicle ownership and long-term demand for imported vehicles. Tioga's review indicates that these impacts remain speculative, and that more recent research anticipates minimal impact from these developments. Accordingly, Tioga did not include these impacts in the forecasts.

Population Growth

Population growth is the fundamental factor behind demand for new vehicles. As Figure 14 indicates, the U.S. vehicle fleet has been rising with population. In fact, vehicle totals have been rising slightly faster, producing rising *per capita* ownership. Using population growth is thus a conservative approach.

[viii] ibid.

Figure 14: US Population and Vehicle Fleet Growth



Household formation is a related factor. As individuals or couples form new households, they are likely to need a car if they do not already own one. The annual growth rate for household formation over the past decade aligns with both the national and Oregon state population growth rates. Consequently, household formation has not been utilized; rather, population growth serves as the primary basis for estimating increased vehicle demand.

In recent years there has been speculation regarding the tendency of younger generations to purchase fewer cars. More recent information indicates that the pattern is basically postponement – buying cars later in life – than avoidance.

Tariff Impacts

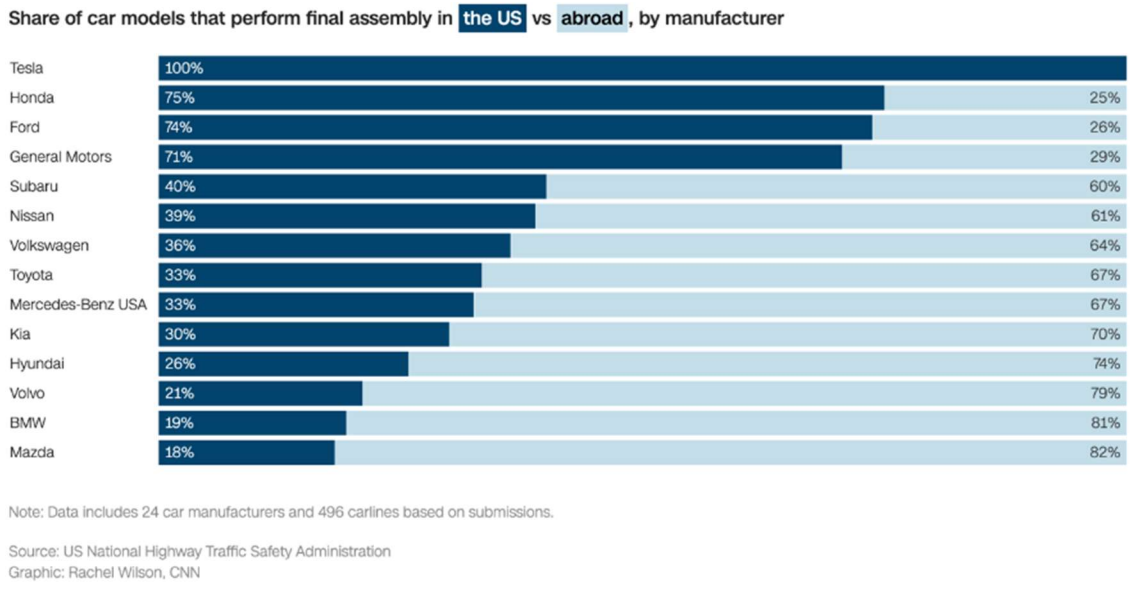
Prior to the recent changes in tariff policy enacted by the Trump Administration, the U.S. had a long-standing two-tiered tariff system for imported vehicles. Imported passenger cars were subject to a 2.5% tariff that was reached through trade negotiations conducted under the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), which aimed to reduce trade barriers globally. In contrast, imported light trucks (including pickup trucks and commercial vans) were subject to a 25% tariff that was a relic of a 1964 trade dispute with Europe. Initially a retaliatory measure, the tax on light trucks was retained long after the original dispute ended, largely to protect the domestic U.S. auto industry from foreign competition in this lucrative market segment. This significant tariff disparity has had a lasting impact on the U.S. auto market, encouraging foreign automakers to establish truck manufacturing plants within the U.S. to avoid the steep import duty. The North American Free Trade Agreement and the United States-Mexico-Canada Agreement (USMCA) saw the manufacture of some pickup trucks shift to Mexico and Canada. Many manufacturers operate plants in Mexico that produce vehicles for import to the U.S. market, although many of these cross the border by land rather than water. For instance, Ford maintains three manufacturing facilities in Mexico and exported approximately 176,000 vehicles to

the United States during the first half of 2024.[ix] Toyota Motor operates two plants in Mexico dedicated to producing the Tacoma pickup truck, with sales exceeding 230,000 units in the U.S. in 2023. Stellantis manages assembly plants in Mexico responsible for manufacturing Ram pickups and vans.[x]

While there is much uncertainty over the final form and impact of proposed tariffs on imported autos and parts, it is necessary to consider how they might affect Port of Portland auto volumes. Since January 2025, the administration has frequently generated headlines and debate by either imposing or threatening to impose a wide variety of import tariffs. The Administration has, as of April 3, 2025, imposed a 25% tariff on all vehicles shipped from other countries (though some exceptions have been negotiated), which is expected to increase car prices for consumers significantly. The Administration has also imposed tariffs on auto parts, which will further increase car prices significantly if they last, as there is currently no car model made completely from US-made parts (even those which are assembled completely in the US use at least some foreign parts). Frequently, car parts cross borders (often into Mexico or Canada) several times during the manufacturing process, adding to the severity of these tariffs for the industry. The Administration has also imposed 50% tariffs on aluminum, steel, and some forms of copper, which are expected to affect the auto industry significantly.[xi] In addition, the Administration announced broad tariffs on goods from countries all over the world, and although most of these were paused for 90 days less than a week after the initial announcement, many have now again taken effect (with exceptions for countries that have negotiated other deals).

Figure 15, created by CNN using data from the US National Highway Traffic Safety Administration, shows the share of car models with final assembly in the United States.[xii]

Figure 15: Auto Model Assembly Shares



[ix] Reuters (March 27, 2025) *These car brands, auto suppliers will be hit by Trump's auto tariffs*, retrieved from https://www.freep.com/story/money/cars/2025/03/27/which-car-brands-are-affected-by-auto-tariffs/82686445007/

[x] Ibid.

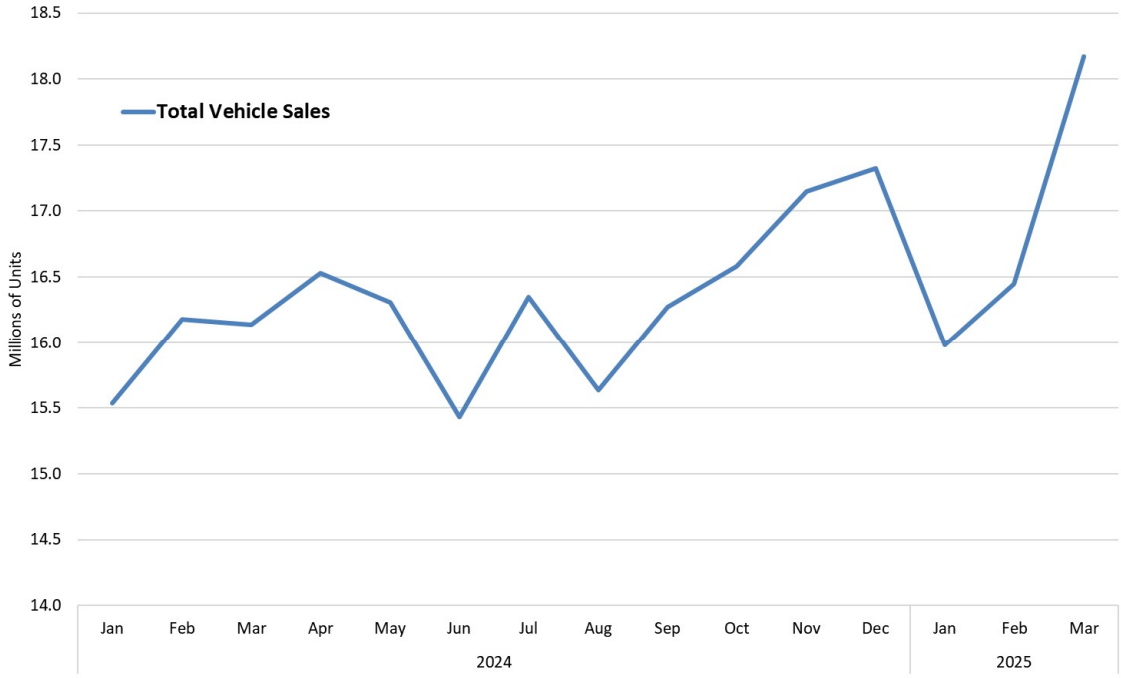
[xi] St. John, A. (2025, February 11). *Trump steel, aluminum tariffs likely to drive up car costs, industry leaders say*. Retrieved from Associated Press: https://apnews.com/article/trump-tariffs-automakers-cars-steel-c002e25a597b8936dae7de111e6653f1

[xii] Buchwald, E., Wilson, R., & Matthews, A. L. (2025, March 30). *How Trump's car tariffs will impact Americans, in 3 charts*. Retrieved from CNN: https://www.cnn.com/2025/03/29/business/car-tariffs-prices-explained-dg/index.html

These announcements have led to a near-term increase in ro-ro traffic, likely due to both importers and consumers seeking to avoid additional costs associated with tariffs. According to data from the analytics firm Esgian, 33 ro-ro ships left Europe for the US in February 2025 compared to 28 in February 2024, suggesting frontloading. Esgian senior vice president Stan Omli stated this means approximately 30,000 more vehicles, and is quoted as saying, "Evidence points to increased activity from Europe and the Far East ... those two regions represent the major export regions to the US".[xiii]

Consumer purchases have also contributed to this recent increase in auto sales, as many who have the means to purchase a new vehicle are doing so now to avoid tariff-related price increases in the coming months. All automakers reported an increase in sales in March 2025.[xiv] Hyundai even reported record sales in March, as customers looked to purchase before these increases.[xv] This is reflected in Figure 16 from the Federal Reserve Economic Data (FRED) of total auto sales over the past year, which shows an increase since January.

Figure 16: Recent Increase in Vehicle Sales Prior to Tariffs Coming into Effect



Source: U.S. Bureau of Economic Analysis via FRED

Forecasts suggest that these tariffs will significantly increase prices both for new and used cars if they remain in place long-term. Fewer imports of new vehicles and higher import prices due to tariffs will place more demand on the used car market, thereby increasing used car prices. Analysis by Bank of America suggests that the 25% tariff will increase average vehicle prices by $4,000 each, with some analysis putting the increase at $12,000 or more for certain models. Because of this, the tariffs will likely lead to a drop in sales, and therefore a drop in imports. A report by Morningstar on the auto industry outlook for 2025 expects a drop of over 1 million units sold compared to their initial forecast of 16.2-16.4 million units if the tariffs are long-lasting, though notably, this expected drop

xiii Giusti, A. C. (2025, March 28). US ports anxious that new tariffs wiill drag down auto shipments. Retrieved from Journal of Commerce: https://www.joc.com/article/us-ports-anxious-that-new-tariffs-will-drag-down-auto-shipments-5971589

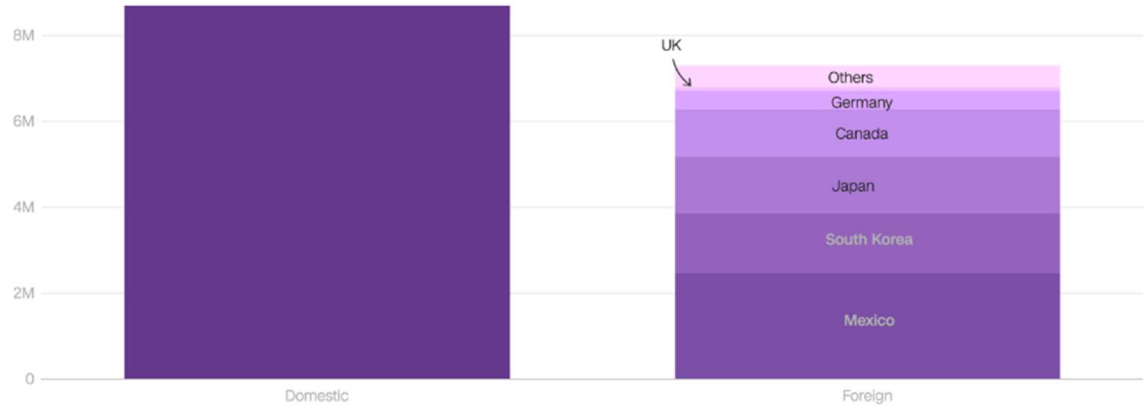
xiv Isidore, C. (2025, April 3). Auto tariffs are now in effect. What it means for America - and you. Retrieved from CNN: https://www.cnn.com/2025/04/03/business/what-the-auto-tariffs-mean-to-you/index.html

xv Hyundai Motor America. (2025, April 1). Hyundai Motor America Reports Record-Breaking March 2025 and Q1 Sales. Retrieved from Hyundai Media Center: https://www.hyundainews.com/en-us/releases/4414

seems to be only in response to the 25% tariffs on Mexico and Canada imposed earlier, so the additional 25% tariff on all imported vehicles could result in an even bigger drop if it is long-lasting, or less if exemptions to the high tariff rate for USMCA-compliant autos and auto parts are maintained.[xvi]

In 2024, 46% of all light-vehicle sales in the US were imports, suggesting that a large volume of potential vehicle sales will be impacted. Mexico was the largest exporter of vehicles to the United States due to heavy investment by U.S. and foreign carmakers in Mexican plants. Yet Mexico has been one of the biggest targets for the Administration's tariffs, which further suggests a major impact (although most Mexican probably move by land rather than by sea, and many Mexican imports are USMCA-compliant, making them subject to lower tariffs). Figure 17 from a CNN article shows foreign vs. domestic light vehicle imports by country, using data from S&P Global.

