

# Kent Valley Supply Chain Management Sector Analysis

Economic Impacts and Workforce Analysis

FINAL REPORT

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*Community Attributes Inc. tells data-rich stories about communities  
that are important to decision makers.*

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## EXECUTIVE SUMMARY

### Background and Purpose

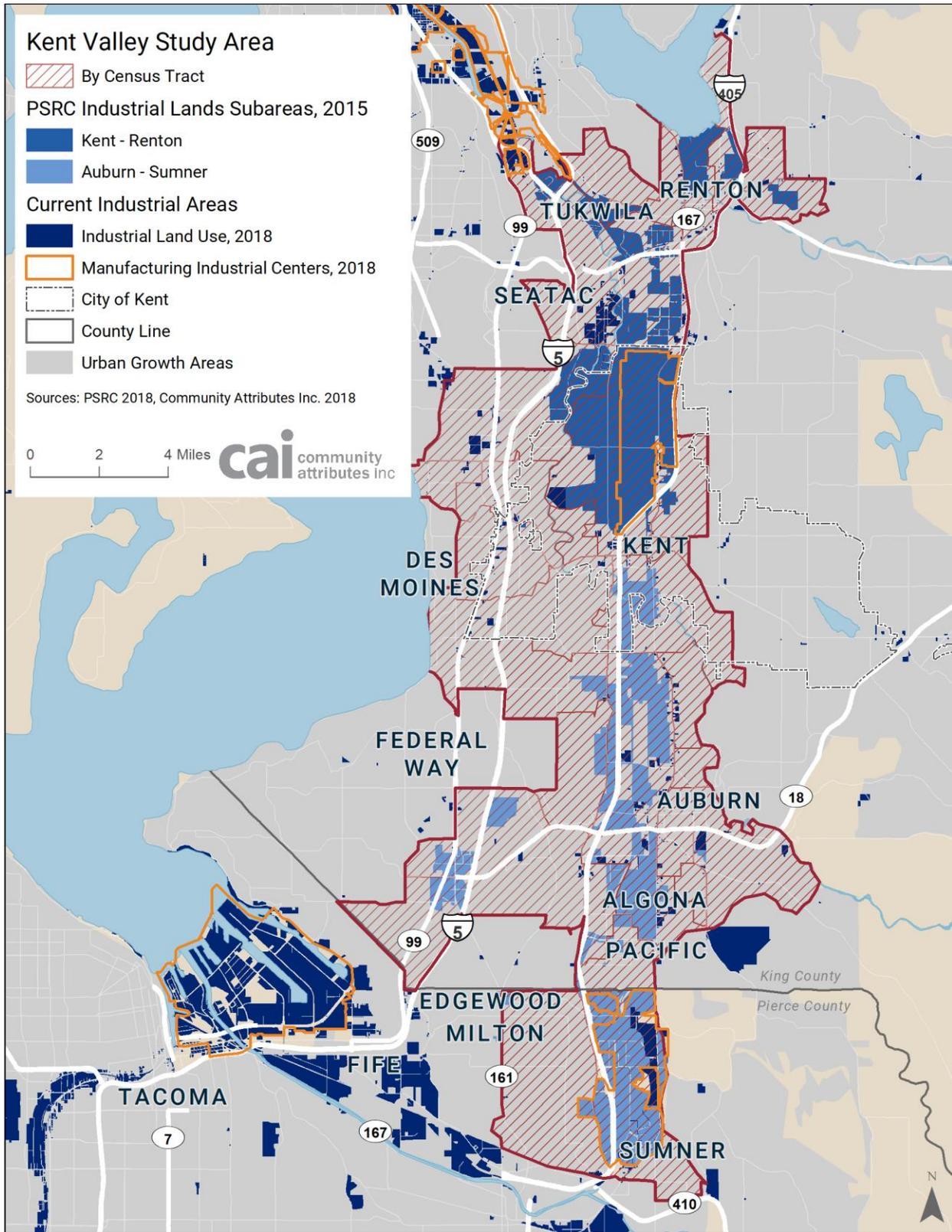
The Global Trade and Supply Chain Management (GTSCM) sector represents an extensive network of service providers and logistics operators that support trade flows to and from the Kent Valley. These include companies and organizations specializing in handling marine cargo, air freight shipments, supply chain management, freight forwarders, trade finance and trucking, as well as the ports, educational institutions, and state and federal government agencies. In addition, there are many related occupations and personnel within trade-reliant industries in the Kent Valley, such as procurement and logistics in aerospace.

The Kent Valley is a major industrial region comprised of all or parts of the cities of Kent, Renton, Tukwila, SeaTac, Federal Way, Des Moines, Auburn, Algonia, Pacific, and Sumner (**Exhibit E-1**). In 2017, total employment in the Kent Valley summed to 255,200 workers, representing 8% of total employment in the state of Washington, compared to 51% for the Seattle-Bellevue-Everett Metropolitan Division, 7% for Spokane Metropolitan Statistical Area (MSA), and 3% for the Yakima MSA.

The region is home to a large concentration of industrial properties, facilities, companies, and assets supporting industries directly engaged in marine and air cargo. These include e-commerce warehousing and fulfillment centers, transloading operations, and local manufacturers importing components and exporting products to overseas and domestic markets. An estimated 6.5% by value of all imports and exports entering or exiting the ports of Seattle and Tacoma and Sea-Tac International Airport are at some point handled at facilities in the Kent Valley.

This study evaluates the size, breadth, and impact of the Kent Valley GTSCM sector, both in absolute terms and as a share of the sector's statewide impact, and the workforce dynamics and needs of these businesses and organizations now and in the near future.

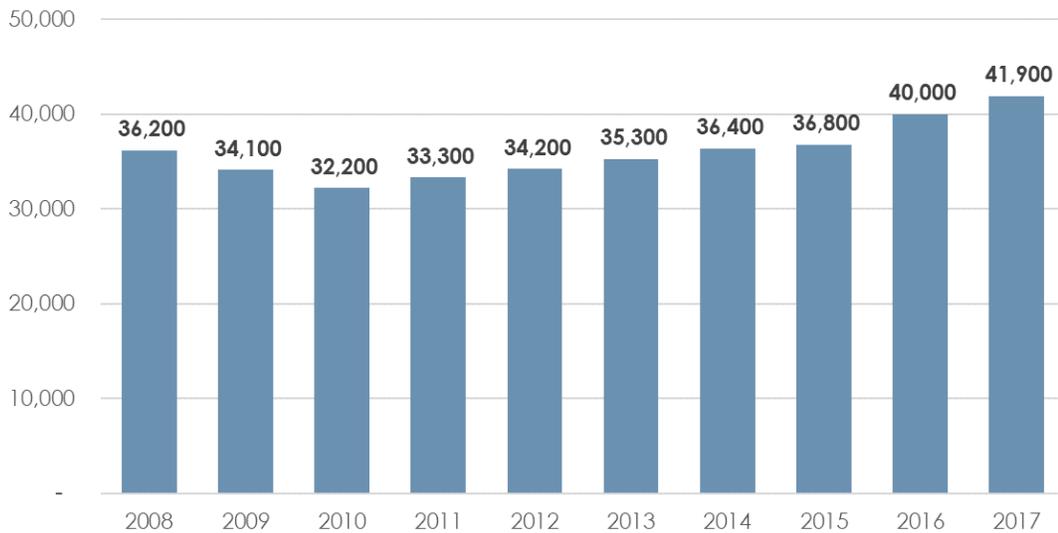
### Exhibit E-1. Kent Valley Study Area



## Size and Breadth of Sector in Kent Valley

In 2017, the Kent Valley was home to an estimated 41,900 workers employed in businesses wholly or primarily engaged in Global Trade and Supply Chain Management (including wholesale), representing just over 16% of total Kent Valley employment. Since 2008, employment in industries mainly engaged in Global Chain and Supply Chain Management (including wholesale) has increased by almost 16%, adding 5,700 jobs. Following a short period of decline during the recession, “core” jobs in the sector grew by a compound annual growth rate of 3.8% between 2010 and 2017. **(Exhibit E-2)**

**Exhibit E-2. “Core” Jobs in Global Trade and Supply Chain Management, Kent Valley, 2008-2017**



*Sources: Puget Sound Regional Council, 2017; Community Attributes, Inc., 2018.*

The Kent Valley Global Trade and Supply Chain Management sector (including wholesaling) constitutes 19% of Washington’s total statewide employment in this sector. Kent Valley warehousing and storage and freight forwarding businesses employed just under half of total Washington state workers in these industries.

