



U.S. DEPARTMENT
of **ENERGY**



2026 United States Energy & Employment Report

DEPARTMENT OF ENERGY

Secretary Chris Wright

DEPARTMENT OF ENERGY

OFFICE OF POLICY | OFFICE OF ENERGY JOBS

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2026 USEER Overview

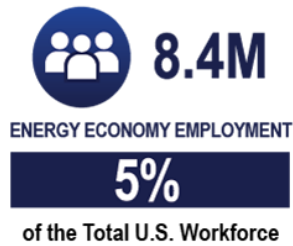
2026 USEER BACKGROUND

- The U.S. Energy and Employment Report (USEER) provides a comprehensive account of the energy employment landscape across America to track employment and wage trends by sector and occupation, identify worker shortages, inform design of workforce development programs, and strategically address urgent workforce needs across the growing energy economy.
- The USEER tracks energy employment across five sectors—Transmission, Distribution, and Storage (T&D or TDS); Electric Power Generation (EPG); Fuels; Energy Efficiency (EE); and Motor Vehicles and Component Parts (MV&CP).
- The 2026 USEER also includes limited data on wages, allowing policymakers to understand how the U.S. energy economy provides stable, high paying employment opportunities to hardworking Americans.

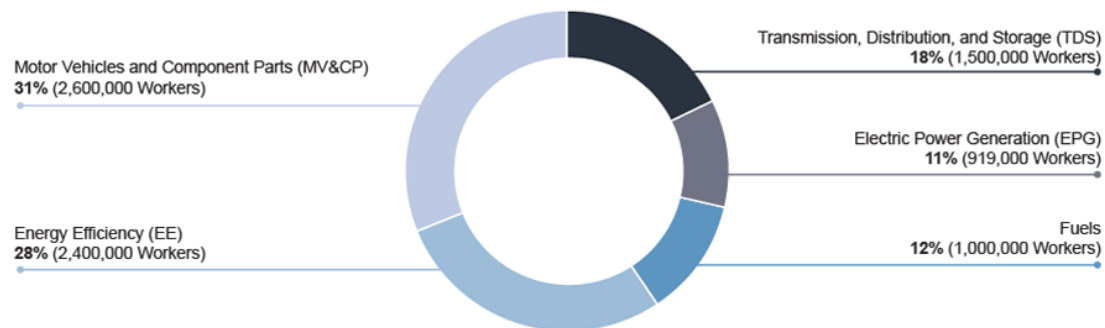
HIGHLIGHTS FROM THE 2026 USEER

- The USEER survey reports the energy sector employed 8.4 million workers in 2025, accounting for 5% of all jobs in the U.S.
- The USEER wage sample and methodology estimates the median annual wage for the energy sectors was \$63,000, which is 24% higher than the median wage observed across sectors nationwide (\$51,000).
- Energy jobs were distributed across all 50 states, Puerto Rico, and the U.S. Virgin Islands.
- Strong demand for workers in the Electric T&D, Natural Gas T&D, Storage sectors, along with Nuclear and Coal EPG subsectors, led to employment growth and wage growth that outpaced the national average.
- Strong demand for workers will only increase in the future as electricity demand reaches record levels, driven by expanding data center and industrial sector demand.
- There are acute labor shortages in these energy sectors, particularly in the Construction, Installation, and Repair occupations, which are driving strong wage increases.
- There are particularly high shortages in electrically skilled occupations due to additional demand from the rapidly expanding data center sector.
- Overall, the future employment outlook for the energy sector is strong. The demand for skilled workers is only expected to grow, creating opportunities for the U.S. energy sector to deliver lasting economic impact and accelerate the creation of high-paying, skilled American jobs.

2026 USEER Key Takeaways



Employment by Energy Sector



Energy Economy Jobs Pay More

Sector	Annual Median Salary	Wage Premium (%)
All U.S.	\$51k	
Energy Economy	\$63k	24%
TDS	\$65k	28%
EPG	\$70k	37%
Fuels	\$64k	26%
EE	\$64k	26%
MV&CP	\$58k	15%

Figure OV.0.1. Energy Economy Key Takeaways, 2025, USEER Survey¹

¹ The wage premium described here is the additional amount, in percentage terms, a median energy sector salary pays relative to the U.S. median salary. The energy sector median salary is calculated using USEER survey data; see Appendix A for details on how wages are calculated in USEER. The U.S. median salary estimate is from the BLS OEWS using all industries and all occupations. Annual salaries assume 2,080 hours of work. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Notable Employment Growth



+5%
Coal Power Generation



+5%
Natural Gas Fuel Distribution



+4%
Nuclear Power Generation



+2%
Electric Power Transmission & Distribution

Future Employment Outlook

The combined effects of soaring electricity demand, historic grid modernization, and strong fuel exports positioned the energy economy as a source of strong employment opportunities in 2025. Meanwhile, federal policies focused on energy dominance, artificial intelligence, and nuclear energy underpin a positive employment outlook in different sectors of the energy economy.



Figure OV.0.2. Energy Economy Key Takeaways, 2025, USEER Survey²

² USEER employment data is not comparable to BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.



Introduction and Instructions

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Introduction

The United States Energy and Employment Report (USEER) is the most comprehensive account of the employment in the nation's energy economy.³ As the nation's official annual energy employment report, the USEER provides employment estimates and workforce insights for energy-related jobs by utilizing USEER business survey data with supplemental information from the U.S. Bureau of Labor Statistics (BLS), the U.S. Census Bureau, and the U.S. Energy Information Administration (EIA).

Pursuant to 42 U.S.C. § 18841 (c)(2)(A),ⁱ the USEER includes employment figures⁴ and workforce metrics across five energy sectors:⁵

- **Transmission, Distribution, and Storage (TDS)** – employment related to electricity transmission and distribution, and storage, as well as the transportation and storage of fuels.
- **Electric Power Generation (EPG)** – employment related to the generation of electricity, including the construction, maintenance, and operation of power plants, as well as manufacturing of components.
- **Fuels** – employment related to the production of fuels, from the extraction from natural sources to the refining and distributing fuels for end use.
- **Energy Efficiency (EE)** – employment related to goods and services that reduce energy use pursuant to the U.S. Environmental Protection Agency's Certified Standards or Department of Energy Efficiency Standards; or establishments that are involved with heating, ventilation, and air conditioning (HVAC) from renewable energy sources, or work that increases the efficiency of HVAC systems.
- **Motor Vehicles and Component Parts (MV&CP)** – employment related to the manufacturing and sales of fossil and non-fossil fuel-related motor vehicles and their component parts.

³ The 2026 USEER defines energy economy as the inclusion of the following energy sectors: Transmission, Distribution and Storage; Electric Power Generation; Fuels; Energy Efficiency; and Motor Vehicles and Component Parts.

⁴ Please note that all figures presented in this report are rounded to the nearest hundred. As a result, totals may not match the sum of individual components due to rounding. For more information, please refer to Appendix A.

⁵ The USEER reports employment for each State, county, and the U.S. Virgin Islands and Puerto Rico pursuant to 42 U.S.C. § 18841 (c)(2)(A). USEER data is not available for all territories due to data collection feasibility and lack of BLS data availability for these areas.

Data Sources

The report uses three main data sources to provide a complete picture of employment, wages, and workforce trends across the energy sector. Using multiple data sources, especially validated BLS employment and wage data, gives a more complete and reliable three-dimensional view of the energy sectors, and allows for comparison of wage trends and employment trends across datasets when energy sector definitions align. Throughout the USEER, the following sources are used:

- establishment survey responses from the USEER survey⁶ collected in 4Q2025 through February 2026;
- the BLS Quarterly Census of Employment and Wages (QCEW);ⁱⁱ and
- the BLS Occupational Employment and Wage Statistics (OEWS).ⁱⁱⁱ

The data presented in the USEER is not intended to remove, replace, or replicate existing data from the BLS QCEW. Instead, the USEER categorizes and filters U.S. energy employment data to provide policymakers and the public with useful insights across the nation's energy economy.

Employment data collected by the BLS provides information on many, but not all, energy-related jobs. Most notably, the BLS does not publish detailed employment data that is specific to the energy economy across business segments. For instance, BLS combines employment at natural gas power plants with employment in coal and diesel facilities. It also includes petroleum engineering firms in a broad engineering category along with civil, mechanical, and other engineering services. Additionally, gasoline- and diesel-fueled vehicle manufacturing is in the same classification as electric vehicle (EV) manufacturing. As a result, although the BLS employment data is methodologically robust, it does not report on each energy-specific technology.

The USEER provides more granularity on employment and workforce trends in specific energy technologies and subsectors. For example, the USEER survey distinguishes between employment in Oil EPG and Natural Gas EPG; Hybrid EVs, Battery EVs, and Plug-in Hybrid Vehicles; and Certified Heating, Ventilation, and Cooling (HVAC) EE activities and Traditional HVAC activities.

One of the USEER survey's greatest strengths is its detailed classification of energy-related business activities into energy sectors and subsectors that are of significant interest to industry stakeholders but are not separately identified in BLS and other publicly available federal datasets. More specifically, the USEER survey can measure energy employment regardless of a firm's primary industry classification. The method allows energy-related work to be identified within companies that may not be classified as part of the energy sector in traditional government datasets. This provides policymakers, industry leaders, and workforce planners with

⁶ USEER wage estimates are based on a significantly smaller sample than the BLS data sources and are calibrated to OEWS wage data. USEER also collects less detailed occupation information than the BLS OEWS data.

a more detailed and comprehensive understanding of where energy jobs are located, what technologies they support, and how workforce needs are changing over time.

The USEER survey also shows where that work occurs along the energy supply chain, from research and manufacturing to construction, distribution, installation, operations, maintenance, and professional services. It also captures employment in emerging and cross-cutting energy activities that are difficult to measure using traditional industry codes, such as energy storage, EV charging infrastructure, EE technologies, and energy-related construction projects. It further collects information on workforce demographics and hiring challenges, training needs, wages, benefits, and future hiring expectations, providing a more complete view of labor market conditions and workforce demand in the energy economy.⁷

Meanwhile, the BLS OEWS data has distinct strengths. Annual estimates provide detailed information on employment and wages by occupation. The occupation-level data are more comprehensive and detailed than the information collected through the USEER survey, making OEWS useful for analyzing workforce composition and pay.

At the same time, the OEWS methodology creates some challenges when comparing estimates over time. Each OEWS estimate is based on six survey panels collected over a 3-year period.⁸

To address some of these issues, BLS uses a model-based methodology, called MB3,⁹ to estimate occupational employment and wages for establishments that do not have usable current survey data. This method is designed to make OEWS estimates more current, more stable, and more useful for year-to-year comparisons.

Because this report only analyzes BLS OEWS data beginning with the May 2022 estimates, it avoids many of the major problems that can arise when comparing OEWS data over time. Several important changes had already been made before 2022, including changes to occupation definitions, wage-updating procedures,¹⁰ industry classification, and the introduction of the MB3 methodology.^{11, 12} These features have remained generally consistent for the period covered in this report.

However, some comparability issues remain. OEWS estimates are based on six survey panels collected over a 3-year period. The MB3 methodology, introduced with the May 2021 estimates,

⁷ Not all USEER survey data are summarized or discussed in this report. Additional USEER data summaries are available in the Appendix sections; see Appendices C, D, E, F, M, N, O, P, Q, R, S.

⁸ For example, the May 2025 OEWS estimates combine survey data with reference dates of May 2025, November 2024, May 2024, November 2023, May 2023, and November 2022.

⁹ This "MB3" methodology, a donor-based prediction method, was first introduced in the BLS OEWS May 2021 estimates. It uses the most similar and most recent survey respondents to estimate occupational employment and wages for establishments without usable current survey data. See <https://www.bls.gov/opub/hom/oeWS/calculation.htm> for more details about this methodology.

¹⁰ Wages are updated, or "aged", using aging factors derived by applying a regression model to the OEWS survey data. The aging calculation assumes that detailed occupational wage rates in a specific geographic area and industry move similarly to cross-industry wages for a broader group of occupations and areas. See the "Model-based adjustments: wage aging and cell-level adjustments" section of <https://www.bls.gov/opub/hom/oeWS/calculation.htm> for more details.

¹¹ See <https://www.bls.gov/opub/hom/oeWS/history.htm> for a history of methodology changes in the BLS OEWS.

¹² Subnational geographical classification changes also do not pose an issue since this report analyzes BLS OEWS data at the national level.

helps address this issue by giving more weight to newer survey data. Even so, the estimates still function in part like a weighted moving average. As a result, sudden changes in employment or wages may appear gradually in the data rather than all at once.

Comparability can also be affected by the assumptions BLS uses to estimate employment and wages for establishments that do not have current survey responses. For example, some measured wage changes may reflect the wage-updating, or “aging,” process rather than actual changes reported directly by establishments. This process uses broader occupation groups and other factors to update wages from earlier survey periods to the current estimate period.

For these reasons, BLS cautions users about comparing OEWS estimates over short time periods.

¹³ In practical terms, OEWS wage changes reported from 2024 to 2025 may be smaller than the actual changes that occurred in the labor market because the estimates are based on a weighted sample collected over multiple years. In addition, some portion of the reported wage change may reflect the assumptions used in the wage-aging methodology rather than direct changes in observed wages.

BLS OEWS data has some limitations when compared with BLS QCEW data. The OEWS provides less detailed industry information under the North American Industry Classification System (NAICS). It is also less well-suited than QCEW for measuring changes in employment and wages over time, as OEWS is based on survey estimates that combine multiple years of data.

The BLS QCEW program provides the most comprehensive employment and wage data among the sources discussed in this report. It is based on near-census administrative records from state unemployment insurance programs,¹⁴ making it especially useful for tracking industry-level employment and wage trends. However, the QCEW classifies establishments only by NAICS industry. The program does not classify establishments using the energy sector and subsectors defined in the USEER survey, and it does not report employment or wages by occupation.

Because of these differences, QCEW-based samples are not directly comparable to USEER data. For example, in this report, some analyses use BLS QCEW data to approximate USEER energy sectors by selecting NAICS industries with energy-intensive activities.¹⁵ This approach captures many relevant establishments, but it does not capture all establishments that USEER would identify as energy-related. For example, a QCEW-based sample may exclude establishments that meet the USEER definition of a qualifying energy establishment but are classified in NAICS industries that are not considered energy-intensive. An establishment classified under NAICS 541214, “Payroll Services,” could still meet the USEER definition of a Qualifying Energy Establishment.¹⁶ However, since NAICS 541214 is not included in any of the constructed

¹³ See https://www.bls.gov/oes/oes_ques.htm for more discussion about comparability issues.

¹⁴ Because the data sources are administrative records, QCEW data are counts, rather than estimates. See <https://www.bls.gov/opub/hom/cew/concepts.htm> for more details.

¹⁵ See Appendix U for a list of these NAICS categories.

¹⁶ See the “Qualifying Energy Establishments and Energy Workers” subsection later in this chapter.

QCEW samples, as it is not an energy-intensive industry, that establishment's employment and wage data is excluded.

It is also important to note that employment and wages estimates from BLS OEWS and BLS QCEW are not directly comparable due to the different purposes, data sources, and collection methods of the two programs. QCEW is based on administrative records and the reports total employment and average weekly wages by industry. Meanwhile, OEWS is survey-based and estimates employment and hourly and annual wages for specific occupations within industries. Because the two programs use different definitions and estimation methods, they may show different employment and wage levels, as well as different trends over time. QCEW average weekly wages are converted to hourly wages by assuming 40 hours of work per week, and converted to annual wages by assuming 52 weeks of work per year.

Each data source provides unique insights into the energy workforce. Due to methodological differences, wage estimates from the USEER survey¹⁷ are reported in median terms, while wage estimates from the BLS sources are reported in average terms. Average wages are usually higher than median wages when a relatively small number of very high earners pull the average upward. For example, BLS OEWS estimates show that the average U.S. annual average salary across industries and occupations is \$19,000 higher than the U.S. median annual salary across all industries and occupations.

New for 2026

The 2026 USEER offers enhanced analysis, visualizations, and documentation to improve insight into U.S. energy economy employment. For the first time, the 2026 USEER features a Future Outlook chapter on energy economy employment and provides an overview of the workforce development efforts of DOE and the industry.

The appendices to this report, available through the DOE website, have been expanded to include documentation on the USEER survey methodology and calculations. Also, the appendices include selected results by establishment size; maps showcasing energy jobs at the national, state, and county levels; occupation wage data; and anticipated hiring among employers, among other data.

¹⁷ See Appendix A for additional information on the USEER wage methodology.

How To Use This Report

The USEER is a retrospective report that presents data from prior years from multiple data sources,¹⁸ including the USEER survey.¹⁹ Reference to a particular year of USEER data indicates a data collection period that is primarily in the fourth quarter of the previous year.²⁰

This report presents both 2024 to 2025 and 2022 to 2025 comparisons to provide insight into recent changes as well as longer-term trends. The 2024 to 2025 data captures labor market changes during a period marked by shifts in federal policy priorities, changes in the regulatory environment, and evolving economic conditions. The 2022 to 2025 period helps place these changes in context and provides a clearer view of underlying trends, as 2025 can be viewed as a transition year for many industries.²¹

Organization

The 2026 USEER is organized into seven chapters:

- Chapter 1: Energy Labor Market Overview
- Chapter 2: Transmission, Distribution, and Storage
- Chapter 3: Electric Power Generation
- Chapter 4: Fuels
- Chapter 5: Energy Efficiency
- Chapter 6: Motor Vehicles and Component Parts
- Chapter 7: Future Outlook

For each of the five energy sectors data is reported across three distinct lenses: subsector, industry (value chain),²² and occupation.

The first lens—subsector—allows the reader to analyze data by commonly used energy technologies,²³ such as Natural Gas Fuels or Bioenergy EPG. Not all subsector categories completely correspond to commonly used energy technology categories. Some are defined based on DOE priorities and practices, while some are catch-all categories.

¹⁸ Using multiple data sources, especially validated BLS employment and wage data, gives a more complete and reliable three-dimensional view of the energy sectors. It also allows for limited comparison of wage trends and employment trends across datasets when energy sector definitions align.

¹⁹ See "Survey Methodology Overview" section below for more details about the data sources and the value each provides.

²⁰ Sometimes the data collection period extends into January or February of the following year.

²¹ The year 2022 was chosen as the baseline for the multi-year comparison due to labor market impacts of the COVID-19 pandemic and the lack of availability of historic data.

²² In this report, industry, which can be also thought of as the value chain, is a grouping of nine broad, generally two-digit North American Industry Classification System (NAICS) categories. See Appendix A for details on how these categories were constructed. Industry definitions are based on NAICS codes to ensure consistency with other statistics created across the U.S. statistical system.

²³ Energy technologies can be thought of as groups of associated activities, products, and services. These groupings are often centered on a given technology's outcome (e.g., EPG), product type (e.g., Fuels), or activity (e.g., EE).

Viewing data through the second lens—industry²⁴—allows the reader to review employment classification based on the primary activities of the establishment.²⁵ For example, a firm whose core activity is making products is classified in the manufacturing industry category, and all its employees are counted under the manufacturing industry. The USEER provides data across nine industry categories:

- **Agriculture and Forestry** include establishments that are primarily engaged in growing crops and harvesting timber from farms or natural habitats.
- **Construction** includes establishments that primarily work on buildings or engineering projects. This can include new work, additions, alterations, or maintenance and repairs.
- **Manufacturing** includes establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. Establishments are often described as plants, factories, or mills and use power-driven machines and material handling equipment.
- **Mining and Extraction** includes establishments that extract and prepare naturally occurring solids, such as coal, ore, and minerals; liquid minerals, such as crude petroleum; and gases, such as natural gas.
- **Other Services** includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.
- **Pipeline Transportation** includes establishments that operate and maintain transmission pipelines for products such as crude oil, natural gas, and refined petroleum products.
- **Professional and Business Services** include establishments engaged in information (e.g., software), legal services, rental and leasing, finance, engineering, research and development, architecture, management of companies and enterprises.
- **Utilities** include establishments engaged in electric power, natural gas, and steam supply services. Specific activities associated with utility services vary by utility: electric power includes generation, transmission, and distribution; natural gas includes distribution; and steam supply includes provision and/or distribution.
- **Wholesale Trade** includes establishments engaged in wholesaling merchandise (the output of agriculture, mining, and manufacturing), generally without transformation.

²⁴ Industry categories can, but may not always, correspond to a sector or subsector's supply chain or value chain segment. For example, the Mining and Extraction and Agriculture and Forestry industry categories identify establishments in the upstream supply chain of a particular sector or subsector, but the Professional and Business Services and Other Services categories do not indicate where an establishment is included in the supply chain.

²⁵ The industry classifications described here align with the NAICS (North American Industry Classification System) classification. This system classifies each business establishment based on its primary economic activity. If an organization operates multiple locations or different types of activities, each establishment is classified according to the main activity performed at that location, rather than the activities of the company as a whole. See <https://www.bls.gov/bls/naics.htm> for more details about the NAICS classification.

Finally, viewing the data by the third lens—occupation—allows for a deeper analysis of domestic workforce availability, needs, and wages.²⁶ Organizing data by occupation provides key insights into specific roles involved in energy.

By filtering the same data through each lens, this report provides relevant details and insights to a wide range of stakeholders.

Rounding Methodology

Estimates in this report may not add up exactly to the totals because of rounding.

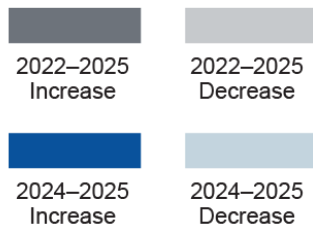
- Hourly wages are reported to the nearest dollar in narrative text and to the cents in tables and appendices.
- Annual wages are rounded to the nearest thousand dollars in both table and figures and narrative text.
- Wage premiums²⁷ are rounded to the whole percentage point, in line with considerations of statistical significance.
- Employment estimates are rounded based on their size to balance considerations of statistical significance and requirements under the Confidential Information Protection and Statistical Efficiency Act (CIPSEA).
 - Employment counts under 50 are rounded to 0 with a note that the employment count is between 0 and 50;
 - Employment counts between 50 and 99,999 are rounded to the nearest 100; and
 - Employment counts 100,000 and above are rounded to the nearest 1,000.
- Growth rates (wage, employment, and gross domestic product) are reported to one decimal place in tables, figures, and appendix tables. In narrative text, these values may be rounded further to improve readability.
- Employment counts within demographic tables are rounded to the nearest 1,000. Percentages within demographic tables are calculated using unrounded values for accuracy.
- All wages and wage changes are reported in inflation-adjusted terms unless otherwise noted. This is done by converting nominal wages to 4th quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values.^{iv}

²⁶ See Appendix J for data on wages of energy jobs.

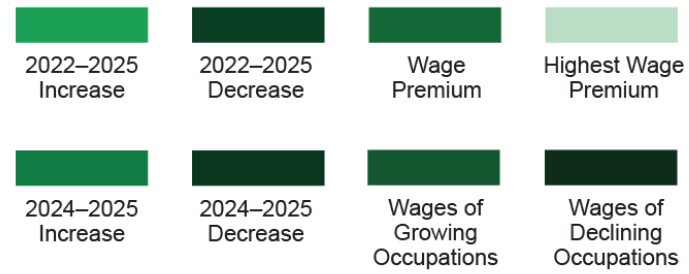
²⁷ A wage premium is the additional pay workers receive compared with a benchmark wage, such as the average wage for all U.S. workers. A positive wage premium indicates that workers earn more than the benchmark.

Color Key for Chapter Data

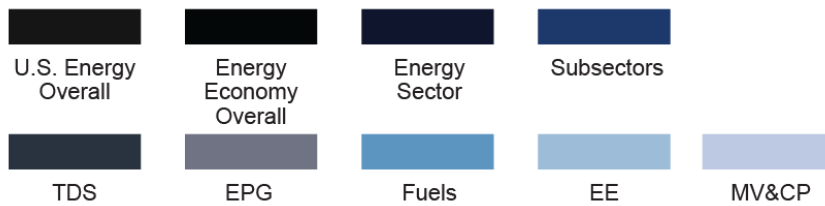
Employment Colors



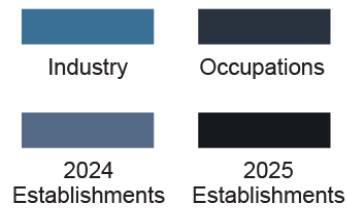
Wage Colors



Economy and Energy Sector Colors



Industry, Occupation, and Establishment Colors



Survey Methodology Overview

The Office of Management and Budget (OMB) approved the current USEER survey methodology in October 2025. The U.S. Department of Energy (DOE) contracted with BW Research Partnership to survey approximately 42,000 establishments^{28, v} across the U.S. The survey data complement existing data from the BLS and are used to identify and analyze where energy-related jobs are concentrated across energy sectors and activities within traditional industries.²⁹ USEER employment estimates are calculated with a methodology using the BLS Quarterly Census of Employment and Wages (QCEW)^{vi} second-quarter 2025 employment data and the BLS Employment Situation Table B-1^{vii} monthly reports through December 2025. Appendix A provides additional detail on how employment counts are calculated.

Since 2016, the sample has been constructed using a stratified sampling method, which is a statistical methodology that sets quotas for survey responses based on three characteristics of establishments to ensure representation:

1. NAICS industry
2. Establishment size
3. State location

The research team procured for the USEER survey developed survey quotas using establishment totals from the BLS QCEW. The use of BLS data to develop a stratified sampling methodology supports more accurate and efficient USEER data collection and analysis.

The research team categorized establishments into two groups: a “known” universe of businesses previously identified as having potential energy-related activity, and an “unknown” universe consisting of all other establishments. Survey quotas are applied to both groups to ensure that establishments with potential energy activity are adequately represented. More detail is provided in Appendix A.

Constructing the survey quotas by the three characteristics involves identifying 220 six-digit NAICS codes that include establishments that have exhibited at least some level of qualifying energy activity³⁰ in past survey efforts.

Because the survey asks establishments directly about their energy-related activities, it captures work that occurs across different parts of the supply chain. For example, if a utility outsources work to a construction firm, the associated jobs are still counted as energy employment. In such cases, the jobs are allocated to the construction industry rather than to the utilities industry. This

²⁸ In U.S. government surveys, an establishment usually means one physical worksite where business activity takes place, such as a store, office, factory, mine, warehouse, hospital, school, or restaurant. An establishment is not always the same as a company. One company may operate many establishments in different locations.

²⁹ Traditional industries are defined by the NAICS, which is the standard used by federal statistical agencies.

³⁰ The definition of qualifying energy activity is given on the next page.

approach allows the survey to capture more than a million energy-related jobs that would be excluded using only NAICS or occupation-based definitions.³¹

The USEER relies primarily on data from public sources and a comprehensive employer survey. The lack of a single authoritative list of U.S. energy establishments causes some data limitations. As a result, the reported margins of error likely understate the true statistical uncertainty. Additional details are provided in Appendix A.

For USEER sectors and subsector definitions that exactly match BLS QCEW NAICS definitions,³² the BLS QCEW counts are reported. These employment estimates do not have sampling uncertainty because the QCEW is a census of administrative records.^{viii}

Definitions for a Qualifying Energy Establishment and a Qualifying Energy Worker can be found below. For more details, please see Appendix A.

Qualifying Energy Establishments and Energy Workers

For the USEER survey, a Qualifying Energy Establishment is an organization with employees in the U.S. that is directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, goods, or services related to:

- TDS;
- EPG;
- Fuels, including extraction, processing, production, and distribution;
- EE, including heating, cooling, and building envelope; and
- Transportation, including MV&CP.

This definition also includes supporting services such as consulting, finance, tax, and legal services related to energy. To qualify for the base USEER survey, firms must explicitly state their involvement in energy as outlined above.

For the USEER survey, a Qualifying Energy Worker is an employee of a Qualifying Energy Establishment who spends some portion of his or her time supporting the qualifying energy portion of the business.

This report provides detail on employment activity that includes both “a portion of their time” and “a majority of their time” when referencing Qualifying Energy Workers. This is especially true in the Energy Efficiency sector, where the employing construction or repair firms are frequently engaged in both non-energy construction or installation activities as well as high-efficiency activities that qualify for energy-efficient certification.

³¹ For example, the USEER can track establishments involved in processing biofuels that are otherwise indistinguishable from establishments processing non-biofuel organic chemicals in the NAICS 325199 All Other Basic Organic Chemical Manufacturing category.

³² See the Appendix U for a list of USEER energy sectors that match with NAICS industry categories.

USEER is an establishment-based survey, meaning it asks employers about jobs at their businesses rather than counting individual people one by one. For that reason, the most technically accurate term for the survey results is “jobs.” A person who works for more than one employer could be counted once for each job, while a household survey would count that same person only once. This is the same distinction the BLS makes between payroll or establishment surveys, which count jobs, and household surveys, which count employed people. Because relatively few workers hold more than one job,³³ the difference between a job count and a worker count is usually small. To make the report easier to read, this report uses the term “workers” as plain-language shorthand for USEER-covered jobs, unless otherwise noted.

³³ About 5% of the total employed population as of June 2026 held multiple jobs, according to the BLS. *See* <https://www.bls.gov/news.release/empsit.t16.htm>



Executive Summary

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Executive Summary

The results of the USEER survey show that the United States energy economy employed 8.4 million workers in 2025, accounting for about 5% of the total American workforce.^{34, ix} Energy employment levels in 2025 declined by 1% (-86,000 workers) compared to 2024.³⁵ From USEER data, median energy sector wages were 24% higher than U.S. median wages (\$63,000 vs. \$51,000). From U.S. Bureau of Labor Statistics (BLS) data,^x average energy wages³⁶ rose faster than the national average and were 22% higher than the broader U.S. workforce in 2025 (\$101,000 vs. \$82,000 annually).³⁷ Wages in the energy economy made up 6% of total U.S. income in 2025.³⁸



Analysis of BLS^{xi} data suggests that in the overall energy sector, occupations adding employment had higher wages than occupations with declining employment.³⁹ Specifically, higher-wage occupations, such as those in the Management and Professional occupation categories, were growing in employment while lower-wage occupations,

such as in the Production occupations, were declining. In 2025, the wage⁴⁰ of energy occupations that had positive employment growth between 2024 and 2025 was \$39 hourly (\$82,000

³⁴ The energy share of workers is calculated using December 2025 total U.S. nonfarm payroll employment from the U.S. Bureau of Labor Statistics (BLS) Current Employment Statistics (CES) program as the denominator. CES measures the number of nonfarm payroll jobs in the United States.

³⁵ In 2025, 74,000 workers were added to the energy economy, while 160,000 workers left the energy economy, for a net decrease of 86,000 workers.

³⁶ The QCEW-defined energy sector is not the same as the USEER defined energy sector. The NAICS codes chosen for the QCEW-defined energy sector are NAICS codes with energy-sector only or energy-sector-intensive activities that correspond to the NAICS codes used for USEER sample construction. See the Introduction for further discussion about how this sample differs from the USEER sample.

³⁷ Wage premiums from different sources provide a more robust, three-dimensional view of the energy sector, as each of the data sources used in this report have different strengths and limitations, as discussed in the Introduction. Meanwhile, wage premiums from different data sources and reporting different wage premium statistics should be different from each other. The USEER data source, using median wages, reports a 24% wage premium while the QCEW sample reports a 22% wage premium using average wages. The wage premiums described here are the additional pay the median (for USEER sample) or average (for QCEW sample) worker in the energy sector receives relative to the U.S. median (for USEER sample) or average (for QCEW sample) pay. QCEW average wages are significantly higher than USEER-reported median wages due to several factors: 1) Differences in sample construction, as the BLS QCEW sample is an administrative count based on a limited set of NAICS industry codes and the USEER sample is collected using a different methodology drawing on energy establishments from a larger set of NAICS categories. 2) Sampling methodology and wage calculation methodologies differ significantly between the sources 3) There is a large difference in average and median statistics. Average wages are usually higher than median wages when a relatively small number of very high earners pull the average upward. For example, BLS OEWS estimates show that the average U.S. annual average salary across industries and occupations is \$19,000 higher than the U.S. median annual salary across all industries and occupations. See the Introduction for a discussion of the strengths and limitations of the different data sources used in this report.

³⁸ Calculations are based on multiplying average energy wage with energy employment count and comparing with average U.S. wage and U.S. employment count using BLS QCEW data. See Appendix V for more details.

³⁹ See Ch. 1. Energy Labor Market Overview.

⁴⁰ Average weighted by occupation employment. May 2025 OEWS occupation employment.

annually),⁴¹ while the wage of energy occupations with negative employment growth was \$31 hourly (\$64,000 annually).⁴²

The USEER provides a comprehensive account of the employment across five energy sectors—Transmission, Distribution, and Storage (TDS); Electric Power Generation (EPG); Fuels; Energy Efficiency (EE); and Motor Vehicles and Component Parts (MV&CP).⁴³

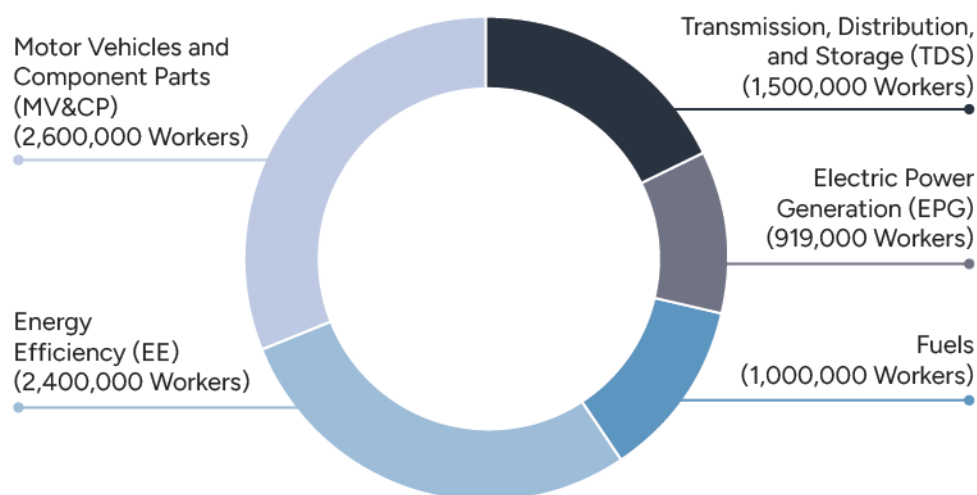


Figure ES.0.1. Energy Economy Employment by Sector, 2025, USEER Survey⁴⁴

The TDS sector employed 1.5 million workers and grew by 2% (+28,000 workers) in 2025 from 2024, also shown in Figure 1.2. The U.S. saw record growth in electricity demand alongside historically high energy exports. After nearly two decades of relatively flat demand, U.S. electricity demand is increasing due to the expansion of data centers, growth in energy-intensive manufacturing and industrial activity, and increasing electrification of transportation and buildings through technologies such as electric vehicles and heat pumps.^{xii}

Utility investment in transmission and distribution (T&D) infrastructure supported T&D job and wage growth that significantly outpaced the national average. Rising U.S. electricity demand led to extensive Electric Power T&D expansion, spurring employment growth and higher wages in the Electric Power TDS sector.

⁴¹ Unless otherwise stated, all wages and salaries are reported in nominal 2025 dollars.

⁴² OEWS data should be interpreted as a rolling three-year average rather than a single-year measure. Because the 2024 and 2025 estimates share most of the same underlying survey responses, year-to-year differences may understate or delay sudden changes in labor market conditions.

⁴³ See Introduction for a definition of each energy sector. These energy sector definitions are defined by the USEER survey and do not generally align with NAICS industry codes.

⁴⁴ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

U.S. electricity load^{xiii} is expected to increase by 2.5% in 2027, a stark contrast from the 0.1% growth rate that the industry experienced from 2005 to 2020. Transmission investment is expected to increase 22% from 2025 to 2028,^{xiv} resulting in a strong employment outlook for the TDS sector.

The EPG sector employed 919,000 workers and declined by about 2% (–15,000 workers) in 2025 from 2024, also shown in Figure 1.2. In 2025, policy changes to encourage nuclear development and retain coal power generation drove a 4% increase (+2,300 workers) in Nuclear EPG employment, and Coal EPG employment grew by 5% (+2,800 workers) from 2024. At the same time, employment in Solar EPG declined by 3% (–11,000 workers), Wind EPG declined 2% (–2,700 workers), reflecting changes to tax incentives and a changing federal regulatory environment. The employment outlook for the Nuclear EPG subsector is positive over the medium and long term, especially for small modular reactors (SMRs) and microreactors. The long-term employment outlook for Wind and Solar EPG remains positive even though there were federal regulatory changes in 2025.⁴⁵

The Fuels sector employed one million workers and declined by 3% (–28,000 workers) in 2025 from 2024. Drilling efficiencies^{xv} in 2025 combined with firm consolidation^{xvi} in the oil and gas sector, led to the overall decrease in Fuels employment. Fuel production is expected to remain high while increases in productivity and labor-saving efficiencies^{xvii} within oil and gas allow for higher output with fewer workers. Industry sources point to the role of artificial intelligence (AI), automation, and digital technologies in improving operational efficiencies and reducing labor requirements.^{xviii}

The EE sector employed 2.4 million workers and declined by 1% in 2025 (–21,000 workers) from 2024. Several 2025 policy changes likely shifted workers' time—and in some cases employment—away from EE activities. Prospects for employment in EE are positive as the DOE restarted home energy rebate programs,^{xix} which are likely to increase demand for Certified⁴⁶ and energy efficient appliances, heat pumps, and other efficiency upgrades.

The MV&CP sector employed 2.6 million workers in 2025, but automakers reduced production capacity in response to weaker consumer vehicle demand and high vehicle costs. As a result, employment in 2025 declined by 2% (–50,000 workers) from 2024. The employment outlook for the MV&CP sector is weak as the automobile market continues to operate in an environment of reduced consumer demand, elevated fuel prices, higher tariffs, and broad economic uncertainty.

The combined effects of soaring electricity demand, historic grid modernization, and strong fuel exports positioned the energy economy as a source of strong employment opportunities in 2025.

⁴⁵ See Ch. 3 Electric Power Generation, EPG Labor Market Analysis section for more detail.

⁴⁶ "Certified" refers to products that have been independently tested and certified to meet strict energy-efficiency requirements established by the ENERGY STAR® program. ENERGY STAR® is a voluntary federal certification program administered by DOE and EPA. See <https://www.energystar.gov/about/how-energy-star-works> for more information about the ENERGY STAR® program.

Meanwhile, federal policies focused on energy dominance, artificial intelligence, and nuclear energy underpin a positive employment outlook across the energy economy.

Increased demand and wages for energy workers, along with employer perspectives on hiring difficulty, indicate a worker shortage across the energy economy in 2025. USEER data suggests these shortages were especially acute in Construction, Installation, and Repair occupations within the Electric Power T&D sector. Industry sources support this finding, reporting that energy employers are increasingly competing for workers not only with other energy companies, but also with fast-growing data centers, infrastructure projects, advanced manufacturing facilities, and critical minerals industries.^{xx} These sectors rely on many of the same skilled occupations, including electricians, electrical engineers and technicians, industrial maintenance workers, construction trades workers, and production workers. As demand continues to grow across these industries, competition for skilled labor is expected to increase, creating new opportunities for American workers and supporting the growth of high-paying, skilled jobs.

Key Findings – Sector Employment and Wages

The Transmission, Distribution, and Storage (TDS) sector employed 1.5 million workers and grew by 2% (+28,000 workers) in 2025 from 2024.

- Natural Gas T&D employment grew by 5% (+12,500 workers) compared to 2024. Estimates from the BLS QCEW indicate that inflation-adjusted wages^{47,xxi} in the natural gas pipeline industry⁴⁸ grew faster than inflation-adjusted wage growth in the broader U.S. workforce in 2025 (3.6% vs. 1.5%),⁴⁹ suggesting strong demand for workers in Natural Gas T&D.
- From USEER data, Construction, Installation, or Repair occupations made up the greatest portion of the TDS workforce at 30% (414,000 workers), and employment in these occupations grew 2% (+9,600 workers).
- About 49% of TDS employers hired workers in the last year, compared with 51% who hired in 2024. In 2025, 67% of employers had trouble hiring, with Management positions being the most difficult to fill.

⁴⁷ Nominal wages are converted to 4th quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. *See* endnote.

⁴⁸ This refers to BLS QCEW's natural gas pipeline sector corresponding to NAICS 486210. This sector refers to the operation and transportation of natural gas through pipelines, including the movement, storage, and delivery of gas once pipeline systems are built. This is distinct from a related industry code, NAICS 237120, which refers to the construction of oil and gas pipelines and related infrastructure, including the building, installation, and major repair of natural gas transmission and distribution pipelines. In short, 486210 covers the ongoing transportation and management of natural gas within existing pipeline networks while 237120 covers pipeline construction activities.

⁴⁹ NAICS 4862 Pipeline Transportation of Natural Gas experienced 3.6% real wage growth (6% nominal growth) from 2024 to 2025.

The Electric Power Generation (EPG) sector employed 919,000 workers and declined by about 2% (–15,000 workers) in 2025 from 2024.

- From USEER data, Nuclear employment increased by 4% (+2,300 workers) and Coal employment by 5% (+2,800 workers) in 2025 compared to 2024, after years of decline. BLS QCEW counts indicate rising demand for workers in the Utilities industry segment of Nuclear EPG. Employment grew 1.6% (+600 workers) from 2024 to 2025 and inflation-adjusted wages rose 1.2 percentage points above U.S. inflation-adjusted wage growth.^{50,51,52}
- From USEER data, overall employment in 2025 declined in Solar EPG by 3% (–11,100 workers), Wind EPG fell by 2% (–2,700 workers), and Water Power EPG declined by 6% (–4,400 workers) from 2024. However, demand for workers remained strong in the Utilities industry segment of Solar EPG and Wind EPG. BLS QCEW counts suggest that Wind EPG Utilities employment increased by 17% (+2,200 workers) and inflation-adjusted wages rose 9% (12% nominally) in 2025 from 2024, while Solar EPG Utilities employment increased by 4% (+600 workers) and inflation-adjusted wages rose 5% (7% nominally).
- From USEER data, Bioenergy EPG employment increased by 8% (+1,100 workers).
- Construction, Installation, or Repair positions made up the greatest portion of the workforce at 32%. Employment declined by 4% (–13,400 workers) between 2024 and 2025.
- Among EPG employers, 42% hired in 2025, compared with 49% hiring in 2024. Of these employers, 70% experienced at least some hiring difficulty, and reported Management occupations as the most difficult positions to fill.

The Fuels sector employed one million workers and declined by 3% in 2025 (–28,400 workers) from 2024.

- In 2025, employment in Petroleum Fuels declined by 3% (–16,300 workers) compared to 2024, while Natural Gas Fuels declined by 4% (–9,800 workers).
- Job losses in 2025 were concentrated in Administrative occupations,^{53, xxii} which declined by 19% (–35,400 workers) from 2024. Meanwhile, employment in Construction, Installation, or Repair occupations grew 5% (+7,600 workers), and employment in Mining and Extraction occupations increased 4% (+7,000 workers) from 2024 and 2025.^{xxiii}

⁵⁰ Nuclear EPG wages experienced 2.7% real wage growth and 5% nominal wage growth from 2024 to 2025.

⁵¹ USEER assigns the following BLS QCEW industry sectors as utilities employment: Nuclear EPG, Solar EPG, Wind EPG, and Water Power EPG.

⁵² From Figure 1.3, U.S. inflation adjusted wage growth using BLS QCEW Q4 data is 1.5%. See Figure 1.3 for more details.

⁵³ Administrative occupations refer to workers who organize records, manage communications, schedule, and perform routine administrative functions that support managers, professionals, and technical staff across industries. Example occupations include administrative assistants, secretaries, receptionists, bookkeeping and accounting clerks, office clerks, data entry keyers, and customer service and billing clerks.

- BLS estimates^{54,xxiv} suggest the employment decline reflects a shift toward a smaller, higher-paid workforce. Employment in the oil and gas extraction⁵⁵ segments of the Petroleum and Natural Gas subsectors within Fuels fell 5% (–5,800 workers) between 2024 and 2025. However, inflation adjusted wages still increased 3% (6% nominally). Further analysis⁵⁶ using BLS OEWS data shows that the average wage of Oil and Gas Extraction occupations with increasing employment in the 2022 to 2025 period was \$69 hourly (\$143,000 annually). Occupations with declining employment over the same period had an average wage was \$42 hourly (\$86,000 annually). This wage difference was driven by employment increases in higher-paying occupations such as Management, Business, or Financial positions, which typically require a bachelor's degree or higher.^{57, xxv} Industry sources also point to the role of AI, automation, and digital technologies in improving operational efficiencies and reducing labor requirements, which may be related to the relative employment increase in higher-wage occupations.^{xxvi}
- In the Fuels sector, 42% of employers actively hired in 2025, compared with 41% hiring in 2024. Of these employers, 76% experienced hiring difficulty, and those employers reported Technicians or Mechanical Support as the most difficult occupations to fill.

The Energy Efficiency (EE) sector employed 2.4 million workers and declined by 1% (–21,400 workers) in 2025 from 2024.

- Employment related to Certified Data Center Equipment jumped by 9% (+1,100 workers) in 2025 from 2024, while Certified Ground-Source or Geothermal Heat Pumps employment increased by 8% (+600 workers).
- Construction, Installation, or Repair occupations made up the greatest portion of the workforce, 33%, and declined by 1.5% (–11,900 workers) in 2025 compared to 2024.
- Nearly 40% of EE employers hired in 2025, compared with 42% hiring in 2024. Of the employers that hired in 2025, 74% had trouble hiring and the employers reported Management roles to be the most difficult to fill.

⁵⁴ BLS OEWS estimates.

⁵⁵ Oil and Gas Extraction, as defined by NAICS 2111, corresponds to the Mining and Extraction industry segments of the Petroleum and Natural Gas subsectors within Fuels.

⁵⁶ See Ch. 4 Fuels, Fuels Labor Market Analysis, Wages section for more detail.

⁵⁷ See Ch. 4 Fuels, Fuels Labor Market Analysis, Wages section for a discussion on these occupations.

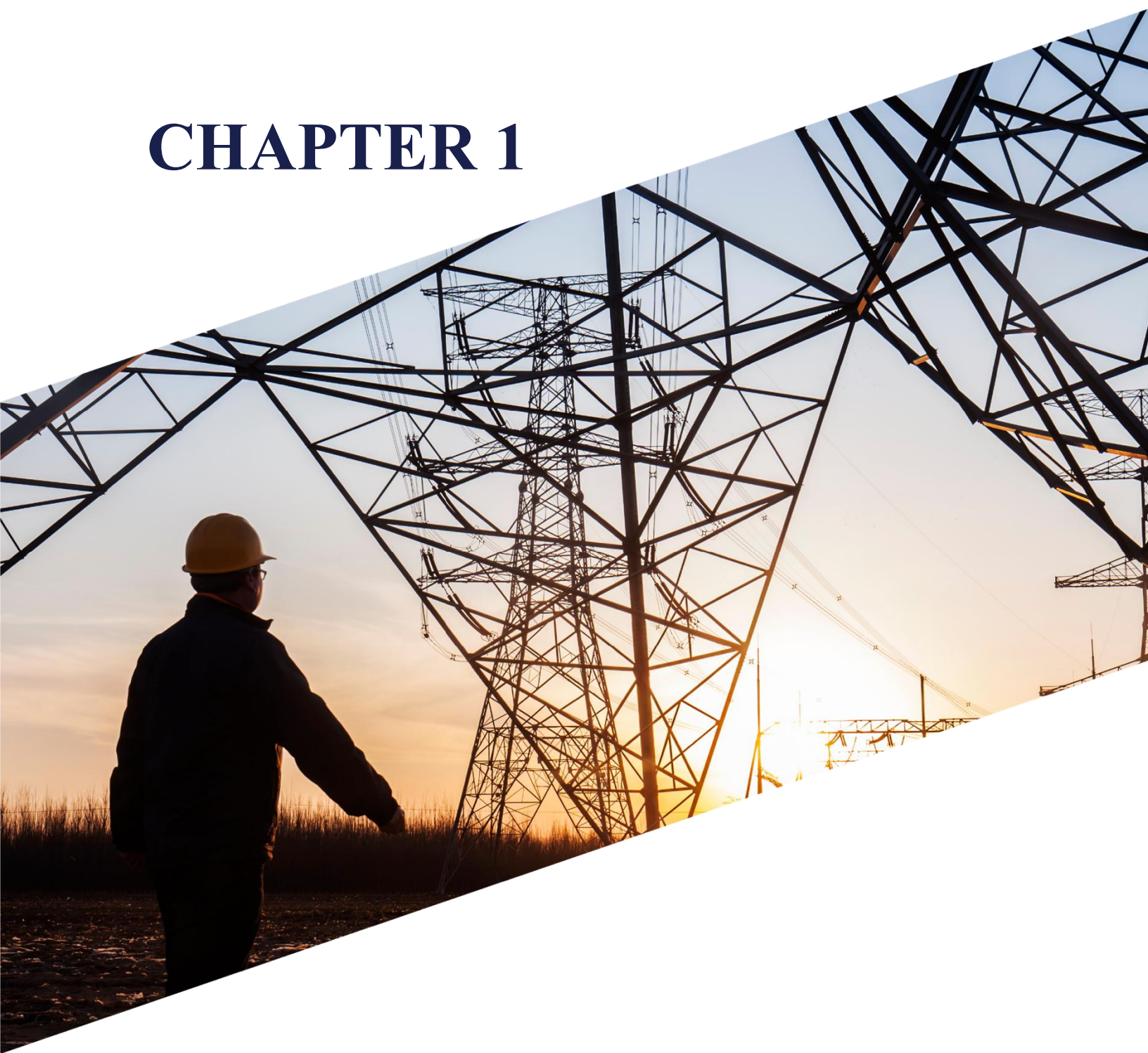
The Motor Vehicles and Component Parts (MV&CP) sector employed 2.6 million workers and declined by 2% (−50,300 workers) in 2025 from 2024.

- The largest subsector, Gasoline and Diesel Motor Vehicles, decreased employment by 2% (−34,500 workers), alongside declines in most subsectors.
- At 32%, Production and Manufacturing occupations made up the largest share of workers in this sector, but employment decreased by 6% (−47,100 workers) in 2025 from 2024. Construction, Installation, or Repair employment also decreased by 3% (−17,500 workers).
- BLS OEWS data show the employment decline reflected a shift towards a smaller, slightly higher-paid workforce. The average wage of occupations with increasing employment (\$31/average hourly wage, \$64,000 annually) was higher than that of occupations with decreasing employment (\$28/average hourly wage, \$59,000 annually).^{58, xxvii}
- BLS QCEW data also suggest this smaller, higher-paid workforce is more efficient. From 2022 to 2025, employment fell slightly and inflation-adjusted wages increased.^{59, xxviii} Meanwhile, output per worker also increased 9% over the same period in the motor vehicle manufacturing sector.^{xxix}
- Among employers, 37% hired in 2025, compared with 34% in 2024. In 2025, 71% of employers that hired had trouble hiring new workers. Technicians or Mechanical Support roles were the most difficult to fill.

⁵⁸ See Ch. 6 Motor Vehicles and Component Parts, MV&CP Labor Market Analysis, Wages section for more detail.

⁵⁹ See Figure 1.3.

CHAPTER 1



Energy Labor Market Overview

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Energy Labor Market Overview

Drawing on the survey data collected for the 2026 USEER and federal labor statistics, this chapter provides an analysis of:

- Long-term and recent employment patterns
- Wage differentials by sector and occupation⁶⁰
- Evolving challenges of hiring and workforce supply

By examining the trends in supply and demand in the energy labor market, this chapter offers critical insights for policymakers, industry leaders, and job seekers to understand the energy economy's employment landscape.

Key Takeaways

- Between 2022–2025, employment in TDS; EPG; and EE employment grew, while employment in Fuels and MV&CP declined.
- Wage patterns from BLS QCEW data, as shown in Figure 1.3, show particularly high demand for workers in Traditional T&D,⁶¹ EPG, Storage, and EE.
- USEER wage data indicated certain supervisory roles, occupations working with electricity,⁶² occupations working with machinery,⁶³ and occupations transporting and moving materials⁶⁴ generally commanded high energy sector wage premiums.⁶⁵ OEWS data showed strong wage growth in these occupations,⁶⁶ suggesting strong demand for workers.
- Construction establishments often reported the highest rates of hiring challenges.
- Enrollments in apprenticeship programs continued to increase, and new registered apprentices within the construction industry were 9% higher in 2025 (112,000 new apprentices) than in 2024 (103,000 new apprentices).^{xxx}
- EPG and TDS sectors attracted more experienced workers 55 and older.
- Collectively, these findings suggest acute worker shortages in construction occupations, machinery-related occupations, electrically skilled occupations, as well as supervisory roles for these occupations. The worker shortage in 2025 was particularly acute in TDS as well as EPG.

⁶⁰ Unless otherwise stated, all wages and salaries are reported in nominal 2025 dollars, and all wage changes are reported in nominal terms.

⁶¹ Traditional T&D includes Electric Power T&D, Natural Gas T&D, Petroleum T&D, Coal T&D and other Fuels T&D.

⁶² Example occupations include Electricians and Electrical, Electronic, and Electromechanical Assemblers.

⁶³ Example occupations include Industrial Machinery Mechanics, Computer Numerically Controlled Tool Operators Machine Tool Setters and Operators, Engine and Other Machine Assemblers, Operating Engineers and Other Construction Equipment Operators.

⁶⁴ Example occupations include Laborers and Freight, Stock, and Material Movers, Hand, and Heavy and Tractor-Trailer Truck Drivers.

⁶⁵ The wage premium described here is how much more a particular occupation pays in the energy sector relative to how much the same occupation pays across the U.S. workforce.

⁶⁶ See Appendix W.

Employment

The USEER estimates that there were 8.4 million domestic energy workers, accounting for about 5% of the total U.S. workforce in 2025.^{xxxix} Energy workers as defined by the USEER include workers across five energy sectors—TDS; EPG; Fuels; EE and MV&CP.

In 2025, compared to 2024, employment declined in most sectors, with TDS as the sole exception.⁶⁷ Since 2022, however, employment grew in TDS, EPG, and EE, detailed further in Figure 1.1 and Figure 1.2.⁶⁸

From 2022 to 2025, trends in energy employment showed differing patterns across the five energy economy sectors,⁶⁹ as shown in Figure 1.1.⁷⁰ Recent employment trends, however, sometimes diverged from longer-term trends, as will be discussed further in subsequent chapters.

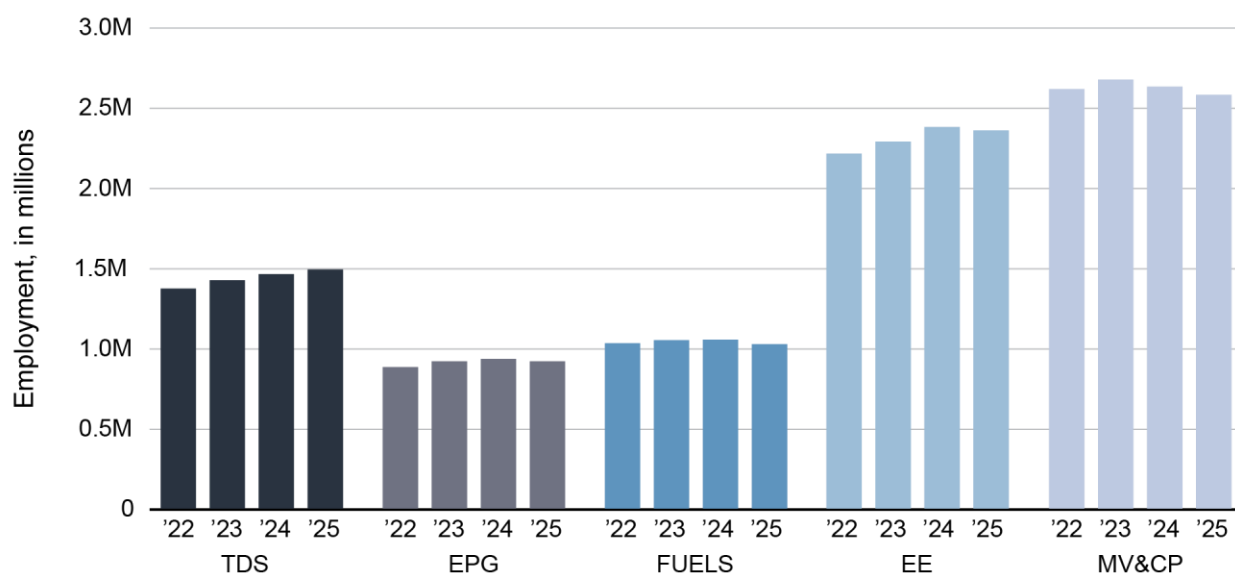


Figure 1.1. Energy Economy Employment by Sector (in millions), 2022–2025, USEER Survey⁷¹

⁶⁷ All employment changes are presented as a percentage difference compared to a base year, and all percentage differences are statistically significant at the 95% level, except for footnoted values.

⁶⁸ See Appendix M for energy employment data 2017–2025.

