

Workforce Development Council of Seattle-King County

# Transportation and Logistics Talent Pipeline

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Submitted to:



Submitted by:





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# EXECUTIVE SUMMARY

## Background and Purpose

The Workforce Development Council of Seattle-King County (WDC) is a nonprofit workforce organization aimed at supporting a strong economy. The WDC works throughout the community in King County bringing together jobseekers, employers, educators and other key stakeholders to shape workforce solutions for the future. Improving skill development, aligning educators with the public workforce system and private employers, and preparing young people for employment in the workforce are key goal areas of the council. In order to better anticipate and plan for forthcoming labor markets, the WDC has commissioned a talent pipeline analysis of the county's transportation and logistics sector.

## Methods

The transportation and logistics sector is comprised of industries providing transportation of people and cargo, as well as warehousing and storage of goods, and the support activities related to these activities.

This analysis draws from data published by the Washington State Employment Security Department (ESD), the Bureau of Labor Statistics (BLS) and the National Center for Education Statistics (NCES).

Program completion data used in this analysis is published by the National Center for Education Statistics (NCES) in the Integrated Postsecondary Education Data System (IPEDS). It is important to note that IPEDS data is published by academic year—which straddles two calendar years—and for the purposes of workforce analysis, completions during academic year 2012-2013 are matched to calendar year 2013, when most individuals who complete programs begin seeking employment.

The data for employment are defined by the four-digit North American Industry Classification System (NAICS) and the data for occupations is defined by the six-digit Standard Occupational Classification (SOC) system. These classifications help frame the demand portion of the analysis, and economic forecasts adhere to these codes. The supply portion of the analysis draws on data that count graduates by degree and unemployment insurance claimants by previous occupation.

## Key Findings

Transportation and logistics is an important player in the local economy, and a larger employer within the region, employing 49,390 workers in King County in 2013. Total employment within the sector is projected to grow at a compound annual growth rate (CAGR) of 0.9%. Growth among core occupations within the transportation and logistics sector between 2018 and 2023 is forecasted to total 3,345 jobs annually. Total growth in

employment includes existing employees regularly exiting employment to retire, move, or change jobs, but does not include employees who change jobs within the same occupation and area. For example, a material moving laborer who takes another material moving laborer job at a different company in the same area would not be counted, but a material moving laborer who takes a first-line supervisor position at the same company would be counted.

The **Talent Pipeline Dashboard** on the following page describes occupational employment in the transportation and logistics sector in King County, grouped by educational requirement and ranked by average annual openings from 2018 to 2023. The expected CAGR for each occupation from 2013 to 2023 is displayed to show how fast occupations are expected to grow relative to each other.

Total demand and total supply, composed of new graduates and existing unemployment insurance claimants, is compared with supply and demand for each occupation to illustrate where supply shortages and surpluses can be expected. Total demand in the transportation and logistics sector is expected to have 3,345 average annual openings. Total supply is projected to be 1,591 individuals annually, including 974 graduates from local institutions and 617 unemployed workers suitable for employment in the transportation and logistics sector. Combining supply and demand illustrates there is a projected shortfall in the local talent supply of 1,754 individuals.

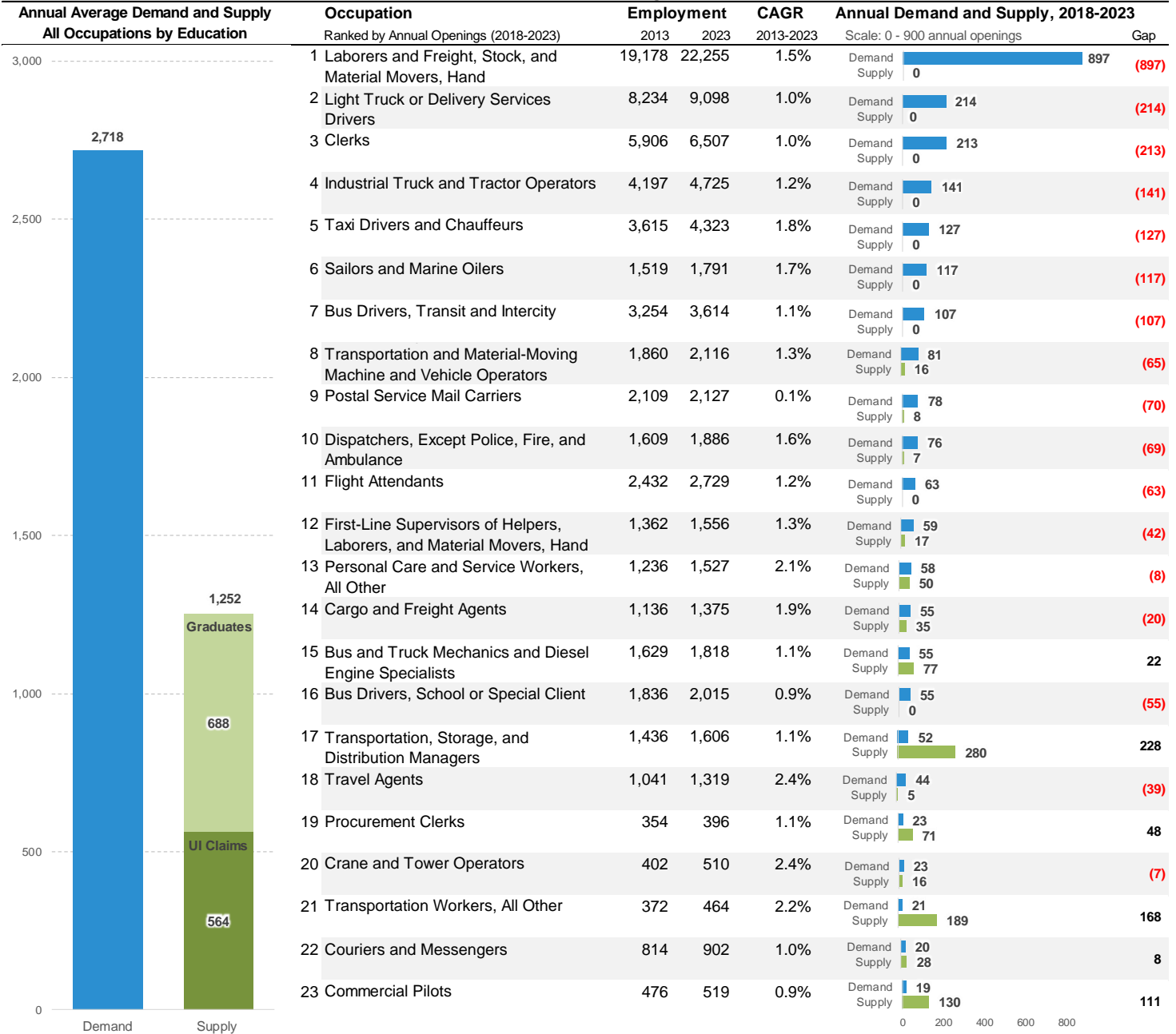
Occupational shortfalls are expected to be greatest among occupations that require on-the-job training. With annual demand of 2,718 positions and local supply of 1,252, annual supply is expected to fulfill just 46% of forecasted demand, leaving a shortage in local supply of 1,466 workers. Among jobs that require on-the-job training the greatest shortfall will be in the laborers and freight, stock, and material movers, hand occupation, with a net annual gap of 897 jobs.

