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WESTERN WYOMING COMMUNITY COLLEGE

ECONOMIC OVERVIEW & PROGRAM GAP ANALYSIS

emsi

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EXECUTIVE SUMMARY

Western Wyoming Community College (WWCC) is located in the city of Rock Springs, WY and serves five counties in southwestern Wyoming. This report outlines the economy of this five-county region (Carbon, Lincoln, Sublette, Sweetwater, and Uinta Counties) and provides a “gap” analysis to determine how well the College’s program offerings are satisfying regional workforce demand. The report also offers recommendations for new program development. The following are some of the key findings of the analysis:

OVERVIEW OF REGIONAL ECONOMY

- The economy of the region served by WWCC (“the WWCC Economic Region”) is primarily driven by three industry sectors: Government; Mining, Quarrying, & Oil & Gas Extraction; and Construction. None of these industry sectors added new jobs between 2010 and 2015, and only Government and Construction are expected to grow through 2025. Other than these industries, the Agriculture, Forestry, Fishing & Hunting industry and the Accommodation & Food Services industry are both projected to lose jobs over the next decade. Overall the regional job growth is expected to be 5% over the next decade.
- Some mid and high-skilled occupational categories are projected to see dependable job growth over the next ten years, including community & social service occupations (24% job growth), healthcare practitioners & technical occupations (16% job growth), and health-care support occupations (15% job growth).
- Between 2015 and 2025, the highest numbers of average annual job openings for workers with postsecondary certificates and above are projected to occur within education, training, & library; office & administrative support; and sales & related occupations.
- Around 18% of residents in the area commute outside the WWCC Economic Region for work, and roughly 20% of the WWCC Economic Region workers reside

outside the area, indicating that there are economic links between the WWCC Economic Region and the surrounding communities for both in-commuters and out-commuters.

- The educational composition of the adult population in the WWCC Economic Region (people age 25 and older) has seen a small shift in recent years. Between 2010 and 2015, the proportion of adults with an associate degree decreased by 1.1 percentage points, but the proportion with a bachelor’s degree or graduate degree and higher increased by 0.6 and 0.5 percentage points, respectively. The proportion of adults with other levels of education changed marginally.

PROGRAM GAP ANALYSIS

- Between both postsecondary certificate level and associate degree level, there are a total of 14 programs associated with significant workforce gaps, with three programs having a gap at both levels. There were ten programs associated with significant workforce surpluses; two at the certificate level and eight at the associate degree level.
- There are seven certificate level programs that registered a significant workforce gap. Industrial Mechanics & Maintenance Technology has the largest gap (gap of 66; median hourly wage \$22.80). General Office Occupations & Clerical Services (gap of 33; median hourly wage \$16.02) and Petroleum Technology/Technician (gap of 26; median hourly wage \$30.18) are the second and third largest gaps at the certificate level.
- The two surpluses at the postsecondary certificate level are Licensed Practical/Vocational Nurse Training (surplus of 19) and Web Page, Digital/Multimedia & Information Resources Design (surplus of 12).
- There are seven associate degree programs that also registered a gap. The top three gaps are: General Busi-

ness Administration & Management (gap of 163; median hourly wage \$18.96), Industrial Mechanics & Maintenance Technology (gap of 68; median hourly wage \$22.80), and General Office Occupations & Clerical Services (gap of 37; median hourly wage \$16.02).

- The top three surpluses at the associate degree level are Elementary Education & Teaching (surplus of 32), General Psychology (surplus of 24), and Registered Nursing/Registered Nurse (surplus of 23). Some of the completers are likely getting jobs outside the WWCC Economic Region.
- There are four significant postsecondary certificate level areas of opportunity. Skilled trades and blue-collar

occupations like heavy & tractor-trailer truck drivers, operating engineers & other construction equipment operators, and teacher assistants appear to be under-supplied in the WWCC Economic Region.

- There are nine areas of opportunity at the associate degree level. Of these nine, none have a significant workforce gap. The top three of those opportunities are preschool teachers, except special education (gap of 5; median hourly wage \$15.48); forest & conservation technicians (gap of 3; median hourly wage \$15.47); and engineering technicians, except drafters, all other (gap of 2; median hourly wage \$32.92).

INTRODUCTION

Colleges face many challenges in their efforts to identify the training needs of their economic regions. They must account for regional economic trends and the changing quality of the workforce. Furthermore, as technology progresses, colleges need to address the increasingly complex and specialized skills required by employers. In light of these dynamics, an understanding of the regional economy and the demand for skilled labor is vital to the planning efforts of colleges seeking to adapt their program offerings to the requirements of an ever-changing workforce.

To gain better insight into economic conditions and workforce trends, Western Wyoming Community College (WWCC) partnered with Economic Modeling Specialists Intl. (Emsi) to conduct an economic overview of the College's Economic Region and a workforce "gap" analysis of the College's program offerings. Gap analysis is a technique used to assess the supply and demand of skilled workers and identify the educational programs that need to be adapted in order to fill any existing or future gaps. The analysis weighs the educational output of WWCC and other regional institutions against the number of job openings related to the institutions' program offerings to determine

whether an oversupply or an undersupply of skilled workers exists. The goal of the analysis is to provide WWCC with relevant data and information that it can use when solving problems and making decisions about current and future program development.

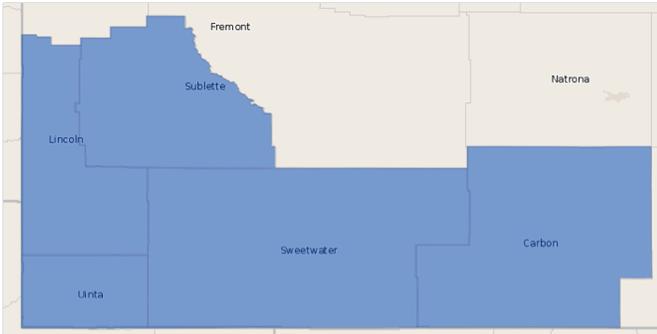
The regional backdrop used in this report is defined by Carbon, Lincoln, Sublette, Sweetwater, and Uinta Counties. This regional backdrop will be referred to as "the WWCC Economic Region." WWCC's main campus is located in Rock Springs, WY.¹ See Figure 1.1 for a map of the region.

The report is broken into two chapters. Chapter 1 provides an overview of employment in the WWCC Economic Region economy with high-level information about current and projected job trends, resident commuting patterns, and unemployment. Chapter 1 also provides further information specifically related to the educational characteristics of the population by gender and ethnicity. Chapter 2 summarizes the results of the program gap analysis and provides recommendations for possible future program needs. After a brief conclusion, detailed information and data are provided in the appendices.

¹ The industry and occupation data presented in this report reflect the number of jobs by place of work, not by place of residence. However, the report does assess the commuting patterns of residents to determine where they live and work both within and outside of the region.

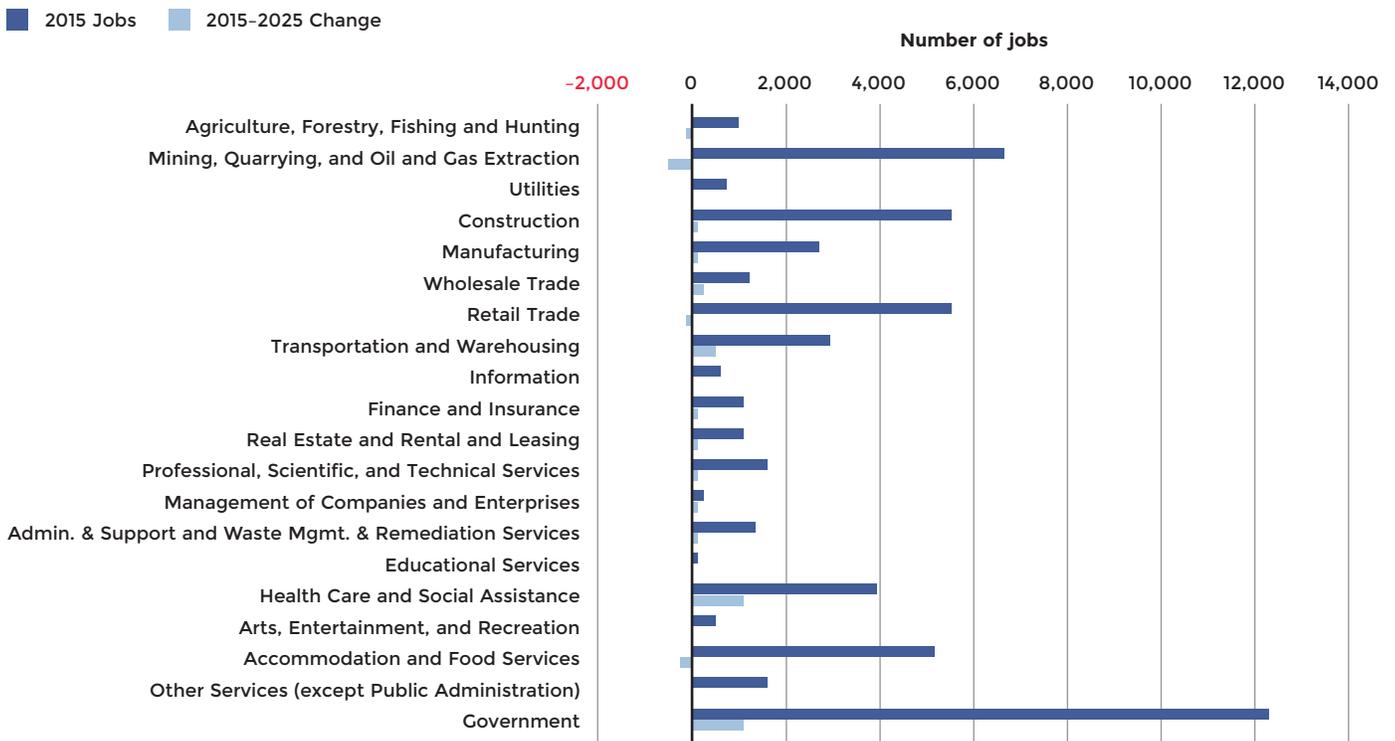
CHAPTER 1: OVERVIEW OF THE ECONOMY

FIGURE 1.1: MAP OF WWCC ECONOMIC REGION



This chapter provides a high-level overview of employment and demographics in the economy of the WWCC Economic Region, defined by Carbon, Lincoln, Sublette, Sweetwater, and Uinta Counties (see Figure 1.1). The goal of the chapter is to provide data on the economic and workforce employment trends that either already exist or are developing in the region. Such information is crucial in building awareness of the region’s labor force – both now and in the future – and identifying priority areas where educators can focus their attention. The chapter examines employment and demographics in the WWCC Economic Region according to the following five indicators: jobs by industry, jobs by occupation, commuting patterns, unemployment, and educational attainment.

FIGURE 1.2: JOBS AND JOB CHANGE BY INDUSTRY SECTOR IN WWCC ECONOMIC REGION, 2015 TO 2025



Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

JOBS BY INDUSTRY

Evaluating current and future employment by industry provides information on the economic diversification of a given region. Industries consist of groups of companies that are primarily engaged in producing the same product or service. The North American Industry Classification System (NAICS) is the structure used by the U.S. Census Bureau to classify establishments into industries based on their production process (although the final product or service is usually similar for the firms in a given industry). NAICS applies a six-digit hierarchical coding system to organize more than 1,100 detailed industries into 20 larger industry sectors. The breakdown of current and future employment

by major industry sector in the WWCC Economic Region appears in Table 1.1 and Figure 1.2.

As shown, the three largest industry sectors in the WWCC Economic Region are Government; Mining, Quarrying, & Oil & Gas Extraction; and Construction. Together these sectors made up 24,315 jobs or approximately 44% of total regional employment in 2015. None of these industry sectors added new jobs between 2010 and 2015, but Government and Construction sectors are projected to grow through 2025. Other industry sectors with notable projected growth are Health Care & Social Assistance (+1,102 jobs); Government (+1,049 jobs); and Transportation & Warehousing (+501 jobs). Two industry sectors that are expected to contract between 2015 and 2025 are Mining, Quarrying, &

TABLE 1.1: CURRENT AND PROJECTED JOBS AND JOB CHANGE BY INDUSTRY SECTOR IN NWC ECONOMIC REGION, 2015 TO 2025

NAICS	INDUSTRY	2015 JOBS	2025 JOBS	CHANGE	% CHANGE
11	Agriculture, Forestry, Fishing and Hunting	947	833	(114)	(12%)
21	Mining, Quarrying, and Oil and Gas Extraction	6,603	6,093	(510)	(8%)
22	Utilities	748	720	(28)	(4%)
23	Construction	5,492	5,673	181	3%
31	Manufacturing	2,738	2,819	81	3%
42	Wholesale Trade	1,215	1,441	226	19%
44	Retail Trade	5,486	5,407	(79)	(1%)
48	Transportation and Warehousing	2,922	3,423	501	17%
51	Information	648	652	4	1%
52	Finance and Insurance	1,058	1,149	91	9%
53	Real Estate and Rental and Leasing	1,075	1,242	167	16%
54	Professional, Scientific, and Technical Services	1,565	1,702	137	9%
55	Management of Companies and Enterprises	224	295	71	32%
56	Administrative and Support and Waste Management and Remediation Services	1,372	1,536	164	12%
61	Educational Services	130	148	18	14%
62	Health Care and Social Assistance	3,851	4,953	1,102	29%
71	Arts, Entertainment, and Recreation	427	430	3	1%
72	Accommodation and Food Services	5,124	4,884	(240)	(5%)
81	Other Services (except Public Administration)	1,628	1,637	9	1%
90	Government	12,220	13,269	1,049	9%
	Total	55,473	58,306	2,833	5%

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

TABLE 1.2: EMPLOYMENT CONCENTRATION BY INDUSTRY SECTOR IN WWCC ECONOMIC REGION, 2015 AND 2025

NAICS	INDUSTRY	2015 LOCATION QUOTIENT	2025 LOCATION QUOTIENT
11	Agriculture, Forestry, Fishing and Hunting	1.40	1.24
21	Mining, Quarrying, and Oil and Gas Extraction	24.17	24.20
22	Utilities	3.74	3.63
23	Construction	1.87	1.74
31	Manufacturing	0.62	0.64
42	Wholesale Trade	0.57	0.62
44	Retail Trade	0.95	0.89
48	Transportation and Warehousing	1.60	1.72
51	Information	0.63	0.62
52	Finance and Insurance	0.48	0.49
53	Real Estate and Rental and Leasing	1.17	1.29
54	Professional, Scientific, and Technical Services	0.44	0.41
55	Management of Companies and Enterprises	0.29	0.35
56	Administrative and Support and Waste Management and Remediation Services	0.40	0.39
61	Educational Services	0.09	0.09
62	Health Care and Social Assistance	0.56	0.60
71	Arts, Entertainment, and Recreation	0.46	0.43
72	Accommodation and Food Services	1.10	0.97
81	Other Services (except Public Administration)	0.61	0.58
90	Government	1.42	1.51

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

Oil & Gas Extraction (510 jobs lost) and Accommodation & Food Services (240 jobs lost).

Table 1.2 shows the employment concentration of the industry sectors in the WWCC Economic Region, measured in terms of location quotients (LQs). LQs are used to assess national competitiveness by comparing the concentration of employment in a given industry against the concentration of employment for that same industry across the nation. An LQ equal to one means that the percentage of total employment comprised by an industry in the region exactly matches the percentage of total employment comprised by that industry in the nation. An LQ greater than one means that the industry comprises a greater proportion of total employment in the region than it does in the nation.

High LQs (usually anything greater than 1.2) are an indication that the region has a comparative advantage

or specialization in certain industries relative to the rest of the nation, or potentially to other competing regions. When evaluated jointly with job counts and expected job growth, high LQs give a sense of the industry sectors that have the greatest potential for workforce investment and where regional economic development professionals are likely to be focusing their efforts. This information is of particular importance to educators seeking to engage in larger conversations with other organizations about aligning program offerings with workforce needs.

The following three industry sectors have the highest location quotients in the WWCC Economic Region: Mining, Quarrying, & Oil & Gas Extraction (24.17); Utilities (3.74); and Construction (1.87). All these industry sectors, as well as the Transportation & Warehousing, Government, and Agriculture, Forestry, Fishing & Hunting sectors are considered to have a comparative advantage. The relative

concentrations are expected to undergo some changes over the next decade, yet all these industry sectors are expected to be above the 1.2 cutoff.²

JOBS BY OCCUPATION

Researchers often refer to industry data to get a sense of regional economic trends, but in order to better understand the quality of the jobs contained within that region, some knowledge of occupations is needed. This is because the

² Note that because LQs represent regional employment relative to national employment, a decreasing LQ does not necessarily mean decreasing employment, and likewise an increasing LQ does not necessarily mean increasing employment.

earning levels and education requirements of workers bear more of a relationship to their occupation than to the industry in which they work. For example, the Manufacturing industry – while employing a number of assemblers and machine operators – also employs people in management occupations and in professional occupations such as engineering. All of these occupations have different pay scales and require varying levels of education and training.

