Fuels

Fuels

Fuels employment encompasses work related to fuel extraction, mining, and processing, including petroleum refineries and firms that support coal mining, oil, and gas field machinery manufacturing. Workers across both the forestry and agriculture sectors who support fuel production with corn ethanol, biodiesels, and fuel wood are also included in the fuel employment data.

TRENDS

- **2018 Job Gain.** In 2018, the Fuels sector grew by approximately 52,000 jobs, or nearly 5 percent for a total of 1,127,553 jobs.
- **Oil and Gas Recovery.** Oil and natural gas employers added the most new jobs, nearly 51,000, employing 603,000 and 271,000 respectively.
- **Coal Growth.** Coal jobs increased by 650 jobs, totaling about 74,800.
- **Biofuels.** Woody biomass added 1,800 jobs, while corn ethanol also increased.
- **2019 Expectations.** Employers in the Fuels sector anticipate over 3 percent job growth in 2019, with most of the increase expected in oil and natural gas.

4.9%

Overall Fuels jobs growth in 2018

3.0%

Fuels employers predict 3% job growth in 2019

SNAPSHOT OF EMPLOYMENT

Figure 1.
Fuels Sector – Employment by Industry, 2017-2018

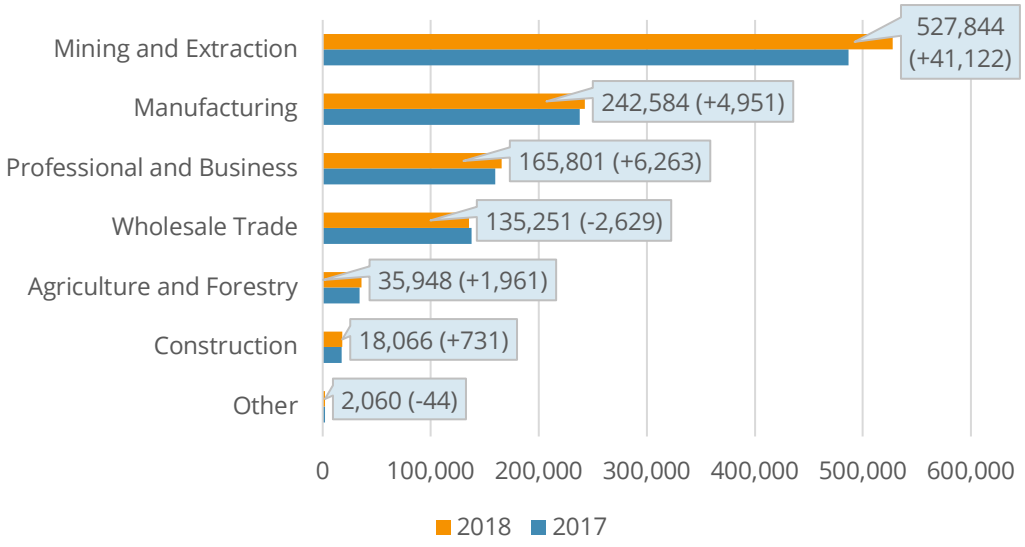
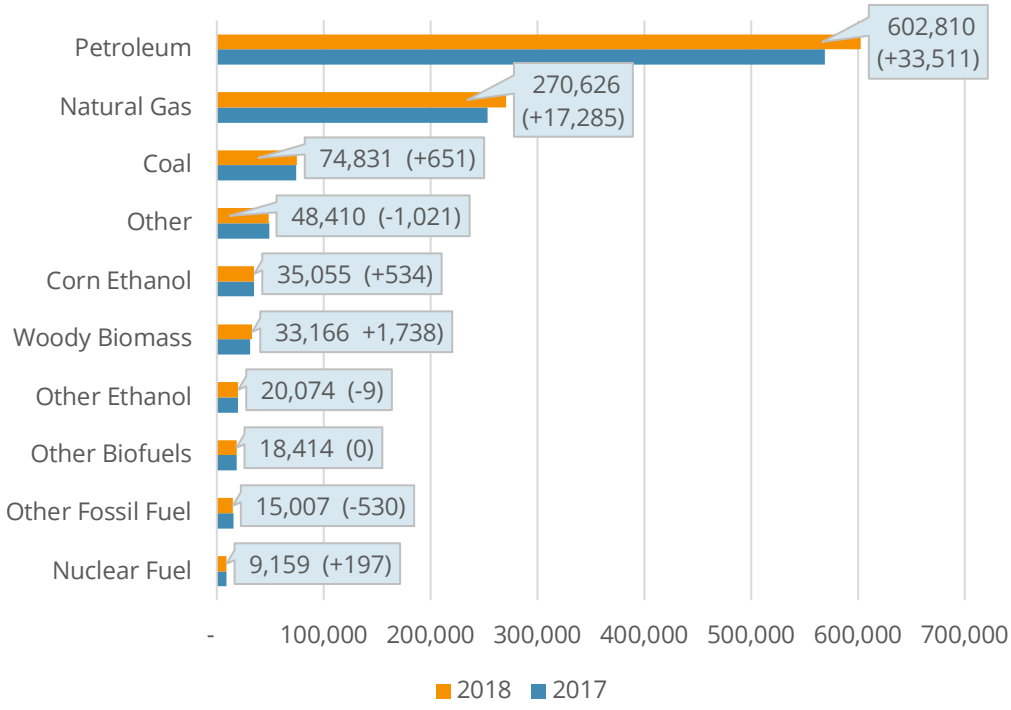


Figure 2.
Fuels Sector – Employment by Detailed Technology Application, 2017-2018



KEY TAKEAWAYS

- The major growth industry sector in Fuels was mining and extraction, which added 41,000 new jobs in 2018, reflecting the growth of oil and natural gas production.
- Fuels production employment in the United States includes coal, petroleum, natural gas, corn ethanol and a variety of other biofuels, nuclear fuel, and others.

Table 5.
Fuels Sector – Employment by Detailed Technology Application and Industry, Q2 2018

	Total	Agriculture	Mining + Extraction	Manufacturing	Wholesale Trade	Professional Services
Coal	74,831	--	55,905	10,194	1,007	7,700
Petroleum	602,810	--	308,681	149,142	58,622	66,947
Natural Gas	270,626	--	162,928	44,444	29,045	34,037
Other Fossil Fuel	15,007	--	--	2,923	6,870	5,103
Corn Ethanol	35,055	15,795	--	9,795	6,553	2,801
Other Ethanol	20,074	2,407	--	2,751	5,282	9,577
Woody Biomass	33,166	17,747	--	4,549	1,005	9,822
Other Biofuels	18,414	--	--	1,013	1,610	15,762
Nuclear Fuel	9,159	--	330	3,038	909	4,883
Other	48,410	--	--	14,737	24,348	9,169
TOTAL	1,127,552	35,949	527,844	242,586	135,251	165,801

HIRING DIFFICULTY

- **53 percent of mining and extraction employers in fuels** reported that it was somewhat difficult or very difficult to hire new employees. 16 percent reported it was very difficult.
- **76 percent of manufacturing employers** reported that it was either somewhat difficult or very difficult to hire new employees.
- **89 percent of professional and business services employers in fuels** reported that it was either difficult or somewhat difficult to hire new employees.

HIGHEST-DEMAND OCCUPATIONS IN FUELS

With significant growth in 2018 and predicted growth of 3 percent in 2019, fuels employers have identified below the occupations that each industry sector is having the greatest difficulty in filling.

Table 6.
Fuels Sector – Reported Occupations with Hiring Difficulty by Industry, Q4 2018

Mining & Extraction	Manufacturing	Wholesale Trade, Distribution, and Transport	Professional and Business Services	Other
Technicians or mechanical support (45%)	Technicians or mechanical support (46%)	Drivers/ dispatchers (39%)	Engineers/ scientists (63%)	Technicians or mechanical support (89%)
Electrician/ construction laborers (21%)	Drivers/ dispatchers (22%)	Sales, marketing, or customer service (28%)	Technicians or mechanical support (13%)	Drivers/ dispatchers (22%)
Drivers/ dispatchers (17%)	Electrician/ construction laborers (21%)	Management (directors, supervisors, vice presidents) (22%)	Electrician/ construction laborers (13%)	Electrician/ construction laborers (22%)

Spotlight: "We are at a critical inflection point in Pennsylvania."

Denise Brinley, Executive Director, Governor's Office of Energy, Pennsylvania

According to USEER data, Pennsylvania has added 6200 jobs in natural gas extraction and electric power generation in the last two years. Currently, almost 17,000 Pennsylvanians are employed in these two sectors.

As **Denise Brinley**, Executive Director of the Governor's Office of Energy in Pennsylvania, observed, "We are at a critical inflection point in Pennsylvania because of the volume of natural gas, the network of pipelines being built, and the importance of climate change. Simultaneously, we have had 14 coal plants with 6,000 MWs of capacity close since 2010. Nuclear power plants produce approximately 40% of the state's baseload electricity, and some are beginning to struggle financially, in part because of the low cost of natural gas. Every form of energy in our state is experiencing a transition.

"Natural gas has provided us with three primary waves of employment. The first was initiated in 2007 with natural gas drilling operations. The second is occurring now and is related to the construction of pipelines. We are now exploring the third, most sustainable future phase — how we can use our natural gas and liquids as a low-cost fuel and feedstock for manufacturers right here in Pennsylvania, which will help spur job creation. We currently export 80% of our natural gas and 100% of our ethane, and we would very much like to change that dynamic.

"We're also undergoing several other promising transitions in our energy economy. For example, Governor Wolf calls for emissions' reduction targets of 26% by 2025 and 80% by 2050."

