

2017 Washington State MARINE PORTS and NAVIGATION PLAN



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CHAPTER 1

INTRODUCTION

Marine transportation provides cost-effective, fuel-efficient, and safer movement for many kinds of freight. Increased use of the marine system—by way of modal diversion—can reduce demand on the highway and rail systems, and thereby provide social, economic, and environmental benefits to the region. Washington is one of the most trade-dependent states per capita in the United States. Trade is reliant on the safe and efficient movement of goods, making ports important to Washington’s economic competitiveness. Many states are also dependent on the ports in Washington to import and export freight.

1.1 Purpose of this plan

The goal of the Marine Ports and Navigation Plan is to assess the transportation needs of marine ports in Washington, including navigation, and to identify transportation system improvements needed to support the international trade and economic development role of marine ports in Washington. The Washington State Department of Transportation (WSDOT) developed this plan to meet state law requirements,¹ and to support the preservation and enhancement of the marine freight system in Washington.

This plan primarily focused on freight transportation. It also generally covers passenger and recreational port and marine topics. The plan explains the economic context of marine transportation, while defining the marine freight system. Additionally, the plan includes analysis of the condition and performance; volumes and forecast; and trends and issues of the system. Lastly, the plan provides strategies to address the trends, issues, and needs.

WSDOT developed this plan in consideration of Results Washington,² the statewide performance management initiative. WSDOT’s work on the marine system contributes to Results Washington’s “Goal 2: Prosperous Economy” by improving travel and freight reliability on strategic corridors. This work also supports Results WSDOT’s³ “Goal 2: Modal Integration” and “Goal 5: Community Engagement.” Results WSDOT provides the vision, mission, values, goals, priority outcomes, and strategies to guide the work of the agency.

1.2 Ports are global gateways

Compared to many other ports in the U.S., some marine ports in Washington have several significant advantages, including natural deep-water harbors on the coast, a West Coast location close to Asian markets, and strong connections to Freight Economic Corridors. Ports in Washington serve as important intermodal facilities for international and regional trade, and the Puget Sound ports function as gateways for containerized commerce between North America and the rest of the world.

¹ RCW 47.06.070. Marine Ports and Navigation Plan. <https://app.leg.wa.gov/rcw/default.aspx?cite=47.06.070>

² Results Washington. <http://www.results.wa.gov/>

³ WSDOT. Results WSDOT. February 2017. <https://www.wsdot.wa.gov/sites/default/files/2017/03/06/ResultsWSDOT2016ProgressReportExecutiveSummary.pdf>

Washington is a gateway state, connecting Asian trade to the U.S. economy, Alaska to the Lower 48 states, and Canada to the U.S. West Coast. On a per capita basis, Washington was the second most trade-dependent state in the nation in 2016, behind Michigan, with total imports and exports valued at \$126.8 billion. In this context, WSDOT has defined trade dependence as the total per capita value of the state's international imports and exports. In 2016, \$79.6 billion in U.S. international trade was exported from or through Washington, of which \$47.9 billion was related to transportation equipment (mostly aircraft) and \$10.2 billion was agricultural products.⁴ In the same period, \$47.2 billion in U.S. international trade was imported to or through Washington.⁵ Approximately 81,000 employees work in the transportation/warehousing sector in Washington, which produced \$1.4 billion in gross business income. Imports support U.S. manufacturers and provide goods to consumers, while agricultural exports support farms throughout the Pacific Northwest and Midwest. Goods coming into Washington by container ship are often headed to the Midwest and East Coast. The highways, rail corridors, and waterways serve to transport goods to locations in Washington and beyond.

In 2015, the maritime industry in Washington supported 69,500 direct jobs and 121,600 indirect and induced jobs. The total economic impact of the maritime sector in 2015 includes \$12.5 billion in labor income and \$37.8 billion in business revenue across Washington.⁶ Maritime logistics and shipping is the largest subsector of the maritime industry, and is critical to the state's trade-dependent economy. Ports in Washington handled a total of 19 million metric tons of international waterborne container trade in 2015, and the ports of Seattle and Tacoma handle most of the international container exports and imports.

Together the ports of Seattle and Tacoma, known collectively as the Northwest Seaport Alliance (NWSA), rank fourth among North American ports in total

container traffic, behind Los Angeles/Long Beach, New York/New Jersey, and Savannah.⁷ The ports of Seattle and Tacoma move breakbulk cargo—cargo moved as separate pieces rather than in containers—as well. International trade moving through these two seaports exceeded \$74.7 billion in 2015. The top three commodities exported through the two seaports are agricultural products, industry machinery, and aircraft and parts. The top three commodities imported through the two seaports are industrial machinery, electric machinery, vehicles and parts.



The Friend Ship Box is being loaded for shipment to Busan, Korea. The container was painted by about 100 Pierce County children during Tacoma's Commencement Bay Maritime Fest. Kids from Korea will paint the other side when it arrives. Source: Port of Tacoma

The Ports of Vancouver USA, Kalama, Olympia, Longview, Grays Harbor, Pasco, and Everett handle mostly bulk goods. The Port of Grays Harbor and several along the Columbia River, including the ports of Kalama, Vancouver, and Longview, play a major role in the movement of exported agricultural products to foreign markets. Kalama is the largest grain port on the West Coast. Some of these ports handle more than bulk. Breakbulk and roll-on/roll-off freight are also major lines of business for ports in Washington. The Port of Everett directly serves the Boeing Company assembly plant in Snohomish County.

⁴ U.S. Department of Trade and Commerce, International Trade Administration, Export Product Profile to a Selected Market. <http://tse.export.gov/tse/TSEReports.aspx?DATA=SED>

⁵ U.S. Census Bureau. Foreign Trade. <https://www.census.gov/foreign-trade/statistics/state/data/imports/wa.html>

⁶ Washington State Maritime Sector Economic Impact Study, 2017 Update. <http://leg.wa.gov/JointCommittees/Archive/ERMM/Documents/2014-9-30/b%20Economic%20Impact.pdf>

⁷ American Association of Port Authorities. 2016 Port Rankings by TEUs. http://aapa.files.cms-plus.com/Statistics/NAFTA%20REGION%20CONTAINER%20TRAFFIC%20PORT%20RANKING%202016_T3.pdf

Ports affect local, regional, state, national, and international economies. Smaller ports have a modest effect on state economy as a percentage of the whole, but for the local economy, the effect is as great as or even greater than the NWSA to the Puget Sound. Ports are economic drivers that attract businesses and industries. Businesses can locate near a port for synergies that can lower supply chain costs, reduce transit times, and provide access to multiple vendors. The concept of a cluster of interacting, competing, and cooperating businesses with a port at the core is apparent when examining a port, such as the NWSA, with the many direct vendors and suppliers, such as warehouses, stevedore and trucking companies. The indirect beneficiaries of a port are less apparent, but include those businesses that ship and receive via the port and benefit from the business community that arises. Ports also support jobs, benefiting the local economy as employees spend their wages. The average maritime laborer in Washington made almost \$67,000 a year in May 2016; a captain, mate, or pilot made almost \$84,000.⁸

⁸ U.S. Department of Labor. Bureau of Labor Statistics. May 2016 State Occupational Employment and Wage Estimates for Washington. https://www.bls.gov/oes/current/oes_wa.htm#53-0000

CHAPTER 2

THE MARINE FREIGHT SYSTEM

The marine freight waterways in Washington consist of the Pacific Ocean, the Salish Sea, and the Columbia-Snake River System. These waterways and their channels, combined with commercial ports, terminals, locks/dams, and vessels, comprise the marine system. In addition, the marine system also includes the intermodal landside connections of ports, which allow the roadway and railway systems to move freight to and from the water.

2.1 Pacific Ocean

The Pacific Ocean forms most of Washington’s western border. All commercially navigable waters in Washington lead to the Pacific Ocean, where freight can be transported globally from ports and terminals. Both ships and barges traverse the Pacific Ocean.



Photo: Port of Grays Harbor. Source: Washington State Department of Transportation

This part of Washington is on the M-5 Corridor, one of the Marine Highway Routes that comprise America’s Marine Highway System. The system is part of America’s Marine Highway Program, led by United States Department of Transportation (USDOT) Maritime Administration. The M-5 Corridor includes the

Pacific Ocean coastal waters, connecting commercial navigation channels, ports, and harbors from San Diego, California to the U.S.-Canada border north of Seattle. It spans Washington, Oregon, and California along the West Coast. At the Canadian border, it connects to the M-5 Alaska Marine Highway Connector.

As shown in Exhibit 2-1, there is one deep-draft port directly on the Pacific Ocean in Washington capable of handling ocean-going vessels, which is in Grays Harbor. For navigation, the Port of Grays Harbor depends on twin jetties (17,200 feet and 13,734 feet) to secure the mouth of the harbor with a deep-draft 22-mile channel from the Pacific Ocean to Aberdeen. The deep-draft channel is 350 feet wide, increasing to 1,000 feet over the bar. Channel depth is 36 feet up to the major port docks at Cow Point and then 32 feet from there to the last dock at South Aberdeen.

Exhibit 2-1: Ports on the Pacific Ocean

Port	Primary Commodities
Grays Harbor	Autos, soybeans, compressed natural gas

Source: Washington State Department of Transportation

2.2 Salish Sea

The Salish Sea is composed of three large bodies of water (the Strait of Juan de Fuca, the Strait of Georgia, and Puget Sound), as well as several smaller bodies of water (e.g., Elliott Bay, Commencement Bay, Bellingham Bay, Hood Canal, Haro Strait, Rosario Strait) that are connecting channels and adjoining waters.

The Strait of Juan de Fuca is a large channel of water that begins at the Pacific Ocean between Vancouver Island, British Columbia, and the Olympic Peninsula of Washington. It extends 95 miles easterly to the San Juan Islands.

The U.S. portion of the Strait of Georgia extends north from Rosario Strait and Haro Strait at the San Juan Islands approximately 15 miles to the International Boundary.

Puget Sound is a partly enclosed coastal body of water. It is a system of interconnected waterways and basins, beginning with its major connection to the Strait of Juan de Fuca at Admiralty Inlet and extending approximately 100 miles south to its southern end at Olympia.

Additionally, the Salish Sea marine corridor includes connected bays, inlets, and other commercially navigable waterways including, but not limited to, Lake Washington and the accompanying Lake Washington Ship Canal, Hood Canal, Possession Sound, the Blair Waterway, and the Lower Duwamish Waterway. The system extends eastward from Cape Flattery on the Pacific Ocean to include the San Juan Islands, north from there to the International Boundary, and south to Olympia.

The Lake Washington Ship Canal contains the only lock system on the Salish Sea. The U.S. Army Corps of Engineers (USACE) completed the Hiram M. Chittenden Locks in 1917. Connecting the waters of Lake Washington, Lake Union, and Salmon Bay to the tidal waters of Puget Sound, the canal and locks allow recreational and commercial vessels to travel to the docks and warehouses of Seattle’s busy freshwater harbor. The complex includes two locks.



Photo: ZIM Djibouti at berth at Washington United Terminals. Source: Port of Tacoma

As shown in Exhibit 2-2, there are eight deep-draft public ports capable of handling ocean-going vessels in the Salish Sea, at Shelton, Olympia, Seattle/Tacoma, Bremerton, Everett, Bellingham, Anacortes, and Port Angeles. There are also private industrial terminals at Anacortes, Ferndale, and Cherry Point.

Exhibit 2-2: Ports on the Salish Sea

Port	Primary Commodities
Shelton	Lumber
Olympia	Lumber, logs, breakbulk, grain, livestock, heavy lift
NWSA (Ports of Tacoma and Seattle)	Dry containers, refrigerated containers, breakbulk, roll-on/roll-off, grain, seafood, logs
Bremerton	Military, fuel
Everett	Aircraft parts, logs
Bellingham	Bulk and break bulk
Anacortes	Shipbuilding and repair
Port Angeles	Logs and lumber

Source: Washington State Department of Transportation

International container shipping provides access to distant markets. Approximately 20 international container carriers provide regular weekly service between the NWSA harbors of Seattle and Tacoma and key markets in Asia, Europe, Central America, and the Oceania geographic region.¹ In early 2017, the top shipping carriers around the world regrouped to form new shipping alliances. Three alliances now represent 96 percent of all east-west ocean freight trades.

The route from Washington to Alaska is one of the nation’s most important routes for domestic waterborne commerce with Alaska. Almost all of the supplies necessary to meet the everyday needs of Alaska’s residents and businesses move by water from Seattle and Tacoma. Crude oil is the most significant commodity carried to Washington from Alaska by weight, and nearly 295,000 barrels of crude oil moved south from Alaska to refineries in Washington every day in 2011. In 2014, the ports of Seattle and Tacoma jointly handled 870,733 domestic TEU. Much of this volume was generated by Alaska. A twenty-foot equivalent unit

¹ Northwest Seaport Alliance. Ocean Carriers. <https://www.nwseaportalliance.com/operations/ocean-carriers>

(TEU) is the standard measurement of volume, and is an approximate unit of cargo capacity based on the volume of a 20-foot-long intermodal container.

Ocean-towing tugs provide barge-towing services for both short and long distances from Washington. These tugs tow cargo, such as container barges, oil rigs, retired military vessels, or mineral extracts from remote mines. Six major barge terminals are located in Seattle on the Lower Duwamish Waterway, providing common carrier and contract-carrier service primarily to Alaska, Hawaii, Canada and coast-wise to Oregon and California. Weekly barge service to and from Harbor Island in Seattle carries rail cars for the Alaska Railroad, connecting it to the rest of the U.S. rail system.

Two companies operating out of Tacoma provide ocean container carrier service between Washington and the domestic markets of Alaska and Hawaii. Container vessels carry over 50 percent of goods traveling between Puget Sound and Alaska. Roll-on/roll-off and breakbulk services are available on ocean-going ships as well.

2.3 Columbia-Snake River System

The Columbia-Snake River System is composed of the two connected rivers that facilitate commercial navigation. The Columbia-Snake River Barge Channel extends 360 miles from Lewiston, Idaho to Vancouver, and flows into the 105-mile long Columbia and Lower Willamette River Channel that continues west to the Pacific Ocean near Ilwaco. The upper river system has eight lock and dam facilities that allow barges to serve ports and terminals on the waterway; the lower river system, from Vancouver to the Pacific Ocean, does not have lock and dam infrastructure. A 14-foot deep channel is maintained from Lewiston, Idaho to Vancouver; a 43-foot deep channel is maintained from Vancouver to the Pacific Ocean.²

The USDOT Maritime Administration (MARAD) has designated the Columbia-Snake River System as the M-84 Corridor, one of the Marine Highway Routes that comprise America’s Marine Highway System. The M-84 Corridor includes the Columbia, Willamette and Snake rivers, connecting commercial navigation channels, ports, and harbors. It spans Oregon, Washington, and Idaho from Astoria, Oregon to Lewiston, Idaho and a

26-mile portion of the Willamette River from Willamette Falls to the confluence with the Columbia River.

