



Transportation, Warehousing & Logistics



Skills Gap Analysis & Sector Strategies

*Commissioned by Workforce Central on behalf of
the Pierce County Workforce Development Council*

September 2016



EXECUTIVE SUMMARY

Background and Purpose

WorkForce Central (WFC) and the Pierce County Workforce Development Council (WDC) work closely together to support a strong economy by leading and overseeing our region's comprehensive workforce development system that prepares job seekers and workers with 21st century knowledge and skills required by businesses. WFC and WDC partner with leaders from the business community, philanthropic organizations, organized labor, education, government, community based organizations and other key stakeholders to shape and support workforce solutions.

Commissioned by WFC on behalf of the WDC, this study compares projected demand for specific occupations against labor supply to identify potential workforce gaps. This skills gap and sector strategy analysis, combined with feedback from industry stakeholders, will be used to plan for the changing needs of the industry and inform workforce preparation strategies. In addition, this study may be used to influence policy and investment decisions throughout and beyond the workforce development system.

Since 2010, Community Attributes Inc. (CAI) has produced multiple talent pipeline studies that examine various sectors. The studies compare projected demand for specific occupations against labor supply to identify potential workforce gaps.

Methods

Talent pipeline 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).

In addition to the talent pipeline analysis, in-depth interviews conducted with stakeholders in the transportation, warehousing and logistics industry inform findings. Interviews covered topics of hiring, recruiting, education and training as well as skills needs. Stakeholders interviewed included representatives from a variety of transportation, warehousing and logistics employers who provided a range of perspectives on the industry and “on-the-ground” realities.

Key Findings

The transportation, warehousing and logistics industry is projected to grow 1.3 percent annually, and with a location quotient of 1.5 is highly concentrated in Pierce County. More than 12,000 people are employed in the industry in Pierce County, and employment within the

industry represents 14 percent of statewide transportation, warehousing and logistics industry.

Employment in core transportation, warehousing and logistics occupations totaled more than 26,300 in 2013. This employment is projected to grow to more than 29,000 in 2018 and almost 30,700 in 2023. This represents net growth of 1,040 jobs per year. Net growth equals new hires minus exiting workers.

The **Talent Pipeline Dashboard** (*page vii*) shows occupations in the transportation, warehousing and logistics industry grouped by education level required for entry ranked by average annual openings within the industry from 2018 to 2023. The minimum education required for entry is defined by the Bureau of Labor Statistics and is not meant to indicate the education requirement defined by individual employers. In some cases, the actual education required by regional employers may be higher than the minimum education level category, and existing workers may have less education than shown. Supply is composed of two elements: the entry of new graduates into the workforce and the existing talent pool of qualified unemployment insurance (UI) claimants actively seeking employment.

Some overall findings include the following:

- Pierce County's transportation, warehousing and logistics industry is projected to have an annual supply of 487 local candidates between 2018 and 2023. This supply is composed of 49 graduates from local educational programs and 438 unemployment claimants whose previous occupation matches to a core transportation, warehousing and logistics occupation. Local graduates are projected to represent ten percent of annual anticipated supply.
- Feedback from industry stakeholders indicates that although there may be a surplus of local candidates for transportation, warehousing and logistics occupations many of these candidates may not be considered qualified by local employers.
- The difference between the anticipated local supply of workers and the projected occupational demand of 374 jobs annually yields a surplus of 113 workers per year between 2018 and 2023. Although the overall talent pipeline indicates a surplus of qualified workers between 2018 and 2023, it is important to note that there are shortages among key transportation, warehousing and logistics occupations. Among all 35 core industry occupations, 25 are projected to have no local graduate supply within the same time period.

- Employers across the transportation, warehousing and logistics industry have challenges finding applicants with strong soft skills. The lack of soft skills negatively impacts retention.
- Competition between employers and industries for a limited workforce is also a challenge. Companies in Seattle or King County often pay slightly higher wages, which can be a draw for some workers.
- The majority of technical skills required for jobs in this industry can be acquired during on-the-job training.
- Regional employers with strong connections to workforce systems and organizations get the best placement results.
- Stakeholders also noted that each specific segment of the transportation, warehousing and logistics industry requires a unique set of skills, and these skills are extremely diverse across the industry.

Some initial recommendations include the following:

- Develop systems to identify UI claimants in occupations with high number of claimants and provide them with additional skills training to help improve their employability and job retention.
- Partner with employers to develop marketing materials about the benefits of remaining employed (or seeking employment) with Pierce County employers.
- Develop staff with expertise about this industry. Consider developing print materials to promote career pathways.

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Pierce County Transportation, Warehousing & Logistics Talent Pipeline

On-the-Job Training

Annual Average Demand and Supply All Occupations by Education		Occupation	Employment		CAGR	Annual Demand and Supply, 2018-2023			
		Ranked by Annual Openings (2018-2023)	2013	2023	2013-2023	Scale: 0 - 83 annual openings in sector			
						Demand	Supply	Gap	
290	280	1 Laborers and Freight, Stock, and Material Movers, Hand	6,016	7,019	1.6%	69	40	(29)	
		2 Industrial Truck and Tractor Operators	2,102	2,387	1.3%	34	37	3	
		3 Packers and Packagers, Hand	1,821	2,199	1.9%	28	14	(14)	
		4 First-Line Supervisors of Transportation and Material-Moving	747	872	1.6%	15	6	(9)	
		5 Dispatchers, Except Police, Fire, and Ambulance	532	642	1.9%	15	9	(7)	
		6 First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	563	653	1.5%	13	8	(6)	
		7 Industrial Machinery Mechanics	798	983	2.1%	12	3	(9)	
		8 Crane and Tower Operators	245	304	2.2%	11	12	1	
		9 Cargo and Freight Agents	227	279	2.1%	10	12	1	
		10 Light Truck or Delivery Services Drivers	1,842	2,108	1.4%	9	14	5	
		11 Material Moving Workers, All Other	209	251	1.8%	6	8	1	
		12 Transportation, Storage, and Distribution Managers	295	348	1.7%	6	36	29	
		13 Bus and Truck Mechanics and Diesel Engine Specialists	699	804	1.4%	6	22	16	
		14 Shipping, Receiving, and Traffic Clerks	1,419	1,631	1.4%	6	5	(1)	
		15 Production Workers, All Other	313	350	1.1%	6	27	21	
		16 Driver/Sales Workers	994	1,192	1.8%	6	3	(2)	
		17 Railroad Conductors and Yardmasters	109	110	0.1%	4	0	(4)	
		18 Motor Vehicle Operators, All Other	160	184	1.4%	4	4	1	
		19 Locomotive Engineers	128	130	0.2%	3	0	(3)	
		20 Weighers, Measurers, Checkers, and Samplers, Recordkeeping	179	213	1.8%	3	2	(2)	
		21 Team Assemblers	705	805	1.3%	2	0	(2)	
		22 Rail Car Repairers	52	53	0.2%	2	0	(2)	
		23 Tank Car, Truck, and Ship Loaders	55	68	2.1%	2	0	(2)	
		24 Assemblers and Fabricators, All Other	317	396	2.3%	2	6	4	
		25 Machine Feeders and Offbearers	189	200	0.6%	1	0	(1)	
		26 Separating, Filtering, Clarifying, Precipitating, and Still Machine	59	75	2.4%	1	0	(1)	
		27 Commercial Pilots	36	39	0.8%	1	6	5	
		28 Millwrights	131	168	2.5%	1	3	2	
		29 Railroad Brake, Signal, and Switch Operators	30	30	0.0%	1	0	(1)	
		30 Signal and Track Switch Repairers	17	18	0.6%	1	1	(0)	