Among jobs that require an associate degree or Postsecondary Award, the greatest shortage in local talent supply will be among heavy and tractor-trailer truck drivers, with just 4 jobs out of 267 being supplied by local talent. Overall, jobs that require an associate degree or Postsecondary Award will be undersupplied by 164 workers per year.

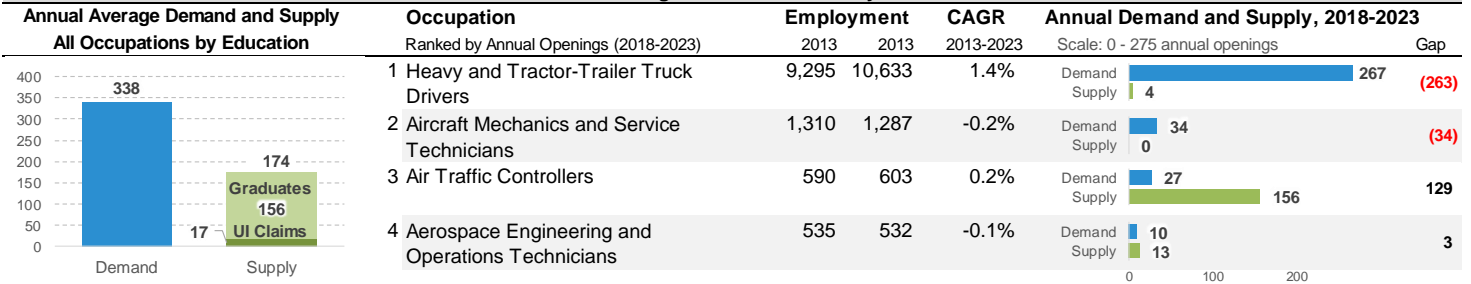
Positions that require a bachelor's degree, which represent 9% of total annual openings within the sector, are forecasted to experience an annual shortfall of 123 workers. The greatest shortage in this category will be among captains, mates, and pilots of water vessels, with just 4 out of 117 annual openings supplied by local sources.

# King County Transportation and Logistics Talent Pipeline

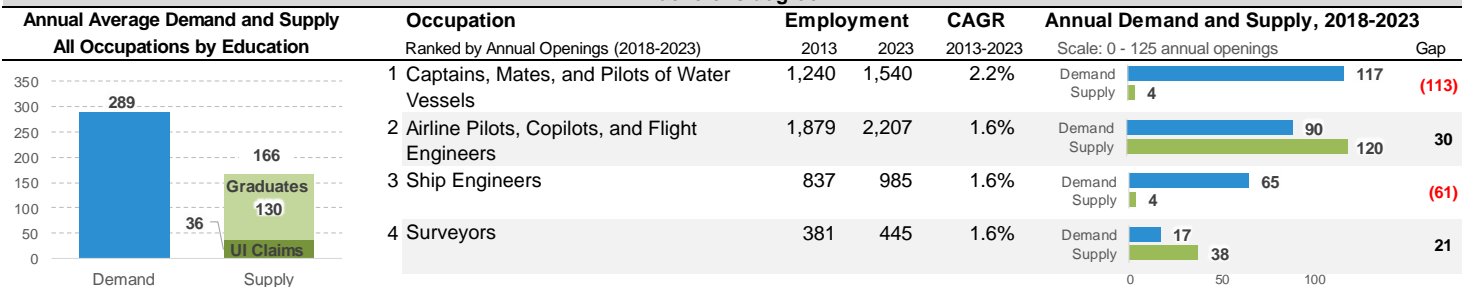
## On-the-Job Training



## Associate's degree or Postsecondary Award



## Bachelor's degree



Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

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# INTRODUCTION

## Background and Purpose

This transportation and logistics sector talent pipeline analysis will assist the Workforce Development Council of Seattle-King County (WDC) as it plans for forthcoming labor shortages and surpluses within the region. In the years following the initial talent pipeline study in 2011-2012, changes in local industries and the King County economy have generated interest in updating the data for three important sectors, including transportation and logistics.

King County's transportation and logistics sector has the unique responsibility of transporting King County's goods and people to and from the region, facilitating the region's economy. This sector represents approximately 4% of the county's employment, employing 49,390 people. In King County the Port of Seattle and all associated transportation operations, as well as the postal service, are important employers within this sector. Median wages for occupations within transportation and logistics range between \$19,900 and \$119,130 annually.

Knowledge of expected gaps in local demand and supply allows workforce development professionals to collaborate and work to ensure the region is offering the appropriate mix of educational and training opportunities. Linking educational preparation to occupational demand ensures a competitive workforce is available to support the regional economy. This analysis aims to increase awareness of the local labor demand and supply chain for transportation and logistics, as well as highlight opportunities for support organizations involved in economic and workforce development.

## Methods

The WDC serves King County, Washington's most populous county. Community Attributes' analysis relies on data published by the state of Washington and federal agencies. Specifically, the following data sources form the foundation of the modeling:

- **Occupational estimates and forecasts from the Washington State Employment Security Department (WA ESD) and the Bureau of Labor Statistics.** These data provide current estimates and forecasted demand for occupations in King County and associated educational requirements, as well as occupational wages. Occupational forecasts include openings created by retirements and separations. For this reason, average annual openings are larger than the average of net jobs created over a period of time.

- **Washington unemployment insurance (UI) claims.** These data, also published by WA ESD, provide monthly unemployment claims and the previous occupations of the claimant by occupation code.
- **Educational attainment data from the National Center for Education Statistics Integrated Postsecondary Education System (IPEDS).** IPEDS provides the number of graduates by educational program, defined according to the Classification of Instructional Programs (CIP), for King County’s higher education institutions as well as a table of equivalences used to translate between educational programs and occupations.

Subsequent sections explain the details and limits of these data. In general, these data provide measures of demand and supply by occupation across industry sectors. The occupations are defined in accordance with the Bureau of Labor Statistics Standard Occupational Classification (SOC) system and industries are delineated using definitions from the North American Industry Classification System (NAICS).

## Organization of Report

- **Demand Analysis.** Describes the composition of transportation and logistics occupational demand in King County.
- **Supply Analysis.** Breaks out the two elements of talent supply: new graduates entering the workforce and the existing pool of unemployment insurance claimants.
- **Supply and Demand.** Examines how local supply is projected to meet occupational demand in King County.
- **Summary of Key Findings.** Assesses in detail the results of the talent pipeline analysis, focusing on key implications for King County.

## TRANSPORTATION AND LOGISTICS SECTOR OVERVIEW

Developing a list of the primary occupations that define the core skills within the transportation and logistics sector begins with developing an operable definition for the sector. The broadest way to define a sector employs the North American Industry Classification System (NAICS) grouping of industries, which group industries in increasingly specific segments from the two-digit level to the six-digit level. This analysis defines the transportation and logistics sector by all four-digit NAICS codes nested within the two-digit industries 48 and 49.