An estimated 3,400 workers were employed in e-commerce in roles and activities directly related to Global Trade and Supply Chain Management in the Kent Valley. Factoring in these considerations, there were a total of 9,500 workers performing Global Trade and Supply Chain Management activities in other industries in Kent Valley, equal to approximately 15% of the statewide total.

## Economic and Fiscal Impacts

Economic and fiscal impacts refer to additional jobs, labor income, business revenues, and associated state tax revenues supported through upstream business-to-business transactions (indirect) and worker earned income household expenditures (induced). In 2017, those businesses and activities accounted for as “core” for the Global Trade and Supply Chain Management sector had a total impact of 80,500 jobs, \$5.9 billion in labor income (including benefits) and \$10.9 billion in business revenues in the Kent Valley.

Impacts are also assessed for workers and related activities outside the above “core” industries, such as supply chain jobs and associated income and revenues among e-commerce and manufacturing businesses. For example, in 2017 these activities had a total impact of 20,900 jobs, \$1.6 billion in labor income (including benefits), and around \$5 billion in business revenues in the Kent Valley. For each job engaged in supply chain management in aerospace, e-commerce or other industry, a total of 2.2 jobs are supported throughout the Kent Valley economy.

The total tax contributions of the sector are significant—businesses in this sector in Kent Valley paid a total of \$164 million in state taxes in 2017. Almost two thirds of these estimated tax payments came in the form of state sales and use tax payments, with B&O payments constituting 29% of total payments.

## Occupations and Career Pathways

Among the nine identified core Global Trade and Supply Chain Management occupations, five have educational requirements of just a high school diploma or equivalent, according to the Bureau of Labor Statistics. Among those core occupations requiring a high school diploma or equivalent, four—Transportation, Storage and Distribution Managers; Procurement Clerks, Cargo and Freight Agents; and Aircraft Cargo Handling Supervisors—have median annual wages in King County of more than \$50,000.

According to the Workforce Development Council of Seattle-King County’s Talent Pipeline Application, in 2017 there was a graduate supply of 175 for Transportation, Storage and Distribution Managers. Regional educational institutions also produce graduate supply for Buyers and Purchasing Agents; Procurement Clerks; and Cargo and Freight Agents. The Talent Pipeline application indicates that there is a projected shortage of talent across King County among Buyers and Purchasing Agents; Production, Planning and Expediting Clerks; Cargo and Freight Agents; Purchasing Managers; Logisticians; Compliance Officers; and Aircraft Cargo Handling Supervisors.

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# INTRODUCTION

## Background and Purpose

The Global Trade and Supply Chain Management sector is made up of an extensive network of service providers and logistics operators that support trade flows to and from the Kent Valley. These include companies and organizations specializing in handling marine cargo, air freight shipments, supply chain management, freight forwarders, trade finance and trucking, as well as the ports, educational institutions and state and federal government agencies. In addition, there are many related operations and personnel within trade-reliant industries in the Kent Valley, such as in procurement and logistics in aerospace.

This study focuses on the Global Trade and Supply Chain Management sector in the Kent Valley, including an in-depth analysis of the size and breadth of this sector, estimated economic contributions, occupations, and career pathways. The analysis is consistent with Community Attributes' statewide analysis of the sector on behalf of the Center of Excellence for Global Trade and Supply Chain Management located at Highline College.

## Methods

This report begins by defining the Kent Valley study area, in collaboration with the City of Kent, and leveraging existing definitions from relevant studies such as the 2015 Puget Sound Regional Council Industrial Lands Study and the CBRE Puget Sound Industrial MarketView report. The analysis of the Global Trade and Supply Chain Management sector makes use of the existing sector definition developed as part of the work produced on behalf of Center of Excellence in Global Trade and Supply Chain Management. The economic impact analysis leveraged the Washington State Input-Output Model, with customizations to reflect local and regional economic conditions.

This study utilizes multiple data sources, including employment estimates from the Puget Sound Regional Council, data series published by the Washington State Employment Security Department (ESD) and U.S. Bureau of Labor Statistics, revenue data from the Washington State Department of Revenue (DOR), personal income and self-employment data from the U.S. Bureau of Economic Analysis, and trade data from the U.S. Census Bureau.

## Organization of Report

The remainder of this report is organized as follows:

- **Description of Kent Valley Global Trade and Supply Chain Management (GTSCM) Sector.** A review of the GTSCM sector definition and the definition of the Kent Valley developed for this study.
- **Sectoral Activities in the Kent Valley.** Key measures of the sector, including jobs, income, and revenues. Also includes economic and fiscal impacts of the sector and a trade analysis focused on estimating the value of cargo handled in the Kent Valley.
- **Occupations and Career Pathways.** Analysis of key occupations for sector businesses in the Kent Valley, including job counts, average and median wage, and when possible splits by industry subsector. Identification of educational requirements and current pipeline for leading occupations. Key education issues identified by industry stakeholders.
- **E-commerce Analysis.** Analysis of e-commerce activities in the Kent Valley, including warehouses and fulfillment centers. Includes estimated jobs, income, and revenues and a qualitative assessment of the economic contributions and importance of this subsector.
- **Summary and Conclusions.** Review of key findings.

## DESCRIPTION OF KENT VALLEY GLOBAL TRADE AND SUPPLY CHAIN MANAGEMENT SECTOR

### Definition of Global Trade and Supply Chain Management Sector

The Global Trade and Supply Chain Management sector includes a range of activities involved in facilitating the movement of goods between businesses, intermediaries, and final consumers. The sector definition used in this study is consistent with the definition developed as part of the statewide study prepared for the Center of Excellence in Global Trade and Supply Chain Management, with the one exception of the addition (in this study) of wholesaling.

**Exhibit 1** presents a description of the segments and subsectors that make up the Global Trade and Supply Chain Management sector, taking into consideration businesses and activities central to the movement of goods (Transportation, Distribution, and Logistics), critical infrastructure, supporting services, other businesses in Washington state engaged in procurement and supply chain management (e.g., procurement and compliance divisions within larger manufacturers), and educational

institutions whose mission is to provide needed human capital to support these activities.

Aligned with the statewide study, the Global Trade and Supply Chain Management sector includes: 1) firms and industries primarily engaged in Global Trade and Supply Chain Management, referred to as “core” activities; and 2) additional jobs, wages and revenues associated with workers engaged in global trade and supply chain management in other industries across the economy.