Annual Average Demand and Supply All Occupations by Education		Occupation	Employment		CAGR	Annual Demand and Supply, 2018-2023			
		Ranked by Annual Openings (2018-2023)	2013	2023	2013-2023	Scale: 0 - 244 annual openings in sector			
						Demand	Supply	Gap	
500	0	1 Heavy and Tractor-Trailer Truck Drivers	4,843	5,609	1.5%	89	204	115	
		2 Aircraft Mechanics and Service Technicians	303	307	0.1%	3	6	2	

Sources: Washington State Employment Security Department, 2014; Bureau of Labor Statistics, 2016; National Center for Education Statistics, 2016; Community Attributes Inc., 2016.

CONTENTS

Introduction.....	1
Background and Purpose.....	1
Methods	1
Organization of Report.....	2
Transportation, Warehousing & Logistics Industry Overview	3
Demand Analysis: Pierce County Transportation, Warehousing & Logistics Occupational Forecasts	11
Supply Analysis: Availability of Regional Talent and Employable Workforce	13
Local Graduates.....	13
Unemployment Insurance	17
Supply and Demand	20
Summary of Key Findings and Preliminary Recommendations	22

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INTRODUCTION

Background and Purpose

Pierce County is a major hub for the transportation, warehousing and logistics industry. As home to the Port of Tacoma, the county relies upon the skills and employment within the industry. The industry is projected to experience steady growth in employment at 1.3 percent annually between 2013 and 2023. Through the skills gap analysis and strategies, WorkForce Central (WFC) can plan for the changing workforce needs of the transportation, warehousing and logistics industry in Pierce County.

Transportation, warehousing and logistics in Pierce County represents 14 percent of total industry employment across Washington. Although the industry is not as large as healthcare or government in Pierce County, it is highly concentrated in Pierce County as demonstrated by a location quotient of 1.5. Warehousing and freight are particularly important segments of the industry. In 2013 more than 26,300 people were employed in transportation, warehousing and logistics occupations. Wages in these occupations indicate options for career opportunities. Among all core transportation, warehousing and logistics occupations, 15 requiring just on-the-job training pay median wages across the Seattle-Tacoma-Bellevue MSA greater than \$50,000 annually.

As one of Pierce County's core industries, a strong understanding of demand, supply and employer perceptions will allow WFC and industry leaders to help address the workforce challenges of the future. Workforce professionals, educators and employers can use this information to help ensure Pierce County's workforce programs are providing the appropriate mix of training opportunities meet the needs of the transportation, warehousing and logistics industry.

Methods

WorkForce Central serves employers and workers within Pierce County, representing nearly ten percent of Washington's total employment. CAI's 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 (ESD) and the Bureau of Labor Statistics.** This data provides current estimates and forecasted demand for occupations in Pierce County and associated educational requirements, as well as occupational wages. Occupational forecasts include openings created by retirements and separations, in addition to openings generated by newly

created positions. For this reason, average annual openings are larger than the average of net jobs created over a period of time.

- **Washington unemployment insurance claims.** This data, also published by ESD, provides 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 for Pierce County's higher education institutions, defined according to the Classification of Instructional Programs, as well as a table of equivalence used to match educational programs to occupations.

Subsequent sections explain the details and limits of this data. In general, this data provides measures of demand and supply by occupation across industries for a geographic region (i.e., Pierce County). The occupations are defined in accordance with the Bureau of Labor Statistics Standard Occupational Classification system and industries are delineated using definitions from the North American Industry Classification System.

Comprehensive interviews were also conducted concurrently with the data-driven, quantitative analysis. Interviewees included port operators, warehousing firms, and transportation specialists. These interviews were open-ended discussions that provided insight into the qualitative trends industry employers grapple with in their day-to-day operations.

Organization of Report

- **Transportation, Warehousing and Logistics Overview.** Provides an overview of the transportation, warehousing and logistics industry and the occupations that define the industry.
- **Demand Analysis.** Describes the composition of transportation, warehousing and logistics occupational demand in Pierce 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 expected to meet occupational demand in Pierce County.
- **Summary of Key Findings and Preliminary Recommendations.** Assesses in detail the results of the talent pipeline analysis and interview findings, focusing on key implications for Pierce County.

TRANSPORTATION, WAREHOUSING & LOGISTICS INDUSTRY OVERVIEW

Assessing occupational gaps in an industry relies on a strict operational definition of which occupations compose that industry. Some occupations are present in nearly every industry and do not characterize the skills that define the industry specifically. Many administrative roles, for example, fit into this category. The first step in determining the core occupations that represent the primary set of skills within Pierce County’s transportation, warehousing and logistics industry is developing an operable definition of the industry. The North American Industry Classification System (NAICS) groups industries in increasingly specific segments from the two-digit to the six-digit level. Transportation, warehousing and logistics activities are delineated by the detailed industries falling within the two-digit NAICS 48 and 49, which describe transportation, warehousing and logistics operations (**Exhibit 1**).

Exhibit 1. Pierce County Transportation, Warehousing & Logistics NAICS by Employment, 2013¹

Four Digit NAICS	Description	Employment, 2013
4931	Warehousing and storage	3,970
4841	General freight trucking	3,220
4883	Support activities for water transportation	1,760
4842	Specialized freight trucking	1,170
4885	Freight transportation arrangement	910
4821	Rail transportation	430
4884	Support activities for road transportation	380
4881	Support activities for air transportation	180
4882	Support activities for rail transportation	120
Transportation, Warehousing & Logistics Industry Total		12,140

Sources: U.S. Bureau of Labor Statistics, 2016; Washington State Employment Security Department, 2016; Community Attributes Inc., 2016.

This industry employs more than 12,100 individuals in Pierce County. The County’s transportation, warehousing and logistics industry is predominately driven by warehousing and storage and freight trucking operations, accounting for 66 percent of the industry-wide activities in Pierce County. Support activities for water transportation, which includes water-based trade, is also a notable fraction of transportation, warehousing and logistics employment in Pierce County (**Exhibit 1**). The

¹ The data in this analysis represents a base year of 2013. Although some employment datasets now have data available for 2014 and 2015, base year 2013 is used throughout this report for consistency. The occupational projections that are the source for the occupational employment and demand analysis are developed by the Washington State Employment Security Department and are updated annually. However, the projections lag available employment data by a year, and at the time of this analysis the projections had not yet been updated to reflect 2014 base year projections.

