U.S. DEPARTMENT of ENERGY



2026 United States Energy & Employment Report: Appendix

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Appendix A: Discussion of USEER Methodology

Roadmap

Appendix A explains how USEER estimates energy employment and wages. It begins with an overview of the USEER survey, a discussion of the USEER methodology,

Survey Overview

The USEER survey is conducted under OMB Control Number 1910-5179. The general USEER sampling approach has been used since 2016, and OMB approved the current 2026 survey methodology in October 2025.

The 2026 USEER methodology relies on the most recently available data from the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) (QCEW, second quarter 2025), the BLS Employment Situation Table B-1 monthly reports through December 2025, and a supplemental survey of U.S. establishments conducted by BW Research Partnership for DOE. Together, these sources allow USEER to estimate energy-related employment that is not separately identified in standard BLS industry data. During a time of rapid change in energy technology and business employment structure, supplemental surveys are an important tool to capture developing trends. Taken together, the BLS and survey data provide the most comprehensive calculation of energy-related employment available. The methodology has been used for local, state, and federal energy-related data collection and analysis for a decade, including the Interstate Renewable Energy Council's National Solar Jobs Census series, energy reports for state agencies in the Commonwealths of Massachusetts, and Pennsylvania, and the States of California, Connecticut, Maryland, Minnesota, New Hampshire, New York, Rhode Island, and Vermont, and numerous nonprofit agencies across the U.S.

Appendix A explains how USEER estimates energy employment and wages. The process has six main steps: first, define the industries and establishments that may have energy-related work; second, survey establishments about their energy activities and employment; third, estimate how common energy activity is within each industry and state; fourth, apply those estimates to BLS employment data; fifth, assign employment to USEER sectors, subsectors, industries, and occupations; and sixth, estimate worker wages and uncertainty in estimation values.

Key terms used in this appendix include:

- **Establishment:** a single physical business location
- **NAICS:** the North American Industry Classification System used to classify industries
- **ANAICS:** aggregated NAICS groups used for USEER sampling allocation

- **Known universe:** establishments previously identified as energy-related
- **Unknown universe:** other establishments in industries where energy-related activity may occur
- **Incidence rate**: the share of establishments in a NAICS or ANAICS classification that report energy-related activity
- **Qualifying Energy Establishment:** an establishment with employees in the United States that directly supports USEER energy sectors
- **Qualifying Energy Worker:** an employee whose job supports the qualifying energy portion of the establishment
- **100 percent NAICS:** industries treated as fully energy-related for USEER employment estimation as their BLS classification covers USEER sector, subsector, or industry definitions
- **Commodity flow:** a method for estimating transportation employment tied to energy commodities.

The 2026 USEER survey uses a stratified sampling plan, which essentially sets quotas for different categories of respondents based on characteristics. This sampling plan ensures that the survey is representative by industry code (NAICS or ANAICS),[1] establishment size and geography to determine the proportion of establishments that work with specific energy-related technologies, as well as the proportion of workers in such establishments. These data are then analyzed and applied to existing public data published by the BLS. For more detail, see Section III, USEER Sampling Plan below.

The 2026 USEER survey was administered by telephone (more than 745,300 outbound dials) and by web, with more than 430,600 emails sent to potential participants throughout the U.S. The phone survey was conducted by ReconMR. The web instrument was programmed internally, and each respondent was required to use a unique ID to prevent duplication.

The survey sample is divided into a known universe and an unknown universe. The known universe includes establishments previously identified as having energy-related activity, such as through prior USEER surveys, industry association lists, approved contractor lists, or government program participation. These establishments are contacted census-style, meaning all identified known establishments are invited to participate. The unknown universe includes other establishments in industries where energy-related activity may occur. Known establishments are removed from the unknown sampling frame to avoid double counting. For the known universe, "census-style" means that all identified known establishments were invited to participate and contacted up to six times; it does not mean that every known establishment completed the survey.

[1] ANAICS is a term used by BLS, which means Allocation NAICS, and refers to the industries included in the aggregation of industries likely to participate in said activities (https://www.bls.gov/ggs/ggs_technote_extended.pdf)

The unknown universe included tens of thousands of businesses in potentially energy-related NAICS codes, across agriculture, mining and extraction, utilities, construction, manufacturing, wholesale trade, distribution (including pipeline distribution), professional and business services, and other services (e.g., repair and maintenance). Each of these segments and their total reported establishments (within the BLS QCEW) were carefully analyzed by size (employment) and state to develop representative clusters for sampling. In total, approximately 41,800 business establishments participated in the survey effort, with approximately 4,500 providing full responses to the survey. These responses were used to develop incidence rates—or the proportion of energy involvement—among industries (by state) as well as to apportion employment across various industry categories in ways currently not provided by state and federal labor market information agencies. The margin of error for incidence in the USEER is ±0.48% at a 95% confidence interval. The margin of error for incidence is calculated from the total number of respondents that answered whether there was energy activity at their establishment out of all establishments within the NAICS codes used for the survey universe (as provided by QCEW data). The margin of error for employment estimates for all energy establishments that answered questions related to energy employment in the survey is ±1.79% at a 95% confidence interval. The margin of error for employment is calculated from the total number of respondents that answered the energy employment question in the survey out of all establishments within the NAICS codes used for the survey universe. The margin of error increases for each subgroup of respondents that participated in the survey. For example, the margin of error for questions answered by all establishments that identified as solar photovoltaic (PV) is ±3.60% at a 95% confidence interval. The margin of error for solar photovoltaic (PV) establishments is calculated from the total number of respondents that identified as solar photovoltaic (PV) establishments out of all establishments within NAICS codes that have had identified solar photovoltaic (PV) activity over the previous three years.

For transportation-related industries, USEER estimates employment tied to specific commodities using a commodity flow method originally developed by DOE and the National Lab of the Rockies (NLR) for the first Quadrennial Energy Review (QER) in 2015. The proportion of employment for a specific technology or fuel source was calculated by dividing the value of commodity shipments (in millions of dollars) for coal, fuel oil, gas, motor vehicles, petroleum and other coal, petroleum products, and other relevant inputs by total commodity value at the state level by truck, rail, air and water transport. This proportion was applied to NAICS employment for truck transportation (NAICS 484), water transportation (NAICS 483), air transportation (NAICS 481) and Railroad Retirement Board (RRB) employment for rail transportation at the state level. With this analysis, truck transportation represents the majority of energy-related transportation employment (74%), followed by rail (16%), water (8%) and air (1%).

Of important note, the USEER expressly excludes any employment in retail trade NAICS codes except for fuel dealers (NAICS 454310). This excludes motor vehicle dealerships, gas stations,[2] appliance and hardware stores and other retail establishments. The retail exclusion also includes motor vehicle dealerships. Motor vehicle employment reported in USEER is limited to covered activities such as manufacturing of motor vehicles and component parts, wholesale trade, professional and business services, repair and maintenance, and commodity-flow transportation where applicable. The 2026 USEER also excludes gas station employment; gas station employment was reported in earlier USEER editions through 2021.

All data in the USEER rely on the BLS QCEW data for the end of the second quarter of 2025, and the BLS Employment Situation Table B-1 monthly reports through December 2025. Employment extrapolations are based on BLS QCEW and survey data, resulting in totals that carry precise decimal values. As a result, some employment totals for tables in the report will sum differently due to rounding. The USEER survey was administered between November 18, 2025 and February 8, 2026 and averaged 17 minutes in length. This is lower than the Paperwork Reduction Act (PRA) maximum burden estimate of 48 minutes. Surveys took longer than 17 minutes in total to complete for some respondents.

Methodology Discussion

Employment data collected by the BLS provide information on many, but not all, energy-related job categories. Most notably, BLS does not collect data on employment levels by energy technology across business segments. For instance, residential solar installation establishments are typically labeled as electrical contractors (together with all other traditional electrical businesses) without being identified specifically as solar companies. Petroleum engineering firms are included in engineering services, with civil, mechanical, and other engineers, while electric vehicle prototype manufacturers are combined with gasoline- and diesel-fueled vehicle manufacturing. As a result, BLS employment data do not capture the full scope of energy employment trends.[3]

Given the complex relationship between energy and the overall economy, the 2026 USEER investigates, with a special supplemental survey, the energy production sectors — Fuels, Electric Power Generation, and Transmission, Distribution, and Storage — followed by individual analyses of employment in two important energy end-use sectors — Energy Efficiency and Motor Vehicles and Component Parts (as designated by 42 U.S.C. § 18841 (c)(2)(A).) The spread of business activities in each of the five analyzed sectors presents additional challenges to categorization, as early-stage research and development, repair, and maintenance or professional and technical services vary across energy, energy efficiency, and manufacturing. Natural gas business activities, for instance, differ from business activities relating to advanced building

[2] Gas station employment had been reported in previous years up to the 2021 USEER. The 2026 USEER excludes employment in this industry.
[3] DOE, Quadrennial Energy Review: Energy Transmission, Storage, and Distribution Infrastructure, 8-7.

materials and solar photovoltaic materials, although they can exist in the same BLS industry categorization.