NAICS 48 is comprised of air, water, and land transportation industries, and represents 36,070 jobs within the sector, approximately 73% of total sector employment. NAICS 49 comprises the postal service, as well as warehousing and local delivery transportation, and employs 13,320 workers in King County. (**Exhibit 1**).

**Exhibit 1. King County Transportation and Logistics NAICS by  
Employment, 2013**

<b>Four Digit NAICS</b>	<b>Description</b>	<b>Estimated Jobs in King County, 2013</b>
4811	Scheduled Air Transportation	10,260
4841	General Freight Trucking	4,540
4885	Freight Transportation Arrangement	4,140
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	3,230
4883	Support Activities for Water Transportation	3,040
4881	Support Activities for Air Transportation	2,790
4842	Specialized Freight Trucking	2,350
4859	Other Transit and Ground Passenger Transportation	1,480
4821	Rail Transportation	810
4855	Charter Bus Industry	810
4884	Support Activities for Road Transportation	650
4872	Scenic and Sightseeing Transportation, Water	500
4853	Taxi and Limousine Service	460
4854	School and Employee Bus Transportation	370
4882	Support Activities for Rail Transportation	200
4812	Nonscheduled Air Transportation	170
4871	Scenic and Sightseeing Transportation, Land	130
4832	Inland Water Transportation	90
4889	Other Support Activities for Transportation	50
	<b>48 Subtotal</b>	<b>36,070</b>
4911	Postal Service	5,080
4921	Couriers and Express Delivery Services	4,160
4922	Local Messengers and Local Delivery	1,110
4931	Warehousing and Storage	2,970
	<b>49 Subtotal</b>	<b>13,320</b>
	<b>Transportation and Logistics Total</b>	<b>49,390</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

From the broad industry definition of the transportation and logistics sector in King County it is possible to identify the core occupations that define the cluster. **Exhibits 2** and **3** arrange the occupations that define transportation and logistics in King County. Assembling the list of occupations requires first examining the code system that the Bureau of Labor Statistics uses for occupations, and grouping these occupational codes according to their concentrations within the NAICS-defined sector.

Occupations with fewer than 50 jobs within the sector, less than 10% concentration in the sector, or with no projected annual openings are excluded from the analysis, as they are not considered core to the sector. The primary occupations identified represent only a portion of employment within the transportation and logistics sector. These occupations are highlighted for this analysis because they represent the core skills that define employment within the sector. Overall employment includes employment in other occupations that are not primary to the sector. Additionally, core transportation and logistics occupations are employed in industries other than transportation and logistics throughout King County. Among transportation and logistics sector occupations 47,482 jobs out of 86,179 are in other sectors throughout King County (**Exhibits 2 and 3**).

SOC codes that begin with the prefix 53 are transportation and material moving occupations and represent 73% of jobs in sector, with 28,361 out of 38,697 jobs in the transportation and logistics sector. (**Exhibit 2**).

### Exhibit 2. Transportation and Logistics Occupations, Employment in Cluster and Total Employment, SOC 53, King County, 2013

SOC	Occupation	Employment in Cluster	Employment in Other Industries	Total Employment	Share in Cluster
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	6,090	13,096	19,186	32%
53-3032	Heavy and Tractor-Trailer Truck Drivers	4,845	4,006	8,851	55%
53-2031	Flight Attendants	2,558	6	2,564	100%
53-3033	Light Truck or Delivery Services Drivers	2,186	5,599	7,785	28%
53-2011	Airline Pilots, Copilots, and Flight Engineers	1,961	20	1,981	99%
53-7051	Industrial Truck and Tractor Operators	1,582	2,776	4,358	36%
53-3041	Taxi Drivers and Chauffeurs	1,531	1,145	2,676	57%
53-5011	Sailors and Marine Oilers	908	692	1,600	57%
53-5021	Captains, Mates, and Pilots of Water Vessels	849	330	1,179	72%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	797	1,100	1,897	42%
53-6061	Transportation Attendants, Except Flight Attendants	741	1	742	100%
53-3021	Bus Drivers, Transit and Intercity	626	2,563	3,189	20%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	591	790	1,381	43%
53-3022	Bus Drivers, School or Special Client	483	1,449	1,932	25%
53-5031	Ship Engineers	457	418	875	52%
53-6099	Transportation Workers, All Other	398	19	417	95%
53-2012	Commercial Pilots	235	215	450	52%
53-7021	Crane and Tower Operators	233	227	460	51%
53-2022	Airfield Operations Specialists	208	33	241	86%
53-4011	Locomotive Engineers	186	0	186	100%
53-4031	Railroad Conductors and Yardmasters	181	0	181	100%
53-1011	Aircraft Cargo Handling Supervisors	168	0	168	100%
53-7121	Tank Car, Truck, and Ship Loaders	154	21	175	88%
53-7199	Material Moving Workers, All Other	143	99	242	59%
53-2021	Air Traffic Controllers	127	460	587	22%
53-7011	Conveyor Operators and Tenders	64	121	185	35%
53-6051	Transportation Inspectors	59	139	198	30%
<b>53 Subtotal</b>		<b>28,361</b>	<b>35,325</b>	<b>63,686</b>	<b>45%</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

The remaining transportation and logistics occupations cover occupations in SOC 43, office and administrative support occupations, SOC 49 installation, maintenance, and repair occupations, SOC 17 architecture and engineering occupations, as well as SOCs 11, 39 and 41. SOC 43 accounts for 7,931 jobs in the King County transportation and logistics sector. Together these occupations account for 10,336 jobs in the sector in King County. (**Exhibit 3**).

### Exhibit 3. Transportation and Logistics Occupations, Employment in Cluster and Total Employment, All Other SOCs, King County, 2013

SOC	Occupation	Employment in Cluster	Employment in Other Industries	Total Employment	Share in Cluster
43-5052	Postal Service Mail Carriers	2,127	0	2,127	100%
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1,416	0	1,416	100%
43-4181	Reservation and Transportation Ticket Agents and Travel	1,377	100	1,477	93%
43-5011	Cargo and Freight Agents	1,118	49	1,167	96%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	640	972	1,612	40%
43-5071	Shipping, Receiving, and Traffic Clerks	636	5,371	6,007	11%
43-5051	Postal Service Clerks	434	0	434	100%
43-5021	Couriers and Messengers	123	525	648	19%
43-3061	Procurement Clerks	60	298	358	17%
<b>43 Subtotal</b>		<b>7,931</b>	<b>7,315</b>	<b>15,246</b>	<b>52%</b>
49-3011	Aircraft Mechanics and Service Technicians	601	718	1,319	46%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	398	1,155	1,553	26%
49-3043	Rail Car Repairers	106	3	109	97%
<b>49 Subtotal</b>		<b>1,105</b>	<b>1,876</b>	<b>2,981</b>	<b>37%</b>
17-3021	Aerospace Engineering and Operations Technicians	132	408	540	24%
17-1022	Surveyors	98	302	400	25%
<b>17 Subtotal</b>		<b>230</b>	<b>710</b>	<b>940</b>	<b>24%</b>
11-3071	Transportation, Storage, and Distribution Managers	517	872	1,389	37%
39-9099	Personal Care and Service Workers, All Other	432	549	981	44%
41-3041	Travel Agents	121	835	956	13%
<b>All Occupations</b>		<b>38,697</b>	<b>47,482</b>	<b>86,179</b>	<b>45%</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

Among transportation and logistics occupations requiring on-the-job training, the most common occupation is “laborers, freight, stock, and material movers, hand.” This occupation has a median wage of \$28,700 in King County. The highest wage in this group is commercial pilots with a median wage of \$98,060, while the occupation with the lowest wage is “personal care and service workers, all other” at less than \$20,000 annually. (**Exhibit 4**).