Port of Tacoma is a significant economic driver in the County— international exports totaled \$10 billion in 2015 (Port of Tacoma, 2015).

Another method for defining the transportation, warehousing and logistics industry is to identify the core occupations that represent the primary skills within the industry. **Exhibits 2 and 3** lay out the core occupations that define Pierce County’s transportation, warehousing and logistics industry. The process of assembling this list began with examining the structure of the occupation codes with employment within the transportation, warehousing and logistics industry. The Bureau of Labor Statistics defines occupations using the Standard Occupation Code system (SOC). These occupations have a two-digit prefix, grouping occupations of similar types, followed by a more detailed four-digit code, identifying each individual occupation. Occupations matching transportation, warehousing and logistics are first grouped by their concentration within the transportation, warehousing and logistics industry.

Occupations with fewer than ten employees in the transportation, warehousing and logistics industry, or less than ten percent of employment concentrated within the industry, are excluded from the analysis as they are not considered core jobs within the industry. The core occupations identified represent only a portion of total employment within the industry. However, these occupations are highlighted in **Exhibits 2 and 3** because they represent the core occupations that define employment within this industry. Overall employment within the transportation, warehousing and logistics industry includes employment in other occupations that are not core to the industry. Additionally, core transportation, warehousing and logistics occupations are also present in industries other than transportation, warehousing and logistics throughout Pierce County.

Exhibit 2. Transportation and Material Moving Occupations and Installation, Maintenance and Repair Occupations, Employment in Industry and Total Employment, Pierce County, 2013

SOC	Occupation	Employment in Industry ↓	Employment in Other Industries	Total Employment	Share in Industry
53-3032	Heavy and Tractor-Trailer Truck Drivers	2,830	2,013	4,843	58%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1,439	4,577	6,016	24%
53-7051	Industrial Truck and Tractor Operators	956	1,146	2,102	45%
53-7064	Packers and Packagers, Hand	654	1,167	1,821	36%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	338	409	747	45%
53-3033	Light Truck or Delivery Services Drivers	321	1,521	1,842	17%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	285	278	563	51%
53-7021	Crane and Tower Operators	184	61	245	75%
53-3031	Driver/Sales Workers	153	841	994	15%
53-7199	Material Moving Workers, All Other	134	75	209	64%
53-4011	Locomotive Engineers	107	21	128	84%
53-4031	Railroad Conductors and Yardmasters	106	3	109	97%
53-3099	Motor Vehicle Operators, All Other	86	74	160	54%
53-7063	Machine Feeders and Offbearers	67	122	189	35%
53-7121	Tank Car, Truck, and Ship Loaders	52	3	55	95%
53-4021	Railroad Brake, Signal, and Switch Operators	29	1	30	96%
53-2012	Commercial Pilots	24	12	36	67%
	Transportation and Material Moving Occupations Subtotal	7,765	12,324	20,089	39%
49-9041	Industrial Machinery Mechanics	219	579	798	27%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	165	534	699	24%
49-3011	Aircraft Mechanics and Service Technicians	108	195	303	36%
49-3043	Rail Car Repairers	52	0	52	100%
49-9044	Millwrights	30	101	131	23%
49-9043	Maintenance Workers, Machinery	28	174	202	14%
49-9097	Signal and Track Switch Repairers	13	4	17	75%
	Installation, Maintenance, and Repair Occupations Subtotal	614	1,588	2,202	28%

Sources: Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

Transportation, warehousing and logistics occupations fall within a wide variety of SOC codes, with the highest concentration among railroad occupations. Rail care repairers are 100 percent concentrated within the industry, 97 percent of railroad conductors and yard masters, and 96 percent of railroad brake, signal, and switch operators are employed within this industry in Pierce County. This is significantly more concentrated than other modes of transportation. For comparison, 67 percent of commercial pilots, 58 percent of heavy and tractor trailer truck drivers, and 45 percent of industrial truck and tractor operators are employed in the transportation, warehousing and logistics industry. Overall, the transportation, warehousing and logistics industry in Pierce County is fairly dispersed; 39 percent of transportation and material moving occupations and 28 percent of installation, maintenance, and repair employment are within this industry. (**Exhibit 2**)

Exhibit 3. All Other Transportation, Warehousing & Logistics Occupations, Employment in Industry and Total Employment, Pierce County, 2013

SOC	Occupation	Employment in Industry	Employment in Other Industries	Total Employment	Share in Industry
51-9199	Production Workers, All Other	134	179	313	43%
51-2092	Team Assemblers	97	608	705	14%
51-2099	Assemblers and Fabricators, All Other	41	276	317	13%
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	21	38	59	35%
Production Occupations Subtotal		293	1,101	1,394	21%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	291	241	532	55%
43-5011	Cargo and Freight Agents	209	18	227	92%
43-5071	Shipping, Receiving, and Traffic Clerks	155	1,264	1,419	11%
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	72	107	179	40%
Office and Administrative Support Occupations Subtotal		727	1,630	2,357	31%
11-3071	Transportation, Storage, and Distribution Managers	143	152	295	49%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	18	0	18	100%
All Occupations		9,560	16,795	26,355	36%

Sources: Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

Production and office administrative support occupations are also integral to the functioning of this industry. Core employment in Pierce County transportation, warehousing and logistics occupations totals more than 26,300 jobs. Out of this total, only 9,500 are employed within the transportation, warehousing and logistics industry, which represents 36 percent of total industry employment. The dispersion throughout Pierce County's industries of core transportation, warehousing and logistics occupations indicates a high degree of occupational crossover between industries. This indicates that the transportation, warehousing and logistics industry may experience a degree of competition from other industries for talent. **(Exhibit 3)**

Exhibit 4. Transportation, Warehousing & Logistics Occupations Median Wage and 90th Percentile Wage, Seattle-Tacoma-Bellevue MSA, 2014