The 2026 USEER relies on a comprehensive survey of approximately 41,800 establishments across the United States, conducted by BW Research. The survey data were used to filter and analyze the concentration, intensity and distribution of various energy technologies and activities throughout traditional industry sectors, using second quarter 2025 employment data from the BLS QCEW and the BLS Employment Situation Table B-1 monthly reports through December 2025. USEER data also provide an additional layer of information to track sector-specific growth potential, obstacles, and opportunities. The data presented in the USEER are not intended to remove, replace, or replicate existing data from the BLS QCEW, but instead to reorganize categories and provide insight for policymakers and the public regarding trends in energy employment, energy production and energy consumption across the U.S.

USEER estimates direct energy employment only. In USEER, "direct" employment means jobs at establishments that directly support qualifying energy activities, including work in construction, manufacturing, utilities, wholesale trade, professional services, operations, maintenance, and repair. USEER does not estimate indirect jobs, such as upstream raw-material suppliers that are not directly identified as part of the energy activity, or induced jobs created by household spending from energy-sector wages. Many employment studies, such as those included in chapter 8 of the first installment of the Quadrennial Energy Review (QER) in 2015, generate employment estimates that rely on input/output modeling. These studies typically define an activity based on reported expenditures or expenditures and associated levels of employment reported by a defined industry or activity, such as U.S. solar PV installation. In this example, solar PV installation firm employment would be the "direct" jobs. Most studies go at least one step further, identifying "indirect" employment, which includes the supply chain or other support services to the industry. In the Solar example, these would include U.S. manufacturing jobs related to producing PV equipment used in domestic installations (and their suppliers and vendors) as well as consulting, tax, legal, and other professional services to support domestic PV installation companies. Another typical calculation is "induced" jobs, which includes jobs created or supported by wages paid and other benefits provided by employers of direct and indirect employees.

In the USEER, by comparison, the direct job category of interest in this example is defined as the solar industry generally, including utility-scale Solar, residential, and commercial installations, as well as the manufacturing, professional and business services, and wholesale trade that make up the sector. However, the indirect jobs that support this industry are not included, such as polysilicon production (the raw material used in solar panels), aluminum production and extrusion activities for frame manufacturing or other aspects of the solar energy value chain. Induced jobs, which are those created economy-wide as a result of the spending of wages by the employees whose income derives, in whole or part, from this industry, are also not included.

Employment estimates are rounded according to the rounding rules described in the "Rounding Methodology" section of the main report. Because calculations use unrounded values, totals in tables may not exactly equal the sum of rounded components. For more information on margin of error, see the "Margin of Error Calculations" section of this appendix.

For the USEER survey, a Qualifying Energy Establishment is:

An establishment with employees in the United States that is directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, goods, or services related to:

- Fuels, including the extraction, processing, production, and distribution thereof;
- Electric Power Generation;
- Electric Power Transmission, Distribution, and Storage;
- Energy Efficiency, including heating, cooling, and building envelope; and
- Transportation, including Motor Vehicles.

For the USEER survey, a Qualifying Energy Worker is:

An employee of a qualifying energy establishment that spends some portion of their time supporting the qualifying energy portion of the business.

Because USEER is an establishment-based survey, the most technically accurate term for the estimates is "jobs." A person with more than one job could be counted once for each job. For readability, the report generally uses "workers" as plain-language shorthand for USEER-covered jobs unless otherwise noted.

The 2026 USEER includes data on 101 detailed occupations across sector and subsector (depending on sample size). The data includes low, median, and high wage estimates for each occupation as well as data on hiring activity and employer healthcare contribution. Supplemental questions were asked of USEER respondents who opted in, and respondents were presented with occupations based on the employer's value chain activity (agriculture & forestry, mining & extraction, utilities, construction, manufacturing, wholesale trade, professional and business services, and other services such as repair and maintenance). Responses from employers were weighted, or reweighted, based on industry employment in USEER and were compared to 2025 Occupational Employment and Wage Statistics (OEWS) data. Wage data were collected and reported for 101 detailed occupations in the published USEER materials.

Primary energy consumption[4] in the U.S. is divided among four sectors: electric power sector (34.9%), residential and commercial buildings (12.0%), industrial (23.9%) and transportation

[4] Primary energy consumption is the direct consumption of energy at its first point of use. Importantly, this does not include consumption of electricity, so that primary energy consumption in the residential and commercial building sector includes direct use of fuels like natural gas for heating, but not electricity used for lighting and cooling.

(29.2%). This distribution of energy consumption by sector is based on total 2025 estimates published by the EIA.[5]

End-use electricity consumption is divided, with 71.7% consumed by residential and commercial buildings, 24.8% by industrial and 0.2% by transportation.[6] Thus, residential and commercial buildings consumed 37.9% of all energy (an amount consisting of their direct energy end use, their electricity end use, and the electrical system energy losses allocated to the sector by EIA).[7]

Energy Efficiency in USEER

The 2026 USEER identifies jobs that manufacture certified energy efficiency appliances and other certified labeled products, as well as employment in building design and contracting services that provide insulation, improve natural lighting, and reduce overall energy consumption across homes and businesses.[8] The 2026 USEER includes a section that disaggregates certified Energy Efficiency technologies more thoroughly, further highlighting the employment impacts.

Motor Vehicles in USEER

Motor vehicles are included in this report primarily because of their intensive use of energy and contribution to carbon emissions.[9] This report delineates employment between traditional gas and diesel motor vehicles, hybrid and plug-in hybrid, electric, natural gas, hydrogen, and fuel cell technologies, as well as motor vehicle component parts for such vehicles. USEER does not, however, cover all sectors of transportation, such as aviation and maritime transportation. According to the EIA, the transportation sector accounted for 29.3% of U.S. primary energy consumption in 2025;[10] 66.8% of overall U.S. petroleum consumption was attributable to the transportation sector.[11]

Motor vehicles employment reported at the state level includes overall industry (manufacturing, wholesale trade, commodity flows or transport of motor vehicles, professional and business services and other services such as repair and maintenance) and employment by subsector (gas and diesel, hybrid, plug-in hybrid, electric, hydrogen and fuel cell, natural gas and other). Employment at the state level is not reported by industry within subsector.

BW Research, an independent research organization, collected and analyzed the data. The data set includes sector, subsector, industry, and energy employment data in all 50 U.S. states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.[12] In a time of rapid change in

[5] EIA, *Monthly Energy Review*, Table 2.1 and Table 2.6. Percentages are based on primary energy consumption in 2025 and do not add up to 100.0% due to rounding.
[6] EIA, *Monthly Energy Review*, Table 7.6. Percentages of retail electricity sales in 2025.
[7] EIA, *Monthly Energy Review*, Table 2.1. Percentage based on total energy consumption in 2025.
[8] Estimates do not include retail employment.
[9] The USEER covers motor vehicle employment across vehicle parts manufacturing, automotive repair and maintenance, as well as vehicle, parts and supplies wholesalers, including air, rail, water, and truck transportation of motor vehicle parts and supplies. It does not capture jobs associated with the final assembly of some transportation equipment such as forklifts and golf carts.
[10] EIA, Monthly Energy Review, Table 2.1.
[11] EIA, *Monthly Energy Review*, Table 3.7c. Percentage calculated using the sum of sector totals in Tables 3.7a through 3.7c.
[12] Other U.S. territories are omitted from the analyses due to unavailability of territory employment data within the BLS QCEW data series outside of Puerto Rico and the U.S. Virgin Islands.

energy technologies across the board, continued refinement of supplemental surveys will remain an important tool in analyzing existing BLS data sets.

USEER Sampling Plan

1a. Survey Universe

Geographic coverage for the survey included the 50 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands. Private establishments and government units were included, but establishments and units with average employment of zero over the last 12 months were excluded. Data were collected for establishments in 220 detailed industries identified to be of specific interest for the USEER survey. The industries were defined using the six-digit detail of the NAICS (which includes 1,099 six-digit industries in total from BLS).

The sampling frame is a representative sample of employers drawn from establishment totals by industry from the QCEW Longitudinal Database (LDB) maintained by the BLS, stratified by employment size categories developed by the Census Bureau County Business Patterns (CBP) data set. The actual contact information and business names were drawn from a private data set, Data Axle USA, because the QCEW's set of contact information is confidential. About 3.2 million establishments with employment of 30.2 million were in the 220 in-scope industries.