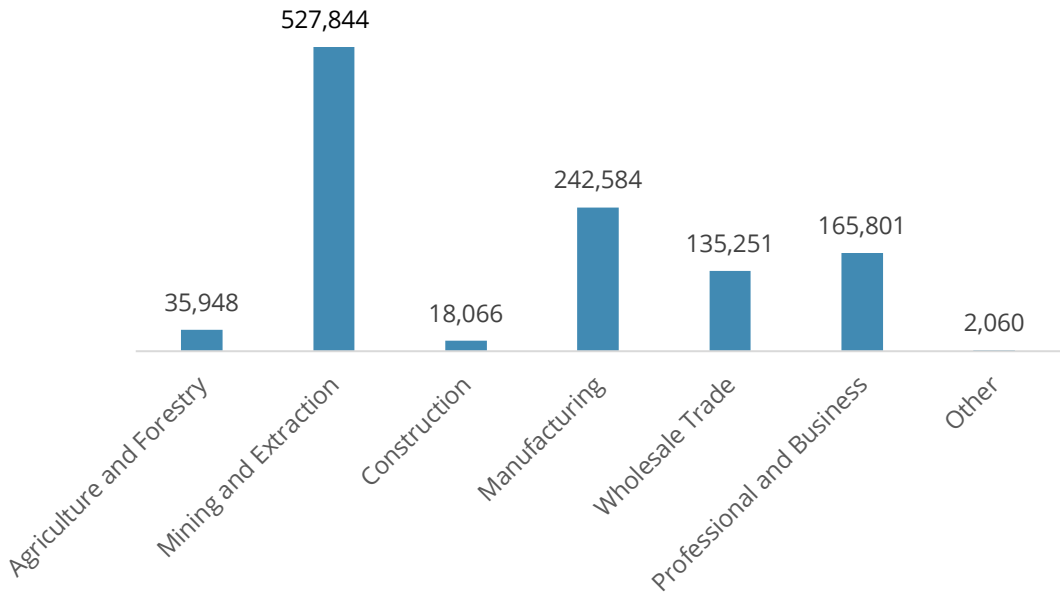
"We have a great example in Chester, Pennsylvania, where the construction of a pipeline to the Kimberly-Clark paper mill will result in the replacement of its coal-fired boiler with natural gas, making the facility economically more competitive while also reducing carbon emissions.

"We are also the first state to publish "energy scenarios," where we've postulated that we harness opportunities with natural gas to the benefit of the entire state economy while managing our emissions' reductions through a combination of carbon pricing and carbon capture and sequestration. Our energy diversity is our strength."

Introduction

The Fuels sector employed 1,127,553 workers in 2018, compared to the previous year's level of almost 1,075,000 jobs. This represents a jump in employment of nearly 5 percent. Oil and gas extraction and support services reached its recent peak employment in the fall of 2014 with 541,000 jobs, while coal mining and extraction reached its recent peak in 2012 with just under 90,000 jobs. In the second quarter of 2018, these comparable BLS employment figures were at 471,609 and 55,905 respectively.[13]

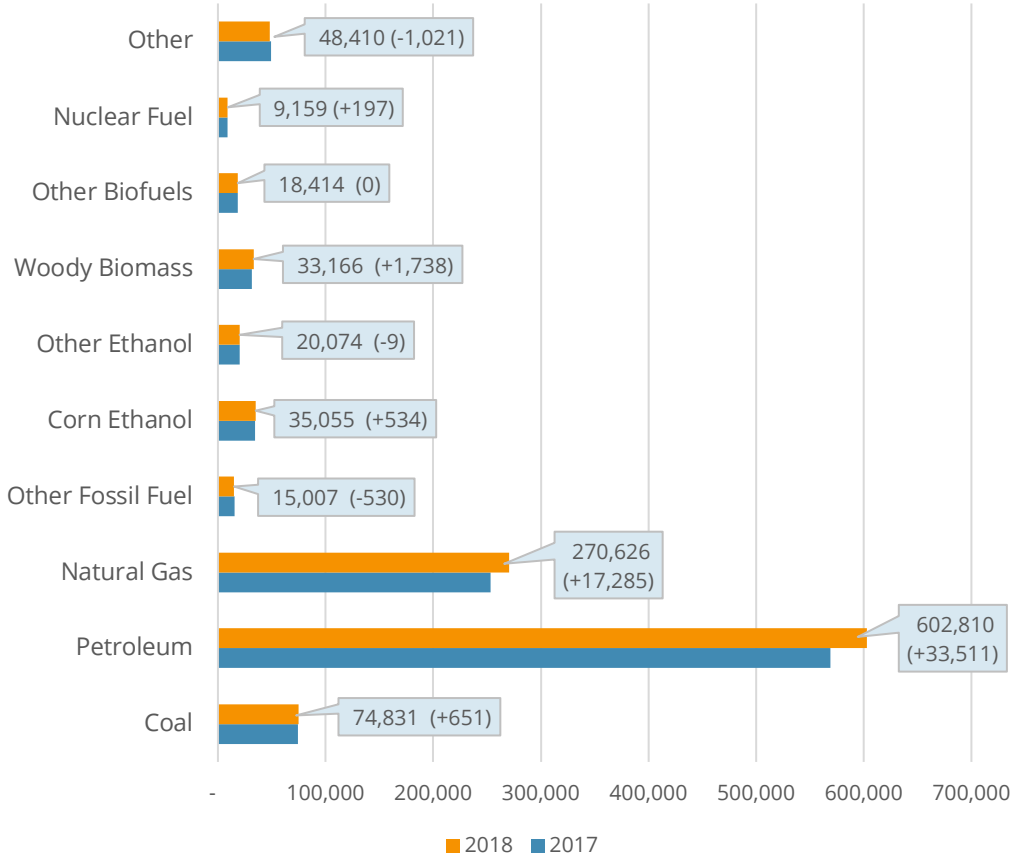
Figure 3.
Fuels Sector – Employment by Industry, Q2 2018



As shown in Figure 4, the 2019 USEER found large increases in 2018 for both petroleum production jobs (more than 33,000 additional jobs, for a total of 602,810 jobs) and natural gas production jobs (more than 17,000 additional jobs, for a total of 270,626 jobs). Overall, employers in the Fuels sector project to see employment increase by 3 percent in 2019.

[13] Job figures from BLS QCEW data, not USEER extrapolated employment, since comparable USEER data does not exist for 2012 and 2014.

Figure 4.
Fuels Sector – Employment by Detailed Technology Application, 2017-2018



Manufacturing employers in the Fuels sector expect an increase in employment of over 4 percent in 2019, while professional business services project to increase employment by over 5 percent during the same time period, as shown in Figure 5.

Figure 5.

Fuels Sector – Expected Employment Growth by Industry (Q4 2018 – Q4 2019

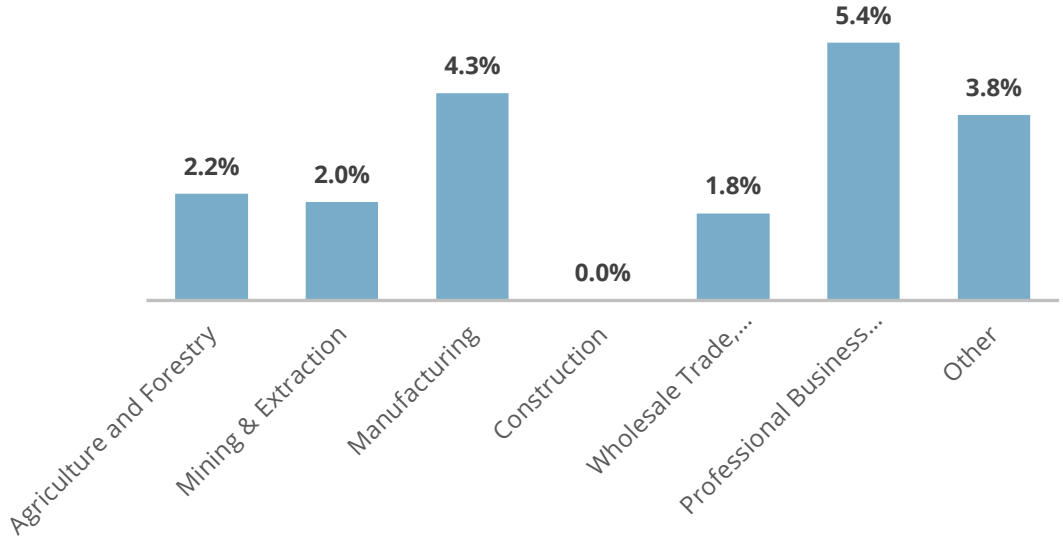
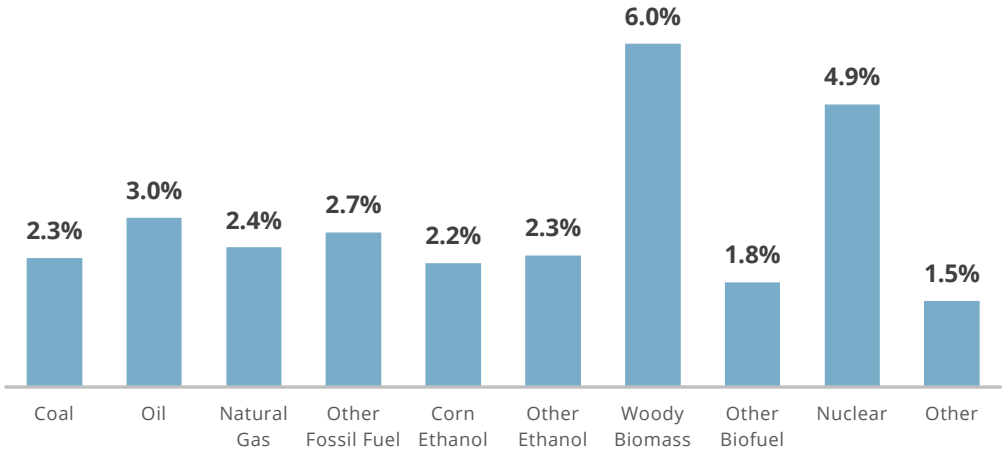


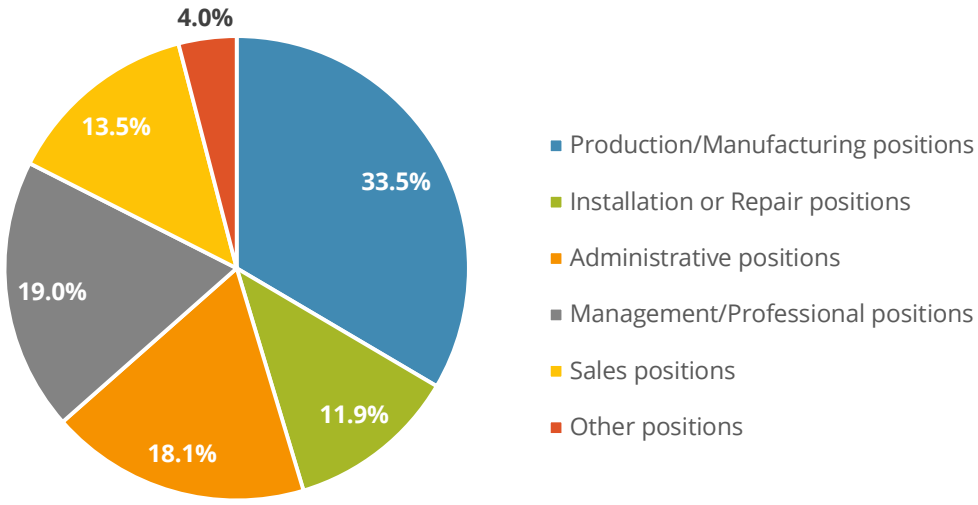
Figure 6.