SOC	Occupation	Employment in Industry	Median Wage ↓	90 th Percentile Wage
On-the-Job Training				
11-3071	Transportation, Storage, and Distribution Managers	143	\$98,560	\$149,260
53-2012	Commercial Pilots	24	\$96,060	\$154,210
53-4011	Locomotive Engineers	107	\$83,940	\$98,330
53-7021	Crane and Tower Operators	184	\$78,690	\$96,030
49-9097	Signal and Track Switch Repairers	13	\$67,560	\$88,940
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	338	\$67,300	\$109,590
49-9044	Millwrights	30	\$67,260	\$95,770
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	165	\$58,250	\$78,110
53-7199	Material Moving Workers, All Other	134	\$58,200	\$90,770
49-9041	Industrial Machinery Mechanics	219	\$58,180	\$91,570
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	285	\$54,950	\$87,340
53-7121	Tank Car, Truck, and Ship Loaders	52	\$54,880	\$93,650
53-4031	Railroad Conductors and Yardmasters	106	\$54,620	\$76,330
49-3043	Rail Car Repairers	52	\$54,480	\$61,560
49-9043	Maintenance Workers, Machinery	28	\$51,250	\$76,120
43-5011	Cargo and Freight Agents	209	\$49,260	\$91,920
43-5032	Dispatchers, Except Police, Fire, and Ambulance	291	\$45,270	\$72,210
47-4061	Rail-Track Laying and Maintenance Equipment Operators	18	\$45,030	\$63,750
53-7051	Industrial Truck and Tractor Operators	956	\$41,190	\$77,930
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	72	\$35,970	\$47,940
43-5071	Shipping, Receiving, and Traffic Clerks	155	\$34,880	\$53,560
53-3033	Light Truck or Delivery Services Drivers	321	\$33,760	\$61,210
51-2092	Team Assemblers	97	\$31,270	\$49,090
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	21	\$30,910	\$50,380
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	1,439	\$28,700	\$47,120
51-2099	Assemblers and Fabricators, All Other	41	\$28,360	\$50,270
53-7063	Machine Feeders and Offbearers	67	\$27,480	\$44,380
53-7064	Packers and Packagers, Hand	654	\$25,300	\$43,710
53-3031	Driver/Sales Workers	153	\$24,840	\$41,380
51-9199	Production Workers, All Other	134	\$23,510	\$46,390
53-4021	Railroad Brake, Signal, and Switch Operators	29	*	*
53-3099	Motor Vehicle Operators, All Other	86	*	*
Associate degree or Postsecondary Award				
53-3032	Heavy and Tractor-Trailer Truck Drivers	2,830	\$43,440	\$66,740
49-3011	Aircraft Mechanics and Service Technicians	108	*	*

* indicates data is suppressed by the U.S. Bureau of Labor Statistics in order to comply with nondisclosure rules.

Due to data limitations median and 90th percentile wages are those for the matching occupation in the Seattle-Tacoma-Bellevue MSA, and are used as a proxy for Pierce County wages by occupation, given data limitations for occupational wage data for Pierce County alone.

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

Notable portions of transportation, warehousing and logistics occupations have high median wages, which is particularly important considering that the vast majority of jobs within this industry do not require a four-year degree. According to stakeholder's skills-based and technical training programs within this industry are vital to the success of the industry, however only a small proportion of high school students are aware of this

alternative to four-year programs. Instead, recent graduates opt for low-level service or retail jobs as opposed to more schooling, and maintain employment in these industries until they realize they have little or no opportunity to advance their career or earning potential. At this point, these individuals begin to turn to employment in the transportation, warehousing and logistics and similar industries. Industry stakeholders expressed frustration at the stagnation of potential hires and the time lost for this proportion of high school graduates.

Among occupations requiring on-the-job training, transportation, storage, and distribution managers have the highest median wage at \$98,500. Commercial pilots and locomotive engineers also have high median wages—\$96,000 and \$83,900, respectively. Commercial pilots also have the highest 90th percentile wage, reaching \$154,200 annually. Out of the 32 occupations within the on-the-job training grouping, 15, or 47 percent, of these jobs have a median wage above \$50,000 annually. (Exhibit 4)

Exhibit 5. Comparative Average Wages, Pierce County and Seattle-Tacoma-Bellevue MSA, 2014

	Employment	Average Wage
Pierce County Transportation, Warehousing & Logistics Industry		
On-the-Job Training Occupations	6,622	\$45,049
Associate Degree or Postsecondary Award Occupations	2,938	\$45,760
Transportation, Warehousing & Logistics Industry Total	9,560	\$45,265
Seattle-Tacoma-Bellevue MSA	1,761,920	\$57,370

Due to data limitations median and 90th percentile wages are those for the matching occupation in the Seattle-Tacoma-Bellevue MSA, and are used as a proxy for Pierce County wages by occupation, given data limitations for occupational wage data for Pierce County alone.

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

The average wage in Pierce County core transportation, warehousing and logistics industry occupations is almost \$45,300 annually across the Seattle-Tacoma-Bellevue MSA. The Seattle-Tacoma-Bellevue MSA average wage is roughly \$12,000 higher than the average transportation, warehousing and logistics occupation wage. Employers within the County acknowledged this reality, commenting that the Pierce County transportation, warehousing and logistics industry is effectively part of the King County talent pipeline for these occupations. Overall occupational concentration within the transportation, warehousing and logistics industry is low, indicating that these occupations have a high degree of transferability in other industries throughout the region. Once employees are adequately trained, they tend to seek higher wages in other locales in the four county region. (Exhibit 5)

Exhibit 6. Transportation, Warehousing & Logistics Occupational Employment in Other Industries by Industry, 2013

Industry	Transportation, Warehousing & Logistics Occupation Employment in Industry
Employment Services	1,387
Grocery and Related Product Wholesalers	1,293
Local government other	1,117
Lumber and const supply merchant wholesalers	694
Food Services and drinking places	581
Federal government	568
Couriers	564
Grocery stores	474
Cement and concrete product manufacturing	355
Plastics product manufacturing	344
Building material and supplies dealers	316
Motor vehicle and parts merchant wholesalers	303
Alcoholic beverage merchant wholesalers	299
Misc durable goods merchant wholesalers	291
Auto parts accessories and tire stores	290
Sawmills and wood preservation	285
Machinery and supply merchant wholesalers	272
Aerospace	268
Other general merchandise stores	252
Drycleaning and laundry services	217
Other wood product manufacturing	215
Automotive repair and maintenance	200
All Other Industries	6,205
Total	16,790

Sources: Washington State Employment Security Department, 2015; Community Attributes Inc., 2016.

Among transportation, warehousing and logistics occupations, almost 16,800 workers are employed in industries other than transportation, warehousing and logistics. Employment services, grocery and related product wholesalers, and other local government represent the largest occupational shares of transportation, warehousing and logistics employment in other industries. These three industries combined account for 3,743 jobs, or 22 percent of the total employment in other industries. (Exhibit 6)

Exhibit 7. Transportation, Warehousing & Logistics Occupation Employment in Other Industries by Occupation, 2013

Occupation	Employment in Other Industries	Top Other Industry
Laborers and Freight, Stock, and Material Movers, Hand	4,577	Employment Services
Heavy and Tractor-Trailer Truck Drivers	2,013	Grocery and Related Product Wholesalers
Light Truck or Delivery Services Drivers	1,521	Couriers
Shipping, Receiving, and Traffic Clerks	1,264	Couriers
Packers and Packagers, Hand	1,167	Grocery stores
Industrial Truck and Tractor Operators	1,146	Grocery and Related Product Wholesalers
Driver/Sales Workers	841	Food Services and Drinking Places
Team Assemblers	608	Petroleum & Coal Prod.
Industrial Machinery Mechanics	579	Commercial machinery repair and maintenance
Bus and Truck Mechanics and Diesel Engine Specialists	534	Vocational rehabilitation services
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	409	Local Government Other
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	278	Automotive repair and maintenance
Assemblers and Fabricators, All Other	276	Building finishing contractors
Dispatchers, Except Police, Fire, and Ambulance	241	Federal Government
Aircraft Mechanics and Service Technicians	195	Federal Government
Production Workers, All Other	179	Employment Services
Maintenance Workers, Machinery	174	Local Government Other
Transportation, Storage, and Distribution Managers	152	Lumber and const. supply merchant wholesalers
Machine Feeders and Offbearers	122	Sawmills and wood preservation
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	107	Grocery and Related Product Wholesalers
Millwrights	101	Building equipment contractors
All Other Occupations	306	
Total	16,791	

Sources: Washington State Employment Security Department, 2015; Community Attributes Inc., 2016.