For the purposes of USEER sample allocation, we aggregated 220 detailed industries into seven groups or "allocation" NAICS (ANAICS). For most in-scope industries, the ANAICS is the two-digit NAICS and includes all in-scope NAICS-defined industries in the two-digit code. In some two-digit industries, ANAICS splits out specific five- and six-digit NAICS industries that have historically had a higher incidence of energy activity. ANAICS two- and three-digit coding is the same as for NAICS, though restricted to USEER-eligible industries.

Industry sectors are also defined for use in allocation into larger value chain or industry categories. Industry sectors are two-digit ANAICS with two exceptions. The manufacturing sector combines three two-digit codes. The trade sector combines retail trade and wholesale trade.

About 19,800 in-scope known universe establishments with 1 million employees were pre-identified as having energy activity. A database of known universe establishments was developed internally by BW Research by collecting industry association databases, approved utility contractor lists, and other public and private sources, as well as prior indication in a USEER survey collection. By comparing the information obtained through these sources and comparing the NAICS codes of these establishments in the QCEW, Known Universe establishments were matched to the QCEW/Data Axle USA dataset and a "known" indicator was used to assist in oversampling known establishments. The known database does not include minimum requirements for completions. All establishments in this list are contacted and asked to complete the survey (oversampling).

1b. Sample

BW Research contacts between 30,000 and 45,000 establishments per year for the USEER effort. The total survey completion targets were based on a sample selected using the QCEW/Data Axle USA frame for the second quarter of 2025. Quotas were established for each NAICS or ANAICS code by size and state.

The USEER sample is stratified (divided into smaller subgroups that do not overlap) by six-digit NAICS and size class (1-9, 10-49, and 50+ employees) and systematic samples selected in the noncertainty strata. Known establishments can be of any ownership, are processed separately, and are excluded from the other portions of the sampling frame (database from which the sample is pulled). Federal and state government stratification are both at the state level by industry sector. Local government stratification is at the state level by industry sector for these sectors: utilities; transportation and warehousing; professional, scientific, and technical Services; remediation services; educational services; arts, entertainment, and recreation; and public administration, with all other sectors combined to a residual category. For private establishments (excluding the known universe), three levels of stratification are examined during sample allocation: (1) at the state level by industry sector, (2) national ANAICS, and (3) national six-digit NAICS. Further stratification by establishment size did not prove to be practical for similar studies.

2. Sample Design

USEER uses a stratified probability-based sampling approach aimed at satisfying data needs at both the state by industry sector level and the national ANAICS level. Establishments are selected within defined strata, such as NAICS industry, establishment size, and state. Selection probabilities may differ across strata because the design is intended to ensure enough responses from key industries, geographies, and establishment types. The basic sampling unit is an establishment. Response quotas are set based on the representation of total establishments by six-digit NAICS, multiplied by the proportion of establishments in each size category as identified in the most recent available data from the Census Bureau County Business Patterns (CBP).

Restricted to in-scope industries, establishments in QCEW industry-defined classification are separated into four mutually exclusive parts that are separately sampled. Approximate sample counts refer to a sample selected from the QCEW frame for the second quarter of 2025.

Known universe

- Sample size: census (outreach to all establishments, up to six attempts)

Federal government

- Sample size: 50
- Stratification (grouping): at the state level by industry sector

State government

- Sample size: 50

- Stratification (grouping): at the state level by industry sector

Private

- Sample size: 37,900

Stratification (grouping): at the state level and by detailed industry (six-digit NAICS)
Known sampling: All establishments in the known universe will be contacted up to six times. The responses will be treated separately, and the overall employment from the known universe sample will be removed from employment estimates from the unknown sample to prevent duplication. This will be completed from the appropriate panel of ANAICS, based on the known universe respondent industries. As above, this is census-style outreach rather than a census of completed responses.

1. The allocation for private establishments and government (excluding known universe) has four basic steps:
2. Determine establishments by state, relying on the most recent establishments by NAICS data available from QCEW, the proportion of establishments in each selected NAICS is determined as a percentage of the total establishments in all selected NAICS.
3. Determine NAICS establishments by size, relying on the most recent data available in the Census Bureau County Business Patterns, the proportion of establishments within each size category in each six-digit NAICS is determined. The total NAICS quota is allocated by the size proportions to develop the percentage of total state-level sample.
4. De-duplicate known universe establishments from the sampling universe — verifying establishment details including (name, NAICS, contact name, address, phone, and other identifying information). Known universe establishments are removed from the private, state, and federal government sampling universes.
5. Establish quotas — state-level quotas are established by multiplying the total number of proposed survey completions per state by the percentages of establishments by size (employment) and NAICS code determined in Step 1 and Step 2.

USEER Employment Estimation

Incidence Rates

Incidence rates provide the basis of energy employment for USEER by establishing the number of establishments by industry that are involved in energy work. Incidence rates are developed from the unknown survey and are the percentage of overall establishments that indicate energy activity. Incidence is calculated at the six-digit NAICS code level by size of establishment (1-9, 10-49, 50+ employees), and at the state level by aggregated NAICS categories by size. An incidence response (“yes or no” to energy) is often termed a “short response” and is collected at a higher rate (higher response) than a full complete to the survey and provides the basis for estimation. An incidence rate is the share of establishments in a given group that report energy-

related activity. For example, if 10 out of 100 sampled establishments in a NAICS-size-state group report energy activity, the incidence rate for that group is 10 percent.

Employment Calculation

For the unknown universe, USEER estimates employment in four steps: (1) estimate the share of establishments with energy activity within each relevant industry, state, and size group; (2) apply that share to QCEW establishment counts; (3) estimate the number of energy workers at those establishments using survey responses; and (4) divide estimated energy employment into sectors and subsectors using the employment shares reported by survey respondents. Known-universe employment is calculated separately from known-establishment survey responses and then added to the unknown-universe estimates.

In order to calculate energy employment from the unknown survey portion of USEER, the incidence rates are applied to BLS QCEW establishment counts by six-digit NAICS and establishment size. Total energy employment within industry is calculated by applying the mean energy employment calculation for unknown industry respondents (e.g., installation/construction) within the USEER survey.

Once overall energy employment by industry is established, it is divided into sector (Fuels, TDS, EPG, EE, MV). This is done by taking the proportion (or share) of employment reported in the survey for unknown respondents within industry by sector (e.g., installation/construction within EPG). With industry employment by sector calculated, employment is further divided into industry employment by subsector using a similar process. Employment is further divided into subsectors by taking subsector employment proportion (or share) as reported in the survey by unknown respondents within an industry and applying to the total energy sector industry employment. This process is completed for each industry except for 100% NAICS industries in USEER, such as agriculture & forestry, mining & extraction, and utilities. Each step of the process includes outlier analysis of survey response data.

Known energy employment is collected via a census of the known energy sample. Known respondents complete the survey at a higher rate in comparison to the unknown sample. Known energy employment is aggregated at the industry, sector, and subsector level and added to unknown employment calculations directly.

For USEER, there are thirty-two 4-, 5-, and 6-digit NAICS industries that are added to the employment totals at the industry, sector, and subsector levels. These constitute “100 % NAICS” categories. This means that the BLS QCEW estimates for specific NAICS categories meet the USEER definition for energy-related and do not need to be estimated through the survey and extrapolation process. They are added directly from QCEW.

Commodity Flow Employment

For transportation-related industries, USEER estimates employment tied to specific commodities using a commodity flow method originally developed by DOE and the National Lab of the

Rockies (formerly known as the National Renewable Energy Laboratory) for the first *Quadrennial Energy Review in 2015*.

This method estimates the share (commodity share) of transportation employment associated with moving selected commodities from all commodities in the U.S., including coal, fuel oil, natural gas, motor vehicles, petroleum, and other coal and petroleum products. For each state and transportation mode, the value of shipments for each commodity is divided by the total value of all shipments. Shipment values come from the Freight Analysis Framework from the Bureau of Transportation Statistics.[13]

The resulting commodity share is then applied to state-level employment in the relevant transportation industries: truck transportation, water transportation, air transportation, and rail transportation. These industries are identified using NAICS (North American Industry Classification System from BLS) codes 484, 483, 481, and 482, respectively. State-level estimates are then summed up to produce national employment estimates.

For example, in Alabama, the shipment of motor vehicles and component parts accounted for 10.1 percent of truck-transported shipment value. Applying that share to Alabama's 27,828 truck transportation jobs results in an estimated 2,814 motor vehicle commodity flow jobs. Motor vehicles accounted for 0.0 percent of shipment value in Alabama's rail, air, and water transportation sectors, so no additional jobs were assigned in those modes. In total, Alabama had an estimated 2,814 motor vehicle commodity flow jobs, compared with 108,161 nationally.

Biofuels Agriculture and Forestry Employment

USEER estimates biofuels-related agriculture and forestry employment using a customized approach because standard QCEW data do not fully capture these workers.[14] This undercounting in QCEW is because agricultural employment includes many workers who are excluded from QCEW coverage, and forestry and logging employment can be highly seasonal and may include subcontracted labor that is not consistently reported.