Fuels Sector – Expected Employment Growth by Detailed Technology (Q4 2018 - Q4 2019)



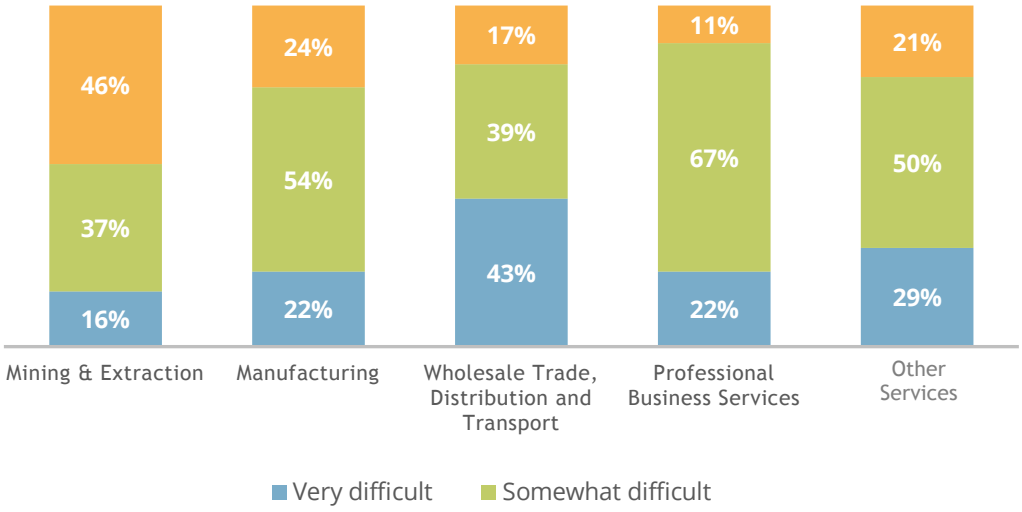
FUELS – WORKFORCE CHARACTERISTICS

Figure 7.
Fuels Sector – Occupational Distribution, Q4 2018



Mining and extraction, the largest segment of petroleum fuels employment, reported a hiring-difficulty score that was one of the lower such scores across all energy sectors–only 53 percent of employers in that industry sector reported that hiring was either somewhat difficult (37 percent) or very difficult (15 percent). Manufacturing, the second largest segment, reported that 76 percent of employers found hiring new employees either somewhat difficult or very difficult.

Figure 8.
Fuels Sector – Hiring Difficulty by Industry, Q4 2018



Fuels sector employers, across most industry sectors, mentioned lack of experience, training, or technical skills as the number one reason for reported hiring difficulty over the previous year. Other significant reasons for reported hiring difficulty were location and insufficient non-technical skills.

Table 7.
Fuels Sector – Reasons for Hiring Difficulty by Industry, Q4 2018

Mining & Extraction	Manufacturing	Wholesale Trade, Distribution, and Transport	Professional and Business Services	Other
Lack of experience, training, or technical skills (42%)	Lack of experience, training, or technical skills (40%)	Insufficient non-technical skills (32%)	Lack of experience, training, or technical skills (63%)	Location (40%)
Insufficient non-technical skills (19%)	Insufficient non-technical skills (21%)	Insufficient qualifications, certifications, education (26%)	Insufficient non-technical skills (13%)	Lack of experience, training, or technical skills (30%)
Difficulty finding industry-specific knowledge, skills, and interest (17%)	Insufficient qualifications, certifications, education (21%)	Cannot provide competitive wages (26%)	Insufficient qualifications, certifications, education (13%)	Difficulty finding industry-specific knowledge, skills, and interest (20%)

More than six in ten (63 percent) professional and business services employers within Fuels who reported difficulty in hiring also reported engineers/scientists as the occupation that was the most difficult to hire for. Technicians or mechanical support was another notably difficult position to hire for.

Table 8 lists the most difficult occupations to hire for by industry within the Fuels sector, as reported by employers in 2018.

Table 8.
Fuels Sector – Reported Occupations with Hiring Difficulty by Industry, Q4 2018

Mining & Extraction	Manufacturing	Wholesale Trade, Distribution, and Transport	Professional and Business Services	Other
Technicians or mechanical support (45%)	Technicians or mechanical support (46%)	Drivers/dispatchers (39%)	Engineers/ scientists (63%)	Technicians or mechanical support (89%)
Electrician/ construction laborers (21%)	Drivers/ dispatchers (22%)	Sales, marketing, or customer service (28%)	Technicians or mechanical support (13%)	Drivers/ dispatchers (22%)
Drivers/ dispatchers (17%)	Electrician/ construction laborers (21%)	Management (directors, supervisors, vice presidents) (22%)	Electrician/ construction laborers (13%)	Electrician/ construction laborers (22%)

Women made up only 24 percent of employment in the Fuels sector. While the Fuels sector had lower proportions of both black or African American and Hispanic or Latino employees, compared to national workforce averages, the sector's overall racial diversity was equal to the national average of 22 percent. The Fuels sector exceeded the national average for veterans hiring at 11 percent.

Table 9.
Fuels Sector – Demographics, Q4 2018

	Fuels		National Workforce Averages[14]
Male	853,800	76%	53%
Female	273,753	24%	47%
Hispanic or Latino	133,945	12%	17%
Not Hispanic or Latino	993,608	88%	83%
American Indian or Alaska Native	20,025	2%	1%
Asian	61,723	5%	6%
Black or African American	59,100	5%	12%
Native Hawaiian or other Pacific Islander	8,195	1%	>1%
White	879,778	78%	78%
Two or more races[15]	98,732	9%	2%
Veterans	122,859	11%	6%
55 and over	261,286	23%	23%
Union	36,066	3%	11%

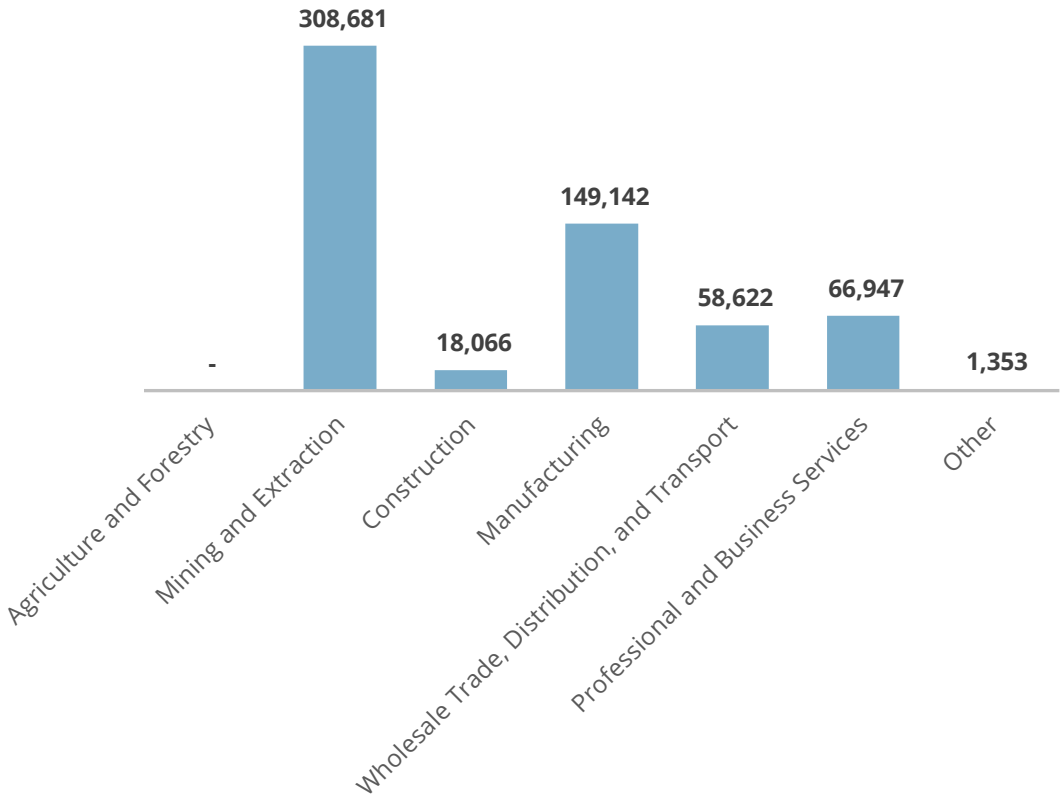
[14] All demographic information except union membership from 2017 data in "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, U.S. Department of Labor, https://www.bls.gov/cps/demographics.htm. Information on union membership is from "Table 3: Union affiliation of employed wage and salary workers by occupation and industry, 2016-17 annual averages," in U.S. Department of Labor, Bureau of Labor Statistics, "Union Members Summary," news release, January 19, 2018, https://www.bls.gov/news.release/union2.nr0.htm.

[15] While federal guidelines were followed in administering the demographic questions, respondents may have reported two or more races as including Hispanic or Latino ethnicity, inappropriately inflating the total and deflating other racial categories.