**Exhibit 1. Description of Segments of Global Trade and Supply Chain Management Sector**

<b>Segment</b>	<b>Subsector/Activity</b>	<b>Description</b>
Transportation, Distribution & Logistics	Marine cargo shipping	Domestic and international freight vessels, e.g., Tote, as well as supporting operations such as tugs.
	Transloading & Intermodal	Movement of cargo from one mode to another and consolidation and repackaging of goods, including between container sizes.
	Air cargo shipping	Freight airlines (e.g., Air China) and air cargo ground-handling operation.
	Freight forwarding	Freight arrangement and 3rd Party Logistics
	Warehousing & storage	Dry and cold storage facilities and packaging.
	Couriers	Express delivery services
Wholesale	Wholesale	Sale and distribution of goods in large quantities to resellers.
Supply Chain Management	Procurement and supply chain management across local manufacturers, wholesalers, shippers	Procurement, sales, import and export of finished and/or intermediate goods and materials, customer service.
Supply Chain Services	Trade finance	Letters of credit and other short-term lending for exporters and importers.
	Compliance	ITAR and other regulatory compliance issues.
	Consulting/Market research	Research on market opportunities.

*Sources: Adapted from Highline College, “Global Trade & Supply Chain Management Sector Economic Analysis,” Community Attributes Inc., August 2018.*

Different from the statewide study, the sector definition in this study also includes wholesale as a “core” industry, in addition to the Transportation, Distribution and Logistics segment.<sup>1</sup> Wholesaling is a key sector in the Kent Valley in terms of employment and is an important step in the supply chain. It involves the sale of large quantities of merchandise with the intent of

<sup>1</sup> In the statewide study prepared for Highline College, wholesale jobs were captured as part of the occupational analysis which identified additional jobs associated with workers engaged in this sector in other industries across the economy.

reassembling, sorting, repackaging, or distributing the goods in smaller lots, in the process of moving these goods from original suppliers to end users.

### *Global Trade and Supply Chain Management in Other Industries*

In addition to businesses primarily involved in Global Trade and Supply Chain Management, there are many workers in other industries also directly engaged in this work. Examples include manufacturers, many of whom have internal staff tasked with managing procurement, logistics, sales, customer service, or businesses providing supporting services such as trade finance, compliance, consulting, and market research.

This study uses the list of relevant supply chain management positions developed for the statewide study for the Center of Excellence in Global Trade and Supply Chain Management to estimate supply chain jobs in other industries (**Exhibit 2**).

#### **Exhibit 2. Leading Occupations in Global Trade and Supply Chain Management, Economy-Wide**

<b>Occupation</b>	<b>Description</b>
Buyers and Purchasing Agents	Purchase goods for further processing, resale or to enable operation of an establishment. These workers include wholesale and retail buyers and purchasing agents for farm products, equipment and raw materials.
Production, Planning, and Expediting Clerks	Coordinate and expedite the flow of work and materials within or between departments of an establishment according to a production schedule.
Compliance Officers	Examine, evaluate and investigate conformity with regulations governing licenses, permits and other inspections. Many of these workers are employed by both public and private establishments.
Logisticians	Analyze and coordinate an establishment's supply chain. They manage the procurement, allocation and delivery of a product to minimize the cost or time required to transport goods.
Purchasing Managers	Oversee the work of buyers and purchasing agents and typically handle more complex procurement tasks.
Transportation, Storage, and Distribution Managers	Plan, direct or coordinate the transportation, storage and distribution activities of an establishment in accordance with organizational policies and government regulations.
Procurement Clerks	Compile information and records to draw up purchase orders for materials and services.
Cargo and Freight Agents	Expedite and route movement of incoming and outgoing cargo and freight shipments in airline, train, trucking and maritime shipping docks. They may prepare and examine bill of lading to determine shipping charges and tariffs.
Aircraft Cargo Handling Supervisors	Coordinate the activities of ground crew in the loading, unloading, securing, and staging of aircraft cargo or baggage. They may determine the quantity and orientation of cargo in an aircraft, and they may monitor and handle cargo in flight.

*Sources: Global Trade & Supply Sources: Global Trade & Supply Chain Management Sector Economic Analysis, Community Attributes Inc., August 2018.*

### *E-Commerce*

Supplementing these jobs estimates, further analysis was done to assess the number of workers in e-commerce engaged in supply chain management. Companies such as Amazon support global supply chains across an extensive range of activities, including logistics, transportation (e.g., Prime Air), and warehouses and fulfillment centers, as well as back office software engineering and data science to develop online platforms and systems for managing inventory, delivering products to consumers, and working with third-party vendors.

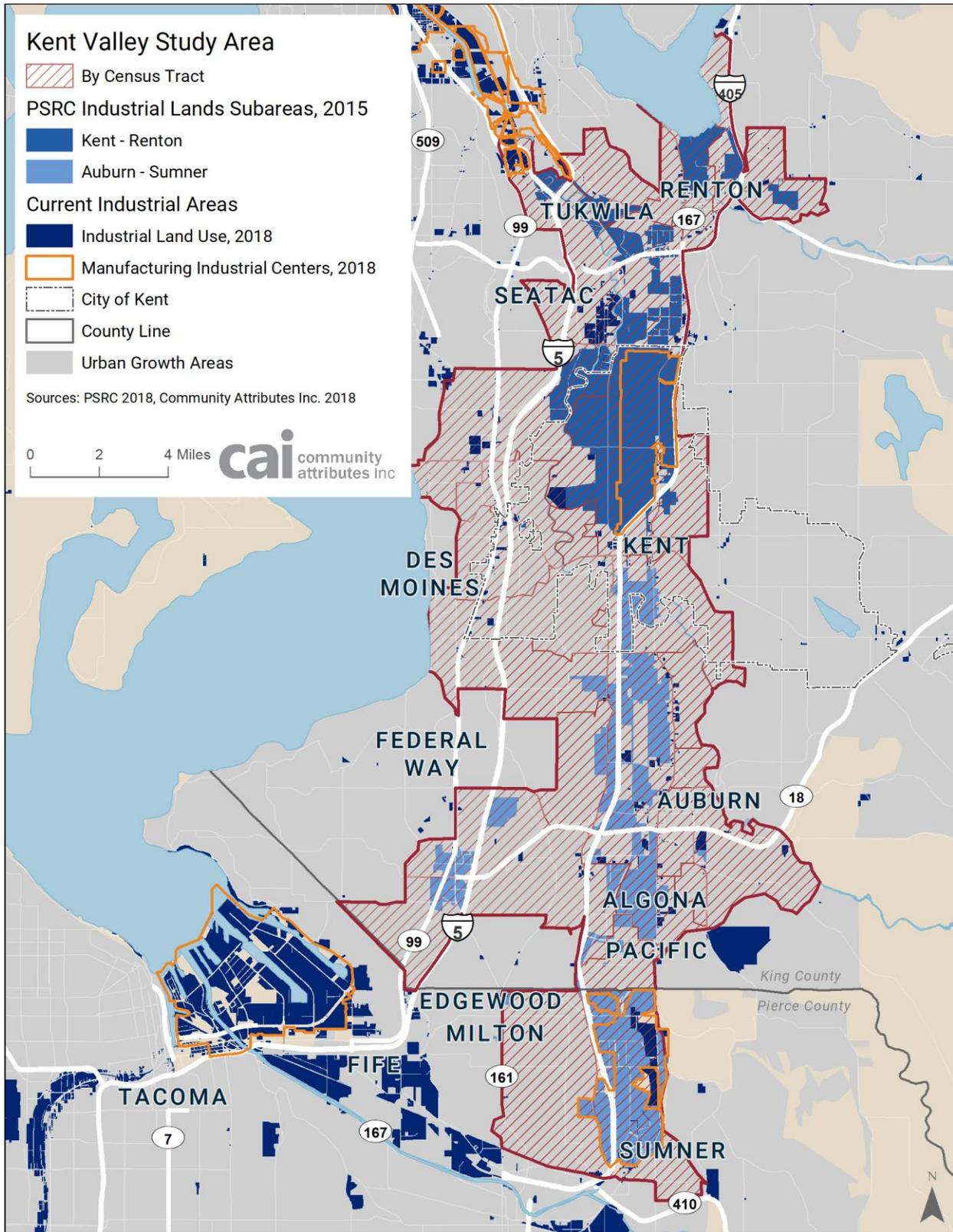
### Kent Valley Study Area

The Kent Valley, as defined in this study, extends from Renton/Tukwila in the North to Sumner in the South and includes parts of Kent, Des Moines, Auburn, Federal Way, Algona, and Pacific (**Exhibit 3**).