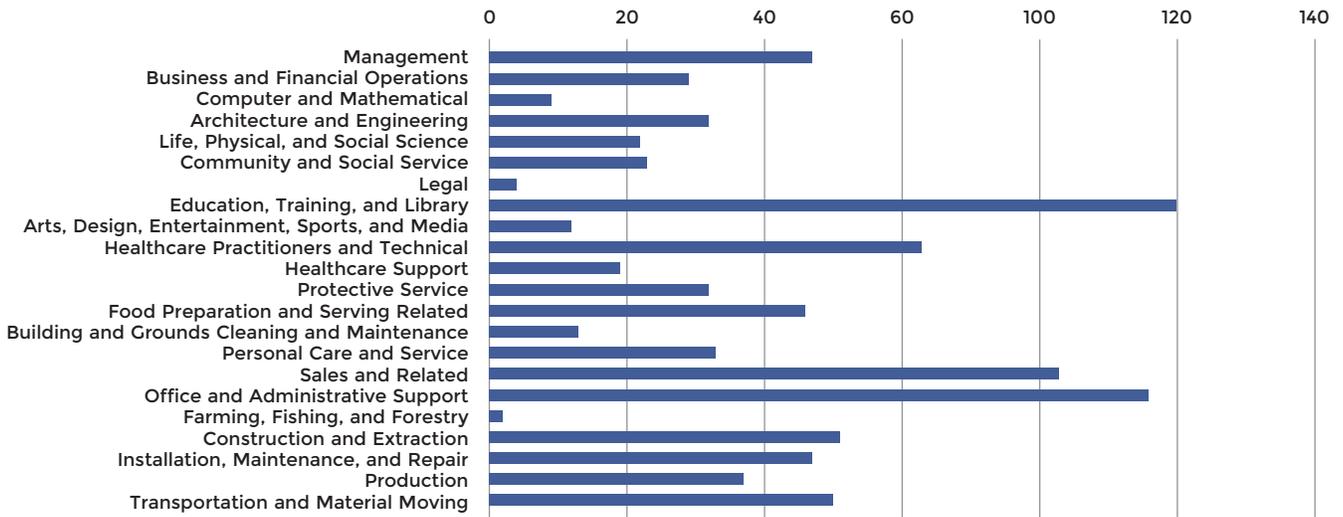
Federal agencies use the Standard Occupational Classification (SOC) system to classify workers into occupational categories based on work performed. The 2010 SOC system contains more than 800 detailed occupations organized according to a five-digit hierarchical coding structure. Detailed occupations with similar job duties are further combined to form 23 major groups. Table 1.3 shows the

TABLE 1.3: CURRENT AND PROJECTED JOBS, JOB CHANGE, AND MEDIAN HOURLY WAGE BY MAJOR OCCUPATION GROUP IN WWCC ECONOMIC REGION, 2015 TO 2025

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	MEDIAN HOURLY WAGE	AVERAGE ANNUAL OPENINGS
11-0000	Management	2,830	2,778	(52)	(2%)	\$34.14	56
13-0000	Business and Financial Operations	1,376	1,467	91	7%	\$26.98	35
15-0000	Computer and Mathematical	385	433	48	12%	\$26.99	11
17-0000	Architecture and Engineering	1,337	1,409	72	5%	\$31.78	38
19-0000	Life, Physical, and Social Science	803	804	1	0%	\$21.01	26
21-0000	Community and Social Service	614	761	147	24%	\$21.67	27
23-0000	Legal	267	275	8	3%	\$23.37	5
25-0000	Education, Training, and Library	3,514	4,044	530	15%	\$23.71	120
27-0000	Arts, Design, Entertainment, Sports, & Media	482	477	(5)	(1%)	\$16.88	14
29-0000	Healthcare Practitioners and Technical	2,010	2,339	329	16%	\$32.99	75
31-0000	Healthcare Support	1,090	1,255	165	15%	\$14.21	23
33-0000	Protective Service	1,262	1,358	96	8%	\$22.07	38
35-0000	Food Preparation and Serving Related	3,700	3,517	(183)	(5%)	\$9.63	55
37-0000	Building & Grounds Cleaning & Maintenance	1,800	1,980	180	10%	\$14.22	16
39-0000	Personal Care and Service	1,948	2,189	241	12%	\$11.12	39
41-0000	Sales and Related	4,387	4,471	84	2%	\$19.76	100
43-0000	Office and Administrative Support	6,003	6,421	418	7%	\$16.86	115
45-0000	Farming, Fishing, and Forestry	388	371	(17)	(4%)	\$18.26	2
47-0000	Construction and Extraction	7,586	7,248	(338)	(4%)	\$22.60	61
49-0000	Installation, Maintenance, and Repair	3,783	4,048	265	7%	\$23.29	56
51-0000	Production	3,070	3,053	(17)	(1%)	\$17.56	44
53-0000	Transportation and Material Moving	5,095	5,637	542	11%	\$22.66	60

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

FIGURE 1.3: AVERAGE ANNUAL OPENINGS BETWEEN 2015 AND 2025 FOR WORKERS WITH SOME COLLEGE AND ABOVE BY OCCUPATION GROUP IN WWCC ECONOMIC REGION



Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

breakdown of employment in the WWCC Economic Region by major group, with information on current and projected jobs, job change, average annual openings, and wage rates.

Construction & extraction occupations comprise the largest occupation group in the WWCC Economic Region at 7,586 jobs, followed by office & administrative support occupations at 6,003 jobs. Neither of these occupation groups ranks among the highest paid, however. Management occupations have median earnings of \$34.14 an hour, the highest on the regional pay scale. Healthcare practitioners & technical occupations have median earnings of \$32.99 an hour. Community & social service occupations and healthcare practitioners & technical occupations are expected to have the highest regional growth over the next 10 years (24% and 16% growth, respectively).

Figure 1.3 provides a look at the average annual job openings for workers with some college or above by occupation group. Job openings refer to new jobs due to growth plus replacement jobs due to worker turnover. Between 2015 and 2025, the occupations with the highest number of average annual job openings for workers with some college or above occurs in education, training, & library; office & administrative support occupations; and sales & related occupations.

COMMUTING PATTERNS

The Longitudinal Employer-Household Dynamics (LEHD) program³ at the U.S. Census Bureau provides information on the residential and employment locations of workers. “Jobs by place of work” refers to where residents of the region commute to work, and “Jobs by place of residence” refers to where workers in the region live. Data for the WWCC Economic Region appears in Tables 1.4 and 1.5, with the same information displayed in Figures 1.4 and 1.5.

Approximately 17.5% of residents commute outside the WWCC Economic Region for work, indicating that there are economic links between the Economic Region and surrounding communities. Nearly half of the residents work in Sweetwater County (41.1%), and a significant portion of residents work in Uinta County (15.0%). Table 1.4 and Figure 1.4 display the top ten employment counties for WWCC Economic Region residents.

Table 1.5 and Figure 1.5 display the top ten counties by place of residency. Of the people who work in the WWCC Economic Region, 80.5% also live in the region. Sweetwater County, where WWCC is located, also houses over a third

3 LEHD is an innovative program that uses modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys while protecting the confidentiality of people and firms that provide the data.

FIGURE 1.4: JOBS BY PLACE OF WORK

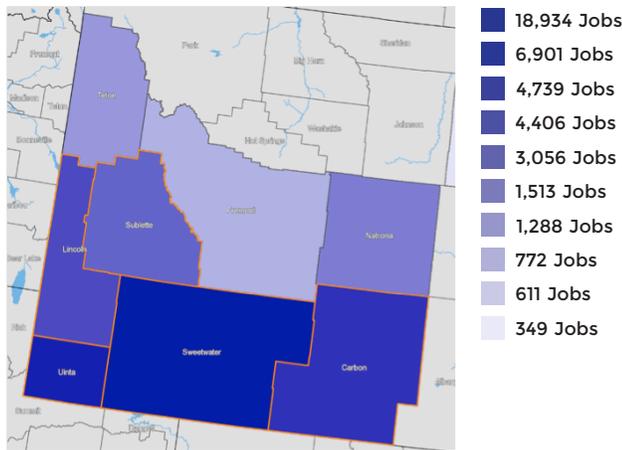


TABLE 1.4: JOBS BY PLACE OF WORK

COUNTY	JOBS	COMMUTE SHARE
Sweetwater County, WY	18,934	41.1%
Uinta County, WY	6,901	15.0%
Carbon County, WY	4,739	10.3%
Lincoln County, WY	4,406	9.6%
Sublette County, WY	3,056	6.6%
Natrona County, WY	1,513	3.3%
Teton County, WY	1,288	2.8%
Fremont County, WY	772	1.7%
Laramie County, WY	611	1.3%
Campbell County, WY	349	0.8%
All Other Locations	3,514	7.6%

Source: Census LEHD

of the region’s workers (36.6%). Uinta County houses 17.1% of the workers in the Economic Region. Natrona County supplies the most commuters from outside the area at 3.0%.

Figure 1.6 presents the inflow and outflow of jobs to and from the WWCC Economic Region. There are 47,241 jobs in the region with 38,036 of these jobs filled by residents and 9,205 jobs going to people living outside the region. Additionally, 8,047 residents commute outside the region for work. The figure clearly illustrates the fact that more workers in-commute than out-commute.

FIGURE 1.5: JOBS BY PLACE OF RESIDENCE

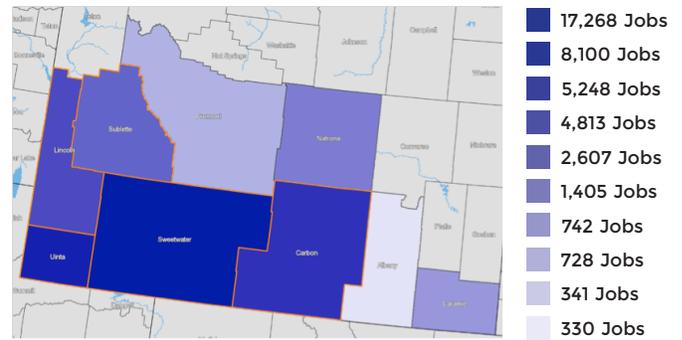
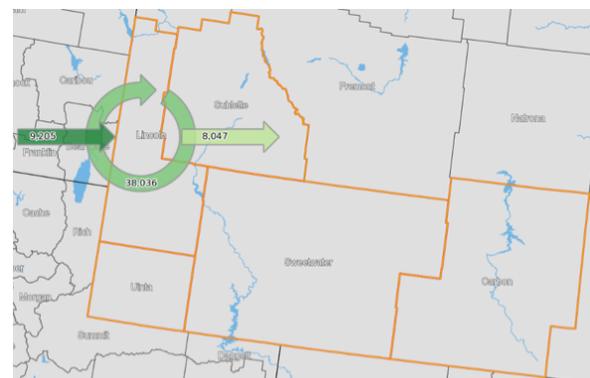


TABLE 1.5: JOBS BY PLACE OF RESIDENCE

COUNTY	COUNT	COMMUTE SHARE
Sweetwater County, WY	17,268	36.6%
Uinta County, WY	8,100	17.1%
Carbon County, WY	5,248	11.1%
Lincoln County, WY	4,813	10.2%
Sublette County, WY	2,607	5.5%
Natrona County, WY	1,405	3.0%
Laramie County, WY	742	1.6%
Fremont County, WY	728	1.5%
Salt Lake County, UT	341	0.7%
Albany County, WY	330	0.7%
All Other Locations	5,659	12.0%

Source: Census LEHD

FIGURE 1.6: IN-FLOW/OUT-FLOW JOB COUNT



- 9,205 - Employed in the Economic Region but Living Outside
- 8,047 - Living in the Economic Region but Employed Outside
- 38,036 - Living and Employed in the Economic Region

UNEMPLOYMENT

Data on unemployment give researchers an idea of where skills mismatches may exist in the region. Unemployment data can also provide important context when identifying the training programs that are best suited to transitioning unemployed workers into in-demand occupations.

Table 1.6 and Figure 1.7, on the next page, present the number of people unemployed by industry sector in the WWCC Economic Region. Data reflect November 2015 and follow the same methodology used by the federal statistical agencies to determine the number of workers in an industry that are not currently employed. The unemployment rate is not provided because it is difficult to accurately determine the size of the labor force in a given industry on a monthly basis. Rather than the unemployment rate,

the percent of all unemployed for the region and for the nation are provided to display which industry sectors have the highest concentration of unemployed workers.

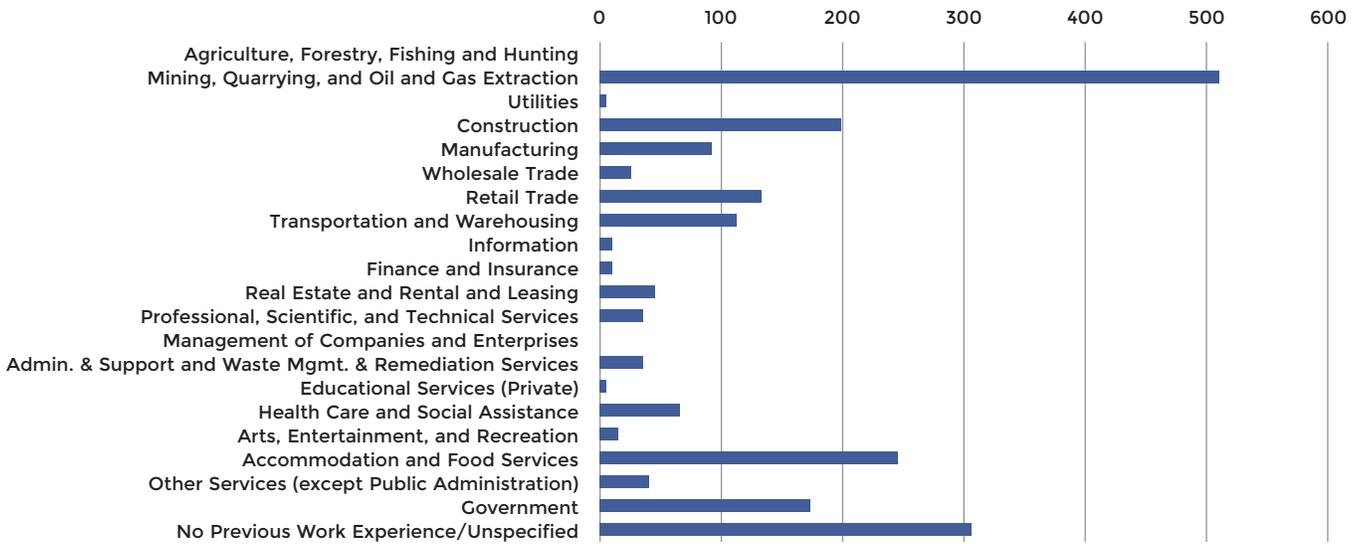
As shown in Table 1.6, the category with the highest number of unemployed is in Mining, Quarrying, & Oil & Gas Extraction. The second highest number of unemployed is in a non-industry labeled as “No Previous Work Experience/Unspecified.” This is simply a catch-all category for which reliable unemployment data are unavailable. The Accommodation & Food Services sector has the third highest number of unemployed, though it is typically common for this industry or industries like Retail Trade and Administrative & Support & Waste Management & Remediation Services to have a high percentage of low-skill jobs that require little to no education and training, thus making them more vulnerable to worker turnover.

TABLE 1.6: NUMBER OF UNEMPLOYED WORKERS BY INDUSTRY SECTOR IN WWCC ECONOMIC REGION

NAICS	INDUSTRY	NUMBER OF UNEMPLOYED	% OF UNEMPLOYED	NATIONAL % OF UNEMPLOYED
11	Agriculture, Forestry, Fishing and Hunting	1	0%	1%
21	Mining, Quarrying, and Oil and Gas Extraction	509	25%	1%
22	Utilities	4	0%	0%
23	Construction	200	10%	6%
31	Manufacturing	92	4%	10%
42	Wholesale Trade	28	1%	2%
44	Retail Trade	135	7%	11%
48	Transportation and Warehousing	113	5%	3%
51	Information	11	1%	2%
52	Finance and Insurance	10	0%	3%
53	Real Estate and Rental and Leasing	45	2%	1%
54	Professional, Scientific, and Technical Services	37	2%	5%
55	Management of Companies and Enterprises	0	0%	0%
56	Administrative and Support and Waste Management and Remediation Services	35	2%	7%
61	Educational Services (Private)	5	0%	2%
62	Health Care and Social Assistance	64	3%	7%
71	Arts, Entertainment, and Recreation	14	1%	2%
72	Accommodation and Food Services	244	12%	9%
81	Other Services (except Public Administration)	43	2%	4%
90	Government	174	8%	8%
99	No Previous Work Experience/ Unspecified	306	15%	16%

Source: Emsi Total Unemployment (11/2015)

FIGURE 1.7: NUMBER OF UNEMPLOYED WORKERS BY INDUSTRY SECTOR IN WWCC ECONOMIC REGION



Source: Emsi Total Unemployment (11/2015)

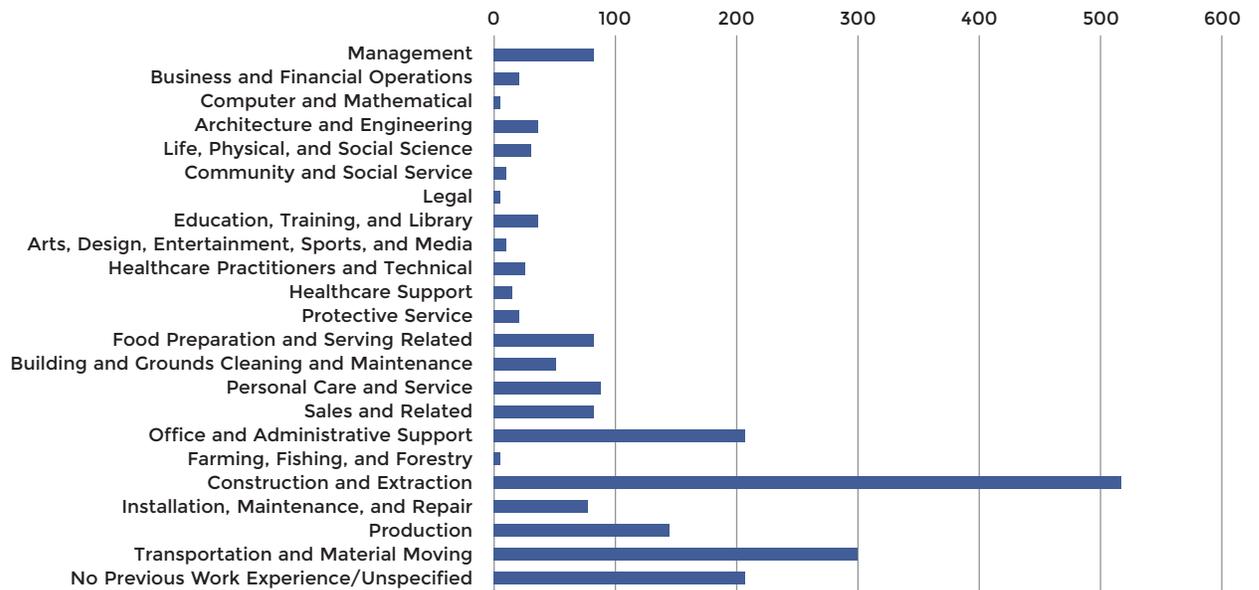
For industry sectors such as Construction, seasonal jobs or jobs of short duration may also lead to high numbers of unemployed workers.