⁶⁹ All employment changes discussed in this report are statistically significant unless otherwise noted. When statistically insignificant changes are discussed, the lack of statistical significance is stated. Figures and tables that report employment changes will identify statistically significant and nonsignificant values in the footnotes or captions.

⁷⁰ EE and MV&CP are the two largest sectors, and EPG and Fuels are the two smallest sectors.

⁷¹ USEER employment data provides the best summary of employment for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employment in TDS experienced strong, steady growth between 2022 and 2025 (8.6%, +118,400 workers), detailed further in Figure 1.2. EPG employment levels grew 4% (+35,800 workers) since 2022, while EE employment grew almost 6.5% (+145,000 workers). However, MV&CP employment declined by 1.4% from 2022 (−35,400 workers). Meanwhile, Fuels sector employment declined 1% since 2022 (−5,900 workers). For more information on energy employment prior to 2022, see Appendix N.

	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
All U.S.	159,358,000	2.7%	0.0%
Energy Economy	8,380,000	3.2%	-1.0%
TDS	1,492,000	8.6%	1.9%
EPG	919,000	4.0%	-1.6%
Fuels	1,025,900	-0.6%	-2.7%
EE	2,360,300	6.5%	-0.9%
MV&CP	2,582,800	-1.4%	-1.9%

Figure 1.2. Employment Changes by Sector⁷², 2022–2025 & 2024–2025, USEER Survey⁷³

Note: All percentage differences are significant at the 95% level except for footnoted values.

⁷² Energy-related data is from the USEER. U.S. employment level is from the December 2025 total nonfarm payroll estimate of the BLS CES. See https://www.bls.gov/ces/data/employment-and-earnings/2026/table1b_202604.htm.

⁷³ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Wages

Analyzing wage trends provides valuable insight into whether changes in employment were driven by changes in worker availability or employer demand for different types of workers. For example, employment and wage changes in the same direction point to changes in employer demand in workers. Specifically, employment increases coupled with real wage increases point to increasing demand for workers while employment declines, coupled with weak or negative real wage growth, point to decreasing demand for workers. This is observed in the TDS sector.

Meanwhile, employment and wage changes in opposite directions generally point to a combination of changes in worker availability (holding the mix of skills or occupations fixed) or changes in the mix of occupations or skills desired by employers. Because changes in worker availability are generally gradual, larger changes in wages when employment is moving in the opposite direction point to a change in the mix of occupations or skills desired by employers. This is observed in the MV&CP sector and further analyzed in Chapter 6's Labor Market Analysis section ⁷⁴

Wage trends presented in Figure 1.3 were based on BLS QCEW data aligned as closely as possible to the energy sector definitions used for USEER.⁷⁵ Estimated inflation-adjusted wages in the energy economy in 2025, defined using BLS QCEW data, grew at a faster rate, 6% (15% nominal), than the broader U.S. economy, 4% (13% nominal) since 2022. Inflation-adjusted wages for Storage and EE grew even faster, up around 8% (17% nominal) between 2022 and 2025. Between 2024 and 2025, inflation-adjusted wages grew by around 3% (6% nominal) for Storage, EPG, EE, and MV&CP, which was higher than U.S. average real wage growth, 1.5% (4% nominal). Higher wage growth suggests continued strong demand for workers within the energy economy.

⁷⁴ For the MV&CP Sector, employment declines are coupled with strong real wage increases. Ch. 6 MV&CP Labor Market Analysis shows that this is due to an employment decline in lower-paying occupations and a smaller employment increase in higher paying occupations.

⁷⁵ The calculations use a list of energy-intensive NAICS codes that are a subset of the USEER sector definitions. *See* Appendix U for details.

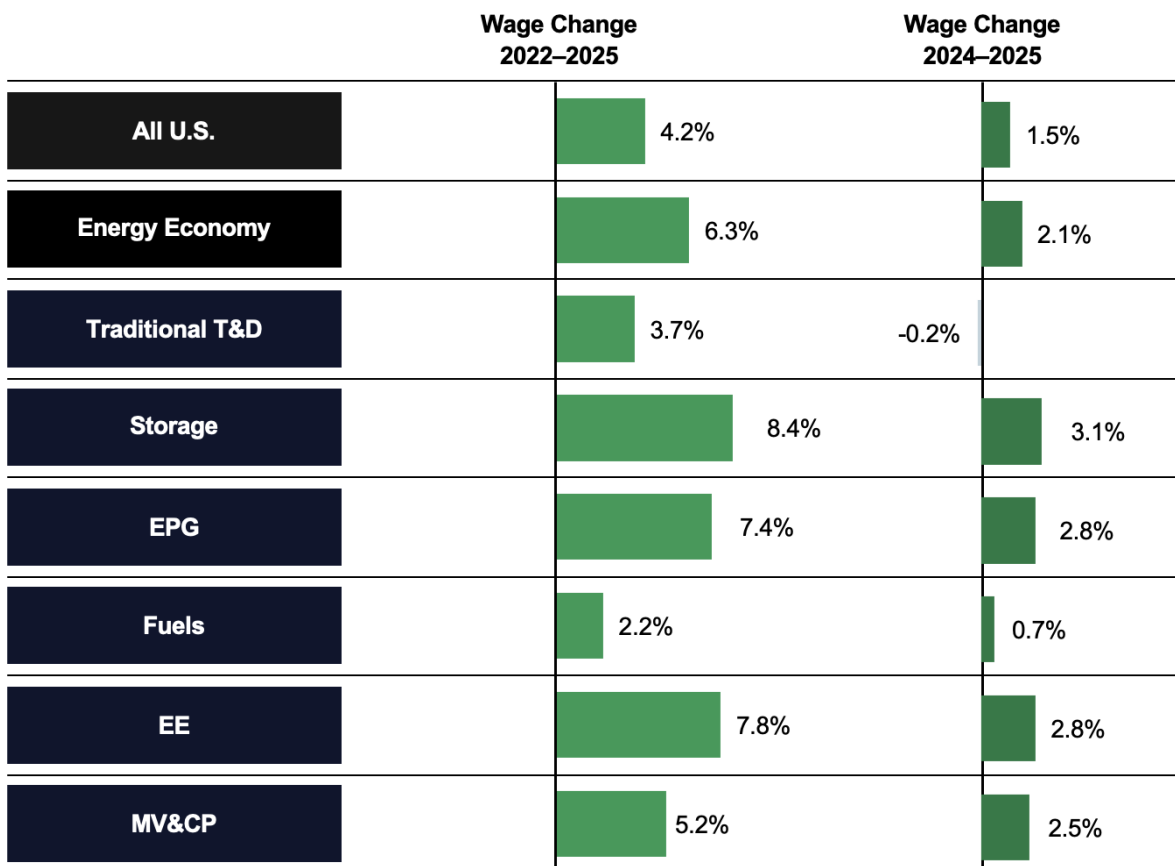


Figure 1.3. Inflation-Adjusted Energy Sector Wages, 2022–2025 & 2024–2025, BLS QCEW^{76, 77,xxxii}

⁷⁶ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. *See* Appendix U for a list of NAICS codes used to construct each sector. Employment counts are usually different from USEER employment estimates as NAICS boundaries are different from USEER sector boundaries. Wage changes are reported in inflation adjusted (real) units by converting nominal wages to 4th quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. *See* endnote.

⁷⁷ The BLS QCEW provides the most accurate data on employment and wages using detailed NAICS industry codes. *See* the Introduction for a discussion of the different data sources used in this report and their relative strengths and limitations.

High annual salaries in the energy sector relative to overall U.S. salaries reflect a combination of strong demand for workers across the energy economy, increased compensation for specialized skills, and increased compensation of potential exposure to dangerous or physically demanding working conditions.⁷⁸ USEER survey estimates show salaries were particularly high in the TDS and EPG sectors, as broken down in Figure 1.4. Workers in the EPG sector experienced the highest wage premium at 37%, relative to the U.S. median salary (\$70,000 vs \$51,000 annually).⁷⁹ TDS, Fuels, and EE also offered wage premiums of at least 26% relative to the U.S. median salary (\$64,000 to \$65,000 annual range compared to \$51,000 annually). MV&CP retained the smallest wage premium of all energy sectors, though workers in the sector still earned wages 15% higher than their peers working the same jobs in the broader U.S. economy (\$58,000 vs. \$51,000 annually).

	Annual Median Salary	Wage Premium
All U.S.⁸⁰	\$51,000	
Energy Economy	\$63,000	 24%
TDS	\$65,000	 28%
EPG	\$70,000	 37%
Fuels	\$64,000	 26%
EE	\$64,000	 26%
MV&CP	\$58,000	 15%

Figure 1.4. Wage Premiums⁸⁰ Across Energy Sectors in 2025, USEER Wage Data^{81,82}

Notes: Percentages show how much higher the wage is for the median salary for each of the five energy sectors relative to the national annual median salary.

⁷⁸ Due to data limitations, it is not possible to separate what share of wage premiums is due to increased demand, specialized skills, exposure to dangerous or physically demanding working conditions. Analyzing changes in employment and inflation-adjusted wages over time can provide more insight into the demand for workers.

⁷⁹ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms.

⁸⁰ The wage premium described here is the additional pay the median worker in a particular energy sector receives relative to the U.S. national median pay. See Appendix A for the methodology for how sector wages are calculated in USEER.

⁸¹ USEER wage data provides the best summary of wages for USEER energy sector definitions. BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁸² Median values are limited to occupations for which wage data was collected through the USEER. This represents a narrow range of occupations relative to the whole economy.

Meanwhile, energy sector wage premiums by occupation⁸³ suggest strong demand and persistent challenges for hiring technically skilled and support-industry workers alike if specialized skills and exposure to dangerous or physical demanding working conditions were similar across industries. Examples in Table 1.1, using USEER wage data, show occupations with relatively higher energy sector wage premiums, meaning occupations that pay energy-related workers more than the national wage for the same occupation. Drivers, Maintenance Workers, and Laborers and Material Movers received some of the largest wage premiums working in energy-related fields. Electrically skilled occupations—including Electricians and Electrical, Electronic, and Electromechanical Assemblers—also earned significantly higher wages in the energy economy.

⁸³ An energy sector wage premium by occupation is the additional amount, in dollar or percentage terms, an occupation pays in the energy sector relative to the amount the occupation pays across all U.S. industry sectors. In this example, median wages are compared.

Key Energy Occupation	Annual Median Wage All Industries ⁸⁴	Energy Sector Wage Premium ⁸⁵ by Occupation				
		TDS	EPG	FUELS	EE	MV&CP
Architectural and Civil Drafters	\$66,000	3%	10%	–	5%	–
Assemblers and Fabricators	\$45,000	11%	12%	13%	11%	4%
Bookkeeping, Accounting, and Auditing Clerks	\$51,000	12%	9%	5%	2%	1%
Computer Numerically Controlled Tool Operators	\$51,000	19%	16%	9%	13%	12%
Construction Laborers	\$47,000	7%	9%	–	5%	–
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	\$46,000	9%	12%	4%	9%	14%
Driver/Sales Workers	\$39,000	19%	12%	9%	10%	22%
Electrical, Electronic, and Electromechanical Assemblers*	\$46,000	17%	15%	–	9%	18%
Electricians	\$63,000	13%	13%	1%	6%	–
Engine and Other Machine Assemblers	\$54,000	9%	9%	4%	11%	10%
Heavy and Tractor-Trailer Truck Drivers	\$59,000	8%	7%	7%	7%	6%
Industrial Truck and Tractor Operators	\$46,000	11%	3%	2%	8%	9%
Inspectors, Testers, Sorters, Samplers, and Weighers	\$49,000	5%	12%	2%	7%	8%
Laborers and Freight, Stock, and Material Movers, Hand	\$40,000	20%	17%	3%	10%	19%
Maintenance and Repair Workers, General	\$50,000	21%	20%	9%	12%	18%
Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	\$47,000	11%	8%	1%	8%	16%

* Except Coil Winders, Tapers, and Finishers

Table 1.1. Wage Premium⁸⁶ for Key Energy Occupations in 2025, USEER Wage Data⁸⁷

⁸⁴ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms.

⁸⁵ An energy sector wage premium by occupation is the additional amount, in dollar or percentage terms, an occupation pays in the energy sector relative to the amount the occupation pays across all U.S. industry sectors. In this example, median wages are compared.

⁸⁶ An energy sector wage premium by occupation is the additional amount, in dollar or percentage terms, an occupation pays in the energy sector relative to the amount the occupation pays across all U.S. industry sectors. In this example, median wages are compared.

⁸⁷ USEER wage data provides the best summary of wages for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in the Mix of Occupations Affect Wages

Changes in the mix of occupations can affect the average wage of the sector even if pay within individual occupations changes little. Analyzing changes in occupation composition can help determine whether wage trends were driven by pay increases within occupations or by changes in the mix of occupations (and skills) desired by employers. For example, a sector that is shedding employment in lower-wage occupations while adding employment in higher-wage occupations will show a higher average wage.

Analysis of occupation employment change using OEWS data^{88, xxxiii} suggests that some of the increase in inflation-adjusted wages in the energy sector can be explained by a shift towards higher paying occupations.⁸⁹ OEWS estimates show that energy sector occupations adding employment had higher wages than energy sector occupations with declining employment. In 2025, the weighted average hourly wage⁹⁰ of energy occupations with positive employment growth from 2024 to 2025 was \$39 hourly (\$82,000 annually), while the weighted average hourly wage of energy occupations with negative employment growth was \$31 hourly (\$64,000 annually).⁹¹ The higher wages of the increasing occupations were driven by employment increases in Management (\$68/average hourly wage, \$141,000 annually) and Business and Financial Operations (\$47/average hourly wage, \$98,000 annually) occupations.⁹²

The occupations with the greatest employment increases were the Construction and Extraction occupations (\$34/average hourly wage, \$70,000 annually) and Installation, Maintenance, and Repair occupations (\$33/average hourly wage, \$68,000 annually).⁹³ Employment declines occurred in the Production occupations (\$31/average hourly wage, \$64,000 annually) that operate industrial equipment and systems.^{94, xxxiv}

⁸⁸ This analysis constructs an energy sector definition using the BLS OEWS data that aligns with most of the USEER-defined energy sectors. However, the OEWS energy sector definition excludes certain energy intensive manufacturing and merchant wholesaler segments due to lack of corresponding sector granularity in OEWS data. *See* Appendix U for NAICS categories included in the OEWS energy sector definition.

⁸⁹ There are some comparability issues to be aware of when interpreting BLS OEWS wage and employment changes over a year. Because the BLS OEWS estimates are calculated from 6 survey panels collected over a 3 year period, wage and employment changes could be smaller than actual wage and employment changes. In addition, wage and employment changes can be due to model error. *See* the Introduction for a further discussion about the modeling methodology used for the BLS OEWS.

⁹⁰ These are averages weighted by OEWS May 2025 employment.

⁹¹ *See* Appendix W.

⁹² *See* Appendix W.

⁹³ *See* Appendix W.

⁹⁴ Production Occupations include workers who make, assemble, inspect, process, or package products, as well as workers who operate and monitor manufacturing equipment and industrial systems. Examples include assemblers, machinists, welders, quality control inspectors, semiconductor technicians, power plant operators, and water treatment plant operators.

Construction and Extraction occupations with substantial energy employment growth include, for example, Electricians (\$34/average hourly wage, \$71,000 annually) and First-Line Supervisors of Construction Trades and Extraction Workers (\$45/average hourly wage, \$94,000 annually).⁹⁵ Examples of Installation, Maintenance, and Repair occupations with substantial energy employment growth include Electrical Power-Line Installers and Repairers (\$43/average hourly wage, \$89,000 annually) and Heating, Air Conditioning, and Refrigeration Mechanics and Installers (\$31/average hourly wage, \$64,000 annually).⁹⁶

Management and Business and Financial Operations occupations with substantial energy employment growth include, for example, Construction Managers (\$61/average hourly wage, \$127,000 annually) and Project Management Specialists (\$53/average hourly wage, \$110,000 annually).⁹⁷

Results were similar for these occupations when comparing 2025 to 2022. More details about these occupations and how they are changing are discussed in the Labor Market Analysis section of each chapter.

Energy Sector (Industry Category)	Employment 2025	Employment Change 2024–2025	Hourly Wage of Growing Occupations	Hourly Wage of Declining Occupations
Traditional T&D Fuel (All)	149,000	1,000	 \$55.22	 \$40.88
MV&CP (All)	2,372,000	-24,000	 \$28.40	 \$33.22
Petroleum and Natural Gas Fuels (Mining & Extraction)	90,000	3,000	 \$68.89	 \$42.31
Energy Efficiency, EPG, TDS (Construction)	1,148,000	35,000	 \$35.50	 \$32.05
EPG, Electric Power T&D (Utilities)	547,000	18,000	 \$46.74	 \$50.81

**Figure 1.5. Wages of Growing and Declining Occupations, by Energy Sector,
2022–2025 & 2024–2025, BLS OEWS**

⁹⁵ See Appendix W.

⁹⁶ See Appendix W.

⁹⁷ See Appendix W.

Hiring Rates and Hiring Difficulty

Consistent with a weaker overall U.S. labor market in 2025,⁹⁸ the share of energy establishments that hired workers declined compared to the year before.⁹⁹ Among the energy sectors, the share of EPG establishments that hired workers fell to about 42% in 2025 from 49% in 2024. The share of establishments hiring in TDS and EE also declined, although those changes were not statistically significant. As summarized in Figure 1.6, hiring rates in Fuels and MV&CP increased slightly, though those changes were not statistically significant.

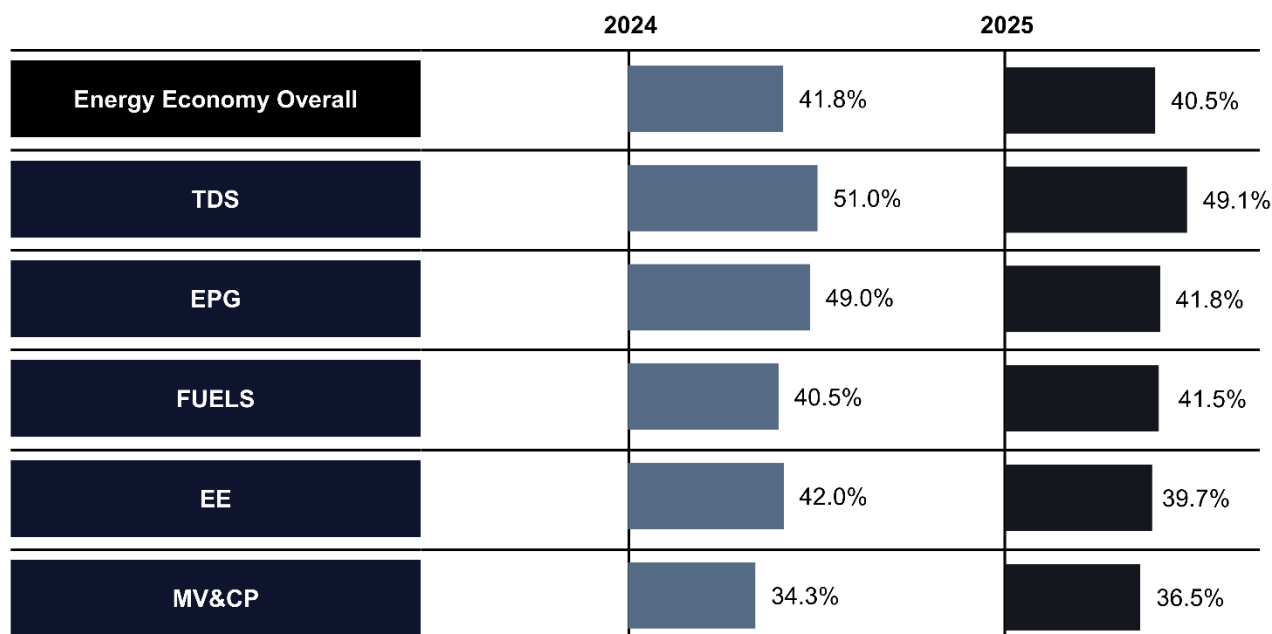


Figure 1.6. Share of Establishments that Hired in the Previous Year, 4Q2025, USEER Survey^{100, 101}

⁹⁸ See Appendix Q for more historical data around hiring difficulty.

⁹⁹ Differences have not been evaluated for statistical significance. The USEER survey asks the employer whether their establishment has hired anyone in the one-year period before the date of the survey.

¹⁰⁰ USEER collects valuable data on employer hiring activity and hiring patterns that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁰¹ These changes have not been evaluated for statistical significance, and results should be interpreted descriptively.

Although establishments reported a decline in hiring difficulty in 2025 compared to the year before,¹⁰² hiring was still difficult across all energy sectors in 2025.¹⁰³ In the EE and MV&CP sectors, as well as several subsectors within EPG¹⁰⁴ and Fuels, 70% or more of establishments reported problems finding workers.¹⁰⁵ TDS employers reported lower rates of hiring challenges (67%) than other sectors, which may be related to higher wages in some TDS occupations.

Construction jobs in fast-growing energy sectors experienced some of the most severe hiring challenges. Construction establishments reported some of the highest hiring difficulty rates across energy sectors: 65% in TDS, 76% in EPG, and 78% in EE.¹⁰⁶

These results are consistent with broader Construction industry trends. One industry survey found that 92% of all Construction firms¹⁰⁷ looking to hire had difficulty finding qualified employees.^{xxxv} Meanwhile, nonresidential construction, which includes energy infrastructure projects, continued to grow since 2022 even as the overall labor market weakened in 2025.^{xxxvi}

The tight labor market within the Construction industry is also reflected in higher pay and longer hours. Since 2022, Construction wages and average weekly hours have grown faster than they have in the private sector overall.^{xxxvii} A construction industry group reported that most firms raised base pay in 2025 as much as, or more than, they had the year before.^{xxxviii}

A lack of qualified applicants appears to be a major cause. That same construction industry group reported that 57% of U.S. firms said candidates lacked the needed skills or licenses, and in response, 42% of firms increased spending on training and professional development over the past year.^{xxxix}

Worker Availability

The previous analysis in this report shows that some energy sectors, especially TDS and EPG, saw growing demand for workers since 2022. This demand is reflected in higher wages and high levels of hiring difficulty, particularly among establishments in the construction industry.

To better understand the current shortages, this section analyzes trends in the supply of workers for each energy sector. Energy worker availability is difficult to measure directly because most public household surveys do not separate energy from non-energy workers, and the USEER survey does not measure how many people are available and qualified to work in energy jobs.

However, available data on segments of energy worker availability can provide a useful perspective. Many skilled trades important to the energy workforce operate Registered

¹⁰² See Appendix Q for hiring difficulty estimates from previous years. Hiring difficulty is only reported if the establishment hired in the previous year. Differences across categories have not been tested for statistical significance.

¹⁰³ Employer-reporting hiring difficulty can reflect not only skill shortages, but also can reflect physical demands and danger of the work that reduce both the number of applicants and their willingness to apply, even when training or experience is available. In these cases, hiring challenges may signal that the job involves high-risk or physically demanding conditions that narrow the applicant pool.

¹⁰⁴ Apart from Bioenergy EPG.

¹⁰⁵ Differences across categories have not been tested for statistical significance and should be interpreted descriptively.

¹⁰⁶ Hiring difficulty rates by industry can be found in (Figure 2.12, Figure 3.9, and Figure 4.10).

¹⁰⁷ This sample includes firms not involved in energy activities.

Apprenticeship programs, particularly through Joint Apprenticeship Training Committees.^{xli} Registered Apprenticeship^{108, xli} data¹⁰⁹ offers a useful view into the worker availability for skilled trades workers in Construction, Installation, or Repair occupations—often referred to as the building trades.¹¹⁰

Apprenticeship enrollment and completion data suggests that worker supply has been rising in recent years, likely in response to strong demand for construction labor. There were 9% more new registered apprentices within the construction industry in 2025 than 2024, and construction apprentices account for more than 33% of new apprentices.^{xlii} This trend is consistent with information from North America’s Building Trades Unions (NABTU),¹¹¹ which reported a surge in Registered Apprenticeship enrollment.^{xliii}

Although this activity shows workers are responding to high wages, the data suggest worker availability is still not high enough to meet the strong demand for workers. A previously cited survey conducted by a construction industry group reported that 92% of construction firms had difficulty finding qualified workers, and nearly half reported project delays resulting from workforce shortages.^{xliv}

As the workforce ages, employment patterns differ across energy sectors. The EPG and TDS sectors are attracting more workers aged 55 and older,¹¹² which may reflect strong demand for experienced workers and supervisors. In contrast, older workers in the Fuels and MV&CP sectors were more likely than younger workers to leave employment in 2025, consistent with employment declines in those sectors and broader U.S. labor market trends.¹¹³ At the same time, energy employers continued to face challenges in finding workers with the skills needed to build and operate energy infrastructure. Changes in immigration enforcement during 2025 reduced the availability of construction workers in some labor markets.^{xlv} Together, these factors suggest that meeting the workforce needs of current and future energy infrastructure projects will remain a long-term challenge.

¹⁰⁸ A Registered Apprenticeship program is an industry-driven, “earn-and-learn” training model validated by the U.S. Department of Labor (DOL) or a State Apprenticeship Agency. It combines paid on-the-job training with mentorship and classroom instruction, leading to a nationally recognized credential.

¹⁰⁹ The U.S. DOL collects detailed data on enrollments, completions, and other information on Registered Apprentices.

¹¹⁰ Skilled trade worker counts are fragmented and incomplete; while unions possess good counts of their skilled trades workers, there is no entity that reliably collects counts on nonunion trades workers.

¹¹¹ NABTU trains seven out of ten North American construction apprentices each year.

¹¹² See Appendix P.

¹¹³ For more information on the age distribution characteristics of the energy economy workforce, see Appendix P.

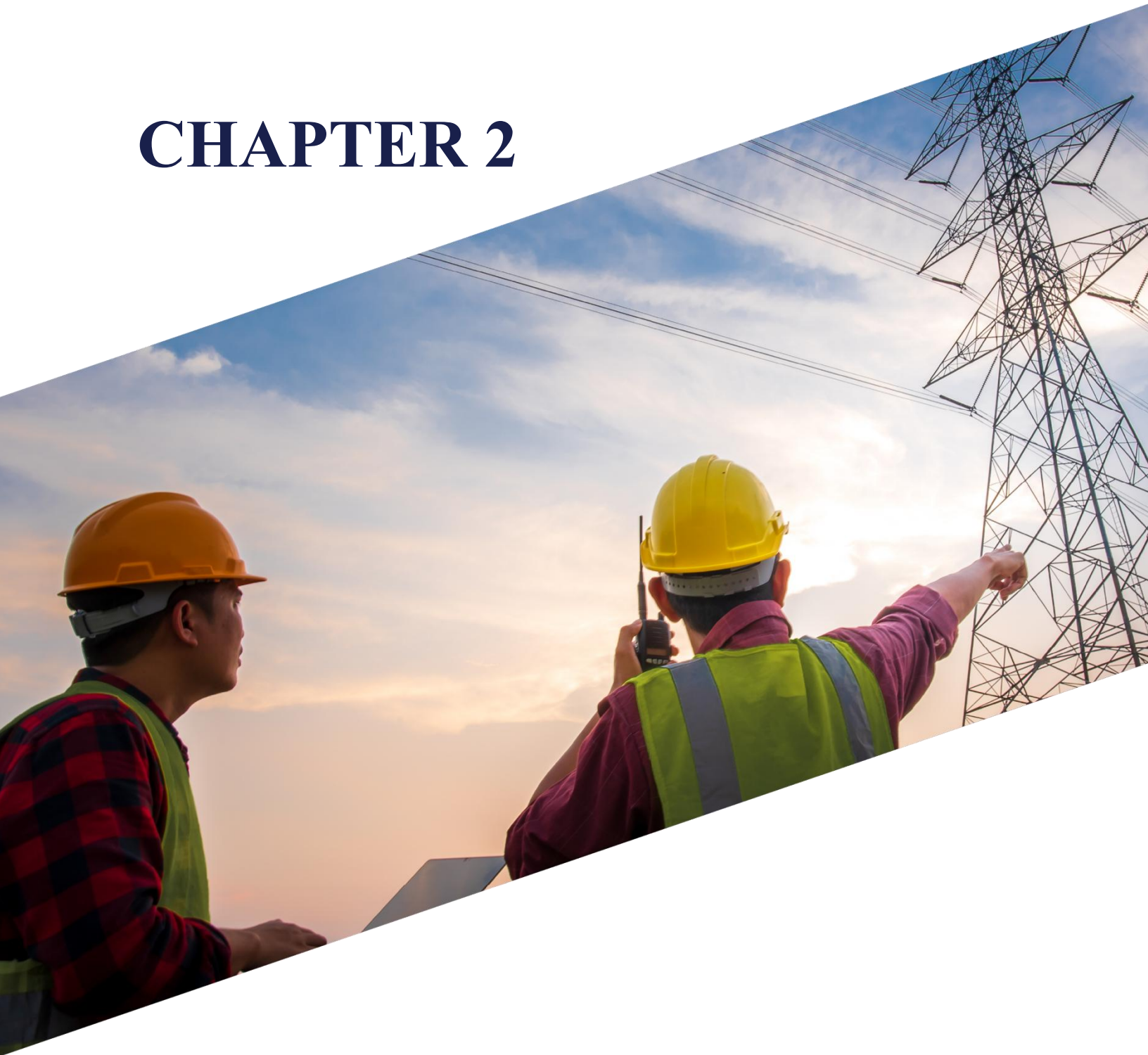
Conclusion

The U.S. energy economy remains a cornerstone of the overall American economy in 2025, employing 8.4 million workers in 2025 and paying wages about 24% higher¹¹⁴ than the national median salary (\$63,000 vs. \$51,000). Although overall energy employment declined slightly in 2025 compared to 2024, rapid growth in several subsectors, including Electric Power T&D and Natural Gas T&D, increased demand for workers. Some subsectors experienced strong wage growth. Within the pipeline transportation of natural gas sector,¹¹⁵ inflation-adjusted wages grew much faster than wages for the overall U.S. workforce in 2025 compared to 2024 (3.6% vs. 1.5% real wage growth, 6.4% vs. 4.3% nominal wage growth). Meanwhile, employers continue to report significant shortages of electrically skilled workers, construction workers, and other technical occupations. The challenges are compounded by an aging workforce and growing infrastructure investment needs. Rising apprenticeship enrollment suggests that higher wages are attracting new workers into the labor pipeline, but labor shortages remain widespread. Meeting growing energy demand and maintaining a reliable energy system will require continued efforts to attract, train, and retain the skilled workforce needed to support current and future energy infrastructure needs.

¹¹⁴ Data from USEER Survey, *see* Figure 1.4. Wages and wage premiums differ between the USEER survey and the BLS QCEW due to different sample constructions. *See* the Introduction for discussion about the different data sources used for wages.”

¹¹⁵ NAICS 4862.

CHAPTER 2



Transmission, Distribution, and Storage

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Transmission, Distribution, and Storage

The Transmission, Distribution, and Storage (TDS) sector captures activities related to constructing, operating, and maintaining energy transportation and storage infrastructure. It also includes occupations serving both electricity and fuels. This sector can be divided into three broad categories: Traditional Transmission and Distribution (T&D) of Fuels, Electric Power T&D, and Storage. These three broad categories have various subsectors.

Employment in Traditional T&D of Fuels includes work related to building, operating, and maintaining pipelines and other systems used to move liquid fuels, including transportation by truck, rail, air, and water.

Employment in Electric Power T&D includes work related to building, operating, and maintaining power lines, substations, and other equipment and structures used to move electricity. It also includes manufacturing equipment used for T&D, as well as professional and technical services that support the design, production, repair, and maintenance of grid equipment and infrastructure.

Storage employment combines energy storage for electricity generation^{xlvi} and liquid fuels storage subsectors, such as Battery Storage, Pumped Hydropower Storage, Mechanical Storage, and other utility-scale storage methods.

Electric Power T&D includes the following subsectors:

- Traditional T&D Electricity
- Smart Grid¹¹⁶
- Microgrid¹¹⁷
- Other Grid Modernization¹¹⁸
- EV Charging¹¹⁹
- Other T&D¹²⁰

¹¹⁶ A Smart Grid refers to a modernized electricity system that uses digital tools and sensors to track and manage the flow of power in real time, particularly in systems that allow power to move both to and from users.

¹¹⁷ A Microgrid is a small, local power system that serves a specific area, such as a building, campus, or community. It includes its own energy sources and equipment to deliver electricity and can connect to the main power grid or operate on its own if needed.

¹¹⁸ Other Grid Modernization refers to any other upgrades to the electricity T&D system to maintain reliable and secure electricity infrastructure that can meet future demand growth.

¹¹⁹ EV Charging includes stations that charge vehicles that use one or more electric motors for propulsion with no onboard generator or nonelectric motor.

¹²⁰ Other T&D refers to Electric Power T&D employment that cannot be placed in one of the previously listed subsectors based on employer response (unable to place employees in a category where they spend “more of their time”).

Traditional T&D of Fuels includes the following subsectors:

- Natural Gas T&D
- Petroleum T&D
- Coal T&D
- Other Fuels T&D¹²¹

Storage includes the following subsectors:

- Battery Storage
- Pumped Hydro Storage
- Mechanical Storage
- Thermal Storage
- Fuels Storage
 - Biofuels Storage
 - Liquefied Natural Gas (LNG) Storage
 - Refined Petroleum Fuels (Liquid) Storage
 - Refined Petroleum Fuels (Gas) Storage
 - Compressed Natural Gas Storage
 - Crude Oil Storage
 - Nuclear Fuel (Used) Storage¹²²
 - Coal Storage
- Other Gas Storage¹²³
- Other Liquid Fuels Storage¹²⁴
- Other Storage¹²⁵

¹²¹ Other Fuels refers to any fuel that is not captured in the categories listed or a category that is used when unable to split employment into a single fuel category where employees spend “more of their time.”

¹²² The Nuclear Fuels Storage subsector within TDS tracks jobs related to used nuclear fuel while the Nuclear Fuels subsector captures employment related to fresh nuclear fuel.

¹²³ Other Gas Storage includes any gas fuel storage that is not captured in the categories listed or a category that is used when unable to split employment into a single gas fuel storage category where employees spend “more of their time.”

¹²⁴ Other Liquid Fuel Storage includes any liquid fuel storage that is not captured in the categories listed or is used when unable to split employment into a single liquid fuel storage category where employees spend “more of their time.”

¹²⁵ Other Storage refers to any storage that is not captured in the subsector categories listed based on establishment response. For example, this category is used when an establishment is unable to classify employees in a category where they spend “more of their time.”

Quick Glance

In 2025, employment growth in TDS was strong, up 2%, (+28,300 workers) from 2024 for a total employment of 1.5 million workers. The need to harden and weatherize existing aging infrastructure and build new infrastructure to support rising electricity demand is encouraging utility investment in transmission and distribution infrastructure.

From USEER survey estimates, employment in Electric Power T&D increased by 2% (+17,900 workers). Expansion of LNG export capacity and pipelines in 2025, driven by rising international demand for U.S. LNG, also supported employment in the sector. Natural Gas T&D employment increased 5% (+12,600 workers). Also in 2025, increasing electricity demand and increased reliability needs in the electric power sector¹²⁶ drove Battery Storage employment growth up 11% (+8,000 workers) compared to 2022.

Expansion of Liquefied Natural Gas (LNG) export capacity also contributed to growing employment and wages in the natural gas pipeline sector.¹²⁷ According to BLS QCEW counts, employment grew by 16% (+5,000 workers) and inflation-adjusted wages grew by 5% (+\$8,000 annually) from 2022 to 2025.¹²⁸ Looking ahead, the employment outlook for the Natural Gas T&D subsector is positive. LNG exporters in the U.S. have announced plans to more than double U.S. liquefaction capacity by 2029 relative to 2025,^{xlvi} suggesting strong future employment.

Other segments of Natural Gas T&D suggest strong labor demand. Inflation-adjusted wages in the natural gas distribution sector¹²⁹ grew 5% (14% nominal growth) from 2022 to 2025, exceeding U.S. overall inflation-adjusted wage growth, 4% (13% nominal growth), in the same period.

Different sources show the TDS sector offers a wage premium, reflecting a combination of labor demand, specialized skills, and potential exposure to dangerous or physically demanding working conditions. BLS QCEW counts suggest that wages within TDS were particularly high in 2025.^{130,131} The average salary for Traditional T&D¹³² was \$123,000 annually in 2025, nearly 50% higher than the U.S. national average salary (\$82,000 annually).¹³³

¹²⁶ Battery storage employment also increased from 2024 to 2025, but the employment increases are not statistically significant at the 95% confidence level.

¹²⁷ This sector corresponds to the industry category NAICS 4862.

¹²⁸ See Appendix V.

¹²⁹ NAICS 2212.

¹³⁰ See Appendix V.

¹³¹ BLS QCEW wage data differ substantially from USEER wage data due to differences in sample construction and wage methodology. USEER wage data is reported in medians, while BLS QCEW wage data is reported in averages.

¹³² This includes Traditional Electric Power T&D and Traditional Fuels T&D. Traditional Fuels T&D includes Natural Gas T&D, Petroleum T&D, Coal T&D, and Other Fuels T&D. The complete list of NAICS industry codes used to construct this sector are: 237130, 221121, 221122, 221210, 237120, 335311, 486110, 486210.

¹³³ Refers to BLS QCEW Q4 national average annual salary, which is calculated to be about \$82,000 based on an assumption of 52 work weeks in a year.

Employment increased at the occupation level. Employment in Construction, Installation, and Repair occupations grew by 2.4% (+9,600 workers) in 2025 from the year before. Production and Manufacturing Occupations also grew by 4% (+9,000 workers).

Wages within these occupations were high in 2025 when compared to overall U.S. wages, as shown in Figure 2.3. Electricians working in TDS earned roughly 13% more than Electricians working in other industries (\$71,000 annually vs. \$63,000 annually). Maintenance and Repair worker salaries were 21% higher (\$60,000 annually vs. \$50,000 annually).

The employment outlook for the sector is strong. U.S. electricity use is expected to increase by 2.5% in 2027,^{xlvi} in contrast to the 0.1% growth rate from 2005 to 2020.^{xli} Transmission investment is also expected to increase 22% from 2025 to 2028.¹ Further discussion on TDS employment can be found in the Labor Market Analysis and Future Outlook sections of this chapter.

TDS Key Takeaways

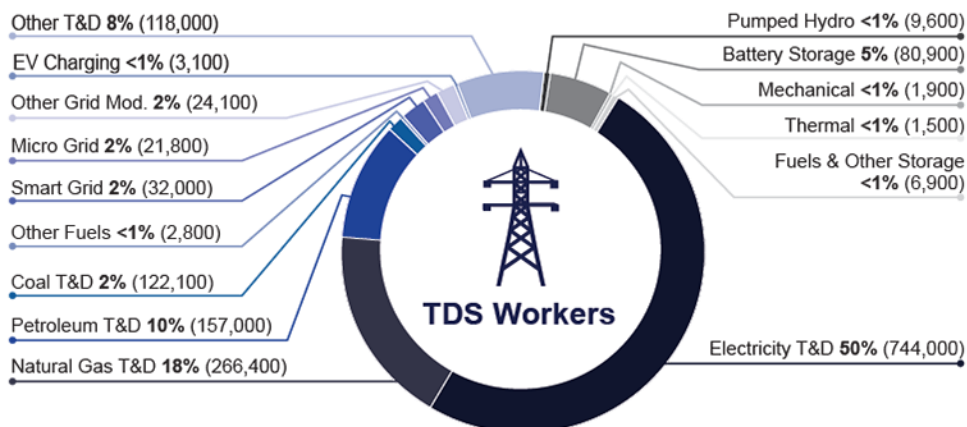


1.5M
+2% (+28k) workers



\$65k
28% higher than U.S. median
annual wage

Employment by Subsector



Occupation Wages



Traditional T&D
\$123k/yr
+50% vs. U.S. median (\$82k)



TDS Electricians
\$71k/yr
+13% vs. U.S. median (\$63k)



TDS Maintenance & Repair
\$60k/yr
+21% vs. U.S. median (\$50k)

Hiring Insights



49% of employers hired



67% of employers had trouble hiring,
especially for Management positions

Figure 2.1. Transmission, Distribution, and Storage Key Takeaways, 2025, USEER Survey¹³⁴

¹³⁴ The wage premium described here is the additional amount the median TDS job pays relative to median U.S. pay. Energy sector median wages are derived from USEER survey data. U.S. median wages are from the May 2025 BLS OEWS estimates using all occupations and industries. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

TDS Chapter Contents

This TDS chapter includes the following sections:

- **Labor Market Analysis** discusses trends on employment, wages, hiring.
- **Employment by Subsector, Industry, and Occupation** provides the data where employment is concentrated by subsector and industry and broad occupation category across the TDS sector.
- **Employer Perspectives on Hiring Difficulty** aggregates employer responses on perceived hiring difficulty, top reasons for hiring difficulty, and most difficult to hire occupations.
- **Workforce Demographics** presents a picture of the TDS workforce.

Unlike the other Electric Power Generation and Fuels chapters, the TDS chapter is not organized by fuel technology. Most TDS employment is in Electric Power T&D, and those workers cannot be accurately assigned to a specific electricity generation source. Some sections do highlight fuel technologies, but only where the fuel type can be clearly identified. Examples include natural gas distribution and coal transport by truck, rail, or water.¹³⁵

¹³⁵ Jobs related to the combustion of fuels to generate electricity are included in the Fuels chapter, while jobs in generating electricity to power vehicles or buildings are covered in the EPG chapter.

TDS Labor Market Analysis

Employment Analysis

Employment in the Fuels T&D subsector was strong overall, increasing 3% (+13,800 workers) in 2025 compared to 2024, for a total of 448,400 workers. Within the sector, employment increased in the Natural Gas T&D subsector while decreasing in the Petroleum T&D and other Fuels T&D subsectors, illustrated in Figure 2.7.

Natural Gas T&D was the strongest source of employment growth in Fuels T&D over the past several years. In 2025, employment increased by about 35% (+68,300 workers) compared to 2022. Compared to 2024, employment increased by about 5% (+12,500 workers). The employment increase is related to the ongoing expansion of LNG facilities and related infrastructure,^{li} including natural gas pipelines^{lii} and storage facilities.^{liii} U.S. natural gas production grew since 2017, and the sector expanded and upgraded systems to move natural gas to the Gulf Coast and other export locations.

Traditional T&D Electricity jobs provided another source of strong TDS employment growth in 2025. The sector increased by 13% (+88,200 workers) compared to 2022. Compared to 2024, employment increased by 2% (+11,500 workers).¹³⁶ The increase in Traditional T&D Electricity is supported by utilities investing in the grid to meet rising electricity demand from data centers and the industrial sector.^{liv}

There was also strong employment growth in smaller Electric Power T&D subsectors. Smart Grid T&D employment was 28% higher (+7,000 workers) in 2025 than in 2022 and up 17% (+4,700 workers) since 2024. Microgrid employment increased 10% (+2,000 workers) in 2025 since 2022. Other Grid Modernization T&D employment increased 16% (+3,200 workers) in 2025 since 2022. EV Charging T&D employment added about 200 workers in 2025, up 6% since 2024 and 37% since 2022.

This employment growth reflects increased investment in T&D infrastructure. Annual nominal T&D investment rose by 47% between 2018 and 2024, continuing a longer-term growth trend over the past two decades.^{lv}

Employment in the Storage sector in 2025 grew by 11% (+10,300 workers) since 2022. Much of this increase came from the Battery Storage subsector, where employment increased by 11% (+8,000 workers) since 2022. Employment in the relatively smaller Pumped Hydro Storage subsector also increased by 16% (+1,300 workers) since 2022.

Smaller Fuels Storage subsectors also increased employment levels in 2025. Biofuels Storage employment increased by 23% (+330 workers) since 2022. LNG Storage increased by 17% (+160 workers), Crude Oil Storage increased by 25% (+180 workers), and Nuclear Fuels (Used) Storage employment doubled (+100 workers), but it is a small subsector.

¹³⁶ The 2024 to 2025 increase is not statistically significant at the 95% level.

Wage Analysis

Employment trends show where jobs were added or lost. Wage trends provide additional insight into labor market conditions by indicating whether demand for workers outpaced available workers. Wage data for the Traditional T&D subsector of TDS suggest strong demand for workers. Based on BLS QCEW data, as Figure 2.2 shows Traditional T&D subsector inflation-adjusted wages grew 4% (16% nominal growth) in 2025 since 2022 as employment increased faster than energy economy and overall U.S. wage growth.

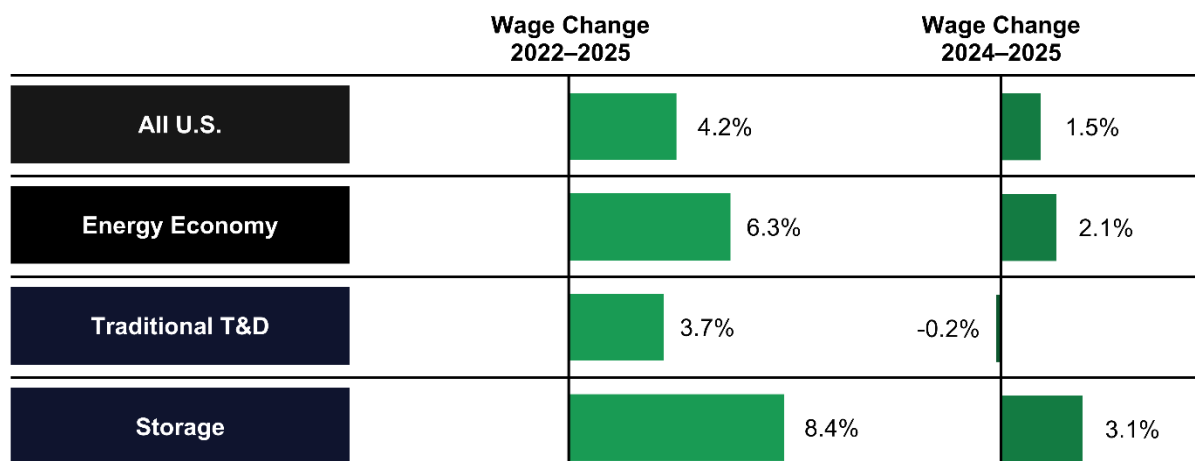


Figure 2.2. Traditional T&D and Storage Sector Wages, 2022–2025 & 2024–2025, BLS QCEW^{137, 138}

In addition, wage estimates from the BLS OEWS¹³⁹ show that wages in many occupations in the Petroleum and Gas T&D subsector of TDS grew faster than wages in the overall economy and were significantly higher than the same occupation in other sectors.¹⁴⁰ For example, inflation-adjusted wages¹⁴¹ for Service Unit Operators, Oil and Gas occupations, had a sector wage premium¹⁴² of 43% in 2025 (\$89,000 vs. \$62,000 annually). Their wages more than doubled (\$43,000 to \$89,000 annually) from 2022 to 2025. Employment for Service Unit Operators, Oil and Gas occupations tripled (+1,110 workers) over the same period. Within management and professional occupations, Cartographer and Photogrammetrist inflation-adjusted wages increased 9% from 2022 to 2025 (\$106,000 to \$115,000 annually), well above U.S. inflation-adjusted wage growth. Meanwhile, employment of Cartographers and Photogrammetrists increased 14% (+50

¹³⁷ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. Wages are reported in nominal terms. Data is from the BLS QCEW.

¹³⁸ Nominal Q4 average weekly wages were converted to fourth-quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. Unless otherwise noted, sectors are defined using energy-intensive NAICS from QCEW that touch sector categories. Employment sizes are usually different than measured by USEER as NAICS boundaries are different from USEER sector boundaries.

¹³⁹ BLS QCEW and BLS OEWS wage and employment estimates generally differ because of differences in sample coverage, sampling frequency, and wage estimation methodologies.

¹⁴⁰ See Appendix W. Some results are internal calculations using the BLS OEWS.

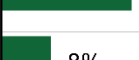
¹⁴¹ All inflation-adjusted wages are reported in 2025 dollars. For nominal wage growth from 2022 to 2025, add 9% to real wage growth in this period.

¹⁴² The sector wage premium for an occupation is the additional amount the occupation pays in a particular sector relative to the pay the occupation pays for all industries.

workers) over the same period. Property, Real Estate, and Community Association Manager inflation-adjusted wages increased 14% (\$160,000 to \$183,000 annually) from 2022 to 2025 as employment more than doubled (+140 workers). Cartographer and Photogrammetrist wages enjoy a 32% sector wage premium in 2025 (\$115,000 vs. \$87,000 annually), and Property, Real Estate, and Community Association Manager wage premium was more than double (\$183,000 vs. \$84,000 annually). The strong wage growth and wage premiums in these occupations suggest strong demand for workers. A more detailed view of wage trends, showing wage levels, wage premiums, and wage growth from 2022 to 2025 for selected occupations in the Petroleum and Gas T&D subsector of TDS—using BLS OEWS data—is provided in Appendix J.

USEER wage data, using a different sampling and wage methodology,¹⁴³ also showed that occupations involved in the TDS sector often pay more than the same occupations in other industries. Laborers and Material Movers, for instance, earned an estimated 20% more (+\$8,000 annually) in the TDS sector than in similar jobs in the broader economy, as illustrated in Figure 2.3. Wages for Computer Numerically Controlled Tool Operators were 19% (+\$9,700) higher; wages for Electrical, Electronic, and Electromechanical Assemblers were 17% (+\$7,600) higher; and wages for Electricians within the TDS sector were 13% (+\$8,150) higher than their peers in other industries.

¹⁴³ OEWS wage data samples are much larger than USEER wage data samples, provide more occupation detail, and have different sector definitions. USEER wage data incorporates wage data from all industry segments while OEWS industry sectors are limited to one industry segment.

Occupation Category	Occupation Name	Wage Premium	U.S. Annual Median Wage	TDS Annual Median Wage
Construction, Installation, or Repair Positions	Construction Laborers	 7%	\$47,000	\$50,000
	Electricians	 13%	\$63,000	\$71,000
	First-Line Supervisors of Mechanics, Installers, and Repairers	 3%	\$80,000	\$82,000
	Maintenance and Repair Workers, General	 21%	\$50,000	\$60,000
	Operating Engineers and Other Construction Equipment Operators	 6%	\$60,000	\$64,000
Management/ Professional Positions	Accountants and Auditors	0%*	\$84,000	\$84,000
	Architectural and Civil Drafters	 3%	\$66,000	\$68,000
	Civil Engineers	 2%	\$101,000	\$103,000
	Mechanical Engineers	 5%	\$104,000	\$109,000
	Project Management Specialists	<1%	\$102,000	\$103,000
Production/ Manufacturing Positions	Computer Numerically Controlled Tool Operators	 19%	\$51,000	\$60,000
	Electrical, Electronic, and Electromechanical Assemblers**	 17%	\$46,000	\$53,000
	Heavy and Tractor-Trailer Truck Drivers	 8%	\$59,000	\$63,000
	Laborers and Freight, Stock, and Material Movers, Hand	 20%	\$40,000	\$48,000
	Welders, Cutters, Solderers, and Brazers	 8%	\$54,000	\$58,000

* Rounded to zero

** Except Coil Winders, Tapers, and Finishers

Figure 2.3. TDS Wages by Priority Occupations, 2025, USEER Survey¹⁴⁴

¹⁴⁴ USEER wage data provides the best summary of wages for USEER energy sector definitions. BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in Occupations Affected Wages in the Petroleum and Natural Gas Transmission and Distribution Sector^{lvi}

Changes in the mix of occupations can affect the sector's average wage even if pay within individual occupations changes little, as pay across occupations can vary within a sector. Analyzing changes in occupation composition can help determine whether wage trends were driven primarily by pay increases within occupations or by shifts toward higher-paying or lower-paying occupations.

Analysis of changes in the composition of occupations is possible using the BLS OEWS for one segment of the TDS sector, Petroleum and Natural Gas T&D, as seen in Figure 2.4. This OEWS-based sector most closely corresponds to this report's Traditional Fuels T&D category, specifically the Petroleum and Natural Gas segment.¹⁴⁵

In the OEWS data of the Petroleum and Natural Gas T&D sector,¹⁴⁶ employment and wages showed strong demand for workers in the 2022 to 2025 period and a relatively weaker labor market in the 2024 to 2025 period. Employment increased by 8% (+12,400 workers) in 2025 from 2022 and by 1% (+2,400 workers) compared to 2024. Inflation-adjusted wages increased by 2% (11% nominal growth, +\$2,000 annually) in 2025 compared to 2022 and 1.4% (4% nominal growth, +\$1,000 annually)¹⁴⁷ from 2024.¹⁴⁸

The estimates also suggest that the occupation mix in the Petroleum and Natural Gas T&D sector was shifting to higher-paid occupations in the 2024 to 2025 period. The occupations that added employment in 2025 compared to 2024 had substantially higher wages, with a \$55 average hourly wage (\$115,000 annually) than the occupations with declining employment, with a \$41 average hourly wage (\$85,000 annually).¹⁴⁹

As show in Figure 2.4, the higher wage for growing occupations was driven by an increase in employment in the higher-wage Management occupations, with an \$86 average hourly wage (\$178,000 annually), and an increase in employment in the Business and Financial Operations occupations, with a \$57 average hourly wage (\$119,000 annually). Employment in Management occupations grew 10% (+1,400 workers) and employment in Business and Financial Operations occupations increased 9% (+1,600 workers).

¹⁴⁵ This segment corresponds to the combination of NAICS 486100 - Pipeline Transportation of Crude Oil and NAICS 486200 - Pipeline Transportation of Natural Gas. In addition, this OEWS-based category excludes Construction and Manufacturing activities, as it overlaps only with the Utilities and Wholesale Trade, Distribution, and Transport industry categories. It also excludes pipeline transportation of Refined Petroleum Products due to OEWS data limitations.

¹⁴⁶ This sample is drawn from NAICS 4861 and 4862. OEWS employment and wage estimates may differ from QCEW counts because the two programs use different data sources, methods, and definitions.

¹⁴⁷ Because of BLS OEWS comparability issues over time, it is recommended by DOE that any nominal wage growth under 5% is interpreted with caution, as a relatively greater portion of wage changes could be due OEWS model error. *See* the Introduction for further discussion about BLS OEWS data comparability issues over time.

¹⁴⁸ More details provided in Appendix W.

¹⁴⁹ More details provided in Appendix W.

Meanwhile, employment in Transportation and Material Moving occupations, with an average hourly wage of \$38 (\$79,000 annually), declined the most, decreasing by 35% (–3,400 workers).

Within the Business and Financial Operations category, the occupations that gained the most employment in 2025 since 2024 were Project Management Specialists, growing by 15% (+500 workers), with a \$65 average hourly wage (\$135,000 annually) and All Other Business Operations Specialists, which grew by 13% (+300 workers), with a \$56 average hourly wage (\$116,000 annually).¹⁵⁰

Within the Management category, the occupations that increased the most in employment in 2025 from the year before were Sales Managers, which more than doubled (+500 workers), with an average hourly wage of \$67 (\$140,000 annually) and Financial Managers, which grew by 26% (+200 workers), with a \$100 average hourly wage (\$209,000 annually) from 2024.¹⁵¹

The lower wage for declining occupations was driven by employment declines in the lower-wage Transportation and Material Moving Occupations category, with a \$38 average hourly wage (\$78,000 annually). Within Transportation and Material Moving occupations, the occupation with the greatest employment decline from 2024 to 2025 was Heavy and Tractor-Trailer Truck Drivers, declining 44% (–800 workers) with a \$32 average hourly wage (\$66,000 annually).¹⁵²

The trends from 2022 to 2025 show stronger employment growth. There were few occupations in this sector whose employment declined between 2022 and 2025. Meanwhile, occupations adding employment had similar wages to the few occupations with declining employment.

Hiring Difficulty

USEER survey results show that hiring difficulty in the TDS sector is high. As Figure 2.12 illustrates, more than 60% of establishments in all industry segments reported difficulty hiring.

Worker Availability

USEER survey results provide demographic information about the TDS workforce. In analyzing the number of TDS workers by age group, employment increased across all age groups in 2025 from 2022 consistent with overall TDS employment growth. The largest increase was among workers 55 and older, whose employment grew by about 24% (+7,800 workers). Employment grew by 12% (+7,300) among workers aged 18 to 29 and by 7% among workers aged 30 to 54 (+15,200).¹⁵³

This suggests that the growing TDS sector is adding relatively more experienced workers over 55 years and older, as well as younger workers. This differs from the broader U.S. workforce,

¹⁵⁰ More details provided in Appendix W.

¹⁵¹ More details provided in Appendix W.

¹⁵² More details provided in Appendix W.

¹⁵³ Differences across age groups or over time have not been tested for statistical significance and should be interpreted descriptively.

where employment growth is lowest among workers age 55 and older and higher among workers age 30 to 54.^{154, lvii} Appendix P contains additional information on the age demographics of the energy workforce.