To address this gap, USEER adjusts QCEW employment using an exclusion factor based on BLS Current Population Survey[15] and QCEW data. In 2024, the Current Population Survey estimated approximately 2.3 million agricultural workers[16], while QCEW reported approximately 1.1 million agriculture-related workers in the fourth quarter. This produces an adjustment factor (the ratio of CPS agriculture workers to QCEW agriculture workers) of 2.09, meaning that for every 100 agricultural workers captured in QCEW, an estimated 109 additional workers are not captured. This is referred to as the BLS QCEW exclusion ratio. USEER applies

[13] Bureau of Transportation Statistics, accessed March 3, 2026, https://www.bts.gov/faf.
[14] Bureau of Labor Statistics, accessed May 11, 2026, https://www.bls.gov/opub/hom/cew/concepts.htm#scope-and-exclusions.
[15] Current Population Survey, https://www.bls.gov/cps/data/aa2024/cpsaat15.pdf.
[16] 2024 estimates were used for the exclusion ratio due to the BLS statement that 2025 data is not strictly comparable to earlier years as averages were only based on 11 months of data for 2025 (Data for October 2025 were not collected due to the federal government shutdown): https://www.bls.gov/cps/cpsaat15.htm

this factor to all relevant agriculture and forestry NAICS employment to better estimate total employment.

After adjusting employment, USEER applies fuel-production shares to estimate the portion of agriculture and forestry employment tied to energy-related activities in each of the following subsectors:

Fuel Production Shares

Woody biomass: Employment in relevant forestry NAICS codes (113110 – Timber Tract Operations, 113310 - Logging, 115310 – Support Activities for Forestry) is estimated using Forest Service and United States Department of Agriculture (USDA) National Resource Use Monitoring data.[17] In 2024, about 36.7 million green tons of harvested hardwood and softwood, or 11 percent of total U.S. harvest volume, were used for bioenergy or fuelwood.

Corn ethanol: Employment in corn production is estimated using USDA Economic Research Service data. The NAICS code used for corn ethanol employment is 11115 (Corn Farming). Approximately 44 percent of harvested U.S. corn is used for ethanol production.[18]

Biodiesel: Employment in soybean production is estimated using USDA data on soybean harvests, soybean crushing, and soybean oil use for biofuel.[19] Based on these data, USEER applies a 25 percent biofuel share to soybean-related employment. The NAICS code used for biodiesel employment is 11111 (Soybean Farming).

In each case, employment estimates are calculated by multiplying total NAICS employment for woody biomass, corn ethanol, or biodiesel by the BLS QCEW exclusion ratio and the fuel production percentage for each category.

$$Total\ NAICS\ Employment\ \times\ BLS\ QCEW\ Exclusion\ Ratio$$
$$\times\ Fuel\ Production\ Percentage$$
$$= \boldsymbol{Energy\ Employment\ for\ Agriculture\ \&\ Forestry\ NAICS\ by\ Subsector}$$

Margin of Error Calculations

USEER reports margins of error (MOE) for survey-based estimates at the 95 percent confidence level. For proportions, the conservative margin of error assumes a 50/50 response distribution because that assumption produces the largest margin of error.

The margin of error increases for smaller subgroups. These margins of error reflect sampling uncertainty and do not capture all sources of uncertainty, including uncertainty in identifying the full universe of energy-related establishments, classification error, nonresponse patterns, or model-based allocation across sectors and subsectors. Because there is no single authoritative list

[17] National Resource Use Monitoring, accessed December 17, 2025, https://research.fs.usda.gov/products/dataandtools/national-resource-use-monitoring-data-downloads.
[18] U.S. Bioenergy Statistics, Economic Research Service (ERS), U.S. Department of Agriculture, Table 5: https://www.ers.usda.gov/data-products/us-bioenergy-statistics
[19] United States Department of Agriculture (USDA), accessed January 23, 2026, https://esmis.nal.usda.gov/sites/default/release-files/795725/cropan26.pdf.

of U.S. energy establishments, the reported margins of error may understate total uncertainty. The formula is:

$$\mathbf{1.96} \times \left(\left(\frac{\sqrt{.5 \times .5}}{\boldsymbol{sample}}\right) \times \left(\sqrt{\frac{\boldsymbol{universe - sample}}{\boldsymbol{universe - 1}}}\right)\right) = \text{MOE}$$

The universe in these calculations is considered the entire range of NAICS codes and establishment counts in the U.S. that have reported sector or subsector employment in the last three years for the relevant sample (e.g., the full list of NAICS codes that have indicated solar activity over the previous three years). This calculation does not incorporate the extrapolated universe of energy establishments developed with incidence rates, instead it includes all establishments (from QCEW) that fall within the relevant NAICS codes.

Wage Estimates

USEER wage estimates are based on employer survey responses about the lowest and highest wages paid for selected occupations. Responses are cleaned, standardized to an hourly basis, and screened for outliers. For occupations with at least 30 survey responses, wage estimates rely on USEER survey data. For occupations with fewer than 30 responses, USEER blends survey responses with BLS OEWS data, placing more weight on BLS data when the survey sample is smaller. Median wage estimates are calibrated using BLS OEWS wage distributions. Wage uncertainty is estimated by combining survey uncertainty with BLS OEWS uncertainty using the same blending approach. This approach distinguishes the occupations collected in the wage module from the subset reported in published USEER materials.

$$final\ estimate = \frac{n}{30} * survey\ estimate + \frac{30 - n}{30} * OEWS\ estimate$$

Estimates with at least 30 responses relied only on survey data.

The margin of error for wage estimates was calculated by combining uncertainty from the USEER survey with uncertainty reported by BLS through its Occupational Employment and Wage Statistics program. For the survey data, variance was calculated only for the unknown sample, while the known sample was treated as having no sampling error it represented employers whose employment information was directly identified or confirmed rather than estimated from a randomly selected survey sample. This variation was converted into a percentage relative standard error, or PRSE, for both the low- and high-wage estimates.

$$PRSE = \frac{SE}{survey\ wage\ estimate} * 100$$

The survey PRSE was then blended with the BLS PRSE using the same weighting approach applied to the wage estimates themselves. Occupational wage estimates based on at least 30 survey responses relied entirely on the survey, while smaller samples placed greater weight on BLS data. The final PRSE was multiplied by the wage estimate to calculate the standard error and then by 1.96 to produce a 95 percent margin of error. Because median wages are derived

from the reported low and high wages rather than collected directly, the PRSE for median wages was estimated by averaging the final PRSEs for the low- and high-wage estimates.

Appendix B: 2026 Employer Survey

OMB No. 1910-5179 Expiration 2027

Introduction:

Hello, my name is _____ and I am calling on behalf of the United States Department of Energy (DOE). We are conducting a national survey about energy and related industries. May I please speak to the person most knowledgeable about staffing at [organization]?

Is now a convenient time? [IF NO – Collect callback information and time]

This survey uses specific terms to describe various technologies and activities. If you require any definitions for clarification, please ask me at any time.

The survey is **voluntary** and can take up to 45 minutes of your time. (If needed): This important survey addresses businesses that research, develop, manufacture, construct, install or work with facilities or products that generate, distribute, store, or save energy.

(If needed): This important survey addresses businesses that research, develop, manufacture, install or work with products that generate, distribute, store, use (in the case of motor vehicles), or save energy.

(If needed) This includes firms that support the construction of manufacturing and warehousing facilities used to assemble and distribute energy products, as well as the build out of electric charging stations for electric vehicles and ports that are preparing or supporting offshore wind development or operations, or other energy related work.

(If needed): This includes organizations involved in fossil and renewable energy production, energy efficiency products and services, solar, wind, fossil and other energy sources, other energy related products and services, and motor vehicles.

(If needed): Your individual responses will not be published; only aggregated information will be used in reporting the survey results.

(If needed): Your participation will help determine how investments of time and money should be made to support the industry and prepare the present and future workforce.

(If needed): If you have any questions about DOE's involvement in this survey, please contact [Ava Kalina] at [202-573-5882]

Privacy Act Statement

The information you provide to the Department of Energy (DOE) during this study will be used to allow energy-related employment to be assigned by primary value chain activity, including: research and development; manufacturing; sales and distribution; installation, repair and maintenance; and professional services. It will also provide insight on wages, workforce demographics, and employers' ability to recruit qualified workers.

The data you supply will be used by industry, training organizations, community colleges, job seekers, federal agencies, and other stakeholders, to better inform the workforce development system by highlighting changes in the industry that are driving demand for workers. The data will also inform energy economic development planning activities at the local, state, and regional levels by providing a more detailed assessment of energy jobs, as well as the changing energy landscape and how such changes influence labor markets.