PETROLEUM FUELS

Petroleum fuels employed a total of 602,810 workers across the nation in 2018. Over the course of 2018, petroleum fuels jobs grew by 33,500 jobs, or almost 6 percent. Mining and extraction supported over half of the oil industry, while manufacturing made up nearly 25 percent of oil fuels employment in 2018.

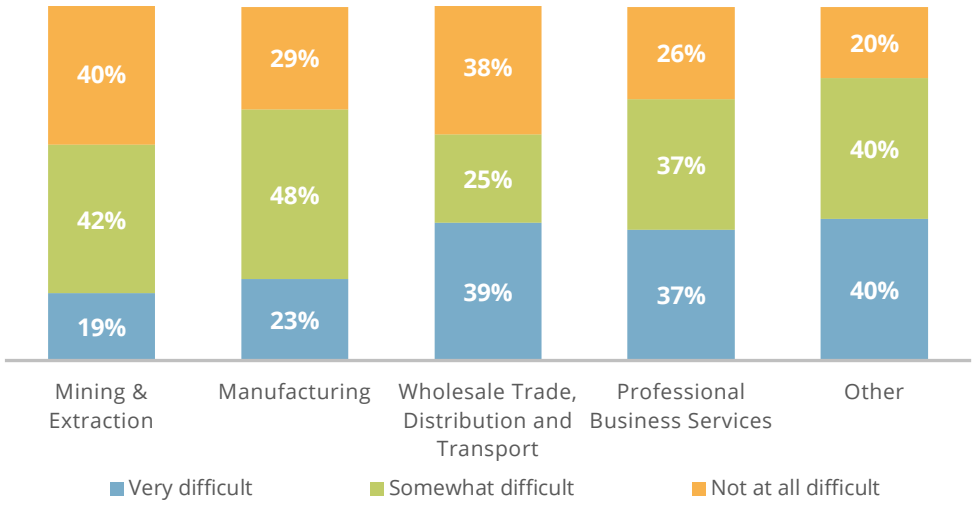
Figure 9.
Petroleum Fuels – Employment by Industry



Employers in industries important to petroleum fuels experienced varying degrees of difficulty in hiring new workers in 2018—61 percent of mining and extraction employers reported that hiring new workers was somewhat difficult or very difficult, 71 percent of manufacturing employers reported hiring was somewhat difficult or very difficult (with 23 percent noting it has been very difficult), and 74 percent of professional business services employers reported that hiring was somewhat difficult or somewhat difficult or very difficult (with 37 percent reporting that hiring was very difficult).[16]

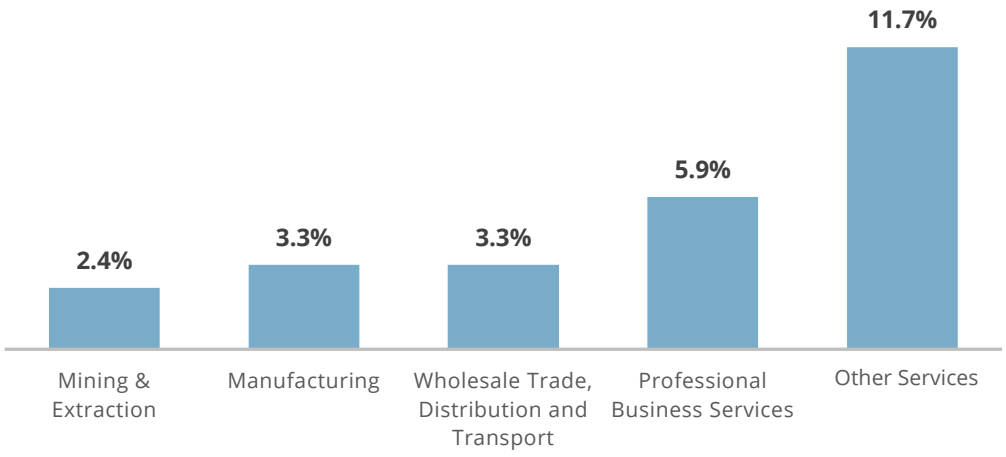
[16] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 10. Conclusions have been made only about industries with sufficient sample size.

Figure 10.
Petroleum Fuels – Hiring Difficulty by Industry



Employers in the petroleum fuels industry expect 3 percent growth in 2019. This is led by the professional business services sector, which expects almost 6 percent growth.

Figure 11.
Petroleum Fuels – Expected Employment Growth by Industry



Petroleum fuels had a low number of female employees in 2018, representing only 23 percent of the workforce. Along with women, black or African American and Hispanic or Latino workers also fell short of national workforce averages. However, the overall racial diversity of the petroleum fuels workforce was equivalent to the national average of 22 percent.

Table 10.

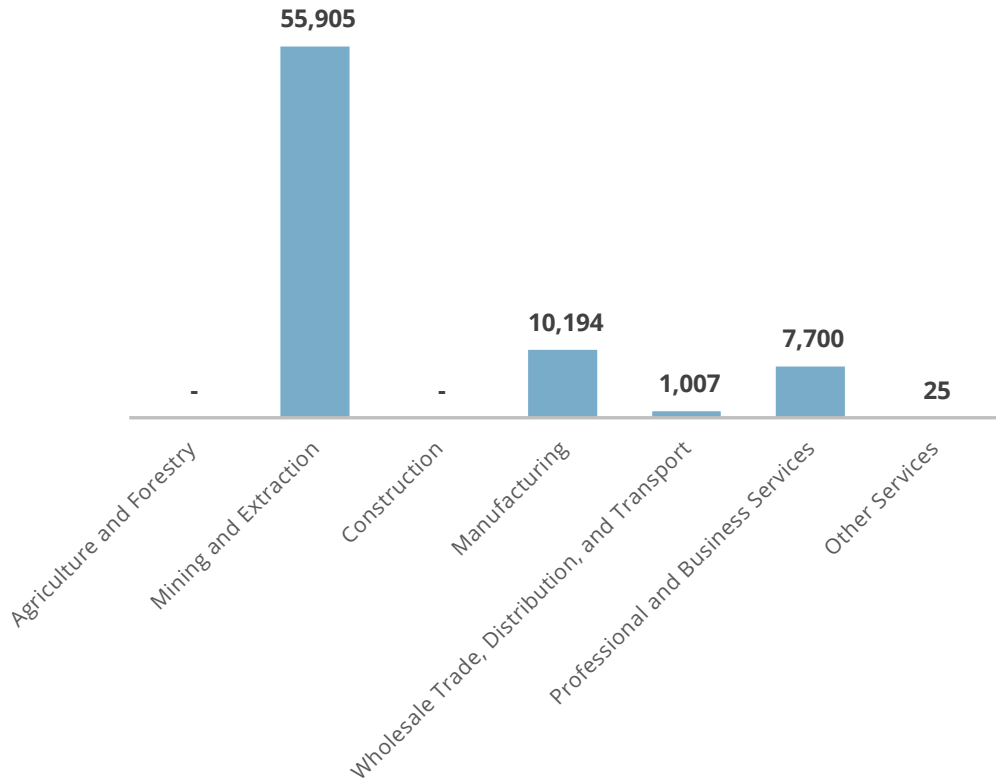
Petroleum Fuels – Demographics, Q4 2018

	Oil		National Workforce Averages
Male	464,164	77%	53%
Female	138,646	23%	47%
Hispanic or Latino	78,100	13%	17%
Not Hispanic or Latino	524,711	87%	83%
American Indian or Alaska Native	12,062	2%	1%
Asian	37,702	6%	6%
Black or African American	35,406	6%	12%
Native Hawaiian or other Pacific Islander	5,256	1%	>1%
White	461,721	77%	78%
Two or more races	50,663	8%	2%
Veterans	60,883	10%	6%
55 and over	134,851	22%	23%
Union	12,373	2%	11%

COAL FUELS

Coal fuels employed a total of 74,831 workers in the U.S. in 2018. Over the course of 2018, coal jobs increased by 650 jobs, or 0.9 percent. Mining and extraction jobs supported nearly 75 percent of coal fuels employment in 2018, while manufacturing made up nearly 14 percent. Additional Wholesale Trade, Distribution and Transport jobs that directly support the coal industry are included in the Transmission, Distribution, and Storage chapter and the Coal Industry crosscut on page 118.

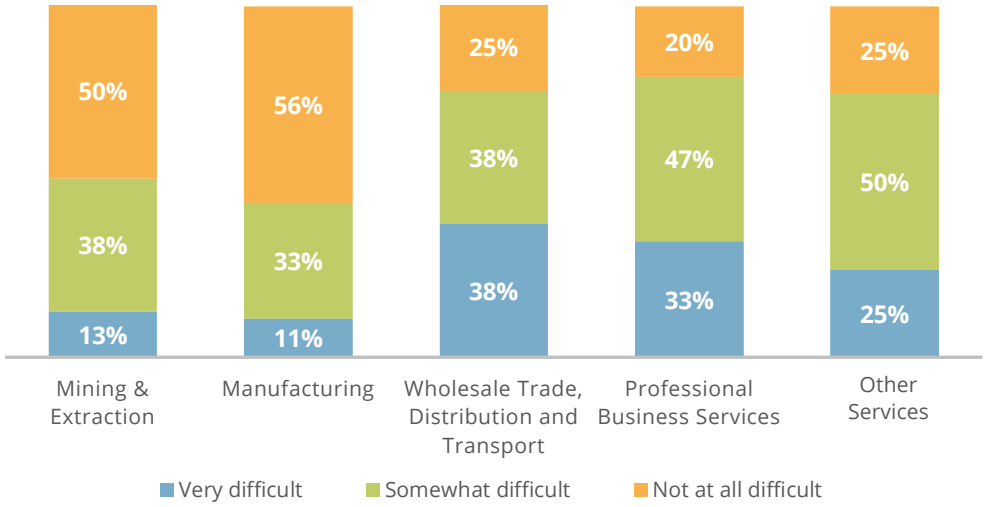
Figure 12.
Coal Fuels – Employment by Industry



Hiring has generally not been difficult for two industry sectors supporting coal fuels–56 percent of manufacturing employers and 50 percent of mining and extraction employers in coal fuels reported that hiring new workers has not been difficult during 2018. By contrast, 80 percent of professional business services employers reported that hiring was somewhat difficult or very difficult (with 33 percent reporting hiring to have been very difficult).[17]