There are three deep-draft ports in Washington currently handling ocean-going vessels on the Columbia River, at Vancouver, Kalama, and Longview. Exhibit 2-3 shows the primary commodities handled by these ports. An additional nine shallow draft ports in Washington handle barges at Clarkston, Whitman-Wilma, Whitman-Almota, Garfield-Central Ferry, Whitman-Central Ferry, Benton, Pasco, Walla Walla, and Klickitat. Exhibit 2-4 shows the primary commodities handled by these ports. There are other ports not currently handling cargo that have the capability and infrastructure for handling marine freight, and private terminals in operation outside port districts. Shippers and receivers in Washington also use marine freight facilities and terminals on the Columbia-Snake River System outside the state, including Portland and Morrow in Oregon and Lewiston in Idaho.

Exhibit 2-3: Deep draft ports on the Columbia-Snake River System in Washington

Port	Primary Commodities
Vancouver	Grain, auto, steel, heavy lift
Kalama	Grain, steel
Longview	Grain, bulk, heavy lift, general cargo, petroleum coke, logs

Source: Washington State Department of Transportation

Exhibit 2-4: Shallow draft ports on the Columbia-Snake River System in Washington

Port	Primary Commodities
Clarkston	Forest products, heavy lift, containers
Whitman-Wilma	Grain
Whitman-Almota	Grain
Garfield-Central Ferry	Grain
Whitman-Central Ferry	Grain
Benton	Military, heavy lift
Pasco	Containers, refrigerated, heavy lift
Walla Walla	Grain, refrigerated
Klickitat	Logs

Source: Washington State Department of Transportation

² Pacific Northwest Waterways Association. Columbia-Snake River System Facts. <http://www.pnwa.net/factsheets/CSRS.pdf>

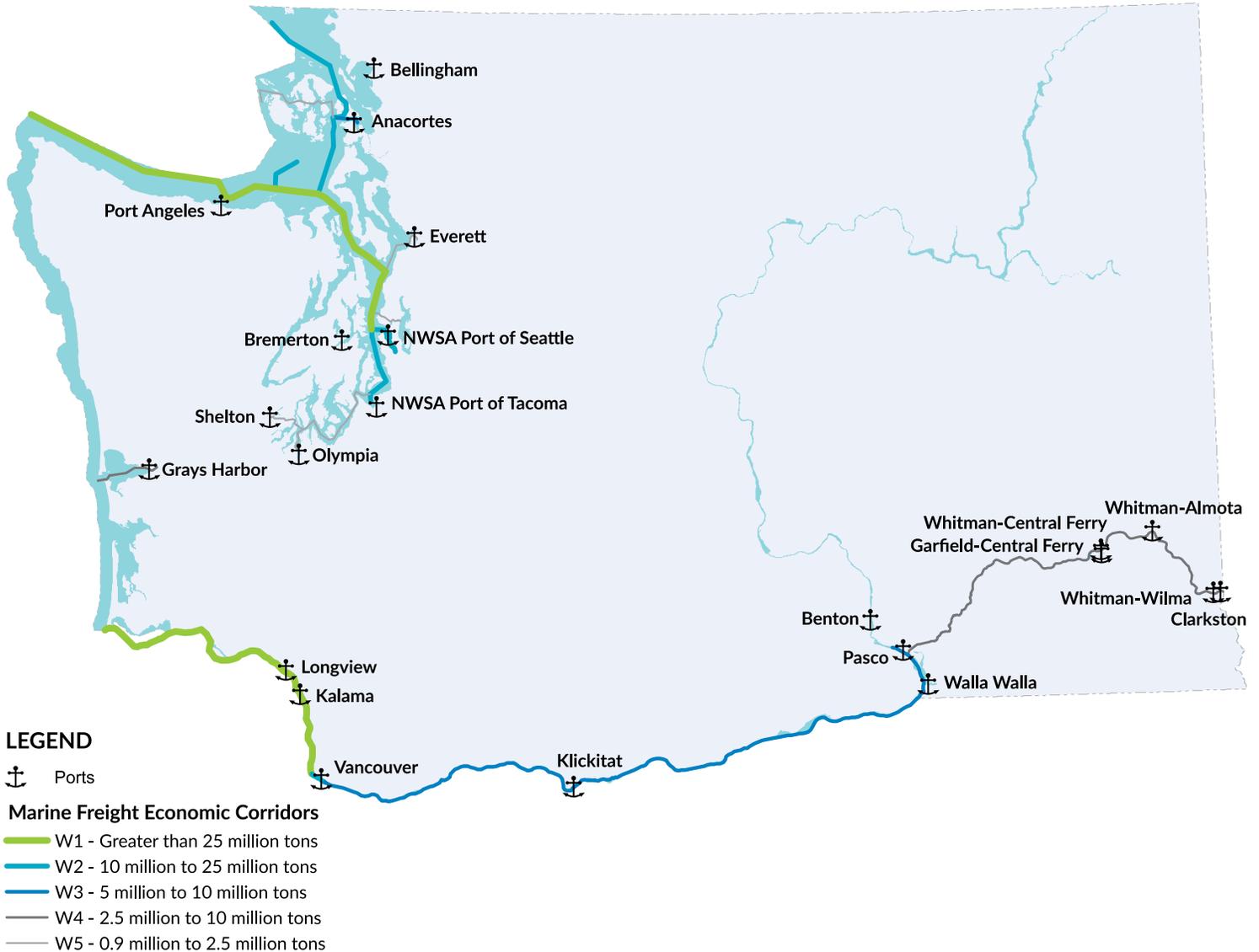
2.4 Waterway Freight Economic Corridors

WSDOT classifies marine corridors based on the volume of freight carried by corridor. The Freight Economic Corridors system is used to identify and map supply chains, identify system condition and capacity issues, and to develop performance measures to improve freight mobility. A map of the Waterway Freight Economic Corridors is shown in Exhibit 2-5.

The Waterway Freight Economic Corridors are classified with the following structure:

- W1: more than 25 million tons per year
- W2: 10 million to 25 million tons per year
- W3: 5 million to 10 million tons per year
- W4: 2.5 million to 5 million tons per year
- W5: 0.9 million to 2.5 million tons per year

Exhibit 2-5: Marine Freight Economic Corridors



Source: Washington State Department of Transportation

CHAPTER 3

THE MARINE FREIGHT FORECAST

The national freight volumes presented in this section are based on the Freight Analysis Framework (FAF) that is produced through a partnership between the Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA). Starting with data from the 2012 Commodity Flow Survey and international trade data, FAF Version 4 (FAF4)¹ integrates data from a variety of sources to create a comprehensive picture of freight movement nationally by all modes of transportation. The FAF4 provides estimates for tonnage and value, commodity type, and mode. Data are available for the base year of 2012, the recent years of 2013 to 2015, and forecasts from 2020 to 2045 in 5-year intervals. FAF4 forecasts are a reasonable exploration of current trends, but do not reflect major shifts in the national economy, future capacity limitations, or changes in transportation costs and technology.

Forecasts from FAF4 indicate that freight tonnage moved exclusively by the marine modes (i.e., ships and barges) is projected to increase from 24.6 million in 2015 to 28.7 million in 2035. That translates to a total increase of 17 percent over a 20-year period, and an annual growth rate at 0.8 percent. The total freight ton-miles moved is anticipated to increase 19 percent from 26.9 billion in 2015 to 32.1 billion in 2035, at an annual growth rate of 0.9 percent.

Exhibit 3-1 shows tonnage and ton-miles, a measurement of one ton of freight carried one mile, for the marine system in Washington. The marine forecast from FAF4 is for freight moved exclusively by water, and does not include multimodal shipments, such as truck-water or rail-water shipments.

Exhibit 3-2 shows marine freight shipment by direction in Washington for 2015 and 2035. In 2015, inbound shipment accounted for 46 percent, outbound shipment accounted for 14 percent, and intrastate shipment

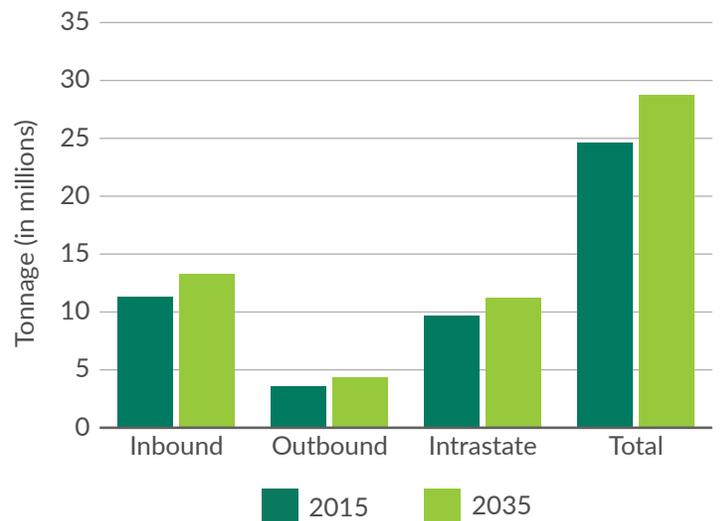
accounted for 40 percent. In general, shipments for all directions are expected to grow at a similar pace over a 20-year period.

Exhibit 3-1: Summary of Marine Freight Forecast

	2015	2035	% Change	% Annual Growth Rate
Tonnage (million tons)	24.6	28.7	17%	0.8%
Ton-Miles (billion ton-miles)	26.9	32.1	19%	0.9%

Source: FHWA Freight Analysis Framework Version 4. Data was retrieved from FAF4 Data Tabulation Tool (<http://faf.ornl.gov/fafweb/Extraction0.aspx>) by using “Total Flows” query, selecting 2015 and 2035 as the data year.

Exhibit 3-2: Marine Freight Shipment by Direction in Washington



Source: FHWA Freight Analysis Framework Version 4.

¹ Bureau of Transportation Statistics, Federal Highway Administration, Center for Transportation Analysis. Freight Analysis Framework Version 4. <http://faf.ornl.gov/fafweb/>

CHAPTER 4

MARINE SYSTEM PARTNERS

A variety of private and public sector organizations play important roles in the marine system in Washington.

4.1 Industry and Associations

Seattle and the Salish Sea are the home to a significant part of the U.S. commercial fishing fleet. The Pacific Coast Federation of Fishermen's Associations represents many of the underlying associations. A large number of fish processors are located in Seattle to support the fishing fleet. The Pacific Seafood Processors Association represents the interests of the processors of the catch.

Beneficial Cargo Owners (BCOs) are the shippers and receivers that are the ultimate customer and determine what ports and carriers are used. Most of the BCOs are global and sophisticated with significant experience with multiple foreign and domestic ports.

Pilot associations represent marine, or maritime, pilots who ensure the safety of ships, crews, passengers, and cargoes by guiding large ships through dangerous or congested waters, such as harbors and river mouths. Ships on the Salish Sea and the Columbia River are required to use pilots. They are regulated by boards in Oregon and Washington established by Public Utility Commissions.

The International Longshore and Warehouse Union (ILWU) is a labor union that primarily represents dockworkers, such as clerks, foremen, and longshoremen.

The Pacific Maritime Association¹ represents terminal, vessel, and stevedore operations in West Coast ports in negotiations with the ILWU concerning work rules, hours, wages, etc. Ports lease space to terminal operators.

The Washington Public Ports Association (WPPA)² promotes the interests of the port community in Washington through government relations, education, and advocacy. WPPA also produces the Marine Cargo Forecast, which projects the volume of cargo moving through public and private facilities.

The Pacific Northwest Waterways Association (PNWA)³ is a collaboration of ports, businesses, public agencies and individuals who combine their economic and political strength in support of navigation, energy, trade, and economic development throughout the Pacific Northwest.

Railroads and truck operators are also important port partners, playing key roles in moving cargo in and out of Washington ports. The state rail system consists of the mainline system operated by the two Class I railroads in Washington (BNSF Railway and Union Pacific Railroad) and a number of short-line railroads. The mainline system is the primary link for large volume import and export cargo moving by rail through ports in the state. Some short-line railroads act as key connections between ports and the mainline system.

4.2 Federal Agencies

Maritime Administration

The Maritime Administration (MARAD)⁴ is an agency within the U.S. Department of Transportation that promotes the use of waterborne transportation. MARAD coordinates with partners in many areas involving ships and shipping, shipbuilding, port operations, vessel operations, national security, environment, and safety. MARAD is responsible for maintaining the health of the merchant marine (U.S. civilian mariners and vessels), as it is vital for supporting national security and trade.

¹ <http://www.pmanet.org/>

² Washington Public Ports Association. <http://washingtonports.org/>

³ Pacific Northwest Waterways Association. <http://www.pnwa.net/>

⁴ Maritime Administration. About Us. <https://www.marad.dot.gov/about-us/>

The America's Marine Highways program⁵ works to incorporate marine corridors more into the greater U.S. transportation system. The U.S. Secretary of Transportation designates Marine Highways. Benefits of this program include creating and sustaining jobs on U.S. vessels and in U.S. ports and shipyards; reducing maintenance costs on roads and bridges; and increasing economic competitiveness, environmental sustainability, public safety, system resiliency, and national security.

MARAD periodically holds a call for projects that represent new or expanded Marine Highway services. Designated Marine Highway Projects receive preferential treatment for any future federal funding assistance from the USDOT and MARAD.

America's StrongPorts Program is an effort by MARAD to improve infrastructure in ports throughout the United States and to ensure they are capable of meeting our future freight transportation needs. By addressing planning, stakeholder engagement, operational and capital financing, and project management, this program provides support to ports working to increase their capacity and efficiency. As part of the StrongPorts initiative, MARAD worked with the American Association of Port Authorities to develop the Port Planning and Investment Toolkit. The Toolkit walks ports through the required analysis, planning, and funding requirements to complete projects.

U.S. Coast Guard

The U.S. Coast Guard (USCG)⁶ provides safety and security duties for the marine system. It is a military, multi-mission maritime force with military, law enforcement, humanitarian, regulatory and diplomatic capabilities. It has three broad roles: maritime safety, maritime security, and maritime stewardship.

Marine freight transportation is dependent on the USCG to provide port and waterway security by protecting marine resources and maritime commerce from internal and external threats through law enforcement. USCG

protects these interests in U.S. ports and inland waterways, along the coasts and on international waters.