Figure 17: U.S. and Foreign-Produced Light-Duty Vehicles Sold in the US in 2024



Source: S&P Global Mobility via CNN

The auto industry is highly globalized. Assembly plants in multiple nations source inputs and deliver assembled vehicles all over the world. The phrase "made in" has no real meaning for completed vehicles, as cars and trucks assembled in any given nation have complex and diverse foreign content. The cross-border nature of auto manufacturing and importation of auto parts, even for models which are assembled domestically, means that no manufacturers or models will be exempt from additional costs related to the tariffs. However, different manufacturers may see costs go up to varying degrees. An analysis by Cox Automotive expects price increases of 15-20% for imported models subjected to the full tariffs, but still expects price increases of around 5% for domestic models that are largely spared from tariffs, as automakers will likely spread the increased costs across all models.[xvii] Even Tesla, which has 100% domestic assembly, will be affected due to some imported batteries. General Motors is expected to be affected significantly, as only 45% of their models are made domestically, and they have significant production in Canada and Mexico. Ford could be affected less, as about 80% of its vehicles are manufactured domestically, yet tariffs on auto parts could significantly affect Ford. Foreign manufacturers such as Toyota, Honda, Hyundai, and Kia could all be particularly affected by tariffs. Toyota and Honda both have significant Canadian manufacturing as well, potentially adding to the tariff burden. BMW and Volkswagen have some assembly in the United States, but rely on imported engines and transmissions, meaning tariffs on auto parts could have a significant effect for them.

xvi Morningstar Equity Research. (2025). Motors and Markets 2025: United States. Chicago: Morningstar Equity Research.
xvii Cerullo, M. (2025, March 31). Which car brands will be impacted most by Trump's 25% auto tariffs? Retrieved from CBS News: https://www.cbsnews.com/news/trump-25-percent-car-tariffs-prices/

Whether or not these tariffs are long-lasting seems to be key in predicting what the effect ultimately will be, and as of now, there is great uncertainty over how long the tariffs will last. The Administration paused many of its initial "reciprocal" tariffs on all goods from most countries, and several significant importer countries have negotiated lower tariff rates, which are now in effect.

The announced 25% tariffs on Canada and Mexico have been adjusted in detail to conform to the terms of the United States-Mexico-Canada Agreement (USMCA). Steel and aluminum tariffs have been raised to 50%, after initially being set at 25% [xviii].

Although the stated goal of the tariffs is to bring auto manufacturing jobs back to the US (and the United Auto Workers union supports the tariffs on these grounds), it will take a very long time for any new factories to be built and to become operational, and manufacturers will likely be reluctant to invest in these costs if the length of the tariffs is uncertain. In a CNN report following the tariffs, General Motors CFO Paul Jacobson is quoted as saying, "If [the tariffs] become permanent, then there's a whole bunch of things that you have to think about, in terms of where do you allocate plants, do you move plants, etc." However, he also stated, "Think about a world where we're spending billions in capital, and then it ends. We can't be whipsawing the business back and forth."

The report also states that making adjustments at factories can take a year or more, and opening new factories can take much more than this. It mentioned Stellantis, which manufacturers Jeep, Ram, Dodge, and Chrysler vehicles in the US, reopening a factory in Illinois, stating that this was announced in 2023 but the factory will not be reopened until 2027 due to the long timeline for such a project.[xix] With opening new factories potentially taking more time than Trump's term is expected to last, it is unlikely that manufacturers will want to make these investments, especially since it is unclear how long the tariffs will last.

Several significant exporter countries negotiated lower tariff rates (including for autos and auto parts) during the 90 day pause on the "reciprocal" tariffs. The European Union, Japan, and South Korea have each negotiated a 15% tariff rate, which applies to autos and auto parts but not steel, aluminum, or some types of copper, which remain at 50% even for these regions or countries. While this 15% rate is quite high, it is lower than the initial proposed 25% rate on auto and auto parts. However, this is higher than the current tariff on USMCA-compliant autos and auto parts, which are only subject to tariffs on non-US components used. This could ultimately incentivize more nearshoring or manufacturing shifts to Canada or Mexico. The USMCA is set for review in 2026, and the terms could change if the Trump administration is insistent on additional requirements.

The imposition of the auto tariffs was sudden, and multiple changes have taken place since. It will therefore likely be some time before the industry can fully assess and forecast the impacts. Some automakers quickly announced changes in response to the tariffs. Jaguar Land Rover, for example, have stated that they will pause vehicle shipments to the US for the month of April while they "develop [their] mid- to longer-term plans," though these were resumed in early May.[xx] Stellantis temporarily stopped production at some assembly plants in Canada and Mexico, which could also affect US jobs. Stellantis also announced temporary layoffs of 900 employees at factories in Michigan and Indiana, seemingly countering the administration's goal of bringing manufacturing jobs back to the US (many analysts expect the tariffs will actually lead to fewer US manufacturing jobs due to the cross-border nature of most auto manufacturing).

xviii Lalljee, J. (2025, April 9). Trump pauses most tariffs, but these are still in effect. Retrieved from Axios: https://www.axios.com/2025/04/09/trump-tariffs-90-day-pause-china

xix Isidore, C. (2025, April 3). Auto tariffs are now in effect. What it means for America - and you. Retrieved from CNN:https://www.cnn.com/2025/04/03/business/what-the-auto-tariffs-mean-to-you/index.html

US West Coast ports will likely be impacted mostly by tariffs on cars imported from Asia (South Korea is the second largest exporter to the US, followed by Japan). Some West Coast ports have expressed concern about this, though they have stated that they cannot yet be sure exactly what the impact will be, as it depends on how long the tariffs last and what the response from automakers is. The Port of Tacoma recently announced a major Ro/Ro and breakbulk expansion project (expected to double Ro/Ro capacity), and has not yet stated that this will be affected by tariffs. NWSA spokesperson Melanie Stambaugh Bast stated, "We expect these tariffs to have a chilling effect on auto volumes imported through Seattle and Tacoma, though much is unknown about how significant or quickly impacts to imported cargo volumes will be felt across the supply chain."[xxi]

Regarding the Port of Portland specifically, GM imports have recently increased ro-ro traffic at the port, and these imports could be affected by tariffs. GM has announced that they will increase domestic light truck production in Indiana in response to the tariffs, but has not announced plans regarding Asian imports as of the time of this writing.[xxii]

One potential impact is that foreign automakers (and perhaps even some US automakers with significant foreign manufacturing, such as GM) will focus less on the US market; an Economist article on the tariffs even recommends that "governments should focus on increasing trade flows among themselves" rather than with the US.[xxiii] A report from Channel News Asia cites several experts as agreeing that "should these tariffs become a long-term fixture on the global trade landscape, it will reduce if not eliminate the relevance of the US in global automotive supply chains."[xxiv] With longer term tariffs, the report states that "the impact of trade barriers to the US could in time be supplemented by a rise in intra-ASEAN trade, coupled with more investments within the broader ASEAN+6 group, which includes China, Japan, South Korea, Australia, New Zealand and India." However, a drop in economic activity as a result of tariff repercussions could reduce overall demand for vehicles in Southeast Asia, making the market more competitive, according to the report. If automakers choose to focus more on inter-Asian trade instead of the US market, this could have a potentially significant impact on ro-ro traffic at US West Coast ports (including Portland), though most experts seem to expect this only with more longer-term tariffs.

Most experts and sources agree that it is too early to forecast with any certainty what the impacts will be, as it is unclear how long the tariffs will last, and what the response from a future administration could be. However, if the tariffs are imposed for any significant length of time, the repercussions for US auto imports could be substantial, and the uncertainty surrounding the issue could affect ro-ro traffic even if the tariffs are not long-lasting.

Mexico and Canada Imports

For autos and auto parts imported to the US from Mexico, a 25% tariff theoretically exists on all vehicles, and a 35% tariff now exists on all goods from Canada as of August 1, 2025. However, the Trump administration has allowed (as of June 16, 2025) for an exemption on autos and auto parts that qualify for preferential treatment under the US Mexico Canada Agreement (USMCA). For autos, the higher tariffs now apply only to non-US

xxi Giusti, A. C. (2025, March 28). US ports anxious that new tariffs will drag down auto shipments. Retrieved from Journal of Commerce: https://www.joc.com/article/us-ports-anxious-that-new-tariffs-will-drag-down-auto-shipments-5971589

xxii Hall, K. (2025, April 3). Exclusive: GM to increase truck production in Indiana following Trump's tariffs. Retrieved from Reuters: https://www.reuters.com/business/autos-transportation/gm-increase-us-truck-production-following-trumps-tariffs-2025-04-03/

xxiii The Economist. (2025, April 3). President Trump's mindless tariffs will cause economic havoc. Retrieved from The Economist: https://www.economist.com/leaders/2025/04/03/president-trumps-mindless-tariffs-will-cause-economic-havoc

xxiv Board, J., & Mahmud, A. H. (2025, April 4). Trump's 25% auto tariffs: Price cuts and 'safe mode' - how Southeast Asia players might ride out turbulence. Retrieved from Channel News Asia: https://www.channelnewsasia.com/asia/trump-tariffs-automotive-car-trade-thailand-southeast-asia-5044141

components. For auto parts, the higher tariffs will only apply to the value of non-US content in these parts.[xxv] Mexico's National Auto Parts Industry (INA) reported that 92% of Mexican auto parts will not be subject to the new tariffs as they as USMCA-compliant. The 8% that are not will be subject to a 27% average tariff, but the Mexican government is working with these manufacturers to get them compliant, according to the report.[xxvi] In general, manufacturing costs remain significantly lower in Mexico compared to the US, which, according to some analyses, means that Mexico may remain competitive for manufacturing even with the tariffs, which could further disincentivize near-shoring to the US.[xxvii]

Imported autos from Canada are U.S. brands produced in their Canadian plants. Most imported autos and parts from Canada move by truck or rail across mid-continent land gateways. Portland does not handle Canadian auto imports, so the impact on Portland would be driven by manufacturers moving Asian production to Canada.

In USMCA negotiations, the US has been pushing for stricter rules of origin requirements (ROOs), specifically pushing for the Regional Value Content (RVC) of cars and light trucks to increase to 75% (from 62.5% under NAFTA) to avoid tariffs. According to a Brookings report,[xxviii] USMCA also requires that 70% of steel and aluminum in cars be sourced in North America, and that 40% of Labor Value Content (LVC) have a wage of $16 per hour or higher for vehicles to be USMCA-compliant and avoid tariffs. Current tariffs on non-US components in vehicles contradict USMCA terms, according to the report. In past years, higher costs of compliance with these requirements have led some manufacturers to simply pay tariffs (previously 2.5%) instead. Figure 18 shows the percentage of vehicle imports that are USMCA compliant over the past few years.