Occupation Title	Employment 2025	Annual Average Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025
Architecture and Engineering Occupations	12,500	\$123,000	-90	-800
Arts, Design, Entertainment, Sports, and Media Occupations	300	\$114,000	-30	-10
Legal Occupations	400	\$236,000	100	20
Construction and Extraction Occupations	15,400	\$96,000	200	1,100
Computer and Mathematical Occupations	6,500	\$122,000	200	100
Transportation and Material Moving Occupations	6,400	\$79,000	500	-3,400
Office and Administrative Support Occupations	18,600	\$74,000	700	-1,100
Business and Financial Operations Occupations	18,900	\$119,000	700	1,600
Sales and Related Occupations	4,400	\$89,000	900	1,200
Life, Physical, and Social Science Occupations	2,900	\$117,000	1,100	-200
Production Occupations	25,700	\$99,000	1,300	1,300
Management Occupations	15,400	\$178,000	3,400	1,400
Installation, Maintenance, and Repair Occupations	36,900	\$96,000	3,800	1,200
Total	164,000			

Figure 2.4. Employment Change by Major Occupation Category for Petroleum and Natural Gas T&D, 2022–2025 and 2024–2025, BLS OEWS^{lviii}

Note: Average annual wage assumes 2,080 hours of work per year.

¹⁵⁴ Between 2022 and 2025, the age 18–29 employment increase was about 3%, age 30–54 employment increased about 4%, and age 55 and above employment increased about 2%.

TDS Employment Results

Employment by TDS Category

Total TDS employment grew by about 9% (+118,000 workers) in 2025 compared to 2022, and about 2% (+28,000 workers) compared to 2024, as summarized in Figure 2.5.

In 2025, Electric Power T&D employment grew by 2% (+17,900 workers) from 2024, and 14% (+101,000 workers) from 2022.

TDS Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Electric Power T&D	825,000	14.0%	1.6%
Fossil Fuel T&D	448,000	-0.1%	3.2%
Other T&D ¹⁵⁵	118,000	6.4%	-4.6%
Storage	101,000	11.4%	2.4%
Total TDS	1,492,000	8.6%	1.9%

Figure 2.5. Total T&D Employment by Category, 2022–2025 & 2024–2025, USEER Survey^{155,156}

Note: The following employment changes are not statistically significant at the 95% confidence level: Total TDS 2024 to 2025; Electric Power T&D 2024 to 2025; Other T&D 2024 to 2025 and 2022 to 2025. Fossil Fuels T&D counts do not have sampling uncertainty because they correspond to BLS QCEW NAICS categories.

¹⁵⁵ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁵⁶ Other T&D includes any transmission and distribution of electricity that is not captured in the categories listed or a category that is used when unable to split employment into a single transmission and distribution category where employees spend “more of their time” with one technology over another.

Employment by Electric Power T&D Subsectors

All subsectors within Electric Power T&D grew between 2022 and 2025, including growth between 2024 and 2025. Between 2024 and 2025, Traditional T&D Electricity added the most workers (+1.6%, +11,500), as referenced in Figure 2.6.

TDS Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Traditional T&D Electricity	744,000	 13.4%	 1.6%
Smart Grid	32,000	 28.3%	 17.4%
Other Grid Modernization	24,100	 15.8%	 4.9%
Microgrid	21,800	 10.1%	 1.7%
EV Charging	3,100	 37.0%	 5.6%
Total Electric Power T&D	825,000	 14.0%	 2.2%

Figure 2.6. Electric Power T&D Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey¹⁵⁷

Note: The following employment changes are not statistically significant at the 95% confidence level: Traditional T&D 2024 to 2025; Other Grid Modernization 2022 to 2025 and 2024 to 2025; Microgrid 2024 to 2025.

¹⁵⁷ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employment by Traditional Fuels T&D Subsectors

Traditional Natural Gas T&D employment increased by 5% (+12,600 workers) from 2024 to 2025. Petroleum T&D grew by almost 2% (+2,800 workers) between 2024 and 2025—see Figure 2.7 for details.

T&D Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Traditional T&D Natural Gas	266,000	34.5%	5.0%
Traditional T&D Petroleum	157,000	-23.4%	1.8%
Traditional T&D Coal	22,100	-32.0%	-1.3%
Traditional T&D Other Fuels	2,800	-78.5%	-30.7%
Total Traditional T&D of Fuels	448,000	-0.1%	3.2%

Figure 2.7. Traditional T&D of Fuels Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey¹⁵⁸

Note: Traditional Fuels T&D counts do not have sampling uncertainty because they correspond to BLS QCEW NAICS categories.

¹⁵⁸ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employment by Storage Subsectors

The Battery Storage subsector accounts for the most jobs within Storage (80%), employing 80,900 workers in 2025, as detailed in Figure 2.8. The Battery Storage subsector grew by 11% (+8,000 workers) in 2025 since 2022. The Pumped Hydro Storage subsector in 2025 grew by nearly 16% (+1,300 workers) since 2022. The breakout of All Other Storage is included in greater detail in Figure 2.9.

Storage Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Battery Storage	80,900	11.0%	2.7%
Pumped Hydro Storage	9,600	15.7%	-1.9%
All Other Storage Combined ¹⁵⁹	10,200	10.9%	4.1%
Total Storage Employment	101,000	11.5%	2.4%

Figure 2.8. Storage Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{159, 160}

Note: The following employment changes are not statistically significant at the 95% confidence level: Battery Storage 2024 to 2025; Pumped Hydro Storage 2024 to 2025; All Other Storage Combined 2022 to 2025 and 2024 to 2025.

¹⁵⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁶⁰ All Other Storage Combined includes any storage that is not captured in the categories listed or a category that is used when unable to split employment into a single category where employees spend “more of their time” with one technology over another.

All Other Storage, a category that contains storage not discussed above, grew by about 11% (+1,400 workers) between 2022 and 2025. Much of this growth in employment was in Biofuels Storage, LNG Storage, Thermal Storage, and Crude Oil Storage. Although it remains a smaller source of energy employment, Nuclear Fuel (Used) Storage had the greatest growth of all Storage subsectors, more than doubling between 2024 and 2025 (+80 workers), Figure 2.9 shows.

Storage Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mechanical Storage	1,900	-1.9%	-4.8%
Biofuels Storage	1,600	25.6%	9.3%
Thermal Storage	1,500	5.2%	2.5%
LNG Storage	1,400	12.8%	7.9%
Refined Petrol Fuels (Gas) Storage	800	35.5%	23.1%
Refined Petrol Fuels (Liquid) Storage	600	-30.5%	-35.5%
Compressed NG Storage	500	3.4%	-0.9%
Crude Oil Storage	500	48.5%	25.3%
Other Gas Storage	400	16.5%	2.9%
Other	300	5.7%	-0.8%
Other Storage	200	9.8%	11.7%
Nuclear Fuel (Used) Storage	200	114.8%	97.8%
Other Liquid Fuel Storage	200	34.7%	26.5%
Coal Storage	200	NA	NA
All Other Storage Combined	10,200	10.9%	4.1%

**Figure 2.9. Storage Employment by Subsector
(except for Battery Storage and Pumped Hydro Storage), 2022–2025, USEER Survey¹⁶¹**

Note: The following employment changes are not statistically significant at the 95% confidence level: Mechanical Storage (all periods); Thermal Storage (all periods).

¹⁶¹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employment by Industry

Construction was the largest industry within TDS, with 554,800 workers in 2025, an increase of about 16% (+75,600 workers) in 2025 compared to 2022. Utilities was the next largest industry within TDS, with 457,200 workers in 2025. That was an increase of about 9% (+37,300 workers) in 2025 since 2022. Between 2024 and 2025, Construction employment in TDS grew by about 3% (+17,000 workers), as shown in Figure 2.10. Between 2024 and 2025, employment in Utilities in TDS also grew by about 3% (+14,000 workers).

TDS Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	555,000	15.8%	3.2%
Manufacturing	87,600	7.7%	3.2%
Professional & Business Services	143,000	4.9%	2.2%
Utilities	457,000	8.9%	-3.0%
Wholesale Trade, Distribution, & Transport	234,000	-3.3%	3.1%
Other Services ¹⁶²	15,100	3.3%	0.1%
Total TDS Employment	1,492,000	8.6%	1.9%

Figure 2.10. Total TDS Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{162, 163}

Note: Differences across categories or over time have not been tested for statistical significance.

¹⁶² USEER employment data provides the best summary of employment for USEER energy sector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁶³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

TDS Employment by Occupation Category

Employment in all TDS sector occupation categories grew, in line with aggregate TDS employment growth. Construction, Installation, or Repair occupations¹⁶⁴ made up the greatest portion of the TDS workforce, accounting for 30% of workers in 2025.¹⁶⁵ Administrative occupations (24%),^{166, lix} Management and Professional occupations (17%),^{167, lx} and Production and Manufacturing occupations (17%)^{168, lxi} made up the next largest proportions of the TDS overall workforce.

Between 2024 and 2025, there was a slight decline of 1% (–3,000 workers) in Administrative occupations that was offset by growth in all other occupation categories, shown in Figure 2.11. TDS workers were most concentrated in the Construction, Installation, or Repair occupation group, as referenced in Appendix O.

¹⁶⁴ Construction, Installation, or Repair occupations include workers who use a variety of resources to build and repair roads, homes, and other structures, and those who set up, take care of, and fix many types of goods and equipment.

¹⁶⁵ Proportions are calculated from Figure 2.11.

¹⁶⁶ Administrative occupations refer to workers who organize records, manage communications, schedule, and perform routine administrative functions that support managers, professionals, and technical staff across industries. Example occupations include administrative assistants, secretaries, receptionists, bookkeeping and accounting clerks, office clerks, data entry keyers, and customer service and billing clerks.

¹⁶⁷ Management and Professional Occupations refer to workers who either direct business activities or require specialized knowledge in fields such as accounting, science, engineering, law, education, healthcare, etc. Examples include chief executives, general and operations managers, accountants, electrical engineers, teachers, nurses, lawyers, and software developers.

¹⁶⁸ Production and Manufacturing occupations refer to jobs involved in making, assembling, processing, and inspecting goods in factories and other production facilities. These workers operate machinery and equipment, assemble parts and products, fabricate materials, and ensure quality control throughout the manufacturing process. Common examples include assemblers and fabricators, machinists, welders and cutters, machine operators, inspectors and testers, and packaging and filling machine operators. These occupations are primarily grouped under SOC major group 51-0000 (Production Occupations) in the BLS system.

TDS Occupational Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Administrative Occupations	294,000	8.6%	-1.0%
Construction, Installation, or Repair Occupations	414,000	6.9%	2.4%
Management/ Professional Occupations	234,000	12.2%	3.8%
Production/ Manufacturing Occupations	231,000	23.0%	4.0%
Sales Occupations	101,000	14.3%	3.2%
Other Occupations ¹⁶⁹	96,400	6.0%	2.9%
Total TDS Employment	1,369,000	11.1%	2.2%

Figure 2.11. TDS Employment by Occupation Category, 2022–2025 & 2024–2025, USEER Survey^{169, 170, 171}

Note: Differences across categories or over time have not been tested for statistical significance.

¹⁶⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁷⁰ The same occupation roles can appear in multiple industries, and each industry typically employs workers across multiple occupation categories. For example, the Manufacturing industry employs many workers engaged in production or manufacturing activities but also employs workers who perform management or professional activities.

¹⁷¹ Other Occupations includes workers in all other occupational groups not listed, such as Life, Physical, and Social Science occupations (workers who use scientific research to help solve problems and expand knowledge), Protective Service occupations (workers who provide public safety), and Farming, Fishing, and Forestry occupations (workers who tend and harvest renewable resources and manage forests and public parks).

TDS Employer Perspectives on Hiring Difficulty

The USEER surveys establishment perspectives on hiring difficulties, including reasons for the difficulties and the most difficult occupations to fill.¹⁷²

Hiring Difficulty by Industry

Utilities employers within TDS reported the greatest hiring difficulty, with 70% stating that they had at least some hiring difficulty in 2025. No industry in TDS had fewer than 64% of employers reporting at least some difficulty hiring, as depicted in Figure 2.12.

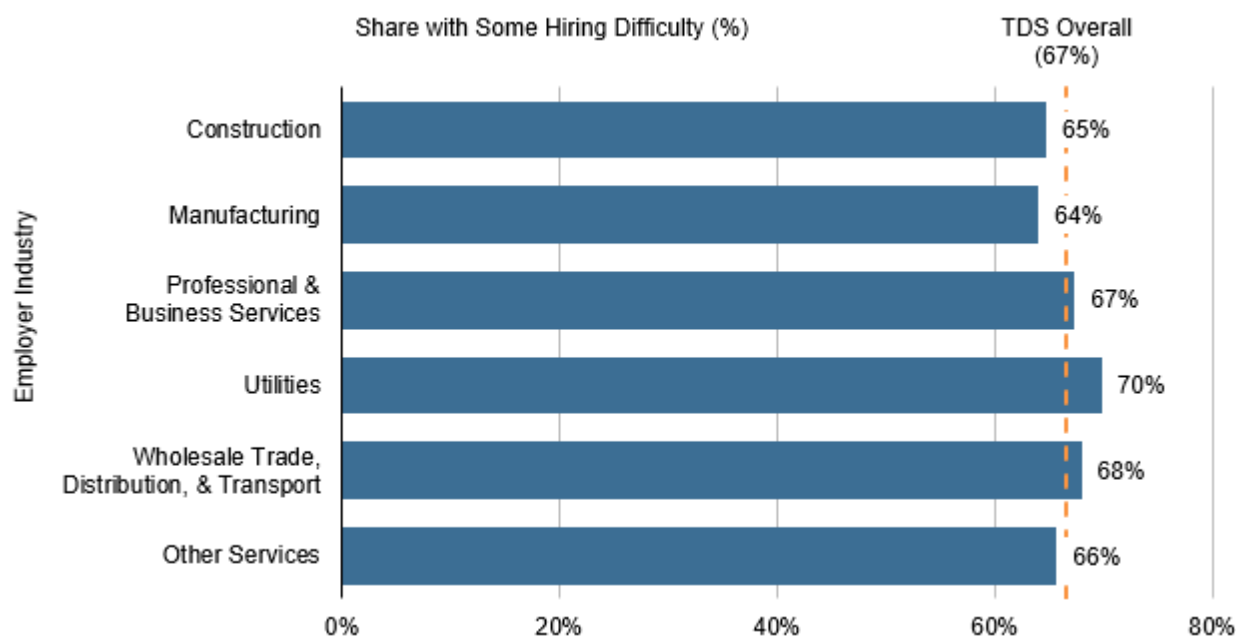


Figure 2.12. Percentage of TDS Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{173, 174}

¹⁷² Some TDS hiring data is not available due to survey design. For more information, please refer to Appendix A. USEER collects valuable data on employer hiring activity and hiring patterns that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁷⁴ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Employers across nearly all industries within TDS reported that a lack of experience, training, or technical skills was the most common reason for hiring difficulty. As shown in Table 2.1, utility employers within TDS most frequently reported insufficient qualifications of candidates to be the primary reason for hiring difficulty.

Industry	Percent of Employers and Reason for Hiring Difficulty
Construction	18% Competition/Small Applicant Pool
	27% Insufficient Qualifications (Certifications or Education)
	56% Lack of Experience, Training, or Technical Skills
Manufacturing	21% Competition/Small Applicant Pool
	25% Insufficient Qualifications (Certifications or Education)
	52% Lack of Experience, Training, or Technical Skills
Professional & Business Services	21% Cannot Provide Competitive Wages
	26% Insufficient Qualifications (Certifications or Education)
	50% Lack of Experience, Training, or Technical Skills
Utilities	32% Competition/Small Applicant Pool
	38% Insufficient Qualifications (Certifications or Education)
	34% Lack of Experience, Training, or Technical Skills
Wholesale Trade, Distribution, & Transport	15% Cannot Provide Competitive Wages
	32% Insufficient Qualifications (Certifications or Education)
	42% Lack of Experience, Training, or Technical Skills
Other Services ¹⁷⁵	23% Competition/Small Applicant Pool
	37% Insufficient Qualifications (Certifications or Education)
	40% Lack of Experience, Training, or Technical Skills
TDS Sector Overall	21% Competition/Small Applicant Pool
	29% Insufficient Qualifications (Certifications or Education)
	49% Lack of Experience, Training, or Technical Skills

Table 2.1. TDS Employers' Reasons for Hiring Difficulty, 2025, USEER Survey^{176, 177}

¹⁷⁵ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

¹⁷⁶ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁷⁷ Multiple responses permitted; totals may not add up to 100%.

Employers in all industries in TDS, except for Utilities and Manufacturing, reported that Management (Directors, Supervisors, Vice Presidents) occupations were the most difficult to hire in 2025. Utilities employers reported that Line Workers were the most difficult to hire, while Manufacturing cited Engineers/Scientists as most difficult to hire, as shown in Table 2.2.

Industry	Percent of Employers and Most Difficult to Hire Occupation
Construction	22% Electricians/Construction Workers
	23% Installation Workers
	29% Management (Directors, Supervisors, Vice Presidents)
Manufacturing	22% Engineers/Scientists
	22% Management (Directors, Supervisors, Vice Presidents)
	17% Technicians or Mechanical Support
Professional & Business Services	20% Engineers/Scientists
	24% Management (Directors, Supervisors, Vice Presidents)
	14% Technicians or Mechanical Support
Utilities	26% Engineers/Scientists
	36% Line Workers
	19% Management (Directors, Supervisors, Vice Presidents)
Wholesale Trade, Distribution, & Transport	23% Engineers/Scientists
	32% Management (Directors, Supervisors, Vice Presidents)
	21% Technicians or Mechanical Support
Other Services ¹⁷⁸	27% Engineers/Scientists
	30% Management (Directors, Supervisors, Vice Presidents)
	30% Technicians or Mechanical Support
TDS Sector Overall	19% Engineers/Scientists
	26% Management (Directors, Supervisors, Vice Presidents)
	18% Technicians or Mechanical Support

Table 2.2. Occupations Most Difficult to Hire for TDS Employers, 2025, USEER Survey^{179, 180}

¹⁷⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

¹⁷⁹ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁸⁰ Multiple responses permitted; totals may not add up to 100%.

TDS Workforce Demographics

The demographic characteristics of the TDS workforce, compared against the broader subsector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 2.3.

	Number of Workers	Share of TDS Workforce	Share of Energy Workforce	Share of U.S. Workforce
Men	1,025,000	75%	74%	53%
Women	345,000	25%	26%	47%
Hispanic or Latino	276,000	20%	19%	20%
Non-Hispanic or Latino	1,093,000	80%	81%	80%
American Indian or Alaska Native	41,500	3%	3%	1%
Asian	111,000	8%	7%	7%
Black or African American	132,000	10%	9%	13%
Middle Eastern or North African	22,000	2%	1%	n/a
Native Hawaiian or Other Pacific Islander	15,700	1%	1%	<1%
White	946,000	69%	72%	75%
Two or More Races	59,500	4%	4%	3%
Unknown Race	42,500	3%	3%	n/a
Veterans	103,000	8%	9%	5%
18 to 29	362,000	26%	29%	22%
30 to 54	752,000	55%	52%	55%
Over 54	255,000	19%	18%	23%
Self-Identification of Disability	30,000	2%	2%	5%
Formerly Incarcerated	21,700	2%	2%	2%
Represented by a Union ¹⁸¹	289,000	21%	12%	10%

Table 2.3. TDS Workforce Demographics and Characteristics, 2025,
USEER Survey and Other Sources^{182, 183, lxii}

¹⁸¹ As defined in the USEER survey, a union employer is one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement.

¹⁸² This table presents calculations from several sources, including the USEER survey. *See* endnotes for sources. Share of TDS workforce and Share of Energy Workforce are calculated from the USEER survey. Share of U.S. workforce are calculated from BLS and other sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

¹⁸³ Figures are exclusive of 122,681 jobs in commodity flows that cannot be split by subsectors.

Electric Power T&D

Electrical Power T&D includes:

- The infrastructure, systems, and services used to deliver electricity from generation sources to end users.
- Advanced technologies that enhance grid reliability, efficiency, flexibility, and integration of distributed energy resources. This includes traditional transmission and distribution systems, smart grid technologies, microgrids, EV charging infrastructure, and other grid modernization solutions.

Employment in this subsector includes workers involved in:

- Grid construction and operation
- Installation and maintenance of transmission and distribution assets
- Deployment of digital and automated grid technologies
- The manufacturing, integration, and support of grid equipment and systems
- Professional and business services such as engineering, information technology cybersecurity, planning, and other services that support grid operations and modernization¹⁸⁴

¹⁸⁴ The Electric Power T&D subsector does not have hiring difficulty data due to survey design. For more information, please refer to Appendix A.

Electric Power T&D Employment by Industry

Employment in Electric Power T&D overall grew by 14% (+88,000 workers) between 2022 and 2025. In 2025, Utilities (332,200 workers) and Construction (285,000 workers) were the two largest industries within Electric Power T&D.

Between 2024 and 2025, there was a 3% decline (–2,700 workers) in Professional and Business Services that was offset by growth in all other industries, as depicted in Figure 2.13.

T&D Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Utilities	332,000	10.5%	3.8%
Construction	285,000	26.0%	2.4%
Professional & Business Services	100,000	4.8%	-2.6%
Manufacturing	52,500	7.6%	3.2%
Wholesale Trade, Distribution, & Transport	41,900	4.8%	0.0%
Other Services ¹⁸⁵	13,400	4.7%	0.9%
Electric Power T&D Overall	825,000	14.0%	2.2%

Figure 2.13. Electric Power T&D Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{185, 186}

Note: Differences across categories or over time have not been tested for statistical significance.

¹⁸⁵ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

¹⁸⁶ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Traditional T&D of Fuels

Traditional T&D of Fuels includes the infrastructure, systems, and services used to transport fuel from production and processing points to storage facilities, distribution hubs, businesses, utilities, residences, and other end users. This includes traditional transmission and distribution of natural gas, petroleum, coal, and other fuels. Employment in this subsector includes workers involved in:

- Pipeline transportation
- Fuel transportation by truck, rail, air, and water
- Fuel distribution operations
- Construction and maintenance of pipeline and related transport infrastructure
- Manufacturing equipment used for fuel transmission and distribution
- Professional and technical services
- Wholesale distribution
- Other support services (such as engineering, logistics, information technology, and repair, as well as maintenance that support fuel transportation and distribution activities)¹⁸⁷

Traditional T&D of Fuels Employment by Industry

Traditional T&D of Fuels employment overall in 2025 remained relatively flat since 2022. However, the Construction, Utilities, and Pipeline Transportation industries saw some employment growth during that time. Construction employment grew 9% (+12,000 workers) between 2024 and 2025, detailed further in Figure 2.14.

Traditional Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	143,000	3.5%	9.2%
Utilities	125,000	4.8%	1.1%
Wholesale Trade, Distribution, & Transport	123,000	-12.9%	-1.3%
Pipeline Transportation	57,800	14.5%	3.6%
Traditional T&D of Fuels Overall	448,000	-0.1%	3.2%

Figure 2.14. Traditional T&D of Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey¹⁸⁸

Note: Differences across categories or over time have not been tested for statistical significance.

¹⁸⁷ The Traditional T&D of Fuels subsector does not have hiring difficulty data due to survey design. For more information, please refer to Appendix A.

¹⁸⁸ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Storage

Storage includes systems and infrastructure used to store energy or fuels. Energy and fuels storage helps balance supply and demand, improves system reliability, and supports the efficient operation of energy systems. Employment in the subsector includes workers involved in:

- The construction, installation, and operation of storage facilities and systems
- Manufacturing storage technologies and equipment
- The maintenance, monitoring, and management of stored energy and fuels
- Supporting activities such as fuel handling and logistics
- Professional and business services including engineering, project development, and information technology
- Other services that support energy storage operations

Storage Employment by Industry

Storage employment within TDS grew each year between 2022 and 2025, resulting in an 11% total increase (+10,400 workers). Construction employment increased 16%, the most during this time (+7,100 workers), followed by Manufacturing which increased 9% (+1,600 workers). Between 2024 and 2025, Construction employment grew almost 5% (+2,300 workers) and Manufacturing employment grew 4% (+800 workers), with Figure 2.15 providing a breakdown

Storage Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	52,100	15.8%	4.7%
Manufacturing	19,800	9.0%	4.0%
Professional & Business Services	16,700	5.1%	-2.5%
Wholesale Trade	9,300	7.8%	-0.1%
Other	1,600	-7.0%	-12.2%
Pipeline Transportation	1,200	22.1%	-7.7%
Storage Overall	101,000	11.4%	2.4%

Figure 2.15. Storage Employment by Industry, 2022–2025 & 2024–2025, USEER Survey¹⁸⁹

Note: Differences across categories or over time have not been tested for statistical significance.

¹⁸⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Storage Hiring Difficulty

Storage establishments reported the greatest difficulty hiring for Management roles, Engineers and Scientists, and Technicians or Mechanical Support.¹⁹⁰

- Management (Directors, Supervisors, Vice Presidents) (26%)
- Engineers/Scientists (21%)
- Technicians or Mechanical Support (15%)

¹⁹⁰ The survey asks the respondent to provide up to two positions that were the most difficult for the establishment to fill.

CHAPTER 3



Electric Power Generation

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Electric Power Generation

The Electric Power Generation (EPG) sector defined by the USEER survey captures employment related to electricity generation,¹⁹¹ including fossil fuels, nuclear energy, and renewable energy sectors. Within the USEER the three major categories of energy for electricity generation are fossil fuels (coal, natural gas, and petroleum), nuclear energy, and renewable energy. Most electricity is generated with steam turbines that use fossil fuels or nuclear, biomass, geothermal, or solar thermal energy. Other major electricity generation technologies include gas turbines, hydro (water) turbines, wind turbines, and solar photovoltaics.

This chapter focuses on employment data for EPG by subsectors, industries, and occupations, including workforce demographics and employer perspectives.

The EPG subsectors include:

- Solar EPG
- Wind EPG
- Natural Gas EPG
- Water Power EPG
- Coal EPG
- Nuclear EPG
- Combined Heat and Power EPG
- Bioenergy EPG
- Oil EPG
- Geothermal EPG
- Other EPG¹⁹²

¹⁹¹ Employment related to the distribution of electric energy is included in the Transmission, Distribution, and Storage chapter, while employment related to the production of fuels purchased to generate electric power is included in the Fuels chapter.

¹⁹² Other EPG includes any generation that is not captured in the categories listed previously or is a category that is used when unable to split employment into a single category where employees spend “more of their time.” See Appendix T for the Other Electric Power Generation subchapter.

Quick Glance

Federal policy shifts in 2025 reshaped the EPG workforce. Nuclear EPG grew 4% (+2,300 workers) in 2025 from 2024 and Coal EPG employment increased 5% (+2,800 workers) after years of decline. Several sub sectors declined in 2025 after years of growth. Solar EPG declined by 3% (−11,000 workers), while Wind EPG declined 2% (−2,700 workers), and Water Power EPG declined 6% (−4,400 workers) from 2024. These changes together caused sector employment to decrease overall in 2025 by 1.6% (−14,800 workers), from 2024.

The employment decline in EPG from 2024 to 2025 was partially offset by an increase in employment in the Utilities industry, as seen in Figure 3.6. Utilities paid well above the national average in 2025 (\$82,000 annually from BLS QCEW)¹⁹³ and saw wages increase from 2024. BLS QCEW counts show the average EPG salary in the Utilities segment¹⁹⁴ in 2025 was \$149,000 annually, 81% above the national average.¹⁹⁵ USEER employment data shows EPG employment shifted toward technically skilled Construction, Installation, Repair, Production and Manufacturing roles, as shown in Figure 3.7. Meanwhile, USEER wage estimates show that wages within these occupation categories had a high wage premium, as shown in Figure 3.3. For example, the wages of the Hand Laborers and Freight, Stock, and Material Movers occupation within EPG, for example, were \$47,000 annually, about \$7,000 (17%) more than the median¹⁹⁶ wage for that occupation across all industries. Maintenance and Repair Workers wages in EPG earned \$60,000 annually, about 20% (\$10,000 annually) more than the median wage for that occupation across all industries.^{197, lxiii} Meanwhile, BLS QCEW wage data suggests demand for workers remained strong in the Utilities segment of Solar, Wind, and Geothermal EPG in 2025. Inflation-adjusted wages increased 5% in the Solar subsector, 9% in the Wind subsector, and 4% in the Geothermal subsector, which outpaced inflation-adjusted wage growth for the broader U.S. economy (1.5%).

The employment outlook for the sector is strong as the federal government works to meet rising electricity demand and support new generation capacity.^{lxiv} Further discussion on EPG employment can be found in the Labor Market Analysis section of this chapter.

¹⁹³ This is the 4th Quarter BLS QCEW average annual wage based on an assumption of 52 work weeks per year.

¹⁹⁴ Internal calculations using the following NAICS industry codes: 221111, 221112, 221113, 221114, 221115, 221116, 221117, 221118, 221330. Private sector ownership establishments only, 4Q data. Wages are weighted by NAICS industry employment.

¹⁹⁵ National average wage from BLS QCEW. BLS QCEW wage and employment estimates generally differ from BLS OEWS estimates because the two programs use different data sources, definitions, and estimation methods.

¹⁹⁶ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms.

¹⁹⁷ These wages are based on workers within NAICS 221100, Electric Power Generation, Transmission and Distribution.

EPG Key Takeaways

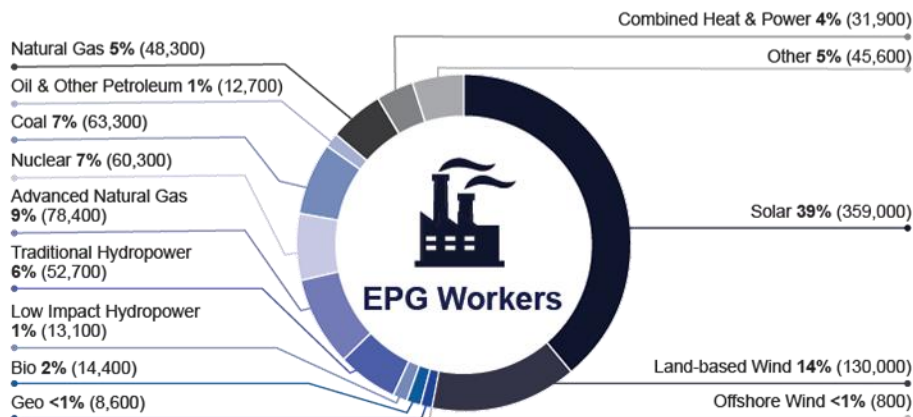


919k
-2% (-1,500) workers



\$70k
37% higher than U.S. median
annual wage

Employment by Subsector



Occupation Wages



Wage increase
+7.4%
since 2022



Civil Engineers
\$104k/yr
+3% vs. U.S. median (\$101k)



EPG Electricians
\$72k/yr
+13% vs. U.S. median (\$63k)

Hiring Insights



42% of employers hired



70% of employers had trouble hiring,
especially for Management positions

Figure 3.1. Electric Power Generation Key Takeaways, 2025, USEER Survey¹⁹⁸

¹⁹⁸ The wage premium described here is the additional amount the median EPG job pays relative to median U.S. pay. Energy sector median wages are derived from USEER survey data. U.S. median wages are from the May 2025 BLS OEWS estimates using all occupations and industries. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions,

EPG Chapter Contents

This EPG chapter includes the following sections:

- **Labor Market Analysis** discusses trends on employment, wages, and hiring.
- **Employment by Subsector, Industry, and Occupation** provides data where employment is concentrated by subsector, industry, and broad occupation category.
- **Employer Perspectives on Hiring Difficulty** aggregates employer responses on perceived hiring difficulty, top reasons for hiring difficulty, and most difficult to hire occupations.
- **Workforce Demographics** presents a picture of the EPG sector workforce.

sampling, and estimation methodology. *See* the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

EPG Labor Market Analysis

Employment Analysis

EPG employment decreased by about 2% (–15,000 workers) between 2024 and 2025 but increased about 4% (+36,000 workers) since 2022. Employment changes varied by energy technology subsector, as illustrated in Figure 3.5.

In 2025, for the first time since 2022, employment in Nuclear and Coal EPG increased as electricity demand reached record levels^{lxv} and federal actions supported these technologies. Electricity demand rose in 2025, with net electricity generation increasing nearly 3% in 2025 from 2024, reaching the highest annual level on record, which goes back to since 1949.^{lxvi} Coal generation became more competitive as natural gas prices increased, which contributed to a 13% growth in coal net generation from 2024 to 2025.^{lxvii} DOE also issued relief orders in 2025 that extended the operating life of some coal plants.^{lxviii}

Federal policy changes also supported growth in Nuclear EPG. Executive Orders issued in May 2025^{lxix} directed agencies to speed permitting for nuclear projects and support faster deployment of advanced nuclear reactors. Meanwhile, Solar and Wind EPG, which had been growing, saw employment declines in 2025. Employment in Solar EPG declined by 3% (–11,000 workers) in 2025, and Wind EPG declined by 2% (–2,700 workers).

Several factors slowed or delayed wind and solar projects, including changes in federal tax credits, higher input costs, and stricter federal permitting and review requirements. The July 2025 One Big Beautiful Bill Act (OBBBA)^{lxx} accelerated the phaseout of wind and solar tax credits,¹⁹⁹ tightened domestic content rules,²⁰⁰ changed requirements for projects involving foreign entities of concern.²⁰¹ Additionally, revised IRS guidance^{lxxi} directed by Executive Order 14315^{lxxii} raised “begin construction” standards on these projects.^{202,lxxiii} Taken together, these changes made it harder for projects to qualify for tax credits and increased the financial risk of delays.

¹⁹⁹ The OBBBA says the section 45Y credit does not apply to wind or solar facilities placed in service after December 31, 2027, and it applies that termination rule to facilities whose construction begins more than 12 months after enactment. The same structure applies to section 48E qualified property that is part of a wind or solar facility. The source text can be found in OBBBA, §§ 70512(a), 70512(l)(4), 70513(a), 70513(g)(5). *See* endnotes for OBBBA citation.

²⁰⁰ “Domestic content” means the required share of project components or manufactured products that must be made in the United States to qualify for the relevant bonus rule. The OBBBA rewrites the domestic content rule for section 48E and sets rising adjusted-percentage thresholds: 40 percent before June 16, 2025; 45 percent from June 16, 2025, through December 31, 2025; 50 percent during calendar year 2026; and 55 percent after December 31, 2026. Offshore wind has lower special percentages for the earlier periods. *See* OBBBA, §§ 70513(d), 70513(g)(2).

²⁰¹ “Foreign entity of concern,” or FEOC, is addressed through the OBBBA’s broader term “prohibited foreign entity.” The Act defines that term to include a specified foreign entity or a foreign-influenced entity. OBBBA denies credits where the taxpayer is a specified foreign entity or foreign-influenced entity. It also denies eligibility for facilities or property that begin construction after December 31, 2025 if construction includes “material assistance from a prohibited foreign entity.” *See* OBBBA, §§ 70512(b), 70512(c), 70512(l)(2), 70513(b).

²⁰² The IRS guidance raising “being construction” standards has since been vacated by the U.S. District Court for the District of Columbia as of June 6, 2026. *See* endnote.

Tariffs also raised costs for key inputs, including solar cells and modules^{lxxiv} and steel and aluminum,^{lxxv} further affecting project economics.

At the same time, federal permitting became more thorough. The U.S. Department of the Interior added additional review requirements for wind and solar projects on federal lands, including scrutiny of project size and land use intensity.^{lxxvi} However, the additional requirements do not consider the other economical uses of the same land on which the projects are cited. Because wind and solar projects can appear to require more land than other generation types when not accounting for their dual use purposes,²⁰³ those projects were more affected.

These policy changes contributed to delays in several gigawatts (GW) of planned capacity.^{lxxvii} While utility-scale installations through the first three quarters of 2025 were similar to installations in 2024, deployment fell sharply in the fourth quarter. By year's end, total installations were just under 35 GW because many projects were pushed into 2026 and 2027.

This is supported by evidence that some previously approved projects were delayed, reversed, or re-reviewed following federal actions, including onshore and offshore wind projects. Examples include reversal of approval for an onshore wind project,^{lxxviii} cancellation of a wind project due to permitting delays and tax credit changes,^{lxxix, 204} delay of a solar project due to a missed federal deadline,^{lxxx} conversion of a grouped solar project to individual project review,^{lxxxi} and stop-work orders affecting offshore wind projects in late 2025.^{lxxxii}

Bioenergy EPG employment was a notable exception to these broader trends, rising in employment despite declines in output and capacity. Employment increased by 8% (+1,100 workers) from 2024 to 2025, up 12% since 2022 (+1,500 workers).

In contrast, bioenergy capacity declined over the same period. Since the end of 2022, in-service biomass generation capacity fell 9%, from 12.4 GW to 11.3 GW,^{lxxxiii} and net generation declined by 11%, from 51.9 million MWh to 46.2 million MWh.^{lxxxiv}

This divergence reflects new capacity expected to come online in 2026 and 2027, reversing previous capacity declines. Respondents to an EIA survey report planned additions of about 75 megawatts (MW) of new biomass capacity in the 12 months after April 2026, compared with net declines of about 230 MW in the prior year.^{lxxxv} As of December 2025, about 87 MW of Bioenergy EPG capacity was under construction,^{lxxxvi} which helps explain higher Construction- and Manufacturing-related employment in 2025.

²⁰³ Dual use refers to the use of the same land area for both energy production and another productive purpose. For solar projects, dual use most commonly means combining solar panels with agricultural activities such as crop production, livestock grazing, or pollinator habitat. For wind projects, the land between turbines often remains available for farming, ranching, or other agricultural uses while generating electricity. As a result, the total land devoted exclusively to energy production may be substantially less than the overall project footprint suggests. For an example, see U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. *Agrivoltaics: Solar and Agriculture Co-Location*. See U.S. Department of Energy, <https://www.energy.gov/eere/solar/agrivoltaics-solar-and-agriculture-co-location>. Accessed 20 June 2026.

²⁰⁴ The Idaho Public Utilities Commission pointed out that permitting delays would put production tax credit eligibility at risk and materially change project economics.

Several factors support this shift in planned capacity. First, federal tax incentives for biomass remained largely in place after 2025 tax law changes, while incentives for wind and solar were more restricted.^{lxxxvii} Second, utilities increasingly demanded firm, dispatchable power generation to balance expansions of variable wind and solar generation capacity.²⁰⁵

Together, these factors suggest that stronger project pipelines in 2025 supported employment even as biomass generation and capacity declined.

Geothermal EPG employment declined slightly from 2024 to 2025²⁰⁶ even as generation increased modestly^{lxxxviii} and capacity remained flat.^{lxxxix} The decline was concentrated in the Construction sector, suggesting that projects begun in 2024 were completed in 2025.

Water Power EPG employment declined by 6% in 2025 from the year before. Since 2022, Water Power EPG employment fell in Management and Professional occupations. But since 2022, Production and Manufacturing, Construction, Installation, and Repair occupations each increased. Employment in the Construction industry grew by 8% (+900 workers) between 2024 and 2025, while employment in the Utilities industry declined by 24% (−4,900 workers), as shown in Figure 3.16.

Wage Analysis

BLS QCEW data for the EPG sector shows evidence of strong demand for workers since 2022. The average wage in 2025 for the utilities segment of EPG was \$149,000 annually, 81% higher than U.S. wages overall.²⁰⁷ Since 2022, inflation adjusted wages for the EPG sector, including all industry segments, grew 7% (+\$7,765 annual), outpacing the U.S. overall—see Figure 3.2 for details. Additionally, Figure 3.3 provides a more detailed view of wages at the occupation level, showing median wages²⁰⁸ and wage premiums²⁰⁹ for selected occupations in the EPG sector using USEER wage estimates.²¹⁰

²⁰⁵ Utilities continue to rely on dispatchable generation sources to balance growing renewable output and rising electricity demand. Biomass generation is often viewed as a firm, dispatchable renewable resource because it can provide controllable power output independent of weather conditions.

²⁰⁶ The decrease is only marginally statistically significant at the 95% confidence level.

²⁰⁷ Internal calculations using a weighted average wage of the following NAICS codes: 221111, 221112, 221113, 221114, 221115, 221116, 221117, 221118, 221330. Weights are employment counts of each industry. This set of industry sectors is narrower than the set of industry codes used in Figure 3.4 for the EPG sector.

²⁰⁸ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms. Median wages are shown due to methodological differences of the USEER survey and are usually substantially lower than average wages due to the presence of high-income workers pulling up averages. *See* the Introduction for a discussion of the differences in data sources.

²⁰⁹ The wage premium is how much more a particular occupation pays in EPG relative to how much the same occupation pays in the U.S. workforce overall.

²¹⁰ USEER estimates of occupation wages differ from BLS OEWS estimates of occupation wages due to differences in data sources, sample sizes, sector definitions, and estimation methodology. BLS OEWS sample sizes are much larger. BLS OEWS estimates are limited to NAICS industry categories, while USEER occupation wage estimates align with USEER energy sectors. USEER occupation wage estimates incorporate BLS OEWS estimates as a calibration benchmark. *See* Appendix A for details on how USEER wages are calculated.

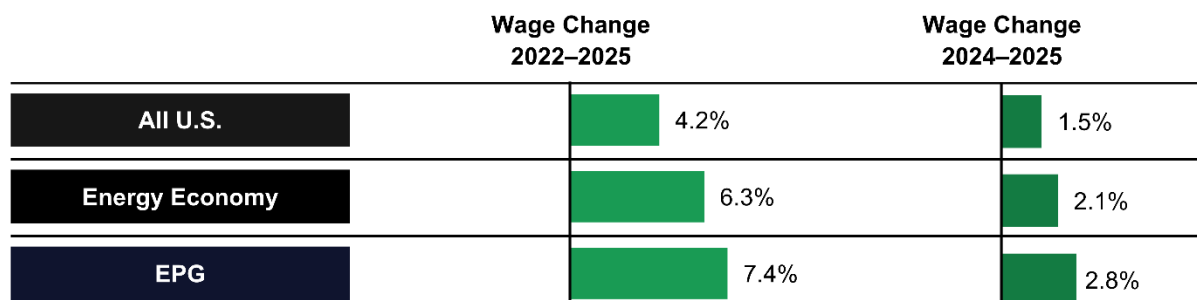


Figure 3.2. EPG Sector Wages, 2022–2025 & 2024–2025, BLS QCEW^{211, 212}

USEER wage estimates show that many occupations in the sector paid a premium relative to the same occupation in the U.S. workforce, reflected in Figure 3.3. These wage premiums reflect a combination of strong demand for workers in this sector, specialized skills, and potential exposure to dangerous or physically demanding working conditions. Employment increased for Production and Manufacturing occupations that include high energy sector wage premium occupations, as shown in Figure 3.3. For example, Hand Laborers made 17% more (+\$7,000 annually) in EPG than in other industries. Within Construction, Installation, and Repair positions, Electricians had a median²¹³ wage of \$72,000 annually, commanding a 13% wage premium in EPG relative to Electrician wages across all industries (\$63,000 annually). Maintenance and Repair Workers in EPG had a 20% wage premium over their peers in other industries (\$60,000 vs. \$50,000 annually).

Estimates from BLS OEWS^{xc} data suggest that wages for many occupations in the EPG sector grew much faster than wages in the overall economy.²¹⁴ Gas Plant Operator inflation-adjusted wages²¹⁵ in the sector increased by 14% since 2022 (\$89,000 to \$101,000 annually) while employment increased 21% (+150 workers) in the same period. Occupational Health and Safety Technician inflation-adjusted wages increased 10% (\$84,000 to \$93,000 annually) while employment increased 76% over the same period (+200 workers).²¹⁶

Within Management and Professional occupations, Electrical and Electronic Engineering Technologists and Technicians' inflation-adjusted wages grew 7% from 2022 to 2025 (\$90,000 to \$96,000 annually) while employment grew 17% (+900 workers). Financial Manager inflation-adjusted wages grew 10% (\$173,000 to \$191,000 annually) as employment grew 49% (+1,400 workers). Within Production and Manufacturing occupations, Heavy and Tractor-Trailer Truck

²¹¹ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. Wages are reported in nominal terms. Data is from the BLS QCEW.

²¹² Nominal Q4 average weekly wages were converted to fourth-quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. Unless otherwise noted, sectors are defined using energy-intensive NAICS from QCEW that touch sector categories. Employment sizes are usually different than measured by USEER as NAICS boundaries are different from USEER sector boundaries.

²¹³ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms.

²¹⁴ This BLS OEWS-based sector includes NAICS 221100 and 237130, which overlaps with Electric Power T&D.

²¹⁵ All inflation-adjusted wages are reported in 2025 dollars.

²¹⁶ See Appendix W for more details.

Driver wages grew 6% (\$60,000 to \$63,000 annually) since 2022 while employment increased 25% (+850 workers) over the same period.

Some occupations expanded significantly in employment while inflation-adjusted wage growth remained above national inflation-adjusted wage growth, also reflecting strong demand for workers. Employment among Wind Turbine Service Technicians increased 22% (+1,200 workers) since 2022 while inflation-adjusted wages increased 5% (\$67,000 to \$70,000 annually). Employment among First-Line Supervisors of Construction Trades and Extraction Workers increased 37% (+6,700 workers) while inflation-adjusted wages increased 5% (\$87,000 to \$91,000 annually).

Occupation Category	Occupation Name	Wage Premium	U.S. Annual Median Wage	EPG Annual Median Wage
Construction, Installation, or Repair Positions	Electricians	 13%	\$63,000	\$72,000
	First-Line Supervisors of Mechanics, Installers, and Repairers	 <1%	\$80,000	\$80,000
	Helpers—Electricians	 9%	\$43,000	\$47,000
	Industrial Machinery Mechanics	 7%	\$65,000	\$69,000
	Maintenance and Repair Workers, General	 20%	\$50,000	\$60,000
Management/ Professional Positions	Business Operations Specialists, All Other	 <1%	\$83,000	\$83,000
	Civil Engineers	 3%	\$101,000	\$104,000
	Electrical Engineers	 1%	\$121,000	\$122,000
	Mechanical Engineers	 <1%	\$104,000	\$104,000
	Project Management Specialists	 2%	\$102,000	\$104,000
Production/ Manufacturing Positions	Computer Numerically Controlled Tool Operators	 16%	\$51,000	\$59,000
	First-Line Supervisors of Production and Operating Workers	 3%	\$74,000	\$77,000
	Inspectors, Testers, Sorters, Samplers, and Weighers	 12%	\$49,000	\$54,000
	Laborers and Freight, Stock, and Material Movers, Hand	 17%	\$40,000	\$47,000
	Miscellaneous Assemblers and Fabricators	 1%	\$45,000	\$45,000

Figure 3.3. EPG Wages by Priority Occupations, 2025, USEER Survey²¹⁷

²¹⁷ USEER wage data provides the best summary of occupation wages for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in Occupations Affected Wages in the Electric Power Generation, Transmission, and Distribution Sector^{xci}

Changes in the mix of occupations can affect the sector's average wage even if pay within individual occupations changes little, as pay across occupations can vary within a sector. Analyzing changes in occupation composition can help determine whether wage trends were driven primarily by pay increases within occupations or by shifts toward higher-paying or lower-paying occupations.

A detailed analysis of how changes in occupation employment contributed to wage trends is not available for the EPG sector alone because the corresponding BLS OEWS²¹⁸ industry category combines Electric Power Generation and Electric Power Transmission and Distribution. As a result, the analysis below, as seen in Figure 3.4, focuses on a broader utilities category that includes the utilities portions of both sectors. The findings are therefore relevant to both the Electric Power T&D subsector and the utilities portion of the EPG sector. The analysis does not cover other industry segments, such as construction or manufacturing.

As shown in Figure 3.4, OEWS estimates suggest strong demand for workers in the 2022 to 2025 period for the combined EPG and Electric Power T&D sectors, while the 2024 to 2025 period reflected broader labor market weakness.²¹⁹ Employment increased by almost 11% (+64,000 workers) between 2022 and 2025²²⁰ and increased 4% (+27,000 workers) in 2025 compared to 2024. Inflation-adjusted average wages increased by 3% (\$94,000 to \$96,500) from 2022 to 2025 and declined by 1%²²¹ (\$97,000 to \$96,500) from 2024 to 2025.²²²

Between 2022 to 2025, the occupation category with the most employment growth was Construction and Extraction occupations, increasing 18% (+19,000 workers), with a \$34 average hourly wage (\$71,000 annually). Only one occupation category, Production, experienced any significant employment decline, decreasing by 9% (−4,000 workers), with a \$51 average hourly wage (\$106,000 annually). This pattern is similar between 2024 and 2025.

Between 2024 and 2025, the average hourly wage of growing occupation categories was \$47 (\$97,000 annually), slightly less than the average hourly wage of the declining Production occupation category, \$51 (\$106,000 annually). Occupations that added employment between 2022 and 2025 had comparable wages to the Production occupations with declining employment, both having an average hourly wage about \$50 (\$105,000 annually).²²³

²¹⁸ BLS OEWS data provides employment and wage information by occupation and industry that makes it possible to examine how changes in a sector's occupation mix contribute to changes in average wages.

²¹⁹ This sample is drawn from NAICS 2211. OEWS estimates of employment and wages may differ from QCEW because the two programs use different data sources, methods, and definitions.

²²⁰ The period 2022 to 2025 is examined first, as employment and wage changes are more likely to be statistically significant.

²²¹ Wage growth under 5% should be considered less accurate and interpreted with caution, as a relatively greater portion of wage changes could be due to an artifact of the OEWS methodology updating the wages from previous survey rounds or statistical sampling error.

²²² Details provided in Appendix W.

²²³ Details provided in Appendix W.

Within the Construction and Extraction occupation category, the occupations that increased the most in employment between 2022 and 2025 were First-Line Supervisors of Construction Trades and Extraction Workers, growing 37% (+6,700 workers), with a \$44 average hourly wage (\$91,000 annually) and Solar Photovoltaic Installers, growing 154% (+4,400 workers), with a \$27 average hourly wage (\$57,000 annually).²²⁴

Within the Production occupation category, the occupations that declined the most in employment since 2022 were First-Line Supervisors of Production and Operating Workers, with a \$65 average hourly wage (\$135,000 annually), Power Plant Operators, with a \$50 average hourly wage (\$104,000 annually), and Power Distributors and Dispatchers, with a \$52 average hourly wage (\$108,000 annually).²²⁵ These occupation trends were similar between 2024 and 2025.²²⁶

Hiring Difficulty

In 2025, 70% of EPG establishments that hired in the preceding year reported difficulty hiring. Solar EPG establishments reported the most difficulty, with 77% of establishments that hired in the preceding year reporting difficulty hiring.

Worker Availability

In analyzing EPG workers by age group, employment decreased slightly among workers ages 18 to 29 in terms of employment share by age group, -1% (from 29% share to 28% share) from 2022 to 2025. Employment also decreased slightly in terms of employment share in the 30 to 54 age group (-1% employment share, from 56% to 55% share) in the same period. Meanwhile, employment among workers age 55 and older increased in employment share by 2 percentage points (from 15% to 17% share).²²⁷

This shows that the growing EPG sector is adding relatively more experienced workers aged 55 and older. This differs from the broader U.S. workforce, where employment growth is lowest among workers age 55 and older (+2%) and higher among workers age 30 to 54 (+3%) from 2022 to 2025.^{228, xcii} More information on worker age demographics over time can be found in Appendix P.

²²⁴ Details provided in Appendix W.

²²⁵ Not shown in table. More details provided in Appendix W.

²²⁶ See Appendix W.

²²⁷ Differences across age groups or over time have not been tested for statistical significance and should be interpreted descriptively.

²²⁸ Between 2022 and 2025, age 18–29 employment increase was about 3%, age 30–54 employment increased about 4%, and age 55 and above employment increased about 2%.

Occupation Title	Employment 2025	Annual Average Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025
Production Occupations	43,400	\$106,000	-4,100	-2,200
Healthcare Practitioners and Technical Occupations	100	\$108,000	20	-10
Arts, Design, Entertainment, Sports, and Media Occupations	2,100	\$102,000	200	30
Legal Occupations	1,700	\$193,000	200	100
Sales and Related Occupations	6,000	\$93,000	900	300
Life, Physical, and Social Science Occupations	12,000	\$110,000	1,600	600
Building and Grounds Cleaning and Maintenance Occupations	3,100	\$57,000	600	700
Protective Service Occupations	7,100	\$72,000	1,800	700
Office and Administrative Support Occupations	66,500	\$68,000	2,400	900
Transportation and Material Moving Occupations	14,500	\$65,000	700	1,200
Computer and Mathematical Occupations	18,400	\$112,000	2,700	1,500
Architecture and Engineering Occupations	47,600	\$112,000	4,900	2,100
Management Occupations	59,400	\$166,000	12,800	3,600
Installation, Maintenance, and Repair Occupations	206,000	\$93,000	6,700	3,900
Business and Financial Operations Occupations	58,930	\$109,000	13,900	4,300
Construction and Extraction Occupations	122,000	\$71,000	18,800	9,300
Total	670,000			

Figure 3.4. Employment Change by Major Occupation Category for EPG and Electric Power T&D, 2022–2025 & 2024–2025, BLS OEWS^{xciii}

Note: Average annual wage assumes 2,080 hours of work per year.

EPG Employment Results

Employment by Subsector

Solar EPG employment in 2025 declined by 3% (–11,000 workers) from 2024 but was positive compared to 2022. Similarly, in 2025, Wind EPG, Water Power EPG, and Geothermal EPG employment declined compared to 2024, but was positive compared to 2022, as seen in Figure 3.5.

Several sectors continued to grow from 2024 to 2025: Nuclear EPG grew 4% (+2,300 workers), Bioenergy EPG grew 8% (+1,100 workers), and Combined Heat and Power (CHP) EPG and Oil EPG employment grew slightly. All these subsectors have seen employment increases since 2022, with Bioenergy increasing relatively the most by 12% (+1,500 workers).

EPG Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Solar EPG	359,000	3.8%	-3.0%
Wind EPG	130,000	3.7%	-2.0%
Natural Gas EPG	127,000	6.9%	-0.9%
Water Power EPG	65,800	-0.6%	-6.2%
Coal EPG	63,300	-1.2%	4.7%
Nuclear EPG	60,300	5.9%	4.0%
Other EPG ²²⁹	45,600	7.1%	-4.4%
Combined Heat & Power EPG	31,900	7.3%	1.6%
Bioenergy EPG	14,400	12.0%	8.2%
Oil EPG	12,700	5.9%	2.0%
Geothermal EPG	8,600	0.0%	-3.8%
Total EPG	919,000	4.0%	-1.6%

Figure 3.5. Electric Power Generation Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{229, 230}

Note: The following changes in employment may not be statistically significant at the 95% confidence level: Water Power EPG 2022 to 2025.

²²⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²³⁰ Other EPG includes any generation that is not captured in the categories listed or a category that is used when unable to split employment into a single category where employees spend “more of their time” with one technology over another.

Employment by Industry

Employment trends by industry category in 2025 largely followed aggregate EPG employment trends, declining from 2024 but increasing compared to 2022. Utilities employment was the exception; it grew by 1% (+2,500 workers) from 2024, driven by increases in Nuclear EPG, Coal EPG, and Bioenergy EPG employment, detailed further in Figure 3.6.²³¹

EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	294,000	0.3%	-3.3%
Manufacturing	107,000	1.4%	-1.6%
Professional & Business Services	201,000	5.2%	-2.1%
Utilities	192,000	8.5%	1.3%
Wholesale Trade	82,400	7.3%	-0.8%
Other Services ²³²	42,700	6.6%	-1.1%
Total EPG	919,000	4.0%	-1.6%

Figure 3.6. EPG Employment by Industry, 2022–2025 & 2024–2025^{232, 233}

Note: Differences across categories and over time have not been tested for statistical significance.

²³¹ These changes have not been tested for statistical significance and should be interpreted descriptively.

²³² USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²³³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

EPG Employment by Occupation Category

The occupation category²³⁴ in the EPG sector with the most employment was Construction, Installation, or Repair occupations, accounting for more than one-third (34%, 315,000 workers) of workers. Employment in Construction, Installation, or Repair and Management and Professional occupations followed larger EPG employment trends, rising through 2022–2024 and declining in 2025. Meanwhile, employment in Administrative and Sales occupations steadily declined since 2022, as seen in Figure 3.7.²³⁵

For most EPG subsectors, workers were largely concentrated in the Construction, Installation, or Repair occupation group. Nuclear EPG, which was largely comprised of Management workers, was the exception. More details can be found in Appendix O.

EPG Occupational Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Administrative Occupations	173,000	-7.7% 	-5.0% 
Construction, Installation, or Repair Occupations	315,000	12.4% 	-4.1% 
Management/ Professional Occupations	185,000	5.1% 	-0.7% 
Production/ Manufacturing Occupations	110,000	8.7% 	6.5% 
Sales Occupations	93,400	-8.7% 	-5.5% 
Other Occupations ²³⁶	43,400	17.5% 	21.6% 
Total EPG	919,000	4.0% 	-1.6% 

Figure 3.7. EPG Employment by Occupation Category, 2022–2025 & 2024–2025, USEER Survey^{236, 237}

Note: Differences across categories or over time have not been tested for statistical significance.

²³⁴ Occupations can span multiple industries, and each industry relies on a variety of occupation skills. Multiple industries can draw on a variety of occupation categories. For example, production and manufacturing workers may be employed by the Manufacturing or Wholesale Trade industries.

²³⁵ Differences across categories or over time have not been tested for statistical significance and should be interpreted descriptively.