With your consent, the DOE will collect your response as you participate in the study. This includes responses to all survey questions for which your firm qualifies. Your feedback will be kept private and will not be linked to you. Only de-identified and aggregated information will be included in any final or published reports. None of your identifying information will be included in the reports. The DOE does not anticipate further disclosure of your personal information except as required by law.

This collection of information is authorized by the Office of Management and Budget. Participation is voluntary, and you may withdraw participation at any time.

Paperwork Reduction Act Burden Disclosure Statement

Public reporting burden for this collection of information is estimated to up to 48 minutes, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of the Chief Information Officer, Enterprise Policy Development & Implementation Office, IM-22, Paperwork Reduction Project OMB Control Number 1910-5179, U.S. Department of Energy, 1000 Independence Ave SW, Washington, DC, 20585-1290; and to the Office of Management and Budget (OMB), OIRA, Paperwork Reduction Project OMB Control Number 1910-5179, Washington, DC 20503.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

Submission of this data is voluntary.

A. Does your organization have at least one location with employees in the United States, including Puerto Rico and the Virgin Islands? (Please count yourself as an employee if you are an owner-operated business or sole proprietor).

1. Yes [CONTINUE]
2. No [TERMINATE]

For this survey, please only answer for your current business location. If your organization has other U.S. locations, please do not include their data. What is the zip code of your current location? [SHOW ADDRESS FROM SAMPLE FILE]

_____ (Accept all five-digit responses)

(DON'T READ) Have check box for Refused (Terminate if Refused)

B. Is your organization involved, in whole or part, with an activity related to energy? (PAUSE, IF UNSURE OR NO READ REMAINDER OF QUESTION, IF YES GO TO SC) We define this as being directly involved with researching, developing, producing, manufacturing, distributing, selling, implementing, installing, or repairing components, constructing facilities (for energy product manufacturing and distribution) or other energy infrastructure projects such as EV charging and ports for offshore wind, and other goods or services related to:

- Electric Power Generation;
- Electric Power Transmission, Distribution, and Storage;
- Energy Efficiency, Including Heating, Cooling and Building Envelope;
- Fuels, including Extraction, Processing, Production, and Distribution;
- and Transportation, including Motor Vehicles.

1. Yes [CONTINUE]
2. No [CONTINUE]
3. Not sure [TERMINATE]

C. Is your organization participating in the building, construction, or retrofitting of manufacturing, assembling, or materials processing facilities?

1. Yes [CONTINUE TO SD]
2. No [GO TO SD]
3. Not sure [TERMINATE]

D. Is your organization participating in the building, construction, or retrofitting of warehouses and related logistical facilities?

1. Yes [CONTINUE TO SE]
2. No [GO TO SE]

3. Not sure [TERMINATE]

E. Is your organization participating in the building, construction, or retrofitting of public facilities for infrastructure, energy, or transportation?

1. Yes [CONTINUE TO SF]
2. No [GO TO SF]
3. Not sure [TERMINATE]

F. Is your organization participating in the building, construction, expansion, or retrofitting of ports and port related facilities?

1. Yes [CONTINUE TO SG]
2. No [TERMINATE IF SB=2 AND SC=2 AND SD=2 AND SE=2]
3. Not sure [TERMINATE]

IF SC=1 OR SD=1 OR SE=1 OR SF=1 ASK SG OTHERWISE SKIP

IF SC=2 AND SD=2 AND SE=2 AND SF=2 AND SB=2, TERMINATE

G. In the last 12 months, has your organization been directly involved in the building and construction of any of the following types of facilities?

IF SC=1 ASK OTHERWISE SKIP

1. Manufacturing facilities for energy related manufacturing?
    1. Yes (specify type_____)
    2. No
    3. Not sure

IF SD=1 ASK OTHERWISE SKIP

2. Warehouse facilities and distribution centers related to energy and energy storage?
    1 Yes (specify type_____)
    2 No
    3 Not sure

IF SE=1 ASK OTHERWISE SKIP

3. Electric charging stations for electric vehicles or other related infrastructure for electric or alternative vehicles?
    1. Yes (specify type_____)
    2. No
    3. Not sure

IF SF=1 ASK OTHERWISE SKIP

4. Ports that are preparing or supporting offshore wind development or operations or the transportation of Liquified Natural Gas or other energy related work?
    1. Yes (specify type_____)
    2. No
    3. Not sure

IF SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 ASK Q1 AND Q2, THEN SKIP TO Q1, OTHERWISE TERMINATE

H. What is your role in your organization?

1. Human resources
2. Owner, manager, or proprietor
3. Other [Specify]

I. Which of the following industries describes your organization's work?

[ALLOW MULTIPLE RESPONSES] [IF NEEDED: If your organization is involved in energy research or professional services for the industry, please select the options that are most relevant to your organization.]

1. Electric Power Generation
2. Electric Power Transmission and Distribution, including electric vehicle charging stations
3. Storage, including electric vehicle batteries
4. Energy Efficiency, Including Heating, Cooling and Building Envelope (IF NEEDED THIS INCLUDES THERMAL OR HOT WATER SOLAR)
5. Fuels
6. Transportation Vehicles, including Motor Vehicles (IF NEEDED: Including industrial and agricultural vehicles, such as forklifts, tractors, and recreational vehicles, such as golf carts) e
7. Component Parts for Transportation Vehicles
8. Carbon Capture, Utilization, and Storage (CCUS)
9. Direct Air Capture (DAC)
10. Other (Specify _____) TERMINATE
11. DK/NA TERMINATE

[ASK SCREENER J IF SI COUNT>1]

J. Which do you consider your organization's primary industry, based on the majority of labor hours performed at your location? [PIPE IN SI CATEGORIES, ACCEPT ONE]

1. Electric Power Generation
2. Electric Power Transmission and Distribution, including electric vehicle charging stations
3. Storage, including electric vehicle batteries
4. Energy Efficiency, Including Heating, Cooling and Building Envelope (IF NEEDED THIS INCLUDES THERMAL OR HOT WATER SOLAR)
5. Fuels
6. Transportation, including Motor Vehicles (IF NEEDED: Including industrial and agricultural vehicles, such as forklifts, tractors, and recreational vehicles, such as golf carts)
7. Component Parts for Transportation Vehicles
8. Carbon Capture, Utilization, and Storage (CCUS)
9. Direct Air Capture (DAC)
10. Other

CREATE SJPRIME FROM SI IF SI COUNT=1, OR SJ IF SI COUNT>1

K. [ASK FOR EACH SI] Which of the following [INSERT SI RESPONSE] technologies is your organization directly engaged with? [READ LIST, ALLOW MULTIPLE RESPONSES]

A. Electric Power Generation (IF SI=1) [RANDOMIZE]

1. Solar Electric Generation [SET SOLAR=1]
2. Land-based Wind Generation
3. Offshore Wind Generation
4. Geothermal Generation
5. Bioenergy/Biomass Generation
6. Low-Impact Hydroelectric Generation such as run of river
7. Traditional Hydroelectric Generation
8. Marine and Hydrokinetic Generation
9. Advanced/Low Emission Natural Gas

10. Nuclear Generation
11. Coal Generation
12. Oil and other Petroleum Generation
13. Natural Gas Generation
14. Combined Heat and Power
15. Other Generation (Specify)

B. Electric Power Transmission and Distribution (IF SI=2) [RANDOMIZE]

1. Traditional Transmission and Distribution
2. Electric Vehicle Charging Stations
3. Smart Grid
4. Micro Grids
5. Other Grid Modernization
6. Other (Specify)

C. Storage (IF SI=3) [RANDOMIZE] [IF SKA=1, "(including battery storage for solar generation)"

1. Pumped hydro-power storage
2. Battery storage, including electric vehicle batteries [IF SKA=1, "(including battery storage for solar generation)"
3. Mechanical storage (flywheels, compressed air energy storage, etc.)
4. Thermal storage
5. Liquefied natural gas
6. Compressed natural gas
7. Crude oil
8. Refined petroleum fuels (liquid)
9. Refined petroleum fuels (gas)
10. Coal storage (piles, domes, etc.)
11. Biofuels, including ethanol and biodiesel
12. Nuclear fuel
13. Other gas fuel (Specify)
14. Other liquid fuel (Specify)

15. Other Storage

16. Other (Specify)

IF S**K**C=2, ASK H_2, H_3, and H_4

H_2. What type of Battery Storage do you work with? [READ LIST, ALLOW MULTIPLE RESPONSES] [RANDOMIZE]

1. Lithium batteries
2. Lead-based batteries
3. Other solid-electrode batteries (Specify)
4. Vanadium redox flow batteries
5. Other flow batteries (Specify)

H_3. What is the application of your battery storage work? [READ LIST, ALLOW MULTIPLE RESPONSES] [RANDOMIZE]