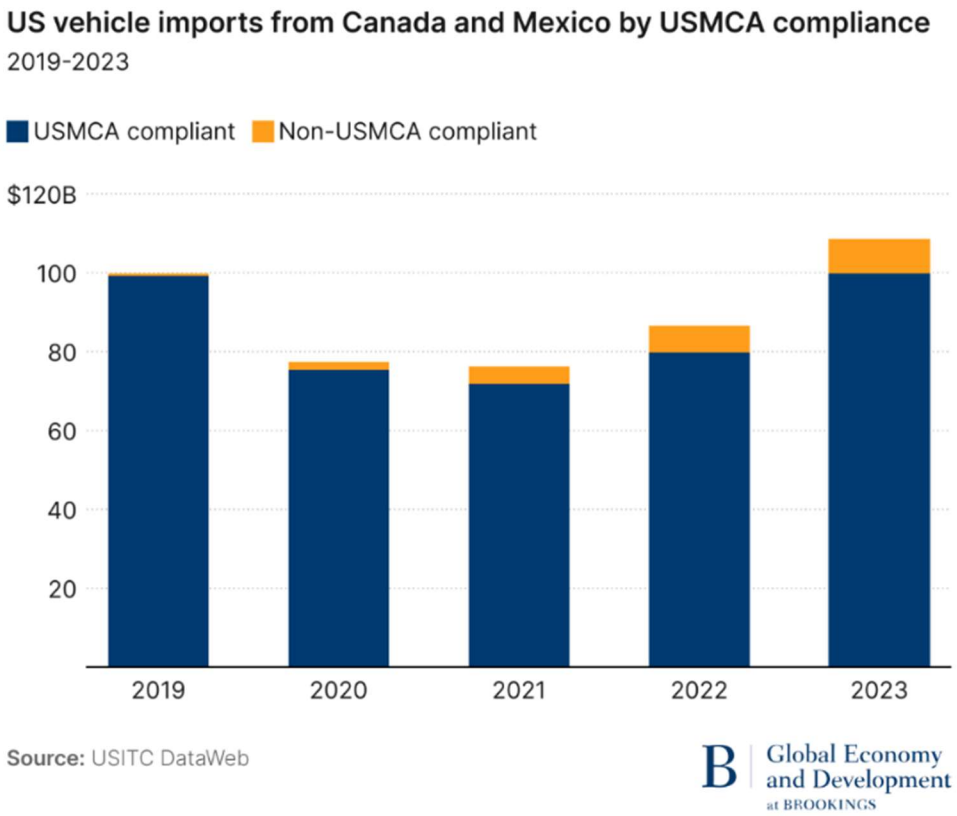
[xxv] Heeren, Philippe, et al. "Trump 2.0 Tariff Tracker." *Trade Compliance Resource Hub*, Reed Smith, 16 July 2025, www.tradecomplianceresourcehub.com/2025/07/16/trump-2-0-tariff-tracker/.

[xxvi] "Report: Only 8% of Mexican Auto Parts Manufacturers Face New US Tariffs." *Mexico News Daily*, Mexico News Day, 13 May 2025, mexiconewsdaily.com/business/mexico-auto-parts-industry-shielded-trump-tariffs/.

[xxvii] Mahoney, Noi. "Borderlands Mexico: Trump Tariffs Won't Stop Nearshoring Investments in Mexico." *FreightWaves*, FreightWaves, 19 Jan. 2025, www.freightwaves.com/news/borderlands-mexico-trump-tariffs-wont-stop-nearshoring-investments-in-mexico.

[xxviii] Meltzer, J. P. (2025, May 13). *The impact of US tariffs on North American auto manufacturing and implications for USMCA*. Brookings. https://www.brookings.edu/articles/the-impact-of-us-tariffs-on-north-american-auto-manufacturing-and-implications-for-usmca/

Figure 18: Imports Autos Under USMCA



The report therefore expects increased USMCA compliance as a result of the new tariffs, and forecasts increased investment in Mexico and Canada for manufacturing. Retaliatory tariffs, especially from the European Union, could also see a drop in US manufacturing for the export market, with auto makers instead investing in Canada or Mexico for exports if these tariffs are imposed. The USMCA is set to be reviewed in 2026, and the review could lead to additional ROOs or stricter interpretations of ROOs, especially on vehicle components (something the US has been pushing for), which could lead to more investment in North American manufacturing. The report states that auto tariffs will be "central" to a USMCA review, as it forecasts that:

> *"Economic modeling of a U.S. 25% tariff on auto imports from Canada and Mexico finds that U.S. exports of automobiles to Canada and Mexico would contract by 25% and 23%, respectively. In the event that Canada and Mexico retaliate, U.S. automotive exports to Canada and Mexico would shrink by up to 55% and 65%, respectively."*

Near-shoring/Re-shoring

Tariffs (or the threat of tariffs) on both autos and auto parts imported into the United States have prompted speculation that significant re-shoring to the US could take place as car makers seek to serve the US market without paying the tariffs. Re-shoring is the stated goal of the Trump administration's tariffs, and the President has claimed that significant re-shoring is already occurring due to the tariffs. The consultant team found, however, that most industry expansion in the U.S. had been announced prior to the tariff announcements, and that subsequent announcements would not create new capacity until 2027 at the earliest. The long lead times illustrate the difficulty of rapid production changes and the quandaries facing auto makers faced with uncertainties.

The administration postponed its tariffs many times in only a few months, including those on autos and auto parts. These changes have created serious uncertainty within the industry as to exactly which tariffs will be imposed long-term. In a climate of uncertainty, manufacturers are unlikely to invest in opening significant new manufacturing in the US, as the costs of doing so are very high and it is unclear how long the tariffs will last (both due to the administration's constant changes and the possibility of a different administration altering many of the tariffs after the 2028 election). It can take several years even to prepare existing factories for increased US manufacturing, and it can take even longer to construct and open new factories.

Although the terms are often used loosely, there is a difference between "re-shoring" and "near-shoring", and both are confused with operation of "transplant" assembly facilities in the US.

- **Re-shoring.** "Re-shoring" refers to former domestic production vehicles that have been returned to the U.S. In practice, the meaning is imprecise. For example, many General Motors models have been assembled in the U.S. yet some, such as the Buick Encore (Korea), Buick Envision (China), and Lincoln Nautilus (China) have been assembled solely in foreign plants and imported for U.S. sales. Likewise, many parts and components, such as electronic systems, have been primarily produced overseas. Re-shoring may therefore be best understood as a shift of parts production or vehicle assembly from overseas to U.S. plants across industry sectors rather than builder-specific or model-specific changes.
- **Near-Shoring.** "Near-shoring" typically refers to shifts of production or assembly from Asia or Europe to Canada or Mexico. This process shifts the tariff coverage from a product or country basis to USMCA coverage for Canadian and Mexican imports. More importantly for ro-ro terminals and ports, this process tends to shift inbound vehicle shipments from maritime to rail or highway modes (although there are some maritime vehicle shipments from Mexico to West Coast ports). Near-shoring would likely be easier for models that are already produced in Canada or Mexico as well as abroad. Examples include the Lexus NX, assembled in a Canadian plant as well as at two plants in Japan.
- **"Transplants"**. Besides re-shoring or near-shoring, there has been a long-term tend of Asian and European automotive manufacturers establishing assembly or component plants in the U.S. This trend includes the earliest U.S. plants established by Honda and Nissan. At present, these "transplants" include those in Table 17. The existence of the plants in Table 17 can facilitate re-shoring. Where those plants have reserve capacity or expansion room, it is far faster, cheaper, and less risky to either increase production of current models or re-tool for additional models than it is to establish new plants. Each of these plants, however, depends on a supply chain reaching out to foreign and domestic parts sources. Establishing or expanding production in the U.S. would thus reduce imports of finished vehicles in ro-ro service but increase ports imports in container service.

Table 17: "Transplant" Auto Plants

Plant Name	Location	Products
BMW US Manufacturing Company, LLC	Greer, South Carolina	BMW X3, BMW X4, BMW X5, BMW X6, BMW X7
Hino Motors Manufacturing U.S.A., Inc.	Williamstown, West Virginia	Class 6 & 7 Medium Duty Trucks (GVWR: 16,001 - 33,000 lbs.), Specialized Trucks
Honda Manufacturing of Alabama, LLC	Lincoln, Alabama	Honda Odyssey, Honda Passport, Honda Pilot, Honda Ridgeline
Honda Manufacturing of Indiana, LLC	Greensburg, Indiana	Honda Civic, Honda CR-V
Honda of America Manufacturing, Inc. East Liberty	East Liberty, Ohio	Honda CR-V, Acura RDX, Acura MDX
Honda of America Manufacturing, Inc. Marysville	Marysville, Ohio	Honda Accord, Acura Integra, Acura TLX
Hyundai Motor Group Metaplant America	Ellabell, Georgia	Hyundai Ioniq 5, Hyundai Ioniq 9
Hyundai Motor Manufacturing Alabama	Montgomery, Alabama	Hyundai Tucson, Hyundai Santa Fe, Hyundai Santa Cruz, Genesis GV70 (ICE & EV)
Kia Motors Manufacturing Georgia	West Point, Georgia	Kia K5, Kia Sportage, Kia Sorento, Kia Telluride, Kia EV9
Mazda Toyota Manufacturing USA	Madison, Alabama	Toyota Corolla Cross, Mazda CX-50
Mercedes-Benz U.S. International, Inc.	Vance, Alabama	Mercedes-Benz GLE-Class, Mercedes-Benz GLS-Class, Mercedes-Benz EQS SUV
Mercedes-Benz Vans, LLC.	Ladson, South Carolina	Mercedes-Benz Sprinter
Nissan North America, Inc. Canton	Canton, Mississippi	Nissan Altima, Nissan Frontier
Nissan North America, Inc. Smyrna	Smyrna, Tennessee	Nissan Leaf, Nissan Rogue, Nissan Pathfinder, Nissan Murano, Infiniti QX60
Scout Motors (VW Group)	*Blythewood, South Carolina (2026)*	*Scout Traveler, Scout Terra*
Stellantis	*Belvedere, Illinois (2027)*	*Mid-sized trucks*
Subaru of Indiana Automotive, Inc.	Lafayette, Indiana	Subaru Outback, Subaru Forester, Subaru Crosstrek, Subaru Ascent
Toyota Motor Manufacturing Indiana	Princeton, Indiana	Toyota Sienna, Toyota Highlander, Toyota Grand Highlander, Lexus TX
Toyota Motor Manufacturing Kentucky	Georgetown, Kentucky	Toyota Camry, Lexus ES350, Toyota RAV4 (Hybrid only)
Toyota Motor Manufacturing Mississippi	Blue Springs, Mississippi	Toyota Corolla
Toyota Motor Manufacturing Texas	San Antonio, Texas	Toyota Tundra, Toyota Sequoia
VinFast USA	*Chatham County, North Carolina (2028)*	*TBA*
Volkswagen Chattanooga Assembly Plant	Chattanooga, Tennessee	Volkswagen Atlas, Volkswagen Atlas Cross Sport, Volkswagen ID.4
Volvo Cars USA LLC	Ridgeville, South Carolina	Volvo EX90

Before the drastic "liberation day" tariffs were announced by the administration on April 2, 2025, several automakers had already made plans to increase US manufacturing. South Korean manufacturer Hyundai announced in February 2025 that it will increase production at a plant in Georgia from 300,000 to 500,000 vehicles per year, and that it will also increase production at a plant in Alabama. Hyundai also announced in March that it is investing $21 billion in the US, including $5.8 billion for a steel plant in Louisiana. Hyundai CEO Jose Munoz has stated that the "best way…[to] navigate tariffs is to increase localization."[xxix] According to a Reuters report in March 2025, Honda plans to manufacture the next-generation Civic Hybrid in Indiana instead of Mexico (the company initially planned to start manufacturing in Mexico in November 2-27, but now plans to start manufacturing in Indiana in May 2028, according to the article).[xxx] Stellantis, which owns Chrysler, Jeep, Fiat, and other brands, also announced in late January that it will invest $5 billion in US manufacturing, most notably reopening a plant in Illinois that closed in February 2023 (mid-size truck manufacturing will begin there in 2027).

More recently, as other auto manufacturers see significant losses due to the tariffs, some are looking to increase investment in the US in hopes of achieving a lower tariff rate or avoiding tariffs. General Motors announced that it will invest $4 billion in US manufacturing to offset increased costs from tariffs, though it will still be significantly negatively affected by the administration's 50% tariffs on copper, which it uses extensively for electric vehicles[xxxi] (material tariffs on aluminum, steel, and copper could also significantly affect auto manufacturers if they last). GM reported losses of $1.1 billion in the three months ending in June as a result of tariffs, and Stellantis has reported losses of $2.7 billion over the first half of 2025. Volkswagen announced at the end of June 2025 that they have suffered a $1.5 billion loss as North American sales dropped 16% due to the US tariffs.[xxxii] In response to this, Volkswagen CEO Oliver Blume has proposed a $10 billion investment in the US, and is attempting to

[xxix] Jacobson, Louis. "Are US Car Plants Being Built at Record Rates, as Trump Claims?" *Al Jazeera*, Al Jazeera, 2 Apr. 2025, www.aljazeera.com/economy/2025/4/2/are-us-car-plants-being-built-at-record-rates-as-trump-claims.

[xxx] Shiraki, Maki. "Exclusive: Honda to Produce next Civic in Indiana, Not Mexico, Due to Us Tariffs, Sources Say | Reuters." *Reuters*, Reuters, 3 Mar. 2025, www.reuters.com/business/autos-transportation/honda-produce-next-civic-indiana-not-mexico-due-us-tariffs-sources-say-2025-03-03/.

[xxxi] "The World in Brief." *The Economist*, The Economist, 22 July 2025, www.economist.com/the-world-in-brief. Accessed 22 July 2025.