In addition, the USCG maintains maritime aids to navigation and is responsible for ensuring the network of signs, symbols, buoys, markers, lighthouses, and regulations is up to date and functioning properly so recreational and commercial boaters can safely navigate the maritime environment.

The USCG has jurisdiction over bridges that cross navigable bodies of water, including movable bridges. The USCG is also responsible for the 68 anchorages on the Salish Sea, as well as those on the Columbia. They are also responsible for the Maritime Transportation Security Act, which provides safety within the domestic ports.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE)⁷ is responsible for dredging and maintaining federal navigation channels. Maintenance of navigation channels includes related critical infrastructure – breakwaters, jetties, pile dikes, and groins. These structures provide passive maintenance functions, help lock the navigation channels in place, and minimize active maintenance, such as dredging. The USACE also maintains the lock and dam system to support the movement of critical commodities.

Another responsibility of the USACE is administration of the Inland Waterways Trust Fund (IWTF), which funds new construction and major rehabilitation of priority navigation projects on the nation's inland waterways system. The IWTF has partially funded projects in Washington, including the construction of the Bonneville Lock and Dam on the Columbia River, a Plan of Study laying out the scope, schedule, and budget to complete technical studies, and a decision-making process concerning breaching the lower four Snake River dams.⁸

⁵ Maritime Administration. America's Marine Highway Program. <https://www.marad.dot.gov/ships-and-shipping/dot-maritime-administration-americas-marine-highway-program/>

⁶ United States Coast Guard. <https://www.gocoastguard.com>

⁷ US Army Corps of Engineers. About Us. <http://www.usace.army.mil/About/>

⁸ US Army Corps of Engineers. Trust Fund Projects. <http://www.iwr.usace.army.mil/Missions/Navigation/Inland-Waterways-Users-Board/Trust-Fund-Projects/>

U.S. Customs and Border Protection

U.S. Customs and Border Protection (CBP)⁹ has a complex mission at ports of entry with broad law enforcement authorities tied to screening all foreign visitors, American citizens returning home and imported cargo that enters the U.S. at more than 300 land, air, and sea ports. An important part of the CBP mission includes facilitating legitimate trade. CBP has undertaken a number of initiatives, such as the use of non-intrusive inspection technology, to increase its ability to examine cargo effectively without slowing the flow of trade, which plays a significant part in the U.S. economy.¹⁰

U.S. Navy

The U.S. Navy has a major presence in Puget Sound. Naval Base Kitsap is the third-largest Navy base in the U.S. The base includes three major port facilities: Puget Sound Naval Shipyard and Intermediate Maintenance Facility at Bremerton, Submarine Base Bangor, and Manchester Fuel Department. The Manchester Fuel Department is the largest underground Navy fuel storage facility on the West Coast. It averages a yearly throughput of 2.3 million barrels of fuel to its various customers, which include U.S. Air Force, U.S. Army, Department of Homeland Security, and U.S. Coast Guard. Manchester receives fuel by tanker ship and distributes it out by barge and truck.

Naval Station Everett is also a major Navy port facility in Puget Sound. Navy vessels move cargo and personnel to and from these port facilities. Supplies come to the bases by truck on highways, including I-5, I-90, SR 16, and SR 3, and by rail.

4.3 Tribal Governments

Tribal interests on waterways in Washington revolve primarily around historical fishing rights recognized in treaties. Freight activities that could affect their ability to harvest salmon and other species, or damage the habitat of those species, are of concern to the tribes. Tribes are also participating in the review of the 1964 Columbia River Treaty with Canada, which has a wide reaching effect on the management of the river.

4.4 State of Washington

Washington State Legislature

The Washington State Legislature creates new laws, changes existing laws, and enacts budgets for the state. The Joint Transportation Committee of the House and Senate (JTC) conducts studies related to freight as one of its duties. One of the upcoming studies planned by the JTC will research best practices for marine pilotage and make recommendations for improvements.



Photo: Trucks on a ferry vessel Source: Washington State Department of Transportation

Washington State Department of Transportation

The Washington State Department of Transportation (WSDOT) is a cabinet-level state agency, with the Secretary of Transportation appointed by the governor. WSDOT was created by the Washington State Legislature¹¹ to address statewide transportation issues and structures. The agency's core mission is to keep people and business moving by operating and improving the state's transportation systems. WSDOT's newly adopted strategic plan goals include effectively managing strategic investments, optimizing modal integration, promoting environmental stewardship, strengthening community engagement, and improving smart technology. WSDOT is responsible for maintaining, preserving, and improving the statewide, multimodal freight transportation system.

Washington State Ferries is the largest ferry system

⁹ US Customs and Border Protection. <https://www.cbp.gov/>

¹⁰ US Customs and Border Protection. Cargo Examination. May 15, 2017. <https://www.cbp.gov/>

¹¹ Revised Code of Washington [RCW] 47.01.011

in the nation. Its routes are part of the state highway system. In addition to moving passengers, Washington State Ferries also moves freight.

Within WSDOT, the freight program of the Rail, Freight, and Ports Division is responsible for:

- Developing the Washington State Marine Ports and Navigation Plan and Washington State Freight System Plan to meet federal and state requirements.
- Building regional participation and support for the plan and other freight efforts by strengthening relationships and coordination efforts within WSDOT and with external freight partners.
- Aligning strategic goals with those of WSDOT and the Governor's Office and providing counsel to WSDOT executives, the Governor's Office and the Legislature on freight policies and programs.
- Promoting freight safety through research, public education, outreach, and freight projects.
- Identifying, pursuing, and administering freight funding sources.
- Supporting freight operations, priorities, and initiatives by pursuing implementation of recommendations.
- Developing cross-functional solutions to meet the performance goals of freight carriers, shippers, and goods receivers.

WSDOT receives state funds (including taxes and fees), bonds, federal funds, and local funds. WSDOT's portion of the state transportation budget pays for operating expenses and capital costs, including maintaining, preserving, and improving the highway system, operating ferries, as well as debt service.

WSDOT administers two programs that support freight rail in the state: The Freight Rail Investment Bank (FRIB) and the Freight Rail Assistance Program (FRAP). Funding for these programs comes from the Washington State Legislature. Ports are eligible to use these funding sources to improve their rail infrastructure. In the 2017-

2019 biennium, the Port of Everett – South Terminal Modernization Project II – received a \$5 million loan from the FRIB program.

Freight Mobility Strategic Investment Board

The Freight Mobility Strategic Investment Board (FMSIB)¹² was created by the Legislature in 1998 (RCW 47.06A.030) to implement the state's freight mobility strategic investment program. The Legislature directed FMSIB to solicit, review, evaluate, and prioritize freight projects from public entities. FMSIB is comprised of 12 members representing various aspects of the state and transportation system including cities, counties, ports, railroads, trucking, shipping, the general public, the Office of Financial Management, and WSDOT. Funding for FMSIB is included in the state's transportation budget. FMSIB is the administering agency for two freight mobility accounts in the State Treasury: the Freight Mobility Investment Account and the Freight Mobility Multimodal Account.

In January 2013, FMSIB created the Washington State Freight Advisory Committee (WAFAC), as directed by Section 1117 in the federal Moving Ahead for Progress in the 21st Century Act (MAP-21). WAFAC is responsible for participating and advising WSDOT in the development of the state freight plan. WAFAC consists of representatives from a cross-section of public and private sector freight stakeholders, including ports, shippers, carriers, freight-related associations, the freight industry workforce, the state transportation department, and local governments. WAFAC also actively seeks input from retail, wholesale, service industry, manufacturing, agricultural, and environmental stakeholders to help inform and shape the committee's understanding of freight issues and recommendations.

¹² Freight Mobility Strategic Investment Board. <http://www.fmsib.wa.gov/>

4.5 Regional and Local Government

Ports

The 75 port districts in Washington are authorized by RCW 53.04, and each port is governed by three to five elected commissioners. Specific authorities granted by the state Legislature make public ports the only public agencies whose primary purpose is economic development. Ports create jobs and economic growth by owning and operating or leasing shipping terminals, marinas and docks, airports, industrial sites, railroads, and parks and recreational facilities. Not all ports in Washington are located on waterways or handle cargo.

Ports in Washington have the authority to levy property taxes on land within their port districts as well as issue revenue bonds to provide funds for carrying out all port district powers. They can use their funds for a variety of activities including property acquisition, construction, reconstruction, maintenance, repair, additions and operation of port properties and facilities, engineering, inspection, accounting, fiscal, and legal expenses.

CHAPTER 5

FUNDING

The American Association of Port Authorities identified a need of \$29 billion for 125 port freight projects nationwide. West Coast ports are investing \$4.7 billion in terminals and infrastructure through a combination of revenues, fees, and revenue bonds.

5.1 Federal funding

Maritime Administration

The USDOT Maritime Administration (MARAD) administers Transportation Investment Generating Economic Recovery¹ (TIGER), Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies² (FASTLANE), and Marine Highway grants for port projects, often working with other USDOT agencies including highway and rail. MARAD's goals include expanding marine capacity through investing \$1.3 billion for port infrastructure modernization including \$5 million in grant money available most years for port improvements including crane and barge.

The MARAD administers America's Marine Highways Program to develop and expand the marine highway corridor system and to facilitate its integration into the U.S. surface transportation system to ensure that reliable, regularly scheduled, competitive, and sustainable services are a routine choice for shippers. The program receives funding periodically. The most recent funding was \$5 million in 2016. To be eligible for this funding, projects need to be on an identified corridor, and must be submitted for funding during a call for projects. Projects are required to show a potential to reduce air pollution and traffic congestion along surface corridors, as well as provide jobs for skilled mariners

and shipbuilders. No projects in Washington have been funded from this program. The focus of the program is on encouraging port to port freight transportation with ports already engaged in marine cargo. MARAD identified eight Pacific corridors.

MARAD also administers the Small Shipyard Grant Program. In 2017, \$9.8 million in grant funding was available to support capital improvements and employee training at small U.S. shipyards. The grants help eligible shipyards modernize operations, improve efficiency and reap the benefits of increased productivity by investing in emerging technologies and a highly skilled workforce. Dakota Creek Industries in Anacortes received funds from the 2017 program to purchase equipment.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) administers federal funds for harbors, waterways, navigation channels, locks, jetties, breakwaters in the U.S. USACE has differing funding agreements with the various ports depending on the enabling legislation in place at the time of the agreement. Some ports have cost sharing requirements with the USACE on routine maintenance—dredging, breakwater, jetties, for instance—while other ports are not required to share in the costs.

The Inland Waterways Trust Fund (IWTF) is designed to pay for half the cost of USACE inland waterway construction and major rehabilitation projects. The IWTF is funded through a \$0.20 per gallon tax on diesel fuel consumed on the inland waterways called the Inland Waterways Fuel Tax. Improvements on the upper Columbia and Snake Rivers are eligible for funding from the IWTF.

¹ United States Department of Transportation. TIGER Discretionary Grants. Updated January 20, 2017. <https://www.transportation.gov/tiger>

² U.S. Department of Transportation. https://www.transportation.gov/sites/dot.gov/files/docs/FASTLANE%20Project%20Awards_9_16_0.pdf

The Harbor Maintenance Trust Fund (HMTF) supports USACE harbor maintenance and development projects. The HMTF is funded by the Harbor Maintenance Fee (HMF), a 0.125 percent fee assessed on the value of imports, domestic shipments, and Foreign-Trade Zone admissions loaded on or unloaded from a commercial vessel at designated ports. Ports in Washington subject to the harbor maintenance fee are Aberdeen, Bellingham, Everett, Port Angeles, Seattle, Tacoma, Olympia, Anacortes, Kalama, Longview, and Vancouver. Congress may appropriate funds from the HMTF to pay for harbor maintenance and development projects undertaken by USACE.

U.S. Department of Commerce

The Economic Development Administration (U.S. Department of Commerce) has supplied grants to the Port of Port Angeles, Port of Woodland, and Port of Chehalis. Grants are awarded with consideration given to economically depressed communities and creation of family wage jobs. Grants require a 50 percent match that includes no federal funds and also requires participation of government entities.

5.2 State funding

In 2015, the Legislature approved the Connecting Washington revenue package, funding \$16 billion of designated transportation construction, including highways and ferries. The Legislature also selects projects to be funded from all federal funding sources, including the National Highway Freight Program (NHFP). In 2016, WSDOT submitted a prioritized list of freight projects eligible for the NHFP to the Legislature for funding consideration.

The Legislature funds the state rail programs and projects funded from these programs sometimes directly benefit ports. The Freight Rail Investment Bank (FRIB) program is a loan program available to the public sector. This program is intended for either smaller projects or as a small part of a larger project, where state funds would enable the project to be completed. The Freight Rail Assistance Program (FRAP) is a grant

program open to applicants in both the public and private sector. This program is directed toward larger projects where it is difficult to gain a contribution and where the rail location or the project is of strategic importance to the local community and the state.

Another source of state funding that benefits ports is the Remedial Action Grant (RAG) program administered by the Washington State Department of Ecology (Ecology).³ The program is Ecology's primary tool for helping local governments, including ports, pay for the cleanup of contaminated sites. This program helps finance and speed up the cleanup process and allows more sites to be cleaned up through grants that provide up to 75 percent of project cost. RAG funding helps protect public and environmental health, creates jobs, and promotes economic development by allowing contaminated properties to be redeveloped. Ports often use these funds to repurpose unused or underused brownfield industrial sites, returning them to a beneficial use. These sites are typically located near existing transportation infrastructure.