²³⁶ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²³⁷ Other Occupations includes workers in all other occupational groups not listed, such as Life, Physical, and Social Science Occupations (workers who use scientific research to help solve problems and expand knowledge), Protective Service Occupations (workers who provide public safety), and Farming, Fishing, and Forestry Occupations (workers who tend and harvest renewable resources and manage forests and public parks).

EPG Employer Perspectives on Hiring Difficulty

The USEER surveys employers on their perspectives on hiring difficulties both across industries and subsectors, as well as the primary reasons for hiring difficulties and the occupations most difficult to hire.

Hiring Difficulty by Subsector

Solar EPG employers reported the most hiring difficulty in 2025, with over three-quarters (77%) citing at least some level of difficulty. This was also higher than the level of difficulty reported by EPG employers overall (70%), as Figure 3.8 shows.

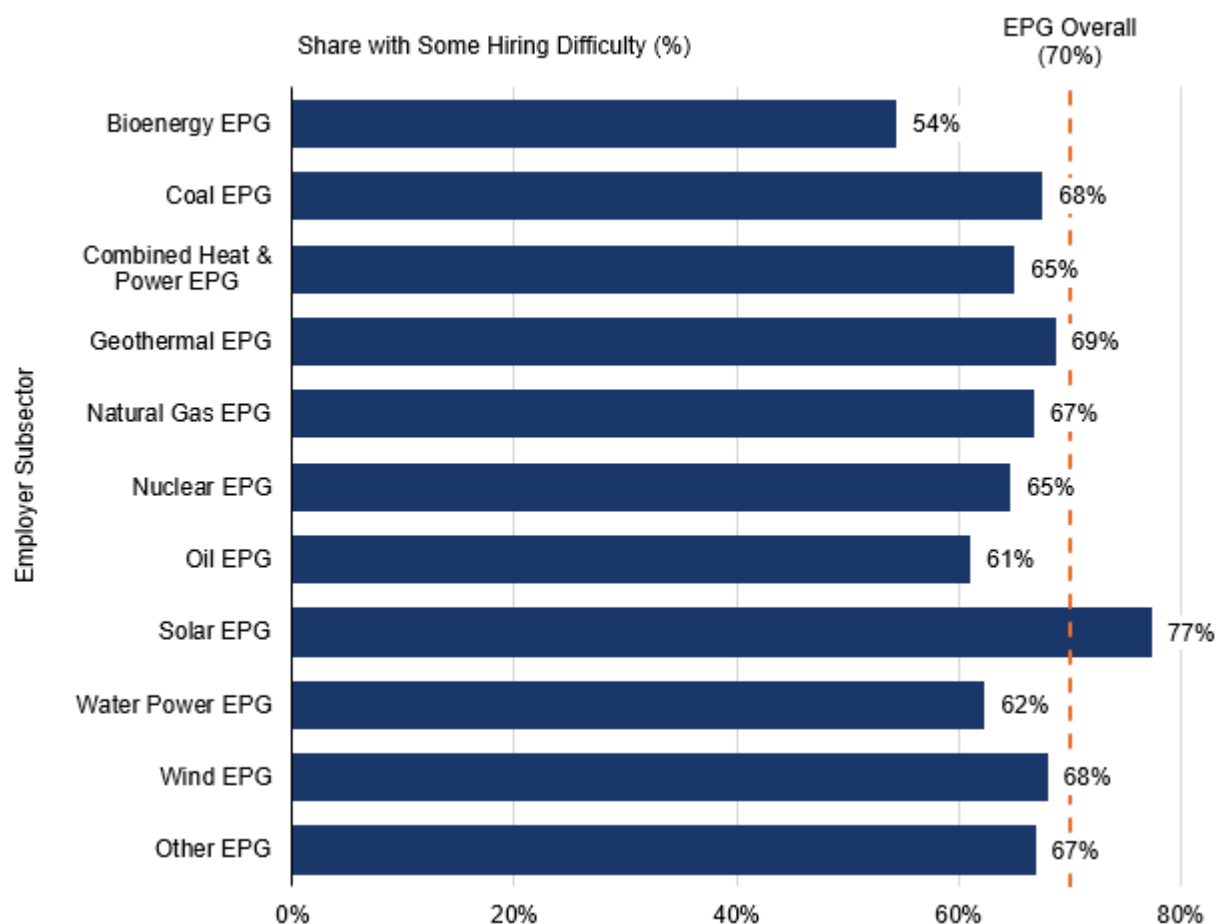


Figure 3.8. Percentage of EPG Employers Reporting at Least Some Hiring Difficulty by Subsector, 2025, USEER Survey^{238, 239}

Note: Differences across categories or over time have not been tested for statistical significance.

²³⁸ The USEER survey collects valuable data on employee demographics, employer hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²³⁹ Other EPG includes any generation that is not captured in the categories listed or a category that is used when unable to split employment into a single category where employees spend "more of their time" with one technology over another.

Hiring Difficulty by Industry

The Construction industry experienced the most hiring difficulty in 2025, with 76% of employers reporting that hiring was at least somewhat difficult. Manufacturing employers reported comparatively less hiring difficulty, with more than one-third (37%) reporting that hiring was not at all difficult, depicted in Figure 3.9.

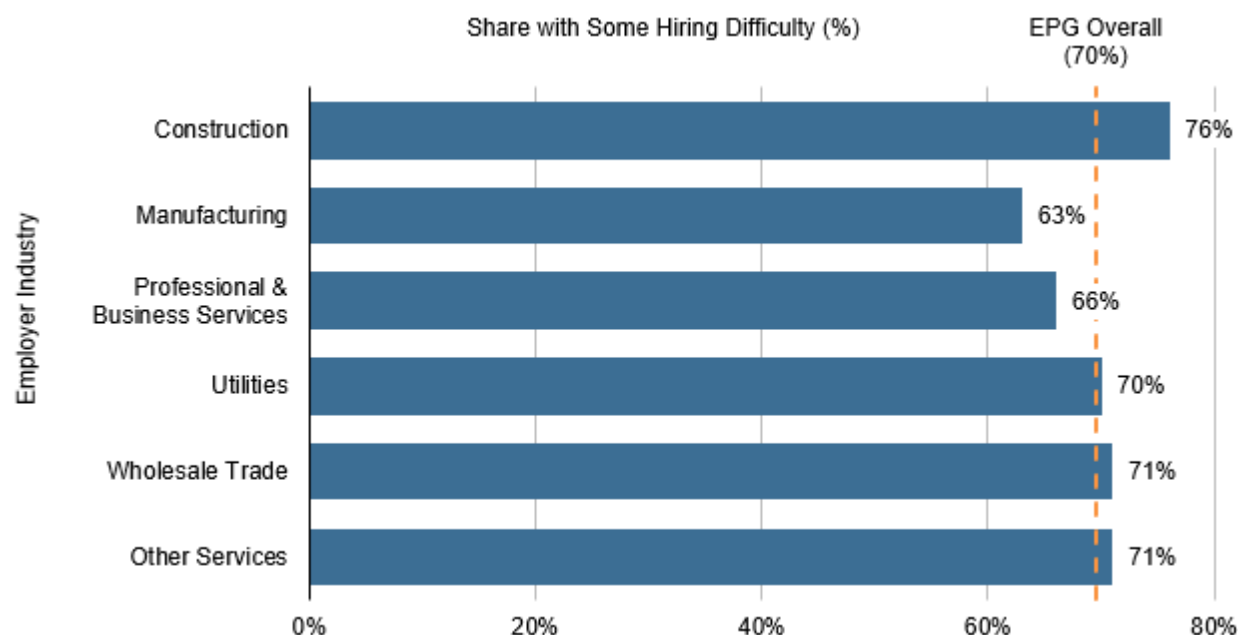


Figure 3.9. Percentage of EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{240, 241}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁴⁰ The USEER survey collects valuable data on employee demographics, employer hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁴¹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Most Common Reasons for Hiring Difficulty

Summarized in Table 3.1, employers across many industries—Construction, Manufacturing, Wholesale Trade, Professional and Business Services, and Utilities—indicated that lack of experience, training, or technical skills was the most common reason for hiring difficulty.²⁴²

Industry	Percent of Employers and Reason for Hiring Difficulty
Construction	58% Lack of Experience, Training, or Technical Skills
	28% Insufficient Qualifications (Certifications or Education)
	20% Competition/Small Applicant Pool
Manufacturing	53% Lack of Experience, Training, or Technical Skills
	24% Insufficient Qualifications (Certifications or Education)
	21% Competition/Small Applicant Pool
Wholesale Trade	53% Lack of Experience, Training, or Technical Skills
	26% Insufficient Qualifications (Certifications or Education) (26%)
	17% Insufficient Non-Technical Skills (Work Ethic, Dependability, Critical Thinking)
Professional & Business Services	53% Lack of Experience, Training, or Technical Skills
	26% Insufficient Qualifications (Certifications or Education)
	15% Cannot Provide Competitive Wages
Utilities	46% Lack of Experience, Training, or Technical Skills
	31% Competition/Small Applicant Pool
	27% Difficulty Finding Industry-Specific Knowledge, Skills, and Interest
Other Services ²⁴³	36% Insufficient Qualifications (Certifications or Education)
	32% Lack of Experience, Training, or Technical Skills
	27% Difficulty Finding Industry-Specific Knowledge, Skills, and Interest
EPG Sector Overall	52% Lack of Experience, Training, or Technical Skills
	25% Insufficient Qualifications (Certifications or Education)
	19% Competition/Small Applicant Pool

Table 3.1. EPG Employers' Top Reasons for Hiring Difficulty, 2025, USEER Survey^{244, 245}

²⁴² Respondents could select up to two most significant reasons for hiring difficulty and the table presents the three top reasons for hiring difficulty cited most often by EPG employers. "Most common" means the reason was selected by the largest share of respondents, whether it was their first or second reason.

²⁴³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

²⁴⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁴⁵ Multiple responses permitted; totals may not add up to 100%.

Most Difficult to Hire Occupations

Employers in all industries of the EPG sector identified Management roles as the most difficult to hire—see Table 3.2 for details.²⁴⁶

Industry	Percent of Employers and Most Difficult to Hire Occupation
Construction	22% Electricians/Construction Workers
	28% Installation Workers
	32% Management (Directors, Supervisors, Vice Presidents)
Manufacturing	22% Engineers/Scientists
	25% Management (Directors, Supervisors, Vice Presidents)
	16% Technicians or Mechanical Support
Professional & Business Services	18% Engineers/Scientists
	28% Management (Directors, Supervisors, Vice Presidents)
	12% Technicians or Mechanical Support
Utilities	19% Engineers/Scientists
	27% Management (Directors, Supervisors, Vice Presidents)
	19% Technicians or Mechanical Support
Wholesale Trade	23% Engineers/Scientists
	30% Management (Directors, Supervisors, Vice Presidents)
	15% Technicians or Mechanical Support
Other Services ²⁴⁷	27% Engineers/Scientists
	27% Management (Directors, Supervisors, Vice Presidents)
	27% Technicians or Mechanical Support
EPG Sector Overall	18% Engineers/Scientists
	29% Management (Directors, Supervisors, Vice Presidents)
	16% Technicians or Mechanical Support

Table 3.2. Occupations Most Difficult to Hire for EPG Employers, 2025, USEER Survey^{248, 249}

²⁴⁶ Respondents could select up to two occupations, and the table presents the three selected most often. “Most difficult” means the occupation was selected by the largest share of respondents, whether it was their first or second occupation.

²⁴⁷ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

²⁴⁸ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁴⁹ Multiple responses permitted; totals may not add up to 100%.

EPG Workforce Demographics

The demographic characteristics of the EPG workforce, compared against the broader subsector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 3.3.

Category	Number of Workers	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	649,000	71%	74%	53%
Women	271,000	29%	26%	47%
Hispanic or Latino	185,000	20%	19%	20%
Non-Hispanic or Latino	734,000	80%	81%	80%
American Indian or Alaska Native	18,700	2%	3%	1%
Asian	77,900	8%	7%	7%
Black or African American	80,800	9%	9%	13%
Middle Eastern or North African	11,700	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	12,300	1%	1%	<1%
White	649,000	71%	72%	75%
Two or More Races	41,500	5%	4%	3%
Unknown Race	27,100	3%	3%	n/a
Veterans	79,000	9%	9%	5%
18 to 29	262,000	28%	29%	22%
30 to 54	501,000	55%	52%	55%
Over 54	157,000	17%	18%	23%
Self-Identification of Disability	20,700	2%	2%	5%
Formerly Incarcerated	18,900	2%	2%	2%
Represented by a Union ²⁵⁰	120,000	13%	12%	10%

Table 3.3. EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{251, xciv}

²⁵⁰ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁵¹ This table presents calculations from several sources, including the USEER survey. Share of EPG workforce and Share of Energy Workforce calculations are from the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Solar EPG

Solar EPG is employment in solar power generation, which involves converting sunlight and solar thermal energy into electrical energy using photovoltaics (also known as solar panels), or thermal systems. Employment in this subsector includes:

- Workers across photovoltaics production and installation, including:
 - Manufacturing and wholesale trade of solar equipment
 - Installation and repair of panels
- Workers involved in professional and business services such as engineering, research and development, and finance that support the operations of each of these industries

Solar EPG Employment by Industry

Solar EPG employed 359,400 workers in 2025, with the largest share (172,600 workers or 48%) employed in the Construction industry. Professional and Business Services employed 57,800 workers in 2025, 16% of the total Solar EPG workforce, as illustrated in Figure 3.10. Solar EPG employment growth from 2022 to 2025 was concentrated in the Utilities industry segment, growing by over 70% (+7,200 workers). Even with a changing federal regulatory environment in 2025, Solar EPG employment in the Utilities industry segment increased 6% (+1,000 workers) from 2024 to 2025.

Solar EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	172,600	-1.5%	-5.0%
Professional & Business Services	57,800	5.8%	-1.2%
Manufacturing	45,900	2.4%	-1.2%
Other Services ²⁵²	34,700	5.2%	-3.1%
Wholesale Trade	30,900	9.8%	-2.5%
Utilities	17,400	70.6%	6.3%
Solar EPG Overall	359,000	3.8%	-3.0%

Figure 3.10. Solar EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey²⁵³

Note: Differences across categories or over time have not been tested for statistical significance.

²⁵² Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

²⁵³ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Solar EPG Hiring Difficulty

The Construction industry had the most difficulty hiring in 2025, with 84% of employers reporting at least some level of hiring difficulty. Manufacturing employers reported comparatively lower hiring difficulty, with one-third (33%) reporting that hiring was not at all difficult, a finding summarized in Figure 3.11.

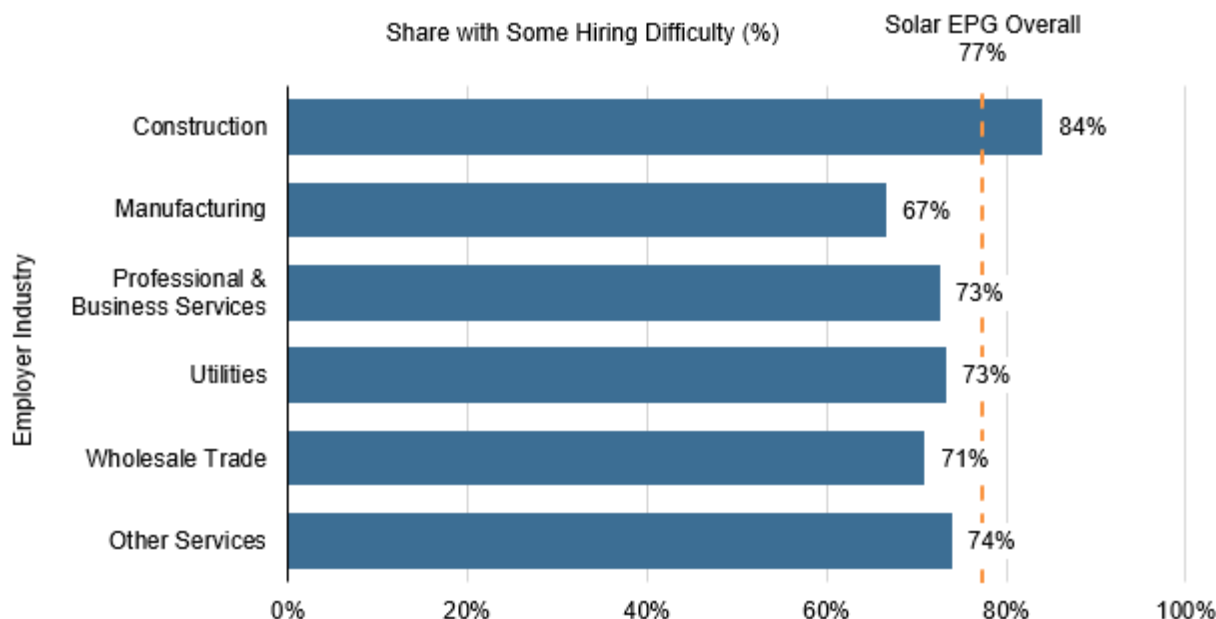


Figure 3.11. Percentage of Solar EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{254, 255}

Note: Differences across categories or over time have not been tested for statistical significance.

Solar EPG employers reported the most difficulty hiring for the occupations below. Nearly a third (29%) of Solar EPG employers reported that Management positions were the most difficult to hire.

- Management (29%)
- Engineers and Scientists (21%)
- Installation Workers (17%)

²⁵⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁵⁵ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Solar EPG Workforce Demographics

The demographic characteristics of the Solar EPG workforce and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce can be found in Table 3.4.

Category	Number of Workers	Share of Solar EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	256,000	71%	71%	74%	53%
Women	103,000	29%	29%	26%	47%
Hispanic or Latino	83,000	23%	20%	19%	20%
Non-Hispanic or Latino	276,000	77%	80%	81%	80%
American Indian or Alaska Native	6,000	2%	2%	3%	1%
Asian	29,000	8%	8%	7%	7%
Black or African American	30,000	8%	9%	9%	13%
Middle Eastern or North African	6,000	2%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	5,000	1%	1%	1%	<1%
White	258,000	72%	71%	72%	75%
Two or More Races	16,000	4%	5%	4%	3%
Unknown Race	10,000	3%	3%	3%	n/a
Veterans	30,000	8%	9%	9%	5%
18 to 29	110,000	31%	28%	29%	22%
30 to 54	196,000	54%	55%	52%	55%
Over 54	54,000	15%	17%	18%	23%
Self-Identification of Disability	8,000	2%	2%	2%	5%
Formerly Incarcerated	6,000	2%	2%	2%	2%
Represented by a Union ²⁵⁶	43,000	12%	13%	12%	10%

Table 3.4. Solar EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{257, xcv}

²⁵⁶ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁵⁷ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Wind EPG

Wind EPG uses turbines to convert kinetic energy from wind into mechanical energy. This energy is used mainly to drive pumps and electric power generators. Employment in this subsector includes workers involved in:

- The manufacturing, installation, repair, and wholesale trade of wind turbines and components
- Professional and business services that support Wind EPG, such as engineering, research and development, and finance

Operations and maintenance (O&M) activities—such as the repair and upkeep of equipment—are distributed across several activities, including utilities, construction, and engineering.

However, businesses that specialize in O&M services are most commonly classified as Other Services industry.²⁵⁸

²⁵⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Wind EPG Employment by Industry

The Wind EPG subsector employed 130,300 workers in 2025. The largest share was in the Construction industry, with 42,100 workers, or about one-third (32%) of the total Wind EPG workforce. Professional and Business Services made up the second-largest share, with 34,900 workers, or 27% of the total Wind EPG workforce—see Figure 3.12 for details.

Wind EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	42,100	-6.6%	-4.7%
Professional & Business Services	34,900	6.3%	-4.5%
Manufacturing	22,900	-2.7%	-5.6%
Utilities	13,700	58.7%	20.5%
Wholesale Trade	13,600	5.4%	-2.9%
Other Services ²⁵⁹	3,200	19.0%	15.4%
Wind EPG Overall	130,000	3.7%	-2.0%

Figure 3.12. Wind Electric Power Generation Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{259, 260}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁵⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁶⁰ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Wind EPG Hiring Difficulty

More than three-quarters (79%) of Other Services²⁶¹ employers reported at least some level of hiring difficulty in 2025. Employers in the Manufacturing industry had comparatively less difficulty hiring in 2025, with more than one-third (36%) reporting hiring as not at all difficult, as depicted in Figure 3.13.

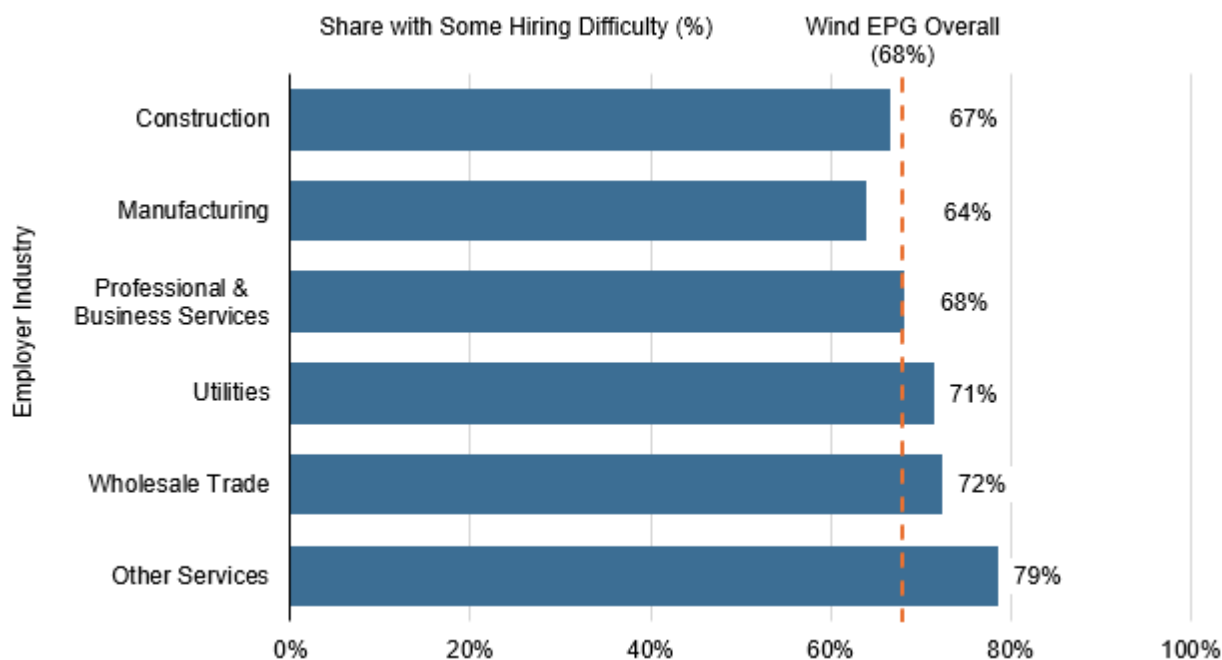


Figure 3.13. Percentage of Wind EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey²⁶²

Note: Differences across categories or over time have not been tested for statistical significance.

Wind EPG establishments reported that the occupations below were most difficult to hire for in 2025. Roughly one quarter (23%) of Wind EPG employers reported that Technicians or Mechanical Support roles, as well as Management roles, were the most difficult to fill.

- Technicians or Mechanical Support (23%)
- Management (23%)
- Engineers or Scientists (22%)

²⁶¹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

²⁶² The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Wind EPG Workforce Demographics

The demographic characteristics of the Wind EPG workforce are compared with the broader sector, the energy economy workforce, and the U.S. overall workforce, as detailed in Table 3.5.

Category	Number of Workers	Share of Wind EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	93,000	71%	71%	74%	53%
Women	38,000	29%	29%	26%	47%
Hispanic or Latino	27,000	21%	20%	19%	20%
Non-Hispanic or Latino	103,000	79%	80%	81%	80%
American Indian or Alaska Native	4,000	3%	2%	3%	1%
Asian	11,000	8%	8%	7%	7%
Black or African American	10,000	7%	9%	9%	13%
Middle Eastern or North African	1,000	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	2,000	1%	1%	1%	<1%
White	92,000	71%	71%	72%	75%
Two or More Races	7,000	5%	5%	4%	3%
Unknown Race	4,000	3%	3%	3%	n/a
Veterans	12,000	9%	9%	9%	5%
18 to 29	38,000	29%	28%	29%	22%
30 to 54	70,000	54%	55%	52%	55%
Over 54	22,000	17%	17%	18%	23%
Self-Identification of Disability	3,000	2%	2%	2%	5%
Formerly Incarcerated	4,000	3%	2%	2%	2%
Represented by a Union ²⁶³	17,000	13%	13%	12%	10%

Table 3.5. Wind EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{264, xevi}

²⁶³ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁶⁴ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Natural Gas EPG

Natural Gas EPG is the process of converting natural gas—a gaseous mixture of hydrocarbon compounds—into electricity. This is typically done by burning the gas to heat water, create steam, and spin turbines connected to generators. This section of the report includes employment data on the Natural Gas and Advanced Natural Gas (e.g., combined-cycle natural gas) EPG subsectors. Natural Gas EPG employment includes:

- Workers in the Utilities industry
- Workers engaged in the operation and maintenance of power plants
- Workers involved in manufacturing facility equipment
- Workers in the repair and maintenance of generation equipment
- Workers in wholesale trade (of Natural Gas EPG equipment and parts such as natural gas turbines)
- Workers in professional and business services that support Natural Gas EPG, such as engineering, financial services, environmental consulting, project management, and other services

Natural Gas EPG Employment by Industry

The Natural Gas EPG subsector employed 127,000 workers in 2025. The Utilities industry employed more than half (65,600 workers) in the Natural Gas EPG subsector. The Construction industry employed 17% of the total Natural Gas EPG workforce, with 22,100 workers in 2025. The Natural Gas EPG sector increased by 7% (+8,200 workers) overall since 2022. The Manufacturing industry within Natural Gas EPG grew 15% between 2024 and 2025, (+900 workers), which Figure 3.14 shows.

Natural Gas EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Utilities	65,600	3.0%	-4.9%
Construction	22,100	12.9%	3.0%
Professional & Business Services	20,200	5.8%	-0.7%
Wholesale Trade	9,800	18.2%	8.3%
Manufacturing	7,100	17.2%	15.0%
Other Services ²⁶⁵	2,000	7.0%	3.0%
Natural Gas EPG Overall	127,000	6.9%	-0.9%

Figure 3.14. Natural Gas Electric Power Generation Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{265, 266}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁶⁵ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁶⁶ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Natural Gas EPG Hiring Difficulty

Hiring difficulty results for the Natural Gas EPG establishments that attempted to hire over the course of 2025, Figure 3.15 shows. Establishments in the Construction industry experienced the most hiring difficulty in 2025, with 70% reporting at least some level of difficulty. Conversely, employers in the Other Services industry experienced limited hiring difficulties, with almost two-thirds (63%) reporting that hiring was not at all difficult.

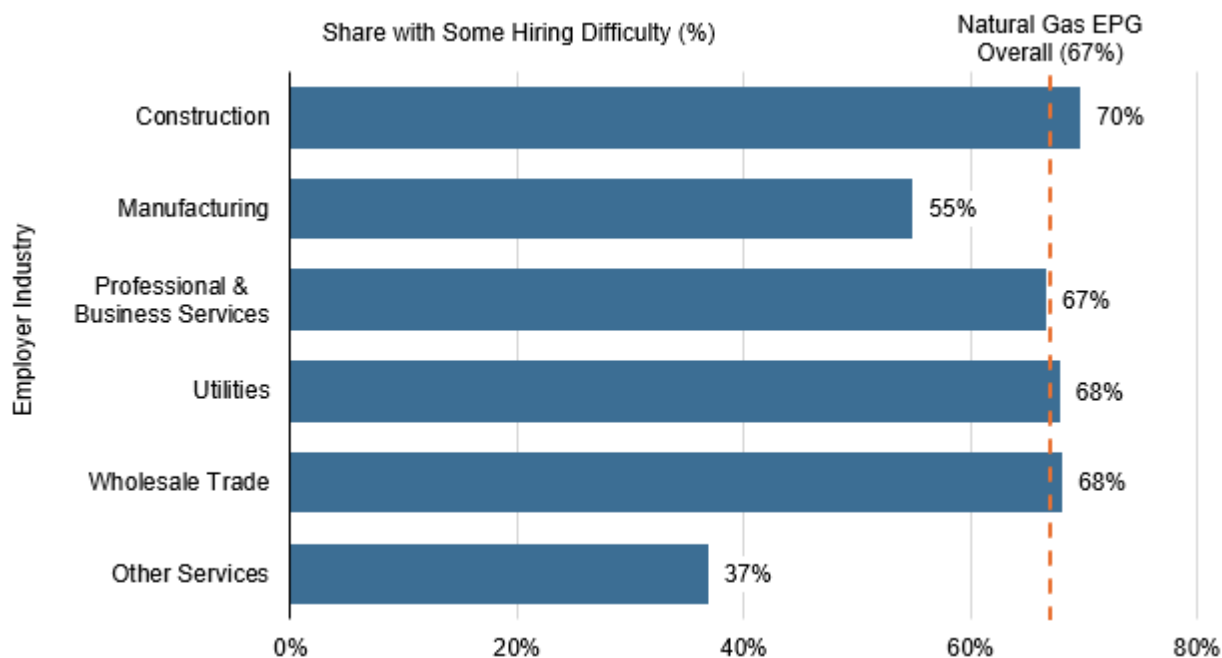


Figure 3.15. Percentage of Natural Gas EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{267, 268}

Note: Differences across categories or over time have not been tested for statistical significance.

Natural Gas EPG establishments reported that in 2025, one third (34%) of Natural Gas EPG employers reported that Management roles were the most difficult to hire in 2025.

- Management (34%)
- Technicians or Mechanical Support (18%)
- Engineers and Scientists (18%)

²⁶⁷ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁶⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Natural Gas EPG Workforce Demographics

A summary of the demographic characteristics of the Natural Gas EPG workforce and their comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce is provided in Table 3.6.

Category	Number of Workers	Share of Natural Gas EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	86,000	68%	71%	74%	53%
Women	40,000	32%	29%	26%	47%
Hispanic or Latino	24,000	19%	20%	19%	20%
Non-Hispanic or Latino	103,000	81%	80%	81%	80%
American Indian or Alaska Native	2,000	2%	2%	3%	1%
Asian	11,000	9%	8%	7%	7%
Black or African American	13,000	10%	9%	9%	13%
Middle Eastern or North African	2,000	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	2,000	1%	1%	1%	<1%
White	86,000	68%	71%	72%	75%
Two or More Races	7,000	6%	5%	4%	3%
Unknown Race	3,000	3%	3%	3%	n/a
Veterans	11,000	9%	9%	9%	5%
18 to 29	33,000	26%	28%	29%	22%
30 to 54	71,000	56%	55%	52%	55%
Over 54	22,000	18%	17%	18%	23%
Self-Identification of Disability	3,000	2%	2%	2%	5%
Formerly Incarcerated	3,000	2%	2%	2%	2%
Represented by a Union ²⁶⁹	22,000	17%	13%	12%	10%

Table 3.6. Natural Gas EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{270, xevii}

²⁶⁹ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁷⁰ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Water Power EPG

Water Power EPG harnesses flowing water to produce electrical energy through traditional facilities, such as dams, as well as smaller, low-impact facilities.²⁷¹ It also includes marine and hydrokinetic power. In Water Power EPG, workers include those involved in:

- Manufacturing and maintaining turbines, generators, and control systems
- Installation
- Repair
- Dam operations
- Infrastructure upgrades

Supporting roles include:

- Civil and electrical engineers
- Environmental consultants
- Information technology specialists managing flow and grid systems
- Administrative staff ensuring regulatory and safety compliance

²⁷¹ See the Glossary for definition of low-impact hydropower.

Water Power EPG Employment by Industry

The Water Power EPG subsector employed 65,800 workers in 2025, with the largest industries being Manufacturing, at 24% (+15,800 workers), and Utilities at 23% (+15,100 workers). Utilities saw a notable 24% (−4,800 workers) decline in workforce between 2024 and 2025, while Construction grew by 8% (+1,000 workers) during this time, as shown in Figure 3.16.

Water Power EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Manufacturing	15,800	-1.5%	-3.6%
Utilities	15,100	-18.7%	-24.2%
Professional & Business Services	13,500	6.0%	0.9%
Construction	12,200	22.2%	8.2%
Wholesale Trade	8,900	3.1%	-0.2%
Other Services ²⁷²	300	20.8%	11.1%
Water Power EPG Overall	65,800	-0.6%	-6.2%

Figure 3.16. Water Power EPG Employment by Industry, 2022–2025, USEER Survey^{272, 273}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁷² USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁷³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Water Power EPG Hiring Difficulty

Employers in the Utilities industry reported the greatest level of hiring difficulty in 2025, with 79% reporting at least some level of difficulty. Employers in the Construction industry reported much lower levels of hiring difficulty in 2025, with nearly half (48%) reporting that hiring was not at all difficult, reflected in Figure 3.17.

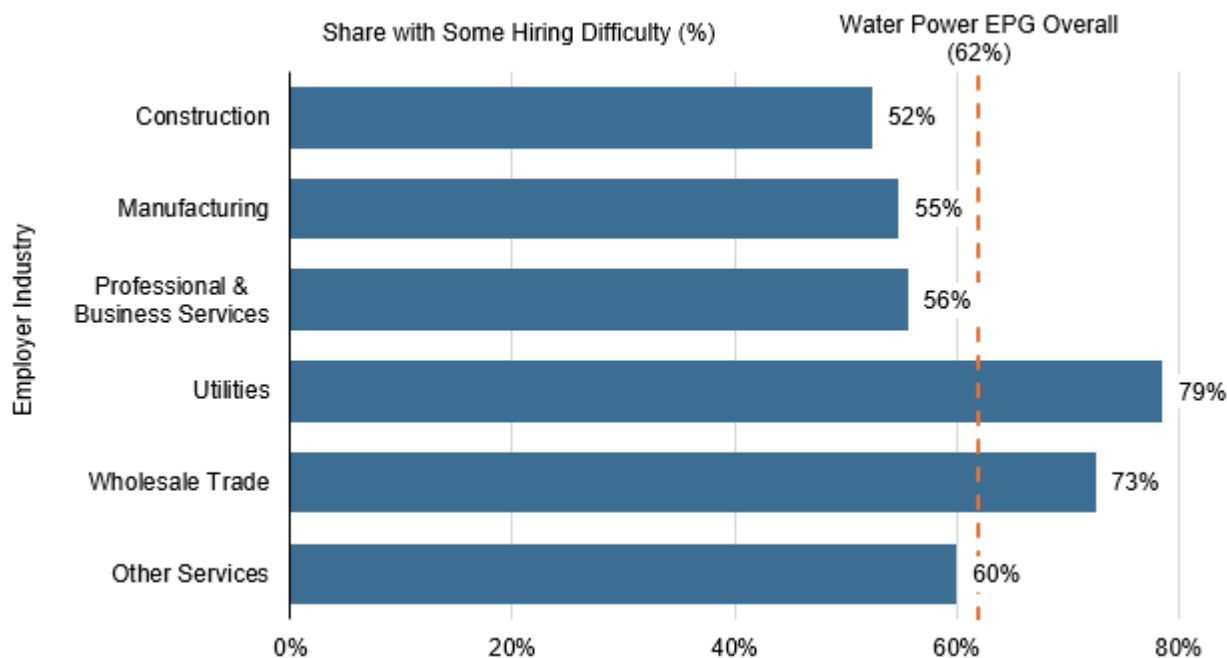


Figure 3.17. Percentage of Water Power EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{274, 275}

Note: Differences across categories or over time have not been tested for statistical significance.

Water Power EPG employers reported the occupations listed below as most difficult to hire in 2025. Roughly one-third (30%) reported that Management roles were the most difficult to fill.

- Management (30%)
- Technicians or Mechanical Support (21%)
- Engineers/Scientists (14%)

²⁷⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁷⁵ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Water Power EPG Workforce Demographics

A summary of the demographic characteristics of the Water Power EPG workforce and their comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce is provided in Table 3.7.

Category	Number of Workers	Share of Water Power EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	48,000	73%	71%	74%	53%
Women	18,000	27%	29%	26%	47%
Hispanic or Latino	12,000	17%	20%	19%	20%
Non-Hispanic or Latino	54,000	83%	80%	81%	80%
American Indian or Alaska Native	2,000	2%	2%	3%	1%
Asian	6,000	9%	8%	7%	7%
Black or African American	7,000	11%	9%	9%	13%
Middle Eastern or North African	900	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	900	1%	1%	1%	<1%
White	45,000	69%	71%	72%	75%
Two or More Races	2,000	4%	5%	4%	3%
Unknown Race	2,000	3%	3%	3%	n/a
Veterans	7,000	10%	9%	9%	5%
18 to 29	18,000	27%	28%	29%	22%
30 to 54	36,000	54%	55%	52%	55%
Over 54	13,000	19%	17%	18%	23%
Self-Identification of Disability	2,000	2%	2%	2%	5%
Formerly Incarcerated	2,000	3%	2%	2%	2%
Represented by a Union ²⁷⁶	9,000	13%	13%	12%	10%

Table 3.7. Water Power EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{277, xcvi}

²⁷⁶ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁷⁷ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Coal EPG

Coal EPG is the process in which coal, a solid sedimentary rock that is primarily composed of carbon, is burned to produce heat. That heat rotates a turbine connected to a generator to create electricity. Workers in this subsector are employed in:

- Equipment manufacturing
- Facility construction
- Wholesale trade of equipment and parts
- Utilities
- Professional and business services such as engineering, financial services, information management, technical consulting, and other support services

Coal EPG Employment by Industry

The Coal EPG subsector employed 63,300 workers in 2025, largely made up of those employed in the Utilities sector (43%), which had 27,200 workers in 2025, representing a 20% increase from 2024 (+4,600 workers). Professional and Business Services also employed a substantial portion, at 35% of the Coal EPG workforce (+22,300 workers), as detailed in Figure 3.18.

Coal EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Utilities	27,200	3.0%	20.2%
Professional & Business Services	22,300	-3.3%	-5.5%
Construction	6,300	-8.6%	-2.3%
Wholesale Trade	5,700	-3.5%	-4.3%
Manufacturing	1,000	-1.5%	-2.1%
Other Services ²⁷⁸	900	2.9%	1.3%
Coal EPG Overall	63,300	-1.2%	4.7%

Figure 3.18. Coal EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{278, 279}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁷⁸ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁷⁹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Coal EPG Hiring Difficulty

Wholesale Trade employers reported the greatest hiring difficulty in 2025, with more than three-quarters citing at least some level of difficulty. Conversely, almost half of employers in the Manufacturing industry reported that hiring was not at all difficult in 2025, with Figure 3.19 providing a full breakdown.

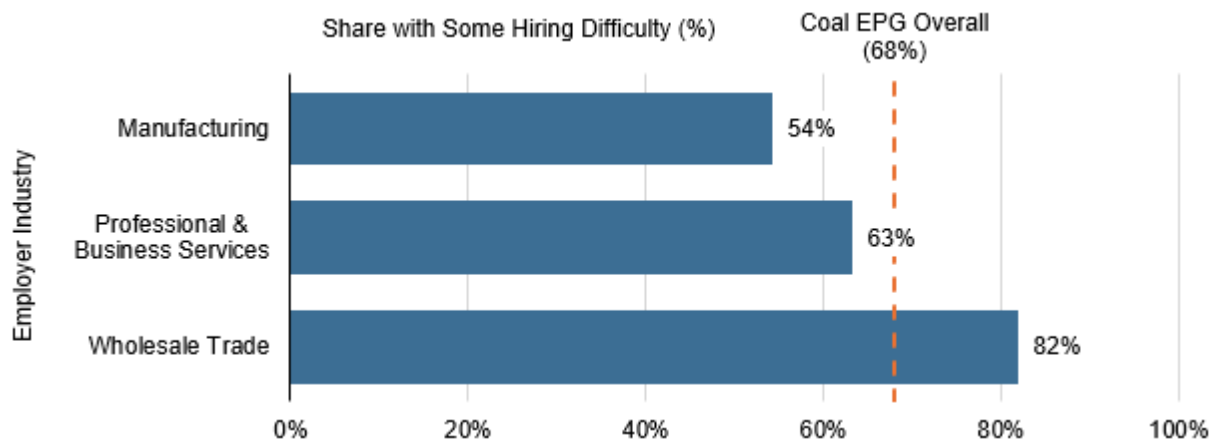


Figure 3.19. Percentage of Coal EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{280, 281}

Note: Differences across categories or over time have not been tested for statistical significance.

Coal EPG employers most frequently identified the occupations below as most difficult to hire. More than one third of Coal EPG employers found Management positions the hardest to hire for in 2025.

- Management (36%)
- Engineers and Scientists (19%)
- Technicians or Mechanical Support (15%)

²⁸⁰ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁸¹ Construction, Utilities, and Other Services industries not reported due to insufficient sample size.

Coal EPG Workforce Demographics

The demographic characteristics of the Coal EPG workforce, compared against the broader sector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 3.8.

Category	Number of Workers	Share of Coal EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	42,000	67%	71%	74%	53%
Women	21,000	33%	29%	26%	47%
Hispanic or Latino	10,000	15%	20%	19%	20%
Non-Hispanic or Latino	54,000	85%	80%	81%	80%
American Indian or Alaska Native	1,000	2%	2%	3%	1%
Asian	5,000	9%	8%	7%	7%
Black or African American	6,000	10%	9%	9%	13%
Middle Eastern or North African	900	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	1,000	2%	1%	1%	<1%
White	45,000	71%	71%	72%	75%
Two or More Races	2,000	3%	5%	4%	3%
Unknown Race	2,000	3%	3%	3%	n/a
Veterans	5,000	8%	9%	9%	5%
18 to 29	16,000	25%	28%	29%	22%
30 to 54	34,000	54%	55%	52%	55%
Over 54	13,000	20%	17%	18%	23%
Self-Identification of Disability	1,000	2%	2%	2%	5%
Formerly Incarcerated	1,000	2%	2%	2%	2%
Represented by a Union ²⁸²	9,000	14%	13%	12%	10%

Table 3.8. Coal EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{283, xcix}

²⁸² For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁸³ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Nuclear EPG

Nuclear EPG is electricity generated through the release of thermal energy from the fission of nuclear fuel in a reactor. Nuclear EPG employment includes workers involved in:

- Manufacturing reactor components and fuel assemblies
- Maintenance and inspection of nuclear systems
- Various services that support plant operations (e.g., engineering, cybersecurity, regulatory compliance)

Nuclear EPG Employment by Industry

The Nuclear EPG subsector employed 60,300 workers in 2025, largely in the Utilities industry, which had 70% of workforce (42,400 workers). The Utilities industry also added the greatest number of workers, at about 6% growth (+2,300 workers), between 2024 and 2025. The Professional and Business Services industry employed 19% (11,500 workers) of the total Nuclear EPG workforce in 2025, as Figure 3.20 illustrates.

Nuclear EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Utilities	42,400	4.5%	5.8%
Professional & Business Services	11,500	18.5%	0.7%
Wholesale Trade	2,400	-9.1%	-3.3%
Construction	2,100	-0.9%	1.6%
Manufacturing	1,700	-1.6%	-2.0%
Other Services ²⁸⁴	100	37.0%	30.3%
Nuclear EPG Overall	60,300	5.9%	4.0%

Figure 3.20. Nuclear EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{284, 285}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁸⁴ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁸⁵ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Nuclear EPG Hiring Difficulty

The Manufacturing and Wholesale Trade industries reported the highest levels of hiring difficulty within Nuclear EPG, with 62% of employers in each industry reporting at least some level of difficulty. Conversely, half of employers in the Professional and Business Services industry reported that hiring was not at all difficult, as summarized in Figure 3.21.

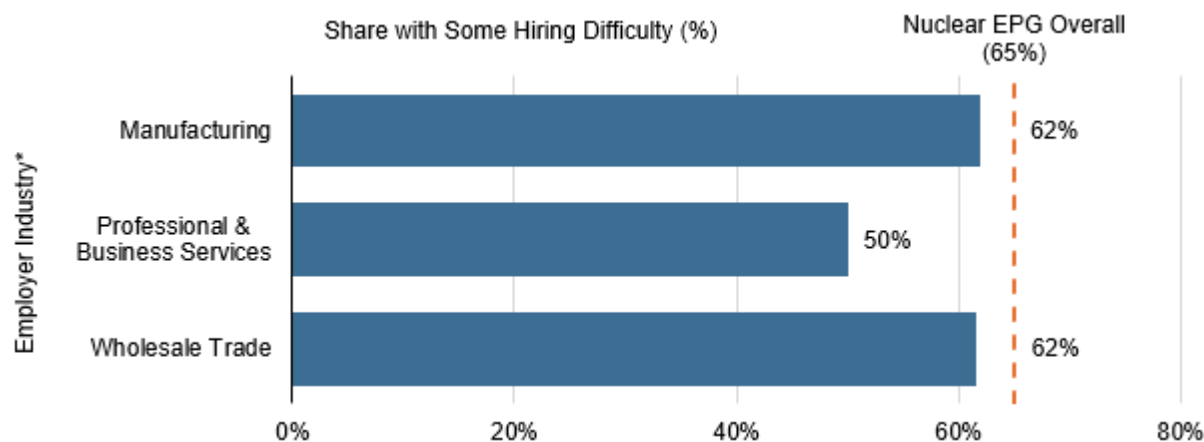


Figure 3.21. Percentage of Nuclear EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{286, 287}

Note: Differences across categories or over time have not been tested for statistical significance.

Nuclear EPG employers reported the occupations below as most difficult to hire in 2025. Nearly one-third of Nuclear EPG employers reported that Engineers and Scientists were the most difficult workers to hire find in 2025.

- Engineers and Scientists (29%)
- Technicians or Mechanical Support (17%)
- Management (15%)

²⁸⁶ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁸⁷ Construction, Utilities, and Other Services industries not reported due to insufficient sample size.

Nuclear EPG Workforce Demographics

The Nuclear EPG workforce demographic characteristics and comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce can be found in Table 3.9.

Category	Number of Workers	Share of Nuclear EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	41,000	69%	71%	74%	53%
Women	19,000	31%	29%	26%	47%
Hispanic or Latino	9,000	15%	20%	19%	20%
Non-Hispanic or Latino	51,000	85%	80%	81%	80%
American Indian or Alaska Native	2,000	3%	2%	3%	1%
Asian	5,000	8%	8%	7%	7%
Black or African American	6,000	11%	9%	9%	13%
Middle Eastern or North African	100	0%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	700	1%	1%	1%	<1%
White	41,000	69%	71%	72%	75%
Two or More Races	3,000	4%	5%	4%	3%
Unknown Race	2,000	3%	3%	3%	n/a
Veterans	5,000	8%	9%	9%	5%
18 to 29	14,000	23%	28%	29%	22%
30 to 54	35,000	58%	55%	52%	55%
Over 54	11,000	19%	17%	18%	23%
Self-Identification of Disability	900	1%	2%	2%	5%
Formerly Incarcerated	1,000	2%	2%	2%	2%
Represented by a Union ²⁸⁸	11,000	19%	13%	12%	10%

Table 3.9. Nuclear EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{289, c}

²⁸⁸ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁸⁹ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Combined Heat and Power EPG

Combined Heat and Power (CHP) EPG involves producing both heat and electricity from a single heat source. Energy inputs include coal, biomass, natural gas, nuclear fuel, or geothermal. In CHP EPG, workers include:

- Technicians operating on-site systems
- Manufacturers of CHP units
- Engineers designing integrated thermal-electric systems

Support roles cover:

- Information technology
- Maintenance
- Administrative services for system efficiency and compliance

CHP EPG Employment by Industry

The CHP EPG subsector employed 31,900 workers in 2025. More than half (18,400 workers) of the CHP EPG workforce worked in the Professional and Business Services industry. The Construction industry had 17% of the total CHP EPG workforce (5,300 workers), and 1,200 of those workers were added between 2024 and 2025—as Figure 3.22 details.

CHP EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Professional & Business Services	18,400	2.8%	-4.3%
Construction	5,300	27.8%	25.1%
Wholesale Trade	4,200	4.1%	0.3%
Manufacturing	2,200	11.6%	10.0%
Utilities	1,600	3.4%	-1.0%
Other Services ²⁹⁰	300	50.2%	46.1%
CHP EPG Overall	31,900	7.3%	1.6%

Figure 3.22. CHP EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{290, 291}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁹⁰ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁹¹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

CHP EPG Hiring Difficulty

Employer-reported hiring difficulty was generally similar across industries in the CHP EPG subsector. Still, employers in the Manufacturing and Professional and Business Services industries reported the most hiring difficulty in 2025, with 67% and 66%, respectively, reporting at least some difficulty, depicted in Figure 3.23.

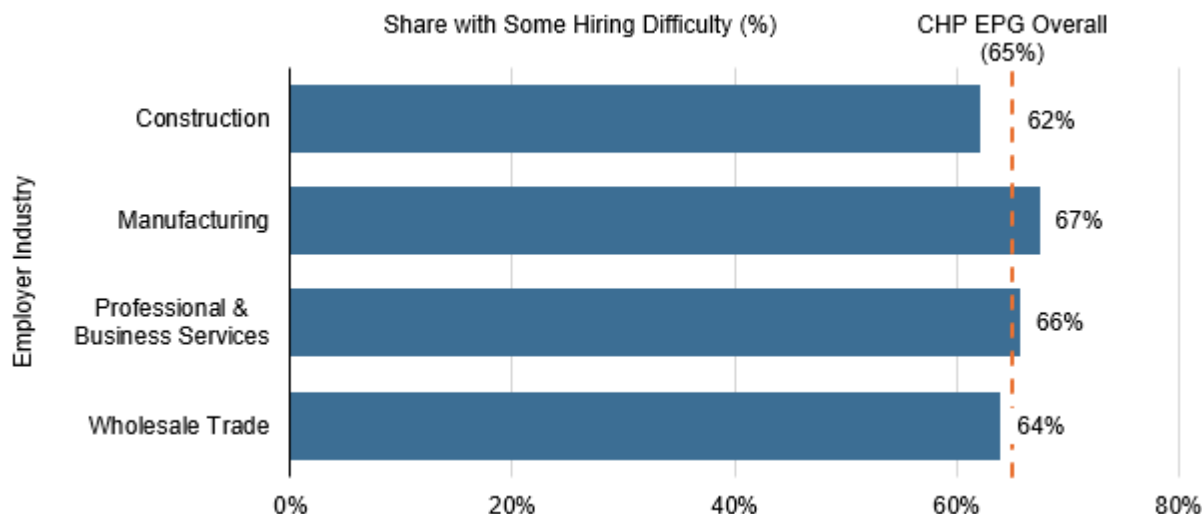


Figure 3.23. Percentage of CHP EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{292, 293}

Note: Differences across categories or over time have not been tested for statistical significance.

CHP EPG employers reported the following occupations as most difficult to hire. Management occupations were the most commonly listed (31%) occupation among CHP EPG employers.

- Management (31%)
- Engineers and Scientists (20%)
- Technicians or Mechanical Support (19%)

²⁹² The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁹³ Utilities and Other Services industries not reported due to insufficient sample size.

CHP EPG Workforce Demographics

Demographic characteristics of the CHP EPG workforce are compared with the broader sector, the energy economy workforce, and the U.S. overall workforce, as detailed in Table 3.10.

Category	Number of Workers	Share of CHP EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	23,000	73%	71%	74%	53%
Women	9,000	27%	29%	26%	47%
Hispanic or Latino	6,000	19%	20%	19%	20%
Non-Hispanic or Latino	26,000	81%	80%	81%	80%
American Indian or Alaska Native	400	1%	2%	3%	1%
Asian	3,000	8%	8%	7%	7%
Black or African American	2,000	7%	9%	9%	13%
Middle Eastern or North African	300	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	300	1%	1%	1%	<1%
White	23,000	73%	71%	72%	75%
Two or More Races	2,000	5%	5%	4%	3%
Unknown Race	1,000	4%	3%	3%	n/a
Veterans	4,000	12%	9%	9%	5%
18 to 29	9,000	27%	28%	29%	22%
30 to 54	16,000	49%	55%	52%	55%
Over 54	8,000	24%	17%	18%	23%
Self-Identification of Disability	700	2%	2%	2%	5%
Formerly Incarcerated	700	2%	2%	2%	2%
Represented by a Union ²⁹⁴	4,000	3%	13%	12%	10%

Table 3.10. CHP EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{295, ci}

²⁹⁴ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

²⁹⁵ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Bioenergy EPG

Bioenergy EPG is the process of using biomass—organic non-fossil material of biological origin—to produce electricity. In Bioenergy EPG, workers span multiple industries and include:

- Employees building biomass facilities
- Operators at utilities running generation systems
- Workers manufacturing boilers and feedstock equipment

Workers may also be engaged in the wholesale trade of equipment and parts, or professional and business services such as engineering, environmental consulting and other services supporting O&M.

Bioenergy EPG Employment by Industry

The Bioenergy EPG subsector employed 14,400 workers in 2025, largely within the Construction industry, at 42% of the total Bioenergy EPG workforce (6,100 workers). Manufacturing and Professional and Business Services grew by 22% and 21% between 2024 and 2025, respectively, representing 200 and 600 additional workers in each industry, as shown in Figure 3.24.

Bioenergy EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	6,100	11.5%	4.0%
Professional & Business Services	3,500	6.9%	21.0%
Utilities	2,300	13.8%	-2.2%
Manufacturing	1,300	22.2%	22.4%
Wholesale Trade	700	23.1%	9.4%
Other Services ²⁹⁶	400	6.2%	0.1%
Bioenergy EPG Overall	14,400	12.0%	8.2%

Figure 3.24. Bioenergy EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{296, 297}

Note: Differences across categories or over time have not been tested for statistical significance.

²⁹⁶ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁹⁷ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Bioenergy EPG Hiring Difficulty

Employer-reported hiring difficulty was largely aligned across industries in the Bioenergy EPG subsector. However, employers in the Manufacturing and Professional and Business Services industries reported the most hiring difficulty in 2025, with 67% and 66%, respectively, reporting at least some level of difficulty, as outlined in Figure 3.25.

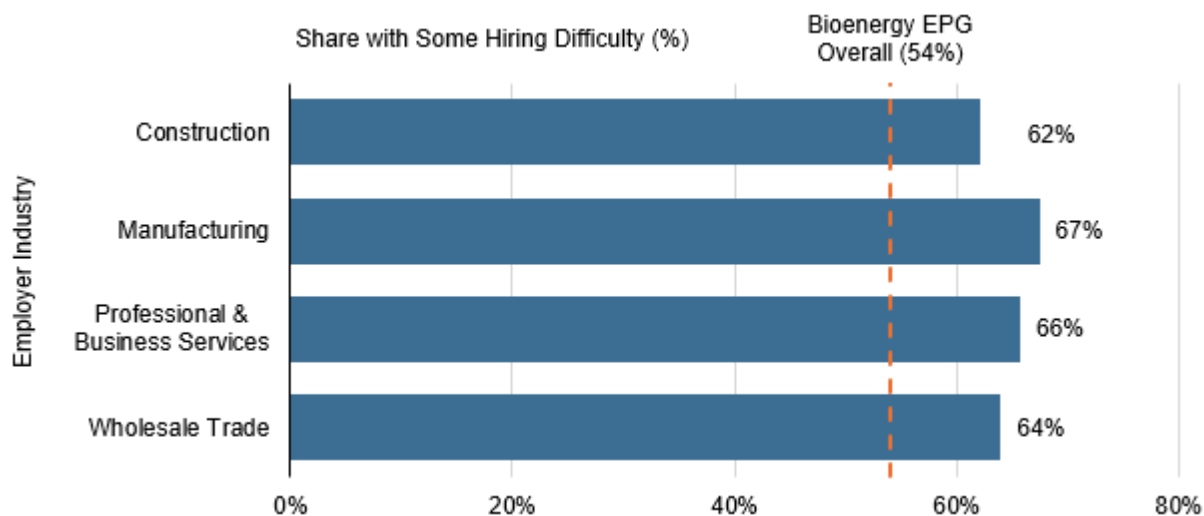


Figure 3.25. Percentage of Bioenergy EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{298, 299}

Note: Differences across categories or over time have not been tested for statistical significance.

Bioenergy EPG employers reported the following as the most difficult to hire occupations. In 2025, 31% of Bioenergy EPG employers reported that Management were the most challenging workers to hire.

- Management (31%)
- Technicians or Mechanical Support (19%)
- Engineers/Scientists (16%)

²⁹⁸ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

²⁹⁹ Utilities and Other Services industries not reported due to insufficient sample size.

Bioenergy EPG Workforce Demographics

A summary of demographic characteristics of the Bioenergy EPG workforce and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce is provided in Table 3.11.