[xxxii] Zahn, M. (2025, July 25). *Volkswagen suffers $1.5 billion loss from Trump's tariffs*. ABC News. https://abcnews.go.com/Business/volkswagen-suffers-15-billion-loss-trumps-tariffs/story?id=124065273

negotiate an unusual dollar-for-dollar offset against tariff costs ($1 reduction in tariffs for every $1 invested). Volkswagen is currently investing in a $2 billion facility in South Carolina to build electric vehicles.[xxxiii]

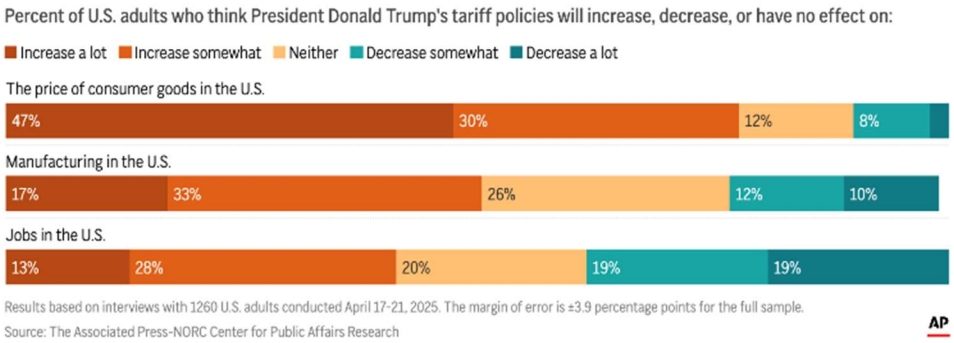
Ultimately, any forecast for re-shoring, near-shoring, or new transplant investments depends on multiple factors that are currently uncertain and unpredictable. It is unclear which of the proposed tariffs will actually be imposed and for how long, which means manufacturers will likely be reluctant to modify long-term plans in response, but some are already looking into strategies to avoid tariffs or negotiate lower rates.

Economic Conditions

In addition to issues regarding tariffs, overall consumer confidence and economic conditions in the United States may affect overall vehicle sales, and may particularly affect imported vehicle sales if those vehicles become more expensive. Reduced economic growth, or even recession, would both reduce the ability of consumers to buy new cars and their willingness to do so.

Due to the overall economic uncertainty caused by the tariffs (or even the possibility of tariffs), studies indicate that many Americans currently expect overall prices to rise, and are concerned about the prospects for the US economy. A recent Associated Press (AP) survey[xxxiv] conducted from April 17-21, 2025 shows that most Americans think the Administration's tariffs will raise prices, while fewer believe they will increase jobs in the US. The full results are shown in AP's graph (Figure 19).

Figure 19: Expected Economic Impacts of Tariffs



The survey also found that:

> *"about half of Americans are 'extremely' or 'very' concerned about the possibility of the U.S. economy going into a recession in the next few months."*

Another AP article[xxxv] states that:

> *"A measure of Americans' short-term expectations for their income, business conditions and the job market plunged 12.5 points to 54.4, the lowest level in more than 13 years. The reading is well below 80, which typically signals a recession ahead."*

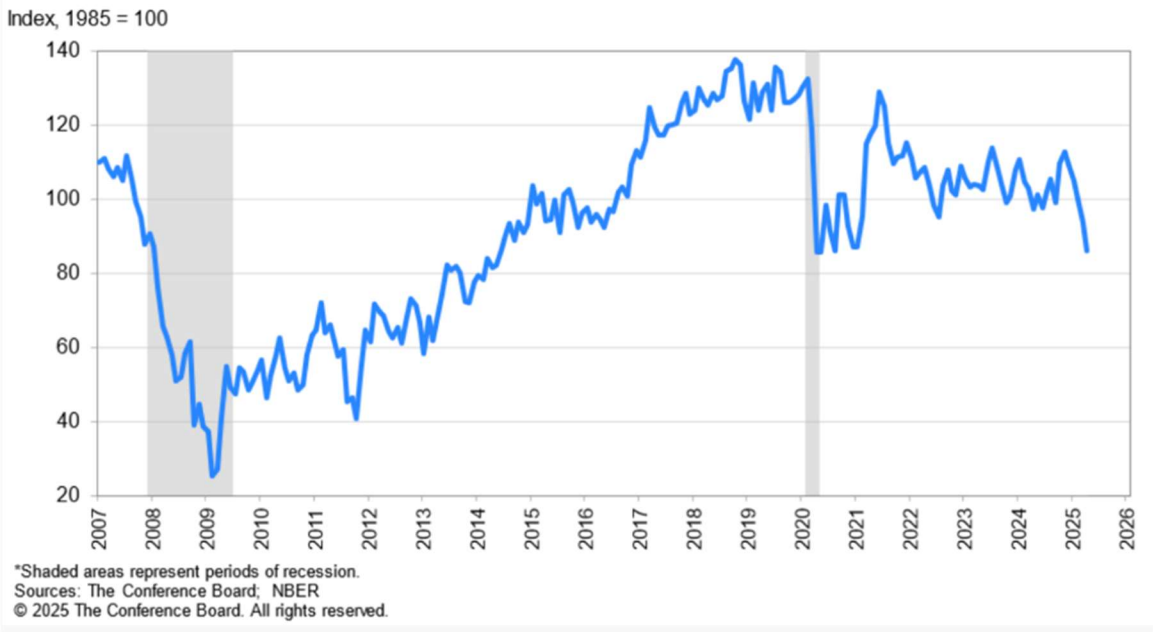
[xxxiii] Hetzner, Christiaan. "Volkswagen Seeks Audience with Trump, Dangling More than $10 Billion in U.S. Investments in Exchange for Tariff Exemptions." *Fortune*, 25 July 2025, fortune.com/2025/07/25/volkswagen-trump-tariffs-exemptions/. Accessed 31 July 2025.

xxxiv Boak, J., & Thomson-DeVeaux, A. (2025, April 24). Most Americans expect higher prices as a result of Trump's tariffs. AP News.https://apnews.com/article/trump-economy-poll-tariffs-inflation-prices-recession1d320115e8801e4970bd5cccf2742fc4

[xxxv] Rugaber, C. (2025, April 29). *US consumer confidence plummets to Covid-era low*. AP News. https://apnews.com/article/economy-confidence-tariffs-f3cb9058971c008127f8dc22c8933296

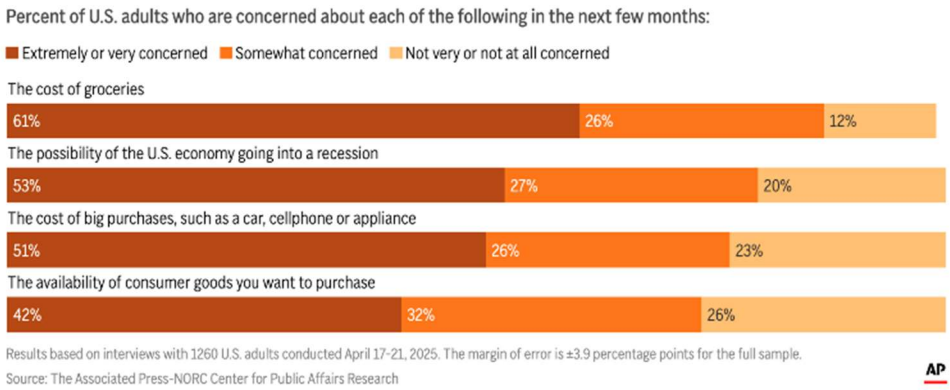
Figure 20 below from the Conference Board's Consumer Confidence Index[xxxvi] shows a sharp decline in confidence this year:

Figure 20: Consumer Confidence Index



The AP article also states that economic uncertainty leads to less spending overall, and that fewer Americans are saying they plan to buy a car in the next six months as a result of economic certainty. A recession, or even concerns about one, could affect major purchase plans for many Americans, and therefore negatively affect auto imports. The AP graph (Figure 21) shows that over 75% of Americans are at least somewhat concerned about the costs of big purchases, including cars.

Figure 21: Economic Concerns



Though economic experts and official financial forecasts remain divided in their overall expectations of a recession, there is a general consensus that a recession has become more likely as a result of tariffs and economic

[xxxvi] April, in. (2025, April 29). *US Consumer Confidence Plunged Again in April*. The Conference Board. https://www.conference-board.org/topics/consumer-confidence/press/CCI-Apr-2025

uncertainty. According to a recent Forbes report[xxxvii], most banks expect roughly even odds of a recession this year; Morgan Stanley predicts 40% odds, Goldman Sachs predicts 45%, and JP Morgan Chase predicts a 60% chance of a recession (comments by JP Morgan Chase CEO Jamie Dimon regarding this high probability were a factor in Trump's decision to pause the tariffs for 90 days, according to the Forbes article).

Lawrence Summers, former Treasury Secretary to President Bill Clinton, has stated that he expects a 60% or higher chance of a recession, and forecasts that this will lead to a 28% increase in the number of unemployed Americans, and at least a $5,000 decline in annual household income. Combined with higher prices for all automobiles (notably, no pause in the auto tariffs has been announced as of this writing), this could significantly affect the amount of money Americans have to spend on cars, which could lead to a significant downturn in auto imports. Some other economists predict an even higher chance of a recession. Torsten Slok, chief economist at Apollo Global Management, recently forecasted a 90% chance of what he described as a "Voluntary Trade Reset Recession," and strongly criticized the Administration's trade policies for increasing this likelihood.

The Administration has indicated that it is aware of the possibility of a recession due to the tariffs, but that it believes in pursuing them anyway. According to the Forbes article, "In a Fox News interview aired March 9, [Trump] would not rule out the possibility of a recession, cautioning Americans for a period of economic 'transition' as his policies take hold and noting he's paying little attention to stock market losses. In subsequent media appearances, Treasury Secretary Scott Bessent similarly declined to dismiss a potential recession and said the US will go through a 'detox period.'" While the administration's pausing the tariffs in response to Dimon's comments may contradict this lack of concern, it demonstrates the unpredictability of the administration's actions, which may further increase economic uncertainty.

Ride-sharing and Autonomous Vehicle Impacts

When "ride-sharing" services such as Uber and Lyft initially became popular, there was some speculation that they would eventually lead to significant reductions in private car ownership. Autonomous vehicles (AVs) are often discussed mainly in the context of robotaxis or shared mobility instead of personal vehicle ownership, their widespread adoption could potentially affect the number of vehicles purchased by individual owners significantly. However, it is unclear when or if this will happen, as studies show conflicting public opinion on AVs, and many indicate that Americans will not want to forego individual car ownership.

Compared to many other developed countries in Europe and Asia, for example, the United States is much more car-centric, and more Americans depend on and regularly use private automobiles for transportation. About 90-92% of driving age Americans own or have access to a car. Americans drove personal cars for 85% of their daily trips in 2010, compared to 50-65% in Europe, and Americans used cars for 70% of daily trips under a mile, compared to 30% of Europeans[xxxviii]. Reasons include different infrastructure investments and less public transit, as well as different zoning rules, which have left many US suburbs significantly more spread out. Americans generally live in less dense suburbs further away from commercial zones, which encourages car use over other methods such as walking, cycling, or public transit. Gasoline prices are also lower due to less taxation, further incentivizing driving.

[xxxvii] Saul, D. (2025, April 21). Forbes Recession Tracker: Apollo Says 90% Chance Of "Voluntary" Recession Heavily Impacting Small Businesses. *Forbes*. https://www.forbes.com/sites/dereksaul/2025/04/21/forbes-recession-tracker-recession-odds-spike-as-trumps-tariff-liberation-day-approaches/

[xxxviii] 9 Reasons the U.S. Ended Up So Much More Car-Dependent Than Europe. Retrieved from Bloomberg: https://www.bloomberg.com/news/articles/2014-02-04/9-reasons-the-u-s-ended-up-so-much-more-car-dependent-than-europe

Some studies have shown that drivers tend to underestimate the overall cost of car ownership. These studies had led many observers to conclude that Americans would be more likely to adopt shared mobility if they understood and accepted the full costs of car ownership. Thes studies, however, tend to confuse the costs of *ownership* with the costs of *operation*, and ignore the separate value of ownership. However, a 2021 study from the Massachusetts Institute of Technology (MIT) [xxxix]addressed this issue. The opening of the report states,

> *"It is widely accepted that consumers underestimate the full cost of car ownership and that correcting this bias could meaningfully accelerate the adoption of shared mobility. Yet this argument fails to consider how much benefit consumers enjoy from owning their own vehicle"*

The report states that Americans typically value vehicle ownership above its costs, and that 58% of this value comes from owning the car instead of simply using it. Reasons for this include control over travel schedule, flexibility (being able to go anywhere at any time without waiting for public transit or a ride-sharing service), and privacy in transit, as well as perceived increase in social status and pride from vehicle ownership. It states that, although availability of alternative forms of transportation can lead to a decrease in car ownership (especially in urban centers),

> *"the reality is that the average value of car ownership and use is at least an order of magnitude higher than the value of other urban transportation options, including ride-hailing, public transportation and non-motorized transport."*

Similarly, a 2024 report by DTS[xl] (a company which makes car audio and entertainment systems, and is part of the Xperi Corporation) concluded that, based on consumer surveys:

> *"Reports of the demise of the personal vehicle have been greatly exaggerated, as this report demonstrates, and its function as something beyond a mode of transportation continues to be important to consumers".*

The report states that vehicle ownership is important to 92% of survey respondents, and that 46% of respondents considered their car to be a "third space" away from home or work, which they often used as a space for relaxation or escape. Notably, the report states that 65% of Gen Z and 63% of Millennial respondents considered their car a "third space," suggesting that younger generations value car ownership as much or more as older generations. Although a company that sells car entertainment systems could have an interest in promoting the idea of cars as a "third space", these findings echo the MIT study's findings about valuing car ownership beyond simple car use for transportation.