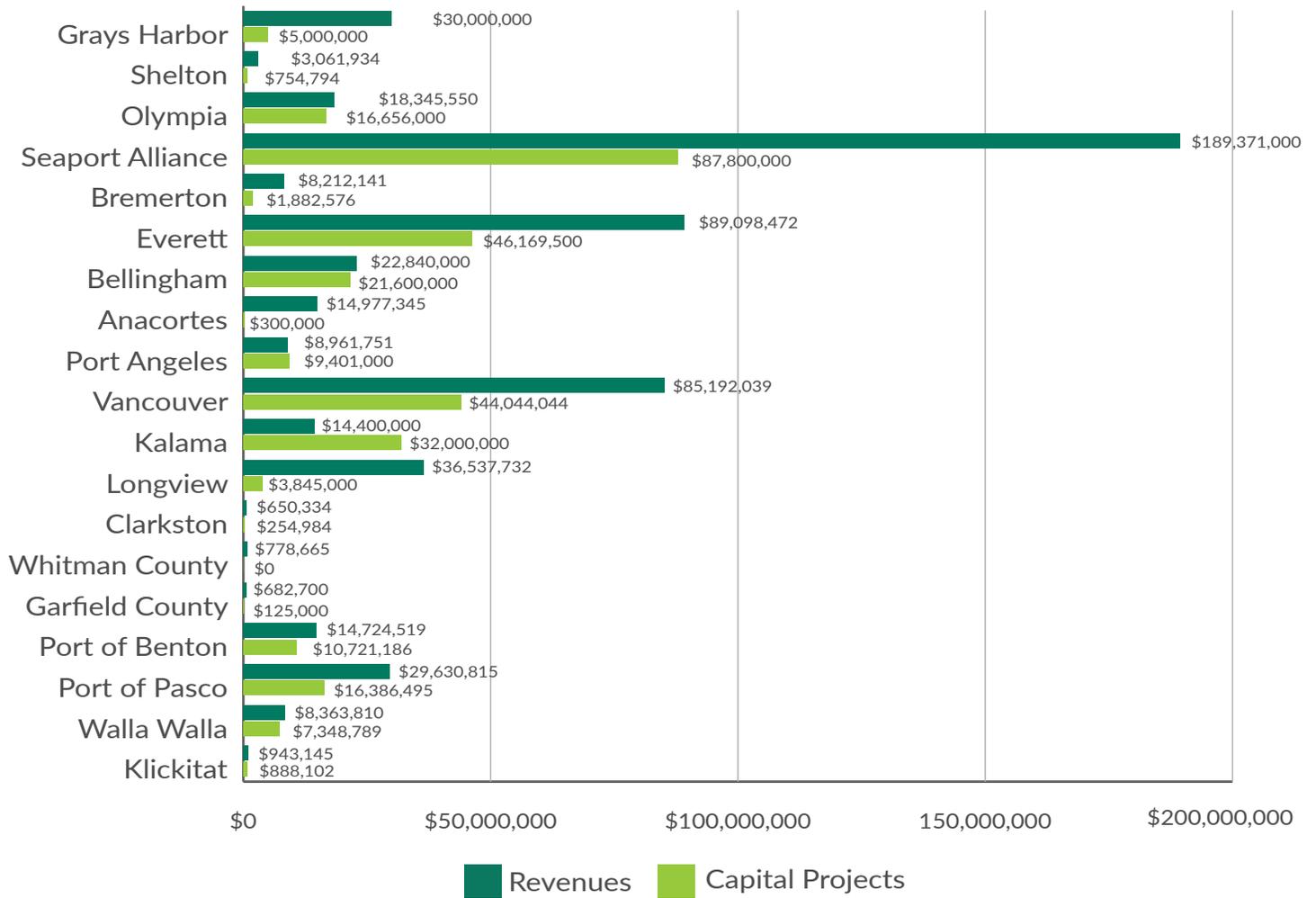
5.3 Local funding

Local funding for the marine system in Washington comes from port districts. Ports are independent government bodies and primarily self-financing through a mix of port district taxes, port issued bonds, fees and leases. They also compete for regional, state and federal grant funds to fund specific projects.

Port Districts in Washington are senior property taxing districts. They are subject to the one percent property tax limit that restricts increases in taxes by individual taxing districts to one percent annually. Their other sources of revenue are user fees, which range from leases for land to industrial or commercial tenants, airport and marina facilities and can also include larger facilities and equipment. Exhibit 1-8 shows planned expenditures for port capital projects in 2017. Exhibit 5-1 shows expected revenues and capital projects in 2017.

³ Department of Ecology. Toxics Cleanup Remedial Action Grants and Loans. <http://www.ecy.wa.gov/programs/tcp/grants/explore-tcp.html>

Exhibit 5-1: 2017 Capital Projects



Source: Washington State Department of Transportation

CHAPTER 6

OUTREACH AND SURVEY

To develop this plan, WSDOT met with marine system partners through outreach events and meetings, and used an online survey of ports in Washington. WSDOT also conducted industry research. The information gained was used to assess the condition of the marine freight system and to identify the trends, issues, and needs affecting the system. This information is organized by the state's six transportation system policy goals, which are defined by state law.¹ The remainder of this plan is structured around these goals.

6.1 Outreach

Outreach conducted for this plan by WSDOT was done concurrently with the outreach performed for the *2017 Washington State Freight System Plan*. That outreach included meetings with the Washington Freight Advisory Committee (WAFAC), a standing committee of the Freight Mobility Strategic Investment Board that includes members representing the private sector, airports, cities, counties, metropolitan planning organizations, federal agencies, freight shippers, maritime businesses, ports, railroads, and other freight transportation partners. These meetings included discussion of freight issues and trends, many of which were related to marine ports and navigation.

WSDOT also met with Metropolitan Planning Organization (MPO) and Regional Transportation Planning Organization (RTPO) Policy Boards and Technical Committees around the state. Feedback from several of these groups pertained to marine port and navigation issues.

In addition, WSDOT gave presentations to the 2017 Washington Public Ports Association Spring Meeting in May and the 2017 Pacific Northwest Waterways Association Summer Conference in June. WSDOT staff

also met with several freight system partners who had information relevant to the development of this plan. This included USDOT Maritime Administration (MARAD), the Northwest Seaport Alliance, and Boyer Towing (a barge towing company based on the Duwamish River in Seattle).

6.2 Port survey

As part of its outreach for this plan, WSDOT conducted an online survey in 2017 of marine ports in the state, receiving responses from 29 ports. Questions in the survey related to trends, issues, needs, opportunities, and challenges. Exhibit 6-1 shows the responses related to national, state, or local trends experienced at ports. Exhibit 6-2 shows the responses related to challenges experienced at ports. Some of the key points from the survey results are described below by goal area.

Economic vitality: Nearly 40 percent said global competition was a major trend for their port. Some ports cited encroachment of non-compatible land uses as a concern.

Preservation: Multiple ports responding to the survey identified preservation issues among their concerns. Waterway and dock infrastructure, along with port-owned rail lines and roads, were listed as preservation needs.

Safety: Half the ports identified safety and security as a major trend.

Mobility: Nearly half the ports said limited or inadequate road and rail connections were a significant issue for them and 25 percent identified congestion on the road and rail networks as an issue. Almost 45 percent listed harbor enhancements as a significant need, with 40 percent saying they needed road improvements. Some ports also mentioned concerns

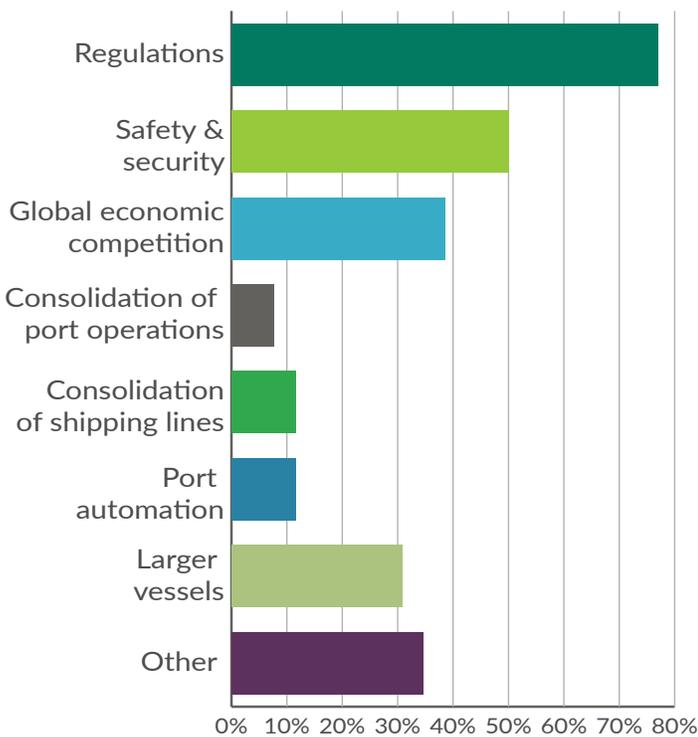
¹ RCW 47.04.280 <http://apps.leg.wa.gov/Rcw/default.aspx?cite=47.04.280>

about clearance and weight restrictions on corridors connecting to the ports limiting the mobility of oversize/overweight loads.

Environment: When asked to select major trends their port is experiencing, 77 percent of ports cited regulations as a major trend. Regulatory requirements are also a concern for many ports, with nearly 60 percent of them saying they are a significant challenge. Lengthy permitting timelines were listed as an issue by several ports. Some Columbia River ports expressed concern about potential changes to the Columbia-Snake River System, like dam breaching and operational changes based on environmental concerns.

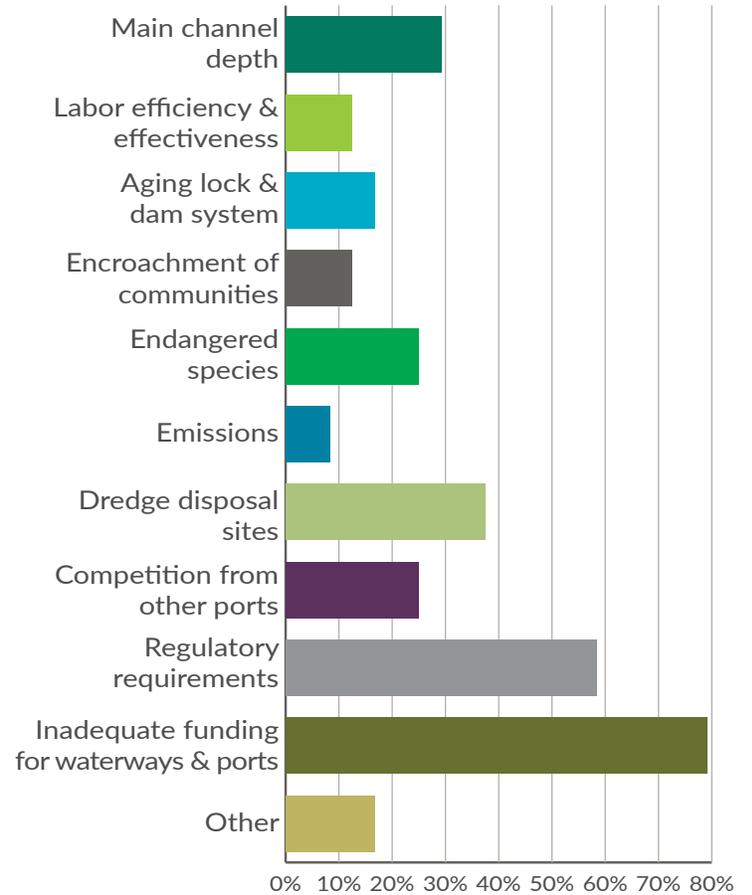
Stewardship: Many of the surveyed ports, 80 percent, responded that inadequate funding for waterways and ports was a major challenge for them. Both the amount and predictability of funding are concerns.

Exhibit 6-1: Trends experienced at ports



Source: Washington State Department of Transportation

Exhibit 6-2: Challenges experienced at ports



Source: Washington State Department of Transportation

Ports were also asked how they see WSDOT’s role in the marine system. Key themes in their responses were:

- Collaboration with WSDOT on transportation network improvements is important to port operations. Ports appreciate the opportunity to continue working together and would like to collaborate more.
- Ports desire a direct liaison for port issues and needs.
- Several ports have rail capacity issues and would like more assistance from WSDOT to address them.
- Some ports would like to see WSDOT get more involved in waterway infrastructure issues.
- Ports would prefer more advance notification when WSDOT conducts construction or maintenance activities that may disrupt operations.

CHAPTER 7

ECONOMIC VITALITY

The ports, terminals, and marine navigation system in Washington ensure prosperous state, regional, and local economies by supporting, stimulating, and enhancing the movement of people and goods.

Competition between ports brings new challenges and opportunities

Ports in Washington not only compete with one another but also with other West Coast ports, depending on the commodity and services required. This has led to ports specializing to take advantage of investments in infrastructure and other advantages. Economic changes, inherent advantages, specific skill sets, and the need to make significant investments resulted in commercial ports specializing to handle specific types of cargo, like bulk, breakbulk, RORO (roll on/roll off), containers, and oversized items. Puget Sound ports at Seattle and Tacoma compete directly with the ports of Prince Rupert and Vancouver, British Columbia and San Pedro Bay (the ports of Long Beach and Los Angeles, California) for container shipments destined east of the Mississippi River. The Port of Kalama competes for bulk grain volumes with the Port of Portland as well as other ports. The Port of Vancouver USA competes with the Port of Grays Harbor for auto-carrier volume and with other Pacific Northwest ports for other commodities/shippers. The inland waterway ports on the Columbia-Snake River System compete for barge business and industrial/business development. The Port of Portland's loss of regularly scheduled container service in 2016 increased container volume through the NWSA, but also resulted in the Port of Portland increasing its competition for bulk commodities. The Port of Portland hopes to attract scheduled container service again in the future. The port is developing a business model with Pacific Northwest companies that would benefit from the restoration of container shipping. If successful, that would cause container shippers in Oregon, those on

the Columbia River, and, potentially, those in southwest Washington to again ship through the Port of Portland.

Ports in Washington have some competitive advantages and disadvantages compared to other West Coast ports that shape their roles in international trade. One advantage is they are closer to major North Pacific trading partners (like China, Japan, Korea, and Russia) than other United States ports and have good connections to the upper Midwest. This makes them particularly competitive for the bulk movement of agricultural products. The ports of Seattle and Tacoma are both natural deep-water ports and require minimal dredging relative to other ports in the United States.