1. Consumer devices
2. Vehicles or other transportation (including electric vehicles)
3. Behind-the-meter (buildings or industrial facilities)
4. Front-of-meter (electric grid)
5. Other (Specify)

H_4: What stage of batteries do you work with? [READ LIST, ALLOW MULTIPLE RESPONSES] [RANDOMIZE]

1. Materials (lithium, cobalt, manganese, graphite, nickel, etc.)
2. Component parts
3. Cells
4. Modules/Packs
5. Other (Specify)

D. Energy Efficiency, Including Heating, Cooling and Building Envelope (IF SK=4) [RANDOMIZE]

1. ENERGY STAR® Certified Appliances (not including HVAC)
2. ENERGY STAR Certified Heating, Ventilation, and Cooling (HVAC), except air-source and ground-source heat pumps
3. ENERGY STAR Air-Source Heat Pumps
4. ENERGY STAR Ground-source or geothermal heat pumps

5. Other high efficiency HVAC that are out of scope for ENERGY STAR certification (e.g. indirect evaporative coolers, air to water heat pumps, energy recovery systems, etc.)
6. Traditional HVAC goods, control systems, and services
7. ENERGY STAR certified water heaters
8. ENERGY STAR Certified Electronics (TVs, Telephones, Audio/Video, etc.)
9. ENERGY STAR Certified Windows, Doors and Skylights
10. ENERGY STAR Certified Roofing
11. ENERGY STAR Certified Insulation
12. Air sealing
13. ENERGY STAR Certified Commercial Food Service Equipment
14. ENERGY STAR Certified Data Center Equipment
15. ENERGY STAR Certified LED lighting
16. Other LED, CFL, and efficient lighting
17. Solar thermal water heating and cooling [SET SOLAR=1]
18. Other renewable heating and cooling (biomass, etc.)
19. Advanced building materials/insulation
20. Recycled building materials
21. Reduced water consumption products and appliances
22. Energy auditing services
23. Other (Specify)

E. Fuels (IF SK=5) [RANDOMIZE]

1. Coal
2. Onshore petroleum, including gasoline and diesel
3. Offshore petroleum, including gasoline and diesel
4. Onshore natural gas
5. Offshore natural gas
6. Other Fossil Fuel
7. Corn Ethanol
8. Renewable Diesel

9. Biodiesel
10. Other Ethanol/Non-Woody Biomass
11. Woody Biomass/Cellulosic Biofuel
12. Waste Fuels
13. Other Biofuels
14. Nuclear Fuel
15. Other (Specify)

ASK KA IF SKE = 2 & 3

KA. Do you primarily work with onshore or offshore petroleum?

1. Onshore petroleum
2. Offshore petroleum
3. Don't know/ Refused

ASK KB IF SKE = 4 & 5

KB. Do you primarily work with onshore or offshore natural gas?

1. Onshore natural gas
2. Offshore natural gas
3. Don't know/ Refused

F. Transportation Vehicles, Including Motor Vehicles (IF SI=6) [RANDOMIZE]

1. Gasoline and Diesel Motor Vehicles (excluding freight transport)
2. Hybrid Electric Vehicles
3. Plug-In Hybrid Vehicles
4. Electric Vehicles
5. Natural Gas Vehicles
6. Hydrogen/Fuel Cell Vehicles
7. Other (Specify _____)

G. Component Parts for Transportation Vehicles (IF SI=7) [RANDOMIZE]

1. Transportation Vehicle Engine & Drive Parts
2. Transportation Vehicle Exhaust System Parts
3. Transportation Vehicle Body Parts
4. Other Transportation Vehicle Parts (Specify _____)

SET SOLAR=1 IF SKA=1 OR SKD=17

IF SK TOTAL>1, ASK SKPRIME, IF NOT, SKIP

IF SK TOTAL>1, ASK SKPRIME, IF NOT, SKIP

[PIPE-IN RESPONSES FROM SKA-SKG]

[IF RESPONDENT ONLY IDENTIFIES WITH ONE INDUSTRY AT SCREENER I, USE THAT INDUSTRY FOR THE REMAINDER OF THE SURVEY IN PLACE OF "ENERGY" / IF MORE THAN ONE, CONTINUE TO USE "ENERGY." EXCEPTION - IF THE ONLY SELECTION AT SCREENER I IS "OTHER" OR "DK/NA," USE "ENERGY"]

L. Which of the following industry descriptions describe your organization's focus as it relates to the [energy/ SI] industry? [ALLOW MULTIPLE RESPONSES]

1. An organization involved in agricultural goods and services
2. An organization involved in mining and extraction
3. An organization that manufactures and/or assembles [energy/ SI] goods or produces components that go into energy products
4. An organization that conducts research and development and related services for [energy/ SI]
5. An organization involved in the wholesale trade and distribution of [energy/ SI] products and services
6. An organization that installs [energy/ SI] systems or provides services for installation of [energy/ SI] systems
7. A public or private utility
8. An organization that provides consulting, engineering, finance, legal, or other professional services related to energy
9. An organization that conducts operations and maintenance (O&M) for [energy/ SI] systems
10. An organization primarily involved in education and training
11. Other support services (Specify: _____)
12. Other (Specify: _____)
13. (DON'T READ) Not sure

[ASK SCREENER M IF MORE THAN ONE SELECTED AT SCREENER L]

M. Which do you consider your organization's primary focus as it relates to the [energy/ SI] industry, based on the labor hours performed at your location

1. An organization involved in agricultural goods and services
2. An organization involved in mining and extraction
3. An organization that manufactures and/or assembles [energy/ SI] goods or produces components that go into energy products
4. An organization that conducts research and development and related services for [energy/ SI]
5. An organization involved in the wholesale trade and distribution of [energy/ SI] products and services
6. An organization that installs [energy/ SI] systems or provides services for installation of [energy/ SI] systems
7. A public or private utility
8. An organization that provides consulting, engineering, finance, legal, or other professional services related to energy
9. An organization that conducts operations and maintenance (O&M) for [energy/ SI] systems
10. An organization primarily involved in education and training
11. Other support services (Specify: _____)
12. Other (Specify: _____)
13. (DON'T READ) Not sure

SET SMPRIME BASED ON SCREENER M RESPONSE OR SCREENER L RESPONSE IF SCREENER L COUNT=1

ASK SN IF SKA=14 OR SKB=6 OR SKC = 13, 14, 15, OR 16 OR SKE = 15, AND SL = 4, 8, OR 10

H. Does your organization work with hydrogen fuel in any capacity?

1. Yes (Please specify)_____
2. No
3. Don't know/ Refused

IF SMPRIME=7, ASK SCREENER O

I. Does your organization employ workers that are in charge of administering, managing, evaluating, or otherwise working on utility-led energy efficiency programs, rebates, and other activities?

1. Yes

2. No
3. DK/NA

For this survey, we will just be asking about the employees that work from or directly report to your current location.

IF SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 ASK Q1 AND Q2, THEN SKIP TO Q4

1. Including all people, permanent and temporary, contract employees as well as any other individuals who may work for or be employed by other entities, how many **people** work at or from your current location doing work for your organization?

   A. Record # of ALL people _____

   (DON'T READ) Refused

Of the #_(TAKE FROM Q1A)_ people that work at or from your current location, how many are permanent employees, full-time or part-time. Please note this would include all of those employees that have taxes withheld by your organization in their paycheck.

   A. Record # of permanent employees _____

   (DON'T READ) Refused

Of the #_(TAKE FROM Q1A)_ people that work at or from your current location, how many are self-employed or independent contractors working for your organization. Please note this would include all of those individuals that receive a 1099 from your organization rather than wages with taxes withheld for them.

   C. Record # of self-employed or independent contractors _____

   (DON'T READ) Refused

Of the #_(TAKE FROM Q1A)_ people that work at or from your current location, how many are employed by another firm or entity, such as a temporary employment agency or a union hiring hall, but are providing services for your organization. Please note this would include all consultants, temporary workers or advisors that are employed by another firm but doing work for your organization.

   D. Record # of people employed by another firm _____

   (DON'T READ) Refused

Now we want to just ask about those permanent employees that work at or from your current location.

2. Based on [Take Q1B #] full-time and part-time permanent employees at your location, how many employees do you expect to have at your location 12 months from now?

   1. More [record #_____]

2. Fewer [record #_____]
3. (DON'T READ) Same number
4. (DON'T READ) Refused

[If amount differs by 10% or more in either direction, ask:]

Just to confirm, you currently have ____ permanent employees at your current location and you expect to have _____ (more/fewer) employees, for a total of ____ permanent employees 12 months from now.

IF SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 SKIP TO Q4

3. Of the [Take Q1 #] full time and part-time permanent employees at your current location, how many of these workers support the [energy/ SI] portion of your business? Please note that your response should include administrative staff supporting the energy portion of your business.