Only five industry sectors in the WWCC Economic Region exceeded the national concentration of unemployed workers. Mining, Quarrying, & Oil & Gas Extraction and Construction have a much higher proportion of unemployed workers than at the national level. On the other

hand, Manufacturing and Administrative & Support & Waste Management & Remediation Services actually have a lower proportion of unemployed workers than at the national level.

Table 1.7, on the next page, and Figure 1.8 provide a breakdown of unemployment in the WWCC Economic Region by major occupation group. As shown, occupational groups that contain the highest number of unemployed

FIGURE 1.8: NUMBER OF UNEMPLOYED WORKERS BY OCCUPATION GROUP IN WWCC ECONOMIC REGION



Source: Emsi Total Unemployment (11/2015)

TABLE 1.7: NUMBER OF UNEMPLOYED WORKERS BY OCCUPATION GROUP IN WWCC ECONOMIC REGION

SOC	OCCUPATION	NUMBER OF UNEMPLOYED	% OF UNEMPLOYED	NATIONAL % OF UNEMPLOYED
11-0000	Management	83	4%	6%
13-0000	Business and Financial Operations	21	1%	3%
15-0000	Computer and Mathematical	3	0%	1%
17-0000	Architecture and Engineering	38	2%	1%
19-0000	Life, Physical, and Social Science	30	1%	0%
21-0000	Community and Social Service	10	0%	1%
23-0000	Legal	7	0%	1%
25-0000	Education, Training, and Library	36	2%	3%
27-0000	Arts, Design, Entertainment, Sports, and Media	10	0%	2%
29-0000	Healthcare Practitioners and Technical	24	1%	2%
31-0000	Healthcare Support	16	1%	2%
33-0000	Protective Service	21	1%	1%
35-0000	Food Preparation and Serving Related	82	4%	7%
37-0000	Building and Grounds Cleaning and Maintenance	54	3%	5%
39-0000	Personal Care and Service	86	4%	4%
41-0000	Sales and Related	85	4%	10%
43-0000	Office and Administrative Support	209	10%	15%
45-0000	Farming, Fishing, and Forestry	3	0%	1%
47-0000	Construction and Extraction	520	25%	8%
49-0000	Installation, Maintenance, and Repair	80	4%	2%
51-0000	Production	147	7%	6%
53-0000	Transportation and Material Moving	299	14%	7%
99-0000	No Previous Work Experience/Unspecified	210	10%	12%

Source: Emsi Total Unemployment (11/2015)

workers are construction & extraction occupations (520 unemployed workers), transportation & material moving occupations (299 unemployed workers), and the no previous work experience/unspecified occupation category (210 unemployed workers). Though some of these occupational groups have a relatively high number of annual openings (see Figure 1.3), high turnover still leads to a high number of unemployed.

A number of occupation groups have a concentration of unemployed workers that is either at or below the national average, including sales & related occupations,

office & administrative support occupations, and food preparation & serving related occupations. Construction & extraction occupations have a much higher concentration of unemployed than at the national level.

EDUCATIONAL ATTAINMENT

This section describes the educational attainment of the population in the WWCC Economic Region for adults aged 25 years and older. This information is useful for educators

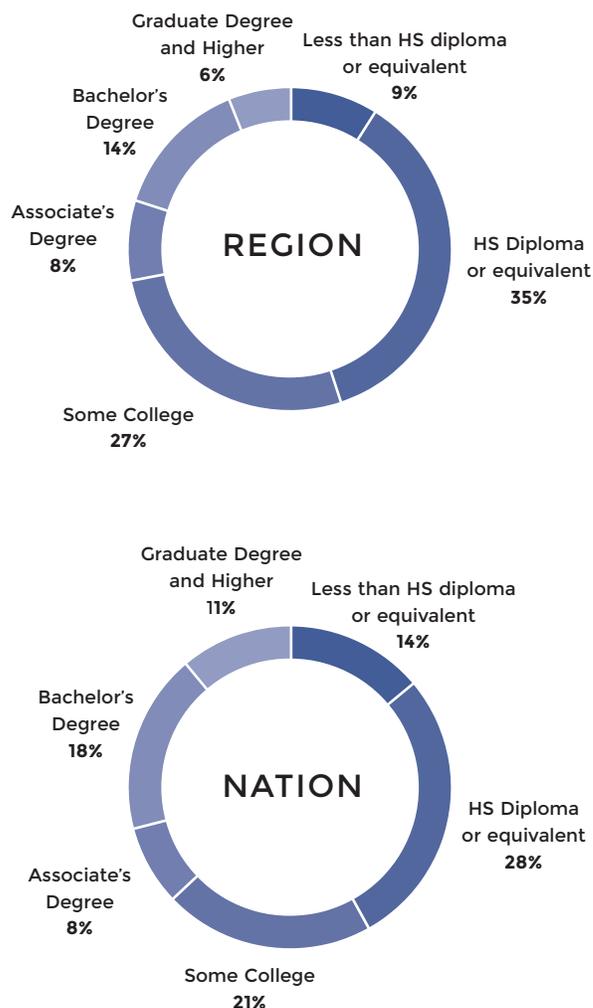
targeting specific population groups that have low education levels. Educational attainment data in this section are presented by gender and by ethnicity and are broken out according to the following categories: 1) less than a high school degree, 2) high school degree, 3) some college,⁴ 4) associate degree, 5) bachelor’s degree, and 6) graduate degree and higher.

Overall Educational Attainment

Table 1.8 and Figure 1.9 display the educational attainment of the overall adult population in the WWCC Economic Region, without reference to gender and ethnicity. In the WWCC Economic Region, the percentage of the adult population with a high school diploma or less is 45%, which is higher than the national average of 44%. These data suggest there is still an opportunity for educators in the WWCC Economic Region to boost the percentage of adults with an associate degree or higher (currently this percentage sits at 28% for the region overall). Out of all the education categories in Table 1.8, the people that are most likely to seek education and training from WWCC are those in the “Less than high school diploma,” “High school diploma,” and “Some college” categories. Together these categories total 53,335 people, or 72% of the entire adult population in the region. Between 2010 and 2015, the proportion of the overall adult population with an “Associate degree” decreased by 1.1 percentage points, but the proportion of adults with a “Bachelor’s degree” or a “Graduate degree and higher” increased by 0.6 and 0.5

4 The “Some college” category includes individuals who attended college but did not successfully obtain a degree and individuals who have received a postsecondary vocational award or professional certification but did not receive an associate or bachelor’s degree.

FIGURE 1.9: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN WWCC ECONOMIC REGION



Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

TABLE 1.8: BREAKDOWN OF ADULT POPULATION IN WWCC ECONOMIC REGION BY EDUCATIONAL ATTAINMENT, 2010 AND 2015

EDUCATION LEVEL	2010 POPULATION	2010 % DISTRIBUTION	2015 POPULATION	2015 % DISTRIBUTION	POPULATION CHANGE	% DISTRIBUTION CHANGE
Less than HS diploma or equivalent	6,726	10%	6,940	9%	214	(0.2%)
High school diploma or equivalent	24,692	35%	26,274	35%	1,583	0.3%
Some college	19,149	27%	20,121	27%	972	(0.1%)
Associate's degree	6,687	9%	6,274	8%	(414)	(1.1%)
Bachelor's degree	9,476	13%	10,448	14%	972	0.6%
Graduate degree or higher	3,758	5%	4,353	6%	595	0.5%

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

percentage points, respectively.⁵ Meanwhile, the proportion of the adult population with a “High school diploma” increased by 0.3 percentage points and those with “Less than HS diploma” or “Some college” decreased by 0.2 and 0.1 percentage points, respectively.

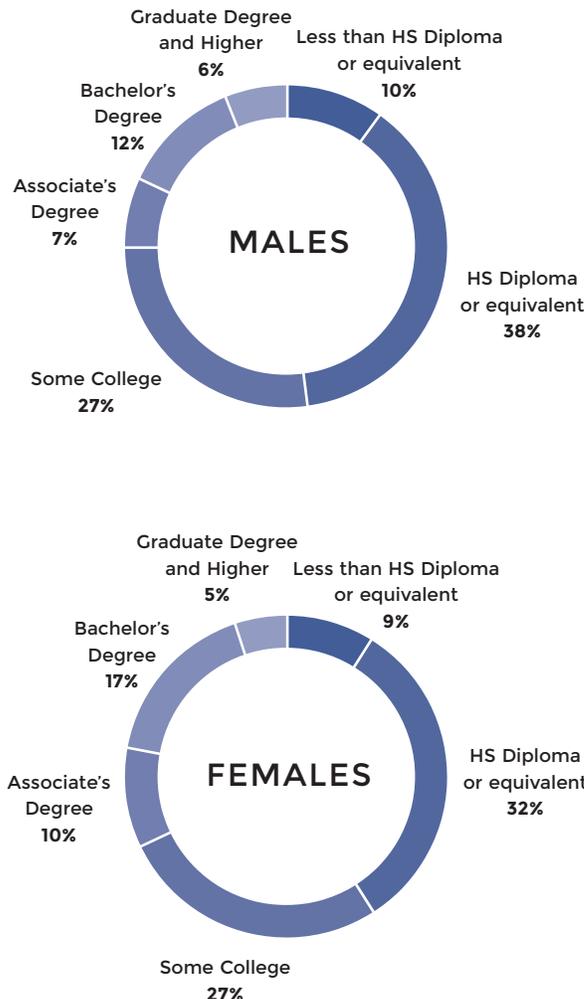
Educational Attainment by Gender

The distribution of educational attainment by gender is fairly even in the WWCC Economic Region. Males are more likely to have “Less than high school diploma,” a “High school diploma or equivalent,” or a “Graduate degree and higher” level of education while females are more likely to have “Some college,” an “Associate degree,” or a “Bachelor’s degree” levels. This information appears in Table 1.9 and Figure 1.10.

Educational Attainment by Ethnicity

Figure 1.11 and Table 1.10, on the next page, display the educational attainment of the adult population by ethnicity. The “Asian, Non-Hispanics” ethnicity category has the highest percentage of adults with post-secondary degrees (60%). “White, Non-Hispanic” category follows with 30%. The “Black, Non-Hispanic” category has the lowest levels of education attainment. For this group, only 12% of the adult population has a post-secondary degree and 53% has a high school diploma or less. There are many opportunities to increase educational attainment in all ethnic groups.

FIGURE 1.10: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN THE WWCC ECONOMIC REGION BY GENDER



5 The column labeled “% Change” in Table 1.8 refers to the proportional change, not to the percent change between 2010 and 2015. For example, if a category comprised 20% of the total adult population in 2010 and 25% of the total adult population in 2015, the proportional change is equal to the difference between the two values (in this example, 5%).

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

TABLE 1.9: BREAKDOWN OF ADULT POPULATION IN WWCC ECONOMIC REGION BY EDUCATIONAL ATTAINMENT AND GENDER

EDUCATION LEVEL	MALES	PROPORTION	FEMALES	PROPORTION
Less than high school diploma or equivalent	3,781	10%	3,159	9%
High school diploma or equivalent	14,817	38%	11,457	32%
Some college	10,516	27%	9,605	27%
Associate's degree	2,869	7%	3,405	10%
Bachelor's degree	4,596	12%	5,852	17%
Graduate degree and higher	2,522	6%	1,830	5%

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

FIGURE 1.11: EDUCATIONAL ATTAINMENT OF ADULT POPULATION IN WWCC ECONOMIC REGION BY ETHNICITY

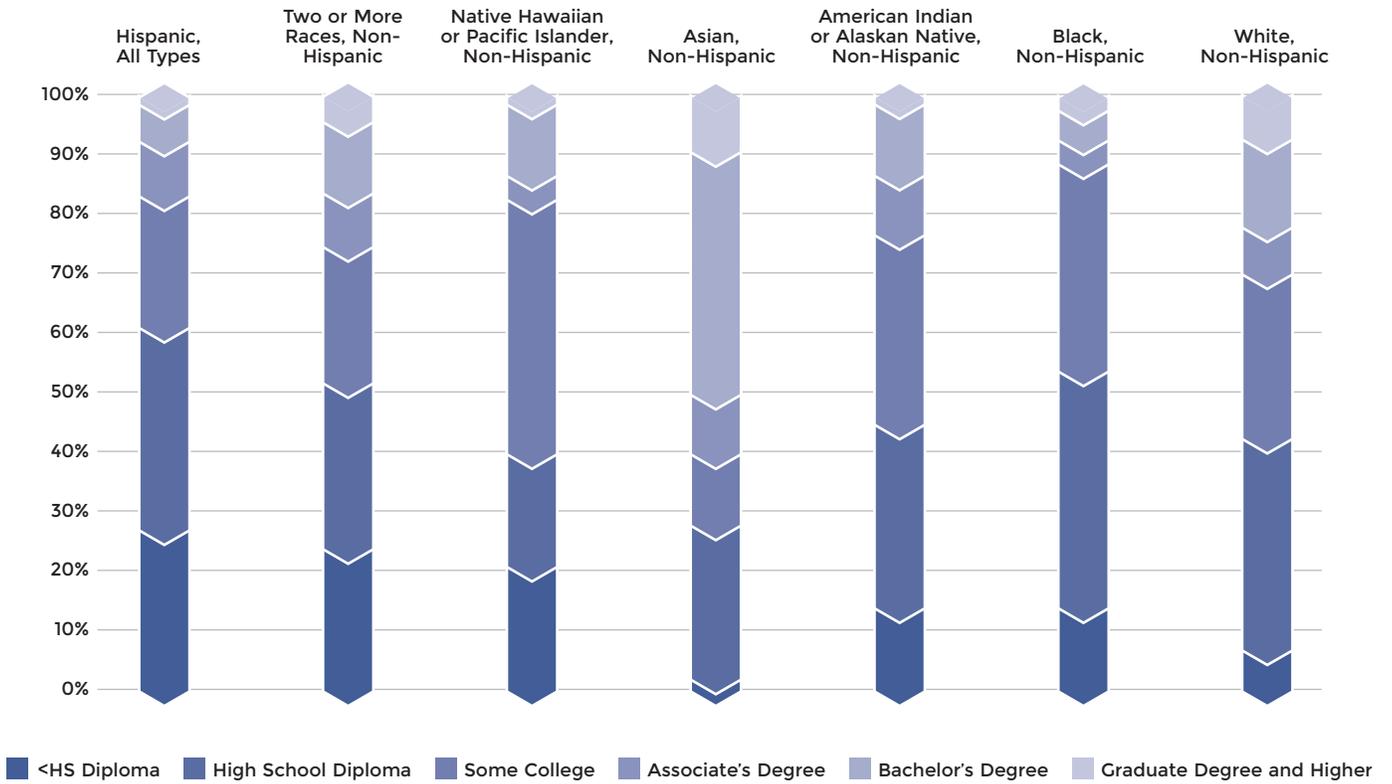


TABLE 1.10: BREAKDOWN OF ADULT POPULATION IN WWCC ECONOMIC REGION BY EDUCATIONAL ATTAINMENT AND ETHNICITY

		< HS DIPLOMA	HIGH SCHOOL DIPLOMA	SOME COLLEGE	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	GRADUATE DEGREE AND HIGHER
White, Non-Hispanic	COUNT	4,414	22,666	17,579	5,313	9,565	4,162
	PERCENT	7%	36%	28%	8%	15%	7%
Black, Non-Hispanic	COUNT	135	387	341	43	48	24
	PERCENT	14%	40%	35%	4%	5%	2%
American Indian or Alaskan Native, Non-Hispanic	COUNT	85	184	187	56	68	8
	PERCENT	14%	31%	32%	10%	12%	1%
Asian, Non-Hispanic	COUNT	11	131	62	49	207	47
	PERCENT	2%	26%	12%	10%	41%	9%
Native Hawaiian or Pacific Islander, Non-Hispanic	COUNT	12	11	25	3	7	1
	PERCENT	21%	19%	43%	4%	12%	1%
Two or More Races, Non-Hispanic	COUNT	159	184	148	57	77	28
	PERCENT	24%	28%	23%	9%	12%	4%
Hispanic, All Types	COUNT	2,124	2,711	1,781	752	476	84
	PERCENT	27%	34%	22%	9%	6%	1%

Source: Emsi QCEW, Non-QCEW, and Self-Employed Data 2015.4

CHAPTER 2:

PROGRAM GAP ANALYSIS

The results that appear in this chapter present a focused view of the program groups projected to have a regional gap or surplus. Programs are analyzed at two different levels: postsecondary vocational certifications and associate degrees, according to the training level offered at WWCC.

Each table includes the CIP code and title, the average annual openings associated with that program (which have been de-duplicated using the process outlined in Appendix 3), the average annual completers between 2012 and 2014,⁶ and finally the gap or surplus figure for the WWCC Economic Region. If the numbers are positive, there is a shortage or “gap” of completers—i.e., there are more job openings in those occupations than there are graduates or completers. If the numbers are negative, then there are fewer annual job openings compared to the “surplus” of completers for those program groups. The median hourly wage rate for related occupations is included. Due to data limitations, the wages are aggregated for all education levels.