Among transportation, warehousing and logistics occupations, employment in other industries is primarily concentrated in laborers and freight, stock, and material movers who do not use heavy machinery. This occupation alone accounts for 27 percent of transportation, warehousing and logistics employment in other industries. Furthermore, five of the 27 core transportation, warehousing and logistics occupations have employment in other industries totaling more than 1,000 jobs. (**Exhibit 7**)

Transportation, warehousing and logistics employment is notably dispersed in other industries. Just 36 percent of the core transportation, warehousing and logistics occupations reside within the industry. This indicates that skills related to these occupations are highly transferable to related industries. Additionally, the majority of technical skills required for these jobs can be acquired during on-the-job training. This suggests that occupations within the transportation, warehousing and logistics industry are highly accessible to a wide array of individuals.

DEMAND ANALYSIS: PIERCE COUNTY TRANSPORTATION, WAREHOUSING & LOGISTICS OCCUPATIONAL FORECASTS

Total demand² for occupations matching the workforce needs of transportation, warehousing and logistics³ in Pierce County is projected to average 1,040 openings annually between 2018 and 2023. Demand for these jobs within the industry will be more limited at 374 positions annually during the same time frame. Overall growth among transportation, warehousing and logistics occupations is estimated to increase 1.1 percent per year during the same time period. This is slightly lower than the 1.4 percent projected annual growth in total employment in Pierce County. (**Exhibit 8**)

Laborers and hand movers of freight, stock, and materials are projected to have the highest number of average annual openings economy-wide at 289 overall (and 69 annual openings within the industry). Heavy and tractor trailer truck drivers are expected to have the highest number of annual openings within the industry, with 89 average annual openings between 2018 and 2023. Hand packers and packagers and industrial truck and tractor operators are also projected to have meaningful occupational demand during the same time period with 28 and 34 annual openings, respectively. (**Exhibit 8**)

Industry stakeholders noted that strong competition between industry employers for a limited workforce is one of the most significant challenges facing this industry in Pierce County.

Stakeholders also reported a significant deficit of soft skills among industry applicants. Interviewees added that this contributes to a pronounced lack of retention within the industry. Workers who consistently fail to show up to work on time or struggle with communication erode the overall workforce supply. As a result, employers must increase recruitment efforts to keep positions filled.

This analysis relies on the Bureau of Labor Statistics' standardized coding system to define occupations. While this code system allows for the analysis of data, some of the specializations that fall within each occupation may not be captured. Employers may expect to see higher demand for some of these specializations.

² Total demand may be underestimated as it is represented by average annual openings. Average annual openings are calculated by the Employment Security Department based on projections of employment by occupation. The employment projections only represent the point of equilibrium between demand and supply and therefore do not account for unmet demand or unfilled jobs. As a result, total demand may be underestimated.

³ Total demand for occupations covers demand across all industries in Pierce County and includes but is not limited to the transportation, warehousing and logistics industry.

Exhibit 8. Pierce County Transportation, Warehousing & Logistics Occupational Demand per Year, 2018 and 2023

SOC	Occupation	Estimated Employment 2018	Estimated Employment 2023	Average Annual Openings ↓ (2018-2023)	Average Annual Openings in Industry (2018-2023)	Estimated Employment CAGR (2018-2023)
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	6,592	7,019	289	69	1.3%
53-3032	Heavy and Tractor-Trailer Truck Drivers	5,306	5,609	152	89	1.1%
53-7064	Packers and Packagers, Hand	2,073	2,199	79	28	1.2%
53-7051	Industrial Truck and Tractor Operators	2,292	2,387	74	34	0.8%
43-5071	Shipping, Receiving, and Traffic Clerks	1,573	1,631	54	6	0.7%
53-3033	Light Truck or Delivery Services Drivers	2,021	2,108	52	9	0.8%
49-9041	Industrial Machinery Mechanics	910	983	43	12	1.6%
53-3031	Driver/Sales Workers	1,108	1,192	36	6	1.5%
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	827	872	34	15	1.1%
43-5032	Dispatchers, Except Police, Fire, and Ambulance	595	642	28	15	1.5%
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	617	653	26	13	1.1%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	764	804	25	6	1.0%
51-2092	Team Assemblers	780	805	17	2	0.6%
53-7021	Crane and Tower Operators	285	304	14	11	1.3%
51-9199	Production Workers, All Other	330	350	13	6	1.2%
11-3071	Transportation, Storage, and Distribution Managers	326	348	13	6	1.3%
51-2099	Assemblers and Fabricators, All Other	367	396	12	2	1.5%
43-5011	Cargo and Freight Agents	258	279	11	10	1.6%
53-7199	Material Moving Workers, All Other	236	251	10	6	1.2%
49-3011	Aircraft Mechanics and Service Technicians	307	307	9	3	0.0%
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	198	213	8	3	1.5%
53-3099	Motor Vehicle Operators, All Other	175	184	7	4	1.0%
49-9043	Maintenance Workers, Machinery	221	233	5	1	1.1%
49-9044	Millwrights	157	168	5	1	1.4%
53-7063	Machine Feeders and Offbearers	199	200	4	1	0.1%
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	67	75	4	1	2.3%
53-4011	Locomotive Engineers	129	130	4	3	0.2%
53-4031	Railroad Conductors and Yardmasters	110	110	4	4	0.0%
53-2012	Commercial Pilots	36	39	2	1	1.6%
53-7121	Tank Car, Truck, and Ship Loaders	64	68	2	2	1.2%
49-3043	Rail Car Repairers	52	53	2	2	0.4%
49-9097	Signal and Track Switch Repairers	17	18	1	1	1.1%
53-4021	Railroad Brake, Signal, and Switch Operators	30	30	1	1	0.0%
47-4061	Rail-Track Laying and Maintenance Equipment Operators	18	19	0	0	1.1%
	Total	29,040	30,679	1,040	374	1.1%

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

SUPPLY ANALYSIS: AVAILABILITY OF REGIONAL TALENT AND EMPLOYABLE WORKFORCE

The local workforce supply is primarily composed of two elements: the entry of new graduates into the available talent pool and the existing talent pool of qualified unemployed workers actively seeking employment. Qualified graduates are drawn from the National Center for Education Statistics' Integrated Postsecondary Education System (IPEDS) data via a match of Classification Instructional Program (CIP) codes to the appropriate SOC codes. These are totaled by SOC code, including duplicates, and are then adjusted down controlled to total occupational employment. Unemployment insurance claimants are organized by their most recently reported occupation (i.e. SOC codes) and represent the second element of supply. It is important to note that workers from outside Pierce County can fill talent gaps, but are not assessed in this analysis.