The Kent Valley benefits from a centralized location, only twelve miles south of downtown Seattle, close to one of the largest container loading centers in the U.S.—The Northwest Seaport Alliance—and with easy access to major freeways. This has made the Valley the largest contiguous industrial area in the Northwest serving the West Coast, the state of Washington, Canada, Alaska, and the Pacific Rim. Other important assets in close vicinity to the Kent Valley are Sea-Tac International Airport, Boeing Field (with UPS), and BNSF and Union Pacific rail lines.

The Kent Valley is home to a cluster of international, national, regional, and local companies, warehousing facilities, and fulfillment centers critical to Washington state's Global Trade and Supply Chain Management sector. In 2017, total employment in the Kent Valley summed to 255,200 workers, representing 8% of total employment in the state of Washington, compared to 51% for the Seattle-Bellevue-Everett Metropolitan Division, 7% for Spokane Metropolitan Statistical Area (MSA), and 3% for the Yakima MSA.

### Exhibit 3. Kent Valley Study Area



## SECTORAL ACTIVITIES IN THE KENT VALLEY

### “Core” Activities

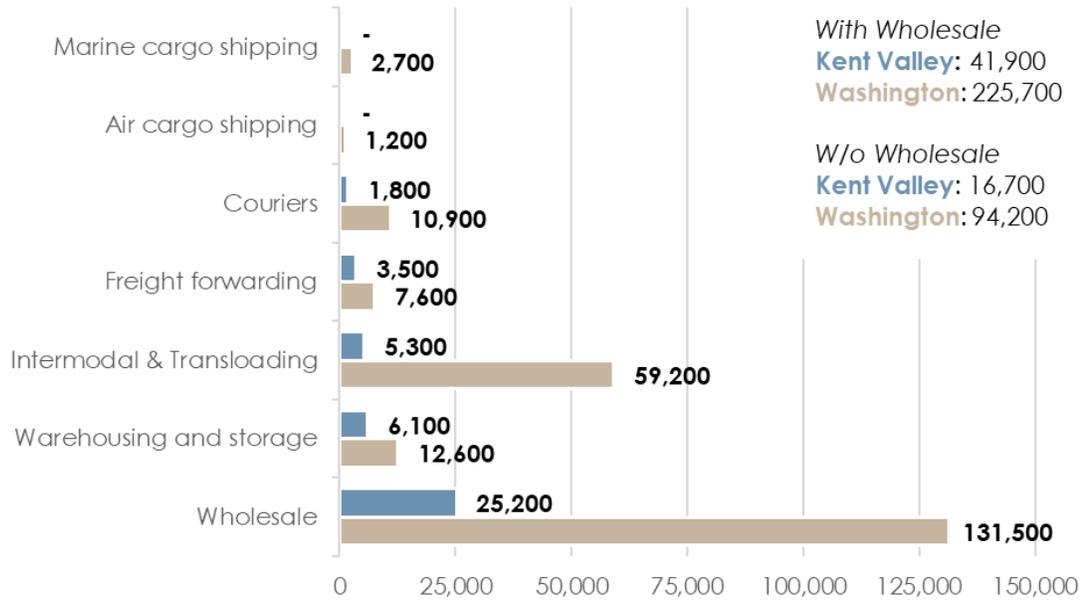
In 2017, an estimated 41,900 workers were employed in businesses wholly or primarily engaged in Global Trade and Supply Chain Management (including wholesale), representing just over 16% of total Kent Valley employment. The Kent Valley Global Trade and Supply Chain Management sector (including wholesaling) provides 19% of Washington’s total statewide employment in this sector. This compares with other major centers of industry concentration across the state, such as 41% of all Information & Communication Technology jobs in the Innovation Triangle (Redmond-Bellevue-Kirkland).

The largest category of activities was wholesale, with an estimated 25,200 workers or 60% of total GTSCM jobs in “core” sectors in the Kent Valley.<sup>2</sup> The second largest category of jobs were in warehousing and storage (6,100 workers, or 15% of total), a group that includes packing and crating facilities that prepare goods for shipment and transportation as well as dry and cold storage facilities (**Exhibit 4**). Kent Valley warehousing and storage and freight forwarding businesses employed just under half of total Washington state workers in these industries.

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<sup>2</sup> Wholesaling was added to the definition of “core” activities in this study, due to the unique role of these companies in handling logistics and distribution in the Kent Valley.

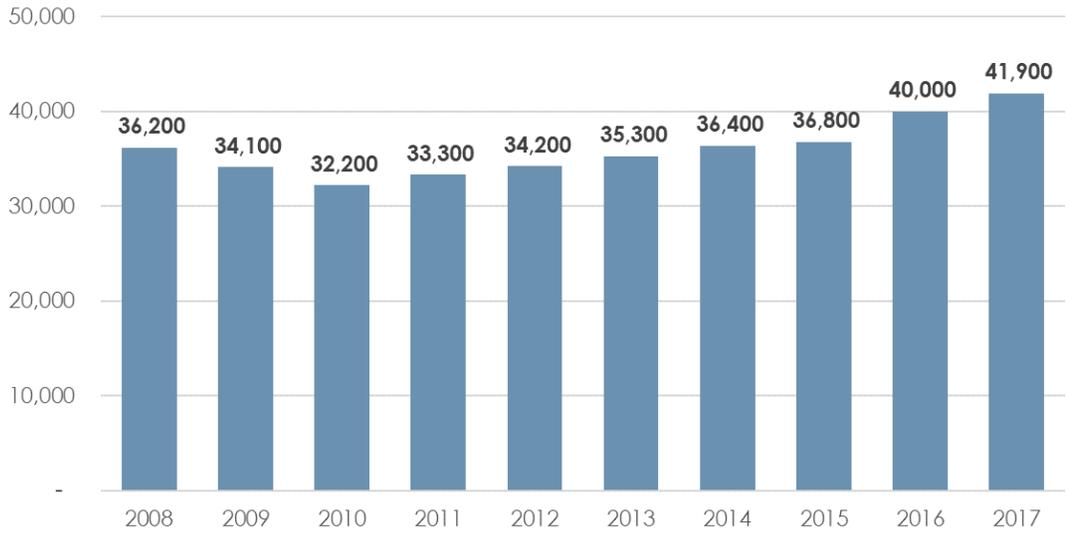
**Exhibit 4. “Core” Jobs in Global Trade and Supply Chain Management by sector, Kent Valley and Washington, 2017**



Sources: Puget Sound Regional Council, 2018; Global Trade & Supply Chain Management Sector Economic Analysis, Community Attributes Inc., August 2018.