INTERPRETING GAP/SURPLUS ANALYSIS RESULTS

The gap analysis is intended to serve as a point of departure for WWCC as the College discusses regional workforce needs. A surplus or deficit of workers in a particular category does not necessarily indicate a problem for the region, and it is important that each occupation group be evaluated on a case-by-case basis. Evaluation of the program supply (surplus and gaps) will provide an understanding of the role skilled occupations play in economic sustainability and growth.

Other information should also be considered when evaluating these surpluses and gaps. For example, only the education supply pipeline is considered in this analysis because these numbers can be tracked at the county

and school level. However, other sources—unemployed workers, industry trained pipelines, in-migrators, and job changers from other occupational categories can also be a source of skilled workers. These types of considerations are useful when evaluating specific types of occupations. Unfortunately, secondary data sources (e.g., regional, state, and federal data) do not account for this, and primary data collection methods (i.e., interviews and surveys) are among the only ways to obtain information on this type of supply pipeline.

Lastly, it is important to keep in mind that the labor market is not so simple or efficient that one could expect supply and demand to be at perfect equilibrium for any extended period of time. As such, as a general rule of thumb, only programs with considerable gaps or surpluses should be considered long-term strategic issues worthy of closer examination. Given the size and characteristics of the WWCC Economic Region, any gap or surplus within 10 jobs either above or below zero should be considered within the normal range of labor market fluctuations.

Once evaluated internally within the College, specific implications should be considered for programs with substantial surpluses or gaps. These implications include:

- **Surplus:** Oversupply of specific education completers may lead to higher attrition rates (i.e., brain drain). In other words, the region is educating a workforce that is leaving after program completion because of a lack of jobs. Note: In the analysis of the WWCC Economic Region, a surplus of completers may indicate the need for some Economic Region residents to commute outside of the Economic Region to find job opportunities. The commuting pattern flows described in Chapter 1 suggest that this is possible.
- **Gap:** Undersupply of specific program completers may lead to missed opportunities for economic growth and put stress on local businesses to find necessary human capital elsewhere. In other words, the region’s education institutions are not providing the necessary work-

⁶ The average annual completers data was updated to the years 2013 to 2015 and reviewed for accuracy by WWCC.

force for the region, thereby shifting the burden on the industries to move workers from other economies to fill the needed occupations. This translates into higher human resources costs and decreased efficiencies in the economic system. This also provides an opportunity for institutions to develop new programs and/or strengthen their current programs.

POSTSECONDARY CERTIFICATE LEVEL GAP ANALYSIS

Figure 2.1 provides an illustration that summarizes the top gap for WWCC postsecondary certificate level programs. There are seven gaps identified at this education level.

Table 2.1 lists supply and demand for all certificate

FIGURE 2.1: SUPPLY AND DEMAND FOR WWCC POSTSECONDARY CERTIFICATE LEVEL PROGRAMS

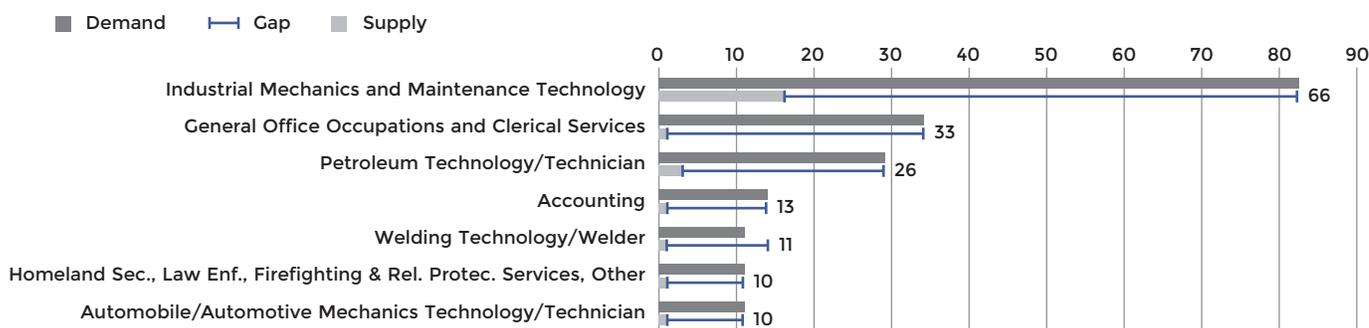


TABLE 2.1: SUPPLY AND DEMAND FOR WWCC POSTSECONDARY CERTIFICATE LEVEL PROGRAMS

CIP	PROGRAM	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	WWCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
47.0303	Industrial Mechanics and Maintenance Technology	82	16	16	66	\$22.80
52.0408	General Office Occupations and Clerical Services	34	1	1	33	\$16.02
15.0903	Petroleum Technology/ Technician	29	3	3	26	\$30.18
52.0301	Accounting	14	1	1	13	\$17.75
48.0508	Welding Technology/ Welder	11	1	1	11	\$23.44
43.9999	Homeland Security, Law Enforcement, Firefighting and Related Protective Services, Other	11	1	1	10	\$12.80
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	11	1	1	10	\$19.41
51.0716	Medical Admin./ Executive Assist. & Medical Secretary	11	3	3	8	\$15.07
47.0101	Electrical/ Electronics Equipment Installation and Repair, General	16	10	10	6	\$29.94
52.0406	Receptionist	8	3	3	5	\$13.45
47.0605	Diesel Mechanics Technology/ Technician	4	2	2	3	\$21.26
47.0614	Alternative Fuel Vehicle Technology/ Technician	2	1	1	1	\$21.19
31.0505	Kinesiology and Exercise Science	3	3	3	0	\$13.59
52.0204	Office Management and Supervision	6	7	7	(1)	\$20.82
23.1302	Creative Writing	0	1	1	(1)	\$15.59
47.9999	Mechanic & Repair Technologies/ Technicians, Other	3	9	9	(6)	\$11.86
16.0101	Foreign Languages and Literatures, General	0	7	7	(7)	\$18.06
11.0801	Web Page, Digital/ Multimedia and Information Resources Design	1	13	13	(12)	\$9.98
51.3901	Licensed Practical/ Vocational Nurse Training	3	22	22	(19)	\$20.66

Source: Emsi Gap Analysis Model

Numbers may not sum due to rounding. Some median hourly earnings figures are not available.

program types for which WWCC offers a training program. While other program groups in the region may face larger surpluses, WWCC did not offer any of the programs. Table 2.3 addresses programs that are not currently being offered but which would address considerable regional workforce gaps. At the certificate level, WWCC is only institution offering programs and as such, their completers comprise 100% of total regional supply.

As shown in Table 2.1, Industrial Mechanics & Maintenance Technology has the largest gap in the WWCC Economic Region. There are 82 annual openings but only 16 average annual completers from WWCC. Along with General Office Occupations & Clerical Services (gap of 33; median hourly wage \$16.02) and Petroleum Technology/Technician (gap of 26; median hourly wage \$30.18), these are the top three gaps in the region. It is important to keep wages in mind when reviewing the gap analysis. In the instance of Homeland Security, Law Enforcement, Firefighting & Related Protective Services, Other, there is a significant gap, but because the wages of the occupations associated with this program are relatively low (less than \$14 an hour), the returns to education may not be justified, and by extension, expanding the program may not be warranted.

There are often some programs preparing students for fields where they may compete with many other graduates. There are two programs at WWCC that are training for occupations with a significant surplus of workers. Licensed Practical/Vocational Nurse Training has the largest surplus of 19. WWCC produces 22 completers a year for the three annual openings resulting in the significant surplus. Web Page, Digital/Multimedia & Information Resources Design has the second significant surplus at the certificate level (surplus of 12). It is possible that the additional annual openings in areas outside of the WWCC Economic Region

are being filled by WWCC completers. A review of placement rates could provide additional information.

ASSOCIATE LEVEL GAP ANALYSIS

Figure 2.2 below provides an illustration of the seven gaps greater than 10 jobs each for WWCC associate degree level programs.

Similar to the previous table, Table 2.2, on the next page, displays supply and demand for all associate level programs for which WWCC provides training. Again, the table only includes program groups available at WWCC. Other program groups in the region may face larger gaps, but WWCC does not offer the program. Table 2.3 addresses programs that are not currently being offered but which would address considerable regional workforce gaps. Again, WWCC is the only institution offering associate degree level programs in the region, and as such, their completers comprise 100% of total regional supply.

The top three programs that are training for under-supplied occupations at the associate degree level are General Business Administration & Management (gap of 163; median hourly wage \$18.96), Industrial Mechanics & Maintenance Technology (gap of 68; median hourly wage \$22.80), and General Office Occupations & Clerical Services (gap of 37; median hourly wage \$16.02).

For the WWCC Economic Region, there are only eight fields at the associate level with a significant surplus. The largest reported surplus is in Elementary Education & Teaching. There is one annual opening compared to 33 regional completers from WWCC. General Psychology has the second largest surplus (surplus of 24). Registered Nursing/Registered Nurse is the third largest surplus in the WWCC Economic Region (surplus of 23). As alluded to

FIGURE 2.2: SUPPLY AND DEMAND FOR WWCC ASSOCIATE DEGREE LEVEL PROGRAMS

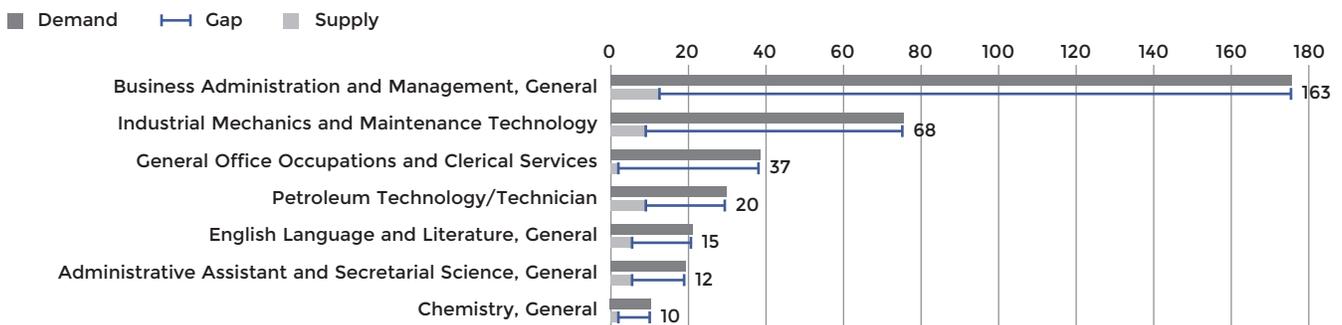


TABLE 2.2: SUPPLY AND DEMAND FOR WWCC ASSOCIATE DEGREE LEVEL PROGRAMS

CIP	PROGRAM	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	WWCC COMPLETERS	TOTAL GAP OR SURPLUS	MEDIAN HOURLY WAGE
52.0201	Business Administration and Management, General	175	12	12	163	\$18.96
47.0303	Industrial Mechanics and Maintenance Technology	76	8	8	68	\$22.80
52.0408	General Office Occupations and Clerical Services	38	1	1	37	\$16.02
15.0903	Petroleum Technology/Technician	29	9	9	20	\$30.18
23.0101	English Language and Literature, General	21	6	6	15	\$14.10
52.0401	Admin. Assistant and Secretarial Science, General	19	6	6	12	\$16.50
40.0501	Chemistry, General	11	1	1	10	\$32.39
47.0604	Automobile/Automotive Mechanics Technology/Tech.	11	3	3	8	\$19.41
48.0508	Welding Technology/Welder	12	3	3	8	\$23.44
52.1401	Marketing/Marketing Management, General	8	1	1	8	\$15.38
51.1101	Pre-Dentistry Studies	10	4	4	6	\$46.16
52.0301	Accounting	16	10	10	5	\$17.75
51.0716	Medical Admin./Executive Assist. & Medical Secretary	11	5	5	5	\$15.07
9.0401	Journalism	1	1	1	1	\$6.57
45.0901	International Relations and Affairs	0	0	0	(0)	\$5.40
51.1104	Pre-Veterinary Studies	1	1	1	(0)	\$23.52
44.0701	Social Work	2	2	2	(0)	\$19.14
50.0711	Ceramic Arts and Ceramics	0	0	0	(0)	\$-
26.0709	Wildlife Biology	0	1	1	(1)	\$28.00
3.0104	Environmental Science	1	1	1	(1)	\$24.01
40.0601	Geology/Earth Science, General	0	1	1	(1)	\$25.93
47.0605	Diesel Mechanics Technology/Technician	3	4	4	(1)	\$21.26
22.0001	Pre-Law Studies	0	1	1	(1)	\$22.02
45.0301	Archeology	0	1	1	(1)	\$28.09
51.1103	Pre-Pharmacy Studies	1	3	3	(2)	\$34.03
54.0101	History, General	0	2	2	(2)	\$-
45.1001	Political Science and Government, General	0	2	2	(2)	\$-
27.0101	Mathematics, General	0	2	2	(2)	\$8.49
16.0101	Foreign Languages and Literatures, General	0	2	2	(2)	\$18.06
45.0201	Anthropology	0	2	2	(2)	\$28.09
50.0301	Dance, General	1	4	4	(3)	\$9.89
51.3817	Nursing Education	0	3	3	(3)	\$26.91
45.0101	Social Sciences, General	0	3	3	(3)	\$-
50.0901	Music, General	0	3	3	(3)	\$17.99
11.0101	Computer and Information Sciences, General	4	7	7	(3)	\$24.75
47.9999	Mechanic & Repair Technologies/Technicians, Other	0	5	5	(4)	\$11.86
51.0907	Med. Radiologic Technology/Sci.-Radiation Therapist	1	6	6	(5)	\$17.37
50.0701	Art/Art Studies, General	1	7	7	(6)	\$3.88
31.0505	Kinesiology and Exercise Science	2	8	8	(6)	\$13.59
51.1102	Pre-Medicine/Pre-Medical Studies	1	8	8	(7)	\$32.23
9.0101	Speech Communication and Rhetoric	0	8	8	(8)	\$19.18
50.0501	Drama and Dramatics/Theatre Arts, General	1	9	9	(8)	\$6.49
13.1205	Secondary Education and Teaching	1	12	12	(11)	\$28.83
14.0101	Engineering, General	0	12	12	(12)	\$49.18
47.0101	Electrical/Electronics Equipment Installation and Repair, General	9	21	21	(12)	\$29.94
43.0103	Criminal Justice/Law Enforcement Administration	2	14	14	(12)	\$31.39
26.0101	Biology/Biological Sciences, General	0	13	13	(13)	\$23.71
51.3801	Registered Nursing/Registered Nurse	9	32	32	(23)	\$28.72
42.0101	Psychology, General	0	24	24	(24)	\$26.36
13.1202	Elementary Education and Teaching	1	33	33	(32)	\$27.90

Source: Emsi Gap Analysis Model

Numbers may not sum due to rounding. Some median hourly earnings figures are not available.

earlier, it is highly likely that WWCC completers are finding jobs outside the WWCC Economic Region. A review of placement rates could provide additional information.

TRANSFER TRACK (LIBERAL ARTS) STUDENTS

A number of students attend WWCC with the intention of transferring to a four-year school to receive a bachelor's degree. Though these students study any number of topics, a large number of them receive associate of arts degrees in liberal arts. Over the past three years, an average of 94 students have completed liberal arts, humanities/humanistic studies, pre-physical therapy studies, or general studies degree at the associate degree level, which composes 18% of the College's annual production of certificates and degrees.

Once these students leave WWCC, their educational and career track is difficult to predict. They could attend a four-year college in the region or outside the region, and they could study any number of different programs that will ultimately determine their future career. What can be shown is that over the next 10 years, jobs that require a bachelor's degree are projected to be in high demand. In any given year between 2015 and 2025, 377 jobs will require a bachelor's degree and 1,748 will require a bachelor's degree or less, availing these students of 91% of all regional job openings.

POTENTIAL NEW PROGRAMS

In addition to knowing how well WWCC's current educational programs are serving the local labor market, it is helpful to know the fields of opportunity where the College could create new program offerings. Table 2.3, on the next page, contains a list of 27 programmatic areas of opportunity that could fill gaps in the labor market via postsecondary vocational certificates and associate degrees. These selected occupations present unmet annual openings by completions within the region. Please note that these tables highlight particular occupations, and in many cases a program can be designed to train for multiple occupations. Once these occupations are grouped with other similar occupations, the actual workforce gap may be larger. Therefore, several programs with relatively small

gaps are included. The median hourly earnings for workers in the Economic Region are included in the Table 2.3. The education level at which the analysis was performed is listed for each occupation.

There are 18 postsecondary certificate level areas of opportunity listed in Table 2.3, four of which are significant. Skilled trades and blue-collar occupations like heavy & tractor-trailer truck drivers, operating engineers & other construction equipment operators, and teacher assistants appear to be undersupplied in the WWCC Economic Region. Wage rates range between \$11.15 for teacher assistants to a high of \$35.77 for separating, filtering, clarifying, precipitating, & still machine setters, operators, & tenders.

The other nine areas of opportunity are at the associate degree level. All potential new associate degree programs have less than significant workforce gaps. Preschool teachers, except special education have the highest gap of the new program areas with a gap of five and median hourly wages of \$15.48. The other potential new programs are in the science technician and legal fields.

CONCLUSION

Between the postsecondary certificate and associate degree levels there are a total of 14 programs associated with significant workforce gaps—with three programs having a gap at both levels.