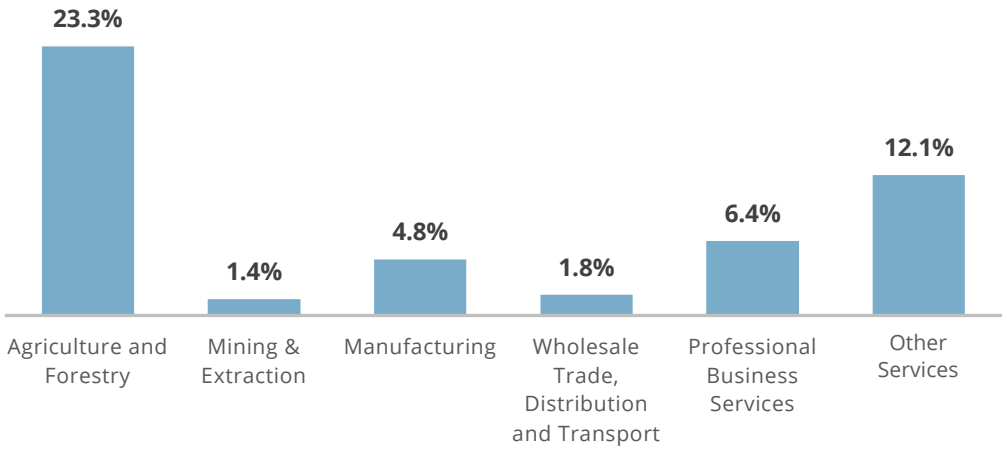
[17] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 13. Conclusions have been made only about industries with sufficient sample size.

Figure 13.
Coal Fuels – Hiring Difficulty by Industry



Employers in the coal fuels industry expect around 2.5 percent growth in 2019. This is led by the professional business services sector, which expects over 6 percent growth.

Figure 14.
Coal Fuels – Expected Employment Growth by Industry



Coal fuels had a low number of female employees in 2018, representing only 22 percent of the workforce. Similarly, black or African American, Hispanic or Latino, and Asian workers also fell short of national workforce averages, making coal fuels one of the least diverse industries.

Table 11.

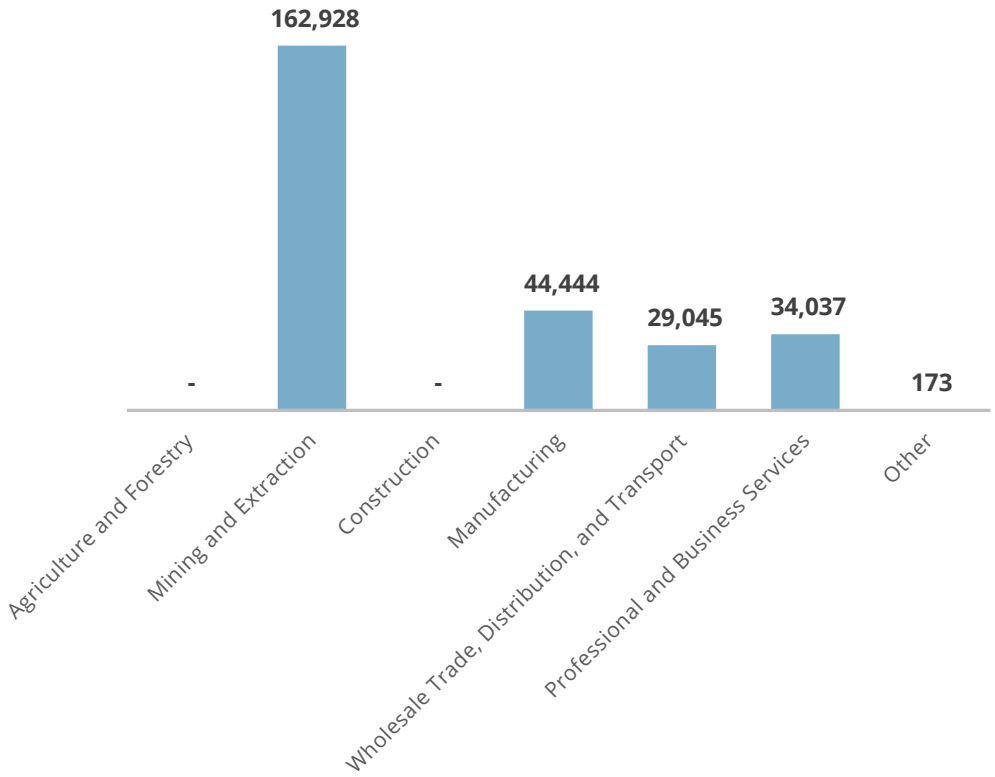
Coal Fuels – Demographics, Q4 2018

	Coal		National Workforce Averages
Male	58,247	78%	53%
Female	16,584	22%	47%
Hispanic or Latino	8,146	11%	17%
Not Hispanic or Latino	66,685	89%	83%
American Indian or Alaska Native	1,572	2%	1%
Asian	2,262	3%	6%
Black or African American	2,814	4%	12%
Native Hawaiian or other Pacific Islander	337	0%	>1%
White	62,834	84%	78%
Two or more races	5,012	7%	2%
Veterans	7,109	9%	6%
55 and over	21,047	28%	23%
Union	888	1%	11%

NATURAL GAS FUELS

Natural gas fuels employed a total of 270,626 workers across the nation in 2018. Over the course of 2018, natural gas jobs grew significantly, by over 17,000 new jobs or by nearly 7 percent. Mining and extraction jobs supported over 60 percent of the natural gas fuels industry, while manufacturing made up over 16 percent of natural gas fuels employment in 2018.

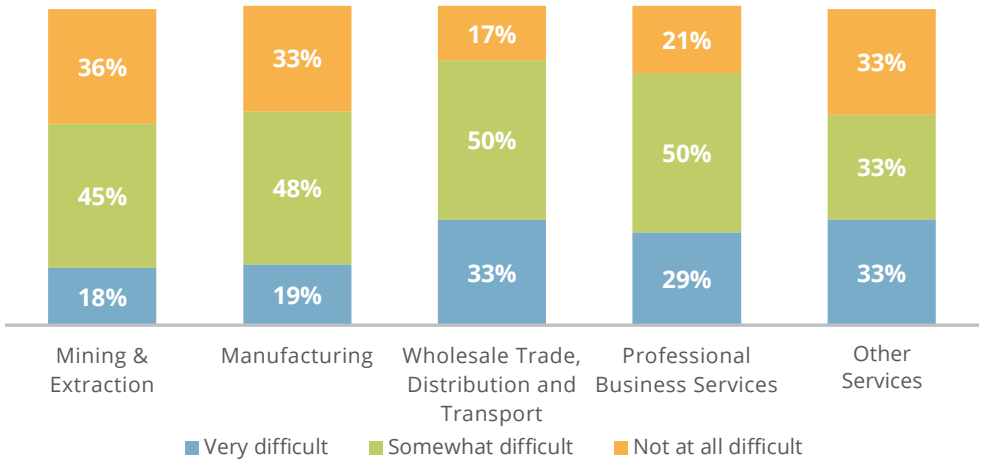
Figure 15.
Natural Gas Fuels – Employment by Industry



Thirty-six percent of mining and extraction employers reported that hiring new workers has not been difficult during 2018. In contrast, 83 percent of wholesale trade, distribution, and transport employers reported that hiring was somewhat difficult or very difficult in 2018 (with 33 percent reporting that hiring was very difficult).[18]

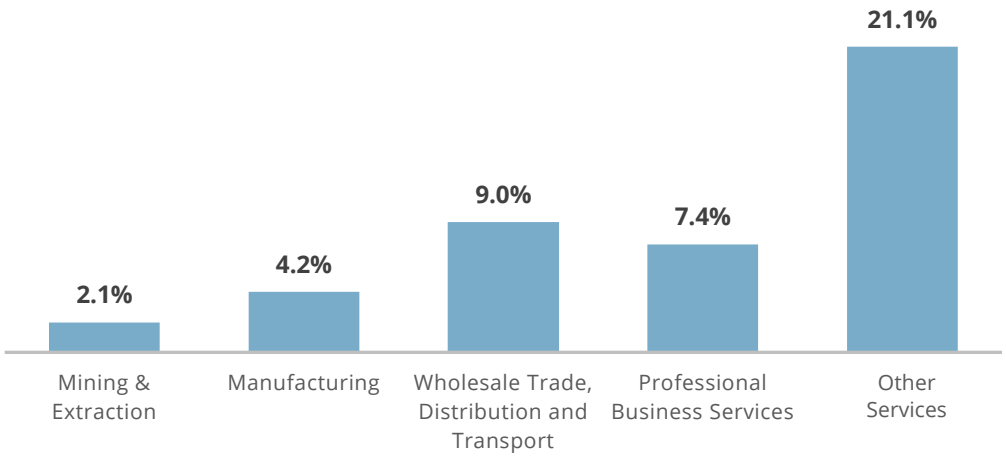
[18] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 16. Conclusions have been made only about industries with sufficient sample size.

Figure 16.
Natural Gas Fuels – Hiring Difficulty by Industry



Employers in the natural gas fuels industry expect nearly 4 percent growth in 2019. This is led by the wholesale trade, distribution, and transport sector, which expects 9 percent growth, and the professional business services sector, which expects over 7 percent growth.

Figure 17.
Natural Gas Fuels – Expected Employment Growth by Industry



Natural gas fuels had a relatively low number of female employees in 2018, representing only 25 percent of the workforce. Similarly, black or African American, Hispanic or Latino, and Asian workers also were below national workforce averages. However, at 23 percent, the overall racial diversity of the natural gas fuels workforce was equivalent to the national average of 22 percent.

Table 12.