**Exhibit 4. Transportation and Logistics Occupations Median Wage and 90<sup>th</sup> Percentile Wage, On-the-job Training, Seattle-Tacoma-Bellevue MSA, 2013**

SOC	Occupation	Employment	Median Wage	90 <sup>th</sup> Percentile Wage
53-2012	Commercial Pilots	450	\$96,060	\$154,210
11-3071	Transportation, Storage, and Distribution Managers	1,389	\$98,560	\$149,260
53-6051	Transportation Inspectors	198	\$94,060	\$130,940
53-4011	Locomotive Engineers	186	\$83,940	\$98,330
53-7021	Crane and Tower Operators	460	\$78,690	\$96,030
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	1,897	\$67,300	\$109,590
53-7121	Tank Car, Truck, and Ship Loaders	175	\$54,880	\$93,650
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	1,381	\$54,950	\$87,340
53-7199	Material Moving Workers, All Other	242	\$58,200	\$90,770
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,553	\$58,250	\$78,110
53-4031	Railroad Conductors and Yardmasters	181	\$54,620	\$76,330
43-5011	Cargo and Freight Agents	1,167	\$49,260	\$91,920
53-2022	Airfield Operations Specialists	241	\$41,730	\$109,820
53-3021	Bus Drivers, Transit and Intercity	3,189	\$55,420	\$72,460
49-3043	Rail Car Repairers	109	\$54,480	\$61,560
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1,612	\$45,270	\$72,210
43-5052	Postal Service Mail Carriers	2,127	\$57,200	\$58,410
53-5011	Sailors and Marine Oilers	1,600	\$49,450	\$60,850
43-5051	Postal Service Clerks	434	\$55,590	\$56,770
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1,416	\$54,520	\$55,700
53-7051	Industrial Truck and Tractor Operators	4,358	\$41,190	\$77,930
43-3061	Procurement Clerks	358	\$43,880	\$56,150
53-7011	Conveyor Operators and Tenders	185	\$39,260	\$58,950
41-3041	Travel Agents	956	\$41,120	\$66,270
53-3033	Light Truck or Delivery Services Drivers	7,785	\$33,760	\$61,210
53-6099	Transportation Workers, All Other	417	\$36,910	\$51,940
53-3022	Bus Drivers, School or Special Client	1,932	\$38,120	\$47,260
43-5071	Shipping, Receiving, and Traffic Clerks	6,007	\$34,880	\$53,560
53-1011	Aircraft Cargo Handling Supervisors	168	\$37,500	\$50,540
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	1,477	\$30,620	\$47,620
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	19,186	\$28,700	\$47,120
53-3041	Taxi Drivers and Chauffeurs	2,676	\$29,550	\$40,410
43-5021	Couriers and Messengers	648	\$29,870	\$38,540
53-6061	Transportation Attendants, Except Flight Attendants	742	\$27,920	\$33,870
39-9099	Personal Care and Service Workers, All Other	981	\$19,900	\$31,110
53-2031	Flight Attendants	2,564	*	*

Note: \* indicates that data is suppressed by the U.S. Bureau of Labor Statistics in order to comply with nondisclosure rules. Due to data limitations median and 90<sup>th</sup> percentile wages are those for the matching occupation in the Seattle-Tacoma-Bellevue MSA, and are considered representative of wages in King County. Sources: U.S. Bureau of Labor Statistics, 2014; Community Attributes, Inc., 2015.

Looking at median wages among transportation and logistics occupations requiring an associate degree, Postsecondary Award or a bachelor's

degree, air traffic controllers have the highest median wage at \$119,130 annually, while heavy and tractor-trailer truck drivers—the most common occupation in this category—have the lowest median wage at \$47,440. (Exhibit 5).

### Exhibit 5. Transportation and Logistics Occupations Median Wage and 90<sup>th</sup> Percentile Wage, Associate Degree, Postsecondary Award or Bachelor's Degree, Seattle-Tacoma-Bellevue MSA, 2013

SOC	Occupation	Employment in Cluster	Median Wage ↓	90 <sup>th</sup> Percentile Wage
<b>Associate's degree or Postsecondary Award</b>				
53-2021	Air Traffic Controllers	587	\$119,130	\$162,220
53-3032	Heavy and Tractor-Trailer Truck Drivers	8,851	\$43,440	\$66,740
49-3011	Aircraft Mechanics and Service Technicians	1,319 *	*	*
17-3021	Aerospace Engineering and Operations Technicians	540 *	*	*
<b>Bachelor's degree</b>				
53-5021	Captains, Mates, and Pilots of Water Vessels	1,179	\$80,540	\$105,190
17-1022	Surveyors	400	\$74,800	\$98,240
53-5031	Ship Engineers	875	\$75,470	\$110,120
53-2011	Airline Pilots, Copilots, and Flight Engineers	1,981 *	*	*

Note: \* indicates that data is suppressed by the U.S. Bureau of Labor Statistics in order to comply with nondisclosure rules. Due to data limitations median and 90<sup>th</sup> percentile wages are those for the matching occupation in the Seattle-Tacoma-Bellevue MSA, and are considered representative of wages in King County. Sources: U.S. Bureau of Labor Statistics, 2014; Community Attributes, Inc., 2015.

The overall average wage within the transportation and logistics sector in King County is \$44,147 annually, which is lower than the regional average wage of \$57,370. Within the transportation and logistics sector, occupations that require a bachelor's degree have the highest average wage at \$78,989 annually. (Exhibit 6).

### Exhibit 6. Comparative Average Wages, King County and Seattle-Tacoma-Bellevue MSA, 2013

	Employment	Average Wage
King County Transportation and Logistics Sector		
On-the Job Training Occupations	70,447	\$42,058
Associate's degree or Postsecondary Award Occupations	11,297	\$50,109
Bachelor's degree Occupations	4,435	\$78,986
Transportation and Logistics Total	86,179	\$44,147
Seattle-Tacoma-Bellevue MSA	1,761,920	\$57,370

Note: due to data limitations median and 90<sup>th</sup> percentile wages are those for the matching occupation in the Seattle-Tacoma-Bellevue MSA, and are considered representative of wages in King County. Sources: U.S. Bureau of Labor Statistics, 2014; Community Attributes, Inc., 2015.