Industrial Mechanics & Maintenance Technology (gap of 66; median hourly wage \$22.80), General Office Occupations & Clerical Services (gap of 33; median hourly wage \$16.02), and Petroleum Technology/Technician (gap of 26; median hourly wage \$30.18) are the top certificate level gaps in the WWCC Economic Region. There are seven associate degree programs that also registered a gap. The top three are General Business Administration & Management (gap of 163; median hourly wage \$18.96), Industrial Mechanics & Maintenance Technology (gap of 68; median hourly wage \$22.80), and General Office Occupations & Clerical Services (gap of 37; median hourly wage \$16.02).

There were ten programs associated with significant workforce surpluses. Two had a surplus at the certificate level: Licensed Practical/Vocational Nurse Training (surplus of 19) and Web Page, Digital/Multimedia & Information Resources Design (surplus 12). The top three surpluses at the associate degree level are: Elementary Education & Teaching (surplus of 32), General Psychology (surplus of

TABLE 2.3: PROGRAMMATIC AREAS OF OPPORTUNITY

SOC	OCCUPATION	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	GAP	MEDIAN HOURLY WAGE	EDUCATION LEVEL
53-3032	Heavy and Tractor-Trailer Truck Drivers	51	0	51	\$22.24	Certificate
47-2073	Operating Engineers and Other Construction Equipment Operators	30	0	30	\$23.47	Certificate
25-9041	Teacher Assistants	17	0	17	\$11.15	Certificate
29-2041	Emergency Medical Technicians and Paramedics	10	0	10	\$16.19	Certificate
47-2031	Carpenters	9	0	9	\$19.91	Certificate
31-1014	Nursing Assistants	9	0	9	\$13.49	Certificate
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	9	0	9	\$37.91	Certificate
53-7032	Excavating and Loading Machine and Dragline Operators	8	0	8	\$28.18	Certificate
53-3022	Bus Drivers, School or Special Client	8	0	8	\$15.81	Certificate
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	7	0	7	\$31.56	Certificate
47-4031	Fence Erectors	6	0	6	\$17.45	Certificate
33-3012	Correctional Officers and Jailers	6	0	6	\$19.70	Certificate
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	6	0	6	\$33.55	Certificate
33-3051	Police and Sheriff's Patrol Officers	6	0	6	\$25.26	Certificate
53-3033	Light Truck or Delivery Services Drivers	6	0	6	\$15.13	Certificate
47-5041	Continuous Mining Machine Operators	5	0	5	\$40.00	Certificate
11-9013	Farmers, Ranchers, and Other Agricultural Managers	5	0	5	\$13.95	Certificate
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	5	0	5	\$35.77	Certificate
25-2011	Preschool Teachers, Except Special Education	5	0	5	\$15.48	Associate's Degree
19-4093	Forest and Conservation Technicians	3	0	3	\$15.47	Associate's Degree
17-3029	Engineering Technicians, Except Drafters, All Other	2	0	2	\$32.92	Associate's Degree
19-4031	Chemical Technicians	2	0	2	\$27.56	Associate's Degree
23-2011	Paralegals and Legal Assistants	1	0	1	\$21.95	Associate's Degree
17-3022	Civil Engineering Technicians	1	0	1	\$22.05	Associate's Degree
17-3011	Architectural and Civil Drafters	1	0	1	\$18.20	Associate's Degree
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairs	1	0	1	\$21.89	Associate's Degree
17-3025	Environmental Engineering Technicians	1	0	1	\$27.38	Associate's Degree

Source: Emsi Gap Analysis Model

24), and Registered Nursing/Registered Nurse (surplus of 23). Some of the completers are likely getting jobs outside the WWCC Economic Region.

Four significant postsecondary certificate level areas of opportunity have been identified. Mid to high-skilled trades and blue-collar occupations like heavy & tractor-trailer truck drivers, operating engineers & other construction equipment operators, and teacher assistants appear to

be undersupplied in the WWCC Economic Region. Nine areas of opportunity are at the associate degree level. All potential new associate degree programs have less than significant workforce gaps. Occupations like preschool teachers, except special education; forest & conservation technicians; and engineering technicians, except drafters, all others have the largest associate degree level gaps that are not being trained for.

APPENDIX 1: ABOUT EMSI DATA

As stated in Chapter 2, Emsi data were used to calculate the projected number of annual job openings from 2015 to 2025. These projections take into account openings due to job growth and openings due to replacement needs.

In order to capture a complete picture of industry employment, Emsi gathers and integrates economic, labor market, demographic, and education data from over 90 government and private-sector sources, creating a comprehensive and current database that includes both published data and detailed estimates with full coverage of the United States.

More specifically, Emsi combines covered employment data from Quarterly Census of Employment and Wages (QCEW-produced by the Department of Labor) with total employment data in Regional Economic Information System (REIS-published by the Bureau of Economic Analysis or BEA). This is augmented with County Business Patterns (CBP) and Non-Employer Statistics (NES) published by the US Census Bureau. Projections are based on the latest-

available Emsi industry data, 15-year past local trends in each industry, growth rates in statewide and (where available) sub-state area industry projections published by individual state agencies, and (in part) growth rates in national projections from the Bureau of Labor Statistics.

However, for this report, the projections were adjusted to reflect the projected decline of the energy industry sector. These adjustments were made by correlating employment figures by industry sector to the trend of futures prices of energy commodities. Once the projection adjustments to the energy industry sector were made, further adjustments to the entire regional economy were made and carried through to occupational employment figures.

Through this combination of data sources, Emsi is able to fill gaps in individual sources (such as suppressions and missing proprietors). This yields a composite database that leverages the strengths of all its sources. Finally, Emsi's database is updated quarterly, providing the most up-to-date integrated information possible.

APPENDIX 2: PROGRAM-TO-OCCUPATION MAPPING

Table A2.1 displays the crosswalk between educational programs (CIP codes) and occupations (SOC codes) that Emsi used to complete the gap analysis. Also listed are the adjustment factors which were applied to the annual openings figures for each occupation within each program. The methodology for these factors is described in Appendix 3, with the program based weight figure recounted under “De-duplication of Annual Openings” and the educational level adjustments recounted under “Education Level Adjustments.”

TABLE A2.1: PROGRAM TO OCCUPATION MAPPING WITH EMPLOYMENT ADJUSTMENT FACTORS

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
3.0104	Environmental Science	19-2041	Environmental Scientists and Specialists, Including Health	1.00	3	6
		19-4091	Environmental Science and Protection Technicians, Including Health	1.00	42	54
9.0101	Speech Communication and Rhetoric	27-3012	Public Address System and Other Announcers	1.00	54	61
		27-3031	Public Relations Specialists	1.00	16	20
		27-3043	Writers and Authors	0.81	12	15
9.0401	Journalism	27-3021	Broadcast News Analysts	1.00	12	16
		27-3022	Reporters and Correspondents	1.00	12	16
		27-3041	Editors	0.33	12	16
		27-3043	Writers and Authors	0.06	12	15
		27-3011	Radio and Television Announcers	1.00	54	61
		27-3099	Media and Communication Workers, All Other	0.11	37	50
		27-4012	Broadcast Technicians	1.00	50	63
		27-4013	Radio Operators	1.00	50	63
		27-4014	Sound Engineering Technicians	1.00	50	63
		27-4031	Camera Operators, Television, Video, and Motion Picture	0.11	32	39
11.0101	Computer and Information Sciences, General	27-4032	Film and Video Editors	0.11	32	39
		27-4099	Media and Communication Equipment Workers, All Other	0.11	50	63
		11-3021	Computer and Information Systems Managers	1.00	19	27

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		15-1111	Computer and Information Research Scientists	1.00	6	9
		15-1121	Computer Systems Analysts	1.00	20	28
		15-1122	Information Security Analysts	0.37	29	43
		15-1134	Web Developers	0.37	23	31
		15-1141	Database Administrators	0.25	22	32
		15-1142	Network and Computer Systems Administrators	0.50	34	49
		15-1143	Computer Network Architects	0.37	27	41
		15-1199	Computer Occupations, All Other	1.00	34	49
		15-1151	PC Support Tech	0.50	40	57
		15-1142	Data Security Manager	0.50	34	49
		15-1141	Data Scientist	0.25	22	32
		15-1141	Database Manager	0.25	22	32
		15-1141	Data Miner	0.25	22	32
		43-9021	Data Entry Clerk	1.00	68	81
		15-1151	Help Desk Assistant	0.50	40	57
11.0801	Web Page, Digital/ Multimedia and Information Resources Design	15-1122	Information Security Analysts	0.63	29	43
		15-1134	Web Developers	0.63	23	31
		15-1143	Computer Network Architects	0.63	27	41
		27-1014	Multimedia Artists and Animators	1.00	34	43
		27-1024	Graphic Designers	1.00	31	44
		43-9031	Desktop Publishers	1.00	57	68
13.1202	Elementary Education and Teaching	25-2021	Elementary School Teachers, Except Special Education	1.00	3	5
13.1205	Secondary Education and Teaching	25-2031	Secondary School Teachers, Except Special and Career/ Technical Education	1.00	3	4
		11-9033	Education Administrators, Postsecondary	1.00	15	20
		25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	0.69	32	40
14.0101	Engineering, General	11-9041	Architectural and Engineering Managers	1.00	11	16
		17-2199	Engineers, All Other	1.00	11	18
15.0903	Petroleum Technology/ Technician	19-4041	Geological and Petroleum Technicians	1.00	56	66
		51-8092	Gas Plant Operators	1.00	80	91
		51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	1.00	80	91
		53-7071	Gas Compressor and Gas Pumping Station Operators	1.00	85	93

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		53-7072	Pump Operators, Except Wellhead Pumpers	1.00	85	93
		53-7073	Wellhead Pumpers	1.00	85	93
16.0101	Foreign Languages and Literatures, General	27-3091	Interpreters and Translators	1.00	37	50
22.0001	Pre-Law Studies	23-1011	Lawyers	1.00	1	1
		23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	1.00	1	1
		23-1022	Arbitrators, Mediators, and Conciliators	1.00	1	1
		23-1023	Judges, Magistrate Judges, and Magistrates	1.00	1	1
23.0101	English Language and Literature, General	25-1099	Postsecondary Teachers	0.65	3	5
		11-3131	Training and Development Managers	1.00	25	34
		11-9141	Property, Real Estate, and Community Association Managers	1.00	52	61
		13-1121	Meeting, Convention, and Event Planners	0.31	33	40
		13-1131	Fundraisers	1.00	17	20
		23-1012	Judicial Law Clerks	1.00	9	12
		25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	0.31	32	40
		25-3021	Self-Enrichment Education Teachers	1.00	32	40
		25-4021	Librarians	1.00	9	14
		25-4031	Library Technicians	1.00	58	67
		27-3042	Technical Writers	1.00	19	26
		27-3099	Media and Communication Workers, All Other	0.89	37	50
		27-4031	Camera Operators, Television, Video, and Motion Picture	0.89	32	39
		27-4032	Film and Video Editors	0.89	32	39
		27-4099	Media and Communication Equipment Workers, All Other	0.89	50	63
		39-3021	Motion Picture Projectionists	1.00	54	76
		41-3041	Travel Agents	1.00	52	65
		41-9011	Demonstrators and Product Promoters	1.00	73	81
		43-4081	Hotel, Motel, and Resort Desk Clerks	1.00	74	82
		43-4121	Library Assistants, Clerical	1.00	46	56
		43-9081	Proofreaders and Copy Markers	1.00	35	43
23.1302	Creative Writing	27-3041	Editors	0.67	12	16
		27-3043	Writers and Authors	0.13	12	15

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
26.0101	Biology/ Biological Sciences, General	11-9121	Natural Sciences Managers	0.75	7	11
		19-1029	Biological Scientists, All Other	1.00	1	4
		19-1099	Life Scientists, All Other	1.00	1	2
26.0709	Wildlife Biology	19-1023	Zoologists and Wildlife Biologists	1.00	1	4
27.0101	Mathematics, General	11-9121	Natural Sciences Managers	0.13	7	11
		15-2021	Mathematicians	1.00	8	11
		15-2041	Statisticians	1.00	8	11
		15-2099	Mathematical Science Occupations, All Other	1.00	8	11
		15-2011	Actuaries	1.00	1	1
31.0505	Kinesiology and Exercise Science	29-1128	Exercise Physiologists	1.00	8	15
		29-1129	Therapists, All Other	1.00	8	15
		27-2021	Athletes and Sports Competitors	1.00	32	40
		27-2022	Coaches and Scouts	1.00	32	40
		29-9091	Athletic Trainers	1.00	32	40
		39-9031	Fitness Trainers and Aerobics Instructors	1.00	45	55
		29-1123	Physical Therapists	1.00	3	9
		31-2021	Physical Therapist Assistants	1.00	28	80
		31-2022	Physical Therapist Aides	1.00	28	80
40.0501	Chemistry, General	11-9121	Natural Sciences Managers	0.04	7	11
		19-2031	Chemists	1.00	4	7
		51-8031	Water and Wastewater Treatment Plant and System Operators	1.00	79	91
		51-8091	Chemical Plant and System Operators	1.00	80	91
40.0601	Geology/ Earth Science, General	11-9121	Natural Sciences Managers	0.08	7	11
		19-2042	Geoscientists, Except Hydrologists and Geographers	1.00	3	6
		19-2043	Hydrologists	1.00	3	6
42.0101	Psychology, General	19-3031	Clinical, Counseling, and School Psychologists	1.00	1	1
		19-3032	Industrial-Organizational Psychologists	1.00	1	1
		19-3039	Psychologists, All Other	1.00	1	1
43.0103	Criminal Justice/ Law Enforcement Administration	33-1012	First-Line Supervisors of Police and Detectives	1.00	44	59
43.9999	Homeland Security, Law Enforcement, Firefighting and Related Protective Services, Other	33-1099	First-Line Supervisors of Protective Service Workers, All Other	1.00	59	71
		33-3041	Parking Enforcement Workers	1.00	56	71

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		33-3052	Transit and Railroad Police	1.00	49	66
		33-9011	Animal Control Workers	1.00	74	82
		33-9031	Gaming Surveillance Officers and Gaming Investigators	1.00	74	84
		33-9091	Crossing Guards	1.00	90	94
		33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	1.00	64	73
		33-9099	Protective Service Workers, All Other	1.00	64	73
44.0701	Social Work	21-1013	Marriage and Family Therapists	1.00	16	21
		21-1019	Counselors, All Other	1.00	16	21
		21-1021	Child, Family, and School Social Workers	1.00	16	22
		21-1029	Social Workers, All Other	1.00	16	22
		21-1092	Probation Officers and Correctional Treatment Specialists	1.00	19	25
45.0101	Social Sciences, General	19-3099	Social Scientists and Related Workers, All Other	1.00	6	10
		19-4061	Social Science Research Assistants	1.00	42	54
45.0201	Anthropology	19-3091	Anthropologists and Archeologists	0.64	6	10
45.0301	Archeology	19-3091	Anthropologists and Archeologists	0.36	6	10
45.0901	International Relations and Affairs	11-1031	Legislators	1.00	27	33
		19-3094	Political Scientists	0.14	6	10
45.1001	Political Science and Government, General	19-3094	Political Scientists	0.86	6	10
47.0101	Electrical/ Electronics Equipment Installation and Repair, General	49-2092	Electric Motor, Power Tool, and Related Repairers	1.00	77	93
		49-9011	Mechanical Door Repairers	0.56	84	95
		49-9099	Installation, Maintenance, and Repair Workers, All Other	0.56	80	90
		17-3021	Aerospace Engineering and Operations Technicians	0.56	60	83
		17-3023	Electrical and Electronics Engineering Technicians	1.00	60	83
		17-3024	Electro-Mechanical Technicians	0.56	60	83
		47-2111	Electricians	1.00	79	93
		47-3013	Helpers--Electricians	1.00	94	97
		49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.89	64	89

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	1.00	64	89
		49-2097	Electronic Home Entertainment Equipment Installers and Repairers	1.00	78	91
		49-9051	Electrical Power-Line Installers and Repairers	1.00	83	94
		51-8013	Power Plant Operators	1.00	68	84
47.0303	Industrial Mechanics and Maintenance Technology	47-4021	Elevator Installers and Repairers	1.00	83	95
		49-9011	Mechanical Door Repairers	0.44	84	95
		49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	1.00	84	95
		49-9041	Industrial Machinery Mechanics	1.00	82	94
		49-9043	Maintenance Workers, Machinery	1.00	82	96
		49-9044	Millwrights	1.00	87	97
		49-9045	Refractory Materials Repairers, Except Brickmasons	1.00	82	94
		49-9081	Wind Turbine Service Technicians	1.00	80	90
		49-9098	Helpers--Installation, Maintenance, and Repair Workers	1.00	92	96
		49-9099	Installation, Maintenance, and Repair Workers, All Other	0.44	80	90
		51-2031	Engine and Other Machine Assemblers	1.00	85	96
		51-6062	Textile Cutting Machine Setters, Operators, and Tenders	1.00	93	93
		51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	1.00	94	96
		51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	1.00	97	99
		17-3021	Aerospace Engineering and Operations Technicians	0.44	60	83
		17-3024	Electro-Mechanical Technicians	0.44	60	83
		17-3027	Mechanical Engineering Technicians	1.00	60	83
		47-2152	Plumbers, Pipefitters, and Steamfitters	1.00	89	96
		47-2221	Structural Iron and Steel Workers	0.86	91	96
		47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	0.86	94	97