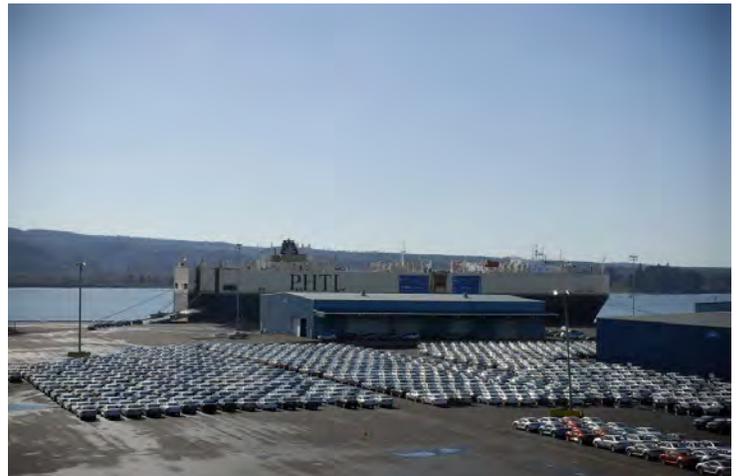


Photo: Auto-carrier at Port of Grays Harbor. Source: Washington Public Ports Association

They also have extensive distribution center capacity nearby for transloading freight to and from domestic containers. A disadvantage for ports in Washington is the relatively light population density of the Pacific Northwest, with significant distances from other major population centers. The adjacent twin ports at Los Angeles and Long Beach are able to serve the significant California population, as well as nearby Southwest states with large populations. The Los Angeles area also has ample rail capacity to the Midwest and southern states, though the overall vessel/rail travel time is longer

to the Midwest than through ports in Washington. British Columbia ports benefit from the exchange rate, shortest combined vessel/rail distance between Asia and the Midwest, implications of the Jones Act (ships can berth in there and then go to the Los Angeles area ports, but can't berth at a Puget Sound port and then go to a California port), and other factors. For cargo not transferred to and from domestic containers, the British Columbia ports are well positioned. Both British Columbia ports and the Los Angeles area ports are planning on significant container capacity expansion. The Panama Canal expansion completed in 2016 has realigned the competitive landscape for U.S. ports. Larger container vessels up to 13,000 twenty-foot equivalent unit (TEU) capacity and comparable bulk cargo vessels can now use the Panama Canal between the Pacific Ocean and eastern U.S. ports, reducing the cost of transportation per container. With the ability of the Panama Canal to handle larger vessels, the breakeven cost (where it is equally expensive to ship via a West Coast or East Coast port) has expanded west. More U.S. markets are now competitively accessible via an East Coast or Gulf Coast port, increasing the competition ports in Washington face to hold or grow their market share.

Another factor affecting the competitive position of ports is the effect of labor costs on the location of manufactures. This is likely to influence shipments to and from Asia and, especially, China. Manufacturing is moving west from China to lower cost countries where the Suez Canal allows direct access to East Coast U.S. ports. Beginning in 2011, the labor cost in Mexico was cheaper than that in China. Labor is just one of many factors that determine where manufacturing occurs. Technology, including robotics, is allowing for the relocation of some manufacturing back to North America. Railroads and marine shipping lines consider whether a port is sufficiently competitive when determining the level of service they provide. If there is excess capacity, ships and railroads will service those ports that offer the best service/cost ratio.

Ports are working to enhance their competitive position by increasing the efficiency of their operations, moving equal or greater amounts of freight with fewer resources. Containerization with gantry cranes

and stack loaders have replaced many port positions. Autonomous vehicles that take containers from the gantry crane to the stacks are already in place in some international ports. The ports of Seattle and Tacoma joined forces as the Northwest Seaport Alliance to unify management of marine cargo facilities and business with the goals of strengthening the Puget Sound gateway and attracting more marine cargo and jobs for the region.



Photo: Terminal 5 at Port of Seattle. Source: Port of Seattle

Maintaining the status of Puget Sound ports as a national gateway for imports is important for the economy of Washington. A prosperous Washington economy depends heavily on goods imported by container through marine and landside transportation infrastructure. Imports support the infrastructure needed by companies in Washington to export their products overseas. Without a high volume of goods from Asia—either for local delivery or destined for the Midwest—producers in Washington face either higher operating costs or fewer options as they would need to seek other port gateways to export their products.

Improving the competitiveness of ports

- Ports are considering operational enhancements to remain competitive. To address growing competition with West Coast ports, the ports of Seattle and Tacoma partnered to create the Northwest Seaport Alliance (NWSA), a combined port authority. The two separate seaports were competitive rivals for most of the 20th century. The combined port authority, formed in 2015, is now the fourth largest cargo port in the United States by container

volume. Under the agreement, properties from both ports were placed in a common pool. Both port commissions oversee operations, ending decades of competition. NWSA will continue to manage the port facilities in Seattle and Tacoma, making strategic terminal investments (like the current Pier 4 reconfiguration and planned Terminal 5 modernization) and implementing operational efficiencies to stay competitive in the global marketplace.

- Ports are developing technological improvements to be more efficient. Efficiencies have been found by using more sophisticated online systems to track cargo. Customs can be handled online, allowing multiple parties to be involved at once and decreasing the time it takes to clear customs. Additionally, the development of Terminal Operating Systems (TOS) has improved the efficient handling of cargo through a port once it has cleared customs. A TOS provides real-time status of cargo, tracks cargo in a port to show available port capacity, and then catalogs associated paperwork efficiently. Northwest Seaport Alliance is developing and deploying a Port Community System that will provide real-time network visibility to shipment information, such as container location, vessel schedules, and terminal conditions within a single, shared platform.

Ports must keep pace as container shipping lines pursue economies of scale

The ocean shipping industry is seeing the continuation of a long-term trend of increasingly larger container ships. These larger ships help shipping lines drive down their costs, using less fuel and fewer people to move more containers. While the shipping lines do not assign their largest ships to routes serving West Coast ports, the new ships do displace ships to lower volume routes and ultimately result in larger ships assigned to some trans-pacific routes that call on Seattle or Tacoma. Few ports in the U.S. are capable of handling both the drafts and length of the largest vessels and their container volumes. Factors, such as channel depth, storage yard space, berthing facilities, and landside

productivity (i.e. container turnover rates), determine how much throughput a port can potentially handle each year. Larger vessels can unload and load more containers during a single port call, thereby resulting in longer time in port. This increases pressure on terminal infrastructure, truck and rail networks, and intermodal load centers to handle higher volumes in more compressed time periods.



Photo: Container operations at Terminal 46. Photo: Source: Port of Seattle

The increase in the size of container ships has produced an abundance of capacity and helped keep shipping rates generally low. To increase efficiency and lower costs, shipping lines have consolidated to create a few large alliances. These alliances are vessel-sharing agreements: all carriers within an alliance pool together their ship fleets, moving containers on one another's behalf to expand their service offerings and geographic coverage. The goal of the alliances is to reduce empty space on ships, and to achieve other efficiencies, such as reducing the number of ships calling at the same port. Alliances let shipping lines offer more sailings with fewer vessels. There are now three major alliances: 2M Alliance, Ocean Alliance, and THE Alliance. Together, they account for more than 95 percent of the container capacity on trans-pacific routes. The consolidation of shipping lines into a few large alliances gives the carriers an advantage in negotiating with ports and stevedore companies, due to the amount of cargo they control and reduced competition with other shipping lines. Alliances also limit any individual carrier's reliance on any particular port or terminal. Some terminals will likely

experience increased volume at the expense of other terminals that may become idle. This concentration of activity could result in congestion during loading and unloading of ships. It also results in underused infrastructure and real estate at idle terminals.

Preparing ports for larger ships

- Ports across Washington are delivering capital projects to remain competitive. To accommodate larger ships, ports are looking at all aspects of their infrastructure, including: cranes, dredging, wharves, bridges, on dock rail, peak trucks per day, on dock staging areas and turning basins. A longer ship requires not only a longer berth, but also more cranes. A wider ship needs a longer crane and will take more time to bring containers from one side of the ship to the dock if the containers move at current speeds. To keep pace with export volumes, ports and railroads have had to scale up. Stack trains move 200 containers at a time to and from ports or yards near ports. Additionally, unit trains of 110 cars or more, that previously were primarily limited to coal, have become common for other commodities bound for export. Ports across Washington are updating to remain competitive. The Port of Longview is actively pursuing redevelopment of Berth 4, the former Continental Grain Terminal. At the Port of Vancouver USA, the West Vancouver Freight Access project is a decade-long effort consisting of 21 individual projects to improve freight rail movement through the port and along the BNSF Railway and Union Pacific Railroad mainlines. This work will connect the Pacific Northwest to major U.S. rail hubs, and from Canada to Mexico. At the Port of Everett, terminal rail enhancements are underway, which will allow freight arriving and departing the terminals to use rail instead of truck. The Port of Grays Harbor is redeveloping land for unloading and storage of potash, as well as a ship loader and new berth facility for shipment to international markets. These are just a small set of examples of projects underway that will improve the ability of ports to

compete in global trade.

- Ports will continue to monitor changes to supply chains for opportunities to remain competitive, to guide facility investments, and to identify new market opportunities on the marine system, including new and expanding commodity markets.

Land use encroachment threatens port operations

Ports, in addition to their role in transportation, provide land and buildings via leases or, in some cases, outright sales. How the port develops and uses its property depends on the long-term alternatives and the cost to maintain transportation infrastructure, such as the connections to highways, harbor depth, rail access, rail sidings, and dock improvements. The value, availability, and demand for property forces ports to consider whether there is an alternative to industrial or marine tenants, including commercial, residential, or recreational interests. Ports also need to balance freight transport with livability in the form of marinas, boat launches and water access. Recreational boaters and commercial vessels want safe access to the same water resulting in necessary compromises. Ports are concerned about mixed-use designation in an industrial area with bike/pedestrian paths sharing the same roadway facilities with trucks and heavy industry. Ports are often affected by Growth Management Act concerns, congestion and environmental responsibilities. Congestion issues for metro area ports negatively affect relations with the larger community, as well as those who move goods to and from the port. Communities less reliant on the industrial port are more likely to criticize traffic congestion than a port-reliant community. Critical freight-intensive land uses near ports need to be preserved in urban areas throughout Washington.

The Governor's Ports Initiative,¹ passed by the Legislature in 2009, requires Seattle and Tacoma to include a container ports element in their respective comprehensive plans. This is designed to ensure industrial properties adjacent to rail and other port

¹ Governor's Container Ports Initiative Main Report. https://app.leg.wa.gov/ReportsToTheLegislature/Home/GetPDF?fileName=ContainerPorts_0809cb94-fa2f-47f9-aa82-812c72dc0da0.pdf

infrastructure are protected and available for future use. Metropolitan Planning Organizations (MPOs) are required or encouraged, depending on population, to plan for ports in regional land use and transportation planning activities. Cities with large container ports must include a container port element in their comprehensive plans, and the law also recommends plans include a marine industrial port element.² This law provides detail on process and components that will improve coordination of land use planning near port areas. Land use planning that is inclusive of the needs of trucking, rail, marine, air cargo, and pipeline systems can reduce conflicts that pressure freight-oriented sites in the future. Seattle, Tacoma, Everett, and Vancouver now include port elements in comprehensive planning, but encroachment is still a concern for some ports.

Protecting industrial land uses around ports

- Regional and local partners should preserve freight-dependent land for freight use. Land that is adjacent to irreplaceable infrastructure (e.g., rail, port terminals and waterways, and airports) should be preserved for those uses, when appropriate. Cities, counties, ports, and tribal governments are responsible for land use decisions. MPOs, local governments, and port authorities should preserve existing water-adjacent port land for water-dependent industries. WSDOT and the Washington Public Ports Association (WPPA) can collaborate with local governments to preserve waterfront land with strategic importance for the marine freight system in existing or new locations. Ports will also need to work with local governments in comprehensive and transportation planning activities.
- Regional and local partners should include ports in comprehensive planning. The Puget Sound Regional Council (PSRC) designates Manufacturing and Industrial Centers, which are employment areas with intensive, concentrated manufacturing and

industrial land uses that cannot be easily mixed with other activities. These areas are intended to continue accommodating a significant amount of regional freight related employment growth. In its regional transportation plan, PSRC has committed to supporting Manufacturing and Industrial Centers, and ensuring industrial and freight-related land uses are supported in local plans. Other metropolitan areas and cities also should consult freight stakeholders to ensure their comprehensive land use plans and transportation plans support freight-related land uses. As part of its mission, WSDOT will encourage and assist with the incorporation of freight transportation planning into local land use and transportation plans, including developing policies and strategies to support and enhance freight transportation. These efforts will ensure appropriate land use planning for freight-oriented sites. WSDOT regularly produces the Local Planning Guide, a document that details transportation-related requirements, recommendations, and resources for local planning. WSDOT will continue to encourage inclusion of freight elements in local planning by regularly updating the guide.

The marine industry faces a labor shortage

The marine workforce in Washington, which includes captains, pilots, engineers, shipbuilders, dock workers, deck hands, and other workers, is headed for a mass retirement. Nearly a third of the more than 5,800 marine transportation workers in Washington are older than 55. Young people entering the workforce do not work in the marine industry as much as previous generations did, and retirements in the industry are occurring at a higher rate.³ Approximately 40 percent of vessel employees with the Washington State Ferries, and around 88 percent of the captains, are eligible for retirement in the next 5 to 10 years.⁴ About 70 percent of WSF's chief engineers are eligible for retirement within 10 years, as are nearly 90 percent of captains.⁵

² RCW 36.70A.085. Comprehensive plans—Port elements. <https://app.leg.wa.gov/rcw/default.aspx?cite=36.70A.085>

³ U.S. Census Bureau. QWI Explorer. <https://qwexplorer.ces.census.gov/static/explore.html?s=fddfe&v=bar&t=ac0&fc=true&st=WA#x=0&g=0>

⁴ U.S. Department of Labor. Bureau of Labor Statistics. https://www.bls.gov/oes/current/oes_wa.htm#53-0000

⁵ Seattle Times. <http://www.seattletimes.com/seattle-news/transportation/washington-state-ferries-looks-to-train-workforce-of-its-future-as-retirements-loom/>



Metal fabrication. Source: Washington State Department of Transportation

and to develop a clear career pathway to jobs in the marine economic sector. MARAD provides grant funding for training that fosters employee skills and enhances productivity at small U.S. shipyards. The grants, provided through the Small Shipyard Grant Program, help eligible shipyards invest in emerging technologies and a highly skilled workforce. The Legislature's Joint Transportation Committee plans to conduct a study of marine pilotage in the 2017-2019 biennium with a goal of recommending best practices for pilot recruitment, training, review, and selection.

Addressing the labor shortage in the maritime industry

- Transportation partners can continue to recruit and train workers with needed skills. The maritime industry needs well-trained, skilled workers. To meet this need, Vigor Industrial Shipyards partnered with South Seattle College to form the Harbor Island Training Center, the Classroom-In-A-Shipyard. Designed to meet the needs for all maritime companies in Puget Sound, the goal of the program is to strengthen Seattle's maritime industry and to produce marketable graduates who are ready to fill the needs in the marine industry. The Port of Seattle has several workforce development initiatives aimed at ensuring skilled workers are available for the maritime industry. In 2017, the port offered 150 paid internships for high school and college students.⁶ The Department of Commerce supports employment in the marine industry by working with industry and existing training and education resources to address gaps in the system,

⁶ Port of Seattle. Workforce Development Programs. http://www.portseattle.org/Supporting-Our-Community/Economic-Development/Pages/Workforce_Development.aspx

CHAPTER 8

PRESERVATION

Transportation partners must work to maintain, preserve, and extend the life and utility of prior investments in transportation systems and services.