Since 2008, employment in industries mainly engaged in Global Chain and Supply Chain Management (including wholesale) has increased by almost 16%, adding 5,700 jobs (**Exhibit**). Following a short period of decline during the recession, “core” jobs in the sector grew by a compound annual growth rate of 3.8% between 2010 and 2017.

**Exhibit 5. “Core” Jobs in Global Trade and Supply Chain Management, Kent Valley, 2008-2017**



*Sources: Puget Sound Regional Council, 2017; Community Attributes, Inc., 2018.*

### Occupations in Other Industries

Occupations core to the Global Trade and Supply Chain Management sector include Buyers and Purchasing Agents; Production, Planning and Expediting Clerks; and Logisticians. Each of these occupations have estimated employment of more than 1,000 in the Kent Valley, outside of the industry-based “core” activities. While these occupations are found among “core” businesses, they are also common in other industries throughout the economy. These workers perform essential functions in supply chain management and facilitating movement of goods across various industries.

“Core” Global Trade and Supply Chain Management occupations have median wages in King County that are close to or more than the median household income in King County of \$78,800, according to the U.s. Census Bureau. Among core occupations, Transportation, Storage and Distribution Managers and Purchasing Managers have median annual wages of more than \$100,000 in King County. Additionally, Compliance Officers; Buyers and Purchasing Agents; Aircraft Cargo Handling Supervisors; Cargo and Freight Agents; and Procurement Clerks all have median wages of more than \$50,000 annually (**Exhibit 5**).

**Exhibit 5. Median Wage and Estimated Employment by Leading Occupation, Kent Valley, 2017**

<b>Occupation</b>	<b>Median Wage</b>	<b>Employment in Other Industries</b>
Buyers and Purchasing Agents	\$73,736	2,060
Production, Planning, and Expediting Clerks	\$45,614	1,300
Logisticians	*	1,130
Cargo and Freight Agents	\$53,019	310
Compliance Officers	\$90,168	620
Transportation, Storage, and Distribution Managers	\$122,907	310
Purchasing Managers	\$131,373	230
Procurement Clerks	\$50,939	60
Aircraft Cargo Handling Supervisors	\$60,778	20
<b>Total</b>		<b>6,040</b>

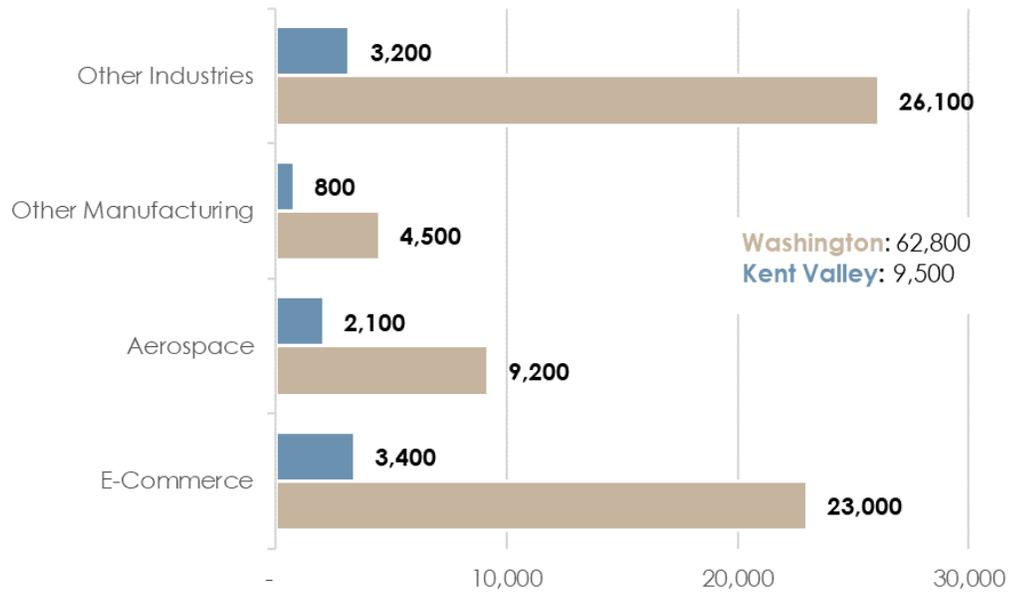
*Notes: \* Indicates data that is suppressed due to nondisclosure restrictions. Median annual wage is calculated using median hourly wages multiplied by a 2,080-hour year.*

*Sources: Puget Sound Regional Council, 2018; Washington State Employment Security Department, 2018; Community Attributes Inc., 2018.*

Supplementing these employment estimates, further analysis was done to assess the number of workers in e-commerce engaged in supply chain management. Companies such as Amazon support global supply chains across an extensive range of activities, including logistics, transportation (e.g., Prime Air), and warehouses and fulfilment centers, as well as back office software engineering and data science to develop online platforms and systems for managing inventory, delivering products to consumers and working with third-party vendors.

An estimated 3,400 workers were employed in e-commerce in roles and activities directly related to Global Trade and Supply Chain Management in the Kent Valley. Factoring in these considerations, there were a total of 9,500 workers performing Global Trade and Supply Chain Management activities in other industries in Kent Valley, equal to approximately 15% of the total statewide (**Exhibit 6**).

**Exhibit 6. GTSCM Jobs in Other Industries, Kent Valley and Washington State, 2017**

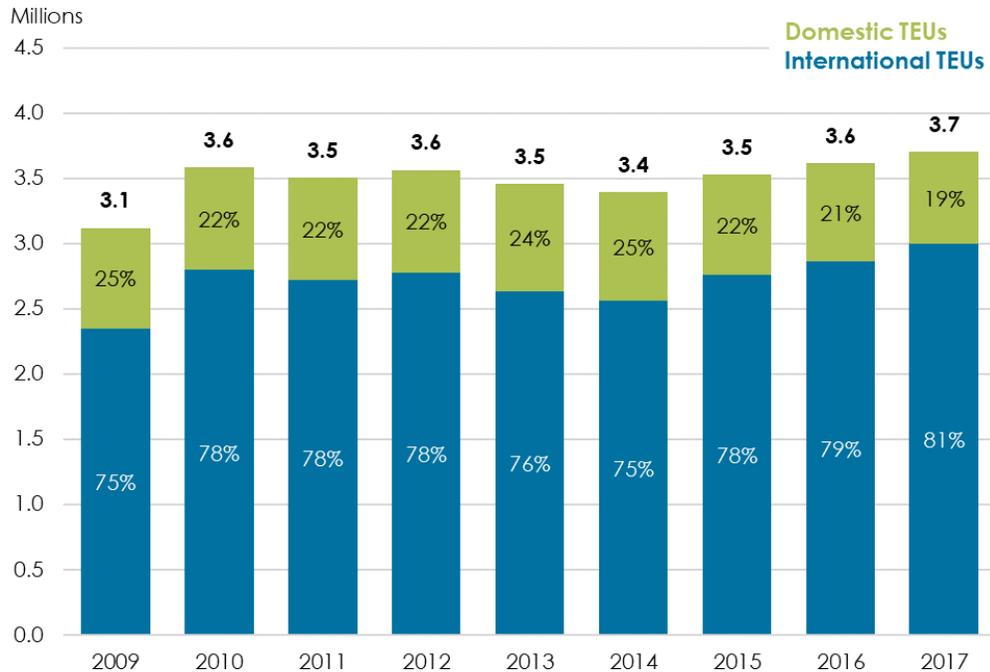


*Sources: Puget Sound Regional Council, 2018; Washington State Employment Security Department, 2018; Global Trade & Supply Chain Management Sector Economic Analysis, Community Attributes Inc., August 2018.*

## Trade Analysis

In 2017, containerized cargo volumes through The Northwest Seaport Alliance (NWSA) reached 3.7 million twenty-foot equivalent units (TEUs), of which 81% were international imports and exports (the remaining cargo serving markets in Alaska and Hawaii) (**Exhibit 7**).