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		47-3019	Helpers, Construction Trades, All Other	1.00	94	97
		47-4099	Construction and Related Workers, All Other	1.00	87	91
		49-3011	Aircraft Mechanics and Service Technicians	1.00	69	90
		49-3042	Mobile Heavy Equipment Mechanics, Except Engines	0.86	87	96
		49-3043	Rail Car Repairers	0.71	87	96
		49-9071	Maintenance and Repair Workers, General	1.00	83	94
		51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1.00	92	97
		51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	1.00	89	95
		51-4041	Machinists	1.00	86	97
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	0.11	64	89
		49-2096	Electronic Equipment Installers and Repairers, Motor Vehicles	1.00	76	95
		49-3023	Automotive Service Technicians and Mechanics	0.73	85	96
		49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.28	87	97
		49-3041	Farm Equipment Mechanics and Service Technicians	0.28	87	96
		49-3051	Motorboat Mechanics and Service Technicians	0.50	88	96
		49-3052	Motorcycle Mechanics	0.50	88	96
		49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.50	88	96
47.0605	Diesel Mechanics Technology/ Technician	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.45	87	97
		49-3041	Farm Equipment Mechanics and Service Technicians	0.45	87	96
		49-3043	Rail Car Repairers	0.18	87	96
47.0614	Alternative Fuel Vehicle Technology/ Technician	49-3023	Automotive Service Technicians and Mechanics	0.27	85	96
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	0.28	87	97
		49-3041	Farm Equipment Mechanics and Service Technicians	0.28	87	96
		49-3051	Motorboat Mechanics and Service Technicians	0.50	88	96
		49-3052	Motorcycle Mechanics	0.50	88	96

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	0.50	88	96
47.9999	Mechanic and Repair Technologies/ Technicians, Other	39-1012	Slot Supervisors	1.00	58	68
		47-4041	Hazardous Materials Removal Workers	1.00	81	87
		49-3093	Tire Repairers and Changers	1.00	90	95
48.0508	Welding Technology/ Welder	51-4121	Welders, Cutters, Solderers, and Brazers	1.00	92	98
		51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1.00	92	98
		47-2221	Structural Iron and Steel Workers	0.14	91	96
		47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	0.14	94	97
		49-3042	Mobile Heavy Equipment Mechanics, Except Engines	0.14	87	96
		49-3043	Rail Car Repairers	0.12	87	96
		51-4199	Metal Workers and Plastic Workers, All Other	1.00	91	96
50.0301	Dance, General	27-2031	Dancers	1.00	66	76
		27-2032	Choreographers	1.00	66	76
50.0501	Drama and Dramatics/ Theatre Arts, General	27-2011	Actors	1.00	38	43
		27-2012	Producers and Directors	1.00	20	26
		27-2099	Entertainers and Performers, Sports and Related Workers, All Other	1.00	53	60
50.0701	Art/ Art Studies, General	27-1012	Craft Artists	0.95	34	43
		27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	0.95	34	43
		27-4021	Photographers	1.00	42	52
50.0711	Ceramic Arts and Ceramics	27-1012	Craft Artists	0.05	34	43
		27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	0.05	34	43
50.0901	Music, General	27-2042	Musicians and Singers	1.00	40	46
51.0716	Medical Administrative/ Executive Assistant and Medical Secretary	31-9092	Medical Assistants	0.34	69	91
		43-6011	Executive Secretaries and Executive Administrative Assistants	0.57	67	81
		43-6013	Medical Secretaries	1.00	67	81
		29-2071	Medical Records and Health Information Technicians	1.00	66	81
		31-9092	Medical Assistants	0.34	69	91
51.0907	Medical Radiologic Technology/ Science - Radiation Therapist	29-1124	Radiation Therapists	1.00	13	56

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		29-2034	Radiologic Technologists	1.00	31	77
		29-2035	Magnetic Resonance Imaging Technologists	1.00	31	77
51.1101	Pre-Dentistry Studies	29-1021	Dentists, General	1.00	0	1
		29-1022	Oral and Maxillofacial Surgeons	1.00	0	1
		29-1023	Orthodontists	1.00	0	1
		29-1024	Prosthodontists	1.00	0	1
		29-1029	Dentists, All Other Specialists	1.00	0	1
		29-2021	Dental Hygienists	1.00	9	64
		31-9091	Dental Assistants	1.00	75	91
51.1102	Pre-Medicine/ Pre-Medical Studies	29-1069	Physicians and Surgeons, All Other	1.00	1	1
		29-1071	Physician Assistants	1.00	14	26
		31-9092	Medical Assistants	0.32	69	91
51.1103	Pre-Pharmacy Studies	29-1051	Pharmacists	1.00	1	2
		29-2052	Pharmacy Technicians	1.00	62	82
		31-9095	Pharmacy Aides	1.00	64	74
51.1104	Pre-Veterinary Studies	29-1131	Veterinarians	1.00	1	2
		29-2056	Veterinary Technologists and Technicians	1.00	62	82
51.3801	Registered Nursing/ Registered Nurse	29-1141	Registered Nurses	1.00	6	45
51.3817	Nursing Education	25-1099	Postsecondary Teachers	0.35	3	5
51.3901	Licensed Practical/ Vocational Nurse Training	29-2061	Licensed Practical and Licensed Vocational Nurses	1.00	78	95
52.0201	Business Administration and Management, General	11-1011	Chief Executives	1.00	27	33
		11-1021	General and Operations Managers	1.00	42	51
		11-2022	Sales Managers	0.95	27	33
		11-2031	Public Relations and Fundraising Managers	0.95	14	17
		11-3011	Administrative Services Managers	1.00	48	59
		11-3051	Industrial Production Managers	1.00	47	56
		11-3071	Transportation, Storage, and Distribution Managers	1.00	63	71
		11-9021	Construction Managers	1.00	59	66
		11-9151	Social and Community Service Managers	1.00	25	31
		11-9199	Managers, All Other	1.00	38	46
		13-1051	Cost Estimators	1.00	55	67
		13-1111	Management Analysts	1.00	18	23
		37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	1.00	83	89

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		39-1011	Gaming Supervisors	1.00	58	68
		39-1021	First-Line Supervisors of Personal Service Workers	1.00	64	74
		11-3031	Financial Managers	0.95	32	39
		11-3061	Purchasing Managers	0.95	35	43
		11-3111	Compensation and Benefits Managers	0.95	31	40
		11-3121	Human Resources Managers	0.95	36	43
		11-9071	Gaming Managers	0.95	72	83
		11-9081	Lodging Managers	0.95	50	59
		13-1011	Agents and Business Manag- ers of Artists, Performers, and Athletes	0.95	36	42
		13-1021	Buyers and Purchasing Agents, Farm Products	0.95	56	65
		13-1022	Wholesale and Retail Buyers, Except Farm Products	0.95	57	66
		13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.95	48	59
		13-1071	Human Resources Specialists	0.95	33	43
		13-1075	Labor Relations Specialists	0.95	33	43
		13-1081	Logisticians	0.95	44	58
		13-1121	Meeting, Convention, and Event Planners	0.65	33	40
		13-1141	Compensation, Benefits, and Job Analysis Specialists	1.00	40	52
		13-1151	Training and Development Specialists	1.00	39	48
		13-1199	Business Operations Specialists, All Other	1.00	34	44
		13-2021	Appraisers and Assessors of Real Estate	1.00	40	51
		39-9099	Personal Care and Service Workers, All Other	0.95	71	79
		41-1011	First-Line Supervisors of Retail Sales Workers	0.95	66	75
		41-1012	First-Line Supervisors of Non-Retail Sales Workers	0.95	52	61
		41-2011	Cashiers	0.95	82	89
		41-2012	Gaming Change Persons and Booth Cashiers	0.95	82	89
		41-2021	Counter and Rental Clerks	0.95	75	83
		41-2022	Parts Salespersons	0.95	83	92
		41-2031	Retail Salespersons	0.95	65	74
		41-3011	Advertising Sales Agents	0.95	38	46
		41-3021	Insurance Sales Agents	0.95	43	53
		41-3031	Securities, Commodities, and Financial Services Sales Agents	0.95	24	30

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		41-3099	Sales Representatives, Services, All Other	0.95	45	54
		41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	0.95	44	53
		41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.95	44	53
		41-9021	Real Estate Brokers	0.95	43	52
		41-9022	Real Estate Sales Agents	0.95	43	52
		41-9031	Sales Engineers	0.95	19	32
		41-9041	Telemarketers	0.95	72	82
		41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	0.95	74	81
		41-9099	Sales and Related Workers, All Other	0.95	52	59
		43-3011	Bill and Account Collectors	0.51	71	82
		43-3021	Billing and Posting Clerks	0.51	70	83
		43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.34	72	83
		43-3051	Payroll and Timekeeping Clerks	0.51	68	81
		43-3071	Tellers	0.51	72	83
		43-3099	Financial Clerks, All Other	0.51	53	62
		43-4011	Brokerage Clerks	0.51	50	59
		43-4161	Human Resources Assistants, Except Payroll and Timekeeping	0.82	57	71
		43-4171	Receptionists and Information Clerks	0.68	74	85
		43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	0.95	62	73
52.0204	Office Management and Supervision	43-1011	First-Line Supervisors of Office and Administrative Support Workers	1.00	57	68
52.0301	Accounting	13-2011	Accountants and Auditors	1.00	12	22
		13-2031	Budget Analysts	1.00	23	32
		13-2041	Credit Analysts	1.00	29	37
		13-2061	Financial Examiners	1.00	17	20
		13-2081	Tax Examiners and Collectors, and Revenue Agents	1.00	42	52
		43-3031	Bookkeeper	0.33	72	83
		13-2051	Financial Analysts	1.00	11	14
		13-2052	Personal Financial Advisors	1.00	14	19
		13-2053	Insurance Underwriters	1.00	37	46
		13-2071	Credit Counselors	1.00	40	49
		13-2072	Loan Officers	1.00	40	49

					% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		13-2082	Tax Preparers	1.00	41	50
		13-2099	Financial Specialists, All Other	1.00	33	41
		43-3011	Bill and Account Collectors	0.49	71	82
		43-3021	Billing and Posting Clerks	0.49	70	83
		43-3031	Bookkeeping, Accounting, and Auditing Clerks	0.33	72	83
		43-3051	Payroll and Timekeeping Clerks	0.49	68	81
		43-3071	Tellers	0.49	72	83
		43-3099	Financial Clerks, All Other	0.49	53	62
		43-4011	Brokerage Clerks	0.49	50	59
52.0401	Administrative Assistant and Secretarial Science, General	43-6011	Executive Secretaries and Executive Administrative Assistants	0.43	67	81
		43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	1.00	67	81
52.0406	Receptionist	43-2011	Switchboard Operators, Including Answering Service	1.00	81	88
		43-2021	Telephone Operators	1.00	77	87
		43-4051	Customer Service Representatives	1.00	65	76
		43-4111	Interviewers, Except Eligibility and Loan	1.00	60	73
		43-4171	Receptionists and Information Clerks	0.17	74	85
52.0408	General Office Occupations and Clerical Services	43-3061	Procurement Clerks	1.00	60	71
		43-4021	Correspondence Clerks	1.00	73	83
		43-4031	Court, Municipal, and License Clerks	1.00	65	81
		43-4071	File Clerks	1.00	66	78
		43-4151	Order Clerks	1.00	73	83
		43-4161	Human Resources Assistants, Except Payroll and Timekeeping	0.14	57	71
		43-4171	Receptionists and Information Clerks	0.11	74	85
		43-4199	Information and Record Clerks, All Other	1.00	60	77
		43-5011	Cargo and Freight Agents	1.00	71	83
		43-5051	Postal Service Clerks	1.00	74	83
		43-5052	Postal Service Mail Carriers	1.00	76	86
		43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	1.00	76	85
		43-5071	Shipping, Receiving, and Traffic Clerks	1.00	86	92
		43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	1.00	81	88

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		43-9022	Word Processors and Typists	1.00	68	81
		43-9041	Insurance Claims and Policy Processing Clerks	1.00	65	77
		43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	1.00	80	89
		43-9061	Office Clerks, General	1.00	68	80
		43-9071	Office Machine Operators, Except Computer	1.00	76	86
		43-9199	Office and Administrative Support Workers, All Other	1.00	57	68
52.1401	Marketing/ Marketing Management, General	11-2011	Advertising and Promotions Managers	1.00	21	26
		11-2021	Marketing Managers	1.00	27	33
		11-2022	Sales Managers	0.05	27	33
		13-1161	Market Research Analysts and Marketing Specialists	1.00	18	23
		11-2031	Public Relations and Fundraising Managers	0.05	14	17
		11-3031	Financial Managers	0.05	32	39
		11-3061	Purchasing Managers	0.05	35	43
		11-3111	Compensation and Benefits Managers	0.05	31	40
		11-3121	Human Resources Managers	0.05	36	43
		11-9071	Gaming Managers	0.05	72	83
		11-9081	Lodging Managers	0.05	50	59
		13-1011	Agents and Business Managers of Artists, Performers, and Athletes	0.05	36	42
		13-1021	Buyers and Purchasing Agents, Farm Products	0.05	56	65
		13-1022	Wholesale and Retail Buyers, Except Farm Products	0.05	57	66
		13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	0.05	48	59
		13-1071	Human Resources Specialists	0.05	33	43
		13-1075	Labor Relations Specialists	0.05	33	43
		13-1081	Logisticians	0.05	44	58
		13-1121	Meeting, Convention, and Event Planners	0.04	33	40
		39-9099	Personal Care and Service Workers, All Other	0.05	71	79
		41-1011	First-Line Supervisors of Retail Sales Workers	0.05	66	75
		41-1012	First-Line Supervisors of Non-Retail Sales Workers	0.05	52	61
		41-2011	Cashiers	0.05	82	89

CIP	PROGRAM	SOC	OCCUPATION	PROGRAM BASED WEIGHT	% OF WORKFORCE WITH GIVEN EDUCATION LEVEL	
					PSV AWARD OR SOME COLLEGE	ASSOCIATE'S DEGREE
		41-2012	Gaming Change Persons and Booth Cashiers	0.05	82	89
		41-2021	Counter and Rental Clerks	0.05	75	83
		41-2022	Parts Salespersons	0.05	83	92
		41-2031	Retail Salespersons	0.05	65	74
		41-3011	Advertising Sales Agents	0.05	38	46
		41-3021	Insurance Sales Agents	0.05	43	53
		41-3031	Securities, Commodities, and Financial Services Sales Agents	0.05	24	30
		41-3099	Sales Representatives, Services, All Other	0.05	45	54
		41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	0.05	44	53
		41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	0.05	44	53
		41-9021	Real Estate Brokers	0.05	43	52
		41-9022	Real Estate Sales Agents	0.05	43	52
		41-9031	Sales Engineers	0.05	19	32
		41-9041	Telemarketers	0.05	72	82
		41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	0.05	74	81
		41-9099	Sales and Related Workers, All Other	0.05	52	59
		43-4161	Human Resources Assistants, Except Payroll and Timekeeping	0.05	57	71
		43-4171	Receptionists and Information Clerks	0.04	74	85
		43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	0.05	62	73
54.0101	History, General	19-3093	Historians	1.00	6	10

APPENDIX 3: PROGRAM GAP ANALYSIS METHODOLOGY

This appendix focuses on describing and understanding the methodology used in the program gap analysis. This requires data on both occupation demand (e.g., annual job openings) and education supply (e.g., number of postsecondary degree completions). These are then compared through an education “gap” analysis to determine whether an education program is potentially producing a surplus or shortage of workforce talent relative to the number of job openings. In this way, it is possible to see how the institution’s current programs are satisfying regional workforce needs.

SUPPLY AND DEMAND MODEL

Emsi builds a model using demand-side data (average annual openings) and supply-side data (postsecondary education output) to compare workforce demand with education supply. The purpose of this analysis is to find the difference or “gap” between the average annual openings for an occupation and the number of people completing postsecondary degrees for that occupation, whether at WWCC or at another training provider within the region. This makes it possible to identify whether there may be talent shortages or surpluses within the Economic Region.

The first step involves mapping the linkage between annual openings for a SOC code and the number of completions for an education program CIP code. The BLS provides information on the occupations that completers of specific CIP codes are more likely to enter. Specific connections have been refined through previous engagements with education institutions and state departments of labor. Some programs have direct occupational ties. For example, a physical therapist assistant is a specific occupation that requires specialized postsecondary training. In this case, one CIP code (physical therapy technician/assistant) maps to only one SOC code (physical therapists assistants). This

provides an easy comparison of annual openings for physical therapist assistants to the number of people completing the relevant program to see whether a talent shortage or surplus exists. Unfortunately, this is not always the case. More often than not an educational program maps to multiple occupations and an occupation maps to multiple educational programs. For this reason, Emsi has pioneered a method of de-duplicating job openings, such that the potential sources of demand are not double-represented for any occupation. The details of this process are outlined in this chapter, under “De-duplication of Annual Openings.”

OCCUPATION DEMAND

Educational Level Adjustments

To capture occupation demand, Emsi uses a proprietary employment dataset that reflects total employment (i.e., employment covered by unemployment insurance as well as proprietor employment). The employment data reflects jobs for the fourth quarter of 2015. Within this dataset, Emsi calculates the number of regional annual job openings for the occupations that require two different levels of postsecondary training.⁷ The BLS also provides educational attainment data of current workers for each SOC code, broken out by their highest level of education attained. The data is presented as the percentage of workers in the SOC code with educational attainment ranging from less than a high school degree to an associate degree. Using these data, Emsi adjusts the annual opening estimates for each SOC code to only incorporate the percentage of workers for three different educational levels that correspond with WWCC’s program offerings.

For example, as shown in Table A3.1, there are three occupations trained for by Corrections (CIP code 43.0102).

⁷ See Appendix 1 for a description of the sources and processes of Emsi data.