Navigation channels and infrastructure require regular maintenance

The infrastructure of the marine system requires regularly scheduled maintenance and replacement to preserve the navigability of the system for ships and barges carrying freight. The lock and dam structures on the Columbia-Snake River System and in Ballard require regular inspection and maintenance to prevent a failure or unplanned closure. The eight navigation locks on the Columbia-Snake River System need funding for critical repairs ranging from replacement of mechanical gear to new gates. Navigation infrastructure also needs maintenance, such as the rubble-mound jetties at the mouth of the Columbia River. These structures help maintain the depth and orientation of the navigation channel. Dolphins, structures used to cushion ship impacts, need to be refurbished or replaced. Priority locations for preservation work include Ft. Rains, just above Bonneville Dam, and the Hard Rock Dolphins above Ice Harbor Dam. These vital pieces of infrastructure ensure the most efficient movement of cargo through the dams on the Columbia-Snake River System.

A major factor in marine system performance is maintaining adequate water depth. Dredging to maintain the channel depth requires continuous investment. As sediment deposits in the navigation channel and in harbors, it needs to be dredged and relocated to a location that does not affect commercial navigation. Dredging will continue to be required to maintain existing navigable channels and waterways on the marine system. The U.S. Army Corps of Engineers (USACE) maintains federal navigation channels.



Photo: Replacement of the John Day navigation lock downstream gate and friction sheaves. Source: U.S. Army Corps of Engineers

The Columbia River Channel Improvement Project deepened the channel to 43 feet. However, sustained high river flows have made maintaining the 43-foot depth a challenge. Priority projects along the Snake River include maintenance dredging for the 14-foot federal navigation channel depth to maintain safe and efficient navigation and completion of the Lower Snake River Programmatic Sediment Management Plan. USACE estimates for dredging in these areas was \$87.7 million in 2016. In 2016, USACE dredging costs in the Portland district were \$34.8 million, and \$52.9 million in the Seattle District, which includes the Salish Sea and Grays Harbor. The Ports of Seattle and Tacoma are both natural deep-water ports and have minimal dredging relative to other ports in the United States.

Preserving navigation channels and infrastructure

- Transportation partners should continue to preserve navigation channels, as needed. Channel maintenance and navigation aids are important for commercial navigation of the marine system. The U.S. Army Corps of Engineers is responsible for maintaining the federal navigation channel and structures. Adjacent landowners are responsible for maintaining areas adjacent to the channel if needed

for commercial navigation. USACE will continue to maintain and improve the federal navigation channels on the marine freight system.

- Ports and terminal owners will maintain and improve the harbors, berths and other areas outside the federally managed channels. WSDOT and other partners will support USACE in maintaining the federal marine navigation system by writing letters of support, and participating on committees and associations, as necessary. WSDOT will consider options for using dredged material in land-side infrastructure projects, if dredge material disposal sites are not meeting current or future needs.

Port infrastructure needs ongoing renewal

Public ports and private terminals maintain other marine infrastructure. Dredging outside of the federal navigation channel is an ongoing maintenance need; additionally, changes in the shipping industry challenge some ports with the need to accommodate larger vessels by creating longer and deeper berths and turning basins. Other ongoing maintenance needs include upkeep of docks, piers, bulkheads, anchorages, dolphins, and other infrastructure. Terminals need infrastructure in adequate condition to maintain and improve freight activities. Infrastructure has aged, in some cases, for several decades without significant preservation activities. Ports also have land-side infrastructure in need of preservation. This includes roadways, highways, and rail infrastructure that directly serves ports. For instance, the Port of Benton has rail that will need to be replaced over time and Port of Whitman County also has maintenance needs on rail lines it owns. Some infrastructure has aged to the point where regular maintenance is inadequate and ports need to replace it. Some ports lack the funding to rehabilitate or replace their infrastructure. There is currently not a statewide inventory of port infrastructure condition to assess preservation needs comprehensively.

Preserving port infrastructure

- Ports and terminal owners should continue to preserve infrastructure condition, as needed. Ports and terminal owners are typically responsible for maintaining their own infrastructure. Capital investments are important to all port operations in

order to sustain and grow business. To meet this need, ports and terminal operators can improve system conditions, as needed, on an individual basis. This may include programmatic repairs to improve infrastructure, but the cost of emergency repairs and upgrades present financial challenges. Publicly owned ports are increasingly prioritizing asset management as a means to efficiently sustain their infrastructure. WSDOT will continue to address aging and inefficient rail and highway infrastructure in public ports in Washington through the FRIB/FRAP programs and the new National Highway Freight Program, though demand greatly exceeds the available funds.

- WSDOT will consider compiling a statewide marine ports infrastructure needs inventory. Part of this work may include collaboration with the Washington Public Ports Association and individual ports to compile individual infrastructure needs inventories. In addition, a statewide inventory will help champion the role of port preservation to the state economy.

CHAPTER 9

SAFETY

Transportation partners must work to provide for and improve the safety and security of transportation customers and the transportation system.

Maintaining port safety and security requires vigilance and investment

Port safety is primarily concerned with the prevention of accidental damage to ports, facilities, and ships in order to protect the environment and facilitate commerce. The United States Coast Guard (USCG) responsibilities include the protection of ports, harbors, vessels, and waterfront facilities against accidents, negligence, and sabotage. To address port safety concerns, the USCG conducts monitoring of liquid and hazardous cargo transfers, and inspections of containers and facilities.

While port safety is concerned with accidents that harm people or property, port security (as a part of maritime security) is concerned with deliberate acts intended to harm people or property. To address port security concerns, the USCG conducts harbor patrols and surveillance, as well as drills and exercises. The SAFE Port Act of 2006 requires 100 percent of U.S.-bound ocean containers to be scanned through non-intrusive inspection and radiation detection equipment in a foreign port prior to being loaded on a U.S.-bound ship. The original deadline for achieving this goal was in 2012, but the U.S. Department of Homeland Security (DHS) has now delayed implementation until 2018. Industry experts believe that implementing across-the-board container inspections are unrealistic due to the large volume of containers moving through U.S. ports each year. The Congressional Budget Office has estimated it would cost \$22 billion to outfit foreign ports with the necessary equipment. Freight that is transshipped (e.g., ship-to-ship, rail-to-ship) has to be handled multiple times to go through inspection stations, and most ports and railyards do not have on-site capacity for inspection

equipment and truck queueing. To broaden freight security, the DHS is now considering 100 percent scanning for both containerized and non-containerized (e.g., dry/liquid bulk, breakbulk, roll-on/roll-off, etc.) maritime cargo bound for the U.S.

Ensuring port safety and security

- Transportation partners should strive to achieve an appropriate balance between safety and security at ports and promote efficient supply chains. Port partners continue to play an important role in security with implementation of Transportation Worker Identification Credential (TWIC) programs that limit access to ports. The TWIC is used at all U.S. Coast Guard regulated marine facilities throughout the Pacific Northwest. Ports also implement safe and efficient cargo screening processes. The role ports play in freight security enhances security of the larger community.



Photo: U.S. Customs and Border Protection at Terminal 18. Source: Port of Seattle

Navigation safety and security requires consistent coordination

Various maritime systems working together ensure the safety of the system.¹ The ship security reporting system is an alert system, which helps in sending distress signals from the ship directly to the maritime security center. Likewise, the Automated Mutual Assistance Vessel Rescue System is a vessel safety system, which was introduced by the USCG to provide immediate assistance to vessels that are in emergency situations. The Automatic Identification System is a ship navigation and tracking system, which helps to pinpoint the exact location of the ships along with other navigational statistics. The Automated Manifest System is a freight tracking system, which requires ships to enter the details of the cargo carried by them. This system was first adopted in 2004 to increase the security level at maritime ports. Another cargo security program is the Container Security Initiative. Administered by the U.S. Bureau of Customs and Border Protection, its purpose is to increase security for container cargo shipped to the United States.

Ensuring navigation safety

- The Committee on the Marine Transportation System (CMTS) is a federal effort to coordinate the myriad of transportation partners. The committee is addressing a number of important issues that affect the safety, security, air and water quality, and the efficient movement of freight and people at our nation's coasts, waterways, and associated port facilities.

Ports support national security

Ports also have a role in supporting overseas military logistics. In 2004, the military began using the Port of Olympia for shipments out of Fort Lewis. In response, the Port of Olympia spent \$1.4 million to add a rail line on its docks closer to where ships berth. The Port of Tacoma is designated as a strategic seaport, part of the National Port Readiness Network. One of the major responsibilities of strategic seaports is to be prepared to make the port and its facilities available within

short notice for the deployment of military forces and. MARAD administers the Strategic Port Program and facilitates the movement of deploying military forces through strategic ports while minimizing commercial disruptions.

Supporting military logistics

- Ports will continue to work with the military to ensure they are effectively able to fulfill their role in supporting military logistics.

¹ Marine Insight. 8 Maritime Systems That Ensures Ship Safety And Security. <http://www.marineinsight.com/marine-safety/8-maritime-systems-that-ensures-ship-safety-and-security/>

CHAPTER 10

MOBILITY

Transportation partners must work to improve the predictable movement of goods and people throughout the state, including congestion relief and improved freight mobility.

Marine capacity and congestion is concentrating

The marine system generally does not experience congestion, other than at ports, terminals, and through lock structures. At these locations, some areas experience capacity limitations, due to a lack of available anchorages, docks, piers, and other loading or storage capacity. Delay data at ports and terminals is not centrally located.



Photo: CMA CGM Benjamin Franklin in Elliott Bay. Source: Port of Seattle

Ports continue to become efficient, moving the same and greater amount of freight with fewer people. Some ports face capacity limits, as marine freight volumes increase and available land at terminals and in ports diminishes. Marine container ports are looking to partner with inland satellite port facilities to meet capacity concerns. In 2016, the NWSA received the largest container ship in its history, the Ben Franklin, with a capacity of 18,000 TEU. This single ship can move nearly one percent of the NWSA's 2015 international container volume. While Puget Sound

ports are not likely to have regular visits by the very largest of cargo vessels, they still require adjustments. As new, extremely large ships enter service they trigger a cascading effect of large ships displacing smaller ships on other routes. Instead of a dozen vessels per month, ports expect fewer but larger ships to dock each month. This will result in spikes of activity to unload/load ships, potentially affecting highway congestion as trucks move to service at less frequent arrivals. This may also require the need for longer trains and space, and the ability to load and unload longer trains efficiently.

Due to congestion, volume growth, land costs and other issues, marine container ports are looking to partner with inland ports as satellite facilities to offer economical solutions to the needs of shippers. Inland ports have several advantages, including generally less expensive land and less competition for the existing transportation infrastructure. An inland seaport, as a satellite facility, receives export cargo and transfers it to another mode, typically rail, to move the cargo to a marine port. This would allow trucks to avoid long trips through congested areas and make more trips per day. Receiving cargo dockside by rail that otherwise would be arriving by truck alleviates congestion on the last mile roadway segments around the marine port. Inland seaports have been developed in the eastern United States. Some examples include Front Royal (Virginia), and Inland Port Greer and Port Dillon (South Carolina). A location for an inland seaport in Washington has not been identified, but Northwest Seaport Alliance is exploring the concept with potential partners. A major issue that would need to be addressed is that, except for certain commodities and volumes, hauls of less than 500 miles are often difficult for railroads to financially justify. Most satellite ports being considered are half that distance.

Another concept that could address congestion affecting containers moving in and out of ports is domestic container service on coastal and inland waterways. MARAD has been supporting trial services in other parts of the country as part of its America's Marine Highways program. Such services must comply with the Jones Act, which requires use of U.S.-built ships and American crews.

Washington ports that do not handle containers also have mobility needs. For instance, the Port of Vancouver USA has identified the need to improve north-south access for trucks and other vehicles. The Port of Woodland is developing a new dock facility on the Columbia River, which may require highway improvements to accommodate additional traffic. The Port of Bellingham would benefit from improved access to its shipping terminal and improvements to truck routes connecting it to I-5. Several ports that specialize in oversize/overweight loads have concerns about clearance and weight restrictions on corridors connecting to their facilities.

At river bridges, commercial vessels are required to navigate between narrow passages between piers in the navigation channel. In some locations, the commercial navigation channel passes underneath two nearby structures, creating navigation challenges that relate to mobility and safety. One such location is on the Columbia River in Vancouver, where barge traffic must pass underneath a highway bridge and a rail bridge in close proximity, resulting in a sharp S-curve maneuver if the lift section on the primary channel is lowered.

At waterway locking structures, commercial and recreational traffic can sometimes be greater than the capacity of the locks to handle traffic, resulting in delay. The USACE monitors and reports delay using its Lock Performance Monitoring System.¹ Lock queue data is available by waterway and lock structure, showing the number of vessels, number of barges, and delay minutes.

Ensuring mobility for marine cargo

- Port and terminal operators should continue to improve terminals to enhance efficiency. For

example, the Port of Tacoma is considering funding a new maintenance crane to work on straddle carriers in 2017. This will improve operational efficiency.

- Marine fleet owners continue to identify new logistical efficiencies on the marine system.
- As markets change, carriers work with shippers and forwarders to meet new demand. For example, global retailer Amazon has been in the marine freight forwarding industry for less than one year, yet has now become a non-vessel operating common carrier for international freight to and from China. In the company's first month, it shipped 150 containers.²
- Ports and local jurisdictions can work to identify and address bottlenecks that affect mobility in and out of ports.
- WSDOT will continue to invest in infrastructure that benefits economic competitiveness of ports, such as the Puget Sound Gateway Program (SR 167 and SR 509) in the Puget Sound region.
- WSDOT will coordinate investment with the FRIB/FRAP programs, and with the new National Highway Freight Program to support the development of needed port infrastructure.
- WSDOT can work with Northwest Seaport Alliance and their potential partners to evaluate the viability of developing inland seaports within the state.
- Transportation partners can investigate opportunities in Washington to establish and expand use of container shipping on the Marine Highway System.

Automation and technology are advancing

The ability to obtain real time integrated information and disseminate that information among the marine freight supply chain has transformed the industry. The information gained by using geospatial technology, such as the Global Positioning System (GPS), enables safer and more efficient marine operations. GPS allows

¹ U.S. Army Corps of Engineers. <http://corpslocks.usace.army.mil/lpwb/f?p=121:3:0>

² Flexport. <https://www.flexport.com/blog/amazon-ocean-freight-forwarder/>

vessels to know their exact location and communicate their position, reducing the risk of collision. Radio-frequency identification (RFID) or other tracking technologies provide the ability to track the location of containers, allowing the terminal operator to manage more inventory in a smaller space and better coordinate with carriers.