A large proportion of employment within transportation and logistics occupations are represented in non-transportation and logistics industries. Within King County, 47,482 workers are employed in transportation and logistics occupations in other industries. Among the other industries that include transportation and logistics occupations, local governments are the largest employer, with 3,923 workers in transportation and logistics occupations, followed by employment services with 3,250 workers and aerospace product and parts manufacturing with 2,700 workers. (Exhibit 7).

**Exhibit 7. Transportation and Logistics Occupational Employment in Other Industries, 2013**

<b>Sector</b>	<b>Transportation and Logistics Occupation Employment in Industry</b>
Local Government Other	3,923
Employment Services	3,250
Aerospace Product and Parts Manufacturing	2,700
Grocery and Related Product Wholesalers	2,519
Education	1,922
State Government Other	1,366
Apparel and piece goods merchant wholesalers	1,173
Motor vehicle and parts merchant wholesalers	1,081
Electronic markets and agents and brokers	1,033
Federal Government	851
Travel arrangement and reservation services	839
Misc. durable goods merchant wholesalers	823
Food Services and Drinking Places	772
Alcoholic beverage merchant wholesalers	753
Department stores	752
Other personal services	713
Lumber and const. supply merchant wholesalers	698
Machinery and supply merchant wholesalers	692
Building material and supplies dealers	650
Hardware and plumbing merchant wholesalers	594
Other general merchandise stores	588
All Other Industries	19,790
<b>Total</b>	<b>47,482</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

Transportation and logistics occupations have different levels of employment in other industries. Among these occupations “laborers and freight, stock, and material movers, hand” have the largest employment

outside the transportation and logistics sector, with 13,096 out of 47,482 jobs in other industries, representing 28% of transportation and logistics employment in other industries. The most common other industry that “laborers and freight, stock, and material movers, hand” work in is employment services. “Light truck or delivery service drivers” have the second highest employment in other industries, with the chief source of other industry employment being the food services and drinking places industry. (**Exhibit 8**).

### **Exhibit 8. Transportation and Logistics Occupation Employment in Other Industries, 2013**

<b>Occupation</b>	<b>Employment in Other Industries</b>	<b>Top Other Industry</b>
Laborers and Freight, Stock, and Material Movers, Hand	13,096	Employment Services
Light Truck or Delivery Services Drivers	5,599	Food Services and Drinking Places
Shipping, Receiving, and Traffic Clerks	5,371	Aerospace Product and Parts Manufacturing
Heavy and Tractor-Trailer Truck Drivers	4,006	Grocery and Related Product Merchant Wholesalers
Industrial Truck and Tractor Operators	2,776	Grocery and Related Product Merchant Wholesalers
Bus Drivers, Transit and Intercity	2,563	Local Government Other
Bus Drivers, School or Special Client	1,449	Education
Bus and Truck Mechanics and Diesel Engine Specialists	1,155	Local Government Other
Taxi Drivers and Chauffeurs	1,145	Other Personal Services
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	1,100	Other Personal Services
Dispatchers, Except Police, Fire, and Ambulance	972	Building Equipment Contractors
Transportation, Storage, and Distribution Managers	872	Management of Companies and Enterprises
Travel Agents	835	Travel Arrangement and Reservation Services
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	790	Grocery and Related Product Merchant Wholesalers
Aircraft Mechanics and Service Technicians	718	Aerospace Product and Parts Manufacturing
Sailors and Marine Oilers	692	State Government Other
Personal Care and Service Workers, All Other	549	Other Amusement and Recreation Industries
Couriers and Messengers	525	Other Ambulatory Health Care Services
Air Traffic Controllers	460	Federal Government
Ship Engineers	418	State Government Other
Aerospace Engineering and Operations Technicians	408	Aerospace Product and Parts Manufacturing
Captains, Mates, and Pilots of Water Vessels	330	State Government Other
Surveyors	302	Architectural, Engineering, and Related Services
All Other Occupations	1,351	
<b>Total</b>	<b>47,482</b>	

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

## DEMAND ANALYSIS: KING COUNTY TRANSPORTATION AND LOGISTICS OCCUPATIONAL FORECASTS

Among transportation and logistics sector occupations total demand is forecasted to average 3,345 average annual openings between 2018 and 2023. Total demand for occupations covers demand across all industries in King County, including but not exclusive to transportation and logistics. “Laborers and freight, stock, and material movers, hand” are forecasted to have the greatest number of average annual openings, with 897 per year. Out of all transportation and logistics occupations taxi drivers and chauffeurs are forecasted to have the highest rate of annual growth at 1.6% per year. (Exhibit 9).

**Exhibit 9. King County Transportation and Logistics Occupational Demand per Year, 2018 and 2023**

SOC	Occupation	Estimated Employment 2018	Estimated Employment 2023	Average Annual Openings (2018-2023)	CAGR (2018-2023)
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	21,011	22,255	897	1.2%
53-3032	Heavy and Tractor-Trailer Truck Drivers	10,163	10,633	267	0.9%
53-3033	Light Truck or Delivery Services Drivers	8,772	9,098	214	0.7%
43-5071	Shipping, Receiving, and Traffic Clerks	6,293	6,507	213	0.7%
53-7051	Industrial Truck and Tractor Operators	4,568	4,725	141	0.7%
53-3041	Taxi Drivers and Chauffeurs	3,996	4,323	127	1.6%
53-5011	Sailors and Marine Oilers	1,700	1,791	117	1.0%
53-5021	Captains, Mates, and Pilots of Water Vessels	1,433	1,540	117	1.5%
53-3021	Bus Drivers, Transit and Intercity	3,444	3,614	107	1.0%
53-2011	Airline Pilots, Copilots, and Flight Engineers	2,103	2,207	90	1.0%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	2,019	2,116	81	0.9%
43-5052	Postal Service Mail Carriers	2,123	2,127	78	0.0%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	1,781	1,886	76	1.2%
53-5031	Ship Engineers	932	985	65	1.1%
53-2031	Flight Attendants	2,660	2,729	63	0.5%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	1,488	1,556	59	0.9%
39-9099	Personal Care and Service Workers, All Other	1,441	1,527	58	1.2%
43-5011	Cargo and Freight Agents	1,277	1,375	55	1.5%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,737	1,818	55	0.9%
53-3022	Bus Drivers, School or Special Client	1,942	2,015	55	0.7%
11-3071	Transportation, Storage, and Distribution Managers	1,538	1,606	52	0.9%
	All Other Occupations (23)	12,625	12,941	358	0.5%
	<b>Total</b>	<b>95,046</b>	<b>99,374</b>	<b>3,345</b>	<b>0.9%</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes, Inc., 2015.

# SUPPLY ANALYSIS: AVAILABILITY OF REGIONAL TALENT AND EMPLOYABLE WORKFORCE

Local talent supply, or workforce supply is composed of two elements: the entry of new graduates into the talent pool and the existing talent pool of unemployed persons actively seeking employment. Qualified graduates are drawn from NCES data through a match of CIP codes to SOC codes and adjusted accordingly to workforce-wide occupational demand. Unemployment insurance claimants are organized by most recent occupation (SOC). It is important to note that changes in migration can affect changes in supply and demand.