TABLE A3.1: EDUCATIONAL LEVEL ADJUSTMENTS

CIP	PROGRAM	SOC	OCCUPATION	"SOME COLLEGE, NO DEGREE" OR POSTSECONDARY AWARD OR LOWER	ASSOCIATE'S DEGREE OR LOWER
43.0102	Corrections	33-3012	Correctional Officers and Jailers	75%	88%
		33-1012	First-Line Supervisors of Police and Detectives	46%	62%
		33-1011	First-Line Supervisors of Correctional Officers	61%	75%
Weighted Average				68%	85%

Within that cluster are an assortment of career fields, including correctional officers and jailers, first-line supervisors of police and detectives, and first-line supervisors of correctional officers. Among correctional officers, the majority of job openings (75%) are available to somebody with “some college” or a postsecondary vocational (PSV) award. Alternatively, for first-line supervisors of police and detectives, only 46% of job openings are accessible to a person without a college degree. The weighted average of job openings is calculated for each program at each program/degree level where WWCC has produced completers over the past three years. Not taking into account the educational attainment dynamics in this way would bias the result by over-counting potential job opportunities for completers.⁸

De-duplication of Annual Openings

Most educational programs are designed to train people for multiple occupational types, many of which are simultaneously linked with other educational programs. This presents a complexity when comparing supply and demand for any particular educational program. For instance, the Computer Systems Networking & Telecommunications program is mapped to three different occupations: computer support specialists, information security analysts, and computer systems analysts. If we focus on just one of the occupations for this list—computer support specialists—it is also mapped to 10 different educational programs, spanning program titles such as Computer Systems Analysis and Medical Office Computer Specialist.

To ensure that no double-counting occurs, it is necessary to either realign the program groupings to eliminate the mapping of occupations to multiple programs or to determine what proportion of demand should be com-

pared with supply numbers from each program. Emsi takes the second approach in this analysis, which has the advantage of maintaining the program titles and descriptions in roughly the same format that completer data were originally delivered to Emsi. Emsi uses a formula that favors program types with the largest number of completers, attributing a greater proportion of demand to these than the programs which produce a smaller number of completers. This method utilizes the assumption that the higher output educational programs are likely feeding a higher degree of demand within the Economic Region.⁹ Appendix 2 contains the detailed mapping of each CIP code to all relevant occupations.

One possible criticism of this methodology is that it assumes, all else being equal, students from higher-output programs are more likely to obtain a job than students from lower-output programs, whereas in reality students are judged more by their skills and merits than their educational program of study. The intention of the analysis is not to rate students’ capability of competing for jobs, but rather to capture the unique dynamics of the local labor market. For example, in a region where a unique program such as Commercial and Advertising Art is more prevalent than Graphic Design, it can safely be assumed that the graduates of the Commercial and Advertising Art program will be offered a larger number of local openings than are students from the Graphic Design program. Otherwise, it would be unlikely for the Commercial and Advertising Art program to remain the producer of local talent in the long-term, as the program would yield students to a program with a more successful job placement rate.

⁸ Given the changing dynamics and need for more education in the existing workforce (i.e., skills-biased technology change in many occupations and industry sectors), this assumption is considered conservative.

⁹ Note this adjustment is performed on a program-by-program basis without consideration of individual colleges or training providers. Therefore, a single program offered at one large institution has no advantage over a group of similar programs offered a number of smaller educational providers provided that the aggregate output of the smaller schools is near the output of the single larger school.

Recognizing that some smaller programs produce students who are more capable of obtaining local jobs than students from larger programs, Emsi also provides an alternative gap analysis, which does not reduce the number of annual openings based on the size of each educational program. Rather the total number of annual openings available for students at each educational level is provided without further modification. Due to this modification, these numbers have not been de-duplicated, unlike the annual openings figures shown in Chapter 2. These figures are provided in Appendix 4: Alternative Supply and Demand Calculations.

EDUCATION OUTPUT

There are several educational institutions in the Economic Region, some of which have programs similar to those offered at WWCC. Hence completers at WWCC will be competing for some jobs with completers from other regional institutions. Emsi determined education output by Classification of Instructional Program (CIP) codes and identified the number of completers for every award level within those CIP codes. To find the output for all public and private education institutions in the Economic Region, Emsi uses data from the Integrated Postsecondary Educational System (IPEDS).¹⁰ These data are publicly available through the National Center for Educational Statistics. Completions data are averaged for a three-year period, 2012 through

TABLE A3.2: SUMMARY OF POSTSECONDARY CERTIFICATE LEVEL REGIONAL COMPLETIONS BY INSTITUTION

INSTITUTION	3-YEAR AVERAGE	% OF TOTAL
Western Wyoming Community College	105	100%
Grand Total	105	100%

Source: IPEDS, WWCC

TABLE A3.3: SUMMARY OF ASSOCIATE'S DEGREE REGIONAL COMPLETIONS BY INSTITUTION

INSTITUTION	3-YEAR AVERAGE	% OF TOTAL
Western Wyoming Community College	425	100%
Grand Total	425	100%

Source: IPEDS, WWCC

2014, to smooth out any bumps in enrollment that may be unique to a particular academic year. Data gathered for WWCC from IPEDS were reviewed for accuracy by WWCC and updated with 2015 completers data.

Tables A3.2 and A3.3 display the completion breakdown by institution and award type. WWCC is the only institution in this region granting post-secondary certificates and associate degrees. WWCC granted an average 105 certificates and 425 associate degrees over the past three years.

¹⁰ These data come with inherent weaknesses. First, numbers are only available for institutions that participate in or are applicants for any federal financial assistance program authorized by the Higher Education Act (HEA). Also, IPEDS does not account for the fact that some people may receive multiple degrees or certifications, so when the number of degrees awarded exceeds the number of people receiving the degrees, the number of completers can be overstated. Nevertheless, this system is the best source for collecting data regarding a broad range of educational institutions.

APPENDIX 4:

ALTERNATIVE GAP ANALYSIS

CALCULATIONS

Emsi de-duplicated the annual openings shown in Chapter 2 to account for the magnitude of output from different educational programs in the region. The process is explained in detail in Appendix 3 under “De-duplication of Annual Openings.” This procedure is designed to reflect the unique supply and demand dynamics of each regional economy. However, Emsi also recognizes that in some cases a student from a less predominant educational program is a more likely candidate to be offered a local job. These alternative supply and demand calculations give equal weight to every job opportunity within students’ field of study, regardless of whether that program is a big or small player in talent development for the region. Therefore, these estimates should be considered as less conservative measures than those from Chapter 2.

ALTERNATIVE GAP ANALYSIS TABLES

TABLE A4.1: ALTERNATIVE SUPPLY AND DEMAND FOR WWCC’S POSTSECONDARY CERTIFICATE PROGRAMS

CIP	PROGRAM	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	WWCC COMPLETERS	TOTAL GAP OR SURPLUS
47.0303	Industrial Mechanics and Maintenance Technology	88	16	16	72
52.0408	General Office Occupations and Clerical Services	39	1	1	38
48.0508	Welding Technology/Welder	32	1	1	32
52.0301	Accounting	29	1	1	27
15.0903	Petroleum Technology/Technician	29	3	3	26
47.0604	Automobile/Automotive Mechanics Technology/Tech.	23	1	1	22
47.0605	Diesel Mechanics Technology/Technician	15	2	2	14
51.0716	Medical Administrative/Executive Assistant and Medical Secretary	15	3	3	12
43.9999	Homeland Security, Law Enforcement, Firefighting and Related Protective Services, Other	11	1	1	10
52.0406	Receptionist	13	3	3	10
47.0101	Electrical/Electronics Equipment Installation & Repair, Gen.	17	10	10	7
47.0614	Alternative Fuel Vehicle Technology/Technician	8	1	1	7
31.0505	Kinesiology and Exercise Science	3	3	3	0
52.0204	Office Management and Supervision	6	7	7	(1)
23.1302	Creative Writing	0	1	1	(1)
47.9999	Mechanic and Repair Technologies/Technicians, Other	3	9	9	(6)
16.0101	Foreign Languages and Literatures, General	0	7	7	(7)
11.0801	Web Page, Digital/Multimedia & Info. Resources Design	1	13	13	(12)
51.3901	Licensed Practical/Vocational Nurse Training	3	22	22	(19)

TABLE A4.2: ALTERNATIVE SUPPLY AND DEMAND FOR WWCC'S ASSOCIATE DEGREE PROGRAMS

CIP	PROGRAM	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	WWCC COMPLETERS	TOTAL GAP OR SURPLUS
52.0201	Business Administration and Management, General	196	12	12	184
52.1401	Marketing/Marketing Management, General	144	1	1	143
47.0303	Industrial Mechanics and Maintenance Technology	83	8	8	75
52.0408	General Office Occupations and Clerical Services	44	1	1	43
48.0508	Welding Technology/ Welder	35	3	3	31
52.0301	Accounting	33	10	10	22
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	25	3	3	22
15.0903	Petroleum Technology/ Technician	29	9	9	20
23.0101	English Language and Literature, General	22	6	6	16
52.0401	Administrative Assistant and Secretarial Science, General	20	6	6	13
47.0605	Diesel Mechanics Technology/ Technician	16	4	4	11
40.0501	Chemistry, General	11	1	1	10
51.0716	Medical Administrative/ Executive Assistant and Medical Secretary	16	5	5	10
51.1101	Pre-Dentistry Studies	10	4	4	6
9.0401	Journalism	2	1	1	2
50.0711	Ceramic Arts and Ceramics	1	0	0	0
45.0901	International Relations and Affairs	0	0	0	(0)
51.1104	Pre-Veterinary Studies	1	1	1	(0)
44.0701	Social Work	2	2	2	(0)
11.0101	Computer and Information Sciences, General	7	7	7	(0)
26.0709	Wildlife Biology	0	1	1	(1)
3.0104	Environmental Science	1	1	1	(1)
40.0601	Geology/Earth Science, General	0	1	1	(1)
22.0001	Pre-Law Studies	0	1	1	(1)
45.0301	Archeology	0	1	1	(1)
51.1103	Pre-Pharmacy Studies	1	3	3	(2)
54.0101	History, General	0	2	2	(2)
45.1001	Political Science and Government, General	0	2	2	(2)
27.0101	Mathematics, General	0	2	2	(2)
45.0201	Anthropology	0	2	2	(2)
16.0101	Foreign Languages and Literatures, General	0	2	2	(2)
50.0301	Dance, General	1	4	4	(3)
51.3817	Nursing Education	0	3	3	(3)
45.0101	Social Sciences, General	0	3	3	(3)
50.0901	Music, General	0	3	3	(3)
47.9999	Mechanic and Repair Technologies/ Technicians, Other	0	5	5	(4)
51.1102	Pre-Medicine/ Pre-Medical Studies	4	8	8	(4)
51.0907	Medical Radiologic Technology/ Science - Radiation Therapist	1	6	6	(5)
50.0701	Art/ Art Studies, General	1	7	7	(6)

CIP	PROGRAM	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL COMPLETERS	WWCC COMPLETERS	TOTAL GAP OR SURPLUS
31.0505	Kinesiology and Exercise Science	2	8	8	(6)
9.0101	Speech Communication and Rhetoric	0	8	8	(8)
50.0501	Drama and Dramatics/ Theatre Arts, General	1	9	9	(8)
47.0101	Electrical/ Electronics Equipment Installation and Repair, General	10	21	21	(11)
13.1205	Secondary Education and Teaching	1	12	12	(11)
14.0101	Engineering, General	0	12	12	(12)
43.0103	Criminal Justice/ Law Enforcement Administration	2	14	14	(12)
26.0101	Biology/ Biological Sciences, General	0	13	13	(13)
51.3801	Registered Nursing/ Registered Nurse	9	32	32	(23)
42.0101	Psychology, General	0	24	24	(24)
13.1202	Elementary Education and Teaching	1	33	33	(32)

APPENDIX 5: DETAILED EMPLOYMENT PROJECTIONS

Table A5.1 displays the occupations that align with one or more of WWCC’s educational programs in the WWCC Economic Region. The programs with which they align can be found in Table A2.1. Table A5.2 displays the occupations that align with one or more of the programs discussed in the analysis of potential new programs (Tables 2.3). Note that if an occupation appears in Table A5.1, it is usually not included in Table A5.2.

TABLE A5.1: DETAILED EMPLOYMENT PROJECTIONS RELATED TO EXISTING PROGRAMS

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
11-1011	Chief Executives	50	47	(3)	(5%)	1
11-1021	General and Operations Managers	958	996	38	4%	22
11-1031	Legislators	21	23	2	11%	1
11-2011	Advertising and Promotions Managers	<10	<10	--	--	1
11-2021	Marketing Managers	19	22	3	16%	1
11-2022	Sales Managers	38	45	7	18%	2
11-2031	Public Relations and Fundraising Managers	<10	<10	--	--	1
11-3011	Administrative Services Managers	39	46	7	19%	1
11-3021	Computer and Information Systems Managers	26	31	5	18%	1
11-3031	Financial Managers	116	122	6	5%	3
11-3051	Industrial Production Managers	72	79	7	9%	2
11-3061	Purchasing Managers	<10	<10	--	--	0
11-3071	Transportation, Storage, and Distribution Managers	36	42	6	16%	1
11-3111	Compensation and Benefits Managers	<10	<10	--	--	1
11-3121	Human Resources Managers	26	30	4	16%	1
11-3131	Training and Development Managers	<10	<10	--	--	1
11-9021	Construction Managers	146	135	(11)	(8%)	2
11-9033	Education Administrators, Postsecondary	10	12	2	20%	0
11-9041	Architectural and Engineering Managers	34	40	6	17%	1
11-9071	Gaming Managers	<10	<10	--	--	0
11-9081	Lodging Managers	52	42	(10)	(19%)	2
11-9121	Natural Sciences Managers	21	20	(1)	(6%)	0
11-9141	Property, Real Estate, and Community Association Managers	66	17	(49)	(74%)	1
11-9151	Social and Community Service Managers	46	57	11	24%	2
11-9199	Managers, All Other	268	256	(12)	(4%)	6

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
13-1011	Agents and Business Managers of Artists, Performers, and Athletes	<10	<10	--	--	1
13-1021	Buyers and Purchasing Agents, Farm Products	<10	<10	--	--	0
13-1022	Wholesale and Retail Buyers, Except Farm Products	31	37	6	19%	1
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	61	68	7	12%	2
13-1051	Cost Estimators	63	74	11	18%	3
13-1071	Human Resources Specialists	103	104	1	1%	2
13-1075	Labor Relations Specialists	21	19	(2)	(7%)	0
13-1081	Logisticians	19	24	5	25%	1
13-1111	Management Analysts	96	97	1	1%	2
13-1121	Meeting, Convention, and Event Planners	21	30	9	44%	1
13-1131	Fundraisers	14	16	2	12%	0
13-1141	Compensation, Benefits, and Job Analysis Specialists	10	12	2	16%	0
13-1151	Training and Development Specialists	85	89	4	5%	2
13-1161	Market Research Analysts and Marketing Specialists	60	74	14	23%	2
13-1199	Business Operations Specialists, All Other	183	201	18	10%	4
13-2011	Accountants and Auditors	261	272	11	4%	9
13-2021	Appraisers and Assessors of Real Estate	41	36	(5)	(12%)	0
13-2031	Budget Analysts	<10	<10	--	--	0
13-2041	Credit Analysts	<10	<10	--	--	1
13-2051	Financial Analysts	28	34	6	21%	1
13-2052	Personal Financial Advisors	30	29	(1)	(3%)	0
13-2053	Insurance Underwriters	<10	<10	--	--	1
13-2061	Financial Examiners	<10	<10	--	--	0
13-2071	Credit Counselors	<10	<10	--	--	1
13-2072	Loan Officers	133	136	3	2%	3
13-2081	Tax Examiners and Collectors, and Revenue Agents	10	11	1	9%	0
13-2082	Tax Preparers	13	<10	--	--	1
13-2099	Financial Specialists, All Other	14	17	3	20%	0
15-1111	Computer and Information Research Scientists	<10	<10	--	--	0
15-1121	Computer Systems Analysts	57	71	14	25%	2
15-1122	Information Security Analysts	<10	<10	--	--	1
15-1134	Web Developers	23	24	1	5%	0
15-1141	Database Administrators	14	15	1	9%	0
15-1141	Data Scientist	14	15	1	9%	0
15-1141	Database Manager	14	15	1	9%	0
15-1141	Data Miner	14	15	1	9%	0
15-1142	Network and Computer Systems Administrators	97	100	3	3%	2
15-1142	Data Security Manager	97	100	3	3%	2
15-1143	Computer Network Architects	<10	<10	--	--	1
15-1151	PC Support Tech	70	81	11	15%	2
15-1151	Help Desk Assistant	70	81	11	15%	2