Yet another factor is Americans' views on AVs themselves and general perception of their safety. According to Pew Research, as of March 2022, 44% of Americans believed widespread use of driverless cars would be a bad idea, compared to only 26% who believed it would be a good idea and 29% who were not sure. About 63% of Americans said they would not want to ride in a fully autonomous vehicle if given the opportunity. Notably, younger generations were more open to the idea, though only 51% of those age 18-29 said they would want to ride in an AV, suggesting more or less an even divide[xli]. According to a separate MIT study, perceptions of AV safety tend to be higher among younger generations (especially young men), and higher in developing countries

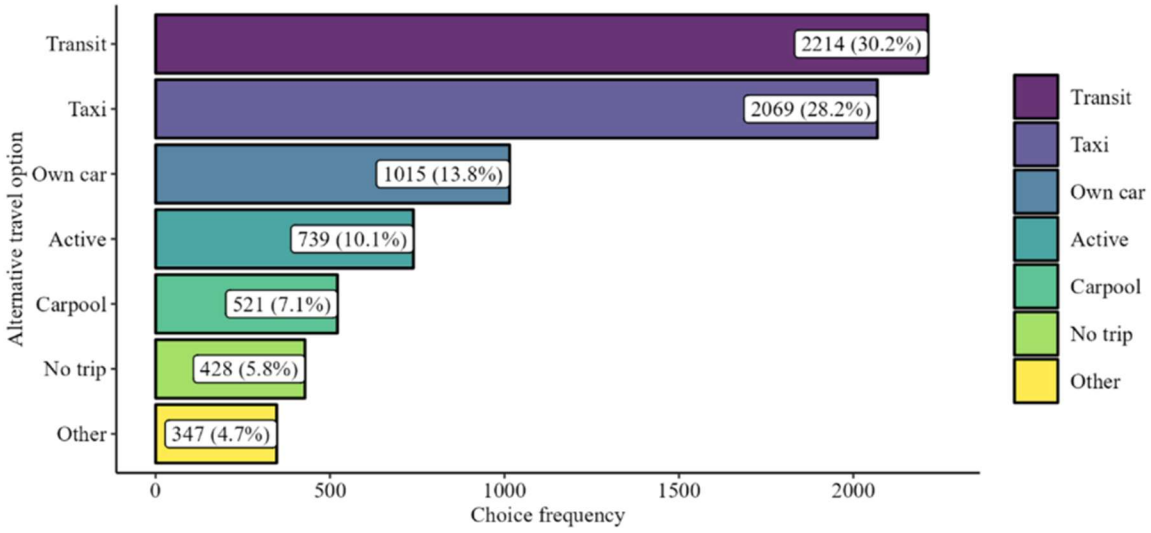
xxxix Moody, J., Farr, E., Papagelis, M., & Keith, D. R. (2021). The value of car ownership and use in the United States. Nature Sustainability.
xl DTS. (2024). Vehicle Ownership, and Its Role as a 'Third Space,' Alive, Well and Enduring. San Jose: Xperi.
xli Rainie, L., Funk, C., Anderson, M., & Tyson, A. (2022, March 17). Americans cautious about the deployment of driverless cars. Retrieved from Pew Research: https://www.pewresearch.org/internet/2022/03/17/americans-cautious-about-the-deployment-of-driverless-cars/

than developed ones, suggesting that people in countries with more dangerous roads and less car ownership may be more interested in AV adoption[xlii].

There has been speculation that AVs could serve a similar function to ridesharing services such as Uber and Lyft, and Waymo has already introduced an AV ridesharing service similar to these other services, but using driverless vehicles, in San Francisco and Los Angeles.

Studies show, however, that ridesharing services do not frequently replace trips that users would have otherwise made in their own personal vehicles. A study published by the Transportation Research Record[xliii] concluded that only 13.8% of trips made with ridesharing services replaced trips that would have otherwise been made in the respondent's own car, 30.2% of trips replaced transit, and 28.2% replaced a traditional taxi. The report also noted that over 50% of trips in the study were replacing more sustainable modes. Figure 22, taken from the report, shows the overall results of the study.

Figure 22: Replacement of Other Modes by Ride-sharing



This low rate of replacing trips in personal vehicles with ridesharing suggests that adoption of shared mobility AVs would likely not have the greatest impact on trips made with users' own cars, but could instead have an impact similar to ridesharing services on transit or other more sustainable transportation modes. If anything, Figure 22 suggests increased demand for new autos due to the substitution of ride-sharing for non-auto modes.

This all suggests that consumers will not be eager to give up car ownership in favor of AV and/or shared mobility; however, To conclude, most reports that the consultant team reviewed do not suggest that Americans will likely give up personal vehicle ownership in favor of shared mobility autonomous vehicles anytime soon. Americans value car ownership quite highly, and similar services such as ridesharing have largely affected transit, taxis, or other transportation methods rather than personal vehicle trips. Americans also remain at least somewhat wary of autonomous vehicles in general, which could slow adoption. Therefore, it seems there is little to suggest that

xlii Moody, J., Bailey, N., & Zhao, J. (2019). Public Perceptions of Autonomous Vehicle Safety: An International Comparison. Cambridge: Massachusetts Institute of Technology.

xliii Giller, J., Young, M., & Circella, G. (2024). Correlates of Modal Substitution and Induced Travel of Ridehailing in California. Transportation Research Record, 2046-2059.

either ride-sharing services or autonomous vehicles will markedly affect car import volumes in the foreseeable future.

III. Terminal 6 Auto Cargo Import Forecast

Approach

Three forecasts for imported ro-ro volumes have been prepared, each predicated on population projections and a combination of assumptions regarding general economic growth, overall tariff implementation, and automotive-specific tariff implementation.

According to feedback from the port, in general 20 percent of total vehicle imports are trucked out of the Port for distribution to dealers within the Pacific Northwest hinterland (Oregon, Washington, Idaho, and Western Montana), while the remaining 80 percent are transported to markets further inland via rail.

The foundation for the US population forecast is the 2023 National Population Projections produced by the U.S. Census Bureau. This represents the first set of projections to incorporate the results of the 2020 Census and utilizes the official estimates of the resident population on July 1, 2022 as the basis for projecting the US population from 2023 to 2100. [xliv] As part of the forecast, the Census Bureau developed a *Low Immigration Scenario* and a *High Immigration Scenario*. These scenarios served as the basis for inland population growth in the Base Line, Low Growth, and High Growth Ro-Ro vehicle import scenarios.

The population in the PNW hinterland region encompasses Oregon, Washington, and Idaho. In 2024, Oregon represented 30% of the total population in the region, Washington accounted for 57%, and Idaho comprised the remaining 13%.

- The Oregon Office of Economic Analysis produced a population forecast extending through 2034.[xlv] For the period covering 2035 through 2045, the growth rate is based on the average of the change in the Census Bureau forecast each year and the past 5-year trend for Oregon.
- The Washington State Office of Financial Management produced a population forecast extending through 2045.[xlvi]
- The Idaho Department of Labor produced a population forecast extending through 2029.[xlvii] As the trend in population growth in Idaho has mirrored Washington recently, 2030 through 2045 is based on the pace of growth in Washington.

The Low Growth regional population growth rate is calculated by averaging the Base Line regional population growth rate with the difference between the Low Immigration and Baseline Census forecast growth rates. The High Growth scenario was determined by taking the calculated difference between the Baseline regional population growth rate and the Low Growth regional population growth rate, and adding this difference to the Baseline regional population growth rate. This calculation method ensures that, for any given year, the Baseline regional population growth rate is the midpoint between the Low Growth and High Growth regional population growth rates.

The baseline for the forecast are the actual vehicle imports handled by Terminal 6 in 2024. This has then been split between the long-term distribution pattern, with 20% assigned to the regional hinterland and the remaining 80% assigned to rail transportation to inland destinations. The regional population growth rates were applied to

xliv https://www.census.gov/data/tables/2023/demo/popproj/2023-alternative-summary-tables.html
xlv https://www.oregon.gov/das/OEA/Pages/forecastdemographic.aspx
xlvi https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/state-population-forecast
xlvii https://lmi.idaho.gov/data-tools/population-projections/

the hinterland portion of the imported vehicles while the national population growth rates were applied to the inland portion of the imported vehicles.

To incorporate the potential impacts of tariffs and slower economic growth, the consultant team used representative values to adjust the scenarios. The impact of slower economic growth was combined with general cross-sector tariffs. The Baseline Growth Scenario applied an additional 5% decrease to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles in 2025. For example, if the 5% negative impact to import growth was applied to a 2% positive impact of population growth, the result would be a 3% overall decline in import volume. This impact was projected to extend five years, through 2029, before a rebound in 2030 that consists of an additional 5% economic increase in addition to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles. For example, if the 5% economic-driven increase was applied to a 2% increase in population-driven growth, the result would be a 7% increase in import volume over the prior year. The Baseline Growth Scenario does not include an automotive-focused tariff.

A more definitive tariff analysis was not possible, as ongoing negotiations, pauses, and changes make tariff levels a moving target. Moreover, there is no modern empirical experience with auto import tariffs at these levels.

Slow Growth Scenario

The Slow Growth Scenario uses the low growth population rates for both the hinterland and national populations. As before, the impact of slower economic growth and general cross-sector tariffs resulted in an additional 5% decrease to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles in 2025. However, in the Slow Growth Scenario this impact was projected to extend ten years, through 2034, before a weaker rebound in 2035 that consists of an additional 2.5% increase to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles. The impact of an automotive-focused tariff was also incorporated, with a further 10% decrease in volume applied to the 2025 growth factor. This impact was projected to extend five years, through 2029, before a rebound in 2030 consisting of an additional 5% increase applied to the population-driven growth rates.

High Growth Scenario

The High Growth Scenario uses the high growth population rates for both the hinterland and national populations. The impact of slower economic growth and general cross-sector tariffs again resulted in an additional 5% decrease to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles in 2025. However, in the High Growth Scenario this impact was projected to extend just two years, through 2026, before a stronger rebound in 2027 that consists of an additional 7.5% increase to the population driven growth rates for both the hinterland-destined vehicles and the inland-destined vehicles. The High Growth Scenario does not include an automotive-focused tariff.

High Growth/High Market Share Scenario

The High Growth/High Market Share Scenario is based on the High Growth Scenario and includes further market share gains from other ports, resulting in higher auto volumes at Terminal 6. The increased market share is projected to begin in 2030, with an estimated volume growth of 12.0% compared to 2029.

Import Forecast Summary

Table 18 below summarizes the four scenarios.

Table 18: Import Scenarios

Economic Scenarios	Pop Growth	Gen Tariff/ Econ Impact 5% Years	Auto Tariffs 10% Years	Rebound
Base	Base	5	0	Medium
Low	Low	10	5	Weak
High	High	2	0	Strong
High-High	High	2	0	Strong

Table 19 summarizes the average annual growth rates for the four scenarios.