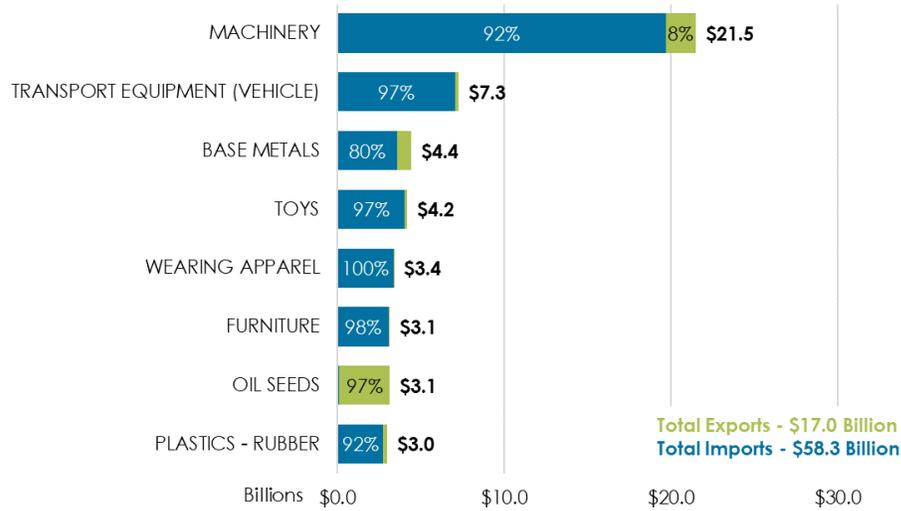
**Exhibit 7. Containerized Cargo Volumes through the Northwest Seaport Alliance, Millions of TEUs, 2009-2017**



Source: *The Northwest Seaport Alliance, 2018.*

In 2017, machinery represented 29% of total vessel value among NWSA containerized cargo. In total, the vessel value of containerized cargo through The NWSA was nearly \$75.3 billion. Imports represented 77% of total vessel value, or \$58.3 billion, and exports totaled nearly \$17.0 billion. Among the leading commodities in 2017 were machinery, transport equipment, base metals, toys, and wearing apparel, each representing more than 5% of total vessel value. (**Exhibit 8**)

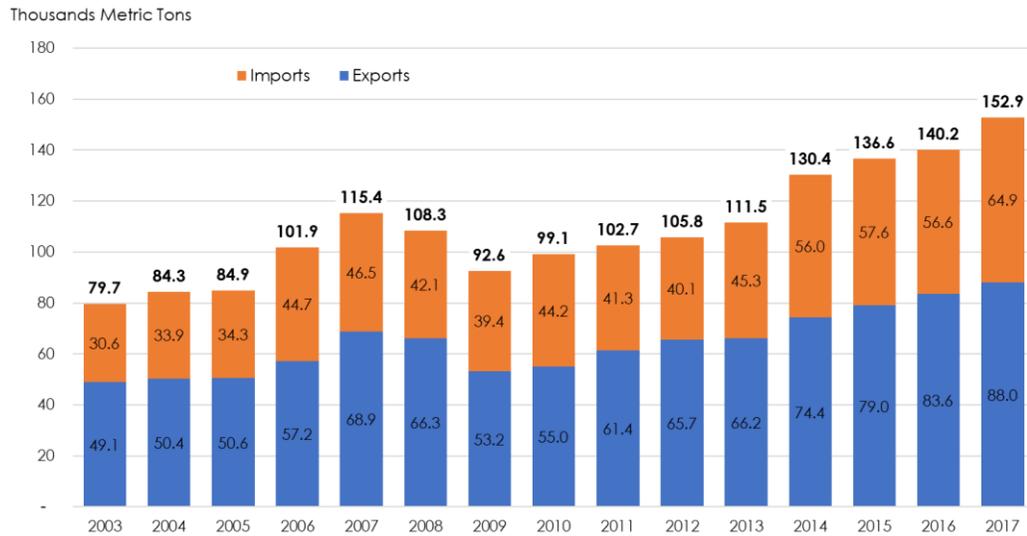
**Exhibit 8. Containerized Cargo Commodities Representing More Than Four Percent of Total Vessel Value, Billions of US Dollars, NWSA, 2017**



Source: The Northwest Seaport Alliance, 2018.

Air cargo flows through Sea-Tac International Airport summed to 152.9 thousand metric tons in 2017, an historic high. Unlike marine cargo, the majority of air cargo are exports, summing to 88,000 metric tons in 2017 (Exhibit 9).

**Exhibit 9. Air Cargo Flows in through Sea-Tac International Airport, 2003-2017**



Sources: U.S. Census Bureau, 2018; Community Attributes Inc., 2018.

Based on data on truck trips provided by the Puget Sound Regional Council, an estimated 9% of all trucks entering or exiting the ports of Seattle and Tacoma and Sea-Tac International Airport at some point stop in the Kent

Valley. Furthermore, by value an estimated three quarters of two-way trade by value was handled across these three ports by truck, either before or after goods enter or exit U.S. Customs, based the Freight Analysis Framework Data Tabulation Tool (FAF4) developed by the U.S. Center for Transportation Analysis.<sup>3</sup> The Puget Sound Regional Council estimates that approximately 8.9% of all truck trips to and from the ports of Seattle and Tacoma and Sea-Tac International Airport originate or are destined for locations in the Kent Valley. Accordingly, an estimated 6.5% of all imports and exports by value are estimated to have been handled in the Kent Valley in 2017.

## ECONOMIC AND FISCAL IMPACTS

### Total Sectoral Direct Impacts

In 2017, there were a total of 51,400 workers employed in Global Trade and Supply Chain Management activities across the Kent Valley economy and industries outside those identified as belonging entirely to the sector, such as manufacturing or retail. Workers earned an estimated \$3.9 billion in income (\$1.7 billion without the wholesale sector) and supported \$13.7 billion in revenues (\$6.3 billion without the wholesale sector) within their businesses of employment. The average wage for workers employed in industries fully engaged in Global Trade and Supply Chain Management, before benefits, was \$74,900, while the average wage among workers engaged in Global Trade and Supply Chain Management occupations in other industries was \$81,100 (**Exhibit 10**).

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<sup>3</sup> U.S. Department of Transportation, Economic Indicators Division, 2019; U.S. Center for Transportation Analysis, *Freight Analysis Framework Data Tabulation Tool (FAF4)*, 2018.