Efficiencies have also been found by using more sophisticated online systems to track cargo. Customs can be handled online allowing multiple parties to be involved at once, decreasing the time it takes to clear customs. Additionally, the development of Terminal Operating Systems (TOS) has improved the efficient handling of cargo through the port once it has cleared customs. A TOS tracks cargo in the port to continually understand available port capacity, real-time status of cargo, the potential for congestion, and efficiently catalogs associated paperwork.

Congestion at terminal gates leads to inefficiencies, as truck drivers wait to gain entry to drop or pick up freight. The NWSA is deploying a system to display wait times and turn times at the ports of Seattle and Tacoma. This data is available to truckers and dispatchers via the DrayQ mobile device app. The technology works by tracking truck wait and turn time at the ports via Bluetooth or Wi-Fi readers. The availability of real-time information should increase efficiency and reduce truck idling at the ports. Because drivers will be able to know how long wait times are at the terminals, this information could help them better plan their parking options in advance of departing for the terminals. WSDOT assisted in securing Freight Advanced Traveler Information System (FRATIS) funding for this project and is committed to partnering with the ports to ensure this system is beneficial to the freight industry.

Mobile cranes, driverless trucks and stackers are the latest technologies to affect terminal operations. The container itself was a relatively recent change that replaced the loose loading and unloading of ships and barges. These systems require significant investment and can be best justified by the largest ports with the greatest throughput. Two terminals at the ports of Los Angeles and Long Beach in California have invested in robotic cranes to stack containers. Investment in

these automated systems will be encouraged as ships increase in size, as they will be needed to handle greater freight volumes more efficiently. Automation within the ports continues to become more prevalent as ports use driverless dray vehicles to move containers from one part of the terminal to another, replacing drivers or the operator of stackers.

Implementing automation and technology to improve efficiency

- Ports should continue to implement automation and technology to take advantage of new opportunities to reach new markets or to find efficiencies in operations. For example, the Port of Tacoma is considering funding a new maintenance crane to work on straddle carriers in 2017. This will improve operational efficiency. Marine fleet owners continue to identify new logistical efficiencies on the marine system.

Ports rely on rail service

Some ports in Washington are dependent on the railroad system. The distance from other major markets requires rail transport to be competitive. The ability to move grain, either by rail or in a combination with barge, to the deep-water ports provides growers in Washington competitive transportation.



Photo: Port of Vancouver on the Columbia River Source: Washington State Department of Transportation

Over 3,000 miles of rail in Washington is served by both the Union Pacific Railroad (UP) and the BNSF Railway Company (BNSF). UP has trackage rights over BNSF on the west side of the state, between Tacoma and Portland, Oregon. On the east side, UP primarily operates on its own lines. The ports on the west side have access to both either directly, via a switching agreement or via one of the short-line railroads in Washington. BNSF and UP have switching yards in both Tacoma and Seattle. Longview is served by a terminal railroad owned jointly by the Class I railroads. The Port of Tacoma is served by Tacoma Rail, which is owned and operated by the City of Tacoma. The Port of Grays Harbor is served by the Puget Sound and Pacific Railroad, which is owned by Genesee and Wyoming Inc.. The ports of Benton, Royal Slope, and Columbia own track with the operator outsourced. The Port of Pend Oreille owns and operates its own railroad.

The BNSF Great Northern Corridor, along with the Montana Rail Link route, are important for the movement of grain, containers, and other freight from the plains and Midwest to the deep-water ports. Those routes and UP's route via Oregon, allow for the competitive movement of containers to and from eastern population centers. The UP route paralleling the I-5 corridor allows for the double stacking of containers between California and Washington. The three BNSF rail lines that serve the Puget Sound allow the BNSF to operate heavy westbound trains loaded with bulk commodities destined for export via the relatively flat Columbia River route, and send the empty trains back east on the Stevens Pass and Stampede Pass lines. Double-stack container trains go to and from Puget Sound ports on the BNSF Stevens Pass line. BNSF's three major east/west lines and UP's single line via Oregon, have prompted discussions of whether short haul container shipments might be a possibility from eastern Washington to the ports in Tacoma and Seattle.

The rail routes in the Pacific Northwest compete for capital within the railroads. Depending on the return, BNSF or UP might invest more in infrastructure in California than in Washington. The responsibility for the last mile rail connections to the ports and within the port rail, loop tracks, at-grade crossings and sidings

depend on various agreements. The rail infrastructure supporting the ports requires ongoing maintenance and funding. Multiple ports highlighted this as an issue of concern in responses to the WSDOT 2017 Port Survey.

Access to rail service is a key concern of nearly all the non-recreational ports. Rail is a service that companies with transportation needs look for when selecting a location. The BNSF and UP provide an alternative to trucks for access to distant domestic and international markets. For some bulk commodities, rail is an absolute requirement. Many ports work closely with short-line railroads in Washington that service their industries and connect with BNSF and UP. Access to equipment, competitiveness of rates, and consistency of service and transit times will partially determine whether the port's industries will be viable. Rail also links ports together. Grain can move from a port district near the harvest, to a port offering barge service to a deep-water port offering access to international bulk vessels.

The ability to handle longer trains, either through on-dock or loop tracks, is another issue for the deep-water ports. The number of trains is expected to increase, which may require additional capacity improvements and increases the risk of safety at highway-rail crossings. The Legislature's Joint Transportation Committee conducted an analysis of highway-rail crossings across the state and provided a ranking based on various weighted inputs. The analysis found there are prominent road-rail conflicts in areas served by ports, due to the high level of traffic on the roadways and railroads.

Maintaining and improving rail access to ports

- Railroads will continue to serve ports. Rail service, including condition, will be maintained and improved on corridors by railroads servicing ports, as needed.
- WSDOT will improve connections between the rail system and ports through the FRIB/FRAP programs.

Ferries are important connections to island communities

The Washington State Ferries (WSF), a division of WSDOT, moves significant amounts of freight by truck. In 2016, WSF served over 46,500 freight truck trips. A very high percent of the vehicles longer than 50 feet are commercial freight trucks. The four busiest freight routes in the system are the San Juan Domestic, Mukilteo-Clinton, Edmonds-Kingston, and Port Townsend-Coupeville. WSF is working on a long-range plan that will coordinate with other state transportation plans.



Photo: Trucks on a ferry vessel Source: Washington State Department of Transportation

Maintaining freight connections to island communities

- WSDOT will continue to carry freight trucks on its ferry system, and make improvements, as necessary, to maintain freight service to communities that rely on that service.

CHAPTER 11

ENVIRONMENT

Transportation partners must work to promote energy conservation, enhance healthy communities, and protect the environment.

The marine system is vulnerable to climate impacts

Washington has developed an integrated state climate change response strategy,¹ which identifies several potential risks to transportation infrastructure:

- Sea-level rise and storm surge will increase the risk of major coastal impacts, including temporary and permanent flooding of roads and transportation facilities in low-lying areas.
- More intense downpours will increase the risk of flooding, erosion, landslides, and damage. Travel disruptions and delays could increase and have serious impacts to the state's economy and public safety.
- An increase in extreme heat could negatively affect rail tracks and other materials in the summer, but warmer winters could offer benefits from reduced road closures and snow and ice removal costs.
- Larger and more severe wildfires could cause temporary road closures and increased risk of erosion due to loss of vegetation, which stabilizes soil.

WSDOT has examined climate risks to state transportation assets using climate projections from the University of Washington Climate Impacts Group. WSDOT completed a statewide qualitative risk assessment² to identify which state-owned roads, bridges and other facilities throughout the state are most vulnerable.

Understanding and addressing climate impact risks

- WSDOT will use results of the 2011 Climate Impacts Vulnerability Assessment³ to inform corridor studies and plans and continue to assess potentially vulnerable transportation infrastructure. WSDOT staff will also evaluate potential risks during the design phase of projects and identify ways to address those risks.
- Ports and adjacent jurisdictions are encouraged to conduct similar assessments of the vulnerability to climate impacts of their critical transportation infrastructure and identify ways to address those risks.

Environmental issues affect freight operations

Ports provide stewardship of the Columbia-Snake River System, the Salish Sea, the Pacific Ocean, and the navigable bays and inlets. Stormwater control, estuary restoration, water quality, and many other projects are outside of the scope of this report. The environmental areas of interest to freight include dredging to deepen channels, anchorages and the transport of cargo that pose risk in case of spills.

The regulatory requirements for permitting projects, especially those on waterways, can be complex. Federal, state, and local regulators have to approve permits needed for construction. Tribal governments often need to be consulted as part of the process. Extended permitting timelines and associated uncertainty is a concern of multiple ports in Washington.

The West Coast Ports Sustainable Design and Construction Guidelines is an effort of the America Association of Port Authorities and the Global

¹ Department of Ecology. Climate Change. <http://www.ecy.wa.gov/climatechange/2012ccrs/infrastructure.htm>

² WSDOT. Climate Change - Adapting and Preparing. <http://www.wsdot.wa.gov/SustainableTransportation/adapting.htm>

³ WSDOT. Climate Impacts Vulnerability Assessment. https://www.wsdot.wa.gov/NR/rdonlyres/B290651B-24FD-40EC-BEC3-EE5097ED0618/0/WSDOTClimateImpactsVulnerabilityAssessmentforFHWA_120711.pdf

Environment and Technology Foundation to establish best practices to address air and water quality, renewable energy, and other environmental issues.

Diesel emissions come from a variety of sources including marine vessels, trucks and on-dock equipment and trucks. The Port of Seattle, Port of Tacoma and Port Metro Vancouver, Canada have jointly developed and carried out the Northwest Ports Clean Air Strategy (NWPCAS) to reduce emissions. More recently, the NWSA (ports of Seattle and Tacoma) has worked with the state to reduce emissions from trucks idling at gates with DrayQ, so that drivers would be able to avoid lines.



Photo: Salmon in the Bonneville Fish Ladder. Source: U.S. Army Corps of Engineers

The Columbia-Snake River System is an important marine freight corridor, but it can be difficult to manage the competing needs and functions involved, such as flood risk management, hydropower, irrigation, fish and wildlife, and recreation functions. In 2016, The U.S. Army Corps of Engineers, Bureau of Reclamation and Bonneville Power Administration began preparing an environmental impact statement (EIS) on the Columbia River System operations and configurations for 14 federal projects in the interior Columbia Basin. Changes to the operation of the Columbia River System could have a dramatic effect on navigation.

The Columbia River Treaty, signed in 1964, also affects management of the river system. The treaty covers hydropower, reservoirs, flooding, irrigation, navigation and other issues on the Columbia River

system. A provision in the treaty allows for a review of the agreement after 50 years and negotiations are scheduled to start early 2018. This review will address tribal and environmental issues to a greater degree than occurred in the early 1960s. Transportation and navigation potentially are affected directly by any changes concerning the release of water, velocity and sediments. Navigation could be indirectly affected by other changes to the treaty.

Addressing environmental issues

- The Northwest Seaport Alliance is working to reduce seaport-related air emissions through the Northwest Ports Clean Air Strategy. The aim is to reduce diesel particulate emissions per ton of cargo 80 percent by 2020, and greenhouse gas emissions per ton of cargo 15 percent by 2020. The NWSA is one of seven port authorities in the U.S. recognized in 2017 for its efforts to reduce seaport-related emissions.⁴
- Marine fleet owners will continue to improve the fleet through engine efficiency improvements and conversion to cleaner fuels for propulsion.
- Transportation partners have provided comments on the scope of the Columbia River System operations and configurations EIS, including the Port of Lewiston. WSDOT will monitor the EIS process and participate, as needed, to support commercial navigation needs and use of the Columbia-Snake River System.

Energy sector cargo is growing

Changes in the energy sector have resulted in different methods and routes for the movement of petroleum products in Washington. Alaska has traditionally been the primary source for crude oil used by refineries in Washington, delivered by ships. As oil production in Alaska has declined, refineries in Washington are receiving less oil from there, delivered by ship. Oil deliveries from North Dakota and Canada have increased, primarily delivered by rail and pipeline. Oil from North Dakota and Canada can also move by

⁴ Northwest Seaport Alliance. Environmental Stewardship. <https://www.nwseaportalliance.com/stats-stories/environmental-stewardship>

barge. In recent years, shippers have transported some of this oil by rail to a facility on the Columbia River near Clatskanie, Oregon and transferred it to barges for delivery to refineries. The proposed Tesoro Savage Vancouver Energy Project in Vancouver could increase the movement of oil moving by water, generating up to 365 vessel trips annually on the lower Columbia River.⁵

The Washington Department of Ecology's greatest concern regarding marine transportation of oil is that vessels could be involved in an accident resulting in a spill of oil or bunker fuel (the fuel used by the ship) in the Salish Sea or in the Columbia-Snake River System. Risks include collisions with other vessels, grounding, structural failure of the vessel, or fire/explosion. To reduce the risk, they encourage Best Achievable Protection, such as improvements in navigation, the training and use of pilots, the resources and ability to respond swiftly, and, in the case of the Salish Sea, anchorages. Though occurrences are infrequent, the potential for severe ecological damage from even one event makes this a critical concern.

Addressing changes in the transportation of energy products

- Transportation partners will monitor changes in the energy sector to identify opportunities and threats.

⁵ Access Washington. Tesoro Savage Vancouver Energy Project Draft EIS. http://www.efsec.wa.gov/Tesoro%20Savage/SEPA%20-%20DEIS/DEIS_PAGE.shtml

CHAPTER 12

STEWARDSHIP

Transportation partners must work to continuously improve the quality, effectiveness, and efficiency of the transportation system.

Federal trust funds for inland waterways and harbors need improvements

The Inland Waterways Trust Fund (IWTF)¹ is designed to pay for half of construction and major rehabilitation costs on the nation's inland waterways. It is currently financed through a 20 cent per gallon diesel tax used in commercial transportation on inland waterways. Improvements on the upper Columbia-Snake River System are partially funded through the IWTF. From its inception, the IWTF contained a surplus, with collections exceeding expenditures. Beginning in 2009, the fund contained less than was needed, even with changes enacted in 2014. Collections are expected to be below need for the foreseeable future.² As a result, additional funding is provided from the general fund. In addition, while it is expected that projects in Washington will be funded in later years, much of the funding is currently allocated to major projects on the Mississippi and Ohio Rivers.

Progress has been made ensuring the IWTF remains solvent. In December 2014, tax extension legislation, supported by industry, included a 9 cent per gallon increase to IWTF collections. As of April 1, 2015, towboaters transiting the inland waters of the U.S. started contributing 29 cents per gallon to the fund.³ In addition, all U.S. geographic areas are now

represented in the USACE's Capital Development Plan, a step towards geographic equity. The plan will be reviewed every five years, providing an opportunity for including projects that may arise over time. As a result, rehabilitation or new construction projects on the inland Columbia-Snake River System are more likely to receive IWTF funding in the future.