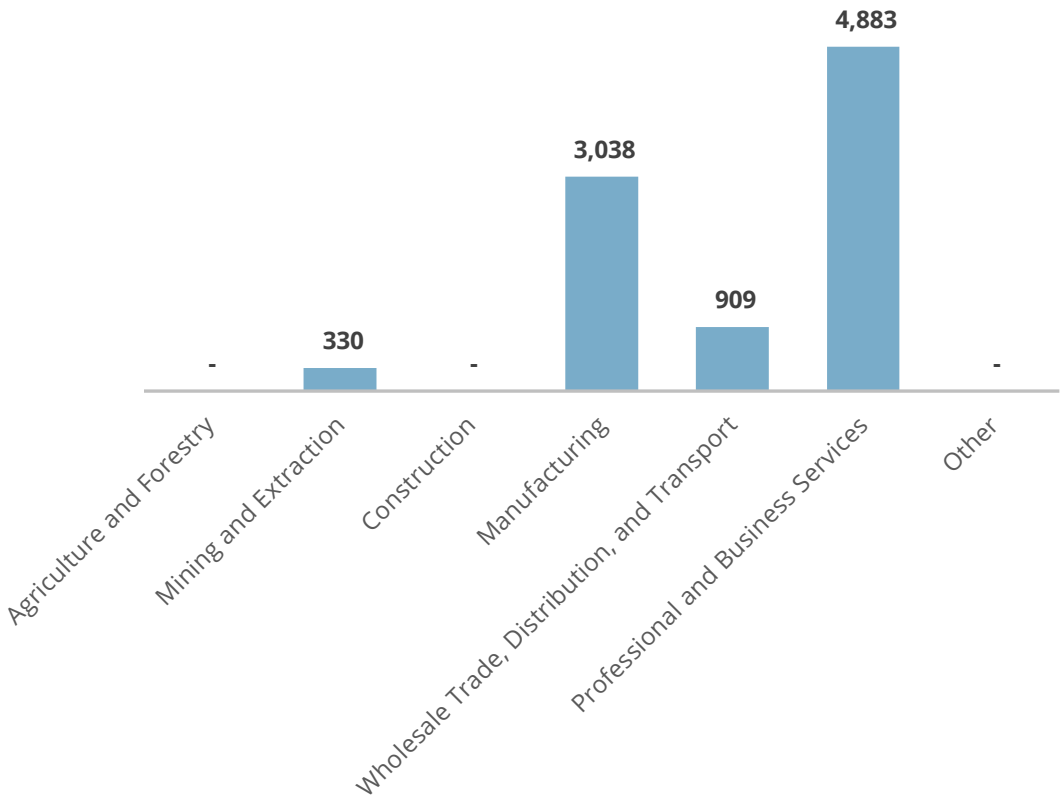
Natural Gas Fuels – Demographics, Q4 2018

	Natural Gas		National Workforce Averages
Male	202,749	75%	53%
Female	67,877	25%	47%
Hispanic or Latino	31,383	12%	17%
Not Hispanic or Latino	239,244	88%	83%
American Indian or Alaska Native	4,744	2%	1%
Asian	11,063	4%	6%
Black or African American	12,516	5%	12%
Native Hawaiian or other Pacific Islander	1,307	0%	>1%
White	207,697	77%	78%
Two or more races	33,299	12%	2%
Veterans	25,317	9%	6%
55 and over	63,388	23%	23%
Union	8,155	3%	11%

NUCLEAR FUELS

Nuclear fuels employed a total of 9,159 workers in the U.S. in 2018. Over the course of 2018, nuclear jobs grew by nearly 200 new positions, or over 2 percent. Professional business services supported over 53 percent of the nuclear fuels industry, while manufacturing made up over 33 percent of nuclear fuels employment in 2018.

Figure 18.
Nuclear Fuels – Employment by Industry



In 2018, 50 percent of manufacturing employers in nuclear fuels reported that hiring was very difficult. In contrast, 50 percent of professional services employers reported that their hiring in 2018 was only somewhat difficult.[19]

[19] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 18. Conclusions have been made only about industries with sufficient sample size.

Nuclear fuels employers are expecting over 7 percent job growth in 2019. Most of that growth is expected in manufacturing.

The nuclear fuels sector had a relatively high proportion of female employees in 2018, representing almost one-third of the workforce. Although below national averages in several areas, the nuclear fuels sector is more diverse than the national workforce. The number of Asian workers and those reporting two or more races in the nuclear fuels industry is notably above national workforce averages. Veterans make up 9 percent of the workforce, 50 percent higher than the national average.

Table 13.

Nuclear Fuels – Demographics, Q4 2018

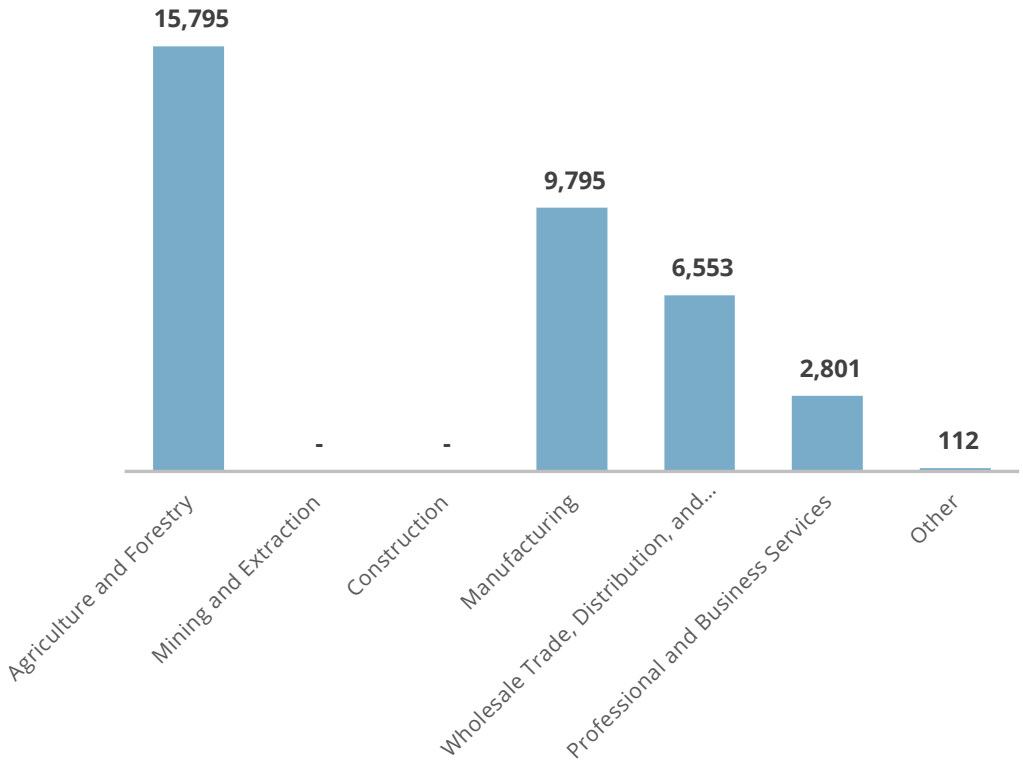
	Nuclear Fuels		National Workforce Averages
Male	6,243	68%	53%
Female	2,916	32%	47%
Hispanic or Latino	1,330	15%	17%
Not Hispanic or Latino	7,829	85%	83%
American Indian or Alaska Native	102	1%	1%
Asian	838	9%	6%
Black or African American	606	7%	12%
Native Hawaiian or other Pacific Islander	92	1%	>1%
White	6,048	66%	78%
Two or more races	1,473	16%	2%
Veterans	849	9%	6%
55 and over	1,517	17%	23%
Union	584	6%	11%

CORN ETHANOL FUELS

Corn ethanol fuels employment represented about 3 percent of the U.S. Fuels workforce in 2018, accounting for 35,055 jobs, and added about 500 jobs in 2018. The sector is primarily composed of agriculture; manufacturing; and wholesale trade, distribution, and transport. Together these three industries accounted for more than 91 percent of workers, followed by professional and business services at 8 percent.

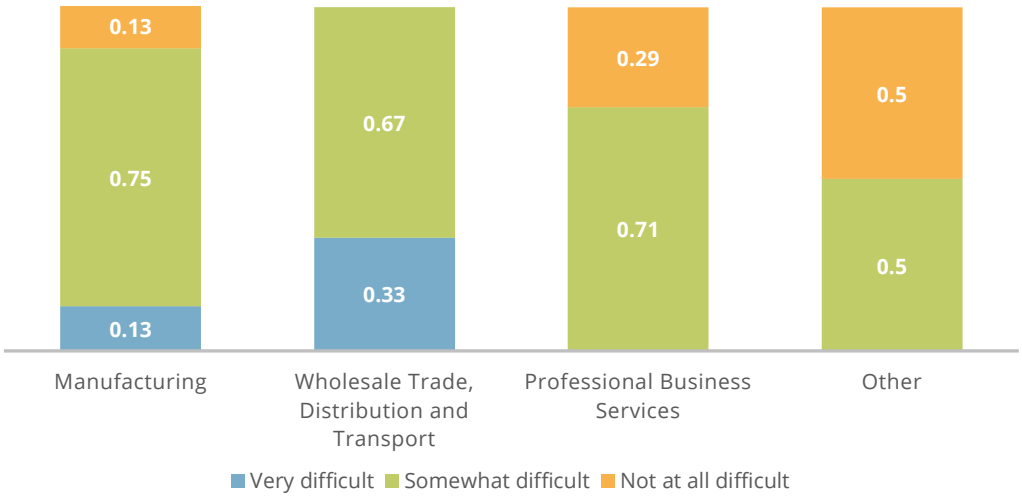
Figure 19.