## Local Graduates

The National Center for Education Statistics standardizes educational curricula with Classification of Instructional Program (CIP) codes. Each CIP code maps to multiple SOC codes because graduates from the same program go on to employment in a range of occupations. At the same time, each occupation draws graduates from several relevant CIPs. For example graduates from airline/commercial/professional pilot and flight crew programs who are qualified to work as airline pilots, copilots, and flight engineers are also qualified to work as commercial pilots. The latter occupation is further supplied by graduates from flight instructor programs. (Exhibit 10).

### Exhibit 10. Other Occupational Matches for Graduates Qualified to Work as Airline Pilots, Copilots, and Flight Engineers

CIP	Description	SOC	Description
49.0102	Airline/Commercial/Professional Pilot and Flight Crew.	53-2011	Airline Pilots, Copilots, and Flight Engineers
49.0108	Flight Instructor.	53-2012	Commercial Pilots

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

Programs matching to one or more transportation and logistics occupations must be summarized across educational institutions in order to determine the number of graduates who will be able to fill forecasted annual openings within King County’s transportation and logistics sector.

Graduate data is tied to the primary location of the educational institution. For this reason, institutions primarily located in adjacent counties that have programs in King County are not attached to King County, and therefore are not included in the local talent supply.

King County’s educational institutions conferred 4,315 degrees or awards in 2013 in CIPs that match to one or more transportation and logistics occupation(s). Among these CIPs, general business administration and management programs conferred 2,006 degrees in 2013. Many of these

graduates will not seek employment in King County after graduating. Others will seek employment in occupations outside the transportation and logistics sector. This number of graduates represents the largest possible pool of new graduates from King County who are qualified to work in transportation and logistics occupations. (**Exhibit 11**).

**Exhibit 11. Total Graduates by CIP Codes that Match to One or More Transportation and Logistics Occupation(s), King County, 2013**

<b>CIP</b>	<b>Description</b>	<b>Graduates</b>
52.0201	Business Administration and Management, General.	2,006
52.0101	Business/Commerce, General.	704
49.0105	Air Traffic Controller.	447
49.0102	Airline/Commercial/Professional Pilot and Flight Crew.	344
44.0401	Public Administration.	292
52.0408	General Office Occupations and Clerical Services.	213
49.0104	Aviation/Airway Management and Operations.	125
47.0605	Diesel Mechanics Technology/Technician.	110
52.0203	Logistics, Materials, and Supply Chain Management.	54
49.0309	Marine Science/Merchant Marine Officer.	11
15.1102	Surveying Technology/Surveying.	9
<b>Total</b>		<b>4,315</b>

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

Due to data limitations linking high school graduates who do not matriculate into higher education and then secure occupations, the supply of local high school graduates who are interested in positions that require on-the-job training cannot be estimated. Some Postsecondary Award and bachelor’s degree programs do match to on-the-job training occupations for which past graduates have gone on to work in on-the-job training positions. Not all training programs that would qualify an individual for these positions are included in IPEDS data, as a result the talent pool available for employers looking to fill jobs that require on-the-job training is understated.

Among educational institutions in King County, Green River Community College graduated the most students qualified to work in transportation and logistics occupations, at 1,123 in 2013. Other institutions with high numbers of qualified graduates include the University of Washington Seattle Campus and City University of Seattle. (**Exhibit 12**).

**Exhibit 12. King County Educational Institutions by Graduates Qualified for Transportation and Logistics Occupations, 2013**

<b>Institution</b>	<b>Graduates Qualified for Transportation and Logistics Occupations</b>
Green River Community College	1,123
University of Washington-Seattle Campus	699
City University of Seattle	635
Seattle University	344
University of Washington-Bothell Campus	267
Bellevue College	256
Seattle Community College-South Campus	167
Seattle Community College-North Campus	141
Highline Community College	108
DeVry University-Washington	93
Seattle Pacific University	77
Bainbridge Graduate Institute	71
Seattle Vocational Institute	68
University of Phoenix-Western Washington Campus	62
Shoreline Community College	58
Cascadia Community College	55
Northwest University	29
Argosy University-Seattle	16
Lake Washington Institute of Technology	15
Renton Technical College	12
Seattle Central College	11
Antioch University-Seattle	4
ITT Technical Institute-Seattle	3
Bakke Graduate University	1
<b>Total</b>	<b>4,315</b>

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

In order to determine how many graduates are likely to fill occupations within the King County transportation and logistics sector, graduates are totaled by every combination of CIP and SOC. Each combination is adjusted to match the ratio of occupational demand to total occupational demand for all possible occupations matching to that CIP. This process leads to an estimate of how many graduates would be able to obtain employment in each available occupation. Finally, each estimate is adjusted to the approximate share of local graduates who obtain work locally after graduation, by multiplying the estimates by a 70% local retention rate.

This method yields a total of 974 local graduates in 2013 that map to transportation and logistics occupations. Out of the total graduates, 688 map to occupations that require on-the-job training. However, these occupations are undercounted due to the lack of information linking programs to occupations outside of IPEDS. (**Exhibit 13** and **14**).

IPEDS data is available only through the 2012-2013 academic year. Although these individuals completing programs in 2013 would be expected to seek employment in 2013, this data provides a picture of what educational programs can be expected to look like in future years if current conditions remain unchanged.

Apprenticeships are not included among graduate supply estimates. The primary feature of an apprenticeship program is on-the-job training. Therefore, these individuals are already counted among the individuals employed in cluster. If they were to be added to the talent pool calculations they would be double-counted within this analysis.

**Exhibit 13. Transportation and Logistics Occupations by Total Graduates, On-the-job Training, King County, 2013**

<b>SOC</b>	<b>Description</b>	<b>All Graduates</b>	<b>Graduates after 70% retention</b>
11-3071	Transportation, Storage, and Distribution Managers	393	275
53-2022	Airfield Operations Specialists	224	156
53-2012	Commercial Pilots	172	120
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	110	77
43-3061	Procurement Clerks	42	29
43-5011	Cargo and Freight Agents	42	29
39-9099	Personal Care and Service Workers, All Other	0	0
41-3041	Travel Agents	0	0
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	0	0
43-5021	Couriers and Messengers	0	0
43-5032	Dispatchers, Except Police, Fire, and Ambulance	0	0
43-5051	Postal Service Clerks	0	0
43-5052	Postal Service Mail Carriers	0	0
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	0	0
49-3043	Rail Car Repairers	0	0
43-5071	Shipping, Receiving, and Traffic Clerks	0	0
53-1011	Aircraft Cargo Handling Supervisors	0	0
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	0	0
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	0	0
53-2031	Flight Attendants	0	0
53-3021	Bus Drivers, Transit and Intercity	0	0
53-3022	Bus Drivers, School or Special Client	0	0
53-3033	Light Truck or Delivery Services Drivers	0	0
53-3041	Taxi Drivers and Chauffeurs	0	0
53-4011	Locomotive Engineers	0	0
53-4031	Railroad Conductors and Yardmasters	0	0
53-5011	Sailors and Marine Oilers	0	0
53-6051	Transportation Inspectors	0	0
53-6061	Transportation Attendants, Except Flight Attendants	0	0
53-6099	Transportation Workers, All Other	0	0
53-7011	Conveyor Operators and Tenders	0	0
53-7021	Crane and Tower Operators	0	0
53-7051	Industrial Truck and Tractor Operators	0	0
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	0	0
53-7121	Tank Car, Truck, and Ship Loaders	0	0
53-7199	Material Moving Workers, All Other	0	0
<b>On-the-Job Training Subtotal</b>		<b>983</b>	<b>688</b>

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

IPEDS data by nature records more complete data for graduates matching to occupations requiring an associate degree, Postsecondary Award or a bachelor's degree. Within transportation and logistics occupations 156



local graduates map to occupations requiring an associate degree or Postsecondary Award in 2013 after retention. An additional 130 graduates qualified for transportation and logistics occupations requiring a bachelor's degree, again after retention. (Exhibit 14).