Table 19: T6 Import Scenario Growth Rates

T6 Import CAGR	2024-2050	2025-2035	2035-2050
Base Line	0.3%	0.9%	0.2%
Low Growth	-0.2%	1.1%	0.1%
High Growth	0.6%	1.4%	0.3%
High Growth + Market Share	1.0%	2.5%	0.3%

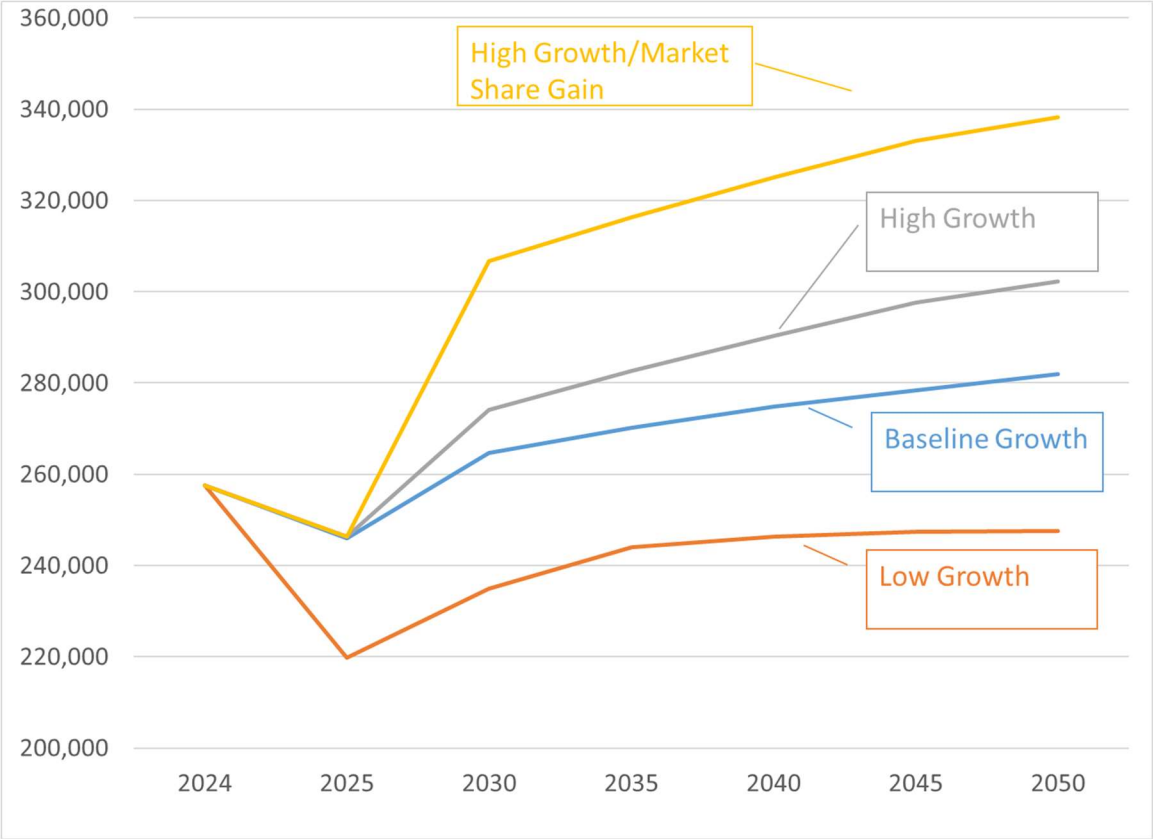
The detailed import forecasts are summarized in Table 20. The Baseline Import Growth scenario projects a gradual increase over the forecast horizon. Starting at 257,505 units in 2024, with a slight dip to 245,941 in 2025, volume is projected to recover and steadily rise, reaching 264,703 by 2030 and continuing to climb to 278,469 units by 2045. This represents an overall increase of approximately 8.1% from the 2024 level. The Low Import Growth scenario projects a more significant initial drop in volume to 219,765 units in 2025. While volume recovers somewhat thereafter, reaching 234,947 in 2030, the projected 2045 volume of 247,435 remains below the 2024 starting point, representing a decrease of about 4%. The High Import Growth scenario anticipates a substantial increase in T6 Volume, rebounding from 246,407 in 2025 to reach 274,121 units by 2030, and growing further to a projected 297,553 units in 2045. This represents an increase of over 15.5% from the 2024 starting point. The High Import Growth/High Market Share scenario builds on the previous scenario and projects a further increase in T6 Volume, rebounding from 246,407 in 2025 to reach 306,791 units by 2030, and growing further to a projected 333,016 units in 2045. This represents an increase of over 29% from 2024.

Table 20: Import Forecast Detail

Baseline Import Growth	2024	2025	2030	2035	2040	2045	2050	24-50 CAGR
T6 Volume	**257,505**	**245,941**	**264,703**	**270,211**	**274,784**	**278,469**	**281,991**	**0.3%**
Oregon Local	51,501	49,345	53,967	55,941	57,797	59,572	61,452	0.6%
Inland	206,004	196,596	210,736	214,270	216,987	218,897	220,538	0.2%
General Tariff/Economic Factor	0	5%	5%	0%	0%	0%	0%	
Auto Tariff Factor	0	0%	0%	0%	0%	0%	0%	
Growth	0	-4.5%	5.5%	0.4%	0.3%	0.2%	0.3%	
Low Import Growth								
T6 Volume	**257,505**	**219,765**	**234,947**	**244,091**	**246,277**	**247,435**	**247,593**	**-0.2%**
Oregon Local	51,501	44,129	48,094	50,836	52,121	53,164	53,476	0.1%
Inland	206,004	175,635	186,853	193,254	194,156	194,271	194,117	-0.2%
General Tariff/Economic Factor	0	5%	0%	3%	0%	0%	0%	
Auto Tariff Factor	0	10%	5%	0%	0%	0%	0%	
Growth	0	-14.7%	5.3%	2.7%	0.1%	0.1%	0.0%	
High Import Growth								
T6 Volume	**257,505**	**246,407**	**274,121**	**282,577**	**290,379**	**297,553**	**302,285**	**0.6%**
Oregon Local	51,501	49,368	55,472	57,798	60,177	62,674	62,940	0.8%
Inland	206,004	197,039	218,649	224,779	230,202	234,879	239,345	0.5%
General Tariff/Economic Factor	0	5%	0%	0%	0%	0%	0%	
Auto Tariff Factor	0	0%	0%	0%	0%	0%	0%	
Annual Growth	0	-4.3%	0.7%	0.6%	0.5%	0.5%	0.3%	
High Growth/High Share								
T6 Volume	**257,505**	**246,407**	**306,791**	**316,256**	**324,987**	**333,016**	**338,313**	**1.0%**
Oregon Local	51,501	49,368	55,472	57,798	60,177	62,674	62,940	**0.8%**
Inland	206,004	197,039	218,649	224,779	230,202	234,879	239,345	**0.5%**
General Tariff/Economic Factor	0%	5%	0%	0%	0%	0%	0%	
Auto Tariff Factor	0%	0%	0%	0%	0%	0%	0%	
Market Share Capture	0	0	32,670	33,678	34,608	35,463	36,027	

Figure 23 depicts projected import levels for the four scenarios.

Figure 23: Import Growth Scenarios

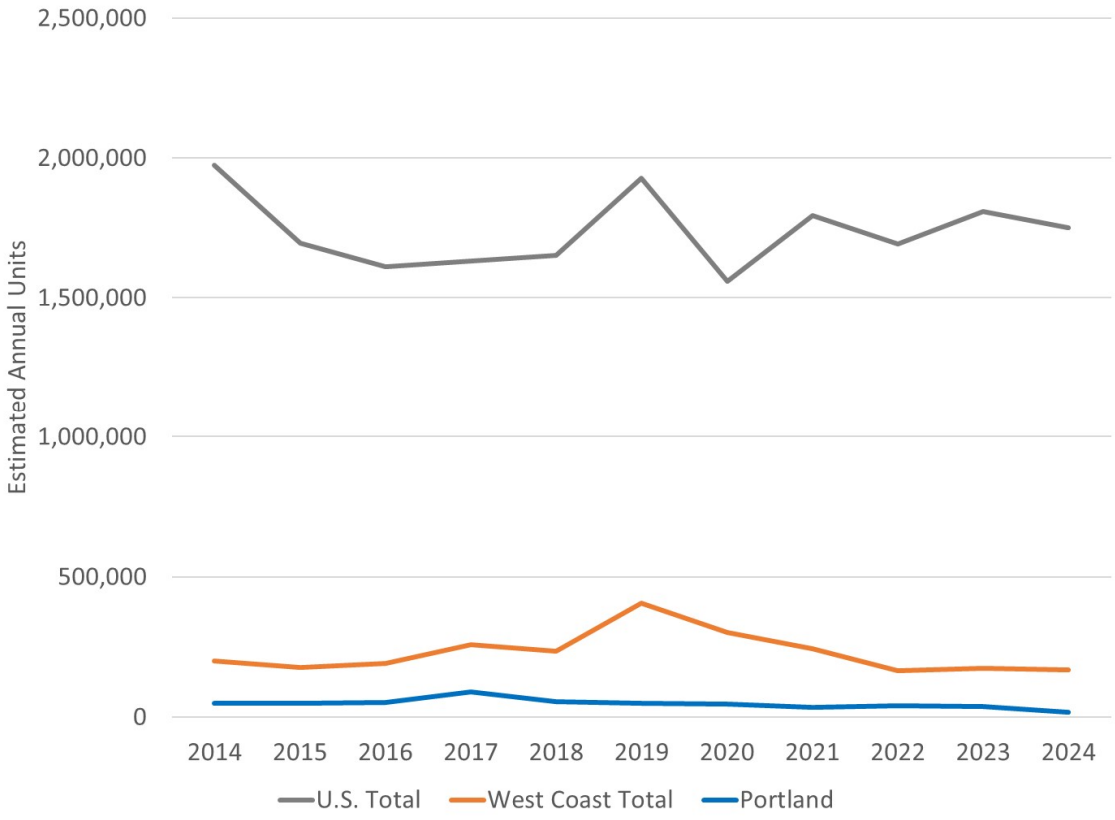


IV. Terminal 6 Auto Export Cargo Forecast

Approach

Auto exports through the Port of Portland are driven by different factors from the import flows. As Figure 24 indicates, U.S., West Coast, and Portland auto export volumes have shown relatively little overall growth since a surge in 2019. The Port of Portland has had a relatively stable share of U.S. and West Coast totals.

Figure 24: Estimated Annual Export Units



As shown in Figure 11, the mix of export brands moving through Berth 601 and 607 has shifted in recent years. In 2024 Ford and Stellantis dominated the export volumes. Conversation with AWC, however, indicate that AWC had expected a resurgence of GM exports in 2025 and 2026 prior to the recent tariff announcements.

The FY 24-25 export data provided by the Port exhibit the market shares shown in Table 21. Although some penetration of other markets is possible, Tioga's conservative forecast approach focused on the China, Japan, and South Korea markets currently being served from Portland.

Table 21: FY 24-25 T6 Export Destinations

FY 24-25 Exports	Units	Share
China	1,424	18%
Japan	2,119	27%
South Korea	4,328	55%
Total	**7,871**	**100%**

A recent projection of light vehicle sales in these markets is provided in Table 22. As noted in the import discussion, population growth is a major factor in long-term demand for autos. With slow or negative population growth in Japan and Korea, auto demand there is expected to decline over time.

Table 22: Light Vehicle Sales Projection

Sales Region	2024	2025	2026	2027	2028	2029	2030	2031	2032	24-32 CAGR
Greater China	26,391,134	27,272,037	27,796,001	28,775,746	28,032,374	28,708,252	29,094,353	29,583,990	29,873,719	1.6%
Japan/Korea	5,921,452	6,165,428	6,210,813	6,095,223	5,962,979	5,956,382	5,898,114	5,854,489	5,774,197	-0.3%

Source: S&P Global Mobility, Data compiled Mar. 28 2025.

Table 23 summarizes the key forecast factors.

Table 23: Key Export Forecast Factors

Market	FY 24-25 Share	2025-2032 CAGR
South Korea	55%	-0.3%
Japan	27%	-0.3%
China	18%	1.6%

Baseline Export Scenario

The Baseline Growth case export forecast uses the 2024 destination market shares and growth rates in Table 23, extending the 2025-2032 growth rates from Table 23 to 2050. This baseline forecast yields a 0.1% CAGR through 2050.

High Growth Export Scenario

The High Growth export forecast incorporates AWC's expectation of a strong resurgence in GM exports to Korea, totaling 20,000 units in 2025. (AWC also anticipated strong growth in 2026, but that growth is necessarily less certain and is not incorporated in the forecast.) The growth rates in Table 23 are then applied as in the Baseline Case. This High Growth export scenario yields a 2.0% CAGR in 2024-2050, with most of the growth occurring in 2025.

Low Growth Export Scenario

The Low Growth export scenario reflects the same tariff and economic impacts incorporated in the Low Growth import forecast. This approach effectively assumes that the overall impact of tariffs in general, and auto tariffs in specific are the same in Japan, South Korea, and China as they are in the U.S. Tioga considers this a more moderate approach than attempting to model the country-by-country impact of tariffs that are currently being negotiated. The Low Growth case thus assumes a 5% volume reduction for 10 years due to general tariffs and economic slowdown and an additional 10% reduction for 5 years due to auto-specific tariffs. As noted in the earlier tariff discussion, U.S. tariffs on imported auto parts and on aluminum and steel will raise the cost of U.S.-built cars to foreign buyers. Unlike the corresponding import scenario the Low Growth export scenario does not anticipate a volume rebound when tariffs expire. Since auto imports to Japan, Korea, and China from other nations will not face similar tariffs any pent-up demand for autos can be met by other exporters. The Low Growth scenario yields a 2024-2050 CAGR of -0.1%.

High Growth/Market Share Gain Export Scenario

The High Growth/Market Share Gain export scenario incorporates AWC's expectation of a strong export resurgence combined with a market share gain of 12% in 2028. This High Growth/Market Share Gain export scenario yields a 2.7% CAGR in 2024-2050, with most of the growth occurring in 2025.

Export Forecast Summary

Table 24 below summarizes the four export scenarios. These employ the same economic and tariff adjustments as the import scenarios under the assumption that importing countries will impose reciprocal tariffs.