Local Graduates

IPEDS standardizes educational curriculum with CIP codes. Each CIP code can match to several SOC codes because graduates from the same program can be qualified to be employed in a variety of occupations and industries. Similarly, each occupation may draw on graduates from several relevant CIP codes. For example, graduates in public administration programs may be qualified to work as transportation, storage, and distribution managers as well as general operations managers. The latter occupation can also draw from graduates from aviation/airway management and operations and business programs (**Exhibit 9**).

Exhibit 9. Other Occupational Matches for Graduates Qualified to Work as Transportation, Storage and Distribution Managers

CIP	Description	SOC	Description
44.0401	Public Administration	11-3071	Transportation, Storage, and Distribution Managers
49.0101	Aeronautics/Aviation/Aerospace Science and Technology, General	11-9021	Construction Managers
49.0104	Aviation/Airway Management and Operations	11-3051	Industrial Production Managers
52.0101	Business/Commerce, General	11-1021	General and Operations Managers
52.0209	Transportation/Mobility Management	11-9151	Social and Community Service Managers

Sources: National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Community Attributes Inc., 2016.

Accredited programs matching to one or more transportation, warehousing and logistics occupation(s) are summarized across educational institutions and programs located in the county in order to determine the number of graduates that will be able to fill forecasted openings within the transportation, warehousing and logistics industry in Pierce County.

Graduation data is tied to the primary location of the educational institution providing the accredited program. Therefore, institutions located outside of Pierce County are not included as part of the local talent supply.

IPEDS data is only available through the 2013-2014 academic year. Because the majority of completions occur at the end of the spring semester, students who complete programs during the 2013-2014 academic year are most likely to seek employment in 2014. Completions data provides a snapshot of what educational programs are expected to look like in future years if current conditions do not change.

IPEDS data only captures information on people who complete programs in postsecondary schools. This means that high school graduates, many of whom may be appropriately qualified for certain positions, are not counted in this analysis.

Additionally, apprenticeships are not included among the 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 the industry. If they were to be added to the talent pool calculations, they would be double-counted within the analysis.

The top three programs—business administration and management, business commerce, and diesel mechanics technology—have more than 100 annual completions in fields that match to one or more transportation, warehousing and logistics occupation(s). Program completions in these three areas represent 76 percent of all transportation, warehousing and logistics program completions in Pierce County. In total, there are 808 program completions in Pierce County that match occupation(s) in the transportation, warehousing and logistics industry. (**Exhibit 10**)

**Exhibit 10. Total Graduates by CIP Codes that Match to One or More
Transportation, Warehousing & Logistics Occupation(s), Pierce County,
2014**

CIP	Description	Graduates
52.0201	Business Administration and Management, General	285
52.0101	Business/Commerce, General	225
47.0605	Diesel Mechanics Technology/Technician	104
49.0205	Truck and Bus Driver/Commercial Vehicle Operator and Instructor	94
52.0408	General Office Occupations and Clerical Services	40
49.0202	Construction/Heavy Equipment/Earthmoving Equipment Operation	38
46.0302	Electrician	10
52.0203	Logistics, Materials, and Supply Chain Management	6
49.0102	Airline/Commercial/Professional Pilot and Flight Crew	6
	Total	808

Sources: National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Community Attributes Inc., 2016.

Examining the same completions by the institution from which they graduated shows the geographic source of qualified transportation, warehousing and logistics occupation candidates, and the institutions from which Pierce County residents graduate and move on to fill occupational openings within the industry. In total, there are eight institutions whose graduates are qualified to work in the transportation, warehousing and logistics industry. Of these, Bates Technical College has the highest number of program completions with 246, or roughly 30 percent of all 808 completions. (**Exhibit 11**)

Stakeholders interviewed reported recruiting students from regional community colleges and universities. In particular employers mentioned Bates Technical College, Tacoma Community College, Pacific Lutheran University and Pierce College as institutions that produce quality graduates for the transportation, warehousing and logistics industry. Pierce County employers do face competition for qualified graduates outside of the County, but competition is intensified after the graduates have completed on-the-job training for a particular occupation.

**Exhibit 11. Pierce County’s Educational Institutions by Graduates
Qualified for Transportation, Warehousing & Logistics Occupations,
2014**

Institution	Graduates Qualified for Transportation, Warehousing & Logistics Occupations
Bates Technical College	246
Tacoma Community College	170
Pacific Lutheran University	119
Pierce College-Fort Steilacoom	111
University of Puget Sound	65
University of Washington-Tacoma Campus	48
Pierce College-Puyallup	43
Clover Park Technical College	6
Total	808

Sources: National Center for Education Statistics’ Integrated Postsecondary Education System, 2014; Community Attributes Inc., 2016.

In order to determine the number of potential graduates that are likely to fill occupations within Pierce County’s transportation, warehousing and logistics industry, qualified graduates are totaled by every possible combination of CIP and SOC codes. Each combination is adjusted to match the ratio of occupational employment to total occupational employment for all possible occupations matching to relevant CIPs. This method results in an estimate of how many graduates could potentially be employed in each available occupation. Each estimate is adjusted to account for the approximate share of local graduates who obtain work locally after graduation by multiplying the estimates by a 70 percent local retention rate. Lastly, the number of graduates expected to seek work locally is adjusted again to account for the number of local graduates who can be reasonably expected to fill positions within the transportation, warehousing and logistics industry.

This approach yields a total of 194 graduates in 2014 that are qualified for the needs of the transportation, warehousing and logistics industry (**Exhibit 12**).

While regional employers are generally satisfied with the technical skills of industry graduates, they expressed concern for the lack of soft skills among technically qualified applicants. Industry employers reported a shortage of applicants with resume writing proficiency, punctuality, and communication skills. These abilities are vital, and indicate how an interviewed individual will perform in a work environment if he or she is hired. Because employers have experienced challenges in workforce retention due to an industry-wide deficit of soft skills, they are forced to increase recruitment efforts to locate well-rounded applicants to fill openings.