   Record # of employees _____

   (DON'T READ) Have check box for Refused

[IF NEEDED: SUPPORT WORKERS ARE DEFINED AS THOSE INDIVIDUALS THAT SPEND ANY AMOUNT OF TIME, DIRECTLY WORKING ON ENERGY RELATED PROJECTS INCLUDING ADMINSTRATIVE SUPPORT WORKERS]

[Q3 SHOULD BE LESS THAN OR EQUAL TO Q1 - BUILD IN CHECK]

   [IF SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 ASK Q4, THEN SKIP TO Q6 OTHERWISE SKIP. IF YES TO MORE THAN ONE SG CATEGORY ASK QUESTION FOR EACH ONE THAT IS YES]

4. Of the [Take Q1 #] full time and part-time permanent employees at your current location, how many of these workers support the building and construction work related to manufacturing facilities / warehouses / infrastructure / ports? (PIPE IN RESPONSES FROM SG) Please note that your response should include administrative staff supporting this portion of your business.

   Record # of employees _____

   (DON'T READ) Have check box for Refused

[IF NEEDED: SUPPORT WORKERS ARE DEFINED AS THOSE INDIVIDUALS THAT SPEND ANY AMOUNT OF TIME, DIRECTLY WORKING ON CONSTRUCTION RELATED PROJECTS INCLUDING ADMINISTRATIVE SUPPORT WORKERS]

5. Of your [Take Q3 #] energy staff at your location (office staff and in the field), please classify them into the area where they spent most of their time over the last 12 months. Please count each employee only once.

    a. In-state within your region/metropolitan area [Record #]_____

    b. In-state outside your region/metropolitan area [Record #]_____

    c. Out-of-state [Record #]_____

IF SB=1 OR SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 ASK Q6 AND Q7

6. How many full-time and part-time permanent employees did you have working at your current location 12 months ago that supported the [energy/ SI/ facilities construction] portion of your business?

    Record # of employees _____

    (DON'T READ) Have check box for Refused

7. Based on [Take Q3 #] full-time and part-time permanent employees at your location that support the [energy/ SI/ facilities construction] portion of your business, how many employees do you expect to have at your location 12 months from now?

    1. More [record #_____]
    2. Fewer [record #_____]
    3. (DON'T READ) Same number
    4. (DON'T READ) Refused

    Just to confirm, you currently have ____ permanent employees supporting the energy portion of your business and you expect that number to be _____ (more/fewer) 12 months from now, for a total of ____

IF RESPONDENTS ANSWERED Q3 ASK Q8A AND Q9A IF RESPONDENTS ANSWERED Q4 ASK Q8B AND Q9B

8. A. Thinking of your [INSERT Q3] energy employees, how many spend at least 50% of their time supporting the energy portion of your business?

    Record: _____

B. Thinking of your [INSERT Q4] employees that support the building and construction work related to manufacturing facilities / warehouses / infrastructure / ports? (PIPE IN "YES" RESPONSES FROM SG), how many spend at least 50% of their time supporting that portion of your business?

    Record: _____

9. A. Thinking of your [Q3 ANSWER] energy employees, how many spend all of their time supporting the energy portion of your business?

Record: _____

B. Thinking of your [INSERT Q4] employees that support the building and construction work related to manufacturing facilities / warehouses / infrastructure / ports? (PIPE IN "YES" RESPONSES FROM SG), how many spend all of their time supporting that portion of your business?

Record: _____

IF SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1 SKIP TO Q21

SECTION 2 – Workforce Profile Questions

If SI COUNT > 1 response, ASK Q10

10. Thinking of your [Take Q3] [energy/ SI] workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the area where they spend the most time.

PIPE IN SCREENER I RESPONSES

Record # of employees _____

If SI COUNT > 1 response and Q8>0, ASK Q11

11. Thinking of your [Take Q8] [energy/ SI] workers that spend at least 50% of their time supporting the energy portion of your business, please classify them in the following categories. Please count each employee only once and categorize them in the area where they spend the most time.

[PIPE IN SCREENER I RESPONSES AND EMPLOYMENT FROM Q8]

Record # of employees _____

IF SI = 1 and Screener K.A > 1 response, ASK Q12 OTHERWISE SKIP

USE Q3 IN PLACE OF Q10 IF SELECTED COUNT AT SCREENER I WAS ONE (ONE CHOICE)

12. Thinking of your [PIPE IN Q10/Q3 GENERATION ANSWER] energy generation workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER K.A RESPONSES

Record # of employees _____

IF SI = 2 and Screener K.B > 1 response, ASK Q13 OTHERWISE SKIP

13. Thinking of your [PIPE IN Q10/Q3 ELECTRIC POWER TRANSMISSION AND DISTRIBUTION ANSWER] energy transmission, distribution, and storage workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER **K**.B RESPONSES

Record # of employees _____

IF SI = 3 and Screener K.C > 1 response, ASK Q14 OTHERWISE SKIP

14. Thinking of your [PIPE IN Q10/Q3 STORAGE ANSWER] storage workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER K.C RESPONSES

Record # of employees _____

IF Q14_2(BATTERY STORAGE)>0, ASK Q15

15. Thinking of your [PIPE IN Q14_2 #] battery storage workers at your location, please classify in them in the following categories. Please count each employee only once and categorize them in the battery storage application category where they spend the most time.

    1. Consumer devices [Record # of employees]
    2. Vehicles or other transportation [Record # of employees]
    3. Buildings or industrial facilities [Record # of employees]
    4. Electric Grid [Record # of employees]
    5. Other (Specify) [Record # of employees]

IF SI = 4 and Screener K.D > 1 response, ASK Q16 OTHERWISE SKIP

16. Thinking of your [PIPE IN Q10/Q3 ENERGY EFFICIENCY, INCLUDING HEATING, COOLING AND BUILDING ENVELOPE ANSWER] energy efficiency, including heating, cooling and building envelope, workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER K.D RESPONSES

Record # of employees _____

IF SI = 5 and Screener K.E > 1 response, ASK Q17 OTHERWISE SKIP

17. Thinking of your [PIPE IN Q10/Q3 FUELS ANSWER] fuels-related workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER E.E RESPONSES

Record # of employees _____

IF SI = 6 and Screener K.F > 1 response, ASK Q18 OTHERWISE SKIP

18. Thinking of your [PIPE IN Q10/Q3 TRANSPORTATION VEHICLES ANSWER] motor-vehicle related workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER E.F RESPONSES

Record # of employees _____

IF SI = 5 and Screener K.G > 1 response, ASK Q19 OTHERWISE SKIP

19. Thinking of your [PIPE IN Q10/Q3 COMPONENT PARTS ANSWER] energy generation workers at your location, please classify them in the following categories. Please count each employee only once and categorize them in the technology area where they spend the most time.

PIPE IN SCREENER K.G RESPONSES

Record # of employees _____

Demographic questions

20. Thinking of the sex of your [Take Q3/Q4] [energy/ SI] employees, how many are:

    a) Male: Record # employees _____

    b) Female: Record # of employees _____

    c) (DON'T READ) Refused

IF SB=1 OR SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1ASK Q21 THROUGH Q30

21 Thinking of your [Take Q3/Q4] [energy/ SI/ facilities construction] employees, please indicate the race and/or ethnicity:

    a) American Indian or Alaska Native

    For example, Navajo Nation, Blackfeet Tribe of the Blackfeet Indian Reservation of Montana, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, Aztec, Maya, etc. Record # of employees _____

    b) Asian

For example, Chinese, Asian Indian, Filipino, Vietnamese, Korean, Japanese, etc. Record # of employees _____

c) Black or African American

For example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc. Record # of employees _____

d) Hispanic or Latino

For example, Mexican, Puerto Rican, Salvadoran, Cuban, Dominican, Guatemalan, etc. Record # of employees _____

e) Middle Eastern or North African

For example, Lebanese, Iranian, Egyptian, Syrian, Iraqi, Israeli, etc. Record # of employees _____

f) Native Hawaiian or Pacific Islander

For example, Native Hawaiian, Samoan, Chamorro, Tongan, Fijian, Marshallese, etc. Record # of employees _____

g) White

For example, English, German, Irish, Italian, Polish, Scottish, etc. Record # of employees _____

22 Thinking of your [Take Q3/Q4] [energy/ SI/ facilities construction] employees, how many:

a) Are Veterans of the U.S. Armed Forces Record # of employees _____

b) Are 55 and over Record # of employees _____

c) Are between 30 and 54 Record # of employees _____

d) Represented by Unions, Collective Bargaining Agreements, and/or Project Labor Agreements Record # of employees _____

e) Have a disability that requires accommodation

f) Were formerly incarcerated

g) (DON'T READ) Refused

23 Thinking of the current [Take Q3/Q4] [energy/ SI/ facilities construction] employees at your location, how many are in the following occupational categories?