**Exhibit 10. Summary of Direct Jobs, Income, and Revenues, Kent Valley,  
2017**

Segment of Sector	Jobs	Wages (Mils \$)	Average Wage	Revenues (Mils \$)
<b>A. "Core" Industry Subsectors</b>				
Intermodal & Transloading	5,300	\$272.0	\$51,300	\$732.1
Freight Forwarding	3,500	\$257.8	\$73,600	\$1,112.1
Warehousing and Storage	6,100	\$339.5	\$55,600	\$567.5
Couriers	1,800	\$83.4	\$46,300	\$50.2
<i>Subtotal</i>	<i>16,700</i>	<i>\$952.6</i>	<i>\$57,000</i>	<i>\$2,461.9</i>
<b>B. Wholesale</b>	25,200	\$2,185.9	\$86,700	\$7,442.3
<i>All-In and Wholesale Combined (A+B)</i>	<i>41,900</i>	<i>\$3,139</i>	<i>\$74,900</i>	<i>\$9,904.2</i>
<b>C. Supply Chain Management Workers in Other Industries</b>				
E-Commerce	3,400	\$322.2	\$94,800	\$1,056.4
Aerospace	2,100	\$155.9	\$74,200	\$1,628.3
Other Manufacturing	800	\$51.7	\$64,700	\$410.5
Other Industries*	3,200	\$240.2	\$75,100	\$704.6
<i>Subtotal</i>	<i>9,500</i>	<i>\$770.1</i>	<i>\$81,100</i>	<i>\$3,799.7</i>
<b>Total (A+B+C)</b>	<b>51,400</b>	<b>\$3,908.6</b>	<b>\$76,000</b>	<b>\$13,703.9</b>

*\*Approximately 81% or 2,600 jobs in the Other Industries category are in service industries such as information, finance and insurance or food, accommodation and entertainment services. The remaining jobs in the other category are in construction and resources (200), other retail than e-commerce (200) and government (200).*

*Sources: Washington State Employment Security Department, 2018; U.S. Bureau of Labor Statistics, 2018; Washington State Office of Financial Management, 2017; Community Attributes Inc., 2018.*

## Total Economic and Fiscal Impacts

Sectoral impacts to the Kent Valley economy are computed through use of the Washington State Input-Output Model. Estimates represent total jobs, labor compensation, business revenues, and tax revenues supported directly and through upstream business-to-business transactions (indirect impacts), and worker household income expenditures on goods and services (induced impacts).

In 2017, those businesses and activities accounted for as “core” for the Global Trade and Supply Chain Management sector had a total economic impact of 80,500 jobs, \$5.9 billion in labor income (including benefits), and \$10.9 billion in business revenues in the Kent Valley (**Exhibit 11**).

**Exhibit 11. Economic Impacts, “Core” Activities, Kent Valley, 2017**

	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>	<b>Total</b>
Jobs	41,900	8,200	30,400	80,500
Total Compensation (mils 2017 \$)	\$3,771.8	\$485.5	\$1,598.5	\$5,855.8
Business Revenue (mils 2017 \$)	\$4,762.2	\$1,433.4	\$4,661.9	\$10,857.5

*Note: Reported direct revenues in this table are less than those reported earlier in Exhibit 10. This is due to an adjustment, for the purposes of impact modeling, in gross margins for retail and wholesale activities. Reported direct compensation in this table is higher than that reported earlier in Exhibit 10 because it was adjusted to include payroll benefits.*

*Sources: Washington State Office of Financial Management, 2017; Community Attributes Inc., 2018.*

These impacts can be translated into industry impact multipliers. For each job in Global Trade and Supply Chain Management, a total of almost 2 jobs were supported across the Kent Valley economy. Likewise, each million dollars in final demand (revenues) supported, either directly or through multiplier effects, 17 jobs across the Kent Valley (**Exhibit 12**).

**Exhibit 12. Sector Impact Multipliers, “Core” Activities, Kent Valley, 2017**

<b>Type</b>	<b>Multiplier</b>
Total output per \$ final demand	2.3
Total jobs per direct job	1.9
Total compensation per \$ direct income	1.6
Total jobs per \$ mil final demand	16.9

*Sources: Washington State Office of Financial Management, 2017; Community Attributes Inc., 2018.*

Impacts are also assessed for workers and related activities outside the above “core” industries, such as supply chain management jobs and associated income and revenues among e-commerce and manufacturing businesses. For example, in 2017 these activities had a total impact of 20,900 jobs, \$1.6 billion in labor income (including benefits), and more than \$5 billion in business revenues in the Kent Valley (**Exhibit 13**). For each job engaged in supply chain management in aerospace, e-commerce or other industry, a total of 2.2 jobs are supported throughout the Kent Valley economy (**Exhibit 14**).

**Exhibit 13. Economic Impacts, Activities in Other Industries,  
Kent Valley, 2017**

	Direct	Indirect	Induced	Total
Jobs	9,500	3,100	8,300	20,900
Total Compensation (mils 2017 \$)	\$963.8	\$193.0	\$434.4	\$1,591.3
Business Revenue (mils 2017 \$)	\$3,254.2	\$574.0	\$1,266.8	\$5,095.0

*Note: Reported direct revenues in this table are less than those reported earlier in Exhibit 10. This is due to an adjustment, for the purposes of impact modeling, in gross margins for retail and wholesale activities. Reported direct compensation in this table is higher than that reported earlier in Exhibit 10 because it was adjusted to include payroll benefits.*

*Sources: Washington State Office of Financial Management, 2017; Community Attributes Inc., 2018.*

**Exhibit 14. Sector Impact Multipliers, Activities in Other Industries, Kent  
Valley, 2017**

Type	Multiplier
Total output per \$ final demand	1.6
Total jobs per direct job	2.2
Total compensation per \$ direct income	1.7
Total jobs per \$ mil final demand	6.4

*Sources: Washington State Office of Financial Management, 2017; Community Attributes Inc., 2018.*

The total statewide tax contributions of the sector are significant—businesses in this sector in the Kent Valley paid a total of \$164 million in state taxes in 2017. Almost two thirds of these estimated tax payments came in the form of state sales and use tax payments, with state B&O payments constituting 29% of total payments (**Exhibit 15**). Estimates do not include local tax payments.

**Exhibit 15. Total Fiscal Impacts, Kent Valley, 2017**

	Direct	Secondary	Total
B&O	\$20.2	\$31.6	\$51.8
Sales & Use Taxes	\$21.7	\$77.4	\$99.0
Other	\$4.8	\$8.3	\$13.2
Total	\$46.7	\$117.3	\$164.0

*Sources: Washington State Office of Financial Management, 2017; Washington State Department of Revenue, 2017; Community Attributes Inc., 2018.*

## OCCUPATIONS AND CAREER PATHWAYS

Among the nine identified core Global Trade and Supply Chain Management occupations, five have educational requirements of just a high school diploma or equivalent, according to the U.S. Bureau of Labor Statistics. Among those core occupations requiring a high school diploma or equivalent, four—Transportation, Storage and Distribution Managers; Procurement Clerks, Cargo and Freight Agents; and Aircraft Cargo Handling Supervisors—have median annual wages in King County of more than \$50,000.

According to the Workforce Development Council of Seattle-King County’s Talent Pipeline Application in 2017 there was a graduate supply of 175 for Transportation, Storage and Distribution Managers. Regional educational institutions also produce graduate supply for Buyers and Purchasing Agents; Procurement Clerks; and Cargo and Freight Agents. The Talent Pipeline application indicates that there is a projected shortage of talent across King County among Buyers and Purchasing Agents; Production, Planning and Expediting Clerks; Cargo and Freight Agents; Purchasing Managers; Logisticians; Compliance Officers; and Aircraft Cargo Handling Supervisors (**Exhibit 16**).

**Exhibit 16 Educational Requirements and Talent Pipeline by Leading Occupation, Kent Valley, 2017**

<b>Occupation</b>	<b>Educational Requirement</b>	<b>Graduate Supply</b>	<b>Unemployment Supply</b>
Transportation, Storage, and Distribution Managers	High school diploma or equivalent	175	73
Buyers and Purchasing Agents	Bachelor's degree	20	58
Production, Planning, and Expediting Clerks	High school diploma or equivalent	0	38
Procurement Clerks	High school diploma or equivalent	25	13
Cargo and Freight Agents	High school diploma or equivalent	25	13
Purchasing Managers	Bachelor's degree	0	31
Logisticians	Bachelor's degree	0	14
Compliance Officers	Bachelor's degree	0	9
Aircraft Cargo Handling Supervisors	High school diploma or equivalent	0	0

*Sources: Bureau of Labor Statistics, 2018; Seattle-King County Workforce Development Council Talent Pipeline, 2018; Community Attributes Inc., 2018.*

## Interviews with Industry Stakeholders on Workforce Challenges

To provide a richer perspective on sectoral workforce needs, a set of interviews were conducted with Kent Valley-based businesses and organizations. Interviews probed several important themes, including hiring, career pathways, training, and technological change. A summary of these findings is presented below.