Category	Number of Workers	Share of Bioenergy EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	10,000	70%	71%	74%	53%
Women	4,000	30%	29%	26%	47%
Hispanic or Latino	3,000	20%	20%	19%	20%
Non-Hispanic or Latino	12,000	80%	80%	81%	80%
American Indian or Alaska Native	300	2%	2%	3%	1%
Asian	1,000	8%	8%	7%	7%
Black or African American	2,000	10%	9%	9%	13%
Middle Eastern or North African	100	1%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	200	2%	1%	1%	<1%
White	10,000	71%	71%	72%	75%
Two or More Races	400	3%	5%	4%	3%
Unknown Race	500	3%	3%	3%	n/a
Veterans	2,000	11%	9%	9%	5%
18 to 29	4,000	27%	28%	29%	23%
30 to 54	7,000	52%	55%	52%	55%
Over 54	3,000	21%	17%	18%	23%
Self-Identification of Disability	400	2%	2%	2%	5%
Formerly Incarcerated	200	2%	2%	2%	2%
Represented by a Union ³⁰⁰	2,000	13%	13%	12%	10%

Table 3.11. Bioenergy EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{301, cii}

³⁰⁰ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁰¹ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Oil EPG

Oil EPG is the process of using petroleum—primarily refined products such as residual fuel oil and, in some cases, crude oil—to generate electricity. Workers in Oil EPG include:

- Plant operators managing oil-fired generators
- Technicians maintaining combustion systems
- Manufacturing workers supplying engine components
- Workers involved in professional and business services that support the operations of each of these industries, including engineering, information technology, and administrative services

Oil EPG Employment by Industry

There was nearly a 2% increase (+200 workers) in the Oil EPG subsector in 2025 compared to 2024. The Manufacturing (40%) and Professional and Business Services (38%) industries accounted for the greatest share of employment in the subsector. Professional and Business Services increased nearly 9% and added the greatest number of workers (+400) between 2024 and 2025. Wholesale Trade made up 17% of the Oil EPG workforce, detailed in Figure 3.26.

Oil EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Manufacturing	5,000	-4.7%	-5.3%
Professional & Business Services	4,800	14.5%	8.8%
Wholesale Trade	2,200	11.3%	3.6%
Utilities	500	21.6%	8.8%
Other Services ³⁰²	200	25.5%	19.7%
Oil EPG Overall	12,700	5.9%	2.0%

Figure 3.26. Oil EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{302, 303}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁰² USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁰³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Oil EPG Hiring Difficulty

Employers in the Wholesale Trade industry reported the greatest hiring difficulty within Oil EPG. As reflected in Figure 3.27, more than three-quarters (82%) of these employers reported hiring was at least somewhat difficult. More than half of Manufacturing (56%) and Professional and Business Services (56%) employers reported at least some hiring difficulty.

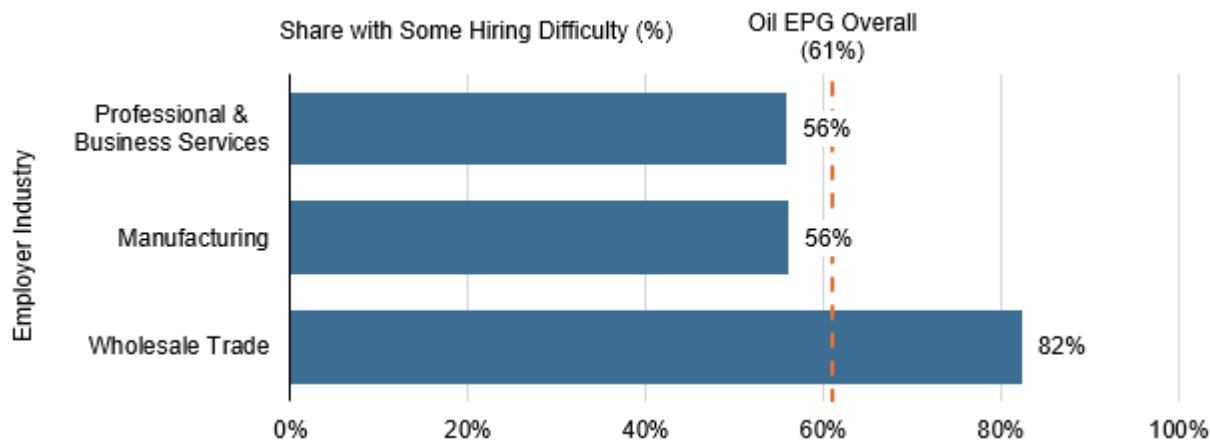


Figure 3.27. Percentage of Oil EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{304, 305}

Note: Differences across categories or over time have not been tested for statistical significance.

Oil EPG employers reported the occupations below as the most difficult to hire. More than one-in-five Oil EPG employers identified Management roles as the most difficult to hire in 2025.

- Management (22%)
- Engineers/Scientists (15%)
- Technicians or Mechanical Support (14%)

³⁰⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁰⁵ Utilities and Other Services industries not reported due to insufficient sample size.

Oil EPG Workforce Demographics

Oil EPG workforce demographics and subsector comparisons with the broader sector and the U.S. workforce are outlined in Table 3.12.

Category	Number of Workers	Share of Oil EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	9,000	74%	71%	74%	53%
Women	3,000	26%	29%	26%	47%
Hispanic or Latino	3,000	19%	20%	19%	20%
Non-Hispanic or Latino	10,000	81%	80%	81%	80%
American Indian or Alaska Native	200	2%	2%	3%	1%
Asian	1,000	9%	8%	7%	7%
Black or African American	1,000	10%	9%	9%	13%
Middle Eastern or North African	400	3%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	200	1%	1%	1%	<1%
White	9,000	69%	71%	72%	75%
Two or More Races	500	4%	5%	4%	3%
Unknown Race	300	2%	3%	3%	n/a
Veterans	1,000	10%	9%	9%	5%
18 to 29	4,000	29%	28%	29%	22%
30 to 54	7,000	53%	55%	52%	55%
Over 54	2,000	18%	17%	18%	23%
Self-Identification of Disability	300	3%	2%	2%	5%
Formerly Incarcerated	300	2%	2%	2%	2%
Represented by a Union ³⁰⁶	1,000	11%	13%	12%	10%

Table 3.12. Oil EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{307, ciii}

³⁰⁶ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁰⁷ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Geothermal EPG

Geothermal EPG uses heat from underground resources—including steam or hot fluids drawn from subsurface reservoirs—to generate electricity. Geothermal EPG employment includes workers involved in:

- Manufacturing geothermal generation equipment and component parts
- Construction and retrofitting of geothermal generation facilities
- Wholesale trade of geothermal generation equipment and related components
- Professional and business services that support geothermal power generation
- Repair and maintenance of geothermal generation equipment and facilities
- Utility workers employed at geothermal electric power generation facilities

Geothermal EPG Employment by Industry

There were 8,600 workers employed in the Geothermal EPG subsector in 2025. Most employment in the Geothermal EPG subsector was in the Construction industry (58%) and the Professional and Business Services industry (22%), which is reflected in Figure 3.28.

Geothermal EPG Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	5,000	2.5%	-6.0%
Professional & Business Services	1,900	-0.4%	-2.7%
Utilities	1,000	-18.3%	-1.5%
Wholesale Trade	400	19.1%	0.8%
Manufacturing	300	5.3%	4.7%
Other Services ³⁰⁸	<100	105.7%	88.5%
Geothermal EPG Overall	8,600	0.0%	-3.8%

Figure 3.28. Geothermal EPG Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{308, 309}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁰⁸ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁰⁹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Geothermal EPG Hiring Difficulty

Professional and Business Services employers within the Geothermal EPG subsector reported the greatest hiring difficulty, with 75% reporting that hiring was at least somewhat difficult, shown in Figure 3.29. Employers within the Manufacturing and Wholesale Trade industries of the Geothermal EPG subsector had less hiring difficulty, with 49% and 45% respectively reporting that hiring was not at all difficult.

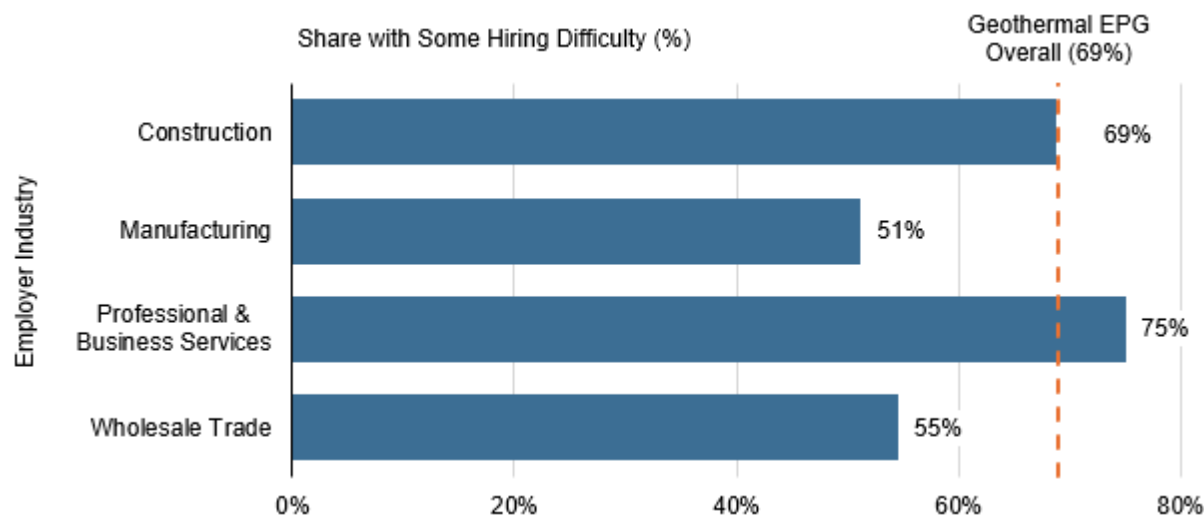


Figure 3.29. Percentage of Geothermal EPG Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{310, 311, 312}

Note: Differences across categories or over time have not been tested for statistical significance.

Geothermal EPG employers reported the following occupations as the most difficult to hire in 2025. Nearly one-third (31%) of Geothermal EPG employers reported Management occupations were most difficult to hire.

- Management (31%)
- Engineers/Scientists (12%)
- Technicians or Mechanical Support (9%)

³¹⁰ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³¹¹ Utilities and Other Services industries not reported due to insufficient sample size.

³¹² Geothermal EPG was categorized in the Other EPG subsector in 2022–2024. Therefore, reported hiring difficulty for those years represents data across the combined subsector of Geothermal and Other EPG.

Geothermal EPG Workforce Demographics

The demographic characteristics of the Geothermal EPG workforce, compared against the broader sector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 3.13.

Category	Number of Workers	Share of Geothermal EPG Workforce	Share of EPG Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	6,100	71%	71%	74%	53%
Women	2,500	29%	29%	26%	47%
Hispanic or Latino	1,500	17%	20%	19%	20%
Non-Hispanic or Latino	7,200	83%	80%	81%	80%
American Indian or Alaska Native	200	2%	2%	3%	1%
Asian	800	10%	8%	7%	7%
Black or African American	700	9%	9%	9%	13%
Middle Eastern or North African	<10	0%	1%	1%	n/a
Native Hawaiian or Other Pacific Islander	100	1%	1%	1%	<1%
White	6,000	71%	71%	72%	75%
Two or More Races	400	4%	5%	4%	3%
Unknown Race	200	3%	3%	3%	n/a
Veterans	600	7%	9%	9%	5%
18 to 29	3,000	30%	28%	29%	22%
30 to 54	5,000	55%	55%	52%	55%
Over 54	1,000	15%	17%	18%	23%
Self-Identification of Disability	200	3%	2%	2%	5%
Formerly Incarcerated	100	2%	2%	2%	2%
Represented by a Union ³¹³	400	5%	13%	12%	10%

Table 3.13. Geothermal EPG Workforce Demographics and Characteristics, 2025, USEER Survey^{314, civ}

³¹³ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³¹⁴ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

CHAPTER 4



Fuels

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Fuels

Employment in the Fuels sector³¹⁵ was highly concentrated in workers related to production, extraction, and refining of fuels, and related professional support services. Fuels are energy sources that are combusted or spent to generate electricity, produce heat, and power transportation.³¹⁶ This chapter focuses on sector jobs related to:

- Production, extraction, and refining of fuels
- Related professional support services

The USEER captures employment data for Fuels by subsectors, industries, occupations, and employer perspectives.

The Fuels subsectors, by employment size, include:

- Petroleum Fuels
- Natural Gas Fuels
- Coal Fuels
- Corn Ethanol Fuels
- Woody Biomass and Cellulosic Biofuels
- Nuclear Fuels
- Other Biofuels³¹⁷
- Other Fuels^{318, 319}

³¹⁵ Employment related to the transport or storage of fuels is included in the Transmission, Distribution, and Storage chapter, while employment related to the use of fuels in electricity generation to power buildings or vehicles is covered in the Electric Power Generation chapter.

³¹⁶ Employment related to the transport or storage of fuels is included in the Transmission, Distribution, and Storage chapter, while employment related to the use of fuels in electricity generation to power buildings or vehicles is covered in the Electric Power Generation chapter.

³¹⁷ Other Biofuels consists of other fuels derived directly from living matter and that are not captured in the categories listed.

³¹⁸ Other Fuels consists of any fuel that is not captured in the categories listed or is a category that is used when unable to split employment into a single fuel category where employees spend “more of their time.”

³¹⁹ See Appendix T for Other Fuels subchapter.

Quick Glance

In 2025, drilling efficiencies^{cv} combined with firm consolidation^{cvi} in the oil and gas sector led to an overall decrease in Fuels employment, which was down 3%, (–28,400 workers) from 2024. Most of these job losses occurred in Administrative and Sales occupations, as Figure 4.8 shows, which is consistent with companies eliminating overlapping positions during consolidation. The job losses were also concentrated on workers 55 and older.³²⁰ Employment increases in Mining and Extraction occupations (+6,900 workers) and Construction-related occupations (+7,600 workers) partially offset the employment declines in other occupations. These employment increases are consistent with increasing domestic production of crude oil and natural gas.^{cvii}

From BLS QCEW counts, the Fuels sector³²¹ paid an average annual salary 50% higher than the overall U.S. wage in 2025 (\$124,000 annually).³²² BLS QCEW counts also show that the Oil and Gas Extraction's³²³ average real wage increased 6% (+\$7,000 in 2025 dollars) in 2025 compared to 2022, while employment increased by only 0.8% (+900 workers) during the same time period. Further analysis of the Oil and Gas Extraction industry segment³²⁴ of Fuels using a different data source, the BLS OEWS,³²⁵ shows the wage increases were driven by a changing occupation mix. Employment gains were concentrated in higher-wage Business and Financial Operations jobs, with an average wage of \$121,000 annually, and Management Occupation jobs, averaging \$216,000 annually. These occupations require higher education, typically requiring bachelor's degrees at a minimum.

Fuels production is expected to remain high while increases in productivity and labor-saving efficiencies^{cviii} within oil and gas allow for higher output with fewer workers. As for other subsectors, the future employment outlook within Biofuels and Nuclear Fuels is positive, as Administration actions and recent federal regulations prioritize increasing domestic production and manufacturing capacity for these technologies.^{cix} Further discussion on Fuels employment can be found in the Labor Market Analysis and Future Outlook sections.

³²⁰ See Appendix P.

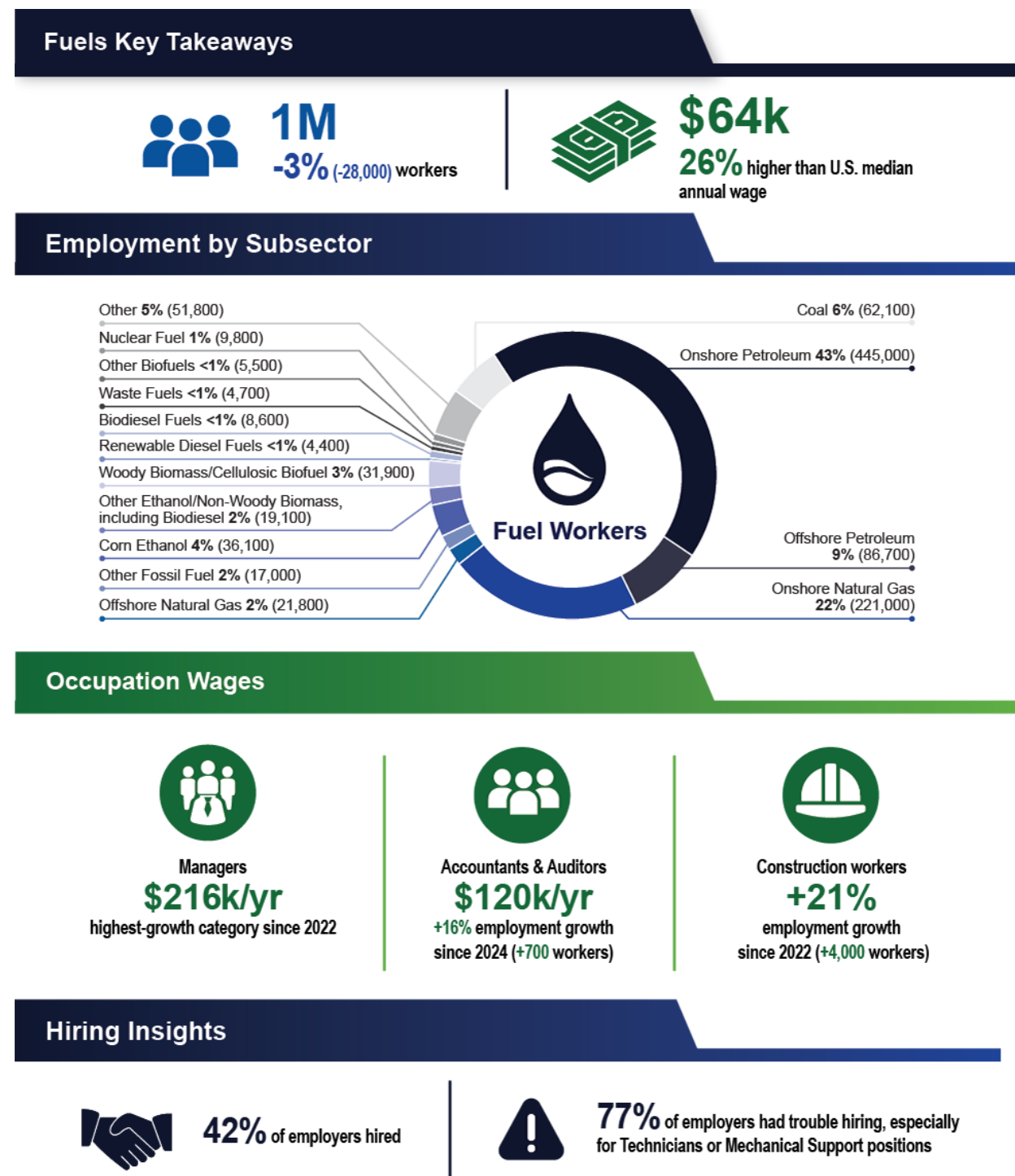
³²¹ The QCEW-defined Fuels sector is not the same as the USEER-defined Fuels sector. The QCEW-defined Fuels sector includes NAICS industry codes that are best aligned with the USEER definition of the Fuels sector. This includes the following energy-intensive NAICS industries: 211120, 211130, 212114, 212115, 213111, 213112, 213113, 237120, 324110, 333132, 335999, 423610, 423720, 424710, 424720, 457210.

³²² See Appendix V

³²³ Oil and Gas Extraction, as defined by NAICS 2111, corresponds to the Mining and Extraction industry segments of the Petroleum and Natural Gas subsectors within Fuels.

³²⁴ Oil and Gas Extraction, as defined by NAICS 2111, corresponds to the Mining and Extraction industry segments of the Petroleum and Natural Gas subsectors within Fuels.

³²⁵ The BLS OEWS provides occupation detail while the BLS QCEW does not. The BLS QCEW and BLS OEWS report different wage and employment estimates because the programs use different samples and methodologies. See the Introduction for a discussion of the strengths and imitations of the main data sources cited in this report.

Figure 4.1. Fuels Key Takeaways, 2025, USEER Survey³²⁶

³²⁶ The wage premium described here is the additional amount the median Fuels job pays relative to median U.S. pay. Energy sector median wages are derived from USEER survey data. U.S. median wages are from the May 2025 BLS OEWS estimates using all occupations and industries. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Fuels Chapter Contents

This Fuels chapter includes the following sections:

- **Labor Market Analysis** discusses trends on employment, wages, and hiring.
- **Employment by Subsector, Industry, and Occupation** provides data where employment is concentrated by subsector, industry, and broad occupation category.
- **Employer Perspectives on Hiring Difficulty** aggregates employer responses on perceived hiring difficulty, top reasons for hiring difficulty, and most difficult to hire occupations.
- **Workforce Demographics** presents a picture of the Fuels sector workforce.

Fuels Labor Market Analysis

Employment

USEER estimates show that employment in the Fuels sector fell 3% in 2025 from 2024 (–28,400 workers). This was driven by 3% declines in Petroleum Fuels (–16,300 workers) and 4% declines in Natural Gas Fuels (–9,800 workers), shown in Figure 4.6. Overall, Fuels employment in the Mining and Extraction industry segment was almost 6% lower (–25,000 workers), as shown in Figure 4.7.

These declines are consistent with consolidation activities among upstream oil and gas companies that began in 2023 as oil prices fell.^{cx} Mergers and acquisitions shifted more drilling activity to larger operators that focused on achieving efficiency.^{cxⁱ} Companies also reduced staffing by eliminating overlapping roles after mergers. Consistent with this trend, Figure 4.8 shows employment declines in Sales and Administrative occupations, where duplicate positions are more common.^{cxⁱⁱ}

In addition, oil and gas companies increased production while improving operating efficiency by using longer wells, standardized drilling methods, and more automated equipment. These changes reduced the number of rigs needed^{cxⁱⁱⁱ} even while drilled lateral length and oil production continued to increase.^{cx^{iv}}

Technology may be playing a key role in the workforce reductions of the oil and gas industry. Industry sources suggest that oil and gas companies are increasingly using AI, automation, and digital technologies to improve efficiency across drilling, maintenance, refining, transportation, and asset management.^{cx^v} As more technical work is automated or centralized through digital systems, companies can operate with fewer workers while reducing costs. Recent workforce reduction plans at multinational oil and gas companies indicate that digital transformation is one factor contributing to lower demand for workers in parts of the oil and gas industry.^{cx^{vi}}

Changes in the mix of occupations in the Fuels sector since 2022 are consistent with increased production and greater operational efficiency, as Figure 4.8 illustrates. Employment in the Mining and Extraction occupations remained largely flat in this period, while employment in Production and Manufacturing³²⁷ and Construction, Installation, or Repair occupations within the overall Fuels sector since 2022 increased.

Natural Gas Fuels employment declined even though natural gas production increased since 2022.^{328, cx^{vii}} One reason is that oil-directed wells co-produce more natural gas each year, increasing supply without requiring new gas-focused drilling operations.^{cx^{viii}}

³²⁷ Example job roles include heavy and tractor trailer truck drivers; labor freight, stock, and material movers; welders, cutters, solderers, brazers; and wellhead pumpers. See Figure 4.5.

³²⁸ Meanwhile, natural gas prices declined from a peak in mid-2022 and reached historic lows in 2023 and 2024 before increasing slightly in 2025.

Employment trends in the Biofuels subsector differed from those in the Petroleum and Natural Gas Fuels subsectors. Biofuels employment generally tracked production levels. Production increased across most biofuels after 2020 but slowed or declined between 2024 and 2025, as shown in Figure 4.2. Slower production growth was driven in part by weak profit margins and uncertainty surrounding changes to biofuels tax credit incentives.^{cxix}

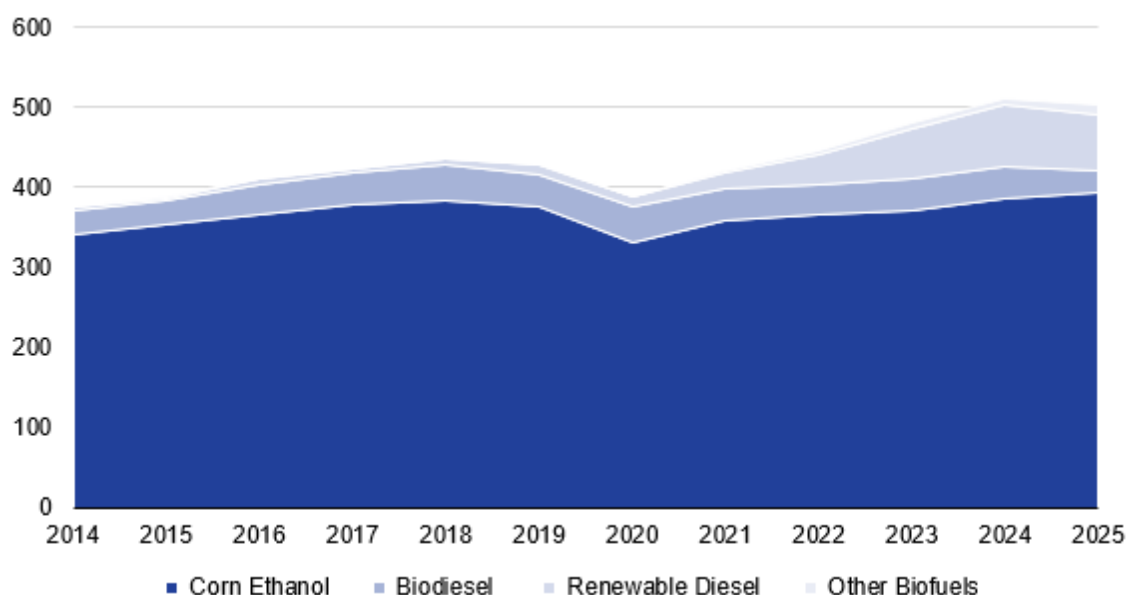


Figure 4.2. Biofuels Production, 2014-2025, Millions of Barrels

Source: EIA Monthly Energy Review^{cxix}

Meanwhile, employment in the Corn Ethanol, Renewable Diesel, and Biodiesel subsectors increased between 2022 and 2025.³²⁹ Renewable Diesel employment grew the most, increasing 16% (+600 workers), as production nearly doubled over the same period. However, employment in all three subsectors remained mostly flat from 2024 to 2025, consistent with slower or declining production in 2025.

This gap between production and agricultural employment may be due to how the sector operates^{cxix} data limitations.³³⁰ Oil and gas fuel prices and profitability concerns particularly affect newer biofuel technologies that still have high production costs. When future demand is less certain, companies may reduce investment in feedstock production and related hiring.^{cxii}

³²⁹ Employment for Renewable Diesel and Biodiesel not shown in Figure 4.6. Renewable Diesel and Biodiesel are included in the Other Biofuels subsector in Figure 4.6. See Appendix O for employment details of these biofuel sectors.

³³⁰ The USEER methodology for estimating agricultural and forestry employment in Biofuels uses BLS data sources that may undercount agricultural workers and agricultural establishments. This issue is widely recognized. The 2025 estimates may also have been affected by changes in immigration enforcement that could influence reported employment. More details on the estimation approach used for agricultural employment in Biofuels are provided in Appendix A.

Wages

BLS QCEW data suggest signs of weaker demand for workers in the Fuels sector³³¹ in 2025, as inflation-adjusted wage growth lagged overall U.S. wage growth,³³² a finding summarized in Figure 4.3. USEER survey data also show that many Fuels sector occupations continued to pay substantially more than the same occupations in other industries, as detailed in Figure 4.4.³³³ In addition, USEER survey data show employment in Production, Manufacturing, Construction, Installation, and Repair occupations has grown since 2022, suggesting continued demand for skilled, higher-wage workers even as overall sector employment declined. This is displayed in Figure 4.8.

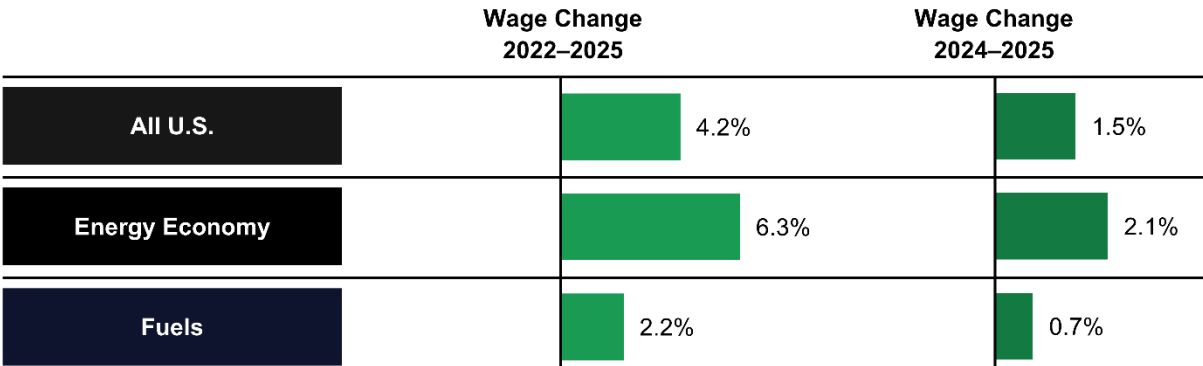


Figure 4.3. Fuels Sector Wages, 2022–2025 & 2024–2025, BLS QCEW ^{334, 335}

Wages and wage premiums for selected occupations in the Fuels sector using USEER wage data³³⁶—provided in Figure 4.4—shows that roles that are not specific to the Fuels sector still receive an energy sector wage premium. General Maintenance and Repair Workers and Heavy and Tractor-Trailer Truck Drivers earn 10% (+\$5,000 annually³³⁷) and 7% (+\$4,000 annually) more, respectively, per year working in the Fuels sector than those in the same occupations in the broader economy, as shown in Figure 4.4.

³³¹ The QCEW-defined Fuels sector is different from the USEER-defined Fuels sector due to BLS QCEW only reporting data by NAICS codes. The QCEW-defined Fuels sector includes only energy sector-intensive NAICS codes that align with USEER-defined NAICS codes assigned to the Fuels sector. *See* Appendix U for details on which NAICS codes are included.

³³² Inflation-adjusted wages grew about 4% in the U.S. workforce from 2022 to 2025.

³³³ As previously mentioned, the wage premium can also compensate for increased exposure to dangerous or physically strenuous working conditions.

³³⁴ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. Wages are reported in nominal terms. Data is from the BLS QCEW.

³³⁵ Nominal Q4 average weekly wages were converted to fourth-quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. Unless otherwise noted, sectors are defined using energy-intensive NAICS from QCEW that touch sector categories. Employment sizes are usually different than measured by USEER as NAICS boundaries are different from USEER sector boundaries.

³³⁶ USEER wages and wage premiums are different from BLS wages for several reasons. USEER reports median wages due to their wage estimation methodology while average wages are reported for BLS sources due to aggregation reasons. In addition, median wages are typically substantially lower than average wages in the same sample due to high income earners pulling the average higher. *See* Introduction section for discussion of the strengths and limitations of data sources in this report, and the impacts of comparing median and average wages.

³³⁷ The wage premium is not the same as the difference in the rounded sector wage and rounded overall U.S. wage shown in Figure 4.4 because it is calculated by using unrounded values and then rounding.

Occupation Category	Occupation Name	Wage Premium	U.S. Annual Median Wage	Fuels Annual Median Wage
Construction, Installation, or Repair Positions	Electricians	 1%	\$63,000	\$64,000
	First-Line Supervisors of Construction Trades and Extraction Workers	 1%	\$80,000	\$80,000
	Helpers--Installation, Maintenance, and Repair Workers	 4%	\$40,000	\$41,000
	Industrial Machinery Mechanics	 1%	\$65,000	\$65,000
	Maintenance and Repair Workers, General	 10%	\$50,000	\$54,000
Management/ Professional Positions	Cost Estimators	 1%	\$79,000	\$79,000
	Farmers, Ranchers, and Other Agricultural Managers	 3%	\$90,000	\$92,000
	Mechanical Engineers	 1%	\$104,000	\$105,000
	Paralegals and Legal Assistants	 2%	\$63,000	\$64,000
	Project Management Specialists	 1%	\$102,000	\$104,000
Production/ Manufacturing Positions	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	 5%	\$46,000	\$48,000
	Engine and Other Machine Assemblers	 4%	\$54,000	\$56,000
	Heavy and Tractor-Trailer Truck Drivers	 7%	\$59,000	\$63,000
	Laborers and Freight, Stock, and Material Movers, Hand	 3%	\$40,000	\$42,000
	Welders, Cutters, Solderers, and Brazers	 1%	\$54,000	\$54,000

Figure 4.4. Fuels Wages by Priority Occupations, 2025, USEER Survey³³⁸

³³⁸ USEER wage data provides the best summary of occupation wages for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in Occupations Affected Wages in the Oil and Gas Extraction Industry Segment^{339, cxxiii}

Changes in the mix of occupations can affect the sector's average wage even if pay within individual occupations changes little, as pay across occupations can vary within a sector. Analyzing changes in occupation composition can help determine whether wage trends were driven primarily by pay increases within occupations or by shifts toward higher-paying or lower-paying occupations.

Additional analysis of occupation employment changes using BLS OEWS data is available for one industry segment in Fuels, Oil and Gas Extraction, as summarized in Figure 4.5. This OEWS-based sector corresponds to the Mining and Extraction industry segment within the USEER Natural Gas and Petroleum Fuels subsectors.³⁴⁰

In the BLS OEWS Oil and Gas Extraction industry segment, among major occupation categories with increasing employment from 2022 to 2025, employment increased by 15,600 workers, as shown in Figure 4.5. Meanwhile, employment decreased by 3,300 workers for major occupation categories with decreasing employment from 2022 to 2025, resulting in a net employment increase of 12,300 between 2022 and 2025 for the Oil and Gas Extraction industry segment. The net employment change remained flat from 2024 to 2025, as shown in Figure 4.5. Average inflation-adjusted wages increased by 6% (\$116,000 to \$123,000 annually) between 2022 and 2025 and 4% between 2024 and 2025 (\$118,000 to \$123,000 annually).^{341, 342}

The major occupation groups adding employment from 2022 to 2025 had substantially higher wages than occupations with declining employment. The average hourly wage of occupations with employment increases between 2022 and 2025 was \$65 (\$135,000 annually) and the average hourly wage of occupations with employment declines was \$42 (\$86,000 annually).³⁴³ Results are similar for the 2024 and 2025 period.³⁴⁴

As shown in Figure 4.5, the higher wage for growing occupations was driven by a relative increase in employment in the higher-wage Business and Financial Operations, increasing 23% (+2,300 workers), with a \$58 average hourly wage (\$121,000 annually), and Management Occupation categories, increasing 27% (+3,900 workers), with a \$104 average hourly wage (\$216,000 annually). These occupations generally require at least a bachelor's degree.

Within the Management occupation category, the detailed occupation categories that gained the most employment since 2022 were General and Operations Managers (+39% employment

³³⁹ Oil and Gas Extraction, as defined by NAICS 2111, corresponds to the Mining and Extraction industry segments of the Petroleum and Natural Gas subsectors within Fuels.

³⁴⁰ Oil and Gas Extraction is defined by NAICS 2111, corresponding to the Mining and Extraction industry segments of the Petroleum and Natural Gas subsectors within Fuels.

³⁴¹ OEWS estimates may differ from QCEW counts because the two programs use different data sources, methods, and definitions. See the Introduction for a discussion of the strengths and limitations of each data source.

³⁴² Wage results not shown in figure. See Appendix W for more details.

³⁴³ Unless otherwise stated, all wages and salaries are reported in nominal 2025 dollars.

³⁴⁴ Wage estimates of declining and increasing occupations not shown in table.

growth, +1,900 workers), with a \$109 average hourly wage (\$227,000 annually), All Other Managers (+100% employment growth, +1,000 workers) with a \$95 average hourly wage (\$198,000 annually), and Financial Managers (+44% employment growth, +700 workers) with a \$109 average hourly wage (\$227,000 annually).³⁴⁵

Within the Business and Financial Operations occupation category, the occupations that increased the most in employment were Business Operations Specialists, doubling in employment (+700 workers) with a \$57 average hourly wage (\$119,000 annually), and Accountants and Auditors, increasing 16% (+700 workers), with a \$58 average hourly wage (\$120,000 annually).³⁴⁶

Meanwhile, the lower wage for declining occupations was driven by employment declines in the lower-wage Production occupation category, with a 37% employment decrease (−2,500 workers) and a \$46 average hourly wage (\$96,000 annually), as shown in Figure 4.5.

Hiring Difficulty

In 2025, 77% of Fuels establishments that hired in the preceding year reported difficulty hiring. Within the Fuels subsectors, Other Biofuels³⁴⁷ establishments reported the greatest hiring difficulty (87%). Meanwhile, the two other biofuel subsectors, Corn Ethanol Fuels and Woody Biomass and Cellulosic Biofuels, reported substantially lower hiring difficulty (56% and 50%, respectively). The substantially greater hiring difficulty in Other Biofuels is consistent with its stronger employment growth compared with other Fuels subsectors, indicating high labor demand.

³⁴⁵ Not shown in Figure 4.6. See Appendix W for occupation details.

³⁴⁶ Not shown in Figure 4.6. See Appendix W for occupation details.

³⁴⁷ Includes Renewable Diesel and Biodiesel Fuels.

Occupation Title	Employment 2025	Annual Median Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction and Extraction Occupations	23,600	\$79,000	2,800	-3,300
Installation, Maintenance, and Repair Occupations	8,200	\$89,000	1,500	-400
Production Occupations	4,200	\$96,000	-2,500	-300
Architecture and Engineering Occupations	12,000	\$174,000	800	-200
Computer and Mathematical Occupations	3,600	\$135,000	700	-200
Building and Grounds Cleaning and Maintenance Occupations	<100	\$44,000	-200	-20
Arts, Design, Entertainment, Sports, and Media Occupations	100	\$98,000	0	-20
Protective Service Occupations	<100	\$92,000	-10	-10
Sales and Related Occupations	1,700	\$148,000	100	100
Office and Administrative Support Occupations	8,200	\$60,000	-700	300
Legal Occupations	1,400	\$167,000	200	300
Life, Physical, and Social Science Occupations	5,100	\$162,000	1,000	400
Transportation and Material Moving Occupations	15,100	\$77,000	2,300	800
Management Occupations	18,400	\$216,000	3,900	1,200
Business and Financial Operations Occupations	12,000	\$121,000	2,300	1,400
Total	114,000			

Figure 4.5. Employment Change by Major Occupation Category for Oil and Gas Extraction Sector, 2022–2025 & 2024–2025, BLS OEWS^{cxiv}

Note: Average annual wage assumes 2,080 hours of work per year.

Fuels Employment

Employment by Subsector

In 2025, the Fuels sector employed 1,025,900 workers.³⁴⁸ Employment in the overall Fuels sector declined from 2024 to 2025 but grew between 2022 and 2025. The 2025 decline was mostly from the largest Fuels subsector, Petroleum Fuels. Other subsectors that experienced employment declines were Coal Fuels, Natural Gas Fuels, Woody Biomass and Cellulosic Fuels, and Nuclear Fuels, as shown in Figure 4.6.

Fuels Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Petroleum Fuels	532,000	2.0%	-3.0%
Natural Gas Fuels	243,000	-7.6%	-3.9%
Other Fuels ³⁴⁹	68,700	8.0%	2.4%
Coal Fuels	62,100	-4.3%	-3.6%
Other Biofuels ³⁵⁰	42,300	5.3%	0.8%
Corn Ethanol Fuels	36,100	2.8%	0.1%
Woody Biomass & Cellulosic Biofuels	31,900	-6.6%	-5.5%
Nuclear Fuels	9,800	5.7%	-1.7%
Fuels Overall	1,026,000	-0.6%	-2.7%

Figure 4.6. Fuels Employment by Subsector, 2022–2025 & 2024–2025^{349, 350}

Note: The only employment change that is statistically significant at the 95% confidence level is Natural Gas 2022 to 2025.

³⁴⁸ All figures presented in this report are rounded to the nearest hundred. As a result, totals may not match the sum of individual components due to rounding. For more information about this report's rounding conventions, see the Introduction.

³⁴⁹ Employment in the Other Fuels subsector consists of workers who engage with any fuel that is not captured in the subsectors otherwise listed. This is also the subsector used when unable to split employment into a single subsector where employees spend “more of their time.”

³⁵⁰ Other Biofuels includes Renewable Diesel and Biodiesel. See Appendix O for employment details of these subsectors.

Employment by Industry

Employment in the Mining and Extraction industry declined nearly 6% (-24,900 workers), as shown in Figure 4.7.³⁵¹ This decline is consistent with the consolidation activities of companies in the upstream oil and natural gas sectors.

Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	405,000	-5.8% 	-5.8% 
Manufacturing	239,000	4.1% 	-0.5% 
Professional & Business Services	178,100	2.2% 	-0.8% 
Wholesale Trade	144,000	3.0% 	0.2% 
Agriculture & Forestry	35,000	-5.1% 	-3.9% 
Construction	23,500	20.7% 	2.6% 
Other Services ³⁵²	1,600	-17.8% 	-18.5% 
Fuels Overall	1,026,000	-0.6% 	-2.7% 

Figure 4.7. Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{352, 353}

Note: Differences across categories and over time have not been tested for statistical significance.

³⁵¹ These changes have not been tested for statistical significance and should be interpreted descriptively.

³⁵² USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁵³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Fuels Employment by Occupation Category

Jobs in Management and Professional as well as Production and Manufacturing occupations followed overall employment trends, as depicted in Figure 4.8. The occupations saw employment increase in 2025 compared to 2022, yet employment decreased in 2025 compared to 2024.

The employment declines from 2024 to 2025 were concentrated in two occupations: Administrative, which was down 19% (–35,400 workers), and Sales, which declined 8% (–9,900 workers). Employment in Mining and Extraction occupations increased 4% (+6,900 workers) and Construction, Installation, or Repair occupations increased 5.3% (+7,600 workers). Overall, Fuels employment decreased (–2.7%, –28,000 workers) from 2024 to 2025.

The Other Occupations category, which consists of a large share of agricultural activities found in the biofuels sectors, increased its portion of the Fuels workforce from 2024 to 2025 by 20% (+13,000 workers). Mining and Extraction occupations make up the greatest share of occupations within Petroleum Fuels, Natural Gas Fuels, and Coal Fuels. Management occupations account for the greatest share of occupations within Other Biofuels and Nuclear Fuels. More detailed information can be found in Appendix O.

Fuels Occupational Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Administrative Occupations	148,000	-22.6% 	-19.3% 
Construction, Installation, or Repair Occupations	152,000	10.0% 	5.3% 
Management/ Professional Occupations	191,000	3.6% 	-2.4% 
Mining & Extraction Occupations	182,000	-0.1% 	4.0% 
Production/ Manufacturing Occupations	175,000	8.0% 	-3.3% 
Sales Occupations	103,000	-12.5% 	-8.7% 
Other Occupations	77,000	32.9% 	20.4% 
Fuels Overall	1,026,000	-0.6% 	-2.7% 

Figure 4.8. Fuels Employment by Occupation Category, 2022–2025 & 2024–2025, USEER Survey^{354, 355}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁵⁴ The USEER survey provides the best summary of occupation employment for USEER energy sector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. *See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.*

³⁵⁵ Occupation categories are distinct from industry categories. The same occupations can appear in multiple industries, and each industry typically employs workers across multiple occupations. For example, the Mining and Extraction industry can employ administrative occupations, along with Mining and Extraction occupations. Meanwhile, Mining and Extraction occupations can be found within establishments in Manufacturing industries.

Fuels Employer Perspectives on Hiring Difficulty

The USEER surveys employers on their perspectives on hiring difficulties across industries and subsectors, as well as the primary reasons for hiring difficulties and the occupations most difficult to hire for.

Hiring Difficulty by Subsector

More than three-quarters of employers across the Fuels sector reported at least some level of hiring difficulty. The exceptions were the Nuclear Fuels, Corn Ethanol Fuels, and Woody Biomass and Cellulosic Biofuels employers, which experienced relatively low levels of hiring difficulty, as shown in Figure 4.9.

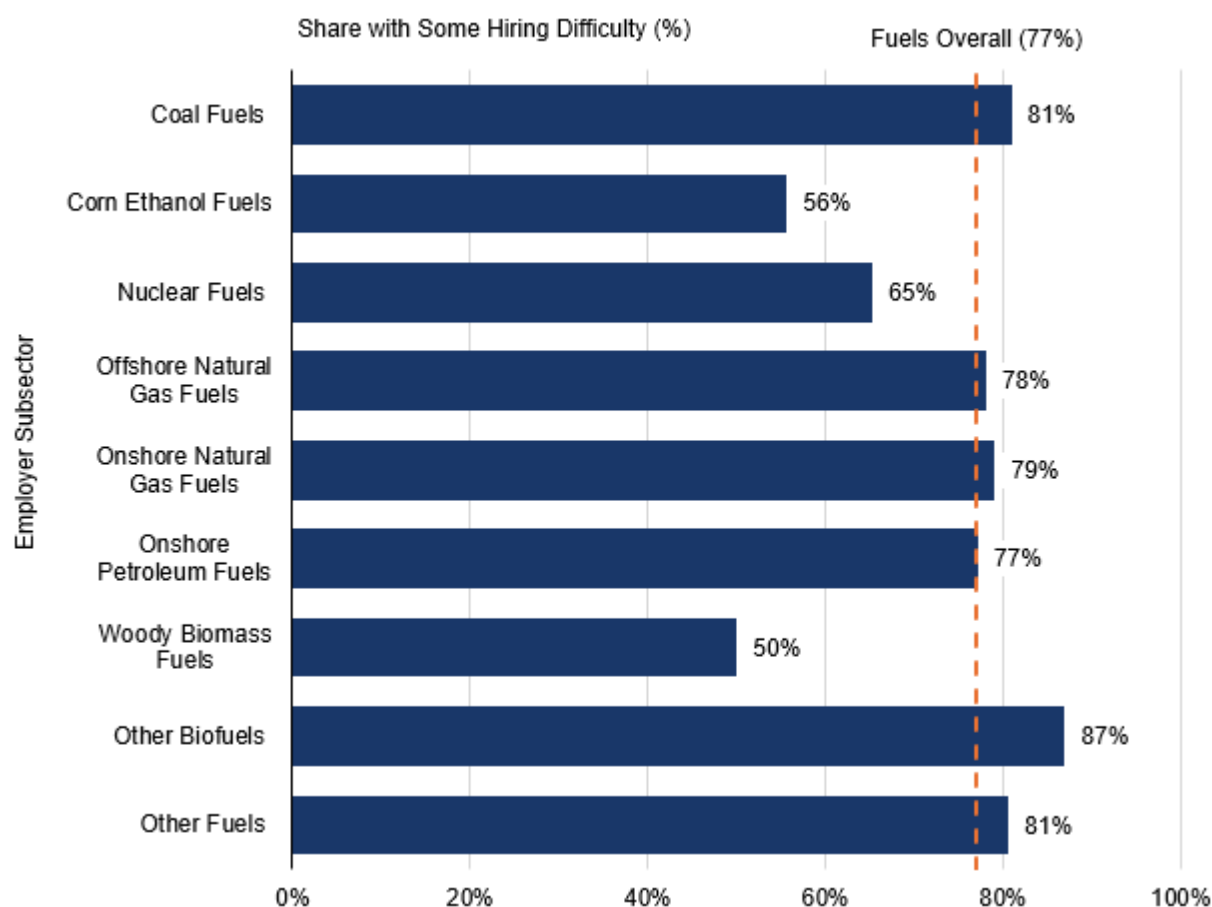


Figure 4.9. Percentage of Fuels Employers Reporting at Least Some Hiring Difficulty by Subsector, 2025, USEER Survey³⁵⁶

Note: Differences across categories or over time have not been tested for statistical significance.

³⁵⁶ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Hiring Difficulty by Industry

Among these establishments, Mining and Extraction, Other Services, and Wholesale Trade industries reported the greatest hiring difficulty. Overall, 77% of Fuels employers reported at least some hiring difficulty, with all subsectors broken down in, Figure 4.10 shows.

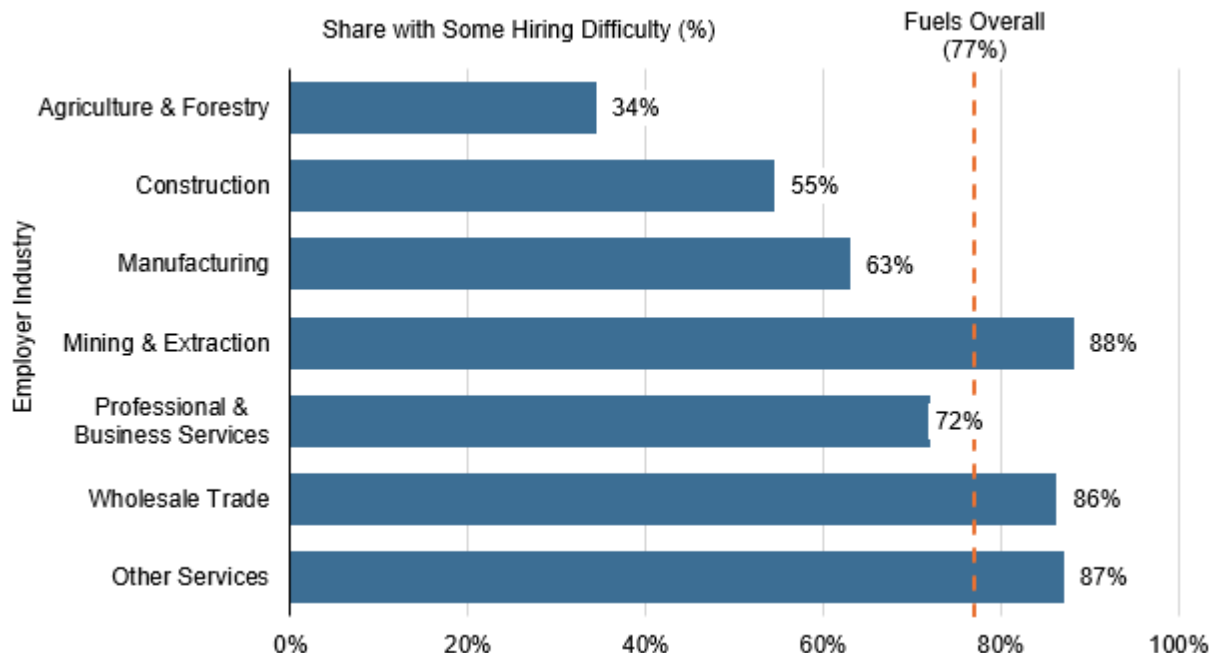


Figure 4.10. Percentage of Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{357, 358}

Note: Differences across categories or over time have not been tested for statistical significance.

Most Common Reasons for Hiring Difficulty

Employers across most industries—including Mining and Extraction, Manufacturing, Construction, Wholesale Trade, Professional and Business Services, and Other Services—indicated that lack of experience, training, or technical skills was the most common reason for hiring difficulty. The most common reason for hiring difficulty for Agriculture and Forestry employers was competition or a small applicant pool, displayed in Table 4.1. Respondents could select up to two most significant reasons for hiring difficulty, and the table presents the three reasons selected most often. “Most common” means the reason was selected by the largest share of respondents, whether it was their first or second reason.

³⁵⁷ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁵⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Industry	Percent of Employers and Reason for Hiring Difficulty
Agriculture & Forestry	67% Competition / Small Applicant Pool
	33% Lack of Experience, Training, or Technical Skills
	33% Difficulty Finding Industry-Specific Knowledge, Skills, and Interests
Mining & Extraction	53% Lack of Experience, Training, or Technical Skills
	33% Competition / Small Applicant Pool
	33% Insufficient Qualifications (Certifications or Education)
Manufacturing	40% Lack of Experience, Training, or Technical Skills
	38% Insufficient Qualifications (Certifications or Education)
	24% Competition / Small Applicant Pool
Construction	67% Lack of Experience, Training, or Technical Skills
	40% Competition / Small Applicant Pool
	20% Insufficient Qualifications (Certifications or Education)
Wholesale Trade	46% Lack of Experience, Training, or Technical Skills
	30% Insufficient Qualifications (Certifications or Education)
	17% Insufficient Non-Technical Skills (Work Ethic, Dependability, Critical Thinking)
Professional & Business Services	43% Lack of Experience, Training, or Technical Skills
	23% Insufficient Non-Technical Skills (Work Ethic, Dependability, Critical Thinking)
	20% Insufficient Qualifications (Certifications or Education)
Other Services ³⁵⁹	44% Lack of Experience, Training, or Technical Skills
	28% Insufficient Qualifications (Certifications or Education)
	20% Competition / Small Applicant Pool
Fuels Sector Overall	44% Lack of Experience, Training, or Technical Skills
	29% Insufficient Qualifications (Certifications or Education)
	23% Competition / Small Applicant Pool

Table 4.1. Fuels Overall Employers' Reasons for Hiring Difficulty, 2025, USEER Survey³⁶⁰

³⁵⁹ Multiple responses permitted; totals may not add up to 100%.

³⁶⁰ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Most Difficult to Hire Occupations

Employers identified several occupations as the most difficult to fill, with variation by industry. Within the Agriculture and Forestry industry, more than two-thirds of employers reported Technicians or Mechanical Support occupations as the most difficult to hire. Other occupations that employers reported as most difficult to hire included Engineers and Scientists, Management, and Drivers and Dispatchers. Respondents could select up to two occupations, and Table 4.2 presents the three selected most often for each industry. “Most difficult” means the occupation was selected by the largest share of respondents, whether it was their first or second occupation.

Industry	Percent of Employers and Most Difficult to Hire Occupation	
Agriculture & Forestry	36%	Drivers / Dispatchers
	67%	Management (Directors, Supervisors, Vice Presidents)
	67%	Technicians or Mechanical Support
Construction	27%	Installation Workers
	20%	Management (Directors, Supervisors, Vice Presidents)
	27%	Technicians or Mechanical Support
Manufacturing	14%	Engineers / Scientists
	21%	Management (Directors, Supervisors, Vice Presidents)
	14%	Technicians or Mechanical Support
Mining & Extraction	20%	Engineers / Scientists
	13%	Finance Positions or Accountants
	13%	Installation Workers
Professional & Business Services	31%	Engineers / Scientists
	20%	Management (Directors, Supervisors, Vice Presidents)
	20%	Technicians or Mechanical Support
Wholesale Trade	28%	Drivers / Dispatchers
	20%	Management (Directors, Supervisors, Vice Presidents)
	20%	Technicians or Mechanical Support
Other Services ³⁶¹	36%	Drivers / Dispatchers
	16%	Management (Directors, Supervisors, Vice Presidents)
	24%	Technicians or Mechanical Support
Fuels Sector Overall	15%	Drivers / Dispatchers
	19%	Management (Directors, Supervisors, Vice Presidents)
	20%	Technicians or Mechanical Support

Table 4.2. Occupations Most Difficult to Hire for Fuels Employers, 2025, USEER Survey^{362, 363}

³⁶¹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

³⁶² The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁶³ Multiple responses permitted; totals may not add up to 100%.

Fuels Workforce Demographics

A summary of Fuels workforce demographics and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce is provided in Table 4.3.

Categories	Number of Workers	Share of Fuels Workforce	Share of Energy Workforce	Share of U.S. Workforce
Men	760,000	74%	74%	53%
Women	266,000	26%	26%	47%
Hispanic or Latino	151,000	15%	19%	20%
Non-Hispanic or Latino	875,000	85%	81%	80%
American Indian or Alaska Native	20,000	2%	3%	1%
Asian	63,000	6%	7%	7%
Black or African American	94,000	9%	9%	13%
Middle Eastern or North African	3,000	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	11,000	1%	1%	<1%
White	781,000	76%	72%	75%
Two or More Races	43,000	4%	4%	3%
Unknown Race	13,000	1%	3%	n/a
Veterans	103,000	10%	9%	5%
18 to 29	320,000	31%	29%	22%
30 to 54	513,000	50%	52%	55%
Over 54	193,000	19%	18%	23%
Self-Identification of Disability	16,000	2%	2%	5%
Formerly Incarcerated	17,000	2%	2%	2%
Represented by a Union ³⁶⁴	75,000	7%	12%	10%

Table 4.3. Fuels Workforce Demographics and Characteristics, 2025, USEER Survey^{365, cxxv}

³⁶⁴ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁶⁵ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Petroleum Fuels

Petroleum Fuels are products made from crude oil to be used as fuel, such as gasoline, distillate, jet fuel, and other products made during oil extraction and refining.³⁶⁶ Jobs in the Petroleum Fuels subsector include work in:

- Onshore and offshore oil drilling and extraction
- Oil refining
- Manufacturing extraction equipment
- Sale of petroleum
- Repairing and maintaining drilling and extraction equipment
- Support roles such as engineering, research and development, and finance

Petroleum Fuels Employment by Industry

Petroleum Fuels employed 532,100 workers in 2025. Employment in Mining and Extraction declined 6% (–15,000 workers) between 2024 and 2025 but increased by 1% (+3,300 workers) between 2022 and 2025, as reflected in Figure 4.11. Construction employment increased by nearly 3% (+600 workers) between 2024 and 2025 but increased 21% (+4,000 workers) from 2022 to 2025.

Petroleum Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	231,000	1.4%	-6.2%
Manufacturing	145,000	2.5%	-0.7%
Professional & Business Services	69,200	-2.7%	-1.8%
Wholesale Trade	62,600	2.8%	1.3%
Construction	23,500	20.7%	2.6%
Other Services ³⁶⁷	1,100	-18.4%	-18.1%
Petroleum Fuels Overall	532,000	2.0%	-3.0%

Figure 4.11. Total Petroleum Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{367, 368}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁶⁶ For more information on energy subsector definitions, see Appendix A and this report's Glossary.