**Exhibit 14. Transportation and Logistics Occupations by Total Graduates, Associate Degree or Postsecondary Award, and Bachelor's Degree, King County, 2013**

<b>SOC</b>	<b>Description</b>	<b>All Graduates</b>	<b>Graduates after 70% retention</b>
53-2021	Air Traffic Controllers	224	156
17-3021	Aerospace Engineering and Operations Technicians	0	0
49-3011	Aircraft Mechanics and Service Technicians	0	0
53-3032	Heavy and Tractor-Trailer Truck Drivers	0	0
<b>Associate's degree or Postsecondary Award Subtotal</b>		<b>224</b>	<b>156</b>
53-2011	Airline Pilots, Copilots, and Flight Engineers	172	120
53-5021	Captains, Mates, and Pilots of Water Vessels	6	4
53-5031	Ship Engineers	6	4
17-1022	Surveyors	2	2
<b>Bachelor's degree Subtotal</b>		<b>185</b>	<b>130</b>
<b>Grand Total</b>		<b>1,392</b>	<b>974</b>

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

## Unemployment Insurance

Local talent supply is composed of two elements, the second of these is the pool of local unemployment insurance claimants whose previous occupations match to a King County transportation and logistics occupation. Due to nondisclosure rules, not all UI data is available for every SOC. These SOC codes can be estimated by leveraging known unemployment totals and disclosed data from previous years. Additionally, in order to capture the expected unemployment rate in future the ratio of a ten year average of forecasted unemployment rates, from the Puget Sound Economic Forecaster, and the current unemployment rate from BLS is used. This method helps complete the expectation for future UI claimants. The ten year average of forecasted unemployment rates is 108.9% of the March 2015 unemployment rate of 4.1%.

There are a total of 617 forecasted unemployment insurance claimants qualified for transportation and logistics occupations in King County. Of these UI claimants qualified to work in the transportation and logistics sector, 564 had previous occupations that required on-the-job training. Just 17 UI claimants are qualified to work in transportation and logistics occupations requiring an associate degree or Postsecondary Award. A single occupation requiring a bachelor's degree is expected to have just 36 UI claimants. (Exhibit 15).

## Exhibit 15. Unemployment Insurance Claimants by Previous SOC, King County

SOC	Description	Unemployment Insurance Claimants
53-6099	Transportation Workers, All Other	189
53-7011	Conveyor Operators and Tenders	75
39-9099	Personal Care and Service Workers, All Other	50
43-3061	Procurement Clerks	41
43-5021	Couriers and Messengers	28
53-6051	Transportation Inspectors	26
43-5051	Postal Service Clerks	17
53-1011	Aircraft Cargo Handling Supervisors	17
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	17
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	16
53-7021	Crane and Tower Operators	16
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	10
53-2012	Commercial Pilots	10
53-4031	Railroad Conductors and Yardmasters	10
43-5052	Postal Service Mail Carriers	8
43-5032	Dispatchers, Except Police, Fire, and Ambulance	7
41-3041	Travel Agents	5
43-5011	Cargo and Freight Agents	5
53-7121	Tank Car, Truck, and Ship Loaders	5
11-3071	Transportation, Storage, and Distribution Managers	4
53-7199	Material Moving Workers, All Other	4
	<b>On-the-Job Training Subtotal</b>	<b>564</b>
17-3021	Aerospace Engineering and Operations Technicians	13
53-3032	Heavy and Tractor-Trailer Truck Drivers	4
	<b>Associate's degree or Postsecondary Award Subtotal</b>	<b>17</b>
17-1022	Surveyors	36
	<b>Bachelor's degree Subtotal</b>	<b>36</b>
	<b>Grand Total</b>	<b>617</b>

Sources: Washington State Employment Security Department, 2015; Community Attributes, Inc., 2015.

The combination of local graduates and unemployment insurance claimants defines talent supply for the region. Within King County there is a total of 974 local graduates, 688 qualified for occupations requiring on-the-job training, 156 qualified for occupations requiring an associate degree or Postsecondary Award and 130 qualified for occupations requiring a bachelor's degree. A total of 617 unemployment insurance claimants can be expected to fill transportation and logistics positions

within King County. Overall, local talent supply is expected to be 1,591 workers. (Exhibit 16).

**Exhibit 16. Total Talent Supply, King County**

<b>Source of Supply</b>	<b>Qualified Workers</b>
On-the-Job Training	688
Associate's degree or Postsecondary Award	156
Bachelors degree	130
<b>Graduates Subtotal</b>	<b>974</b>
Unemployment Insurance Claimants	617
<b>Grand Total</b>	<b>1,591</b>

Sources: National Center for Education Statistics Integrated Postsecondary Education System, 2013; Washington State Employment Security Department, 2015; Community Attributes, Inc., 2015.

## SUPPLY AND DEMAND

The combination of expected supply with projected demand produces projected annual occupational gaps. **Exhibits 17** and **18** summarize expected local graduate supply, projected total demand, expected UI claimant supply and the total gaps for each transportation and logistics occupation.

Occupations that require on-the-job training in King County's transportation and logistics sector have a total local supply of 1,252 workers, while the total annual demand is 2,718. This leaves a shortage of 1,466 positions. The local supply fulfills 46% of total demand. Among these occupations the greatest shortage is expected within "laborers and freight, stock, and materials movers, hand," with a gap of 897 workers. This shortage is partially offset by an oversupply in "transportation, storage, and distribution managers," with a surplus of 228 workers. (**Exhibit 17**).