In 2014, educational institutions in Pierce County conferred degrees to 136 graduates in transportation, warehousing and logistics related occupations who are expected to stay in Pierce County. Of these 136 graduates, 49 are expected to seek employment within the industry. The majority of these, 41 graduates or 81 percent of all graduates, are qualified for positions that require on-the-job training. Bus and truck mechanics (17 positions) and diesel engine specialists (12 positions) are expected to have the highest local graduate supply. Of the 33 total core occupations in the transportation, warehousing and logistics industry, only nine are expected to have supply from local graduates. (**Exhibit 12**)

Exhibit 12. Transportation, Warehousing & Logistics Occupations by Total Graduates, Pierce County, 2014

SOC	Description	All Graduates	Graduates After 70% Retention	Graduates in Industry	↓
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	104	73	17	
11-3071	Transportation, Storage, and Distribution Managers	35	25	12	
43-5011	Cargo and Freight Agents	8	6	5	
53-3033	Light Truck or Delivery Services Drivers	19	13	2	
53-2012	Commercial Pilots	4	3	2	
47-4061	Rail-Track Laying and Maintenance Equipment Operators	2	1	1	
53-7021	Crane and Tower Operators	2	1	1	
49-9097	Signal and Track Switch Repairers	1	1	1	
	On-the-Job Training Subtotal	175	123	41	
53-3032	Heavy and Tractor-Trailer Truck Drivers	19	13	8	
	Associate degree or Postsecondary Award Subtotal	19	13	8	
	Grand Total	194	136	49	

Sources: National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Community Attributes Inc., 2016.

Unemployment Insurance

The second key element of the local talent supply is the pool of unemployment insurance (UI) claimants whose previous occupations match those in Pierce County's transportation, warehousing and logistics industry. Due to nondisclosure rules, not all UI data is available for every SOC.

Overall, there are a total of 1,072 unemployment insurance claimants whose previous occupation was a core healthcare occupation. Of these UI claimants 438 are expected to seek work within core transportation, warehousing and logistics occupations in Pierce County. (**Exhibit 13**)

The majority of these UI claimants were previously employed in occupations with a minimum educational requirement of on-the-job training, however, there are claimants available for occupations within each educational grouping. UI claimants matching to on-the-job training occupations represent 54 percent of total UI claimant talent supply. The occupations with the greatest projected supply from UI claimants are laborers and hand freight, stock, and material movers (40) and industrial truck and tractor operators (37). Out of all of the core transportation,

warehousing and logistics occupations in Pierce County, 25 have projected supply from unemployment claimants. (Exhibit 13)

Exhibit 13. Unemployment Insurance Claimants by Previous SOC, Pierce County, 2014

SOC	Description	Total Qualified Unemployment Insurance Claimants	Unemployment Insurance Claimants in Sector ↓
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	169	40
53-7051	Industrial Truck and Tractor Operators	81	37
51-9199	Production Workers, All Other	63	27
11-3071	Transportation, Storage, and Distribution Managers	49	24
53-7064	Packers and Packagers, Hand	40	14
53-3033	Light Truck or Delivery Services Drivers	65	11
53-7021	Crane and Tower Operators	14	11
43-5032	Dispatchers, Except Police, Fire, and Ambulance	16	9
53-7199	Material Moving Workers, All Other	12	8
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	15	8
43-5011	Cargo and Freight Agents	7	6
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	14	6
51-2099	Assemblers and Fabricators, All Other	45	6
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	22	5
43-5071	Shipping, Receiving, and Traffic Clerks	43	5
53-3099	Motor Vehicle Operators, All Other	8	4
53-2012	Commercial Pilots	6	4
53-3031	Driver/Sales Workers	20	3
49-9041	Industrial Machinery Mechanics	11	3
49-9044	Millwrights	13	3
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	4	2
49-9043	Maintenance Workers, Machinery	4	1
49-3043	Rail Car Repairers	0	0
	On-the-Job Training Subtotal	721	236
53-3032	Heavy and Tractor-Trailer Truck Drivers	335	196
49-3011	Aircraft Mechanics and Service Technicians	16	6
	Associate degree or Postsecondary Award Subtotal	351	201
	Grand Total	1,072	438

Sources: Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

Total supply is defined as the sum of local qualified graduates and qualified unemployment insurance claimants. Within Pierce County, there are a total of 49 local graduates and 438 unemployment insurance claimants who can reasonably be expected to fill the needs of the transportation, warehousing and logistics industry within Pierce County. The sum of the two sources of supply leads to a total projected supply of 487 candidates. (Exhibit 14)

Exhibit 14. Total Talent Supply, Pierce County, 2014

Source of Supply	Qualified Workers
On-the-Job Training	41
Associate Degree or Postsecondary Award	8
Graduate Subtotal	49
Unemployment Insurance Claimants	438
Grand Total	487

Sources: National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

SUPPLY AND DEMAND

The combined elements of expected supply and projected occupational demand yields a summary of annual occupational gaps within the transportation, warehousing and logistics industry. **Exhibit 15** summarizes graduate supply, total demand, UI claimant supply and the expected gaps for each transportation, warehousing and logistics occupation.

Stakeholders indicated that they generally see a lack of applicants for their openings, especially among a few specific occupations. Additionally, employers stated that of the applicants they get, there were not enough qualified candidates.

Of the 33 occupations that require on-the-job training, there is an expected supply of 41 local graduates and an additional supply of 236 UI claimants, totaling a supply of 277 workers. Total demand for these occupations is projected to be 282 workers annually. Combining supply and demand yields an expected shortfall in supply of four qualified workers annually.

Individual analysis of the occupations provides additional information. The vast majority (28 of 34) of occupations listed are in relative balance (between a surplus of five to a deficit of nine). The occupations with the highest number of annual shortages each year are laborers who move freight, stock, and materials by hand (29); and hand packers and packagers (14). The occupations with the largest surpluses each year are bus and truck mechanics and diesel engine specialists (16); production workers, all other (21); and transportation, storage, and distribution managers (29). **(Exhibit 15)**

A total of two occupations require an associate degree or postsecondary award. These occupations have a projected supply of eight local graduates and 201 UI claimants, yielding a total anticipated supply of 209 workers. The total demand is expected to be 92 workers per year. The difference between the forecasted supply and demand is a surplus of 117 workers. The surplus in supply between these two occupations is due to an expected surplus of 115 candidates in the heavy and tractor-trailer truck driver occupation. Feedback across the industry has typically indicated a shortage of qualified applicants among the occupation, as well as challenges in retention and attraction of younger talent. As mentioned above, the data indicates a surplus of talent, but does not provide information about the quality of applicants. **(Exhibit 15)**

Exhibit 15. Annual Supply and Demand, On-the-Job Training, Pierce County, 2018-2023