³⁶⁷ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁶⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Employment in the Petroleum Fuels subsector is categorized into two types: onshore and offshore. Most workers in this subsector, 84%, worked in Onshore Petroleum Fuels (445,000 workers). Many of these workers were in the Mining and Extraction industry, which employed 198,000 workers. Mining and Extraction employment shrank by 6% (–13,000 workers) in 2025 compared to 2024 but increased 2% (+4,000 workers) 2022–2025, as shown in Figure 4.12.

Onshore Petroleum Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	198,000	2.0%	-6.2%
Manufacturing	104,000	2.1%	-0.7%
Wholesale Trade	60,800	2.7%	1.3%
Professional & Business Services	59,300	-3.1%	-1.7%
Construction	23,500	20.7%	2.6%
Other Services ³⁶⁹	400	-19.2%	-18.1%
Onshore Petroleum Fuels Overall	445,000	2.2%	-3.0%

Figure 4.12. Onshore Petroleum Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{369, 370}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁶⁹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁷⁰ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Offshore Petroleum Fuels employed 86,700 workers, as shown in Figure 4.13. The largest share of Offshore Petroleum Fuels workers was in the Manufacturing industry, with 40,900 workers, which declined from 2024 to 2025 by almost 1% (−300 workers), but increased since 2022 (3.7%, +1,400 workers).

Offshore Petroleum Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Manufacturing	40,900	3.7%	-0.7%
Mining & Extraction	33,500	-1.9%	-6.2%
Professional & Business Services	9,900	-0.5%	-1.8%
Wholesale Trade	1,700	5.5%	1.3%
Other Services ³⁷¹	600	-17.8%	-18.1%
Offshore Petroleum Fuels Overall	86,700	0.8%	-3.1%

Figure 4.13. Offshore Petroleum Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{371, 372}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁷¹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁷² Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Petroleum Fuels Hiring Difficulty

In looking at hiring difficulty for Onshore Petroleum Fuels, employers in the Mining and Extraction and Other Services³⁷³ industries reported the highest levels of hiring difficulty in 2025, with 92% of employers in both industries indicating that hiring was at least somewhat difficult, illustrated in Figure 4.14. Conversely, employers in the Construction and Manufacturing industries reported lower levels of difficulty, at 55% and 58%, respectively.

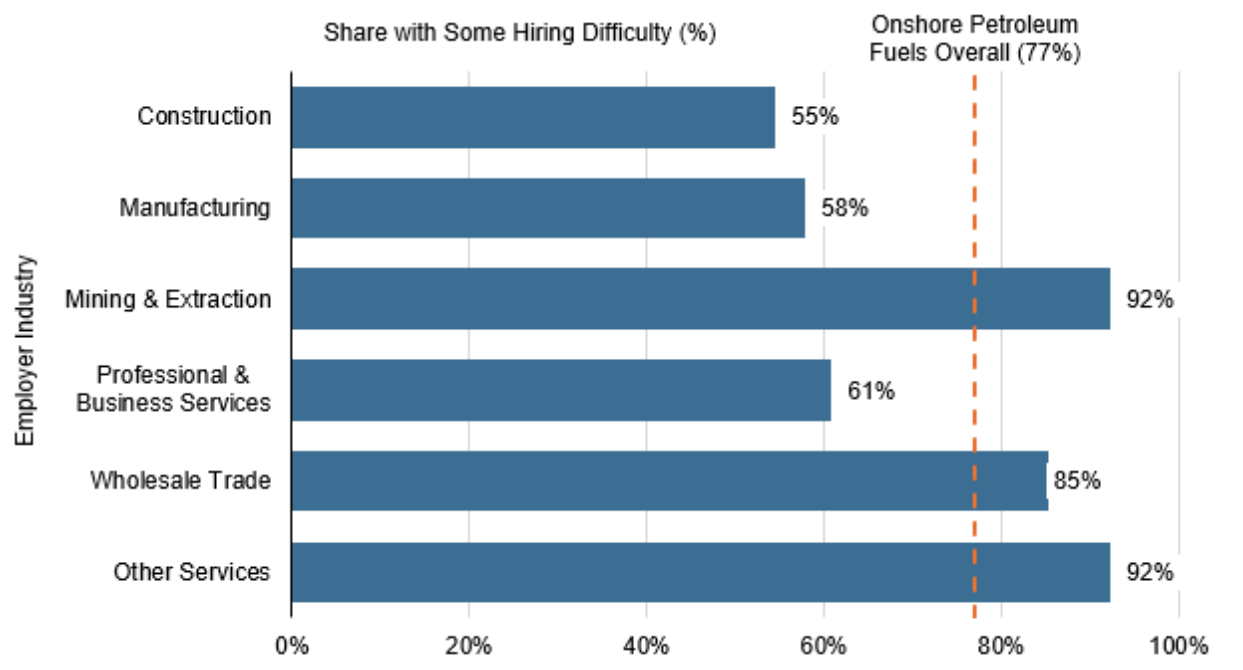


Figure 4.14. Percentage of Onshore Petroleum Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{374, 375}

Note: Differences across categories have not been tested for statistical significance.

³⁷³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

³⁷⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁷⁵ Offshore Petroleum Fuels hiring difficulty not reported due to insufficient sample size.

Onshore Petroleum Fuels employers reported the occupations below to be the most difficult to hire. More than one-fourth (27%) of Onshore Petroleum Fuels employers reported that Technicians or Mechanical Support roles were the hardest to hire.

- Technicians or Mechanical Support (27%)
- Drivers and Dispatchers (19%)
- Management (16%)

Similar to Onshore Petroleum Fuels, Offshore Petroleum Fuels employers most commonly cited that Technicians or Mechanical Support roles were the most difficult to hire. Offshore Petroleum Fuels employers reported the following occupations as the most difficult to hire:

- Technicians or Mechanical Support (32%)
- Engineers and Scientists (28%)
- Management (24%)

Petroleum Fuels Workforce Demographics

Demographic characteristics of the Petroleum Fuels workforce, compared against the broader sector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 4.4.

Categories	Number of Workers	Share of Petroleum Fuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	402,000	76%	74%	74%	53%
Women	130,000	24%	26%	26%	47%
Hispanic or Latino	80,900	15%	15%	19%	20%
Non-Hispanic or Latino	451,000	85%	85%	81%	80%
American Indian or Alaska Native	11,000	2%	2%	3%	1%
Asian	35,300	7%	6%	7%	7%
Black or African American	55,300	10%	9%	9%	13%
Middle Eastern or North African	900	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	4,900	1%	1%	1%	<1%
White	400,000	75%	76%	72%	75%
Two or More Races	21,100	4%	4%	4%	3%
Unknown Race	4,100	1%	1%	3%	n/a
Veterans	50,600	10%	10%	9%	5%
18 to 29	170,000	32%	31%	29%	22%
30 to 54	270,000	51%	50%	52%	55%
Over 54	92,300	17%	19%	18%	23%
Self-Identification of Disability	5,600	1%	2%	2%	5%
Formerly Incarcerated	7,800	1%	2%	2%	2%
Represented by a Union ³⁷⁶	36,900	7%	7%	12%	10%

Table 4.4. Petroleum Fuels Workforce Demographics and Characteristics, 2025, USEER Survey^{377, cxxvi}

³⁷⁶ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁷⁷ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Natural Gas Fuels

Natural gas is a mixture of gases made mostly of methane and is found underground. It is often located near petroleum and is extracted for use as fuel. Jobs in the Natural Gas Fuels subsector include work in:

- Onshore and offshore exploration and extraction
- Natural gas processing
- Manufacturing extraction and processing equipment
- Repairing and maintaining extraction equipment
- Selling natural gas wholesale
- Providing support services, which can include engineering, financial services, environmental consulting, project management, and other professional services

Natural Gas Fuels Employment by Industry

The Natural Gas Fuels subsector employed 242,900 workers in 2025. Across the Natural Gas Fuels subsector, Mining and Extraction employed the most workers (129,700). While Manufacturing employment in 2025 remained steady between 2024 and 2025, it grew by more than 9% (+3,900 workers) compared to 2022, as seen in Figure 4.15.

Natural Gas Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	130,000	-16.7% 	-6.1% 
Manufacturing	45,500	9.4% 	-0.1% 
Professional & Business Services	37,500	3.5% 	-2.5% 
Wholesale Trade	30,000	2.7% 	-1.2% 
Other Services ³⁷⁸	100	-18.0% 	-20.1% 
Natural Gas Fuels Overall	243,000	-7.6% 	-3.9% 

Figure 4.15. Total Natural Gas Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{378, 379}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁷⁸ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁷⁹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Employment in Natural Gas Fuels can be grouped into onshore and offshore work. Onshore Natural Gas Fuels businesses employed 91% of total Natural Gas Fuels workers (221,000) in 2025. Most workers in this subsector were employed in the Mining and Extraction industry, with 126,700 workers. Manufacturing employment increased 10% (+3,600 workers) in 2025 compared to 2022, but growth was flat in 2025 compared to 2024, detailed further in Figure 4.16.

Onshore Natural Gas Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	127,000	-16.8% 	-6.1% 
Manufacturing	40,100	10.0% 	-0.1% 
Wholesale Trade	29,800	2.7% 	-1.2% 
Professional & Business Services	24,300	2.4% 	-2.9% 
Other Services ³⁸⁰	100	-18.0% 	-20.5% 
Onshore Natural Gas Fuels Overall	221,000	-8.6% 	-4.0% 

Figure 4.16. Onshore Natural Gas Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{380, 381}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁸⁰ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁸¹ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

The Offshore Natural Gas Fuels subsector employed 21,800 workers in 2025, representing 9% of the subsector's total workforce, as shown in Figure 4.17. Most Offshore Natural Gas Fuels workers (13,200) were employed in the Professional and Business Services industry.

Professional and Business Services, Wholesale Trade, and Manufacturing grew by more than 5% in 2025 since 2022. Wholesale Trade and Manufacturing employment between 2024 and 2025 was relatively stable. Professional and Business Services employment fell 2% (–200 workers) in 2025 compared to 2024.

Offshore Natural Gas Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Professional & Business Services	13,200	5.6%	-1.8%
Manufacturing	5,400	5.2%	-0.1%
Mining & Extraction	3,000	-8.7%	-6.1%
Wholesale Trade	200	5.6%	-1.2%
Other Services ³⁸²	<1000	-17.7%	-18.1%
Offshore Natural Gas Fuels Overall	21,800	3.3%	-2.0%

Figure 4.17. Offshore Natural Gas Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{382, 383}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁸² USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁸³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Natural Gas Fuels Hiring Difficulty

Onshore Natural Gas Fuels employers reported high levels of hiring difficulty—79% overall. Within the Onshore Natural Gas Fuels subsector, the Wholesale Trade industry reported the greatest level of hiring difficulty, with 85% of employers indicating that hiring was at least somewhat difficult in 2025. Professional and Business Services employers reported the least difficulty hiring, with almost one-third reporting that hiring was not at all difficult, as shown in Figure 4.18.

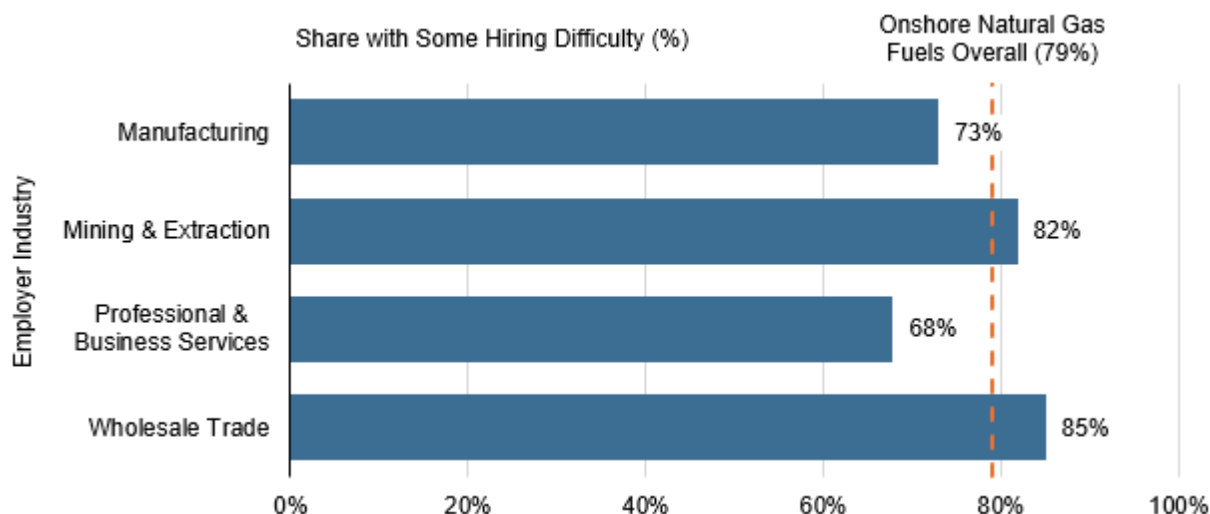


Figure 4.18. Percentage of Onshore Natural Gas Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{384, 385}

Note: Differences across categories have not been tested for statistical significance.

³⁸⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁸⁵ Other Services industry in Onshore Natural Gas Fuels not reported due to insufficient sample size.

Among Offshore Natural Gas Fuels employers, 86% of Professional and Business Services employers reported at least some level of difficulty hiring in 2025. More than half (54%) of the employers in the Manufacturing industry indicated some level of hiring difficulty, as shown in Figure 4.19.

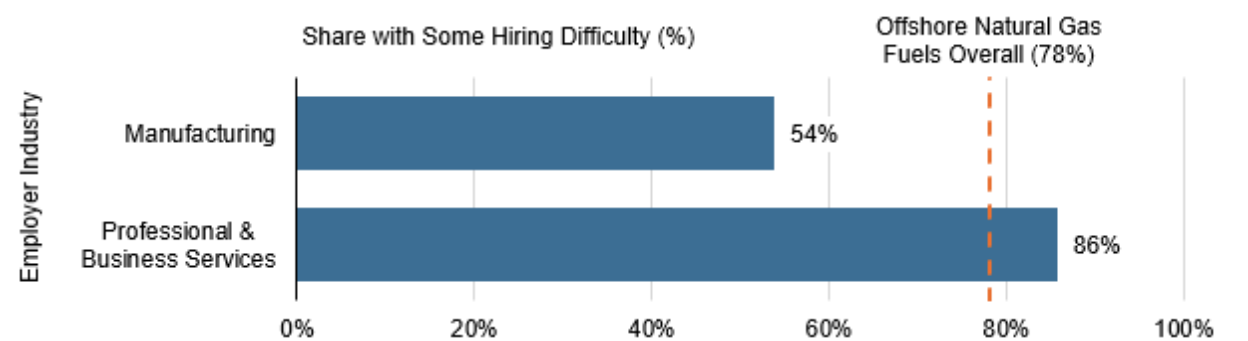


Figure 4.19. Percentage of Offshore Natural Gas Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{386, 387}

Note: Differences across categories have not been tested for statistical significance.

Offshore Natural Gas Fuels employers reported the following occupations as most difficult to fill in 2025. Employers reported both Engineers and Scientists, as well as Management workers, to be the most difficult roles to fill.

- Engineers/Scientists (25%)
- Management (24%)
- Technicians or Mechanical Support (22%)

Onshore Natural Gas Fuels employers reported similar challenges to their Offshore peers. The following occupations are those that Onshore Natural Gas Fuels employers identified as most difficult to fill in 2025:

- Engineers/Scientists (26%)
- Management (26%)
- Technicians or Mechanical Support (19%)

³⁸⁶ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁸⁷ Mining and Extraction, Wholesale Trade, and Other Services industries in Offshore Natural Gas Fuels not reported due to insufficient sample size.

Natural Gas Fuels Workforce Demographics

The Natural Gas Fuels workforce demographics and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce can be found in Table 4.5.

Categories	Number of Workers	Share of Natural Gas Fuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	181,000	75%	74%	74%	53%
Women	61,800	25%	26%	26%	47%
Hispanic or Latino	36,800	15%	15%	19%	20%
Non-Hispanic or Latino	206,000	85%	85%	81%	80%
American Indian or Alaska Native	3,900	2%	2%	3%	1%
Asian	12,700	5%	6%	7%	7%
Black or African American	21,500	9%	9%	9%	13%
Middle Eastern or North African	100	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	1,800	1%	1%	1%	<1%
White	186,000	77%	76%	72%	75%
Two or More Races	15,200	6%	4%	4%	3%
Unknown Race	1,800	1%	1%	3%	n/a
Veterans	21,300	9%	10%	9%	5%
18 to 29	77,200	32%	31%	29%	22%
30 to 54	118,000	49%	50%	52%	55%
Over 54	47,300	19%	19%	18%	23%
Self-Identification of Disability	4,400	2%	2%	2%	5%
Formerly Incarcerated	5,600	2%	2%	2%	2%
Represented by a Union ³⁸⁸	18,100	7%	7%	12%	10%

Table 4.5. Natural Gas Fuels Workforce Demographics and Characteristics, 2025, USEER Survey³⁸⁹, cxxvii

³⁸⁸ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁸⁹ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Coal Fuels

Coal is a solid sedimentary rock that is primarily composed of carbon. The Coal Fuels subsector captures employment related to thermal coal (also called steam coal), which is mined and burned as a fuel to produce energy in the form of heat and electricity. Coal Fuels employees work in capacities including:

- Mining and Extraction
- Processing
- Manufacturing equipment for these activities
- Sales and distribution of coal products to retailers
- Professional and Business Services such as engineering, financial services, information management, technical consulting, and other support services

Coal Fuels Employment by Industry

The Coal Fuels subsector consisted of 62,100 workers in 2025. Most of these workers (70%) were employed in the Mining and Extraction industry (43,400),^{390,cxxviii} followed by Manufacturing (17%), which had 10,400 workers. Manufacturing employment grew 4% in 2025 compared to 2022 (+400 workers) and was steady in 2025 compared to 2024, as depicted in Figure 4.20.

³⁹⁰ Coal's Mining and Extraction employment estimate of 43,400 should be interpreted as an estimate of direct employee headcount with a likely undercount of contractors. This is because the USEER survey does not ask establishments to report third-party contractor or subcontractor headcount as part of its employment reporting. To the extent contractors are under-sampled by the USEER survey, the employment estimates undercount contractors. Undercount of contractors in the Fuels sector is a known limitation of USEER. As a benchmark, the Department of Labor's Mine Safety and Health Administration (MSHA) publishes worker counts compiled from administrative records (MSHA Form 7000-2, Quarterly Mine Employment and Coal Production Report) and reports 43,078 operators and 19,117 contractors in coal mining and extraction in 2025. MSHA's operator employment count is remarkably close to the USEER employment estimate of 43,400 for Coal Mining and Extraction. This suggests coal mining and extraction contractors are under sampled or not sampled by USEER. *See* endnotes for full citation.

Coal Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Mining & Extraction	43,400	-5.2% 	-2.9% 
Manufacturing	10,400	4.3% 	-0.2% 
Professional & Business Services	7,300	-8.5% 	-11.5% 
Wholesale Trade	900	-12.5% 	-4.5% 
Other Services ³⁹¹	<100	-33.0% 	-33.8% 
Coal Fuels Overall	62,100	-4.3% 	-3.6% 

Figure 4.20. Coal Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{391, 392}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁹¹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁹² Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Coal Fuels Hiring Difficulty

In the Coal Fuels subsector, Wholesale Trade employers reported the most hiring difficulty, with more than three-quarters of these employers reporting at least some level of hiring difficulty, as illustrated in Figure 4.21.

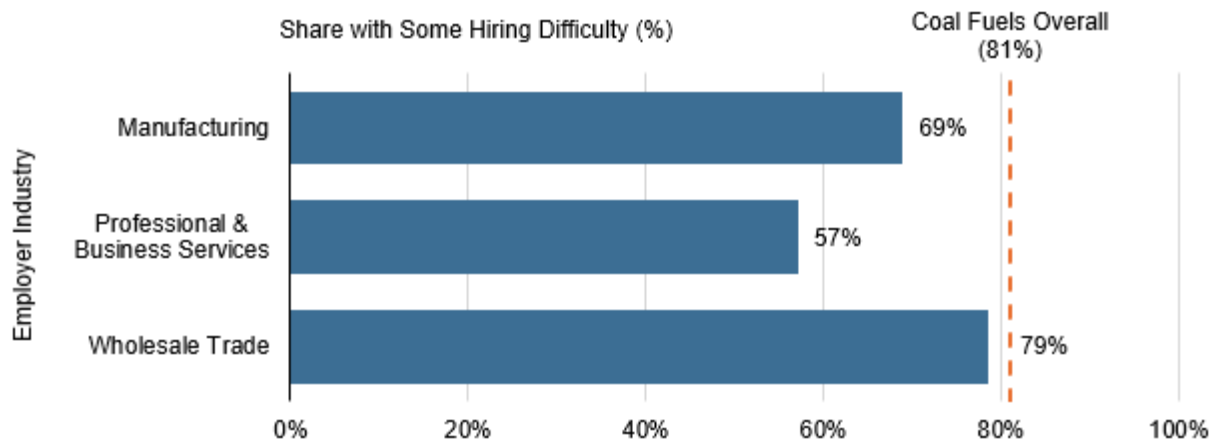


Figure 4.21. Percentage of Coal Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{393, 394}

Note: Differences across categories have not been tested for statistical significance.

Coal Fuels employers reported a wider range of occupations that were most difficult to hire for in 2025 than other Fuels subsectors, suggesting that the labor market may have less clear workforce challenges within a given occupation. The following occupations are those identified most frequently by Coal Fuels employers as most difficult to hire in 2025:

- Management (16%)
- Technicians or Mechanical Support (14%)
- Engineers/Scientists (14%)

³⁹³ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁹⁴ Mining and Extraction and Other Services industries not reported due to insufficient sample size.

Coal Fuels Workforce Demographics

Demographic characteristics of the Coal Fuels workforce are compared with the broader sector, the energy economy workforce, and the U.S. overall workforce, as detailed in Table 4.6.

Categories	Number of Workers	Share of Coal Fuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	46,100	74%	74%	74%	53%
Women	16,000	26%	26%	26%	47%
Hispanic or Latino	9,200	15%	15%	19%	20%
Non-Hispanic or Latino	52,900	85%	85%	81%	80%
American Indian or Alaska Native	1,800	3%	2%	3%	1%
Asian	3,800	6%	6%	7%	7%
Black or African American	4,500	7%	9%	9%	13%
Middle Eastern or North African	100	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	1,200	2%	1%	1%	<1%
White	48,600	78%	76%	72%	75%
Two or More Races	1,600	2%	4%	4%	3%
Unknown Race	600	1%	1%	3%	n/a
Veterans	6,800	11%	10%	9%	5%
18 to 29	19,400	31%	31%	29%	22%
30 to 54	28,300	46%	50%	52%	55%
Over 54	14,400	23%	19%	18%	23%
Self-Identification of Disability	1,300	2%	2%	2%	5%
Formerly Incarcerated	900	2%	2%	2%	2%
Represented by a Union ³⁹⁵	6,400	10%	7%	12%	10%

Table 4.6. Coal Fuels Workforce Demographics and Characteristics, 2025, USEER Survey^{396, cxxix}

³⁹⁵ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

³⁹⁶ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Corn Ethanol Fuels

Corn ethanol fuels are primarily biofuels produced from corn biomass, which are then typically blended with gasoline for motor vehicles. Corn Ethanol Fuels employment includes workers in:

- Corn farming
- Mill processing for production
- Ethanol refineries
- Equipment manufacturing
- Wholesale trade of corn ethanol
- Farming and production equipment
- Professional and Business Services that support subsector operations including finance, research and development, and administrative support

Corn Ethanol Fuels Employment by Industry

The Corn Ethanol Fuels subsector employed 36,100 workers in 2025. The largest share was employed in the Agriculture and Forestry industry, accounting for 46% (16,600 workers) of the total Corn Ethanol Fuels workforce. Wholesale Trade employment increased by nearly 7% (+500 workers) in 2025 compared to 2024 and grew by nearly 10% (+700 workers) since 2022, detailed further in Figure 4.22.

Corn Ethanol Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Agriculture & Forestry	16,600	3.9%	0.1%
Manufacturing	9,400	-0.9%	-1.8%
Wholesale Trade	7,400	9.6%	6.6%
Professional & Business Services	2,600	-7.2%	-8.5%
Other Services ³⁹⁷	100	-16.9%	-18.3%
Corn Ethanol Fuels Overall	36,100	2.8%	0.1%

Figure 4.22. Corn Ethanol Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{397, 398}

Note: Differences across categories or over time have not been tested for statistical significance.

³⁹⁷ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

³⁹⁸ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Corn Ethanol Fuels Hiring Difficulty

Within Corn Ethanol Fuels, Wholesale Trade employers reported the highest level of hiring difficulty, with 83% indicating at least some difficulty in 2025. In contrast, more than one-third (36%) of Professional and Business Services employers reported that hiring was not at all difficult in 2025, broken down in Figure 4.23.

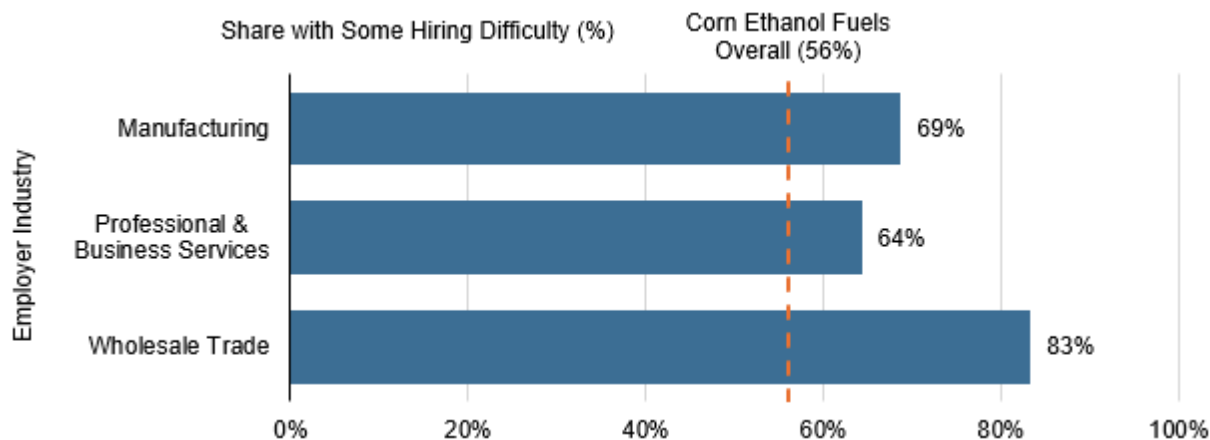


Figure 4.23. Percentage of Corn Ethanol Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{399, 400}

Note: Differences across categories have not been tested for statistical significance.

Corn Ethanol Fuels employers reported the occupations below to be the most difficult to hire in 2025. Technicians or Mechanical Support, as well as Management, were the most commonly mentioned as the most difficult to hire.

- Technicians or Mechanical Support (18%)
- Management (18%)
- Engineers/Scientists (15%)

³⁹⁹ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁰⁰ Agriculture and Forestry and Other Services industries not reported due to insufficient sample size.

Corn Ethanol Fuels Workforce Demographics

A summary of the Corn Ethanol Fuels workforce demographic and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce is provided in Table 4.7.

Categories	Number of Workers	Share of Corn Ethanol Fuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	24,900	69%	74%	74%	53%
Women	11,200	31%	26%	26%	47%
Hispanic or Latino	5,100	14%	15%	19%	20%
Non-Hispanic or Latino	31,000	86%	85%	81%	80%
American Indian or Alaska Native	500	1%	2%	3%	1%
Asian	2,100	6%	6%	7%	7%
Black or African American	2,400	7%	9%	9%	13%
Middle Eastern or North African	<100	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	600	2%	1%	1%	<1%
White	28,400	79%	76%	72%	75%
Two or More Races	900	2%	4%	4%	3%
Unknown Race	1,200	3%	1%	3%	n/a
Veterans	5,700	16%	10%	9%	5%
18 to 29	10,000	28%	31%	29%	22%
30 to 54	17,200	48%	50%	52%	55%
Over 54	8,900	25%	19%	18%	23%
Self-Identification of Disability	1,200	3%	2%	2%	5%
Formerly Incarcerated	200	1%	2%	2%	2%
Represented by a Union ⁴⁰¹	2,200	6%	7%	12%	10%

Table 4.7. Corn Ethanol Fuels Workforce Demographics and Characteristics, 2025, USEER Survey^{402, cxxx}

⁴⁰¹ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁴⁰² This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Woody Biomass and Cellulosic Biofuels

Woody biomass is a fuel used for heating or electricity generation, typically made from wood and wood waste such as bark, sawdust, wood chips, and paper mill residue. Cellulosic biofuels are made from plant waste such as leaves, stems, or other biological materials. Workers in the Woody Biomass and Cellulosic Biofuels subsector may be involved in:

- Sourcing and harvesting
- Transportation and logistics
- Processing and conversion
- Wholesale trade of biofuels
- Professional and business services such as engineering, environmental compliance, and finance

Woody Biomass and Cellulosic Biofuels Employment by Industry

Employment and production patterns in Woody Biomass and Cellulosic Fuels, a smaller biofuels subsector, differ from the other three biofuels subsectors. In the other subsectors displayed in Figure 4.6, production slowed or declined from 2024 to 2025, and employment generally followed the same pattern. In contrast, Woody Biomass and Cellulosic Fuels showed a mismatch between production and employment. As Figure 4.24 illustrates, production increased while employment fell more quickly in 2025 than in previous years. Job losses were mainly in the Agriculture and Forestry segments, while Manufacturing employment continued to rise steadily since 2022, in line with higher production.

The Woody Biomass and Cellulosic Biofuels subsector employed 31,900 workers in 2025. Agriculture and Forestry was the largest industry, accounting for 49% (15,700) of workers. Professional and Business Services was the second-largest industry with 32% (10,400) of workers, summarized in Figure 4.24.

Employment in the Woody Biomass and Cellulosic Biofuels subsector declined by 6% (–1,900 workers) from 2024 to 2025. This decline was mainly in the Agriculture and Forestry industry, which lost 9% (–1,500) of workers, continuing trends that began in 2022.

Woody Biomass and Cellulosic Biofuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Agriculture & Forestry	15,700	-14.7% 	-8.7% 
Professional & Business Services	10,400	0.9% 	-4.4% 
Manufacturing	4,900	9.4% 	3.9% 
Wholesale Trade	1,000	-7.0% 	-7.7% 
Other Services ⁴⁰³	<100	8.9% 	1.1% 
Woody Biomass & Cellulosic Biofuels Overall	31,900	-6.6% 	-5.5% 

Figure 4.24. Woody Biomass and Cellulosic Biofuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{403, 404}

Note: Differences across categories or over time have not been tested for statistical significance.

⁴⁰³ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁰⁴ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Woody Biomass and Cellulosic Biofuels Hiring Difficulty

Professional and Business Services employers reported the highest level of hiring difficulty, with 73% indicating at least some difficulty. More than half of Manufacturing employers reported that hiring was not at all difficult in 2025, shown in, Figure 4.25 shows).

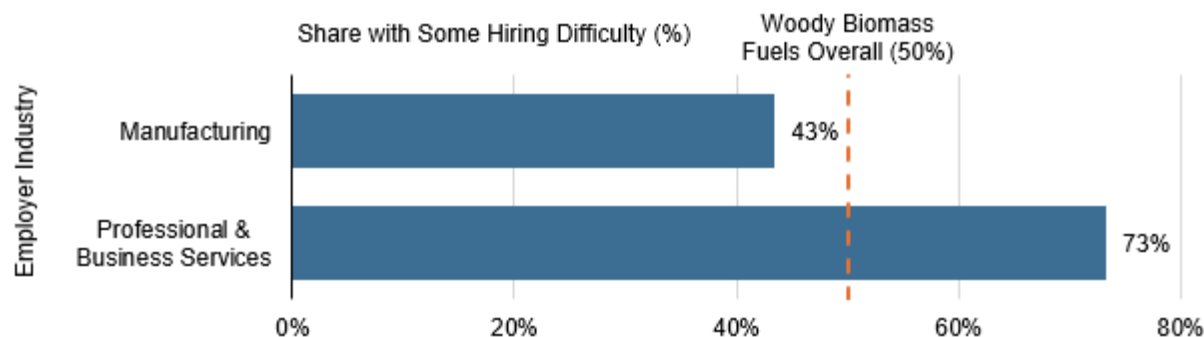


Figure 4.25. Percentage of Woody Biomass and Cellulosic Biofuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{405, 406}

Note: Differences across categories have not been tested for statistical significance.

Woody Biomass and Cellulosic Biofuels employers were most likely to identify Engineers and Scientists as the occupations most difficult to hire in 2025. The list of occupations below are the occupations most frequently cited as difficult to hire by Woody Biomass and Cellulosic Biofuels employers:

- Engineers/Scientists (17%)
- Management (14%)
- Technicians or Mechanical Support (10%)

⁴⁰⁵ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁰⁶ Agriculture and Forestry, Wholesale Trade, and Other Services industries not reported due to insufficient sample size.

Woody Biomass and Cellulosic Biofuels Workforce Demographics

Woody Biomass and Cellulosic Biofuels workforce demographics and their comparison with the broader sector, the energy economy workforce, and the U.S. overall workforce are outline in Table 4.8.

Categories	Number of Workers	Share of Woody Biomass & Cellulosic Biofuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	21,700	68%	74%	74%	53%
Women	10,200	32%	26%	26%	47%
Hispanic or Latino	4,000	13%	15%	19%	20%
Non-Hispanic or Latino	27,900	87%	85%	81%	80%
American Indian or Alaska Native	500	1%	2%	3%	1%
Asian	1,600	5%	6%	7%	7%
Black or African American	1,600	5%	9%	9%	13%
Middle Eastern or North African	100	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	300	1%	1%	1%	<1%
White	25,800	81%	76%	72%	75%
Two or More Races	900	3%	4%	4%	3%
Unknown Race	1,100	3%	1%	3%	n/a
Veterans	4,700	15%	10%	9%	5%
18 to 29	9,700	30%	31%	29%	22%
30 to 54	15,900	50%	50%	52%	55%
Over 54	6,300	20%	19%	18%	23%
Self-Identification of Disability	1,000	3%	2%	2%	5%
Formerly Incarcerated	800	3%	2%	2%	2%
Represented by a Union ⁴⁰⁷	2,000	6%	7%	12%	10%

Table 4.8. Woody Biomass and Cellulosic Biofuels Workforce Demographics and Characteristics, 2025, USEER Survey^{408, cxxxi}

⁴⁰⁷ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁴⁰⁸ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Nuclear Fuels

Nuclear fuels are used in nuclear reactors to sustain nuclear fission by producing heat in a controlled manner for generation of electricity.⁴⁰⁹ Employment in the Nuclear Fuels subsector can include those involved in:

- Mining and extraction of uranium and plutonium
- Manufacturing of nuclear fuel equipment
- Fuel monitoring and maintenance
- Repair and maintenance of equipment
- Professional services that support operations, including engineering, information technology, and administrative services

Nuclear Fuels Employment by Industry

The Nuclear Fuels subsector employed 9,800 workers in 2025. Most (60%, 5,800 workers) were employed in the Professional and Business Services industry, followed by the Manufacturing industry (2,600 workers). As depicted in Figure 4.26, the decline in Nuclear Fuels employment from 2024 to 2025 was largely due to a 7% (–200 workers) employment decline in the Manufacturing industry during this time.

Nuclear Fuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Professional & Business Services	5,800	15.3%	0.9%
Manufacturing	2,600	-8.6%	-7.2%
Wholesale Trade	900	-2.9%	-3.1%
Mining & Extraction	500	6.9%	2.3%
Nuclear Fuels Overall	9,800	5.7%	-1.7%

Figure 4.26. Nuclear Fuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey⁴¹⁰

Note: Differences across categories or over time have not been tested for statistical significance.

⁴⁰⁹ Nuclear Fuels subsector captures employment related to fresh nuclear fuel, while the Nuclear Fuels Storage subsector within TDS tracks jobs related to used nuclear fuel.

⁴¹⁰ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Nuclear Fuels Hiring Difficulty

Employers in both the Manufacturing and Professional and Business Services industries of Nuclear Fuels reported similar levels of hiring difficulty in 2025, 63%, and 62%, respectively. These rates were closely aligned with the Nuclear Fuels subsector overall (65%), as shown in Figure 4.27 for details.

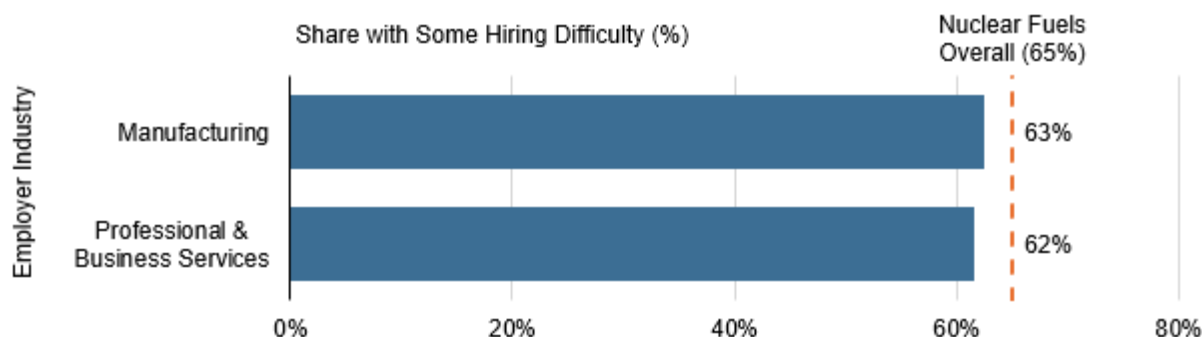


Figure 4.27. Percentage of Nuclear Fuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{411, 412}

Note: Differences across categories have not been tested for statistical significance.

Nuclear Fuels employers reported the following occupations as most difficult to hire in 2025. As was the case for Nuclear EPG, Engineers and Scientists were the most frequently cited occupations to hire for Nuclear EPG employers. The list of most commonly cited occupations is below:

- Engineers/Scientists (32%)
- Technicians or Mechanical Support (16%)
- Management (16%)

⁴¹¹ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴¹² Mining and Extraction and Wholesale Trade industries not reported due to insufficient sample size.

Nuclear Fuels Workforce Demographics

The demographic characteristics of the Nuclear Fuels workforce, compared with the broader sector, the energy economy workforce, and the U.S. overall workforce, are summarized in Table 4.9.

Categories	Number of Workers	Share of Nuclear Fuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	6,800	69%	74%	74%	53%
Women	3,000	31%	26%	26%	47%
Hispanic or Latino	1,500	15%	15%	19%	20%
Non-Hispanic or Latino	8,300	85%	85%	81%	80%
American Indian or Alaska Native	200	2%	2%	3%	1%
Asian	900	10%	6%	7%	7%
Black or African American	800	9%	9%	9%	13%
Middle Eastern or North African	<10	<1%	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	200	2%	1%	1%	<1%
White	6,700	68%	76%	72%	75%
Two or More Races	700	7%	4%	4%	3%
Unknown Race	100	1%	1%	3%	n/a
Veterans	900	9%	10%	9%	5%
18 to 29	3,100	31%	31%	29%	22%
30 to 54	5,300	54%	50%	52%	55%
Over 54	1,400	14%	19%	18%	23%
Self-Identification of Disability	200	2%	2%	2%	5%
Formerly Incarcerated	200	2%	2%	2%	2%
Represented by a Union ⁴¹³	1,600	16%	7%	12%	10%

Table 4.9. Nuclear Fuels Workforce Demographics and Characteristics, 2025, USEER Survey^{414, cxxxii}

⁴¹³ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁴¹⁴ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

Other Biofuels

Other Biofuels include any fuel made from biomass feedstocks not classified elsewhere in the USEER, such as Renewable Diesel, Biodiesel,⁴¹⁵ Waste Fuels (from feedstock and municipal waste), and Other Ethanol/Non-Woody Biomass Fuels (ethanol not produced from corn, such as ethanol produced from sugar cane). Workers in this subsector can include those involved in:

- Biomass sourcing and production
- Logistics
- Biomass conversion
- Manufacturing agricultural equipment
- Wholesale Trade
- Professional and Business Services such as data processing, financial and investment services, and administrative support, among other support services

⁴¹⁵ Renewable diesel and biodiesel are not identical. Renewable diesel, previously known as “green diesel,” is a hydrocarbon produced most often by hydrotreating and by gasification, pyrolysis, and other biochemical and thermochemical technological processes. It meets the Advancing Standards Transforming Markets Standard Specification for Diesel Fuel (ASTM D975) specification for petroleum diesel. Biodiesel is a mono alkyl ester produced via transesterification. Biodiesel meets ASTM’s Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels (ASTM D6751) and is approved for blending with petroleum diesel.

Other Biofuels Employment by Industry

The Other Biofuels subsector employed 42,300 workers in 2025. Most workers (65%, 27,000) were employed in the Professional and Business Services industry, followed by Wholesale Trade (18%, 7,700 workers). Employment in Other Biofuels was relatively stable between 2024 and 2025. Other Services was the exception to this trend, which included a small number of workers, Figure 4.28 shows.

Other Biofuels Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Professional & Business Services	27,700	5.4%	1.4%
Wholesale Trade	7,700	3.9%	1.4%
Manufacturing	4,000	6.4%	-3.5%
Agriculture & Forestry	2,800	7.5%	1.0%
Other Services ⁴¹⁶	100	-31.9%	-33.1%
Other Biofuels Overall	42,300	5.3%	0.8%

Figure 4.28. Other Biofuels Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{416, 417}

Note: Differences across categories or over time have not been tested for statistical significance.

⁴¹⁶ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴¹⁷ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Other Biofuels Hiring Difficulty

Professional and Business Services employers within the Other Biofuels subsector reported the most hiring difficulty, with 94% reporting at least some level of difficulty hiring. Manufacturing employers reported the least difficulty hiring, with 31% indicating hiring was not at all difficult, as seen in Figure 4.29.

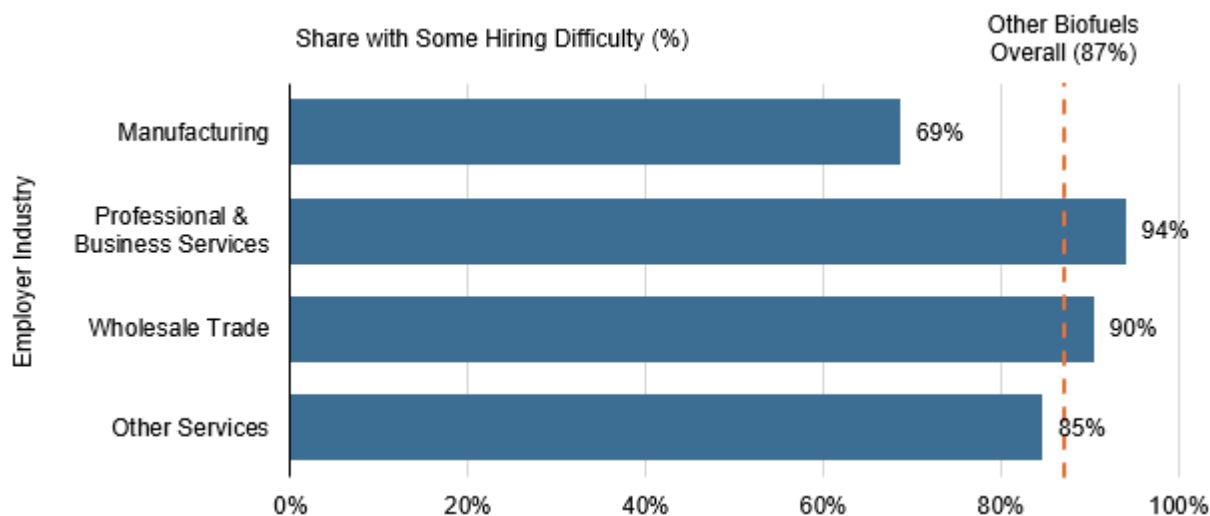


Figure 4.29. Percentage of Other Biofuels Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{418, 419}

Other Biofuels employers reported that Management roles were the most commonly identified as being hard to fill by Other Biofuels employers:

- Management (18%)
- Engineers/Scientists (16%)
- Technicians or Mechanical Support (15%)

⁴¹⁸ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴¹⁹ Agriculture and Forestry industry not reported due to insufficient sample size.

Other Biofuels Workforce Demographics

Other Biofuels workforce demographics and subsector comparisons with the broader sector, the energy economy workforce, and the U.S. overall workforce can be found in Table 4.10.

Categories	Number of Workers	Share of Other Biofuels Workforce	Share of Fuels Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	28,000	66%	74%	74%	53%
Women	14,200	34%	26%	26%	47%
Hispanic or Latino	5,000	12%	15%	19%	20%
Non-Hispanic or Latino	37,200	88%	85%	81%	80%
American Indian or Alaska Native	800	2%	2%	3%	1%
Asian	2,700	6%	6%	7%	7%
Black or African American	4,400	10%	9%	9%	13%
Middle Eastern or North African	300	1%	0%	1%	n/a
Native Hawaiian or Other Pacific Islander	800	2%	1%	1%	<1%
White	30,900	73%	76%	72%	75%
Two or More Races	1,000	2%	4%	4%	3%
Unknown Race	1,400	3%	1%	3%	n/a
Veterans	5,200	12%	10%	9%	5%
18 to 29	13,000	31%	31%	29%	22%
30 to 54	22,900	54%	50%	52%	55%
Over 54	6,300	15%	19%	18%	23%
Self-Identification of Disability	1,500	4%	2%	2%	5%
Formerly Incarcerated	600	1%	2%	2%	2%
Represented by a Union ⁴²⁰	2,000	5%	7%	12%	10%

Table 4.10. Other Biofuels Workforce Demographics and Characteristics, 2025, USEER Survey⁴²¹, cxxxiii

⁴²⁰ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁴²¹ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

CHAPTER 5



Energy Efficiency

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Energy Efficiency

The Energy Efficiency (EE) sector captures employment related to manufacturing, selling, and maintaining products designed to reduce energy use. The sector also includes work that improves the energy performance of buildings. The EE sector includes establishments, such as contractors,⁴²² whose employees split their time between EE activities and other activities that USEER does not count as EE.

For example, a roofing contractor establishment may spend most of its labor hours on roofing, including Certified and Non-Certified roofing, and some labor hours on traditional/Non-Certified HVAC activities. USEER would count this establishment as a Qualifying Energy Establishment because it performs qualifying EE work. In addition, its energy activities would fall under the EE sector, and its activities may span more than one EE subsector, such as Certified Roofing and Non-Certified HVAC.

In addition, USEER counts energy employment based on how employees⁴²³ spend their labor hours. Employees engaged in qualified energy activities are assigned to a USEER sector or subsector depending on where they spend the largest share of their energy-related labor hours.

The term “Certified” as used in this chapter refers to ENERGY STAR certified materials and equipment that meet strict EE guidelines set by the U.S. Environmental Protection Agency (EPA).^{cxxxiv} This certification ensures equipment and materials use less energy and reduce greenhouse gas emissions without sacrificing performance. Certified equipment typically saves 10%–30% more energy than standard models, reducing utility bills. But it sometimes has a higher up-front cost.^{cxxxv}

Because EE covers many different types of work activities, subsectors are grouped for clarity based on their primary end use or associated function.⁴²⁴ The EE subsectors, by employment size, are:

- **Non-Certified (Traditional) HVAC**⁴²⁵
 - Non-Certified HVAC Goods, Control Systems, and Services
- **Certified Appliances, Products, and Services**^{cxxxvi}
 - Certified Appliances (not including HVAC products)
 - Certified HVAC, Except Air-Source or Ground-Source Heat Pumps

⁴²² This is distinct from use of “contractor” to describe a worker hired to do specific work for a company, but who is in business for themselves rather than on the company’s payroll.

⁴²³ Employees are direct part-time and full-time workers and exclude contractors hired to do specific work for a company and not on the company’s payroll.

⁴²⁴ The absence of dedicated NAICS industry classifications for EE businesses makes it difficult to accurately measure employment in the sector from BLS or Census sources. Because this work is often part of other industries and employees may split time between EE and other tasks, direct employer reporting through surveys like USEER are the only method for characterizing these establishments.

⁴²⁵ Non-Certified HVAC typically uses a central system for heating and cooling units, using ductwork to move air throughout an entire building. In this report, Certified HVAC is HVAC that meets the international standard for energy-efficient consumer products originating in the United States.

- Certified Air-Source Heat Pumps
- Certified Ground-Source or Geothermal Heat Pumps
- Certified Commercial Food Service Equipment
- Other High-Efficiency HVAC Out of Scope for Certification (e.g., indirect evaporative coolers, air-to-water heat pumps, energy recovery systems)
- **Advanced and Recycled Building Materials**
 - Certified Windows, Doors, and Skylights
 - Certified Roofing
 - Certified Insulation
 - Air Sealing
 - Advanced Building Materials/Insulation
 - Recycled Building Materials
- **LED, CFL, and Other Efficient Lighting**
 - Certified LED Lighting
 - Other LED, CFL, and Efficient Lighting
- **Other EE**⁴²⁶
 - Certified Electronics (TVs, telephones, audio/video, etc.)
 - Certified Data Center Equipment
 - Reduced Water Consumption Products and Appliances
 - Energy Auditing Services
 - Other Energy Efficiency⁴²⁷
- **Renewable Heating and Cooling**
 - Certified Water Heaters
 - Solar Thermal Water Heating and Cooling
 - Other Renewable Heating and Cooling (geothermal, biomass, heat pumps, etc.)

⁴²⁶ See Appendix T for Other Energy Efficiency employment.

⁴²⁷ Other Energy Efficiency refers to any energy efficiency that is not captured in the categories listed or a category that is used when unable to split employment into a single EE category where employees spend “more of their time.”

Quick Glance

Overall employment decreased by less than 1% (–21,400 workers) in 2025 compared to 2024.⁴²⁸ Workers in the EE sector can easily switch across work activities, so employment declines in EE do not necessarily correlate with lost jobs but could mean a shifting of workers’ time spent on EE activities.

Subsectors such as Certified HVAC, Certified Data Center Equipment, and Certified Ground-Source/Geothermal Heat Pumps^{429, cxxxvii} increased in employment in 2025, as construction of data centers and electricity demand increased, and federal tax credits remained for residential geothermal heat pumps.

Using USEER and BLS QCEW wage data, wages within Energy Efficiency (EE) are 18-23% higher than the U.S. average, at \$89,000 and \$101,000 annually (\$7,000 and \$19,000 higher, respectively).⁴³⁰ In 2025 since 2022, inflation-adjusted wages within the EE sector using BLS QCEW sector definitions⁴³¹ grew 8% faster in 2025 than the wages of the overall U.S. economy, which only grew by 4% during the same period.⁴³² EE Production and Manufacturing positions increased by 3% (+10,000 workers) in 2025, as seen in Figure 5.5. Many occupations, especially within the growing Production and Manufacturing occupation category, pay higher wages than the same occupations in the broader U.S. economy, as shown in Figure 5.3. For example, Engine and Machine Assemblers in EE receive wages 11% more (\$6,000 more annually)⁴³³ compared to U.S. wages overall. Laborers and Materials Movers receive an energy sector premium of 10% (\$4,000 more annually).

Prospects for employment in Energy Efficiency are positive as the DOE restarted Home Energy Rebate programs,^{cxxxviii} which are likely to increase demand for Certified appliances, heat pumps, and other efficiency upgrades. As states and Tribes implement programs, demand for HVAC Technicians, Energy Auditors, and other EE-related occupations are expected to grow. Further discussion on EE employment and wages can be found in the Labor Market Analysis and Future Outlook sections.

⁴²⁸ This change is not statistically significant at the 95% confidence level.

⁴²⁹ The term “Certified” as used in this chapter refers to ENERGY STAR certified materials and equipment that meet strict EE guidelines set by the U.S. Environmental Protection Agency (EPA). This certification ensures equipment and materials use less energy and reduce greenhouse gas emissions without sacrificing performance. Certified equipment typically saves 10%–30% more energy than standard models, reducing utility bills, but often has a higher up-front cost.

⁴³⁰ Estimates differ because sector definitions and wage estimate methodologies differ.

⁴³¹ The sector definition of the Energy Efficiency sector constructed from BLS QCEW data is not the same as the USEER definition of the Energy Efficiency sector due to the limitations of QCEW NAICS industry categories. The QCEW sample of the EE sector was constructed using energy-intensive NAICS codes that align with USEER’s NAICS codes mapping to EE. Because of this, and differences in sampling and estimation methodologies, wage and employment trends may be different. The NAICS codes used for the constructed QCEW sample are: 238210, 238211, 238212, 238220, 332410, 333414, 333415, 333611, 335131, 335132, 335139, 335210, 335311, 335999, 423610, 423620, 423720, 423730, 424720.

See Introduction for discussion of the value of the data sources and the Appendix U for more details about the NAICS codes used.

⁴³² For nominal wage growth from 2022 to 2025, add 9% to real wage growth.

⁴³³ Wage premium in dollars is different from the wage premium implied in Figure 5.3 because of rounding. Wage premium in dollars is calculated by taking the difference of unrounded salaries and then rounding.

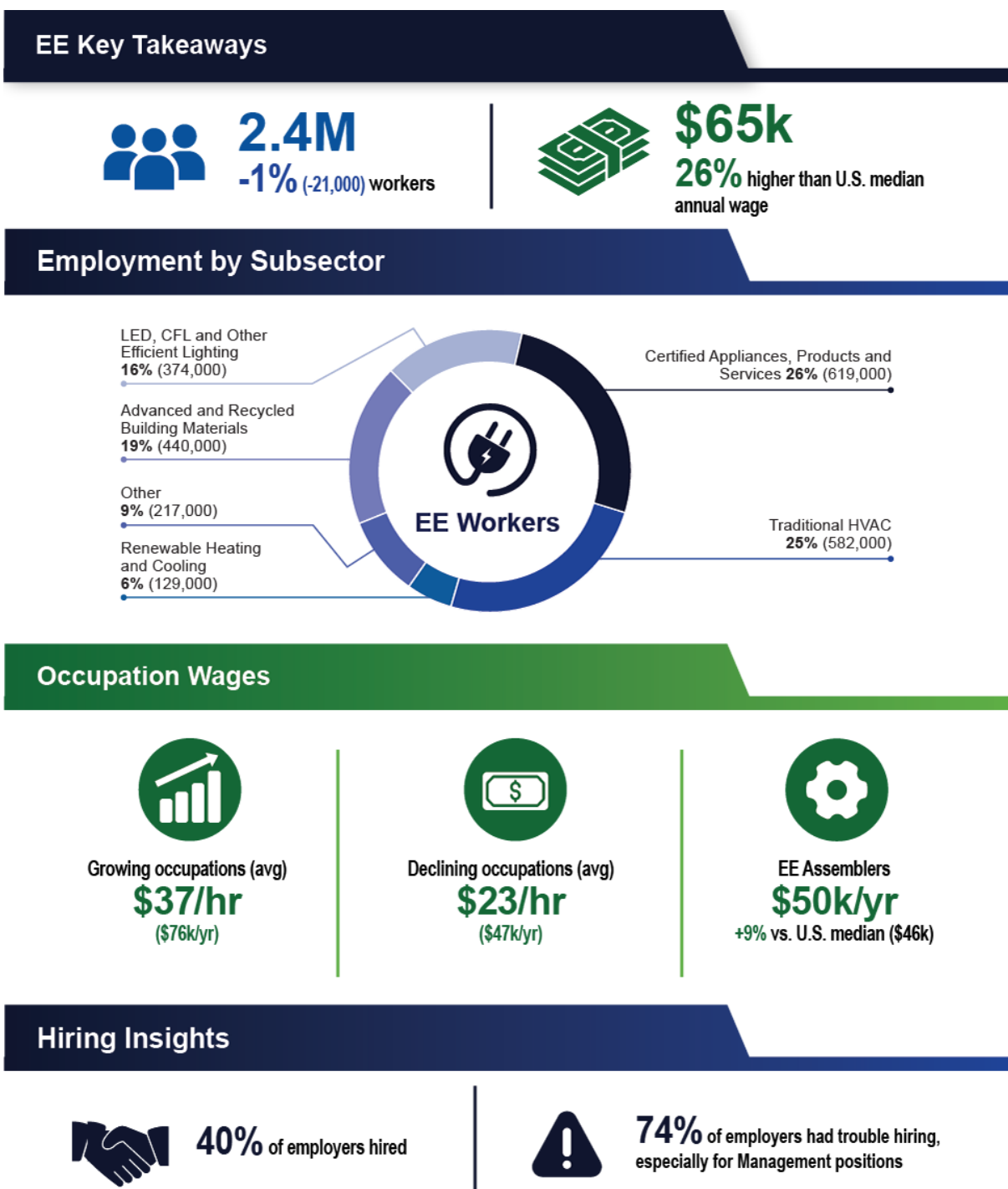


Figure 5.1. Energy Efficiency Key Takeaways, 2025, USEER Survey⁴³⁴

⁴³⁴ The wage premium described here is the additional amount the median EE job pays relative to median U.S. pay. Energy sector median wages are derived from USEER survey data. U.S. median wages are from the May 2025 BLS OEWS estimates using all occupations and industries.. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

EE Chapter Contents

This EE chapter includes the following sections:

- **Labor Market Analysis** discusses trends on employment, wages, and hiring.
- **Employment by Subsector, Industry, and Occupation** describes where employment is concentrated by subsector, industry, and broad occupation category across the EE sector.
- **Employer Perspectives on Hiring Difficulty** aggregates employer responses on perceived hiring difficulty, top reasons for hiring difficulty, and most difficult to hire occupations.
- **EE Workforce Demographics** presents a picture of the EE sector's workforce.