## Exhibit 17. Annual Supply and Demand, On-the-job Training, Transportation and Logistics Occupations, King County

Occupation	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap ↓
Laborers and Freight, Stock, and Material Movers, Hand	0	897	(897)	0	(897)
Light Truck or Delivery Services Drivers	0	214	(214)	0	(214)
Shipping, Receiving, and Traffic Clerks	0	213	(213)	0	(213)
Industrial Truck and Tractor Operators	0	141	(141)	0	(141)
Taxi Drivers and Chauffeurs	0	127	(127)	0	(127)
Sailors and Marine Oilers	0	117	(117)	0	(117)
Bus Drivers, Transit and Intercity	0	107	(107)	0	(107)
Postal Service Mail Carriers	0	78	(78)	8	(70)
Dispatchers, Except Police, Fire, and Ambulance	0	76	(76)	7	(69)
First-Line Supervisors of Transportation and Material- Moving Machine and Vehicle Operators	0	81	(81)	16	(65)
Flight Attendants	0	63	(63)	0	(63)
Bus Drivers, School or Special Client	0	55	(55)	0	(55)
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	0	59	(59)	17	(42)
Travel Agents	0	44	(44)	5	(39)
Cargo and Freight Agents	29	55	(26)	5	(20)
Transportation Attendants, Except Flight Attendants	0	18	(18)	0	(18)
Postal Service Mail Sorters, Processors, and Processing Machine Operators	0	10	(10)	0	(10)
Reservation and Transportation Ticket Agents and Travel Clerks	0	18	(18)	10	(8)
Personal Care and Service Workers, All Other	0	58	(58)	50	(8)
Material Moving Workers, All Other	0	12	(12)	4	(8)
Crane and Tower Operators	0	23	(23)	16	(7)
Locomotive Engineers	0	6	(6)	0	(6)
Rail Car Repairers	0	5	(5)	0	(5)
Tank Car, Truck, and Ship Loaders	0	6	(6)	5	(1)
Railroad Conductors and Yardmasters	0	6	(6)	10	4
Couriers and Messengers	0	20	(20)	28	8
Postal Service Clerks	0	7	(7)	17	10
Aircraft Cargo Handling Supervisors	0	7	(7)	17	10
Transportation Inspectors	0	7	(7)	26	19
Bus and Truck Mechanics and Diesel Engine Specialists	77	55	22	0	22
Procurement Clerks	29	23	6	41	48
Conveyor Operators and Tenders	0	6	(6)	75	69
Commercial Pilots	120	19	101	10	111
Airfield Operations Specialists	156	12	144	0	144
Transportation Workers, All Other	0	21	(21)	189	168
Transportation, Storage, and Distribution Managers	275	52	223	4	228
<b>On-the-Job Training Subtotal</b>	<b>688</b>	<b>2,718</b>	<b>(2,030)</b>	<b>564</b>	<b>(1,466)</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

Transportation and logistics sector occupations requiring an associate degree or Postsecondary Award are expected to experience an annual shortage of 164 workers, with local supply of 173 workers and annual demand of 338 workers. Just one occupation requiring an associate degree

or Postsecondary Award has local graduate supply, which is air traffic controllers. Occupations requiring a bachelor's degree are also expected to experience a shortage of workers, with 123 unfilled jobs. Among these occupations captains, mates, and pilots of water vessels are expected to experience the greatest shortage of local supply, while airline pilots, copilots, and flight engineers are expected to experience the greatest surplus of local talent.

Overall, local supply is expected to be 1,591 workers for transportation and logistics sector occupations in King County, composed of 974 local graduates and 617 unemployment insurance claimants. Total local demand is projected to be 3,345 jobs annually, leaving an annual shortfall of 1,754 workers. (**Exhibit 18**).

Not all occupations within an educational grouping are substitutable. An oversupply in one occupation may not necessarily be countered by an undersupply in another occupation. Although the educational requirement may be the same, the actual degree or skills may not be the same between occupations. For this reason it is important to have a detailed account of supply and demand for each primary occupation in order to anticipate and plan for labor surpluses and shortages in the future.

**Exhibit 18. Annual Supply and Demand, Associate Degree or Postsecondary Award, and Bachelor's Degree, Transportation and Logistics Occupations, King County**

Occupation	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap ↓
Heavy and Tractor-Trailer Truck Drivers	0	267	(267)	4	(263)
Aircraft Mechanics and Service Technicians	0	34	(34)	0	(34)
Aerospace Engineering and Operations Technicians	0	10	(10)	13	3
Air Traffic Controllers	156	27	129	0	129
<b>Associate's degree or Postsecondary Award Subtotal</b>	<b>156</b>	<b>338</b>	<b>(182)</b>	<b>17</b>	<b>(164)</b>
Captains, Mates, and Pilots of Water Vessels	4	117	(113)	0	(113)
Ship Engineers	4	65	(61)	0	(61)
Surveyors	2	17	(15)	36	21
Airline Pilots, Copilots, and Flight Engineers	120	90	30	0	30
<b>Bachelor's degree Subtotal</b>	<b>130</b>	<b>289</b>	<b>(159)</b>	<b>36</b>	<b>(123)</b>
<b>Grand Total</b>	<b>974</b>	<b>3,345</b>	<b>(2,371)</b>	<b>617</b>	<b>(1,754)</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

## INTERIM FINDINGS AND NEXT STEPS

### Interim Findings

King County's transportation and logistics sector occupations are projected to have total annual average openings of 3,345 between 2018 and 2023. These occupations are projected to grow at a compound annual growth rate of 0.9%, from 95,046 in 2018 to 99,374 in 2023.

The transportation and logistics sector can expect an annual local supply of 617 UI claimants and 974 local graduates, for a combined total of 1,591 workers who both match to transportation and logistics occupations and can be expected to stay in the area after graduating. (**Exhibit 19**).

#### **Exhibit 19. Summary of Annual King County Transportation and Logistics Sector Talent Supply, 2018-2023**

<b>Projected Talent Supply (Annual)</b>	
Unemployed	617
Newly-Trained Candidates	974

Sources: Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

The sector is projected to experience a total annual shortage of 1,754 workers annually between 2018 and 2023. This means approximately 48% of annual openings are expected to be filled through the local talent pool. (**Exhibit 20**).

#### **Exhibit 20. Summary of Annual King County Transportation and Logistics Sector Talent Supply and Demand, 2018-2023**

<b>Annual Surplus or (Shortage)</b>	
Total Openings (Demand)	3,345
Total Supply	1,591
Surplus or (Shortage)	<b>(1,754)</b>

Sources: U.S. Bureau of Labor Statistics 2014; Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.

Overall demand among transportation and logistics occupations is expected to be greatest among occupations requiring on-the-job training, with an annual demand of 2,718 workers, annual supply is expected to meet approximately 46% of demand leaving an annual shortfall of 1,466 workers. Transportation and logistics occupations requiring an associate degree or Postsecondary Award are expected to have an annual supply of 173 workers, and an annual demand of 338 workers, leaving a shortage of 164 workers. Positions that require a bachelor's degree are projected to

have an annual demand of 289 workers, and a total supply of 166 workers, leaving a gap of 123 unfilled positions annually. (Exhibit 21).

**Exhibit 21. Summary of Annual Talent Supply and Demand by Education Requirement, 2018-2023**

<b>Educational Requirement</b>	<b>Total Graduate Supply</b>	<b>Total Demand</b>	<b>Interim Gap</b>	<b>Total UI Claims Supply</b>	<b>Final Gap</b>
On-the-Job Training	688	2,718	(2,030)	564	(1,466)
Associate's degree or Postsecondary Award	156	338	(182)	17	(164)
Bachelor's degree	130	289	(159)	36	(123)
<b>Total</b>	<b>974</b>	<b>3,345</b>	<b>(2,371)</b>	<b>617</b>	<b>(1,754)</b>

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2015; National Center for Education Statistics Integrated Postsecondary Education System, 2013; Community Attributes, Inc., 2015.