Occupation	Total Graduate Supply	Total Demand	Interim Gap	Total UI Claims Supply	Final Gap ↓
Laborers and Freight, Stock, and Material Movers, Hand	0	69	(69)	40	(29)
Packers and Packagers, Hand	0	28	(28)	14	(14)
First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	0	15	(15)	6	(9)
Industrial Machinery Mechanics	0	12	(12)	3	(9)
Dispatchers, Except Police, Fire, and Ambulance	0	15	(15)	9	(7)
First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	0	13	(13)	8	(6)
Railroad Conductors and Yardmasters	0	4	(4)	0	(4)
Locomotive Engineers	0	3	(3)	0	(3)
Driver/Sales Workers	0	6	(6)	3	(2)
Team Assemblers	0	2	(2)	0	(2)
Rail Car Repairers	0	2	(2)	0	(2)
Tank Car, Truck, and Ship Loaders	0	2	(2)	0	(2)
Weighers, Measurers, Checkers, and Samplers, Recordkeeping	0	3	(3)	2	(2)
Machine Feeders and Offbearers	0	1	(1)	0	(1)
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	0	1	(1)	0	(1)
Shipping, Receiving, and Traffic Clerks	0	6	(6)	5	(1)
Railroad Brake, Signal, and Switch Operators	0	1	(1)	0	(1)
Signal and Track Switch Repairers	1	1	(0)	0	(0)
Maintenance Workers, Machinery	0	1	(1)	1	(0)
Motor Vehicle Operators, All Other	0	4	(4)	4	1
Crane and Tower Operators	1	11	(9)	11	1
Material Moving Workers, All Other	0	6	(6)	8	1
Rail-Track Laying and Maintenance Equipment Operators	1	0	1	0	1
Cargo and Freight Agents	5	10	(5)	6	1
Millwrights	0	1	(1)	3	2
Industrial Truck and Tractor Operators	0	34	(34)	37	3
Assemblers and Fabricators, All Other	0	2	(2)	6	4
Commercial Pilots	2	1	1	4	5
Light Truck or Delivery Services Drivers	2	9	(7)	11	5
Bus and Truck Mechanics and Diesel Engine Specialists	17	6	11	5	16
Production Workers, All Other	0	6	(6)	27	21
Transportation, Storage, and Distribution Managers	12	6	6	24	29
On-the-Job Training Subtotal	41	282	(240)	236	(4)
Aircraft Mechanics and Service Technicians	0	3	(3)	6	2
Heavy and Tractor-Trailer Truck Drivers	8	89	(81)	196	115
Associate degree or Postsecondary Award Subtotal	8	92	(84)	201	117
Grand Total	49	374	(325)	438	113

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Community Attributes Inc., 2016.

It is important to bear in mind that not all occupations within an educational grouping are easily substitutable. A surplus in one occupation may not necessarily be countered by a shortage in another occupation. The skills required may not be the same between occupations. As such, a detailed account of the prospective supply and demand for each primary occupation can help organizations anticipate and plan for possible labor shortages and surpluses in the future.

SUMMARY OF KEY FINDINGS AND PRELIMINARY RECOMMENDATIONS

Pierce County's transportation, warehousing and logistics industry is projected to have an annual supply of 487 local candidates between 2018 and 2023. This supply is composed of 49 graduates from local educational programs and 438 unemployment claimants whose previous occupation matches to a core transportation, warehousing and logistics occupation. Feedback from industry stakeholders indicates that although there may be a surplus of local candidates for transportation, warehousing and logistics occupations many of these candidates may not be considered qualified by local employers. A consistent theme among employers is a lack of soft skills among applicants, which cannot be measured within completions or UI data and also are skills considered essential to be employable by local companies. (Exhibit 16)

Exhibit 16. Summary of Annual Pierce County Transportation, Warehousing & Logistics Talent Supply, 2018-2023

Projected Talent Supply (Annual)	
Unemployed	438
Newly-Trained Candidates	49

Sources: National Center for Education Statistics' Integrated Postsecondary Education System, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

The difference between the anticipated local supply of workers and the projected occupational demand of 374 jobs annually yields a surplus of 113 workers per year between 2018 and 2023. This surplus represents more than one percent of total core occupation employment within the transportation, warehousing and logistics industry. (Exhibit 17)

Exhibit 17. Summary of Annual Pierce County Transportation, Warehousing & Logistics Talent Supply and Demand, 2018-2023

Annual Surplus or (Shortage)	
Total Openings (Demand)	374
Total Supply	487
Surplus or (Shortage)	113

Sources: U.S. Bureau of Labor Statistics, 2014; Washington State Employment Security Department, 2014; Community Attributes Inc., 2016.

Employers across the transportation, warehousing and logistics industry have challenges finding applicants with strong soft skills. Most employers are willing to invest in training for the hard skills specific to their organization; however, they struggle to find workers that have basic skills necessary for employment. Employers require workers that

reliably come to work on time and that have the basic communication skills to succeed in a team environment.

The struggle to find workers with strong soft skills contributes to a decrease in industry retention. Workers that fail to show up on time, fail routine drug tests and are unable to communicate with their fellow workers leads to attrition in the workforce. In turn, poor retention leads to an increase in the need for employers to recruit new workers. Organizations are using data and hiring information to increase retention, such as identifying methods to select applicants that will become long-term employees. The workforce system could help in this effort by understanding the unique needs of employers and screen applicants to find the best fit.

- *Recommendation* – Develop systems to identify UI claimants in occupations with high number of claimants and provide them with additional skills training to help improve their employability and job retention. The additional skills training should include a heavy emphasis on soft skills training and plenty of opportunities to practice and receive feedback on their new and/or improved skills.

The majority of technical skills required for jobs in this industry can be acquired during on-the-job training. This suggests that occupations within the transportation, warehousing and logistics industry are highly accessible to a wide array of individuals.

Competition between employers and industries for a limited workforce is also a challenge. Employers find that other industries and companies often recruit experienced workers. Some Pierce County employers cannot afford to pay the wages of large national employers. This competition for workforce is also geographic. Companies in Seattle or King County often pay slightly higher wages, which can be a draw for some workers. Pierce County employers effectively see themselves as a pipeline for the King County workforce.

- *Recommendation* – Partner with employers to develop marketing materials about the benefits of remaining employed (or seeking employment) with Pierce County employers.

Regional employers with strong connections to workforce systems and organizations get the best placement results. This includes having a robust understanding of industry. Stakeholders have found that by working with the workforce system, the community and other employers they can improve their own workforce systems and the system as a whole for the industry.

Stakeholders also noted that each specific segment of the transportation, warehousing and logistics industry requires a unique set of skills, and these skills are extremely diverse across the

industry. Thus workers from one segment of the industry may not be a good fit in other segments of the industry. For example, supervisors from a trucking company do not have to provide constant management to their employees, scattered around the country. For this reason, they are not accustomed to the amount of active management required in rail and often do not succeed. As a result, it is important for the workforce system and the educational system to have a strong understanding of the diversity of skills found within the industry to effectively prepare workers for each segment within the industry.

- *Recommendation* – Develop staff with expertise about this industry. Consider developing print materials that workforce development stakeholders and job seekers can use that describes career pathways, working conditions, required skills, training requirements and wages. Some of these materials could be focused on incumbent workers to help them understand specific skills deficits they may experience if intending to switch jobs.