EE Labor Market Analysis

Employment

USEER survey estimates show employment in the EE sector declined by about 1% (–21,400 workers) in 2025 compared to 2024⁴³⁵ yet it increased 7% (+145,000 workers) since 2022. Many subsectors declined between 2024 and 2025, or grew slower than previous years, while some historically small subsectors experienced notable growth.

Within the USEER, changes in employment levels do not necessarily mean workers have entered or left an establishment or the EE sector. A change may simply mean that the same workers spend more time on one subsector activity and less time on another between years.⁴³⁶ This is especially relevant to the EE sector, where subsector activities are similar and workers may more frequently reallocate their time over years.

Several 2025 policy changes likely shifted time—and in some cases employment—away from EE activities. The 2025 OBBB also accelerated the phaseout of several residential energy efficiency tax credits, which likely reduced participation in rebate programs.^{cxxxix}

At the same time, continued or rising demand appears to have benefited some subsectors. Federal tax credits for qualifying geothermal heat pumps remained in place, supporting growth in Certified Ground-Source/Geothermal Heat Pump employment. The Certified Data Center Equipment subsector grew by about 8% (+1,100 workers), driven, in part, by strong demand for new data center construction in 2025. Some growth in Certified HVAC and Geothermal Heat Pump work may also reflect households accelerating purchases before tax credits expired at the end of 2025.⁴³⁷ This possibly pulled activity forward and temporarily increased employment.

The decline in Traditional HVAC employment may be partly related to this shift because workers and firms spent more time on Certified equipment installation and maintenance instead of traditional systems.⁴³⁸ Overall market demand also appears to be a factor. HVAC shipment data^{cxl} show steady growth since the pandemic, consistent with employment gains in Certified HVAC since 2022. Similarly, rapid growth in data center construction—over 30% in 2025^{cxli}—aligns with the increase in Certified Data Center Equipment employment.

Wages

Data collected through the USEER effort provides energy sector wage premiums⁴³⁹ for detailed occupations within EE. In 2025, Laborers and Material Movers were the greatest beneficiaries,

⁴³⁵ This change is not statistically significant at the 95% confidence level.

⁴³⁶ This is because the USEER survey counts energy employment based on where energy employees spend more of their energy-related labor hours. See the introduction of this section and the survey in Appendix B for more details.

⁴³⁷ Tax credits are more likely to be taken when the credit is large relative to project cost, and Certified HVAC and Certified ground-source or Geothermal Heat Pumps fit that description. However, the employment trends in other residential Certified equipment and materials do not indicate a pull-forward spike.

⁴³⁸ Establishments with Traditional HVAC activities typically perform work across other USEER EE subsectors, such as Certified HVAC, Certified Air-Source Heat Pumps, Certified Ground-Source or Geothermal Heat Pumps, and Certified Water Heaters.

⁴³⁹ This is the amount more an occupation pays in the energy sector relative to the same occupation in the broader U.S. labor market.

with wages 10% higher (\$4,000 annually) than their peers working throughout the broader economy. Similarly, Electrical, Electronic, and Electromechanical Assemblers received 9% more in the EE sector (\$4,000 more annually) compared to peers in the broader economy. Heavy and Tractor-Trailer Truck Drivers received 7% more (\$4,000 more annually), as shown in Figure 5.3.

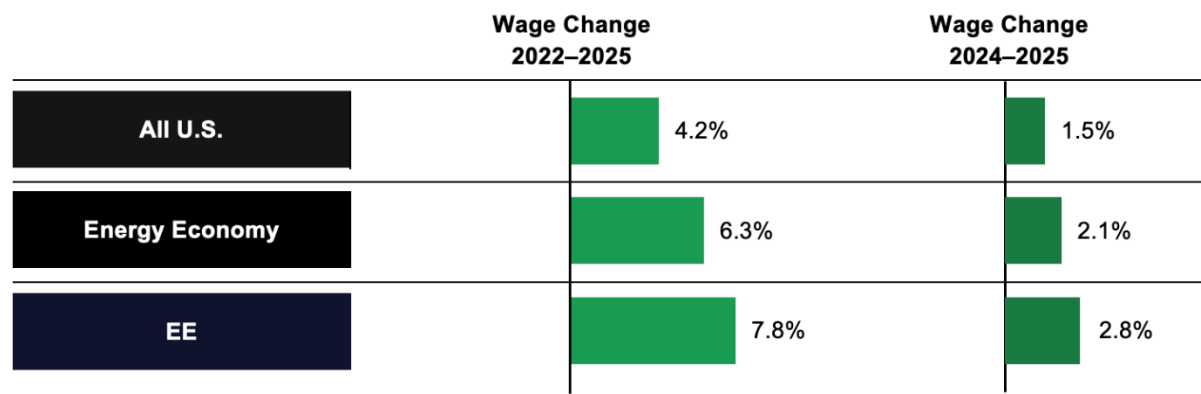


Figure 5.2. EE Sector Wages, 2022–2025 & 2024–2025, BLS QCEW^{440, 441}

⁴⁴⁰ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. Wages are reported in nominal terms. Data is from the BLS QCEW.

⁴⁴¹ Nominal Q4 average weekly wages were converted to fourth-quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. Unless otherwise noted, sectors are defined using energy-intensive NAICS from QCEW that touch sector categories. Employment sizes are usually different than measured by USEER as NAICS boundaries are different from USEER sector boundaries.

Occupation Category	Occupation Name	Wage Premium	U.S. Annual Median Wage	EE Annual Median Wage
Construction, Installation, or Repair Positions	Construction and Building Inspectors	 5%	\$75,000	\$78,000
	Construction Laborers	 5%	\$47,000	\$49,000
	Electricians	 6%	\$63,000	\$67,000
	Operating Engineers and Other Construction Equipment Operators	 12%	\$60,000	\$67,000
	Plumbers, Pipefitters, and Steamfitters	 2%	\$64,000	\$65,000
Management/ Professional Positions	Civil Engineers	 4%	\$101,000	\$105,000
	Cost Estimators	 1%	\$79,000	\$80,000
	Electrical Engineers	 0%	\$121,000	\$121,000
	General and Operations Managers	 5%	\$106,000	\$111,000
	Project Management Specialists	 5%	\$102,000	\$107,000
Production/ Manufacturing Positions	Electrical, Electronic, and Electromechanical Assemblers*	 9%	\$46,000	\$50,000
	Engine and Other Machine Assemblers	 11%	\$54,000	\$59,000
	Heavy and Tractor-Trailer Truck Drivers	 7%	\$59,000	\$63,000
	Laborers and Freight, Stock, and Material Movers, Hand	 10%	\$40,000	\$44,000
	Welders, Cutters, Solderers, and Brazers	 4%	\$54,000	\$56,000

Figure 5.3. EE Wages by Priority Occupations, 2025, USEER Survey⁴⁴²

* Except Coil Winders, Tapers, and Finishers

⁴⁴² USEER wage data provides the best summary of occupation wages for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in Occupations Affected Wages in the Electrical Contractors and Plumbing and HVAC Contractor Sector

Changes in the mix of occupations can affect the sector's average wage even if pay within individual occupations changes little, as pay across occupations can vary within a sector. Analyzing changes in occupation composition can help determine whether wage trends were driven primarily by pay increases within occupations or by shifts toward higher-paying or lower-paying occupations.

Detailed analysis of occupation employment and wage changes is not available for the Energy Efficiency (EE) sector defined by USEER. However, this analysis can be conducted using a related industry grouping defined in BLS OEWS^{exlii} data that combines residential and non-residential Electrical, Plumbing, Heating, and Air-Conditioning Contractors, as shown in Figure 5.5.⁴⁴³ This OEWS industry category overlaps with the Construction industry segments of the EPG and Electric Power T&D sectors in addition to the Energy Efficiency sector.

As previously noted, employment changes collected by USEER across Energy Efficiency subsectors do not typically mean workers are leaving their occupation or the broader sector; it usually means that a worker in a specific occupation is changing the focus of their work towards or away from a specific Energy Efficiency product or service. However, employment changes in this BLS OEWS analysis do show whether workers are leaving or entering a sector.

The OEWS data of the Electrical, Plumbing, Heating, and Air-Conditioning Contractors industry⁴⁴⁴ suggests strong demand for workers in the 2022 to 2025 period. As shown in Figure 5.5, employment increased by 10% (+224,000 workers) from 2022 and 2025 and by 3% (+69,000 workers) in 2025 compared to 2024. Inflation-adjusted wages increased by 3% (\$71,000 to \$73,000 annually) from 2022 to 2025 and 0.4%⁴⁴⁵ (\$72,000 to \$73,000 annually) from 2024 to 2025.⁴⁴⁶

No major occupation categories experienced a decline in employment greater than 50 workers from 2022 to 2025.

Occupations in this Energy Efficiency-aligned sector adding employment since 2022 had substantially higher wages than the occupations with declining employment. The average wage of occupations with employment increases between 2022 and 2025 was \$37 hourly (\$76,000 annually) and the average wage of the one occupation category with any employment decline was \$23 hourly (\$47,000 annually).⁴⁴⁷ This pattern is similar, though less stark, between 2024

⁴⁴³ The industry categories used are NAICS 23821 Electrical Contractors and Other Wiring Installation Contractors and NAICS 23822 Plumbing, Heating, and Air-Conditioning Contractors.

⁴⁴⁴ OEWS estimates may differ from QCEW counts because the two programs use different data sources, methods, and definitions.

⁴⁴⁵ Wage growth under 5% should be considered less accurate and interpreted with caution, as a relatively greater portion of wage changes could be due to an artifact of the OEWS methodology updating the wages from previous survey rounds or statistical sampling error.

⁴⁴⁶ Details provided in Appendix W.

⁴⁴⁷ Not shown in Figure 1.5. Details provided in Appendix W.

and 2025.⁴⁴⁸ The average hourly wage of occupations with employment increases from 2024 to 2025 was \$36⁴⁴⁹ (\$74,000 annually) and the average hourly wage of occupations with employment declines was \$32 (\$67,000 annually).

Between 2022 and 2025, the occupation category with the most employment growth was Construction and Extraction occupations, growing 9% (+108,000 workers), with a \$34 average hourly wage (\$71,000 annually), as shown in Figure 5.5. No occupation category experienced any meaningful employment declines. The pattern was similar between 2024 and 2025, with no occupation category declining by more than 500 workers, as shown in Figure 5.4.

The higher wage for growing occupations is driven by a relative increase in employment in the higher-wage Business and Financial Operations occupations, growing by 20% (+21,000 workers), with a \$45 average hourly wage (\$94,000 annually), as shown in Figure 5.5. Within the Business and Financial Operations occupations, the occupation that gained the most employment since 2022, by far, was Project Management Specialists, with employment growing by 41% (+15,000 workers), and a \$50 average hourly wage (\$105,000 annually).⁴⁵⁰ There was a similar trend in 2025 compared to 2024.

Hiring Difficulty

In 2025, 74% of EE establishments that hired in the preceding year reported difficulty hiring, as seen in Figure 5.14. Professional and Business Services and Construction were the industry segments in EE that reported more hiring difficulty.

⁴⁴⁸ This was previously shown in Figure 1.5.

⁴⁴⁹ Unless otherwise stated, all wages and salaries are reported in nominal 2025 dollars.

⁴⁵⁰ Not shown in table, more details provided in Appendix W.

Occupation Title	Employment 2025	Annual Average Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025
Arts, Design, Entertainment, Sports, and Media Occupations	3,500	\$68,000	1,200	-500
Protective Service Occupations	800	\$54,000	300	-100
Production Occupations	18,500	\$66,000	4,200	-40
Legal Occupations	200	\$166,000	20	-10
Life, Physical, and Social Science Occupations	5,500	\$95,000	1,800	900
Transportation and Material Moving Occupations	40,100	\$50,000	5,800	1,000
Sales and Related Occupations	51,200	\$86,000	6,700	1,100
Management Occupations	138,100	\$129,000	18,700	1,400
Architecture and Engineering Occupations	32,000	\$91,000	4,500	2,100
Computer and Mathematical Occupations	14,500	\$86,000	4,300	2,500
Office and Administrative Support Occupations	249,000	\$53,000	19,500	3,700
Business and Financial Operations Occupations	123,000	\$94,000	20,600	8,300
Installation, Maintenance, and Repair Occupations	463,000	\$64,000	28,700	14,900
Construction and Extraction Occupations	1,275,000	\$71,000	108,200	33,900
Total	2,414,000			

Figure 5.5. Employment Change by Major Occupation Category for Electrical, Plumbing, Heating, and Air-Conditioning Contractors, 2022–2025 & 2024–2025, BLS OEWS^{exliii}

Note: Average annual wage assumes 2,080 hours of work per year.

EE Employment

Employment by Subsector

The number of workers focused on EE activities increased by 6.5% (+144,900 workers) since 2022, Figure 5.6 shows. Between 2022 and 2025, the number of workers focused on EE activities increased across all subsectors. In 2025 compared to 2024, the change in the number of workers focused on different EE subsector activities was generally not statistically significant.

EE Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Certified Appliances, Products, & Services	619,000	10.2%	2.1%
Traditional HVAC	582,000	3.2%	-4.4%
Advanced & Recycled Building Materials	440,000	6.1%	-0.5%
LED, CFL, & Other Efficient Lighting ⁴⁵¹	374,000	6.4%	-0.1%
Other Energy Efficiency ⁴⁵²	217,000	7.9%	0.0%
Renewable Heating & Cooling	129,000	5.2%	-3.6%
Energy Efficiency Overall	2,360,000	6.5%	-0.9%

Figure 5.6. EE Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{451, 452, 453, 454, 455}

⁴⁵¹ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁵² Employment in the Other EE subsector consists of workers who engage in any energy efficiency activity that is not captured in the subsectors otherwise listed. This is also the subsector used when unable to split employment into a single subsector where employees spend “more of their time.”

⁴⁵³ The following changes in employment are statistically significant at the 95% confidence level: from 2024 to 2025, Non-Certified HVAC, Certified HVAC, Certified Data Center Equipment, Certified Ground-source or Geothermal Heat Pumps, and Energy Auditing services. From 2022 to 2025, all changes were statistically significant except for Non-Certified HVAC, Certified LED lighting, Other, Recycled Building Materials, Other Renewable Heating and Cooling, Air sealing, Certified Air-Source Heat Pumps, Certified Roofing, Solar Thermal Water Heating and Cooling, and Certified Windows, Doors and Skylights.

⁴⁵⁴ Other LED, CFL, and Efficient Lighting includes other efficient lighting that does not meet certification.

⁴⁵⁵ Other Energy Efficiency includes any energy efficiency that is not captured in the categories listed or a category that is used when unable to split employment into a single energy efficiency category where employees spend “more of their time” with one technology over another.

All technology categories in the Certified Appliances, Products, and Services subsector grew between 2022 and 2025, led by a 19% increase (+1,200 workers) in Certified Ground-Source or Geothermal Heat Pumps, and a 16% increase (+30,000 workers) in Certified HVAC (Except Air-Source or Ground-Source Heat Pumps). These two technologies also led growth between 2024 and 2025, each growing about 8% during this time, as seen in Figure 5.7.⁴⁵⁶

Certified Appliances, Products, and Services Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Certified HVAC, Except Air-Source or Ground-Source Heat Pumps	219,000	15.7%	8.0%
Other High-Efficiency HVAC Out of Scope for Certification ⁴⁵⁶	152,000	7.8%	0.3%
Certified Appliances (Not Including HVAC)	142,000	7.4%	-0.3%
Certified Air-Source Heat Pumps	67,600	4.6%	-4.2%
Certified Commercial Food Service Equipment	30,600	8.8%	-2.9%
Certified Ground-Source or Geothermal Heat Pumps	7,700	18.5%	8.2%
Certified Appliances, Products, and Services Overall	619,000	10.2%	2.1%

Figure 5.7. Certified Appliances, Products, and Services Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey⁴⁵⁷

⁴⁵⁶ Other High-Efficiency HVAC Out of Scope for Certification includes products and services for high-efficiency HVAC systems that are large capacity, custom, or otherwise fall outside certified product categories and cannot be rated by standardized prescriptive metrics (e.g., indirect evaporative coolers, air-to-water heat pumps, energy recovery systems).

⁴⁵⁷ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

All technology categories in the Advanced and Recycled Building Materials subsector grew in employment between 2022 and 2025, led by a 9% increase (+10,000 workers) in Advanced Building Materials and Insulation, and an 8% increase (+8,400 workers) in Certified Insulation. Only Advanced Building Materials and Insulation grew slightly, by 1% (+1,200 workers) between 2024 and 2025, as Figure 5.8 shows.

Advanced and Recycled Building Materials Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Advanced Building Materials/Insulation	117,000	9.3%	1.0%
Certified Insulation	115,000	7.9%	-0.7%
Recycled Building Materials	78,200	3.6%	-1.6%
Air Sealing	70,300	2.3%	-1.2%
Certified Roofing	34,300	5.2%	-0.1%
Certified Windows, Doors & Skylights	25,600	3.0%	-2.1%
Advanced and Recycled Building Materials Overall	440,000	3.2%	-0.5%

Figure 5.8. Advanced and Recycled Building Materials Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey⁴⁵⁸

⁴⁵⁸ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Between 2022 and 2025 employment in Other LED, CFL, and Efficient Lighting grew 10% (+20,200 workers), the fastest of all technology categories within the LED, CFL, and Other Efficient Lighting subsector. Employment in Other LED, CFL, and Efficient Lighting grew 2% (+4,800 workers) between 2024 and 2025, the only technology category in the subsector to grow during this time, with Figure 5.9 providing a full breakdown.

LED, CFL, and Other Efficient Lighting Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Other LED, CFL, and Efficient Lighting ⁴⁵⁹	227,000	9.8%	2.2%
Certified LED Lighting	147,000	1.6%	-3.4%
LED, CFL, and Other Efficient Lighting Overall	374,000	6.4%	-0.1%

Figure 5.9. LED, CFL, and Other Efficient Lighting Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{459,460}

⁴⁵⁹ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁶⁰ Other LED, CFL, and Efficient Lighting includes other efficient lighting that does not meet certification.

Certified Data Center Equipment employment in 2025 grew dramatically since 2022, increasing 33% (+3,300 workers). Energy Auditing Services in 2025 also grew, adding 23% (+600 workers) more workers since 2022, up 14% (+400 workers) since 2024, as shown in Figure 5.10.

Other Energy Efficiency Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Other Energy Efficiency ⁴⁶¹	99,200	4.6%	0.4%
Reduced Water Consumption Products & Appliances	93,500	8.1%	-1.9%
Certified Data Center Equipment	13,700	32.5%	8.6%
Certified Electronics (TVs, Telephones, Audio/Video, etc.)	7,200	7.5%	-0.6%
Energy Auditing Services	3,100	23.0%	13.5%
Other Energy Efficiency Overall	217,000	7.9%	0.0%

Figure 5.10. Other EE Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{461, 462}

⁴⁶¹ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. *See* the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁶² Other Energy Efficiency includes any energy efficiency that is not captured in the categories listed or a category that is used when unable to split employment into a single energy efficiency category where employees spend “more of their time” with one technology over another.

Employment moved similarly across all technology categories within the Renewable Heating and Cooling Employment subsector. Since 2022, all technologies increased by about 5%, while all categories declined by 3% to 4% between 2024 and 2025, as shown in Figure 5.11.

Renewable Heating & Cooling Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Other Renewable Heating & Cooling	77,100	5.4%	-3.6%
Solar Thermal Water Heating & Cooling	30,400	4.9%	-3.4%
Certified Water Heaters	21,200	4.6%	-3.9%
Renewable Heating & Cooling	129,000	5.2%	-3.6%

Figure 5.11. Renewable Heating and Cooling Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey⁴⁶³

⁴⁶³ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employment by Industry

For all industry segments, the number of workers focused on EE activities increased, except for Other Services as shown in Figure 5.12. Construction industry employment, which includes installation, maintenance,⁴⁶⁴ and repair activities increased by 7.1% (+85,100 workers) in 2025 compared to 2022.

EE industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Construction	1,278,000	7.1%	-1.5%
Professional & Business Services	492,000	1.2%	-2.2%
Manufacturing	344,000	13.7%	4.9%
Wholesale Trade	211,000	8.9%	0.2%
Other Services ⁴⁶⁵	35,500	-11.8%	-17.3%
Energy Efficiency Overall	2,360,000	6.5%	-0.9%

Figure 5.12. EE Employment by Industry, 2022–2025 & 2024–2025, USEER Survey^{465, 466}

Note: Differences across categories and over time have not been tested for statistical significance.

⁴⁶⁴ NAICS Construction includes construction-related installation, maintenance, and repair activities, but not all repair work is classified as construction. Classification depends on the establishment's primary activity.

⁴⁶⁵ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁶⁶ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

EE Employment by Occupation Category

One-third of the EE workforce is employed in Construction, Installation, or Repair. Administrative (22%) and Management/Professional occupations (16%) also comprise a significant portion of the EE workforce. The largest occupations followed the job trends of the overall sector, increasing between 2022 to 2024, and then decreasing from 2024 to 2025, as shown in Figure 5.13.

EE Occupation Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Administrative Occupations	510,000	1.5%	-3.8%
Construction, Installation, or Repair Occupations	787,000	8.3%	-1.5%
Management/ Professional Occupations	385,000	8.6%	-2.7%
Production/ Manufacturing Occupations	346,000	3.2%	2.9%
Sales Occupations	206,000	15.2%	3.3%
Other Occupations ⁴⁶⁷	127,000	7.2%	3.9%
Energy Efficiency Overall	2,360,000	6.5%	-0.9%

Figure 5.13. EE Employment by Occupation Category, 2022–2025 & 2024–2025, USEER Survey^{467, 468, 469}

Note: Differences across categories and over time have not been tested for statistical significance.

⁴⁶⁷ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁶⁸ The same occupation roles can appear in multiple industries, and each industry typically employs workers across multiple occupation categories. For example, the Manufacturing industry employs many workers engaged in production or manufacturing activities but also employs workers who perform management or professional activities.

⁴⁶⁹ Other Occupations includes workers in all other occupation groups not listed, such as Life, Physical, and Social Science occupations (workers who use scientific research to help solve problems and expand knowledge), Protective Service occupations (workers who provide public safety), and Farming, Fishing, and Forestry occupations (workers who tend and harvest renewable resources and manage forests and public parks).

EE Employer Perspectives on Hiring Difficulty

The USEER surveys employers on their perspectives on hiring difficulties across industries, as well as the primary reasons for hiring difficulties and the most difficult to hire occupations.⁴⁷⁰

Hiring Difficulty by Industry

Employers in the Professional and Business Services industry reported the greatest hiring difficulty within EE in 2025. More than three-quarters of Professional and Business Services employers reported hiring was at least somewhat difficult. As Figure 5.14 illustrates, construction employers also reported notable hiring difficulty, with 78% indicating at least some level of hiring difficulty.

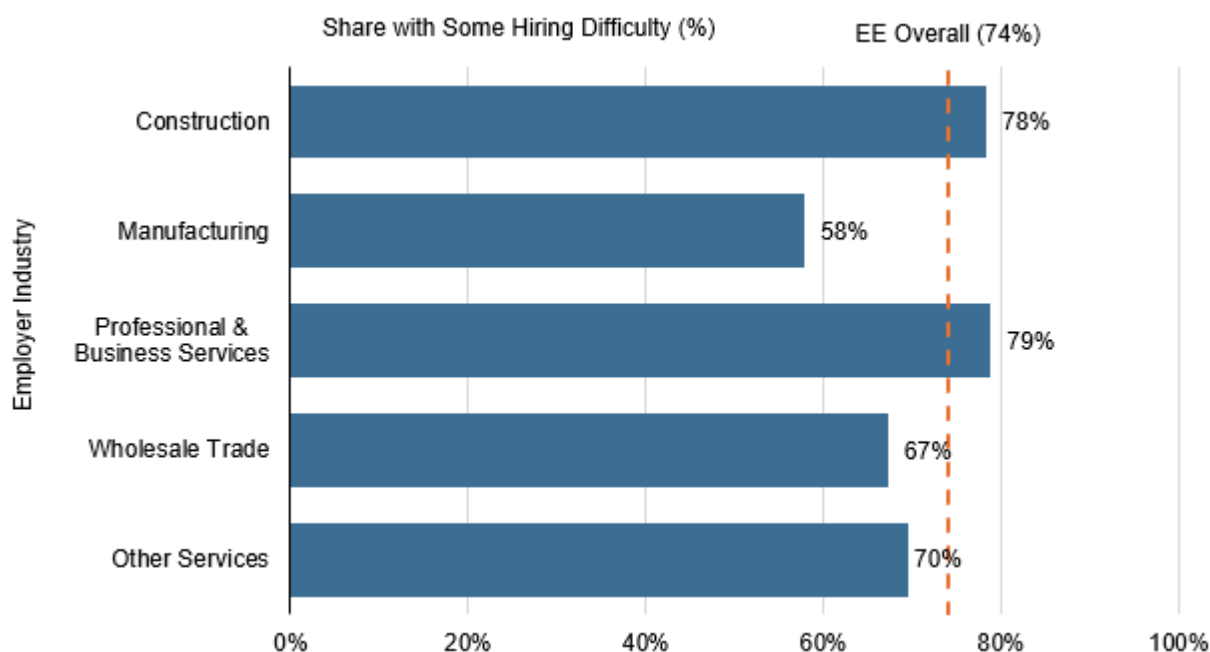


Figure 5.14. Percentage of EE Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey^{471, 472}

Note: Differences across categories and over time have not been tested for statistical significance.

⁴⁷⁰ The EE sector does not have some hiring difficulty data due to survey design. For more information, please refer to Appendix A.

⁴⁷¹ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁷² Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Most Common Reasons for Hiring Difficulty

Employers across nearly all industries within EE reported that a lack of experience, training, or technical skills was the most common reason for hiring difficulty. Other Services employers within EE most frequently reported insufficient qualifications of candidates as the primary reason for hiring difficulty, a finding summarized in Table 5.1.

Industry	Percent of Employers and Reasons for Hiring Difficulty
Construction	46% Lack of Experience, Training, or Technical Skills
	35% Insufficient Qualifications (Certifications or Education)
	21% Competition/Small Applicant Pool
Manufacturing	46% Lack of Experience, Training, or Technical Skills
	27% Insufficient Qualifications (Certifications or Education)
	23% Competition/Small Applicant Pool
Wholesale Trade	52% Lack of Experience, Training, or Technical Skills
	35% Insufficient Qualifications (Certifications or Education)
	19% Insufficient Non-Technical Skills (Work Ethic, Dependability, Critical Thinking)
Professional & Business Services	53% Lack of Experience, Training, or Technical Skills
	26% Insufficient Qualifications (Certifications or Education)
	21% Competition/Small Applicant Pool
Other Services ⁴⁷³	43% Insufficient Qualifications (Certifications or Education)
	39% Lack of Experience, Training, or Technical Skills
	18% Cannot Provide Competitive Wages
EE Sector Overall	46% Lack of Experience, Training, or Technical Skills
	33% Insufficient Qualifications (Certifications or Education)
	20% Competition/Small Applicant Pool

Table 5.1. EE Employers' Reasons for Hiring Difficulty, 2025, USEER Survey^{474, 475}

⁴⁷³ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

⁴⁷⁴ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁷⁵ Multiple responses permitted; totals may not add up to 100%.

Most Difficult to Hire Occupations

Employers in Wholesale Trade and Professional and Business Services reported that Management (Directors, Supervisors, Vice Presidents) occupations were the most difficult to hire. Construction employers reported that Installation Workers were the most difficult to hire. Manufacturing employers reported Engineers/Scientists as most difficult to hire in 2025, and Other Services⁴⁷⁶ cited Technicians or Mechanical Support as most difficult to hire, as referenced in Table 5.2.

Industry	Percent of Employers and Most Difficult to Hire Occupation
Construction	42% Installation Workers
	28% Management (Directors, Supervisors, Vice Presidents)
	22% Technicians or Mechanical Support
Manufacturing	21% Engineers/Scientists
	19% Management (Directors, Supervisors, Vice Presidents)
	16% Technicians or Mechanical Support
Professional & Business Services	20% Engineers/Scientists
	25% Management (Directors, Supervisors, Vice Presidents)
	13% Technicians or Mechanical Support
Wholesale Trade	43% Management (Directors, Supervisors, Vice Presidents)
	17% Sales, Marketing, or Customer Service
	19% Technicians or Mechanical Support
Other Services	20% Installation Workers
	27% Management (Directors, Supervisors, Vice Presidents)
	30% Technicians or Mechanical Support
EE Sector Overall	22% Installation Workers
	26% Management (Directors, Supervisors, Vice Presidents)
	20% Technicians or Mechanical Support

Table 5.2. Occupations Most Difficult to Hire for EE Employers, 2025, USEER Survey^{477, 478}

⁴⁷⁶ Other Services includes establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

⁴⁷⁷ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁷⁸ Multiple responses permitted; totals may not add up to 100%.

EE Workforce Demographics

Demographic characteristics of the EE workforce are compared with the broader sector, the energy economy workforce, and the U.S. overall workforce, as detailed in Table 5.3.

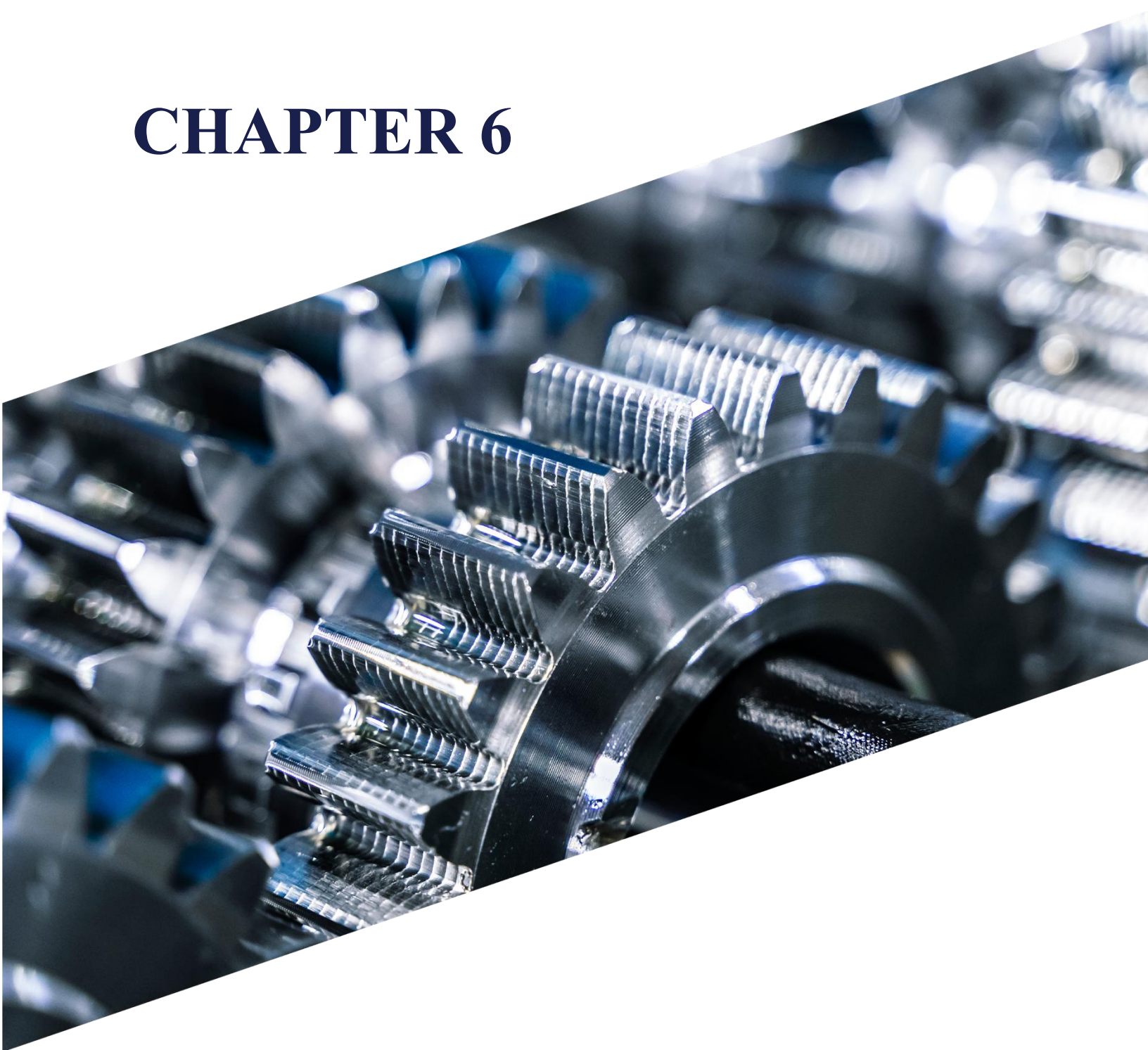
Categories	Number of Workers	Share of EE Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	1,741,000	74%	74%	53%
Women	620,000	26%	26%	47%
Hispanic or Latino	438,000	19%	19%	20%
Non-Hispanic or Latino	1,923,000	81%	81%	80%
American Indian or Alaska Native	69,000	3%	3%	1%
Asian	148,000	6%	7%	7%
Black or African American	225,000	10%	9%	13%
Middle Eastern or North African	4,600	<1%	1%	n/a
Native Hawaiian or Other Pacific Islander	32,300	1%	1%	<1%
White	1,725,000	73%	72%	75%
Two or More Races	76,900	3%	4%	3%
Unknown Race	79,200	3%	3%	n/a
Veterans	215,000	9%	9%	5%
18 to 29	711,000	30%	29%	22%
30 to 54	1,290,000	55%	52%	55%
Over 54	360,000	15%	18%	23%
Self-Identification of Disability	66,700	3%	2%	5%
Formerly Incarcerated	41,500	2%	2%	2%
Represented by a Union ⁴⁷⁹	314,000	13%	12%	10%

Table 5.3. EE Workforce Demographics and Characteristics, 2025, USEER Survey^{480, cxliv}

⁴⁷⁹ For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁴⁸⁰ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. *See* endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

CHAPTER 6



Motor Vehicles and Component Parts

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Motor Vehicles and Component Parts

The Motor Vehicles and Component Parts (MV&CP) sector includes businesses that design vehicles and parts, manufacture and ship new vehicles and parts, as well as businesses that repair motor vehicles. This includes cars, trucks, and buses, but excludes railroad vehicles (such as locomotives, freight cars and passenger rail cars), airplanes, and any shipbuilding activity.⁴⁸¹ MV&CP is included in the USEER because the transportation sector is a significant share of U.S. energy consumption through fuels and electricity.^{cxlv}

The MV&CP subsectors include:

- Gasoline and Diesel Motor Vehicles
- Hybrid EVs
- Battery EVs
- Plug-In Hybrid Vehicles
- Hydrogen/Fuel Cell Vehicles
- Natural Gas Vehicles⁴⁸²
- Other Vehicles⁴⁸³

Unless otherwise noted, the terms used to describe broader vehicle types in this section will follow EIA practice,^{cxlvi} as shown in Figure 6.1 below. Electric Vehicles, or ‘EVs’ include both Battery Electric Vehicles (BEV) and Plug-in Hybrid Electric Vehicles (PHEV), while Hybrid Vehicles have their own category.

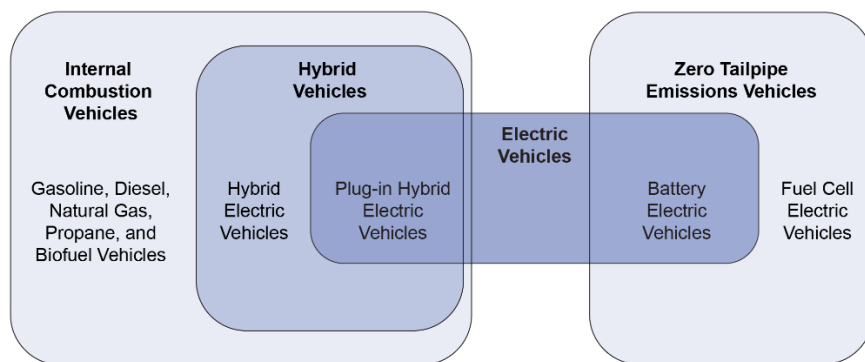


Figure 6.1. Vehicle Classifications by Technology Type^{cxlvii}

⁴⁸¹ Employment in Motor Vehicles covers jobs related to the assembly and repair of vehicles sold in the marketplace, while Component Parts employment covers the materials used in this assembly and replacement parts.

⁴⁸² Natural Gas Vehicles are alternative fuel vehicles that use compressed natural gas or LNG as an alternative to other fossil fuels. These vehicles can produce fewer emissions and may cost less to fuel. Some run only on natural gas, while others can switch between natural gas and gasoline.

⁴⁸³ Other Vehicles are any motor vehicle technology that is not captured in the subsector categories listed based on employer response. Examples include propane or gas vehicles. It is also a subsector used when unable to place employees in a category where they spend “more of their time,” as is often the case for maintenance and repair workers who work on all types of vehicles, depending on the component. See Appendix T for Other Vehicles subchapter.

Quick Glance

Employment in the MV&CP declined in 2025 compared to 2024 as automakers reduced production capacity in response to weaker consumer vehicle demand and high vehicle costs. Employment losses were mainly concentrated in Manufacturing establishments, as shown in Figure 6.10, and the share of workers in Production and Manufacturing occupations in 2025 declined since 2022, shown in Figure 6.11. These losses, however, were partially offset by a substantial 17% employment increase in Management and Professional Occupations (+45,100 workers) in the same period.

Despite declining employment, the sector experienced strong wage gains in 2025 compared to 2022, consistent with rising skill intensity and workforce composition shifting towards higher-paying occupations. In 2025, inflation-adjusted wages in the sector increased 5% (14% nominal growth) compared to 2022, as shown in Figure 6.6. Further analysis of BLS OEWS data, shown in Figure 6.8, suggests this is driven by employment gains in higher-paying Architecture and Engineering occupations, with an average wage of \$47 hourly (\$98,000 annually).^{cxlviii} In addition, MV&CP wages command wage premiums. From USEER wage estimates, the MV&CP sector median⁴⁸⁴ annual salary for occupation wages was \$58,000, with wage premiums of 15% over the U.S. overall wages, as Figure 1.4 shows.⁴⁸⁵

BLS data also suggests this smaller, more highly paid workforce is more efficient. As employment fell slightly and wages increased from 2022 to 2025,⁴⁸⁶ output per worker increased 9% between 2022 and 2025 in the Motor Vehicle Manufacturing industry.^{cxlix}

As the auto market continues to operate in an environment of weakened consumer demand and economic uncertainty, the employment outlook in MV&CP is weaker than other energy sectors. Further discussion on MV&CP employment can be found in the Labor Market Analysis and Future Outlook chapters.

⁴⁸⁴ Due to methodological differences, wage estimates from the USEER survey are reported in median terms, while wage estimates from BLS sources are reported in average terms.

⁴⁸⁵ USEER wage estimates differ from QCEW wage estimates due to differences in wage methodology. The Introduction provides a discussion about the different data sources. More details about the USEER wage estimate methodology are provided in Appendix A.

⁴⁸⁶ BLS QCEW, *See* Figure 1.3.

MV&CP Key Takeaways



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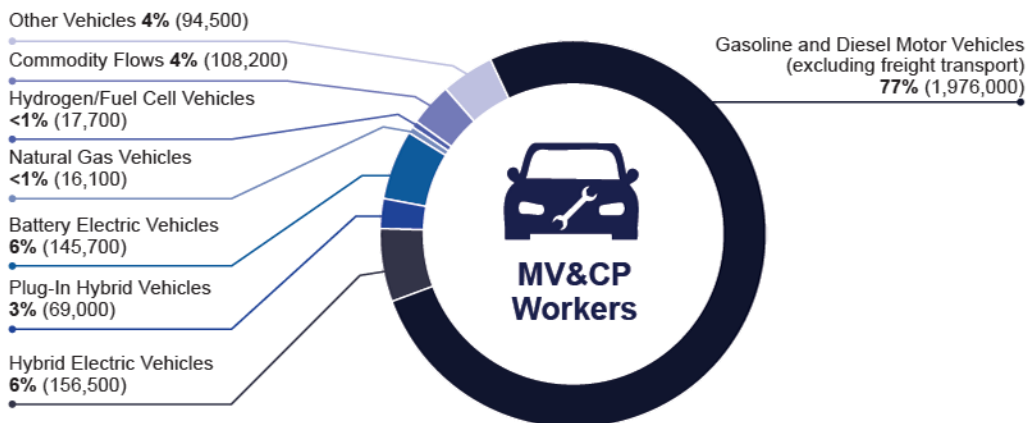
-2% (-50,300) workers



\$58k

15% higher than U.S. median annual wage

Employment by Subsector



Occupation Wages



Architecture & Engineering

+19%

employment growth since 2022



Laborers & Freight

\$48k/yr

+19% vs. U.S. median (\$40k)



Maintenance workers

\$58k/yr

+18% vs. U.S. median (\$50k)

Hiring Insights



37% of employers hired



71% of employers had trouble hiring, especially for Technicians or Mechanical Support positions

Figure 6.2. Motor Vehicle and Component Parts Key Takeaways, 2025, USEER Survey⁴⁸⁷

⁴⁸⁷ The wage premium described here is the additional amount the median MV&CP job pays relative to median U.S. pay. Energy sector median wages are derived from USEER survey data. U.S. median wages are from the May 2025 BLS OEWS estimates using all occupations and industries. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions,

MV&CP Chapter Contents

The MV&CP chapter includes the following sections:

- **Labor Market Analysis** discusses trends on employment, wages, and hiring.
- **Employment by Subsector, Industry, Activity, and Occupation** describes where employment is concentrated by activity, industry, and broad occupation category across the sector.
- **Employer Perspectives on Hiring Difficulty** aggregates employer responses on perceived hiring difficulty, top reasons for hiring difficulty, and most difficult to hire occupations.
- **Workforce Demographics** presents a descriptive picture of the MV&CP sector workforce.

sampling, and estimation methodology. *See* the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

MV&CP Labor Market Analysis

Employment

Weaker-than-expected retail vehicle demand and major policy changes contributed to employment declines in the MV&CP sector in 2024 and 2025. Gasoline and diesel vehicle sales fell sharply after the pandemic and never returned to pre-pandemic levels, Figure 6.3 shows.

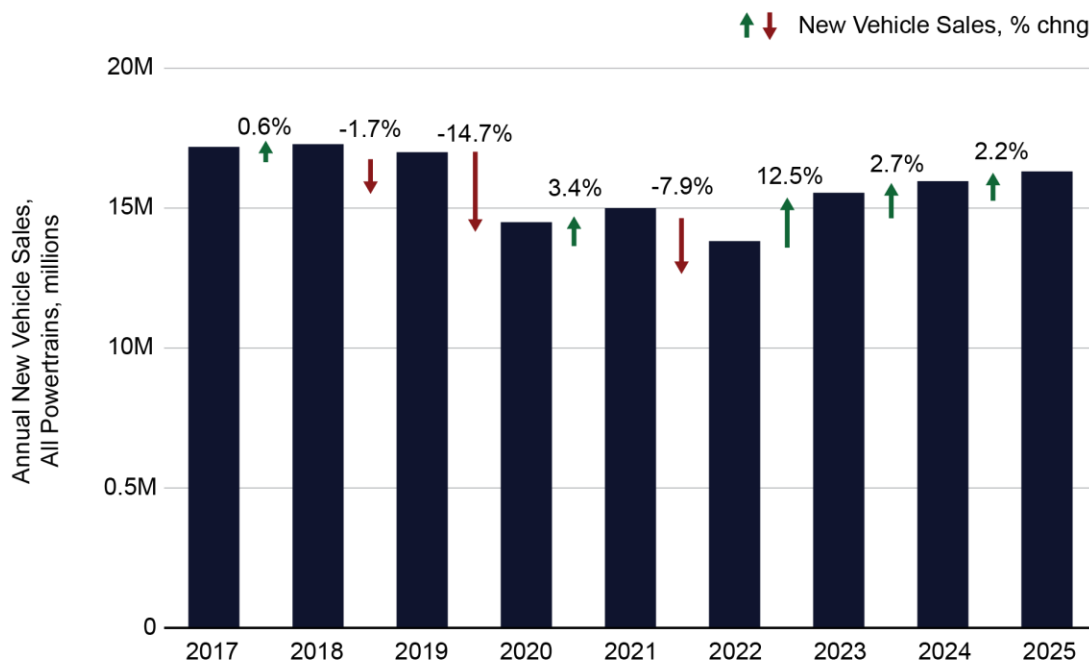


Figure 6.3. New Vehicle Sales, % Change^{cl}

High vehicle ownership costs also reduced demand. New vehicle prices rose 22%, more than the costs of other goods and services between 2021 and 2023 as labor and material costs increased.^{cli} At the same time, higher interest rates^{clii} sharply increased the cost of auto loans.^{cliii} Insurance, repair, and maintenance costs also increased.^{cliv} Together, these higher costs made vehicle ownership less affordable and weakened demand for new vehicles.^{clv}

Consumers also changed what type of vehicles they purchased. Since 2023, gasoline and diesel vehicles lost market share, while hybrid and EVs gained market share, see Figure 6.4. By 2025, gasoline and diesel vehicles made up only about 75% of new vehicle sales, down from about 96% in 2019.

Hybrid vehicle sales remained strong during this time, with double-digit growth, while EV sales (BEV and PHEV), slowed to near zero, Figure 6.5 shows. The slowing of EV sales was likely due in part to policy changes, including the accelerated expiration of tax credits^{clvi} on September 30, 2025.

Energy Information Administration analysis shows that Battery EVs reached a record 12% share of light-duty vehicle sales in September 2025 just before the credits expired, providing evidence

of the impact of the tax credit changes.^{clvii} After that, the Battery EV market share fell to below 6% for the rest of the year. 2025 was the first year that annual Battery EV sales and market share increased more slowly from the year before.^{clviii}

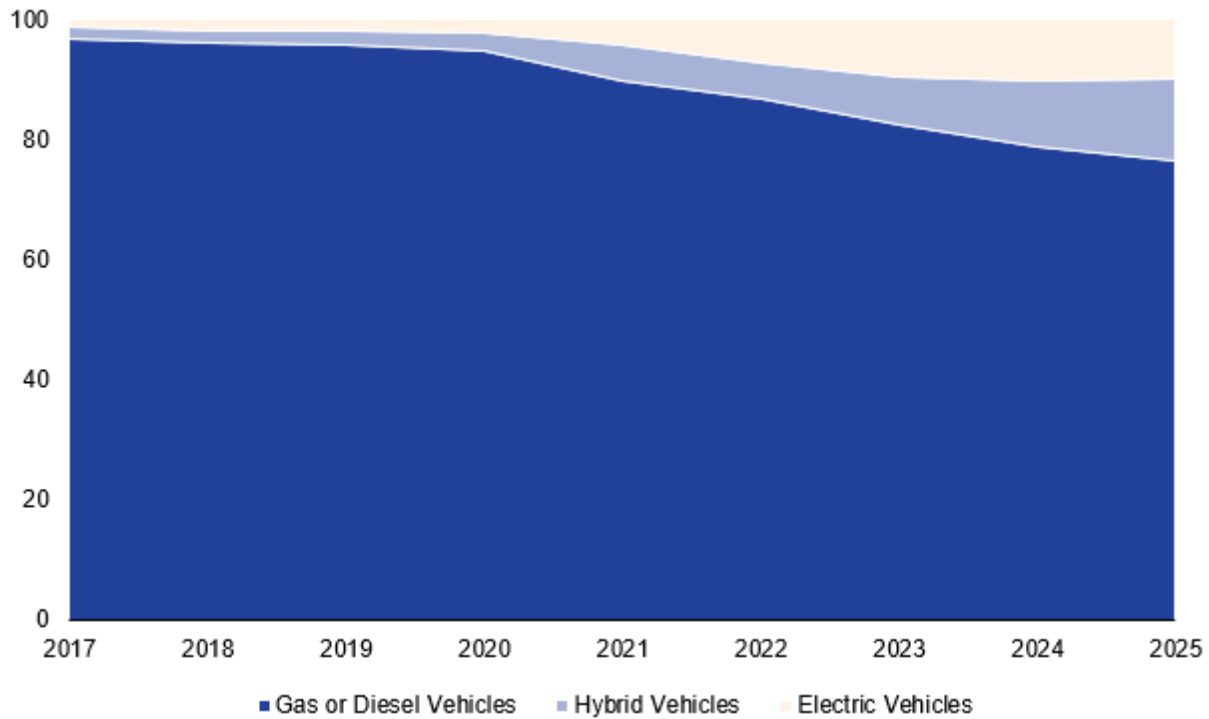


Figure 6.4. Share of New Vehicle Sales^{clix}

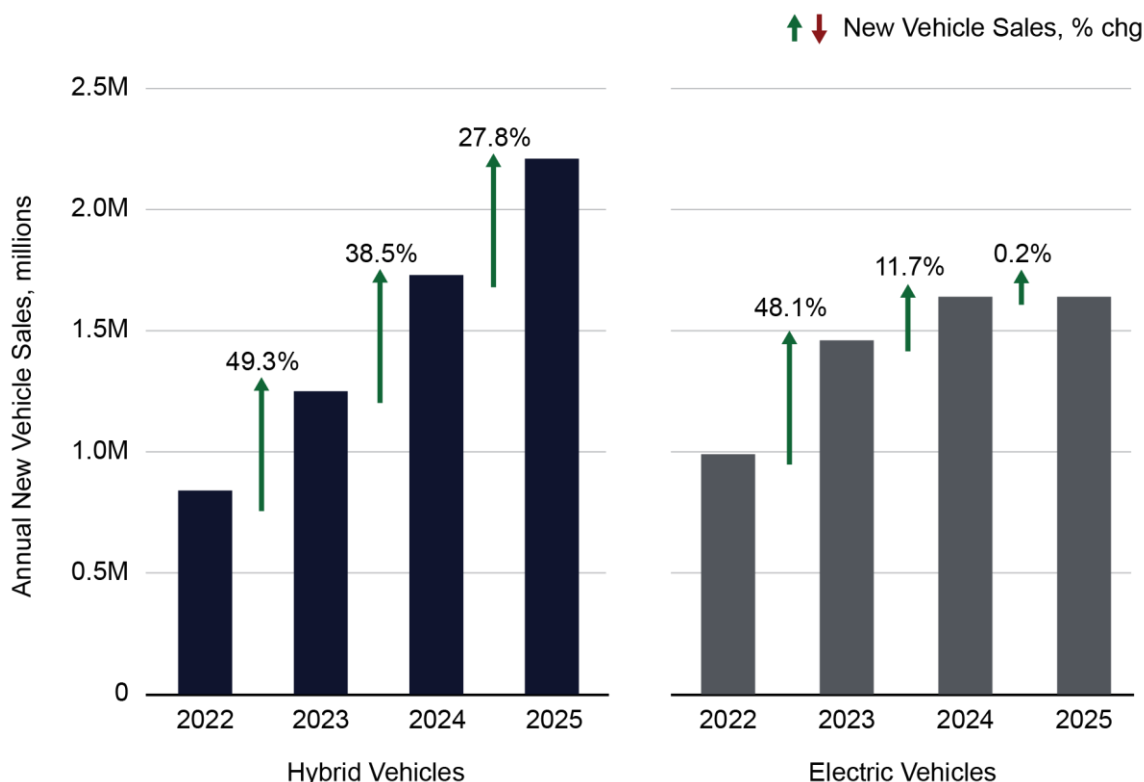


Figure 6.5. Hybrid vs. EV New Vehicle Sales, 2022–2025^{clx}

In response to weaker demand, U.S. automakers reduced production capacity for electric vehicles starting in 2024 and reallocated production toward hybrid, gas, and diesel vehicles.

This reduction in capacity contributed to employment losses across the sector, as shown in Figure 6.9. Several major automakers cut EV-related investments in 2024^{clxi} and paused plant construction.^{clxii} Meanwhile, as carmakers cut production capacity, they retooled factories after weaker-than-expected EV sales^{clxiii} and shifted production toward larger trucks, SUVs, and hybrid models.^{clxiv}

In 2025, policy changes—specifically reduced federal EV incentives^{488,clxv} and deregulatory actions for gasoline and diesel vehicle emissions and fuel economy^{clxvi}—encouraged automakers to adjust their product mix. As EV sales growth slowed, automakers decreased their existing EV manufacturing capacity^{clxvii} and cancelled planned EV manufacturing investments.^{clxviii} Another automaker expanded production of larger, more expensive gas-powered SUVs and trucks, while also expanding flexible production of both gas- and electric vehicles.^{clxix} Another U.S. automaker announced an intention to invest in trucks, hybrids, and affordable EVs.^{clxx} Changes in auto-related tariffs in 2025^{clxxi} delayed some automaker investment decisions that would support job growth.^{clxxii}

⁴⁸⁸ The OBBBA was the original legislative push for the expiration of new and leased EV tax credits. See OBBBA §§ 70502(a), 70503, 139 Stat. 251 (amending I.R.C. §§ 30D(h), 45W(g)).

Vehicle sales by price show that affordability is shaping consumer demand. In 2025, sales fell for both lower-priced and higher-priced vehicles,^{clxxiii} while mid-priced vehicles gained market share. This suggests consumers are shifting toward mid-priced options and, in some cases, from new to used vehicles. Used vehicle sales^{clxxiv} and price^{clxxv} data suggest strong demand for used vehicles since 2024.

Wages

Wage and employment patterns from BLW QCEW data suggest that employment declines in MV&CP sector were associated with a shift toward smaller but more skilled, higher-paid and more efficient workforce. From 2024 to 2025, as overall employment declined 1.5%,⁴⁸⁹ inflation-adjusted wages in the sector (2.5%) grew more than inflation-adjusted wages in the QCEW-defined energy sector, as well as the overall U.S. workforce, as shown in Figure 6.6.

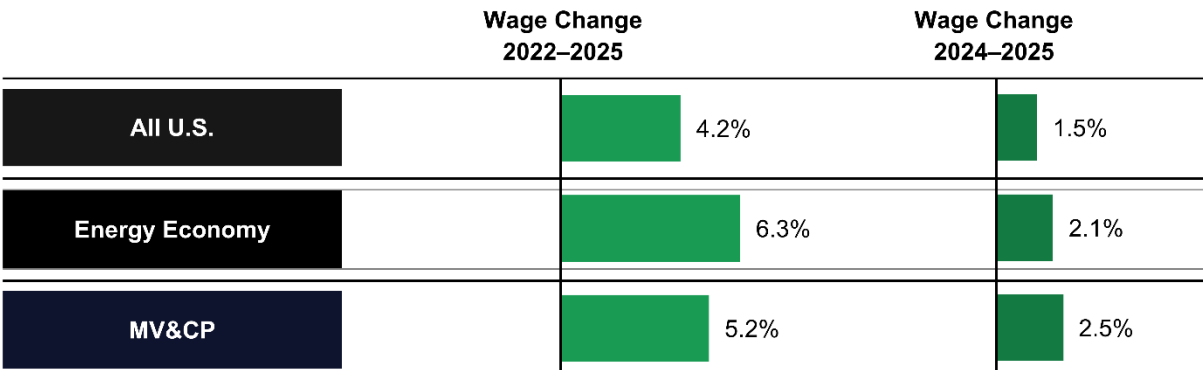


Figure 6.6. MV&CP Sector Wages, 2022–2025 & 2024–2025, BLS QCEW^{490, 491}

Further analysis of employment and wage changes by detailed industry within the MV&CP sector, as shown in Table 6.1, shows that despite minimal employment growth or even declines in the detailed MV&CP sectors, almost all QCEW subsectors experienced strong inflation-adjusted wage gains. The wage gains ranged from 3% to 17% between 2022 and 2025. Rising wages suggests increasing skill intensity and a shifting occupation mix towards higher wage occupations.

Employment patterns in USEER data also suggest that employment declines in the MV&CP sector were associated with a shift toward a smaller, more skilled, and more efficient workforce. As shown in Figure 6.11, there was an employment decline in lower-wage Production and Manufacturing occupations and an employment increase in higher-wage Management and Professional occupations.

⁴⁸⁹ Results not shown, *see* Appendix V.
⁴⁹⁰ Sector wages are calculated using energy-intensive NAICS codes weighted by employment size. Wages are reported in nominal terms. Data is from the BLS QCEW.
⁴⁹¹ Nominal Q4 average weekly wages were converted to fourth-quarter 2025 dollars using the Consumer Price Index for All Urban Consumers (CPI-U), U.S. City Average, All Items, not seasonally adjusted, based on fourth-quarter average index values. Unless otherwise noted, sectors are defined using energy-intensive NAICS from QCEW that touch sector categories. Employment sizes are usually different than measured by USEER as NAICS boundaries are different from USEER sector boundaries.