The Harbor Maintenance Fee (HMF)⁴ is intended to require those who benefit from maintenance of U.S. ports and harbors to share the cost of the maintenance. Freight loaded on or unloaded from a commercial vessel is subject to a port use fee of 0.125 percent of its value on imports, domestic shipments, and Foreign-Trade Zone admissions. The ports subject to the harbor maintenance fee in Washington are Aberdeen, Bellingham, Everett, Port Angeles, Seattle, Tacoma, Olympia, Anacortes, Kalama, Longview, and Vancouver. Fees collected by CBP are deposited into the Harbor Maintenance Trust fund, from which Congress may appropriate amounts to pay for harbor maintenance and development projects and related expenses.⁵ Some ports are considered "donors" to the fund because the taxes collected exceed the amount invested on projects, so the surplus is potentially used for projects at other ports, including ports outside the Pacific Northwest that compete with ports in Washington. The ports of Seattle and Tacoma get just over a penny for every dollar of the HMF that shippers pay on cargo moving through those ports.⁶ The HMF is not assessed on U.S. imports that arrive in a foreign port (e.g., Prince Rupert,

¹ 26 USC 9506. <https://www.gpo.gov/fdsys/pkg/USCODE-2011-title26/html/USCODE-2011-title26-subtitle-chap98-subchapA-sec9506.htm>

² <https://www.waterways.org/2010%20Website/IWTF/IWTF%20Fact%20Sheet.pdf>

³ Pacific Northwest Waterways. Inland Waterways Trust Fund. <http://www.pnwa.net/factsheets/IWTF.pdf>

⁴ 19 CFR 24.24 - Harbor maintenance fee. <https://www.gpo.gov/fdsys/pkg/CFR-2011-title19-vol1/xml/CFR-2011-title19-vol1-sec24-24.xml>

⁵ U.S. Customs and Border Protection. Harbor Maintenance Fee. https://help.cbp.gov/app/answers/detail/a_id/283/~/what-is-the-harbor-maintenance-fee-%28hmf%29%3F

⁶ Port of Seattle. Harbor Maintenance Tax. <https://www.portoftacoma.com/sites/default/files/HMT%201%20Pager.pdf>

British Columbia) and later transported into the U.S. by truck or rail. This creates an unintended incentive for international importers to divert cargo through non-U.S. ports.

The ports support reforming the HMF to ensure U.S. tax policy does not disadvantage U.S. ports and maritime cargo, and to provide greater equity for donor ports. In addition, the HMF has generated a surplus. Since 2003, HMF collections have far exceeded funds appropriated for harbor maintenance. It is estimated that in FY2018 the surplus of collections over expenditures will grow to over \$9 billion. Rather than being used for their intended purpose, these user fees are used to balance the federal budget. As part of the 2014 Water Resources Reform and Development Act, Congress included language in Section 2106 authorizing up to \$50 million in HMF transfers—subject to appropriation—to donor ports and energy ports. This can be used for customer rebates, berth maintenance and in-water environmental remediation. Congress has appropriated \$25 million for this purpose in the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act.

Addressing issues with existing federal funding mechanisms

- Transportation partners will continue to address funding levels and equity. Inland waterway users may be responsible for the costs of constructing and operating the inland waterway systems that make their business possible. Currently, inland waterway users pay less than 10 percent of the total costs of operating the system. WSDOT will support PNWA in partnership with the Portland and Walla Walla Districts of the USACE to meet the needs of our inland waterway system. Two bills have been introduced in 2017 with additional reforms to the HMF, both of which aim to fully use available funding. WSDOT will support marine partners in pursuing changes to the HMF that benefit the marine freight system in Washington.

Labor agreements affect system efficiency

The Pacific Maritime Association (PMA) represents terminal, vessel, and stevedore operations for the West Coast ports, including 11 ports in Washington,

in negotiations with the ILWU concerning work rules, hours, wages, etc. The ILWU is a labor union that primarily represents dockworkers, such as clerks, foremen, and longshoremen. Terminal operators and stevedore companies hire dockworkers based on seniority and skill set, and compensate ILWU members based on the established labor agreements. Most of the positions are daily and subject to bid. In 2015, there were 14,224 registered West Coast port workers (Class A and B). Of those registered workers, 2,257 are in Washington and 1,091 in Oregon. In addition to the registered members, there are casual workers, selected through a lottery system, who work when there are insufficient registered workers.

In some cases, the ports operate as a terminal operator and work directly with the ILWU. The port dispatches crews and assigns work. If there is a delay, the port is responsible for four hours of pay, even when there is no work to be done. Longshoremen also have privileges allowing them to find work at other ports when there is no work at one port.

Prior to the 1950s, most cargo was loose and the loading/unloading of vessels involved a significant number of dockworkers. The introduction of the container and cranes replaced many longshore jobs, reducing the number of direct positions working the ships. If a position becomes redundant, the contract requires compensation to the ILWU. The continuance of innovation to improve efficiency at ports may continue to decrease the need for dockworkers in the future.

The 2014-2015 strike by the ILWU was a pivotal event that may have lasting effects on West Coast trade. The strike coincided with the expansion of the Panama Canal and resulted in shippers/receivers reconsidering their supply chain and reducing their reliance on West Coast ports. Instead of bringing imports through a West Coast port, shippers may find it more economical to import via Canadian, Gulf Coast, and East Coast ports. PMA and ILWU recently extended the waterfront contract for another 3 years, to 2022.

Addressing labor agreements

- The PMA will continue to negotiate and administer maritime labor agreements with the ILWU.

CHAPTER 13

SYSTEM IMPROVEMENTS

In 2016, WSDOT responded to a state legislative requirement, ESHB 2524, Section 218 (4) (b), which required “The department, in conjunction with the stakeholder group, must provide a list of prioritized projects for consideration for funding in the 2017-2019 fiscal biennium. The prioritized list must have approval from all affected stakeholders. The prioritized list must be submitted to the office of financial management and the transportation committees of the Legislature by November 1, 2016.” This 2016 freight project list was intended to also identify needs in the state

freight investment plan, when developed. To maintain consistency between this plan and the *2017 Washington State Freight System Plan*, the 2016 freight project list is carried over to this plan, and is not fiscally-constrained or prioritized for freight system benefits. The solicitation process, overview, and recommendations are described in the submittal letter.⁴⁸ The multimodal projects listed in the 2016 freight projects list are shown in Exhibit 13-1.

Exhibit 13-1: Port Projects

Project	Description	Location
Improvements to Tradewinds and East Wind Roads	Improvement to local roads to include: Road “A” will be a new, 680-foot long road that will provide access to Air Liquide, an existing Port tenant, and to the Port’s wastewater treatment plant.	Port of Kalama
Port Community Technology System	Implement an electronic platform that allows for the secure exchange of information between the NWSA and private, as well as public, sector stakeholders to improve the efficiency of the NWSA-related supply chain. This will cover NWSA terminals, trucks, rail and waterways, and their interactions with each other.	Northwest Seaport Alliance
Terminal 5 Access Improvements	The project includes truck gate, intelligent transportation systems (ITS), and intersection improvements in the South Spokane St/East Marginal Way/Hanford corridor to facilitate truck access and minimize traffic impacts.	Northwest Seaport Alliance
Port of Longview Multi-Cargo Modernization Project (Berth 6/7)	Project will rehabilitate and modernize 1,500 lineal feet of Berth 6 & 7 bulk and breakbulk cargo facilities to optimize increased cargo handling omni-dock operations.	Port of Longview
Kalama Methanol Manufacturing and Exporting Facility (KMMEF) - Dock	The new export dock is designed to accommodate both the existing fleet and future generations of methanol carriers.	Port of Kalama

¹ WSDOT. Prioritized Freight Project List. <http://www.wsdot.wa.gov/publications/fulltext/LegReports/15-17/2016PrioritizedFreightProjectList.pdf>

Project	Description	Location
South Terminal Modernization Project II	Strengthen the remaining 560 feet of the South Terminal, install 700 feet of crane rail to support two 100-foot gauge gantry cranes, and construct a double rail siding to support the cargo operations.	Port of Everett
Port of Longview Industrial Rail Corridor (IRC) Expansion Project	The project consists of expansion of its existing industrial rail corridor by adding one to two additional through tracks into the Port with up to four sidings to accommodate current and future growth and market demand. The running tracks will be approximately 9,500 feet and the sidings up to 7,500 feet.	Port of Longview
Terminal 18 Truck Access Improvements	This project will reconfigure the southern edge of the NWSA's Terminal 18, and adjacent public right of way, to relocate the terminal truck entrance's security check and optical character recognition equipment. It will increase the capacity of the security check and eliminate truck queues on public streets.	Northwest Seaport Alliance
Blair Hylebos Rail Improvements	Track improvements specific to future dry bulk export terminal requirements and connection to arrival/ departure track infrastructure and direct mainline infrastructure.	Northwest Seaport Alliance
Bridgeview Terminal (Berth 1/2) Project	Redevelopment of the Berth 1 and Berth 2 facilities into one leased terminal. Project development will be in coordination with private development. Project may include storage, dock construction, and rail infrastructure improvements.	Port of Longview
North Sea-Tac Cargo Facility Access	Rehabilitation of existing arterials to support new cargo land uses north of Sea-Tac Airport.	POS/City of SeaTac
Arrival/Departure Tracks	In order to increase cargo velocity through terminals, it is necessary to arrive and depart longer trains of 8,000-feet intact. This project would extend a number of SR 509 rail corridor tracks 1,300 feet east, construct a new rail bridge across Wapato Creek, and relocate utilities. This phase provides two track connections from existing support yard to future Bulk Export facility and connects the easterly end of the existing Pierce County Terminal Intermodal Yard to the SR 509 corridor arrival and departure tracks.	Northwest Seaport Alliance
North Intermodal Yard Alignment	Align North and South Intermodal Yards.	Northwest Seaport Alliance
Terminal 5 Improvements	The completed project will upgrade the terminal's dock and power supply to accommodate larger cranes, additional refrigerated container storage and future shore power, and increase the depth of the berth to accommodate larger ships. The grant requested portion of this project includes truck gate, ITS and intersection improvements in the South Spokane St/East Marginal Way/Hanford corridor, container movement and power supply improvements to facilitate truck access and minimize traffic effects.	Northwest Seaport Alliance

Project	Description	Location
Barlow Point Terminal Entry Road Development	Develop Barlow Point terminal entrance off of SR 432. Project is to provide safe entrance/exit for future private terminal development.	Port of Longview
Duwamish Rail Corridor Project	Create improved direct rail access from the Port marine terminals T-5 and T-18 to UP and BNSF mainlines.	Northwest Seaport Alliance
T-5 Rail Improvements	Intermodal Yard and Rail Enhancements.	Northwest Seaport Alliance
Barlow Point Terminal Railway Entry Development	New rail infrastructure development from the terminus of the BNSF Reynolds Lead into the Barlow Point property; to include two inbound and two outbound tracks. Project is to provide rail backbone to the property for future private terminal development.	Port of Longview
Big Pasco Intermodal Rail Reconstruction	Reconstruct 12,300 linear feet of WWII-era Port-owned rail actively used for intermodal transloading.	Port of Pasco
South Terminal Modernization Project III	The Port of Everett is exploring a cleanup action plan for the South Terminal Mill A site that restores the health of the Puget Sound, while also modernizing the Port of Everett Seaport to meet 21st Century Infrastructure Needs. The net result would be a minimum of a 1,100-foot berth and -45 mean lower low water (MLLW) operational depth.	Port of Everett
Berth 4 Terminal Redevelopment Project (including rail infrastructure support)	Redevelopment of the Berth 4 facilities into a leased terminal. Project development will be in coordination with private development. Project may include storage, dock construction, and rail infrastructure improvements.	Port of Longview
Barlow Point Terminal Development	Port terminal development on 285+ acres. Site is considered a “green field” development; no previous development has occurred. Project would include dock structures, utility backbone, roadways, storm water systems, etc., on the site to support 1 to 3 future private terminal developments.	Port of Longview

Source: WSDOT. Prioritized Freight Project List.⁴⁹

² <http://www.wsdot.wa.gov/publications/fulltext/LegReports/15-17/2016PrioritizedFreightProjectList.pdf>

CHAPTER 14

PLAN DEVELOPMENT AND NEXT STEPS

WSDOT developed this *2017 Washington State Marine Ports and Navigation Plan* with partnership from the marine freight industry, including shippers and carriers. In addition, WSDOT worked with federal, state, and local partners who provided additional perspectives. The plan was circulated for public review in coordinated review with the 2017 Washington State Freight System Plan. The draft was released on Aug. 15, 2017, for a review period ending on Sept. 14, 2017. Reviewers representing seven organizations provided more than 70 comments on the plan. Prominent themes among the comments are highlighted below.

- Provide more descriptive and more accurate information about the marine system and ports.
- Include examples of Washington marine industry successes and competitive advantages.
- Expand the discussion of funding and related issues, especially the Harbor Maintenance Trust Fund.
- Include information from the Marine Cargo Forecast.
- Add more information about oversized freight (superload) corridors.

Exhibit 14-1 presents a summary of the strategies that WSDOT will use to implement this 2017 Washington State Marine Ports and Navigation Plan, including guiding freight planning and informing project investments in the future. Context and details are described in the chapters corresponding to each goal.

WSDOT intends to update this plan consistent with state freight plan update requirements described in state law. That plan update will be informed by the planning work conducted to implement this *2017 Washington State Marine Ports and Navigation Plan*. WSDOT will work with transportation partners in these implementation activities.

Exhibit 14-1: Summarized Areas of Focus

ECONOMIC VITALITY
<ul style="list-style-type: none"> • Improving the competitiveness of ports • Preparing ports for larger ships • Protecting industrial land uses around ports • Addressing the labor shortage in the maritime industry
PRESERVATION
<ul style="list-style-type: none"> • Preserving navigation channels and infrastructure • Preserving port infrastructure
SAFETY
<ul style="list-style-type: none"> • Ensuring port safety and security • Ensuring navigation safety • Supporting military logistics
MOBILITY
<ul style="list-style-type: none"> • Ensuring mobility for marine cargo • Implementing automation and technology to improve efficiency • Maintaining and improving rail access to ports • Maintaining freight connections to island communities
ENVIRONMENT
<ul style="list-style-type: none"> • Understanding and addressing climate impact risks • Addressing environmental issues • Addressing changes in the transportation of energy products
STEWARDSHIP
<ul style="list-style-type: none"> • Addressing issues with existing federal funding mechanisms • Addressing labor agreements

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