Corn Ethanol Fuels – Employment by Industry



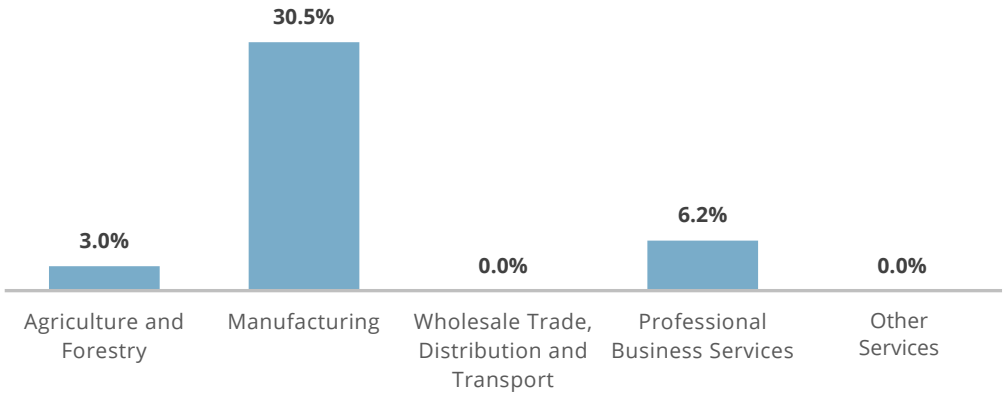
In 2018, 88 percent of manufacturing employers in corn ethanol, its second largest sector, reported that hiring was somewhat difficult or very difficult (although only 13 percent reported that hiring was very difficult). In addition, 71 percent of professional business services employers reported that hiring new workers was somewhat difficult in 2018.

Figure 20.
Corn Ethanol Fuels – Hiring Difficulty by Industry



Employers in the corn ethanol fuels industry expect more than 10 percent growth in 2019. Employers in the manufacturing sector expect over 30 percent growth, and the professional business services sector expects over 6 percent growth.[20]

Figure 21.
Corn Ethanol Fuels – Expected Employment Growth by Industry



About three in ten workers in corn ethanol fuels were women, and less than one in ten were Hispanic or Latino. This technology also has a small proportion of Asian and Black or African American workers. However, it is disproportionately older, with 27 percent of employees over age 55. A very high percentage (21 percent) are veterans.

[20] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 21. Conclusions have been made only about industries with sufficient sample size.

Table 14.

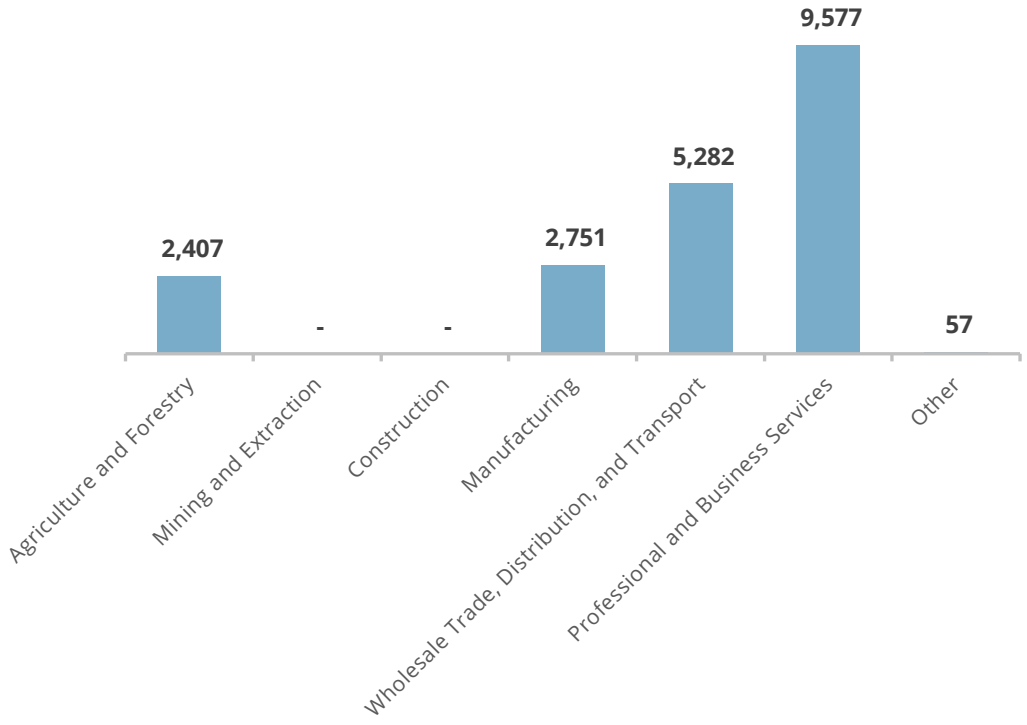
Corn Ethanol Fuels — Demographics, Q4 2018

	Corn Ethanol		National Workforce Averages
Male	24,552	70%	53%
Female	10,503	30%	47%
Hispanic or Latino	3,242	9%	17%
Not Hispanic or Latino	31,814	91%	83%
American Indian or Alaska Native	276	1%	1%
Asian	2,091	6%	6%
Black or African American	1,811	5%	12%
Native Hawaiian or other Pacific Islander	257	1%	>1%
White	28,557	81%	78%
Two or more races	2,063	6%	2%
Veterans	7,345	21%	6%
55 and over	9,417	27%	23%
Union	2,831	8%	11%

OTHER ETHANOL AND NON-WOODY BIOMASS FUELS, INCLUDING BIODIESEL

Other ethanol and non-woody biomass, including biodiesel[21], employed almost 2 percent of the Fuels workforce in 2018, providing 20,074 jobs. Because non-woody biomass represents a small portion of U.S. fuel supply, most of this employment was concentrated in professional and business services–likely research and development–and wholesale trade.

Figure 22.
Other Ethanol and Non-Woody Biomass Fuels (Including Biodiesel) — Employment by Industry



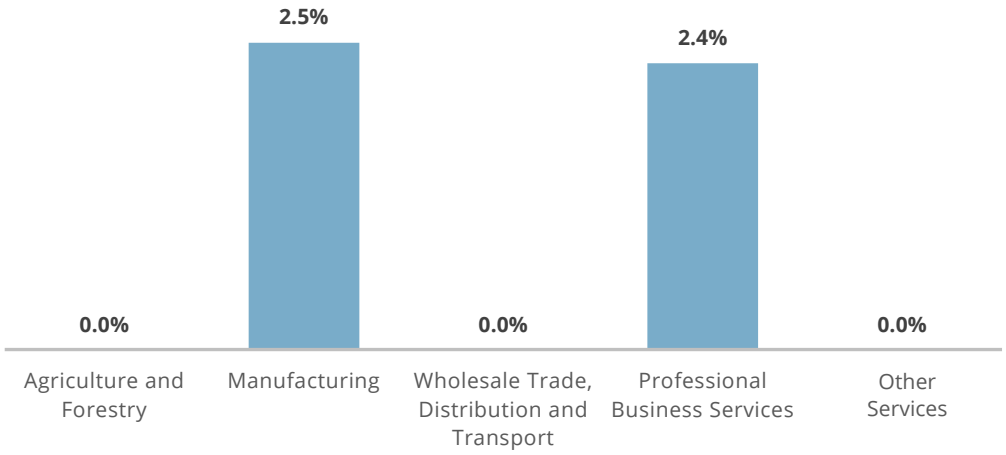
In 2018, all employers in wholesale trade, distribution, and transport reported that all hiring was very difficult.[22]

[21] Other Ethanol/Non-Woody Biomass Fuel, including Biodiesel is fuel made from materials other than cornstarch, such as straw, manure, vegetable oil, and animal fats.
[22] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 22. Conclusions have been made only about industries with sufficient sample size.

Other ethanol and non-woody biomass fuels employers are expecting 1.5 percent job growth in 2019, with that hiring concentrated in manufacturing and professional services.

Figure 23.

Other Ethanol and Non-Woody Biomass Fuels (Including Biodiesel) – Expected Employment Growth by Industry



Almost a third of the workers supporting these fuels were women and 13 percent were Hispanic or Latino. However, other ethanol and non-woody biomass employers were more diverse, in total, than the overall workforce, exceeding national averages for employment of American Indians, Asians, and those reporting two or more races.

Table 15.

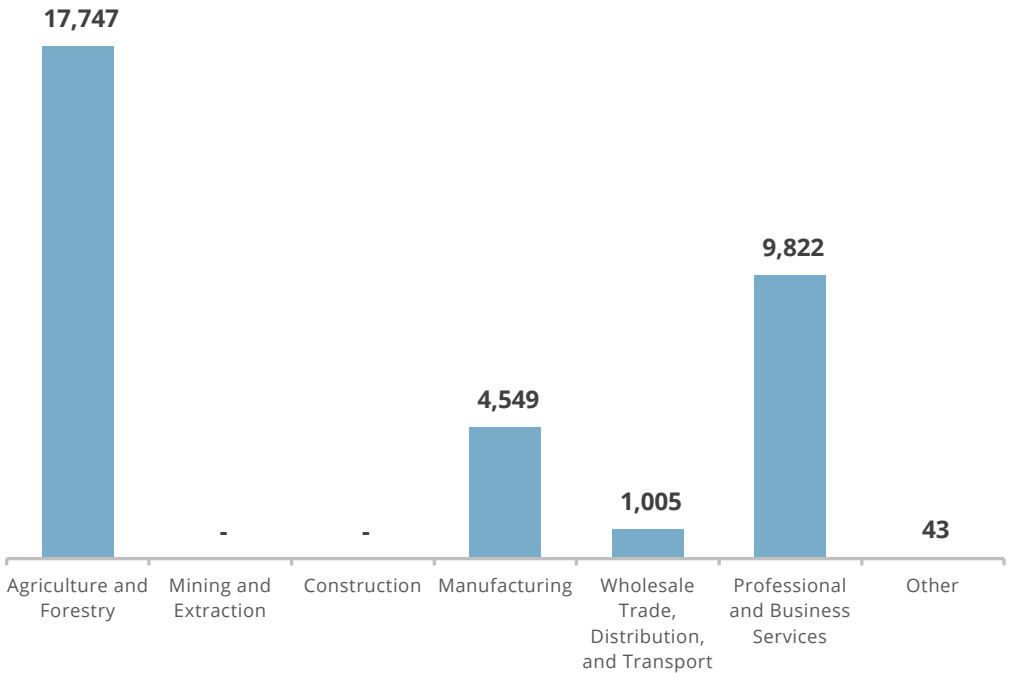
Other Ethanol and Non-Woody Biomass Fuels (Including Biodiesel) — Demographics, Q4 2018

	Fuels		National Workforce Averages
Male	13,603	68%	53%
Female	6,471	32%	47%
Hispanic or Latino	2,682	13%	17%
Not Hispanic or Latino	17,392	87%	83%
American Indian or Alaska Native	338	2%	1%
Asian	1,692	8%	6%
Black or African American	1,582	8%	12%
Native Hawaiian or other Pacific Islander	310	2%	>1%
White	14,989	75%	78%
Two or more races	1,163	6%	2%
Veterans	1,865	9%	6%
55 and over	2,897	14%	23%
Union	878	4%	11%

WOODY BIOMASS FUEL FOR ENERGY AND CELLULOSIC BIOFUELS

Woody biomass fuel for energy and cellulosic biofuels[23] supported 33,166 jobs across the United States in 2018, just under 3 percent of the Fuels workforce, and added over 1,700 jobs in 2018. Over half of the employment in woody biomass fuels was found in agriculture, followed by professional services; these two industries accounted for 83 percent of employment.