The shifting occupation mix also seems to correspond to higher labor productivity. From BLS data, output per worker for the motor vehicle manufacturing subsector⁴⁹² in 2025 was 9% higher than 2022.^{clxxvi}

Industry	Employment 2025	Annual Median Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025	Wage Change 2022–2025	Wage Change 2024–2025
Motor Vehicle Manufacturing	286,000	\$109,000	0.3%	1.5%	16.5%	4.5%
Motor Vehicle Body and Trailer Manufacturing	153,000	\$72,000	–8.6%	–2.3%	8.3%	3.3%
Motor Vehicle Parts Manufacturing	513,000	\$79,000	–8.1%	–4.4%	6.2%	4.8%
Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	365,000	\$84,000	–1.1%	–2.2%	–0.3%	0.6%
Automotive Repair and Maintenance	1,026,000	\$59,000	4.3%	–0.4%	3.0%	0.9%

Table 6.1. MV&CP Employment and Inflation-Adjusted Wages by Detailed Industry, 2022–2025 & 2024–2025, BLS QCEW⁴⁹³

Even with the smaller workforce, the MV&CP sector remained attractive from the perspective of occupation wages. USEER median wage data from 2025 shows that the MV&CP sector still pays sector wage premiums for many occupations, as shown in Figure 6.7. For example, Maintenance and Repair Workers earned roughly 18% more (\$9,000 annually⁴⁹⁴) than their colleagues working in the broader U.S. economy in 2025.

⁴⁹² Corresponding to NAICS 3361.

⁴⁹³ The BLS QCEW data generally provides the best combination of data on employment and wages by NAICS industry categories. For MV&CP, BLS QCEW industry categories largely align with USEER's MV&CP sector definition. *See* the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁴⁹⁴ Due to rounding conventions, the reported difference in Figure 6.7 is \$8,000, but the rounded amount of the difference in unrounded salaries is \$9,000.

Occupation Category	Occupation Name	Wage Premium	U.S. Annual Median Wage	MV&CP Annual Median Wage
Construction, Installation, or Repair Positions	Bus and Truck Mechanics and Diesel Engine Specialists	 2%	\$62,000	\$63,000
	Heavy and Tractor-Trailer Truck Drivers	 6%	\$59,000	\$62,000
	Industrial Machinery Mechanics	 6%	\$65,000	\$68,000
	Maintenance and Repair Workers, General	 18%	\$50,000	\$58,000
	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	 17%	\$47,000	\$55,000
Management/ Professional Positions	Electrical Engineers	 1%	\$121,000	\$121,000
	Industrial Production Managers	<1%	\$126,000	\$126,000
	Mechanical Engineers	 1%	\$104,000	\$105,000
	Paralegals and Legal Assistants	 3%	\$63,000	\$65,000
	Project Management Specialists	<1%	\$102,000	\$102,000
Production/ Manufacturing Positions	Assemblers and Fabricators	 4.2%	\$45,000	\$47,000
	Electrical, Electronic, and Electromechanical Assemblers*	 17.8%	\$46,000	\$54,000
	First-Line Supervisors of Production and Operating Workers	 1.5%	\$74,000	\$76,000
	Laborers and Freight, Stock, and Material Movers, Hand	 18.9%	\$40,000	\$48,000
	Welders, Cutters, Solderers, and Brazers	 5.9%	\$54,000	\$57,000

Figure 6.7. MV&CP Wages by Priority Occupations, 2025, USEER Survey⁴⁹⁵

*Except Coil Winders, Tapers, and Finishers

⁴⁹⁵ USEER wage data provides the best summary of occupation wages for USEER energy sector definitions; BLS data sources cannot distinguish between energy sector establishment wages for many NAICS categories. USEER wage data differs from BLS QCEW and BLS OEWS data due to differences in sampling and wage estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

How Changes in Occupations Affected Wages in the MV&CP Sector^{clxxvii}

Changes in the mix of occupations can affect the sector's average wage even if pay within individual occupations changes little, as pay across occupations can vary within a sector. Analyzing changes in occupation composition can help determine whether wage trends were driven primarily by pay increases within occupations or by shifts toward higher-paying or lower-paying occupations.

Fortunately, OEWS industry categories for MV&CP closely align with the USEER sector definition⁴⁹⁶ and the following analysis provides insight into how changes in the occupation composition of employment may have affected average wages in the sector.

In the OEWS data of the MV&CP sector,⁴⁹⁷ employment increased 4% (+86,000 workers) in 2025 from 2022, as shown in Figure 6.8. However, the sector declined by 1% (−25,000 workers) in 2025 from 2024. Inflation-adjusted wages in this sample increased by 4% (13% in nominal terms) between 2022 and 2025 and declined by less than 1% (3% in nominal terms)⁴⁹⁸ from 2024 to 2025.⁴⁹⁹

In the 2022 to 2025 period, occupations within MV&CP adding employment had slightly higher wages than occupations with declining employment. The total increase in employment among occupations with growing employment had an average wage of \$31 hourly (\$64,000 annually). Meanwhile, employment among declining occupations had an average wage of \$28 hourly (\$58,000 annually).⁵⁰⁰

The slightly higher wage of growing occupations is driven by an increase in employment in the higher-wage Architecture and Engineering occupations, with a weighted average wage of \$47 hourly (\$98,000 annually), as seen in Figure 6.8. Within this category, Engineering occupations grew the most, with higher wages than the average wage of the broader MV&CP sector in 2025. The engineering occupations that gained the most in employment in the sector were Industrial Engineering Technologists and Technicians, where employment increased 75% (+3,600 workers) with a \$33 average hourly wage (\$68,000 annually). Also, Mechanical Engineers increased employment 23% (+3,400 workers), with a \$53 average hourly wage (\$109,000 annually). Industrial Engineers increased employment 11% (+2,800 workers), with a \$49 average hourly wage (\$101,000 annually).

Meanwhile, employment in the Electrical Engineer occupation declined by 33% (−1,300 workers), potentially related to the decline in Electric Vehicle production capacity.

⁴⁹⁶ The OEWS data excludes commodity flow employment calculations that are included in this report's MV&CP sector. The sample is drawn from NAICS codes 3361, 3362, 3363, 4231, 8111.

⁴⁹⁷ OEWS estimates may differ from QCEW counts because the two programs use different data sources, methods, and definitions.

⁴⁹⁸ Wage growth under 5% should be considered less accurate and interpreted with caution, as a relatively greater portion of wage changes could be due to an artifact of the OEWS methodology updating the wages from previous survey rounds or statistical sampling error.

⁴⁹⁹ See Appendix W.

⁵⁰⁰ See Appendix W.

Employment in Installation, Maintenance, and Repair occupations grew the most between 2022 and 2025, up by 8% (+43,000 workers), with a \$28 average hourly wage (\$58,000 annually), as shown in Figure 6.8. Meanwhile, employment in Production occupations⁵⁰¹ declined the most, decreasing 4% (–27,000 workers) with a \$27 average hourly wage (\$56,000 annually). This pattern was similar in 2025 compared to 2024.

Within Production occupations, the occupation that decreased most in employment between 2022 and 2025 was Miscellaneous Assemblers and Fabricators, declining by 3% (–9,600 workers), with a \$26 average hourly wage (\$55,000 annually).⁵⁰² Within the Installation, Maintenance, and Repair occupations, the occupation that gained the most employment was Automotive Service Technicians and Mechanics, increasing by 7% (+18,000 workers), with an hourly average wage of \$26 (\$54,000 annually). These occupation trends were similar in the 2024 to 2025 period.⁵⁰³

Hiring Difficulty

In 2025, 71% of MV&CP establishments that hired in the preceding year reported difficulty hiring, Figure 6.12 shows. The industry segments in MV&CP that reported more hiring difficulty were Repair and Maintenance (73%) and Wholesale Trade, Distribution, and Transport (73%).⁵⁰⁴

⁵⁰¹ Production Occupations include workers who make, assemble, inspect, process, or package products, as well as workers who operate and monitor manufacturing equipment and industrial systems. Examples include assemblers, machinists, welders, quality control inspectors, semiconductor technicians, power plant operators, and water treatment plant operators. *See* <https://www.bls.gov/ooh/Production/> for more details.

⁵⁰² *See* Appendix W.

⁵⁰³ *See* Appendix W.

⁵⁰⁴ Differences across groups or over time have not been tested for statistical significance and should be interpreted descriptively.

Occupation Title	Employment 2025	Average Annual Wage 2025	Employment Change 2022–2025	Employment Change 2024–2025
Architecture and Engineering Occupations	70,400	\$98,000	11,300	800
Arts, Design, Entertainment, Sports, and Media Occupations	3,800	\$77,000	-1,100	-100
Building and Grounds Cleaning and Maintenance Occupations	9,900	\$37,000	1,700	500
Business and Financial Operations Occupations	81,500	\$80,000	9,700	-
Computer and Mathematical Occupations	18,700	\$107,000	3,100	-4,800
Construction and Extraction Occupations	17,500	\$75,000	-3,600	-400
Food Preparation and Serving Related Occupations	200	\$34,000	-100	0
Healthcare Practitioners and Technical Occupations	400	\$100,000	0	0
Installation, Maintenance, and Repair Occupations	606,400	\$58,000	43,400	5,400
Legal Occupations	1,000	\$112,000	200	100
Life, Physical, and Social Science Occupations	2,900	\$83,000	700	300
Management Occupations	133,600	\$120,000	7,000	-3,000
Office and Administrative Support Occupations	203,400	\$50,000	7,000	-4,500
Production Occupations	688,600	\$56,000	-27,400	-21,000
Protective Service Occupations	1,500	\$46,000	500	-200
Sales and Related Occupations	140,400	\$62,000	8,000	3,200
Transportation and Material Moving Occupations	409,400	\$40,000	25,700	2,100
Total	2,389,400			

Figure 6.8. Employment Change by Major Occupation Category for MV&CP, 2022-2025 and 2024-2025, BLS OEWS^{clxxviii}

Note: Average annual wage assumes 2,080 hours of work per year.

MV&CP Employment

Employment by Subsector

There were nearly 2.6 million workers employed within the MV&CP sector in 2025.^{505, 506} Motor Vehicles accounted for the largest number of workers within MV&CP, with nearly 1.5 million workers in 2025. Component Parts employed just over 1 million workers in the MV&CP sector in 2025.

In 2025, 80% of workers in MV&CP sector work in the Gasoline and Diesel Motor Vehicles subsector, accounting for less than 2 million workers. Hybrid Vehicles and Electric Vehicles account for about 6% each, employing more than 150,000 and 145,000 workers, respectively, as seen in Figure 6.9.⁵⁰⁷

The overall MV&CP sector saw employment declines of 1.1% (-50,300 workers) in 2025 since 2022, as seen in Figure 6.9. All vehicle types followed this trend (Gasoline & Diesel Vehicles, Hybrid EVs, Battery EVs, Plug-in Hybrid Vehicles, and Hydrogen/Fuel Cell Vehicles) except for Other Vehicles and Natural Gas Vehicles.

⁵⁰⁵ All figures presented in this report are rounded to the nearest hundred. As a result, totals may not match the sum of individual components due to rounding. See the Introduction for more information about this report's rounding conventions.

⁵⁰⁶ Standard errors are not calculated for MV&CP employment estimates because this sector consists of almost all NAICS categories with 100% of employment falling within USEER's MV&CP sector definition.

⁵⁰⁷ In the 2024 USEER, MV&CP estimates and comparisons were derived using data from Q3 instead of Q4 to mitigate data collection challenges resulting from the 2023 United Auto Workers strike. For comparability across years, all data in this report references data collected in Q4.

MV&CP Subsector	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Gasoline & Diesel Motor Vehicles	1,976,000	-1.9% 	-1.7% 
Hybrid Electric Vehicles	156,000	2.3% 	-3.0% 
Battery Electric Vehicles	145,000	8.5% 	-1.9% 
Other Vehicles ⁵⁰⁸	94,500	-4.6% 	-4.3% 
Plug-In Hybrid Vehicles	69,000	0.0% 	-1.9% 
Hydrogen/Fuel Cell Vehicles	17,800	-0.1% 	-2.9% 
Natural Gas Vehicles	16,100	5.3% 	0.9% 
MV&CP Overall	2,475,000	-1.1% 	-1.9% 

Figure 6.9. MV&CP Employment by Subsector, 2022–2025 & 2024–2025, USEER Survey^{508, 509, 510}

Note: Overall MV&CP employment does not have sampling uncertainty due to the sector's perfect match to QCEW NAICS codes. However, vehicle type employment estimates do have sampling uncertainty. None of the above changes in employment are significant except for Battery EVs 2022 to 2025.

⁵⁰⁸ The USEER survey provides the best summary of employment for USEER energy subsector definitions. BLS data sources cannot distinguish between energy sector establishment employment for many NAICS categories. USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁵⁰⁹ Figures are exclusive of 108,200 jobs in commodity flows that cannot be split by MV or CP subsectors.

⁵¹⁰ Other Vehicles include any motor vehicle technology that is not captured in the categories listed or a category that is used when unable to split employment into a single motor vehicle category where employees spend “more of their time” with one technology over another.

Employment by Industry

Employment changes by broad industry (value chain) categories show that the Repair and Maintenance industry employed 40% of the MV&CP workforce, or more than 1 million workers in 2025, Figure 6.10 shows. The Manufacturing industry made up the second largest share of MV&CP workers, accounting for more than one-third of workers in the sector with nearly 1 million workers. Wholesale Trade, Distribution, and Transport employed 20% of the MV&CP workforce, accounting for more than half a million workers. In 2025, the declines in the manufacturing value chain of the MV&CP sector drove the overall employment decline of 1.4% since 2022.

MV&CP Industry	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Repair & Maintenance	1,040,000	4.5%	1.6%
Manufacturing	950,000	-7.2%	-5.1%
Wholesale Trade, Distribution, & Transport	529,000	-1.4%	-2.4%
Professional & Business Services	64,100	2.6%	-3.5%
MV&CP Overall	2,583,000	-1.4%	-1.9%

Figure 6.10. MV&CP Employment by Industry, 2022–2025 & 2024–2025, USEER Survey⁵¹¹

Note: Differences across categories and over time have not been tested for statistical significance.

⁵¹¹ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

MV&CP Employment by Occupation Category

The largest occupation categories of workers in MV&CP in 2025 were Production/Manufacturing occupations (32%); Construction, Installation, or Repair occupations (27%); and Administrative occupations (15%), as seen in Figure 6.11.⁵¹²

In 2025 since 2022, the share of workers in the Production/Manufacturing occupations declined, while the share of workers in the Management/Professional and Administrative occupations increased. This is consistent with previous evidence that U.S. automakers have been decreasing production capacity in response to weakening consumer demand for vehicles after the pandemic.

MV&CP Occupation Category	Employment 2025	Employment Change 2022–2025	Employment Change 2024–2025
Administrative Occupations	363,000	6.2%	0.6%
Construction, Installation, or Repair Occupations	680,000	-0.7%	-2.5%
Management/ Professional Occupations	305,000	17.4%	0.0%
Production/ Manufacturing Occupations	789,000	-10.1%	-5.6%
Sales Occupations	189,000	0.6%	0.5%
Other Occupations ⁵¹³	149,000	-1.2%	9.7%
MV&CP Overall	2,475,000	-1.1%	-1.9%

Figure 6.11. MV&CP Employment by Occupation Category, 2022–2025 & 2024–2025, USEER Survey^{513, 514}

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⁵¹² Occupations can span multiple industries, and each industry relies on a variety of occupation skills. Multiple industries can draw on a variety of occupation categories. For example, production and manufacturing workers may be employed by the Manufacturing or Wholesale Trade, Distribution, and Transport industries.

⁵¹³ USEER employment data differs from BLS QCEW and BLS OEWS data due to differences in definitions, sampling, and estimation methodology. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁵¹⁴ Figures are exclusive of 108,200 jobs in commodity flows that cannot be split by MV or CP subsectors.

⁵¹⁵ Other Occupations includes workers in all other occupation groups not listed, such as Life, Physical, and Social Science occupations (workers who use scientific research to help solve problems and expand knowledge), Protective Service occupations (workers who provide public safety), and Farming, Fishing, and Forestry occupations (workers who tend and harvest renewable resources and manage forests and public parks).

MV&CP Employer Perspectives on Hiring Difficulty

This section provides results on hiring difficulty across industry category, the primary reasons for hiring difficulties, and the most difficult to hire occupations.⁵¹⁶

Hiring Difficulty by Industry

Employers in the Repair and Maintenance and Wholesale Trade, Distribution, and Transport industries reported the highest levels of hiring difficulty, with 73% in each industry reporting at least some difficulty in 2025, as seen in Figure 6.12.

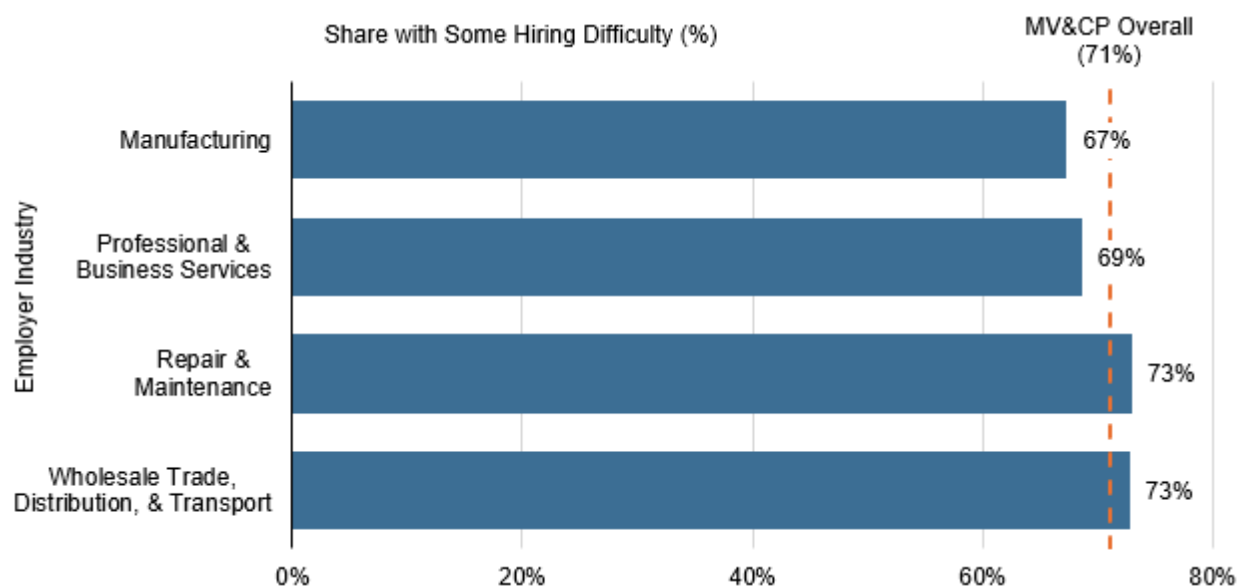


Figure 6.12 Percentage of MV&CP Employers Reporting at Least Some Hiring Difficulty by Industry, 2025, USEER Survey⁵¹⁷

⁵¹⁶ MV&CP lacks some hiring difficulty data due to survey design. For more information, please refer to the methodology in Appendix A for more information.

⁵¹⁷ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

Employers across all industries in MV&CP cited a lack of experience, training, or technical skills as the most common reason for hiring difficulties. Insufficient certification or education qualifications was the second most common reason for hiring difficulty among most industries, as depicted in Table 6.2

Industry	Percent of Employers and Reasons for Hiring Difficulty
Manufacturing	47% Lack of Experience, Training, or Technical Skills
	30% Insufficient Qualifications (Certifications or Education)
	20% Competition/Small Applicant Pool
Wholesale Trade, Distribution, & Transport	51% Lack of Experience, Training, or Technical Skills
	31% Insufficient Qualifications (Certifications or Education)
	16% Insufficient Non-Technical Skills (Work Ethic, Dependability, Critical Thinking)
Professional & Business Services	50% Lack of Experience, Training, or Technical Skills
	20% Competition/Small Applicant Pool
	18% Insufficient Qualifications (Certifications or Education)
Repair & Maintenance	48% Lack of Experience, Training, or Technical Skills
	32% Insufficient Qualifications (Certifications or Education)
	32% Competition/Small Applicant Pool
MV&CP Sector Overall	50% Lack of Experience, Training, or Technical Skills
	27% Insufficient Qualifications (Certifications or Education)
	23% Competition/Small Applicant Pool

Table 6.2. MV&CP Employers' Reasons for Hiring Difficulty, 2025, USEER Survey^{518, 519}

⁵¹⁸ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁵¹⁹ Multiple responses permitted; totals may not add up to 100%.

Employers in the Manufacturing; Wholesale Trade, Distribution, and Transport; and Professional and Business Services industries reported that Management positions were the most difficult to hire in 2025. Repair and Maintenance employers cited Technicians or Mechanical Support most frequently—see Table 6.3 for details.

Industry	Percent of Employers and Most Difficult to Hire Occupation	
Manufacturing	15%	Engineers/Scientists
	23%	Management (Directors, Supervisors, Vice Presidents)
	17%	Technicians or Mechanical Support
Professional & Business Services	13%	Engineers/Scientists
	22%	Management (Directors, Supervisors, Vice Presidents)
	12%	Technicians or Mechanical Support
Repair & Maintenance	14%	Drivers/Dispatchers
	18%	Management (Directors, Supervisors, Vice Presidents)
	61%	Technicians or Mechanical Support
Wholesale Trade, Distribution, & Transport	22%	Drivers/Dispatchers
	18%	Engineers/Scientists
	35%	Management (Directors, Supervisors, Vice Presidents)
MV&CP Sector Overall	12%	Engineers/Scientists
	24%	Management (Directors, Supervisors, Vice Presidents)
	26%	Technicians or Mechanical Support

Table 6.3. Occupations Most Difficult to Hire for MV&CP Employers, 2025, USEER Survey^{520, 521}

⁵²⁰ The USEER survey collects valuable employer data on hiring activity and hiring difficulty in the energy sector that are not available in other federal sources. See the Introduction section for a discussion of the different data sources used in this report and their relative strengths and limitations.

⁵²¹ Multiple responses permitted; totals may not add up to 100%.

MV&CP Workforce Demographics

Table summarizes demographic characteristics of the MV&CP workforce and compares characteristics with the energy economy workforce and the U.S. overall workforce.

Categories	Number of Workers	Share of MV&CP Workforce	Share of Energy Economy Workforce	Share of U.S. Workforce
Men	1,837,000	74%	74%	53%
Women	638,000	26%	26%	47%
Hispanic or Latino	490,000	20%	19%	20%
Non-Hispanic or Latino	1,984,000	80%	81%	80%
American Indian or Alaska Native	56,400	2%	3%	1%
Asian	133,000	5%	7%	7%
Black or African American	232,000	9%	9%	13%
Middle Eastern or North African	46,300	2%	1%	n/a
Native Hawaiian or Other Pacific Islander	28,400	1%	1%	<1%
White	1,783,000	72%	72%	75%
Two or More Races	127,000	5%	4%	3%
Unknown Race	69,100	3%	3%	n/a
Veterans	256,000	10%	9%	5%
18 to 29	725,000	29%	29%	22%
30 to 54	1,223,000	49%	52%	55%
Over 54	527,000	21%	18%	23%
Self-Identification of Disability	46,000	2%	2%	5%
Formerly Incarcerated	36,900	1%	2%	2%
Represented by a Union ⁵²²	164,000	7%	12%	10%

Table 6.4. MV&CP Workforce Demographics and Characteristics, 2025, USEER Survey⁵²³, clxxix

⁵²² For this analysis, a union employer is defined as one with at least 20% of its workforce as a member of a labor union or covered by either a project labor agreement or a collective bargaining agreement. Figure represents private sector unionization rate. Unionization rates vary by state.

⁵²³ This table presents calculations from several sources, including the USEER survey. Share of U.S. workforce calculations are from the BLS and other sources. All other calculations are from the USEER survey. See endnotes for sources. The USEER survey collects valuable data on employee demographics in the energy sector that are not available in other federal sources.

CHAPTER 7



Future Outlook

2026 United States Energy
& Employment Report



U.S. DEPARTMENT
of **ENERGY**

Future Outlook

Employment Outlook Across the Energy Economy

Evolving market conditions and federal policy actions present an encouraging outlook for future employment opportunities across the energy economy. Federal priorities to expand electricity capacity to meet rising consumer and data center demand, revive nuclear energy, and bolster mining are likely to have long-lasting benefits to the economy and create high-paying career opportunities for Americans.

Upgrades to aging grid infrastructure and demand growth can create an ‘AI Infrastructure Workforce’.

As seen in this year’s USEER results, employment related to Electrical Grid Transmission and Distribution (T&D) grew in 2025. The outlook for the whole Transmission, Distribution, and Storage (TDS) sector is for growth to continue, with further gains expected from continued grid upgrades and data center development.

By the end of 2025, U.S. data center proposed projects demanded 241 gigawatts (GW) of electricity,^{clxxx} yet no more than 35 GW^{clxxxi} of capacity was currently under construction in North America. By 2030, data centers are expected to consume 521-843 terawatt-hours (TWh) of electricity annually, or 9.5-15.3% of total U.S. electricity.^{clxxxii}

Increased need to upgrade or replace aging electricity infrastructure are driving utility investments in T&D systems. Investor-owned utilities are expected to spend about \$1.1 trillion on infrastructure from 2025 to 2029.^{clxxxiii} These long-term capital investments translate into stable, multi-year employment opportunities with a steady pipeline of new projects.

The Administration’s “Speed to Power” initiative is cutting federal permitting timelines for major transmission projects. The initiative is designed to promote jobs and local economic growth by reducing project uncertainty, as projects can move forward more quickly. The initiative was inspired by a 2025 Executive Order that supports federal interventions to strengthen grid reliability and security.^{clxxxiv}

Federal actions are prioritizing accelerated federal permitting of data centers and related infrastructure through easing regulatory burdens, encouraging qualifying projects and ensuring efficient environmental reviews.

Employment related to natural gas pipeline transportation will likely increase alongside rising LNG exports. In 2025, USEER data showed a 4% increase in natural gas pipeline employment, outpacing both the broader energy sector and the national average. Policy actions, including the Administration’s 2025 *Unleashing American Energy* Executive Order^{clxxxv} — which reversed prior limits on Federal Energy Regulatory Commission’s (FERC) approval of natural gas infrastructure—positions the U.S. to support additional export capacity.

The U.S. Energy Information Administration (EIA) forecasts record high exports in 2026 and 2027,^{clxxxvi} as developers undertake new export facility projects, and pipeline capacity grows. Increased exports are likely to spur employment opportunities related to the distribution of natural gas in both the near and long term.

The employment growth outlook related to the production of fossil fuels remains limited. Although production has reached record setting levels, increased operational efficiencies in the oil and gas extraction sector will tend to keep worker requirements low in the foreseeable future.

Expected growth in battery storage presents a favorable employment outlook.

EIA reports that developers plan to add 24 GW of utility-scale battery storage in 2026, which is a staggering number compared with the already record 15 GW added in 2025.^{clxxxvii} This continues the rapid growth in U.S. battery storage capacity, which increased by more than 40 GW over the past five years.^{clxxxviii}

Battery Storage employment demand also grew in 2025 outside the Utilities industry. In an environment of lengthy grid-connection times,^{clxxxix} data centers are increasingly pairing battery storage with on-site power systems to avoid project delays.^{cxc} The DOE has identified on-site power and storage as important tools for meeting rising data center electricity demand and improving grid flexibility.^{cxc} As data center growth continues and grid connection delays persist, battery storage use is likely to increase in data center power systems.^{cxcii, cxciii}

The outlook for Electric Power Generation is positive overall, bolstered by expected increases in nuclear employment and long-term projected increases in wind and solar generation capacity.

Although the power sector has faced a changing regulatory environment with mixed employment results, rising power demand will be a major driver of future employment across all types of power generation. The outlook for employment within Nuclear Power Generation is positive in the medium and long-term. Natural Gas Electric Power Generation employment opportunities may outpace expectations if electricity demand accelerates even more quickly than projected,^{cxciv} stepping in as a stable source to meet rising load and balance intermittent renewable output, which supports consistent jobs in the sector.

Employment growth for Solar and Wind Electric Power Generation may be more measured as project activity may slow in a federal regulatory environment that emphasizes other energy sources.

Geothermal Electric Power Generation presents new employment pathways for drilling, subsurface engineering, and operations roles traditionally concentrated in oil and gas sector. Geothermal presents a positive longer-term employment outlook, with many large projects under construction and capacity expected to reach 60GW by 2050.^{cxcv}

Federal actions to support Coal Power Generation provide more options for electricity generation in an environment of increasing electricity demand and uncertain natural gas prices. Coal

generation can become a cost-competitive option in the shorter-term, consistent with what occurred in 2025.^{cxvii} Consistent with these objectives, the Administration issued emergency orders to continue coal plant operations,^{cxviii} directed the Department of War^{cxviii} to utilize coal-sourced electricity, and funded existing and new coal export infrastructure.^{cxix} These actions indicate near-term employment stability, however long-term projections indicate an overall decline in coal generation.^{cc}

America’s next nuclear renaissance^{cci} is taking steps to create high-paying jobs for nuclear scientists, engineers, operators, and the skilled trades.

This outlook is supported by the Trump Administration’s suite of Executive Orders in 2025 catalyzes a resurgence in U.S. nuclear power generation, development of advanced reactors, and the nuclear fuel cycle. The goal is to triple the current nuclear capacity by 2050, totaling 400 GW.^{ccii} Past DOE studies^{cciii} estimated that small modular reactors could provide nearly 240 jobs per GW, while traditional large-scale reactors employ around 500 workers per GW.

The DOE Office of Energy Dominance Financing is supporting both the restart of legacy nuclear plants and the development of new large-scale reactors. Recent announcements outline a goal to have ten reactors under construction by 2030, with estimates of roughly 70,000 jobs stemming from the new deals.^{cciv} In addition, DOE’s Reactor Pilot Program^{ccv} and Advanced Reactor Demonstration Program (ADRP)^{ccvi} are expediting testing and construction of advanced reactors. Together, these programs initiate employment opportunities across construction and engineering related occupations.

Growth is also expected across the nuclear fuel cycle. DOE’s Fuel Line Pilot Program,^{ccvii} funds awards for domestic uranium enrichment,^{ccviii} and a new supply-chain consortium^{ccix} aims to build domestic capacity across mining, processing, and advanced fuel manufacturing.

Bolstering the attractiveness of employment in the nuclear sector is its higher wages, discussed in detail in the EPG chapter of this report. These occupations pay more than many other electricity jobs^{ccx} because they require specialized expertise to meet federal safety requirements.⁵²⁴

The Fuels sector is benefiting from increased operational efficiency, and may be bolstered by expected growth in Biofuels, ultimately boosting demand for U.S. grown feedstocks for biofuel production.

Although Fuels production employment is expected to remain substantial, several trends are likely to limit job growth in the sector. The sector is more productive with fewer workers due to increasing operational efficiency. These trends are likely to limit job growth in the Fuels sector, while Biofuels subsector standing out as a notable area of growth.

⁵²⁴ The Nuclear Regulatory Commission (NRC) licenses reactor operators, requires a written exam and operating test, and says all nuclear power plant applications must go through an NRC safety review before a plant can be built or operated. NRC guidance also shows that nuclear engineers monitor plant operations, help ensure compliance with safety standards, and need strong analytical, math, and detail-oriented skills. See <https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-fs?> for more information.

In 2026, the U.S. raised the requirements^{ccxi} for renewable fuel to the highest levels in the Renewable Fuel Standard program history. The new standards increased required amounts for biomass-based diesel (including renewable diesel and biodiesel), advanced biofuels, and total renewable fuels, while keeping conventional corn ethanol requirements relatively stable. The revised requirements are expected to boost labor demand across the biofuels supply chain, including the farming of feedstocks; biofuels production; as well as construction, installation, maintenance and repair occupations that support new and expanded facilities.

The outlook for Energy Efficiency is positive because the Home Energy Rebate program has potential to increase demand for energy efficiency related jobs.

In 2026, DOE restarted the \$8.8 billion Home Energy Rebate program.^{ccxii} As homeowners seek to qualify for these rebates, the employment outlook for energy audits, home assessments and retrofit services is likely to grow. By increasing the affordability of home efficiency upgrades, the program will increase demand for energy efficiency appliances, heat pumps, insulation productions and home efficiency upgrades. This will spark demand for a skilled workforce, particularly among HVAC technicians, energy auditors, electricians, and other installers.

The employment outlook for Motor Vehicles & Component Parts is less clear due to broad auto industry uncertainties.

The automobile market continues to operate in an environment of reduced consumer demand, elevated fuel prices, higher tariffs, and broad economic uncertainty. In the longer term, the EIA is projecting a decline in sales of gasoline and diesel fuel vehicles across many scenarios.^{ccxiii} By 2032, however, light-duty battery electric vehicles are expected to have 50% market share of total light-duty vehicle sales. In the shorter-term, the MV&CP workforce will continue to shift towards higher-skill occupations as demand grows for engineers, software developers, data scientists and advanced skilled trades.^{ccxiv}

Employment Outlook Across Emerging Sectors

Although not yet captured in the USEER, the data center sector and the Critical Minerals and Materials (CMM) sector have a strong employment outlook, helped by policy actions prioritizing these sectors.

Data centers can attract skilled workers and increase productivity to drive stronger local economic growth.

Data centers can also create significant benefits from agglomeration.^{ccxv} They can draw in both highly skilled workers and associated specialized firms. In doing so, they can more easily share knowledge, collaborate on solutions, attract additional talent, and streamline supply chains. These reinforcing activities help raise productivity, allowing businesses to innovate, grow, and operate more efficiently. When this concentration of expertise and economic activity develops, communities can achieve higher economic growth, attract more workers, and improve living standards with the same resources that would otherwise have been spread across many regions.

Initiatives to achieve America’s mineral dominance^{ccxvi} is bolstering the future of the mining industry.

Increased employment related to Critical Minerals and Materials (CMM), will be needed to meet federal goals for Artificial Intelligence, energy production, and advanced technologies.

Employment prospects are strong due to recent federal policy changes and DOE initiatives. In 2025, DOE announced its intent to make nearly \$1 billion available to help expand mining, processing, and manufacturing technologies across key parts of the CMM supply chain.^{ccxvii}

Workforce Development Actions

Hiring Challenges and Workforce Development in the Energy Economy

As demand for workers accelerates across certain energy sectors, the U.S. needs to confront the increasingly urgent and systemic workforce shortages that threaten U.S. capacity to meet national and infrastructure energy needs.

Industry sources are finding that energy employers increasingly compete for talent not only with other energy firms, but also with rapidly expanding data center, general infrastructure, advanced manufacturing, and critical minerals industries.^{ccxviii} These sectors draw from many of the same occupational pipelines—particularly electricians, electrically skilled engineers and technicians, industrial maintenance workers, building trades workers, and skilled production workers—creating growing competition for labor across the U.S. industrial economy.

While interest and enrollment in apprenticeship programs have increased, worker shortages still limit hiring in high-growth energy sectors such as Natural Gas T&D, Electric Power T&D, Battery Storage, and various EPG subsectors, particularly in the Construction, Installation, and Repair Occupations.⁵²⁵

Spotlight on Construction, Installation, and Repair Occupations

BLS projections show strong demand for construction workers, with construction employment expected to grow over the long run.^{ccxix, 526} Among the 15 industries in the Construction industry, BLS notes the fastest growing are tied directly to the expansion of power generation, data centers, and EV infrastructure.⁵²⁷ In addition, the 20 construction and extraction occupations identified by BLS are projected to grow faster than the average for all occupations from 2024 to 2035, and they offer a higher median annual wage of \$58,360 compared with \$49,500 for all U.S. occupations.^{ccxx}

⁵²⁵ See Ch. 1. Energy Labor Market Overview.

⁵²⁶ For example, construction investment plateaued in spring 2026 due to elevated oil prices and other supply chain uncertainties stemming from the Iran situation.

⁵²⁷ These industries are power and communication line and related structures construction; electrical contractors and other wiring installation contractors; and plumbing, heating, and air-conditioning contractor.

This outlook is consistent with USEER data showing that employers find it very difficult to hire in the Construction, Installation, or Repair occupations. The data can be viewed in Figure 2.12, Figure 3.9, Figure 4.10, Figure 5.14, and Figure 6.12.

Further exacerbating worker shortages, many construction workers are approaching retirement. According to NCCER, about 41% of the current construction workforce^{ccxxi} is expected to retire by 2031,^{ccxxii} increasing competition for skilled workers and making it more difficult for employers to fill open positions.

This underscores the particular need for workforce development, apprenticeship programs, and recruitment of new workers into the Construction-related skilled trades.

The Role of AI and Automation in Occupations

Construction, Installation, or Repair occupations have a strong employment outlook because they are less likely to be displaced by AI and automation. One study finds that several energy-related trades—including Power-line Installers, Diesel Mechanics, Cement Masons, Pile Driver Operators, Stonemasons, and Construction Helpers—have little or no exposure to tasks affected by generative AI.^{ccxxiii}

The outlook is less clear for occupations with greater exposure to AI and automation, which include Professional and Business Services occupations as well as Sales and Administrative occupations. Some workers in these roles, particularly those in scientific and technical professions, may be well positioned to adapt, retrain, or move into new careers. Others, especially in some administrative occupations, may have fewer resources or opportunities to make those transitions.^{ccxxiv} Managerial occupations tend to have lower measured exposure to AI and automation.

Because technology and job requirements are changing quickly, workforce development will be most effective when workers gain experience in high-growth areas such as data centers and advanced manufacturing and invest in certifications and training to use new AI tools.

Meanwhile, workforce development is also becoming more urgent in the long term because worker availability is expected to slow^{ccxxv} due to broader demographic and economic trends, including an aging workforce,^{ccxxvi} declining fertility,^{ccxxvii} higher retirement rates,^{ccxxviii} and increased immigration enforcement.^{ccxxix}

Federal Workforce Development Actions

Federal agencies have responded to energy workforce shortages by expanding Registered Apprenticeship and other “earn-and-learn” programs.^{ccxxx}

In 2025, a series of Executive Orders set national goals to expand Registered Apprenticeships to more than 1 million new apprentices^{ccxxxi} and to grow programs in priority sectors such as AI^{ccxxxii} and nuclear energy.^{ccxxxiii} The DOE’s 21st Century Energy Workforce Advisory Board recommended^{ccxxxiv} expanding apprenticeships and other hands-on training programs. DOE’s

response was to affirm that the Registered Apprenticeship model should be used across workforce development, offering financial assistance to feasible programs.^{ccxxxv}

Federal investment in apprenticeship programs has increased:

- The Department of Labor (DOL) has been expanding Registered Apprenticeship Programs to help address energy workforce shortages. In 2025, following the Executive Orders on Registered Apprenticeships,^{ccxxxvi} AI,^{ccxxxvii} maritime,^{ccxxxviii} and nuclear energy,^{ccxxxix} DOL and other agencies elevated Registered Apprenticeship to be a central workforce strategy.^{ccxl}
- DOL increased funding to support this expansion of apprenticeships, including a \$285 million FY 2025 investment^{ccxli} with more grants for states, industry partnerships, and career pathways programs.⁵²⁸
- In 2026, DOE funded nuclear safety training and curriculum development at multiple universities.^{ccxlii} National labs also expanded hands-on apprenticeship programs such as training for machinists.^{ccxliii}

There are also other federal programs that support workforce development beyond apprenticeships:

- DOE runs the Energy Skilled Recognition Program^{ccxliv} and the Weatherization Assistance Program^{ccxlv} to improve the skill quality of the building technologies workforce. DOE programs like the Algae Technology Educational Consortium^{ccxlvi} and the Battery Workforce Initiative^{ccxlvii} convene industry and academia to standardize skills and develop training curricula that meet the needs of newly developed technologies.
- The DOL's Workforce Innovation and Opportunity Act funds training, career, and supportive services (such as childcare and transportation) that increase the number of available workers among target populations. Such populations include those with criminal records,^{ccxlviii} dislocated workers, and youth,^{ccxlix} and the Act's goal is to reduce barriers to employment.
- The Department of War's SkillBridge^{cccl} and Transition Assistance Program^{cccli} help service members move into civilian careers, including energy-related jobs. The National Science Foundation (NSF) supports long-term workforce development by funding STEM education and K–12 programs.^{ccclii} DOE also supports jobs in the building trades and efficiency occupations through programs such as the Weatherization Assistance Program and energy-efficiency certification initiatives.

Private sector investors have also highlighted skilled labor shortages as a major constraint on the buildout of energy infrastructure and have begun investing in workforce development and training partnerships.^{cccliii}

⁵²⁸ See Appendix I for a list of federal actions that supported energy sector Registered Apprenticeships.

Conclusion

Together, these federal efforts, along with those at the state and private-sector level, underscore that workforce development is a strategic imperative. The rapid expansion of Registered Apprenticeships, hands-on training models, and sector-specific career pathways reflects a national consensus that a skilled workforce is essential to the nation's energy reliability, security, and infrastructure objectives. Agencies such as DOE, DOL, and NSF are deepening investments. Also, universities, national labs, and labor organizations are expanding cutting-edge training. Private industry is mobilizing to address labor shortages as well. The U.S. is strategically investing in a workforce infrastructure that strengthens its national energy security and long-term resilience.

The year 2025 was an inflection point within the energy economy. Continued shifts in the nation's energy mix are already driving notable changes in energy employment. Federal policy actions and investments are expected to influence the energy labor market further over the next few years. Advances in technology and changes to infrastructure also contribute to expected future employment changes. The USEER will track these dynamics closely in future editions, offering deeper insight into how the energy workforce evolves over time.

As the 2026 USEER findings reaffirm, energy jobs are not only vital to powering the nation today—they are foundational to ensuring energy reliability, affordability, and economic competitiveness, and expanding opportunity for all Americans.

Glossary of Terms

Energy-Related Job – a job where a worker spends some of his/her time supporting the qualifying energy portion of the business at a Qualifying Energy Establishment with employees in the U.S.

Qualifying Energy Establishment – an organization with employees in the U.S. who are directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, goods, or services related to:

- Electric Power Transmission, Distribution, and Storage;
- Electric Power Generation;
- Fuels, including extraction, processing, production, and distribution;
- Energy Efficiency, including heating, cooling, and building envelope; and
- Transportation, including Motor Vehicles and Component Parts.

Qualifying Energy Worker – an employee of a Qualifying Energy Establishment who spends some of his/her time supporting the qualifying energy portion of the business.

Sectors

Electric Power Generation – the process of generating electric power from other sources of primary energy, whether connected to a distribution grid or not.

Energy Efficiency – goods and services that reduce electricity demand pursuant to the U.S. Environmental Protection Agency’s Certified Standards or Department of Energy Efficiency Standards; or establishments that are involved with heating, ventilation, and cooling (HVAC) from renewable energy sources, or work that increases the energy efficiency of HVAC systems.

Fuels – substances that produce useful energy when they undergo a chemical or nuclear reaction.

Motor Vehicles and Component Parts – Motor Vehicles includes fossil and non-fossil fuel-related rail, aircraft, vessels, and vehicles. Component Parts includes parts for fossil and non-fossil fuel-related rail, aircraft, vessels, and vehicles.

Transmission, Distribution, and Storage – movement and storage of electric energy over an interconnected group of lines and associated equipment between supply, transformation, and delivery sites.

Subsectors

Transmission, Distribution, and Storage

Battery Storage – using a cell or connected group of cells to convert chemical energy into electrical energy by reversible chemical reactions. The battery may be recharged by passing a current through it in the direction opposite to that of its discharge.

Biofuels Storage – storing liquid fuels and blending components produced from biomass feedstocks, including ethanol and biodiesel.

Coal Storage (piles, domes, etc.) – areas or structures used to store coal before it is transported or used.

Compressed Natural Gas Storage – storing compressed natural gas in tanks, cylinders, or related equipment.

Crude Oil Storage – storing crude oil in tanks, terminals, and related facilities.

EV Charging – stations that charge vehicles that use one or more electric motors for propulsion with no onboard generator or nonelectric motor.

Liquefied Natural Gas Storage – storing liquefied natural gas in tanks or related facilities.

Mechanical Storage (flywheels, compressed air energy storage, etc.) – systems that store inputted energy through mechanical forms, such as kinetic energy, compressed air, or gravitational potential energy.

Microgrid – a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that act as a single controllable entity with respect to the grid.

Nuclear Storage – storing spent nuclear fuel via pool or dry cask.

Other Gas Storage – any gas fuel storage that is not captured in the categories listed or a category that is used when unable to split employment into a single gas fuel storage category where employees spend “more of their time” with one technology over another.

Other Grid Modernization – Grid modernization includes investments and upgrades that make the electric power system more reliable, efficient, and resilient. Examples include replacing aging equipment, expanding and upgrading transmission and distribution networks, deploying smart grid technologies, integrating renewable energy and energy storage resources, improving cybersecurity, and strengthening the grid's ability to withstand and recover from outages. This category is a catch-all category for activities that do not fall under Microgrid or Smart Grid.

Other Liquid Storage – any liquid fuel storage that is not captured in the categories listed or a category that is used when unable to split employment into a single liquid fuel storage category where employees spend “more of their time” with one technology over another.

Other Storage – any storage that is not captured in the categories listed or a category that is used when unable to split employment into a single category where employees spend “more of their time” with one technology over another.

Other T&D – any transmission and distribution of electricity that is not captured in the categories listed or a category that is used when unable to split employment into a single transmission and distribution category where employees spend “more of their time” with one technology over another.

Pumped Hydro Storage – hydroelectric energy storage used by electric power systems for load balancing. The method stores energy in the form of gravitational potential energy of water, pumped from a lower-elevation reservoir to a higher elevation.

Refined Petroleum Fuels (Gas) Storage – storing refined petroleum fuels in gas form.

Refined Petroleum Fuels (Liquid) Storage – storing refined petroleum fuels in liquid form.

Smart Grid – an electricity network that uses digital technologies, sensors, and automated controls to detect and react to local changes in generation, transmission, and distribution.

Thermal Storage – heating or cooling a medium to store thermal energy.

Traditional T&D Other Fuels – any transmission and distribution of fuels that is not captured in the categories listed or a category that is used when unable to split employment into a single transmission and distribution category where employees spend “more of their time” with one technology over another.

Traditional Transmission and Distribution – allowing electricity to move across the country through infrastructure commonly referred to as “poles and wires.”

Electric Power Generation

Advanced/Low-Emission Natural Gas Electric Power Generation – efficient, low-emission, leak-free natural gas, including systems that use any of the following technologies: High-Efficiency Compressor, Advanced Low-NOx Combustion Technology, First Application of Closed-Loop Steam Cooling in an Industrial Gas Turbine, Advanced Turbine Blade and Vane Materials, High-Temperature Thermal Barrier Coating and Abradable Coatings, Advanced Row 4 Turbine Blades, 3D Aero Technology, Advanced Brush Seal.

Bioenergy Electric Power Generation – generating electricity from materials derived from biological sources or any organic material that has stored sunlight in the form of chemical energy.

Coal Electric Power Generation – the burning of thermal coal to create electricity.

Combined Heat and Power Electric Power Generation – generating electricity and useful thermal energy in a single, integrated system. This process uses heat that is normally wasted in conventional power generation and recovered as useful energy.

Geothermal Electric Power Generation – using or generating steam produced from reservoirs of hot water or hot dry rock found a few miles or more below the Earth’s surface to produce electricity.

Low-Impact Hydroelectric Generation, Including Wave/Kinetic Generation – methods of producing electricity from moving water or natural water motion (such as rivers, tides, waves, or currents) similar to traditional hydroelectric generation, but certification criteria are aimed at ensuring the low-impact certified dam or kinetic energy infrastructure adequately protects or mitigates its impacts in seven key resource areas including river flows, water quality, fish passage and protection, watersheds, threatened and endangered species, cultural resources, and public access and recreation opportunities.

Natural Gas Electric Power Generation, Other Than Advanced Natural Gas Generation – burning natural gas to create electricity.

Nuclear Electric Power Generation – splitting an atom via nuclear fission in a reactor to convert thermal energy into usable power.

Oil Electric Power Generation – burning oil or other petroleum to create electricity.

Other Electric Power Generation – any generation that is not captured in the categories listed or a category that is used when unable to split employment into a single category where employees spend “more of their time” with one technology over another.

Solar Electric Power Generation – generating electrical power by either converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect or by concentrating collectors toward a central object to convert solar radiation into thermal energy.

Water Power Electric Power Generation – consists of two technologies. Marine and Hydrokinetic Generation harnesses power from the natural movement of water, including waves, tides, and river and ocean currents. Traditional Hydroelectric Generation includes the production of electrical power using the gravitational potential energy of falling or flowing water.

Wind Electric Power Generation – converting the wind’s kinetic energy into electrical power.

Fuels

Biodiesel Fuels – renewable fuels that can be manufactured from vegetable oils, animal fats, or recycled restaurant grease for use in diesel vehicles or any equipment that operates on diesel fuel.

Coal Fuels – Fuels from combustible black or dark brown rock consisting mainly of carbonized plant matter, found mainly in underground deposits.

Corn Ethanol Fuels – ethanol produced from corn biomass.

Natural Gas Fuels – fuels from flammable gas, consisting largely of methane and other hydrocarbons, occurring naturally underground (often in association with petroleum).

Nuclear Fuels – substances that will sustain a fission chain reaction, so they can be used as a source of nuclear energy.

Other Biofuels – other fuels derived directly from living matter that are not captured in the categories listed.

Other Ethanol/Non-Woody Biomass Fuels, Including Biodiesel – fuels made from other materials such as straw, manure, vegetable oil, and animal fats.

Other Fossil Fuels – natural fuels such as coal or gas, formed in the geological past from the remains of living organisms.

Other Fuels – any fuel that is not captured in the categories listed or a category that is used when unable to split employment into a single fuel category where employees spend “more of their time” with one technology over another.

Petroleum Fuels – liquid fuels created from a mixture of hydrocarbons present in certain rock strata that can be extracted and refined. Such fuels include gasoline, kerosene, and diesel oil.

Renewable Diesel Fuels – fuels made from fats and oils, such as soybean oil or canola oil, that are processed to be chemically the same as petroleum diesel.

Woody Biomass/Cellulosic Biofuels – 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).

Energy Efficiency

Advanced Building Materials/Insulation – all materials that represent advances in efficiency over traditional materials.

Air Sealing – Processes and products that reduce the amount of air that leaks in and out of a building by sealing cracks and openings.

Certified Air-Source Heat Pumps – air-source heat pumps that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified Appliances – appliances that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified Commercial Food Service Equipment – commercial kitchen equipment, including refrigerators, dishwashers, and ovens, that meets the international standard for energy-efficient consumer products originating in the U.S.

Certified Data Center Equipment – information technology equipment, such as servers, uninterruptible power supplies, data storage, and network equipment, that meets the international standard for energy-efficient consumer products originating in the U.S.

Certified Electronics – electronic appliances such as televisions, telephones, and audio/video devices that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified Ground-Source or Geothermal Heat Pumps – heat pumps that use the Earth’s natural heat to provide heating and cooling and meet the international standard for energy-efficient consumer products originating in the U.S.

Certified/High AFUE HVAC – HVAC that meets the international standard for energy-efficient consumer products originated in the U.S. or has a high Average Fuel Utilization Efficiency (AFUE) rating of 90 or greater, or 15 Seasonal Energy Efficiency Ratio or greater.

Certified Insulation – insulation products, including blankets, foam boards, and loose fill, that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified LED Lighting – LED light bulbs that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified Roofing – certified roof products that reflect more of the sun’s rays and decrease the amount of heat transferred into a building.

Certified Water Heaters – water heaters, which can come with gas, solar, or electric heat pump technology, that meet the international standard for energy-efficient consumer products originating in the U.S.

Certified Windows, Doors, and Skylights – windows, doors, and skylights that meet the international standard for energy-efficient consumer products originating in the U.S.

Energy Auditing Services – professional inspection services of buildings to analyze energy usage, pinpoint inefficiency, and identify opportunities for comfort, safety, and efficiency improvements.

LED, CFL, and Other Efficient Lighting – energy-efficient lighting sources.

Other Energy Efficiency – any energy efficiency that is not captured in the categories listed or a category that is used when unable to split employment into a single energy efficiency category where employees spend “more of their time” with one technology over another.

Other High-Efficiency HVAC Out of Scope for Certification (e.g., indirect evaporative coolers, air-to-water heat pumps, energy recovery systems) – this includes products and services for high-efficiency HVAC systems that are large capacity, custom, or otherwise fall outside certified product categories and cannot be rated by standardized prescriptive metrics.

Other LED, CFL, and Efficient Lighting – other efficient lighting that does not meet certification.

Recycled Building Materials – building materials sourced from construction demolition debris that are used to create sustainable, cost-effective infrastructure and building materials.

Reduced Water Consumption Products and Appliances – high-efficiency washing machines, faucet aerators, low-flow shower heads, etc.

Renewable Heating and Cooling – establishments that are involved with HVAC from renewable energy sources or work that increases the energy efficiency of HVAC systems.

Solar Thermal – uses the sun’s energy to generate thermal energy.

Traditional HVAC Goods, Control Systems, and Services – HVAC systems, including building retro-commissioning and retrofits connected to heating and cooling, wall units, and furnaces.

Motor Vehicles

Battery Electric Vehicles – vehicles that use one or more electric motors for propulsion with no onboard generator or nonelectric motor.

Fuel Cell Vehicles – a type of vehicle that uses a fuel cell, instead of an engine, in combination with a storage device, such as a battery, to power its onboard electric motor.

Gasoline and Diesel Motor Vehicles (excluding freight transport) – vehicles that run on gasoline and diesel internal combustion engines.

Hybrid Electric Vehicles – vehicles that use two or more distinct types of power, such as an internal combustion engine and an electric motor.

Hydrogen Vehicles – vehicles that use hydrogen as their onboard fuel for motive power.

Natural Gas Vehicles – alternative fuel vehicles that use compressed natural gas or liquefied natural gas as an alternative to other fossil fuels.

Other Vehicles – any motor vehicle technology that is not captured in the categories listed or a category that is used when unable to split employment into a single motor vehicle category where employees spend “more of their time” with one technology over another.

Plug-In Hybrid Vehicles – hybrid electric vehicles that use two or more distinct types of power, such as an internal combustion engine and an electric motor that is powered by rechargeable batteries or another energy storage device. They can be recharged by plugging into an external source of electric power.

Industries⁵²⁹

Agriculture and Forestry – establishments primarily engaged in growing crops, raising animals, harvesting timber, and harvesting fish and other animals from a farm, ranch or their natural habitats.

Construction – establishments primarily engaged in the construction of buildings or engineering projects. Construction work may include new work, additions, alterations, or maintenance and repairs.

Manufacturing – establishments engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products. Establishments in the industry are often described as plants, factories, or mills and use power-driven machines and material handling equipment.

Mining and Extraction – establishments that extract and prepare naturally occurring solids, such as coal, ores, and minerals; liquid minerals, such as crude petroleum; and gases such as natural gas.

Other Services – establishments engaged in providing services not specifically provided for elsewhere in the classification system, such as equipment and machinery repair.

Pipeline Transportation – establishments that operate, maintain, and use transmission pipelines to transport products, such as crude oil, natural gas, refined petroleum products, and slurry.

Professional and Business Services – establishments engaged in information (software, etc.), legal services, rental and leasing, finance, engineering, research and development, architecture, management of companies and enterprises, technical and scientific activities, administrative support, waste management, remediation services, etc.

Utilities – establishments engaged in the provision of electric power, natural gas, and steam supply utility services. Specific activities associated with utility services vary by utility: electric power includes generation, transmission, and distribution; natural gas includes distribution; and steam supply includes provision and/or distribution.

Wholesale Trade – establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. Merchandise includes the outputs of agriculture, mining, and manufacturing.

Wholesale Trade, Distribution, and Transport – includes establishments engaged in wholesaling merchandise or commodity flows: truck, rail, air, and water transport of fuels or motor vehicles and component parts.

⁵²⁹ As defined by the BLS and United States Census Bureau.

Occupation Categories^{ccliv}

Administrative Occupations – workers who prepare and organize documents, track products, and provide information to the public.

Construction, Installation, or Repair Occupations – workers who use a variety of resources to build and repair roads, homes, and other structures, and those who set up, take care of, and fix many types of goods and equipment.

Management/Professional Occupations – workers who establish plans and policies, direct business activities, and oversee people, products, and services; workers who are involved in the day-to-day activities of running a business or with matters related to money; workers who create or support computer applications, systems, and networks; workers who design and develop structures, products, and systems and collect information for mapping and other purposes; and workers who interpret the law and support law-related activities.

Other Occupations – workers in all other occupation groups not listed, such as Life, Physical, and Social Science occupations (workers who use scientific research to help solve problems and expand knowledge), Protective Service occupations (workers who provide public safety), and Farming, Fishing, and Forestry occupations (workers who tend and harvest renewable resources and manage forests and public parks).

Production/Manufacturing Occupations – workers who operate machines and other equipment to assemble goods or distribute energy, and those who move people and goods.

Sales Occupations – workers who sell goods and services or connect buyers with sellers in a specific market.

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