### *Hiring*

According to interviewees, for higher skilled positions, the Seattle labor market is expensive compared to other parts of the country. According to one person, equally qualified candidates can be hired more cheaply in other GTSCM locations such as Charleston, South Carolina. At the entry-level, hiring reliable, high quality workers can also be a challenge. Warehousing requires more labor than other aspects of the business, though labor needs fluctuate throughout the year and peak in the fall and winter. Another interviewee pointed out that hiring to keep up with warehouse growth has been harder every year. They noted that while the supply of temporary labor is good, temporary workers may be less reliable as a source of labor. And while the core task of fulfillment is sorting and packing, temps who return for additional future work are seen as more productive and have the opportunity to move up within the company.

Qualifications also vary by position, but few jobs have strict educational requirements. According to one interviewee, export jobs are teachable, while customs brokers and import positions require more professional experience in advance of hiring. They also look for basic skills and temperament when hiring, such as the ability to multi-task and adapt to a fast-paced work environment. Even though college degrees are not always necessary, candidates with higher educational attainment levels often display a common set of valuable traits, including higher productivity, fluency with technology, ability and interest in learning new systems, and a desire to move up within the company.

### *Career Paths*

Paths for advancement exist without a college degree. According to one interviewee, there is a common career pathway from warehousing to customer service by learning the products and customer base. From there, if an employee learns skills related to product content or search engine optimization, they can move into the constantly growing e-commerce area. In freight forwarding, there isn't a set path, but cross training, transferring, and internal promotions are strongly encouraged; diversifying one's skillset and taking advantage of internal opportunities has worked well. One apprenticeship program relayed that some employers have developed primers on each section of the business to give to other divisions. They also suggested

that moving upwards within a company is common but moving from the industrial to the business side is more difficult and requires additional training; logistics might be a way for production employees to transition into this side of the business.

### *Training*

Multiple companies interviewed pointed to their investments in employee training but that these decisions are made on a case-by-case basis. Similarly, Boeing has a program called Supplier University to bring employees up to speed on supply chain management. One interviewee concurred with the benefits of creating a training program, but also highlighted the advantages of individual training. Ambitious and talented employees will distinguish themselves and the company can make a more targeted investment in them as a result. Examples of on-the-job training used by one employer interviewed include using Excel and a 6-month LEAN manufacturing certification program. According to one company, the most valuable training opportunities relate to technology.

### *Technology*

Technology is constantly evolving in the Global Trade and Supply Chain Management sector, though the pace of this change varies by subsector. For freight forwarding, the most pressing technology need is on the customer side. Many companies now employ user-friendly digital dashboards for customers to track orders, a feature that is becoming more of a necessity rather than a distinguisher.

Some of the greatest productivity gains enabled through integration of technology in fact occur at the entry level position. According to interviewees, it is increasingly important for new hires to have a high degree of computer literacy, even at the entry level. Shipping and warehousing companies are already at the forefront of many of these trends, including the integration of new technology into picking, packing, and shipments. Automation lines and hand-held scanners and printers help increase productivity, especially in e-commerce. One interviewee emphasized that these tools can only be effective if the warehouse is built around them and the staff are trained.

According to at least one company, an ever-present challenge is competing with Amazon, or other large retailers with well-established e-commerce infrastructure. Smaller retailers will begin to catch up as they invest more in their businesses and their own e-commerce platforms. However, companies also look to opportunities to partner with Amazon, leveraging its capabilities and scale.

## E-COMMERCE ANALYSIS

The Kent Valley is the second largest distribution zone on the West Coast. This region enjoys a comparative advantage in fulfillment and distribution of online orders and because it has space for large warehouses and proximity to Port of Seattle, Port of Tacoma, Sea-Tac Airport and the large customer base in the Greater Seattle Area. E-commerce firms have leveraged the Valley’s advantages in recent years, most notably Amazon, which has opened 2,731,700 square feet of warehouse space since July 2014.

NAI Puget Sound Properties called 2016 the best year the Kent Valley Industrial Market had ever had. At that time, Class A big box space was seeing the highest growth rate, largely due to Amazon’s growing presence in the area. Amazon’s push for same-day delivery has raised the standard for shipping online orders and increased demand for warehouses close to Seattle consumers. Amazon operates multiple facilities in the Kent Valley. These include 1 million square feet at Amazon’s DuPont fulfillment facility (**Exhibit 15**).

**Exhibit 15, Amazon Warehouses in the Kent Valley**

<b>Facility Name</b>	<b>Location</b>	<b>Opening</b>	<b>Square Footage</b>
BFI3 Fulfillment	Dupont	Feb-15	1,000,000 sq ft
BFI4 Fulfillment	Kent	Mar-16	885,000 sq ft
BFI6 Pantry & Fresh	Kent	Q2 107	158,000 sq ft
BFI7 Pantry & Fresh	Sumner	Q2 107	229,800 sq ft
BFI5 Sortation	Kent	Jul-14	320,900 sq ft
DSE5 Delivery Station	Renton	Oct-17	138,000 sq ft

*Source: MWPVL International Inc., “Amazon Global Fulfillment Center Network,” December 2018.*

Other e-commerce firms, as well traditional retailers with an online presence, such as Target, Article, Wayfair, Ricardo Beverly Hills (estimated employment of 75 jobs) and Pickleball Central (24 jobs), have located in Kent Valley.

By 2014, warehouse construction across the Puget Sound region was accelerating due to the increased growth in e-commerce. E-commerce sales were moving large amounts of goods between retail stock rooms and warehouses, increasing demand for distribution and fulfillment centers. Similarly, firms needed space to store raw materials for construction and large consumer goods like furniture. Kent Valley and Pierce County account for most of the region’s industrial space, and a major hub for these activities as a result.

## SUMMARY AND CONCLUSIONS

The Kent Valley is an important hub for Global Trade & Supply Chain Management in Washington state, facilitating the movement of billions of dollars in cargo and shipments. Activities, ranging from transloading, wholesaling, and e-commerce, are critical to the state economy, supporting commerce in many other sectors and consumer demand. An estimated 6.5% of cargo by value of trade entering or exiting the ports of Seattle and Tacoma and Sea-Tac International Airport are handled at some point *en route* in the Kent Valley, such as import cargo coming from overseas and export cargo destined for Asia and other markets.

In 2017, these activities directly supported 51,400 jobs in the Kent Valley and \$13.7 billion in business revenues. Factoring upstream business-to-business transactions (indirect) and worker household consumption expenditures (induced), the total economic impacts of the Global Trade and Supply Chain Management sector in the Kent Valley summed to 80,500 jobs across the economy from “core” activities and an additional 20,900 from activities in other sectors.

Human capital is a critical factor in the continuing growth of this sector. Among the nine identified core Global Trade and Supply Chain Management occupations, five have educational requirements of just a high school diploma or equivalent, according to the Bureau of Labor Statistics. Among those core occupations requiring a high school diploma or equivalent, four have median annual wages in King County of more than \$50,000.