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
15-1199	Computer Occupations, All Other	15	16	1	9%	0
15-2011	Actuaries	<10	<10	--	--	0
15-2021	Mathematicians	<10	<10	--	--	1
15-2041	Statisticians	<10	<10	--	--	1
15-2099	Mathematical Science Occupations, All Other	-	(0)	(0)	--	0
17-2199	Engineers, All Other	32	32	0	1%	1
17-3021	Aerospace Engineering and Operations Technicians	<10	<10	--	--	0
17-3023	Electrical and Electronics Engineering Technicians	37	35	(2)	(6%)	1
17-3024	Electro-Mechanical Technicians	16	11	(5)	(33%)	0
17-3027	Mechanical Engineering Technicians	<10	<10	--	--	0
19-1023	Zoologists and Wildlife Biologists	79	83	4	5%	3
19-1029	Biological Scientists, All Other	27	26	(1)	(4%)	1
19-1099	Life Scientists, All Other	<10	<10	--	--	1
19-2031	Chemists	40	39	(1)	(2%)	1
19-2041	Environmental Scientists and Specialists, Including Health	70	75	5	7%	3
19-2042	Geoscientists, Except Hydrologists and Geographers	50	53	3	7%	2
19-2043	Hydrologists	<10	<10	--	--	1
19-3031	Clinical, Counseling, and School Psychologists	57	69	12	21%	3
19-3032	Industrial-Organizational Psychologists	-	<10	--	--	0
19-3039	Psychologists, All Other	<10	<10	--	--	1
19-3091	Anthropologists and Archeologists	16	14	(2)	(13%)	0
19-3093	Historians	<10	<10	--	--	0
19-3094	Political Scientists	<10	<10	--	--	1
19-3099	Social Scientists and Related Workers, All Other	<10	<10	--	--	0
19-4041	Geological and Petroleum Technicians	77	64	(13)	(17%)	3
19-4061	Social Science Research Assistants	<10	<10	--	--	0
19-4091	Environmental Science and Protection Technicians, Including Health	18	20	2	10%	1
21-1013	Marriage and Family Therapists	<10	<10	--	--	1
21-1019	Counselors, All Other	<10	<10	--	--	0
21-1021	Child, Family, and School Social Workers	100	127	27	27%	5
21-1029	Social Workers, All Other	26	29	3	10%	1
21-1092	Probation Officers and Correctional Treatment Specialists	31	33	2	6%	1
23-1011	Lawyers	148	155	7	4%	3
23-1012	Judicial Law Clerks	<10	<10	--	--	1
23-1021	Administrative Law Judges, Adjudicators, and Hearing Officers	<10	<10	--	--	1
23-1022	Arbitrators, Mediators, and Conciliators	<10	<10	--	--	1
23-1023	Judges, Magistrate Judges, and Magistrates	<10	<10	--	--	0
25-1099	Postsecondary Teachers	130	167	37	28%	6
25-2021	Elementary School Teachers, Except Special Education	480	582	102	21%	22
25-2031	Secondary School Teachers, Except Special and Career/ Technical Education	341	392	51	15%	15

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors	14	18	4	27%	1
25-3021	Self-Enrichment Education Teachers	57	63	6	11%	2
25-4021	Librarians	67	73	6	9%	2
25-4031	Library Technicians	68	72	4	6%	4
27-1012	Craft Artists	<10	<10	--	--	1
27-1013	Fine Artists, Including Painters, Sculptors, and Illustrators	<10	<10	--	--	1
27-1014	Multimedia Artists and Animators	<10	<10	--	--	0
27-1024	Graphic Designers	39	43	4	10%	1
27-2011	Actors	<10	<10	--	--	1
27-2012	Producers and Directors	14	14	(0)	(1%)	0
27-2021	Athletes and Sports Competitors	<10	<10	--	--	1
27-2022	Coaches and Scouts	144	155	11	8%	6
27-2031	Dancers	<10	<10	--	--	1
27-2032	Choreographers	11	15	4	35%	1
27-2042	Musicians and Singers	19	18	(1)	(3%)	1
27-2099	Entertainers and Performers, Sports and Related Workers, All Other	<10	<10	--	--	0
27-3011	Radio and Television Announcers	11	11	(0)	(1%)	0
27-3012	Public Address System and Other Announcers	<10	<10	--	--	0
27-3021	Broadcast News Analysts	<10	<10	--	--	0
27-3022	Reporters and Correspondents	25	25	(0)	(2%)	1
27-3031	Public Relations Specialists	51	54	3	5%	1
27-3041	Editors	34	34	0	1%	1
27-3042	Technical Writers	<10	<10	--	--	0
27-3043	Writers and Authors	14	9	(5)	(38%)	0
27-3091	Interpreters and Translators	12	10	(2)	(14%)	0
27-3099	Media and Communication Workers, All Other	<10	<10	--	--	0
27-4012	Broadcast Technicians	16	16	(0)	(1%)	0
27-4013	Radio Operators	<10	<10	--	--	0
27-4014	Sound Engineering Technicians	<10	<10	--	--	0
27-4021	Photographers	20	<10	--	--	1
27-4031	Camera Operators, Television, Video, and Motion Picture	<10	<10	--	--	0
27-4032	Film and Video Editors	<10	<10	--	--	0
27-4099	Media and Communication Equipment Workers, All Other	<10	<10	--	--	1
29-1021	Dentists, General	81	129	48	59%	7
29-1022	Oral and Maxillofacial Surgeons	<10	<10	--	--	0
29-1023	Orthodontists	<10	<10	--	--	0
29-1024	Prosthodontists	<10	<10	--	--	0
29-1029	Dentists, All Other Specialists	<10	<10	--	--	0
29-1051	Pharmacists	75	72	(3)	(4%)	2
29-1069	Physicians and Surgeons, All Other	16	21	5	29%	1
29-1071	Physician Assistants	24	29	5	20%	1

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
29-1123	Physical Therapists	54	67	13	24%	3
29-1124	Radiation Therapists	<10	<10	--	--	0
29-1128	Exercise Physiologists	<10	<10	--	--	0
29-1129	Therapists, All Other	<10	<10	--	--	1
29-1131	Veterinarians	33	33	0	0%	1
29-1141	Registered Nurses	665	737	72	11%	21
29-2021	Dental Hygienists	102	136	34	33%	6
29-2034	Radiologic Technologists	47	53	6	12%	1
29-2035	Magnetic Resonance Imaging Technologists	<10	<10	--	--	0
29-2052	Pharmacy Technicians	78	76	(2)	(3%)	1
29-2056	Veterinary Technologists and Technicians	43	53	10	23%	1
29-2061	Licensed Practical and Licensed Vocational Nurses	94	109	15	16%	4
29-2071	Medical Records and Health Information Technicians	33	37	4	12%	1
29-9091	Athletic Trainers	<10	<10	--	--	0
31-2021	Physical Therapist Assistants	10	15	5	49%	1
31-2022	Physical Therapist Aides	10	14	4	39%	1
31-9091	Dental Assistants	127	164	37	29%	7
31-9092	Medical Assistants	88	106	18	20%	4
31-9095	Pharmacy Aides	<10	<10	--	--	1
33-1012	First-Line Supervisors of Police and Detectives	83	87	4	5%	3
33-1099	First-Line Supervisors of Protective Service Workers, All Other	24	26	2	7%	1
33-3041	Parking Enforcement Workers	10	10	(0)	(3%)	0
33-3052	Transit and Railroad Police	<10	<10	--	--	1
33-9011	Animal Control Workers	21	22	1	6%	1
33-9031	Gaming Surveillance Officers and Gaming Investigators	<10	<10	--	--	1
33-9091	Crossing Guards	54	53	(1)	(1%)	1
33-9092	Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	57	59	2	3%	4
33-9099	Protective Service Workers, All Other	120	126	6	5%	9
37-1011	First-Line Supervisors of Housekeeping and Janitorial Workers	112	135	23	21%	5
39-1011	Gaming Supervisors	<10	<10	--	--	0
39-1012	Slot Supervisors	<10	<10	--	--	1
39-1021	First-Line Supervisors of Personal Service Workers	87	91	4	4%	2
39-3021	Motion Picture Projectionists	<10	<10	--	--	1
39-9031	Fitness Trainers and Aerobics Instructors	74	81	7	9%	2
39-9099	Personal Care and Service Workers, All Other	28	46	18	63%	3
41-1011	First-Line Supervisors of Retail Sales Workers	552	574	22	4%	14
41-1012	First-Line Supervisors of Non-Retail Sales Workers	47	40	(7)	(15%)	1
41-2011	Cashiers	1,158	1,038	(120)	(10%)	50
41-2012	Gaming Change Persons and Booth Cashiers	<10	<10	--	--	0
41-2021	Counter and Rental Clerks	167	188	21	13%	7

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
41-2022	Parts Salespersons	186	180	(6)	(3%)	5
41-2031	Retail Salespersons	1,283	1,381	98	8%	56
41-3011	Advertising Sales Agents	32	35	3	8%	1
41-3021	Insurance Sales Agents	169	218	49	29%	9
41-3031	Securities, Commodities, and Financial Services Sales Agents	45	44	(1)	(3%)	1
41-3041	Travel Agents	<10	<10	--	--	0
41-3099	Sales Representatives, Services, All Other	101	126	25	25%	6
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	67	72	5	8%	2
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	355	400	45	13%	12
41-9011	Demonstrators and Product Promoters	<10	<10	--	--	0
41-9021	Real Estate Brokers	29	20	(9)	(30%)	0
41-9022	Real Estate Sales Agents	119	75	(44)	(37%)	1
41-9031	Sales Engineers	<10	<10	--	--	1
41-9041	Telemarketers	15	16	1	5%	0
41-9091	Door-to-Door Sales Workers, News and Street Vendors, and Related Workers	33	31	(2)	(7%)	0
41-9099	Sales and Related Workers, All Other	29	33	4	14%	1
43-1011	First-Line Supervisors of Office and Administrative Support Workers	298	328	30	10%	10
43-2011	Switchboard Operators, Including Answering Service	14	13	(1)	(8%)	0
43-2021	Telephone Operators	<10	<10	--	--	0
43-3011	Bill and Account Collectors	46	48	2	5%	2
43-3021	Billing and Posting Clerks	102	119	17	17%	4
43-3031	Bookkeeping, Accounting, and Auditing Clerks	586	620	34	6%	9
43-3031	Bookkeeper	586	620	34	6%	9
43-3051	Payroll and Timekeeping Clerks	63	68	5	8%	2
43-3061	Procurement Clerks	16	17	1	9%	1
43-3071	Tellers	180	178	(2)	(1%)	8
43-3099	Financial Clerks, All Other	<10	<10	--	--	1
43-4011	Brokerage Clerks	<10	<10	--	--	1
43-4021	Correspondence Clerks	<10	<10	--	--	0
43-4031	Court, Municipal, and License Clerks	142	155	13	9%	4
43-4051	Customer Service Representatives	236	271	35	15%	10
43-4071	File Clerks	29	26	(3)	(9%)	1
43-4081	Hotel, Motel, and Resort Desk Clerks	258	275	17	7%	14
43-4111	Interviewers, Except Eligibility and Loan	22	23	1	4%	1
43-4121	Library Assistants, Clerical	37	43	6	16%	2
43-4151	Order Clerks	16	18	2	11%	1
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	30	31	1	3%	1
43-4171	Receptionists and Information Clerks	194	213	19	10%	7

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	25	21	(4)	(17%)	0
43-4199	Information and Record Clerks, All Other	48	46	(2)	(4%)	1
43-5011	Cargo and Freight Agents	<10	<10	--	--	0
43-5051	Postal Service Clerks	50	39	(11)	(23%)	1
43-5052	Postal Service Mail Carriers	60	66	6	11%	3
43-5053	Postal Service Mail Sorters, Processors, and Processing Machine Operators	53	43	(10)	(18%)	0
43-5071	Shipping, Receiving, and Traffic Clerks	81	92	11	13%	3
43-5111	Weighers, Measurers, Checkers, and Samplers, Recordkeeping	37	48	11	29%	2
43-6011	Executive Secretaries & Executive Admin. Assistants	121	127	6	5%	2
43-6013	Medical Secretaries	361	429	68	19%	12
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	952	1,052	100	10%	22
43-9021	Data Entry Clerk	22	19	(3)	(14%)	0
43-9022	Word Processors and Typists	11	10	(1)	(13%)	0
43-9031	Desktop Publishers	<10	<10	--	--	0
43-9041	Insurance Claims and Policy Processing Clerks	52	57	5	9%	2
43-9051	Mail Clerks and Mail Machine Operators, Except Postal Service	17	15	(2)	(13%)	0
43-9061	Office Clerks, General	936	995	59	6%	26
43-9071	Office Machine Operators, Except Computer	<10	<10	--	--	1
43-9081	Proofreaders and Copy Markers	<10	<10	--	--	1
43-9199	Office and Administrative Support Workers, All Other	39	43	4	11%	2
47-2111	Electricians	520	520	(0)	(0%)	10
47-2152	Plumbers, Pipefitters, and Steamfitters	340	332	(8)	(2%)	4
47-2221	Structural Iron and Steel Workers	57	69	12	22%	3
47-3013	Helpers--Electricians	11	13	2	16%	0
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, & Steamfitters	46	43	(3)	(6%)	1
47-3019	Helpers, Construction Trades, All Other	<10	<10	--	--	1
47-4021	Elevator Installers and Repairers	<10	<10	--	--	0
47-4041	Hazardous Materials Removal Workers	26	28	2	6%	1
47-4099	Construction and Related Workers, All Other	13	16	3	21%	1
49-2092	Electric Motor, Power Tool, and Related Repairers	<10	<10	--	--	1
49-2093	Electrical and Electronics Installers and Repairers, Transportation Equipment	13	14	1	7%	0
49-2094	Electrical and Electronics Repairers, Commercial and Industrial Equipment	46	42	(4)	(8%)	1
49-2096	Electronic Equip. Installers and Repairers, Motor Vehicles	<10	<10	--	--	0
49-2097	Electr. Home Entertainment Equip. Installers & Repairers	<10	<10	--	--	0
49-3011	Aircraft Mechanics and Service Technicians	<10	<10	--	--	1
49-3023	Automotive Service Technicians and Mechanics	376	352	(24)	(6%)	10
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	203	221	18	9%	6

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
49-3041	Farm Equipment Mechanics and Service Technicians	12	12	(0)	(1%)	0
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	258	302	44	17%	13
49-3043	Rail Car Repairers	197	245	48	24%	11
49-3051	Motorboat Mechanics and Service Technicians	<10	<10	--	--	1
49-3052	Motorcycle Mechanics	14	13	(1)	(9%)	0
49-3053	Outdoor Power Equipment and Other Small Engine Mechanics	<10	<10	--	--	1
49-3093	Tire Repairers and Changers	66	61	(5)	(7%)	2
49-9011	Mechanical Door Repairers	<10	<10	--	--	0
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	98	90	(8)	(9%)	3
49-9041	Industrial Machinery Mechanics	734	804	70	9%	29
49-9043	Maintenance Workers, Machinery	60	75	15	24%	2
49-9044	Millwrights	16	19	3	18%	1
49-9045	Refractory Materials Repairers, Except Brickmasons	<10	<10	--	--	0
49-9051	Electrical Power-Line Installers and Repairers	68	73	5	7%	3
49-9071	Maintenance and Repair Workers, General	720	769	49	7%	19
49-9081	Wind Turbine Service Technicians	14	16	2	14%	0
49-9098	Helpers--Installation, Maintenance, and Repair Workers	96	103	7	7%	4
49-9099	Installation, Maintenance, and Repair Workers, All Other	61	70	9	14%	2
51-2031	Engine and Other Machine Assemblers	<10	<10	--	--	1
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	<10	<10	--	--	1
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders, Metal and Plastic	<10	<10	--	--	0
51-4041	Machinists	136	144	8	6%	4
51-4121	Welders, Cutters, Solderers, and Brazers	319	301	(18)	(6%)	8
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	<10	<10	--	--	0
51-4199	Metal Workers and Plastic Workers, All Other	<10	<10	--	--	1
51-6062	Textile Cutting Machine Setters, Operators, and Tenders	<10	<10	--	--	1
51-6063	Textile Knitting and Weaving Machine Setters, Operators, and Tenders	<10	<10	--	--	0
51-6064	Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders	<10	<10	--	--	1
51-8013	Power Plant Operators	90	80	(10)	(11%)	3
51-8031	Water and Wastewater Treatment Plant and System Operators	114	125	11	10%	5
51-8091	Chemical Plant and System Operators	180	151	(29)	(16%)	7
51-8092	Gas Plant Operators	240	192	(48)	(20%)	9
51-8093	Petroleum Pump System Operators, Refinery Operators, and Gaugers	383	409	26	7%	17
53-7071	Gas Compressor and Gas Pumping Station Operators	55	42	(13)	(24%)	2
53-7072	Pump Operators, Except Wellhead Pumps	78	55	(23)	(30%)	3
53-7073	Wellhead Pumps	113	75	(38)	(34%)	2

TABLE A5.2: DETAILED EMPLOYMENT PROJECTIONS RELATED TO POTENTIAL FUTURE PROGRAMS

SOC	OCCUPATION	2015 JOBS	2025 JOBS	CHANGE	% CHANGE	PROJECTED ANNUAL OPENINGS
11-9013	Farmers, Ranchers, and Other Agricultural Managers	456	378	(78)	(17%)	7
17-3011	Architectural and Civil Drafters	98	95	(3)	(3%)	1
17-3022	Civil Engineering Technicians	65	65	(0)	(0%)	1
17-3025	Environmental Engineering Technicians	22	24	2	11%	1
17-3029	Engineering Technicians, Except Drafters, All Other	133	122	(11)	(8%)	3
19-4031	Chemical Technicians	93	92	(1)	(1%)	2
19-4093	Forest and Conservation Technicians	156	153	(3)	(2%)	6
23-2011	Paralegals and Legal Assistants	80	87	7	9%	2
25-2011	Preschool Teachers, Except Special Education	129	173	44	34%	9
25-9041	Teacher Assistants	731	827	96	13%	27
29-2041	Emergency Medical Technicians and Paramedics	231	314	83	36%	16
31-1014	Nursing Assistants	559	561	2	0%	11
33-3012	Correctional Officers and Jailers	234	254	20	9%	9
33-3051	Police and Sheriff's Patrol Officers	291	314	23	8%	12
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	807	750	(57)	(7%)	9
47-2031	Carpenters	749	761	12	2%	11
47-2073	Operating Engineers and Other Construction Equipment Operators	989	1,078	89	9%	32
47-4031	Fence Erectors	135	168	33	25%	7
47-5041	Continuous Mining Machine Operators	89	128	39	43%	6
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	372	385	13	4%	12
49-2021	Radio, Cellular, and Tower Equipment Installers and Repairs	59	61	2	4%	1
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	197	190	(7)	(4%)	7
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	213	233	20	9%	8
53-3022	Bus Drivers, School or Special Client	312	343	31	10%	9
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,924	2,165	241	13%	57
53-3033	Light Truck or Delivery Services Drivers	195	224	29	15%	6
53-7032	Excavating and Loading Machine and Dragline Operators	243	308	65	27%	9