Table 24: Export Scenarios

Economic Scenarios	Gen Tariff/ Econ Impact 5% Years	Auto Tariffs 10% 10% Years	Rebound
Base	5	0	Medium
Low	10	5	None
High	2	0	Strong
High-High	2	0	Strong

Table 25 summarizes the average annual growth rates for the four scenarios.

Table 25: T6 Export Scenario Growth Rates

T6 Export CAGR	2024-2050	2025-2035	2035-2050
Base Line	0.1%	0.1%	0.1%
Low Growth	-0.1%	1.2%	0.1%
High Growth	2.0%	-0.1%	0.0%
High Growth + Market Share	2.5%	1.0%	0.0%

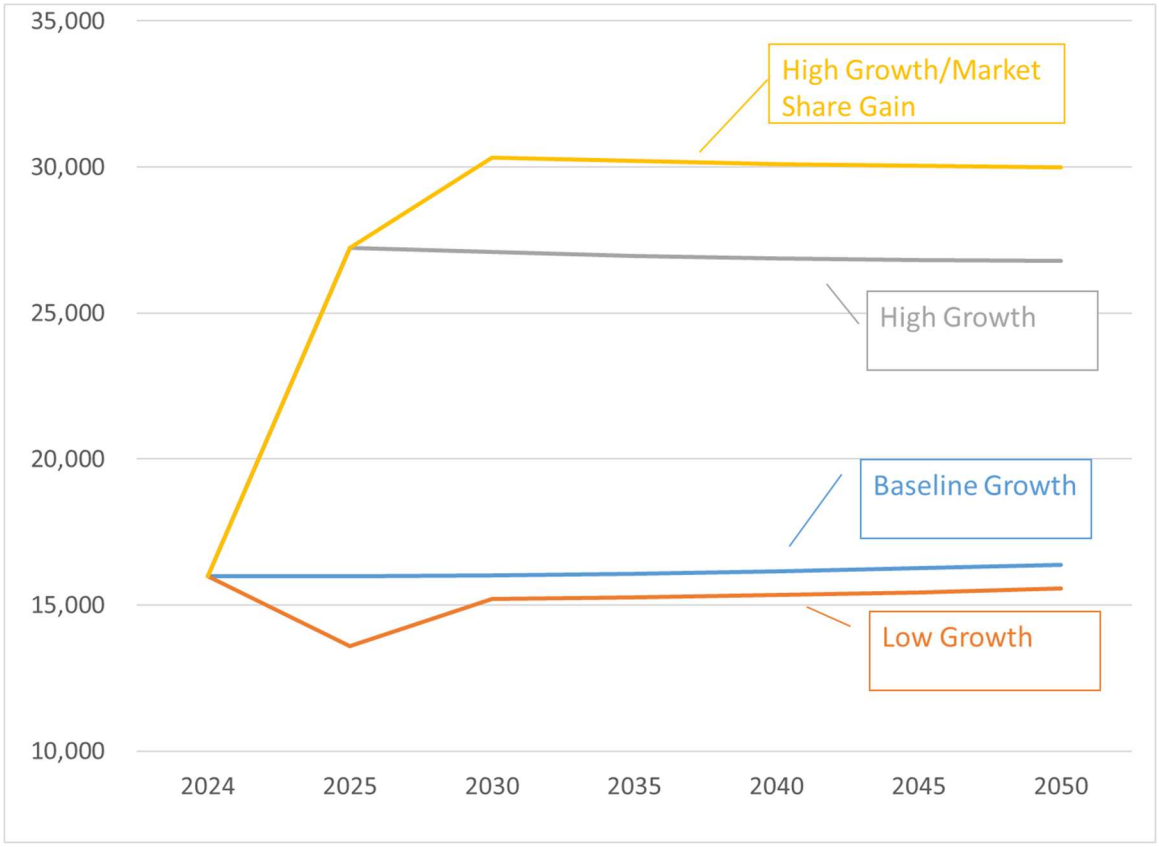
The detailed export forecasts are summarized in Table 26. The changes are, for the most part, small, and overshadowed by import volumes. The Baseline Export Growth scenario projects a gradual decline in exports to South Korea and Japan, offset by long-term export growth to China. Obviously, this forecast is vulnerable to Chinese reciprocal tariff increases. The Low Export case allows for a significant near-term decline, a partial recovery, and flat volumes that do not recover the 2024 peak within the forecast horizon. The High Growth and High-High Growth scenarios incorporate a near-term export increase that was expected before the tariff negotiations, but has been postponed as of this report date. The increased market share in the High-High case is not currently expected without the project. These cases thus represent growth paths that could have taken place prior to tariff impositions, but which might be resumed in the future.

Table 26: Export Forecast Detail

Baseline Export Growth			2024	2025	2030	2035	2040	2045	2050	24-50 CAGR
T6 Volume			**15,976**	**15,980**	**16,013**	**16,068**	**16,146**	**16,250**	**16,381**	**0.1%**
South Korea	55%	-0.3%	8,785	8,757	8,620	8,486	8,353	8,223	8,094	-0.3%
Japan	27%	-0.3%	4,301	4,287	4,221	4,155	4,090	4,026	3,963	-0.3%
China	18%	1.6%	2,890	2,935	3,172	3,427	3,703	4,002	4,324	1.6%
Growth				0.0%	0.1%	0.1%	0.1%	0.1%	0.2%	
Low Export Growth										
T6 Volume			**15,976**	**13,583**	**15,212**	**15,264**	**15,339**	**15,438**	**15,562**	**-0.1%**
South Korea	55%	-0.3%	8,785	7,444	8,189	8,061	7,936	7,812	7,690	-0.5%
Japan	27%	-0.3%	4,301	3,644	4,010	3,947	3,885	3,825	3,765	-0.5%
China	18%	1.6%	2,890	2,495	3,013	3,256	3,518	3,802	4,108	1.4%
Growth				-15.0%	11.8%	0.1%	0.1%	0.1%	0.2%	
High Export Growth										
T6 Volume			**15,976**	**27,223**	**27,080**	**26,962**	**26,871**	**26,807**	**26,774**	**2.0%**
South Korea	55%	-0.3%	8,785	20,000	19,688	19,380	19,078	18,780	18,486	2.9%
Japan	27%	-0.3%	4,301	4,287	4,221	4,155	4,090	4,026	3,963	-0.3%
China	18%	1.6%	2,890	2,935	3,172	3,427	3,703	4,002	4,324	1.6%
Growth				70.4%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	
High Export Growth/Market Share Gain										
T6 Volume			**15,976**	**27,223**	**30,681**	**30,899**	**31,141**	**31,409**	**31,705**	**2.7%**
South Korea	55%	-0.3%	8,785	20,000	20,005	20,010	20,015	20,020	20,025	3.2%
Japan	27%	-0.3%	4,301	4,287	4,221	4,155	4,090	4,026	3,963	-0.3%
China	18%	1.6%	2,890	2,935	3,172	3,427	3,703	4,002	4,324	1.6%
Market Share Capture					3,283	3,307	3,333	3,361	3,393	
Growth				70.4%	0.1%	0.1%	0.2%	0.2%	0.2%	

As Figure 25 suggests the main difference between the Baseline High Growth and Low Growth export scenarios is what happens over the near future in terms of export resurgence, market share gain, and/or tariff and economic impacts.

Figure 25: Auto Export Forecasts



V. Total T6 Import/Export Vehicle Forecast

Combining the import and export scenarios yields the overall T6 volume forecast in Table 28. The table contrasts the four different scenarios: Baseline Growth, Low Growth, High Growth, and High Growth/High Market Share Gain. The final column depicts the compound annual growth rate (CAGR) for each category over the 2024-2050 period. Imports consistently dominate the total volume across all scenarios and years, although in all but the Baseline Growth scenario the rate of export growth outpaces that of import growth.

The growth rates are summarized in Table 27.

Table 27: Total T6 Forecast Scenario Growth Rates

T6 Total CAGR	2024-2050	2025-2035	2035-2050
Base Line	0.3%	0.9%	0.3%
Low Growth	-0.1%	1.1%	0.1%
High Growth	0.7%	1.2%	0.4%
High Growth + Market Share	1.2%	2.4%	0.4%

Baseline Growth

This scenario projects a modest growth for both imports and exports. The total volume is forecasted to increase from 273,481 in 2024 to 298,372 by 2050, representing a CAGR of 0.3%. The total volume is projected to grow by 9.1% between 2024 and 2050 in this scenario. Imports are expected to grow at 0.4% annually, while exports have a lower annual growth rate of 0.1%. Imports would represent 94.5% of the total volume in 2050, compared to 94.2% in 2024.

Low Growth

In this more pessimistic scenario, the total volume decreases over time, with a negative CAGR of -0.2%. The total volume is projected to decrease by 3.8% between 2024 and 2050 in this scenario. This is driven by a decline in both imports (at an annual rate of -0.2%) and exports (at an annual rate of -0.1%). The total volume drops from 273,481 to 263,156 in 2025. Imports would represent 94.1% of the total volume in 2050.

High Growth

This scenario forecasts stronger growth than the baseline. The total volume is expected to rise from 273,481 to 329,059 in 2050, achieving a CAGR of 0.7%. The total volume is projected to grow by 20.3% between 2024 and 2050 in this scenario. This growth is supported by a significant increase in exports, which are projected to grow at 2.1% annually. Imports also grow, but at a slower rate of 0.6%. Even with the faster pace of growth, exports would represent just 8.1% of the total volume in 2050 compared to 91.9% for imports..

High Growth/Market Share Gain

This is the most optimistic scenario, combining strong market growth with an increase in T6's market share. The total volume is forecasted to grow at a CAGR of 1.2%, reaching 370,018 by 2050. The total volume is projected to grow by 35.3% between 2024 and 2050 in this scenario. The growth in imports (at 1.1%) is stronger than in other scenarios, but still lags the growth in exports (at 2.8%), indicating a significant increase in both inbound and outbound trade. Imports would represent 91.4% of the total volume in 2050. This scenario almost doubles the CAGR of the High Growth scenario, indicating that gaining market share would have a substantial impact on T6's

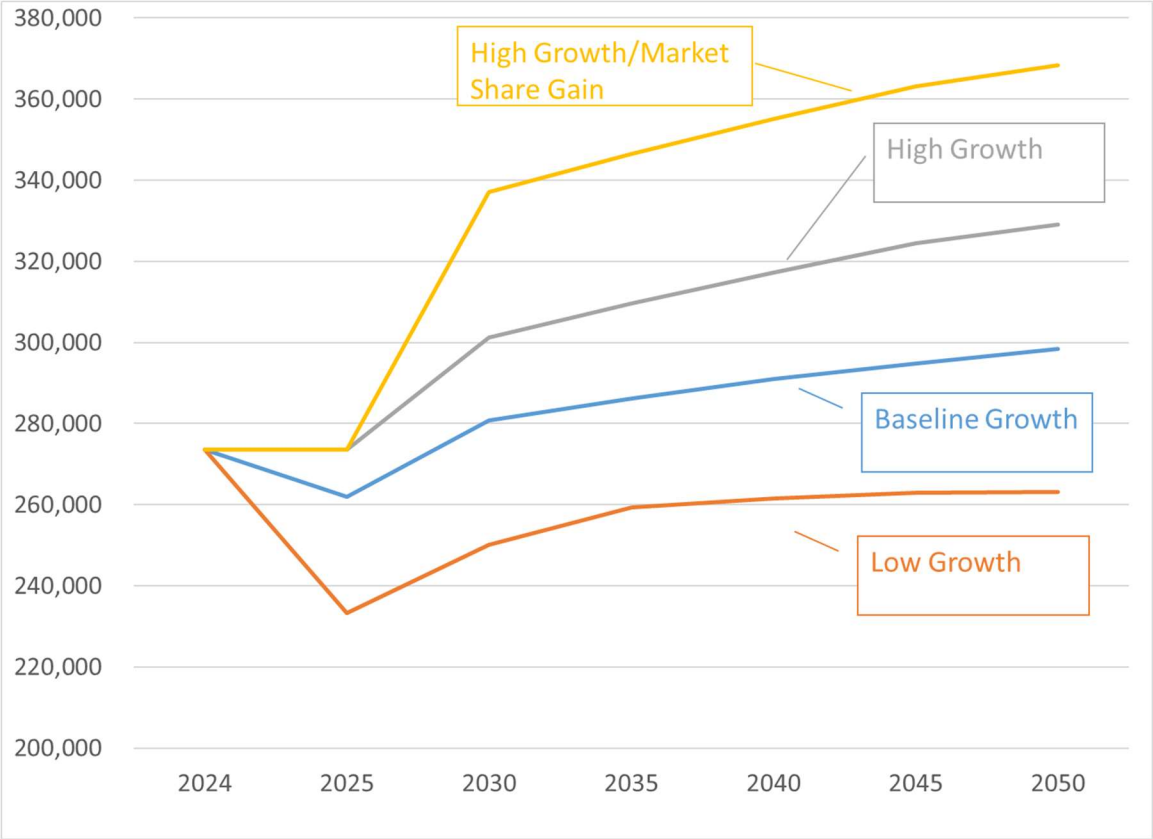
performance. However, market share growth is modeled as occurring in a single shift in 2028, and adjusting the year it occurs would impact the CAGR.