Figure 24.
Woody Biomass Fuel for Energy and Cellulosic Biofuel – Employment by Industry



For 2018, 71 percent of professional services employers reported it was somewhat difficult to hire.[24] No data was available for agricultural or logging firms.

[23] While the survey question asked of respondents covered both woody biomass fuel for energy and cellulosic biofuels, all employment data reported is in woody biomass fuel for energy. Woody Biomass or Cellulosic Biofuel are fuels developed from the by-product of management, restoration, and hazardous fuel reduction treatments, as well as the product of natural disasters, including trees and woody plants (limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment).
[24] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 24. Conclusions have been made only about industries with sufficient sample size.

Woody biomass fuels employers are expecting over 8 percent job growth in 2019.

The workforce for woody biomass fuels is less diverse than the nation as a whole with 6 percent of the workforce reported to be Hispanic or Latino, 5 percent Asian, and 4 percent Black or African American. Similar to corn ethanol employers, a high percentage of employees–17 percent–are veterans and the workforce is older than the national average.

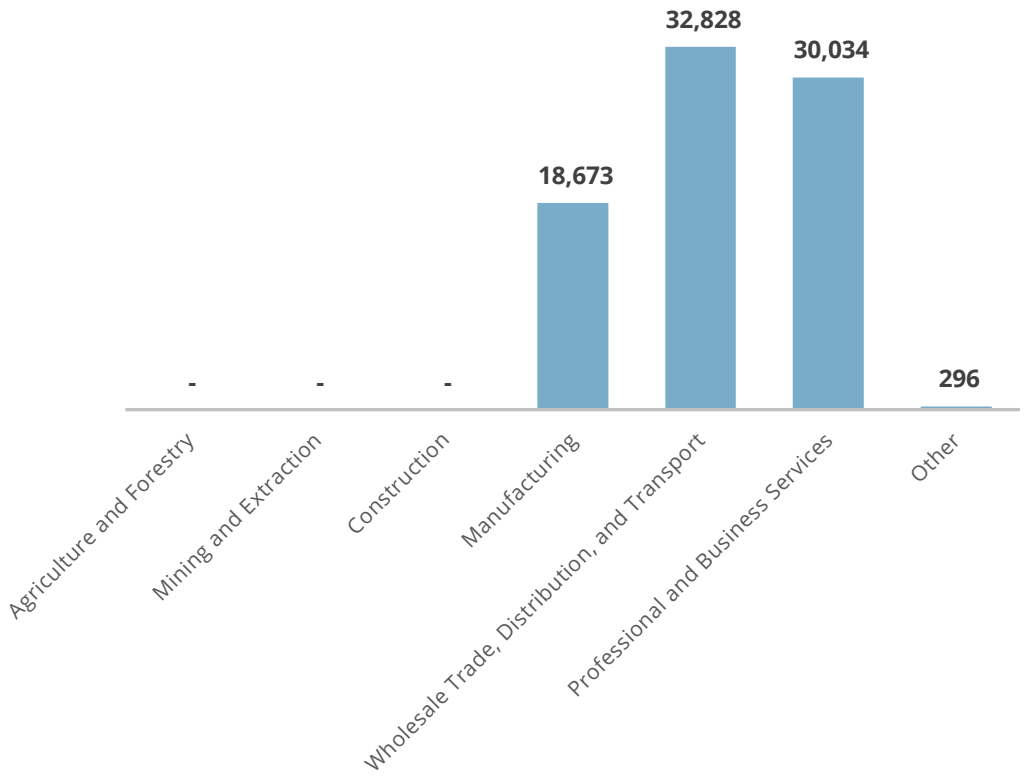
Table 16.
Woody Biomass Fuel for Energy and Cellulosic Biofuel — Demographics, Q4 2018

	Woody Biomass Fuels		National Workforce Averages
Male	23,942	72%	53%
Female	9,224	28%	47%
Hispanic or Latino	1,921	6%	17%
Not Hispanic or Latino	31,245	94%	83%
American Indian or Alaska Native	289	1%	1%
Asian	1,736	5%	6%
Black or African American	1,410	4%	12%
Native Hawaiian or other Pacific Islander	157	0%	>1%
White	27,881	84%	78%
Two or more races	1,694	5%	2%
Veterans	5,627	17%	6%
55 and over	8,048	24%	23%
Union	2,863	9%	11%

OTHER FUELS

Other fuels[26] comprised 81,831 jobs across the United States in 2018, just over 7 percent of the Fuels workforce. Over 40 percent of that employment was found in wholesale trade, distribution, and transport, followed by professional services with almost 37 percent of the workforce.

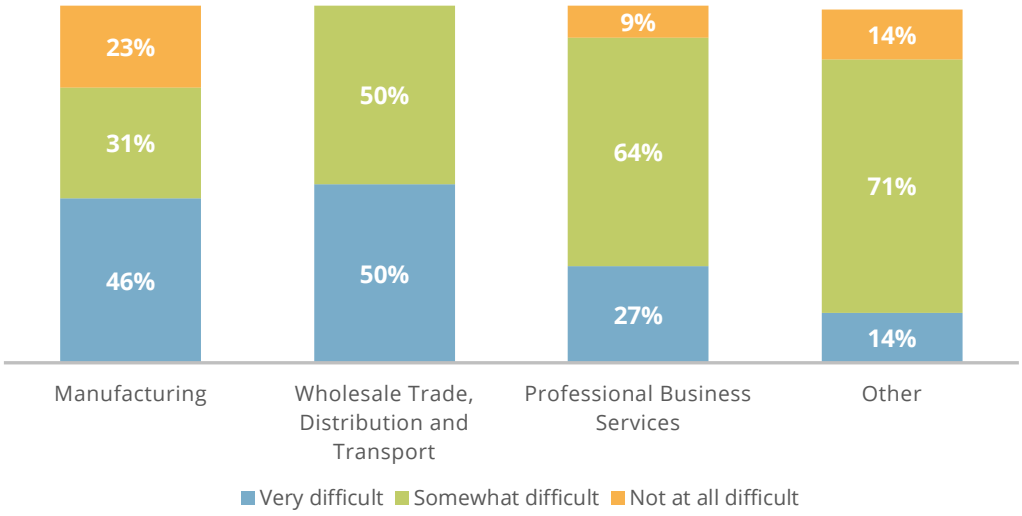
Figure 25.
Other Fuels – Employment by Industry



Employers reported significant difficulty in hiring in other fuels in 2018, with 91 percent of professional business services employers reporting that hiring has been somewhat difficult or very difficult, and 77 percent of manufacturers reporting similarly.[27]

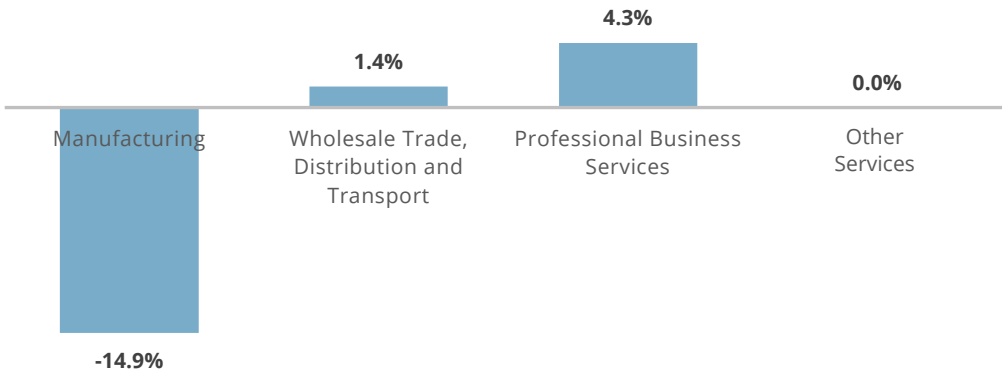
[26] Includes other fossil fuels, other biofuels, and all other fuels. All other fuels includes employers that are not able to assign their workers to a single detailed technology application.
[27] Some industries are omitted from this discussion due to their small sample size in the data contributing to Figure 26. Conclusions have been made only about industries with sufficient sample size.

Figure 26.
Other Fuels – Hiring Difficulty by Industry



Employers in other fuels expect -1 percent growth in 2019, making this the only component of the Fuels sector that is expected to shrink. This is influenced by the enormous lack of confidence found in the manufacturing industry. However, the professional business services sector expects over 4 percent growth.

Figure 27.
Other Fuels – Expected Employment Growth by Industry



The workforce for other fuels is less diverse, with 9 percent of the workforce reported to be Hispanic or Latino, 5 percent Asian, and 4 percent Black or African American. It is also older and with a higher percentage of veterans than the workforce as a whole.

Table 17.

Other Fuels — Demographics, Q4 2018

	Other Fuels		National Workforce Averages
Male	60,403	74%	53%
Female	21,428	26%	47%
Hispanic or Latino	7,094	9%	17%
Not Hispanic or Latino	74,737	91%	83%
American Indian or Alaska Native	659	1%	1%
Asian	4,220	5%	6%
Black or African American	2,884	4%	12%
Native Hawaiian or other Pacific Islander	467	1%	>1%
White	70,336	86%	78%
Two or more races	3,265	4%	2%
Veterans	13,865	17%	6%
55 and over	20,122	25%	23%
Union	7,493	9%	11%