Table 28: Overall T6 2050 Volume Forecast Scenarios

Baseline Growth	2024	2025	2030	2035	2040	2045	2050	24-50 CAGR
T6 Volume	**273,481**	**261,921**	**280,716**	**286,278**	**290,930**	**294,720**	**298,372**	**0.3%**
Imports	257,505	245,941	264,703	270,211	274,784	278,469	281,991	0.3%
Exports	15,976	15,980	16,013	16,068	16,146	16,250	16,381	0.1%
Growth		-4.2%	5.2%	0.4%	0.3%	0.2%	0.2%	
Low Growth								
T6 Volume	**273,481**	**233,348**	**250,160**	**259,355**	**261,616**	**262,873**	**263,156**	**-0.1%**
Imports	257,505	219,765	234,947	244,091	246,277	247,435	247,593	-0.2%
Exports	15,976	13,583	15,212	15,264	15,339	15,438	15,562	-0.1%
Growth		-14.7%	5.7%	2.6%	0.1%	0.1%	0.0%	
High Growth								
T6 Volume	**273,481**	**273,630**	**301,201**	**309,540**	**317,250**	**324,360**	**329,059**	**0.7%**
Imports	257,505	246,407	274,121	282,577	290,379	297,553	302,285	0.6%
Exports	15,976	27,223	27,080	26,962	26,871	26,807	26,774	2.0%
Growth		0.1%	0.6%	0.5%	0.5%	0.4%	0.3%	
High Growth/Market Share Gain								
T6 Volume	**273,481**	**273,630**	**337,124**	**346,457**	**355,086**	**363,043**	**368,302**	**1.2%**
Imports	257,505	246,407	306,791	316,256	324,987	333,016	338,313	1.1%
Exports	15,976	27,223	30,333	30,201	30,099	30,028	29,990	2.5%
Growth		0.1%	0.6%	0.5%	0.5%	0.4%	0.3%	

Figure 26 displays the overall growth forecast scenarios graphically. Due to the dominance of import flows, Figure 26 closely resembles Figure 23.

Figure 26: Combined Auto Volume Forecast Scenarios



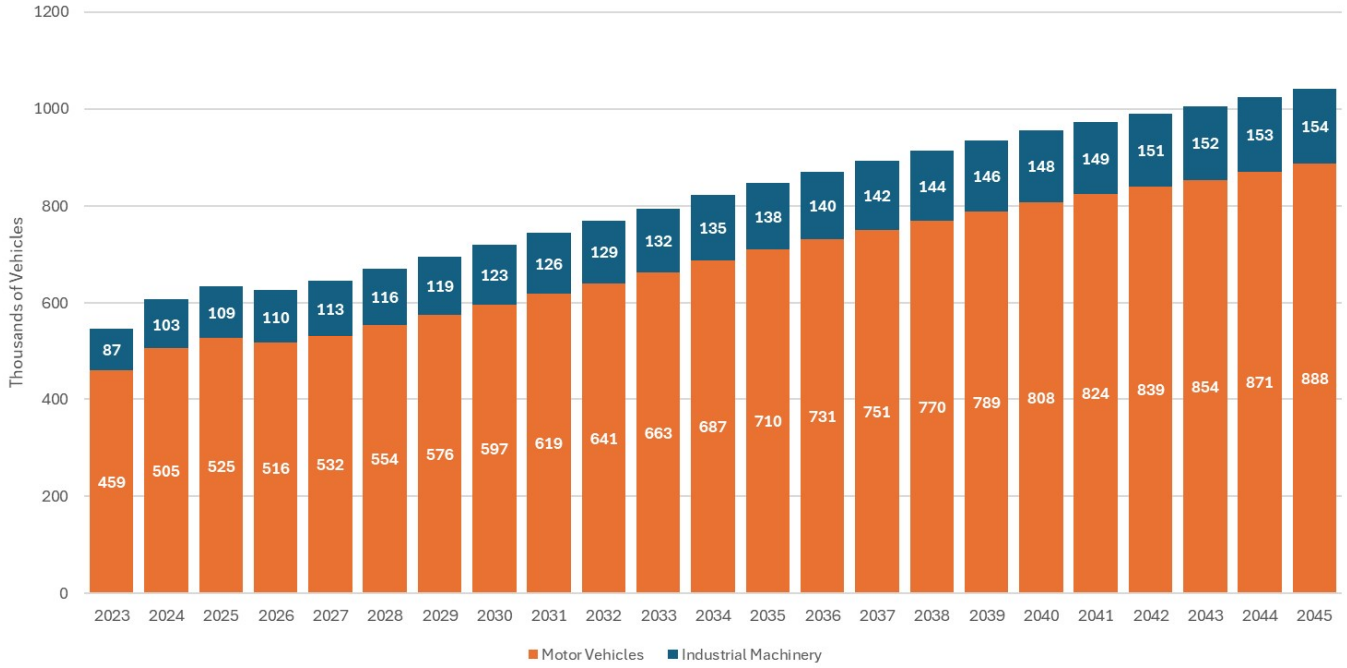
Comparison to Other Forecasts

No other recent port-level forecasts were located, although the 2024 Washington Marine Cargo Forecast produced for the Washington Public Ports Association (WPPA) and the Washington Freight Mobility Strategic Investment Board (FMSIB) was considered. It is important to note that this report was produced prior to the introduction of auto tariffs in 2025. The report stated that motor vehicles are projected to increase from 459,000 units in 2023 to nearly 888,000 units in 2045, while industrial machinery like forklifts, bulldozers, excavators, are projected to increase from 87,000 units in 2023 to 154,000 units in 2045 (Figure 27).[xlviii] Based on the (rounded) figures included in the report, motor vehicles are forecast to experience a total growth of 93.5%, with annual growth of 3.1%, while industrial machinery is projected to have a total growth of 77.0%, with annual growth of 2.6%. The report notes 98% of all roll-on/roll-off vehicles arrive as imports and that this is not expected to change through 2045.[xlix]

The 3.1% annual pace of growth for motor vehicles is significantly higher than the 1.2% rate in the High Growth/Market Share Gain scenario, suggesting that even the team's most aggressive forecast might be on the conservative side. However, it is important to recall that the 2024 Washington Marine Cargo Forecast was produced prior to the introduction of steep auto tariffs, and as such was developed with a different set of assumptions.

[xlviii] 2024 Washington Marine Cargo Forecast, p36, Washington Public Ports Association and the Washington Freight Mobility Strategic Investment Board
[xlix] Ibid.

Figure 27: WPPA International Ro-Ro Forecast, Thousands of Roll-On/Roll-Off Vehicles



Data source: 2024 Washington Marine Cargo Forecast, Washington Public Ports Association and the Washington Freight Mobility Strategic Investment Board

VI. Terminal 6 Auto Carrier Vessel Call Forecast

Approach

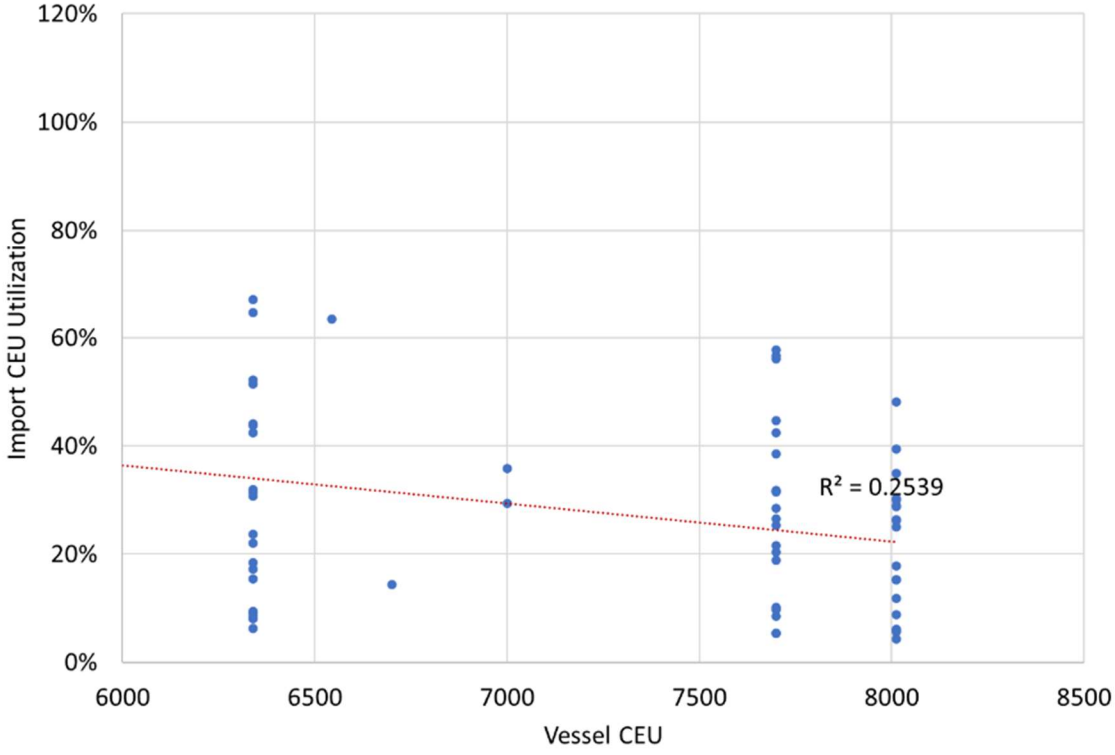
Vessel calls are driven by import flows. Export flows are handled on the same vessels as imports, and no export-only calls were noted in recent data. The base case vessel call forecast builds from the average import units per call by ro-ro vessels at T6 in FY 24-25 YTD in data supplied by the Port (Table 29). There were 85 total ro-ro vessel calls at T6 berths in FY 24-25 YTD data: 40 at Berth 601 alone, 29 at Berth 607 alone, and 8 that called at both Berth 601 and Berth 607. The eight vessels that called at both Berth 601 and Berth 607, were treated as 16 separate calls, 8 at each berth. Note that the voyages that called at both berths handled roughly double those that called at just one berth. The average number of units per call at the double-berth calls thus aligns with the overall averages for Berth 601 and Berth 607.

Table 29: FY 24-025 Average Import Units per Call

Berth	Calls	Import Units	Avg. Units/Call	Ratio
601	40	65,855	1,646	0.47
607	29	54,109	1,866	0.53
601/607	8	29,374	3,672	
601 Combined	48	79,624	1,659	
607 Combined	37	69,714	1,884	
T6	**85**	**149,338**	**1,757**	

The forecast is based on the assumption that vessels will call at other North American West Coast ports, including Portland, and that vessel utilization levels will remain consistent in the future. In Port data for FY 24-25, import vessel utilization averaged 32%, and declined slightly with vessel size (Figure 28), supporting the use of a average import volume per call as a useful metric. As such, any significant decrease in volume would result in fewer calls, and any increase in volume would result in additional calls.

Figure 28: FY 24-25 Import Vessel CEU Utilization



Import Vessel Forecast

Table 30 displays the vessel call forecast based on the import forecast scenarios. Vessel calls in 2024 were based on actual data collected over a period of approximately six months from June 30, 2024, to January 10, 2025, using the average number of vehicles per call during the period to estimate the number of calls for 2024. The ratio was held steady throughout the forecast period.

Under the Baseline Import Growth scenario, vessel calls are projected to grow at a modest pace. After a slight dip to 140 in 2025, calls are expected to gradually rise, reaching 151 by 2030 and continuing to climb to 158 by 2045. This represents an increase of approximately 7.5% from the 2024 level. The Low Import Growth scenario projects that calls will drop to 125 in 2025, and while there is a recovery in subsequent years the number of calls remains below the 2024 starting point for the entire forecast period, reaching only 141 by 2045. The High Import Growth scenario anticipates a significant increase in vessel calls, reaching 156 calls by 2030, and climbing to a projected 169 calls in 2045. This represents an increase of over 15% from the 2024 starting point.

Table 30: Forecast T6 Vessel Calls

Baseline Import Growth	2024	2025	2030	2035	2040	2045	2050
T6 Volume	257,505	245,941	264,703	270,211	274,784	278,469	281,991
Annual Import Vessel Calls	147	140	151	154	156	158	161
Low Import Growth							
T6 Volume	257,505	219,765	234,947	244,091	246,277	247,435	247,593
Annual Import Vessel Calls	147	125	134	139	140	141	141
High Import Growth							
T6 Volume	257,505	246,407	274,121	282,577	290,379	297,553	302,285
Annual Import Vessel Calls	147	140	156	161	165	169	172
High Growth/High Share							
T6 Volume	257,505	246,407	306,791	316,256	324,987	333,016	338,313
Annual Import Vessel Calls	147	140	175	180	185	190	193

The chart below depicts projected vessel calls for the four import scenarios.

Figure 29: Forecast Import Vessel Calls