(Please only assign one category to each employee that supports the [energy/ SI] portion of your business. If they fall into more than one category, please assign them to the category in which they devote more of their time.)

a. Mining and Extraction Field positions (includes oil field workers, miners, etc.)

Record # of employees _____

(DON'T READ) Have check box for Refused

b. Production/Manufacturing positions (includes workers in refineries and assembly workers and those involved in the design, quality control and manufacturing process)

Record # of employees _____

(DON'T READ) Have check box for Refused

c. Construction, installation or repair positions (includes technicians, building trades people, and supervisors that are working at project site)

Record # of employees _____

(DON'T READ) Have check box for Refused

d. Administrative positions (includes customer service representatives, clerks, office and operations support)

Record # of employees _____

(DON'T READ) Have check box for Refused

e. Management/Professional positions (***does not include*** those supervisors that spend a majority of their time at project sites or sales managers)

Record # of employees _____

(DON'T READ) Have check box for Refused

f. Sales positions (includes cost estimators, sales representatives and sales managers)

Record # of employees _____

(DON'T READ) Have check box for Refused

g. Other (Specify: _____)

Record # of employees _____

(DON'T READ) Have check box for Refused

SECTION 3 – Workforce Development & Training Needs

24. How many energy/ facilities construction workers have you hired over the last 12 months, either for new positions or to replace former workers?

Record _____

IF Q24>0, ask Q25-28 otherwise SKIP

25. Thinking of the [Insert Q25] energy/ facilities construction workers that you have hired at your location over the last 12 months, please indicate your level of difficulty finding qualified applicants to fill the positions.

1. Very difficult
2. Somewhat difficult
3. Not at all difficult
4. DK/NA

IF Q25 = 1 or 2 ask Q26 and Q27, otherwise SKIP

26. What are the two most significant reasons for the reported difficulty?

_____

_____

27. Please provide the two most difficult positions for your organization to fill at your location.

_____

_____

28. You reported [insert Q24] additional workers at your organization over the last 12 months. Of these [insert Q24] positions, how many:

a. Were newly created positions?

Record # of employees _____

b. Were existing employees that added energy responsibilities?

Record # of employees _____

c. Were hired to replace workers due to turnover or retirement?

Record # of employees _____

d. Were positions that required previous work experience related to the position?

Record # of employees _____

e. Required a bachelors degree or beyond: _____

Record # of employees _____

f. Required an associate degree or academic certificate from an accredited college, but not a bachelors degree: _____

Record # of employees _____

g. Required a vocational or technical postsecondary certificate or credential:

_____

Record # of employees _____

h. Are represented by a union, collective bargaining agreement, or a project labor agreement: _____

Record # of employees _____

29. Does your firm have a formal or informal mentorship/sponsorship program?
    1. Yes
    2. No
    3. DK/NA

30. Briefly describe the mentorship/sponsorship program?

IF SB=1 ASK Q31

SECTION 4 – Business Questions

31. The following is a list of factors that may contribute to difficulty growing a profitable business. Please rate the significance of each factor. [READ ITEM, THEN SAY] is it very significant, somewhat significant, or not at all significant. [RANDOMIZE]
    a. Lack of capital
    b. Lack of qualified talent
    c. Poor demand
    d. Cost or supply of materials
    e. Permitting delays
    f. Interconnection delays
    g. Policy challenges

IF SB=1 OR SB=2 AND SG1=1 OR SG2=1 OR SG3=1 OR SG4=1ASK Q32-33

32. Thinking about your organization's energy related suppliers and vendors, what percent of your supply chain purchases (in dollars/value), are:
    a. In-state (Enter %)_____
    b. Out of state but in the United States (Enter %)_____
    c. Outside of the United States (Enter %)_____ (WEB ONLY SPECIFY COUNTRIES_____)
    d. DK/NA

33. Thinking about your organization's energy related customers, what percent are located:
    1. In-State (Enter %)_____
    2. In a bordering state but out of state (Enter %)_____
    3. In the United States, but outside of a bordering state (Enter %)_____
    4. Outside of the United States (Enter %)_____

5. DK/NA

34. Are you currently partnering with registered apprenticeship programs, community colleges, universities, government training programs, or private sector training programs? [SELECT ALL THAT APPLY]
    1. Yes, registered apprenticeship programs
    2. Yes, a community college or multiple community colleges
    3. Yes, a university or multiple universities
    4. Yes, a government training program or multiple government training programs
    5. Yes, a private sector training program or multiple private sector training programs
    6. No
    7. (DON'T READ) DK/NA
35. Has your business been awarded any federal government grants, loans, or procurement contracts?
    1. [SELECT ALL THAT APPLY]
    2. Yes, grant (SPECIFY_____)
    3. Yes, loan (SPECIFY_____)
    4. Yes, contract (SPECIFY_____)
    5. No
    6. (DON'T READ) DK/NA

SECTION 5 – Revenue Questions

Ask Q36 if SMPRIME = 5 or 6

36. Can you name any specific rebates or incentives that can reduce the cost of selling, distributing or installing energy for your customers? [Record up to 3]

    Record: _____

37. Approximately how much of your organization's work at your current location, in terms of total gross revenue, is related to energy?

    Record $:_____

ASK Q38 if SK has multiple responses, otherwise SKIP

38. Approximately how much of your organization's work at your current location, in terms of total gross revenue, is related to each of the following products or services? (Use numbers to indicate percentages, for instance 20=20%)

1. INSERT SK RESPONSE 1 ____%
2. INSERT SK RESPONSE 2 ____%
3. INSERT SK RESPONSE 3 ____%
4. …
5. All other revenue not related to energy ____%

SECTION 6 – Motor Vehicles & Component Parts

ASK Q39 if SI = 6, otherwise SKIP

39. With which of the following types of transportation vehicles does your firm primarily design, manufacture, sell, repair, or otherwise work with? [SELECT ONE]
    1. Automobiles
    2. Light- or Medium- Duty Vehicles
    3. Heavy Duty Vehicles
    4. Industrial Vehicles, such as forklifts
    5. Recreational Vehicles, such as golf carts
    6. Rail
    7. Other (specify _____)

ASK Q40-Q42 if SI = 7, otherwise SKIP

40. Does your firm manufacture, design, sell, and/or distribute parts solely used for alternative vehicles, or vehicles with a fuel source other than gasoline or diesel?
    1. Yes, electric vehicles
    2. Yes, hydrogen fuel cell vehicles
    3. Yes, other (Specify)____
    4. No
    5. Don’t know/ Refused

ASK Q41 IF Q40=1, otherwise SKIP

41. How much of your firm’s work, as a percentage of your total revenue, is attributed to parts solely used for alternative vehicles, or vehicles with a fuel source other than gasoline or diesel?
    1. All of it (100%)
    2. Half to most of it (50% to 99%)

3. A quarter to almost half of it (25% to 49%)
4. Less than a quarter (1% to 24%)
5. (DON'T READ) DK/NA

42. Thinking of the type of fuel used, does your organization offer parts or products for any of the following types of transportation vehicles? [ALLOW MULTIPLE]
    1. Gasoline and Diesel Motor Vehicles (excluding freight transport)
    2. Hybrid Electric Vehicles
    3. Plug-In Hybrid Vehicles
    4. Electric Vehicles
    5. Natural Gas Vehicles
    6. Hydrogen Vehicles
    7. Fuel Cell Vehicles
    8. Other (Specify _____)

[If Q42 = 2,3, or 4, ask Q43, otherwise SKIP]

43. Which systems for electric and hybrid vehicles does your firm primarily work with?
    a. Body design or structure
    b. Batteries
    c. Charging components
    d. Electric propulsion (i.e. converter, controller, transmission, etc.)
    e. Auxiliaries (i.e. brakes, steering, climate control, etc.)
    f. Other (Specify_____)

SECTION 7 – Energy Efficiency

IF SCREENER O=1, ASK Q44

44. How many of your [Take Q3#] energy employees work on administering, managing, evaluating, or otherwise working on utility-led energy efficiency programs, rebates, and other activities?

    Record # of employees: _____

WAGE SECTION

USE SCREENERS FROM USEER (2026) TO CONFIRM INFORMATION LEARNED INITIALLY

For this survey, we will just be asking about the employees that work from or directly report to your current location.

DEVELOP OCCUPATIONAL MATRIX TO IDENTIFY UP TO 4 OCCUPATIONAL CATEGORIES

Now we'd like to ask you about occupational categories that work from or report to your current location.

1. Thinking about the different ways you hire [OCCUPATIONAL CATEGORY], please let us know if you hire this position for permanent full-time employment, permanent part-time employment, as a temporary or independent contractor employed by your organization, OR as a temporary or contract worker employed by another organization (employment agency) or union hiring hall). (SELECT ALL THAT APPLY)

   1 = Permanent full-time employment (taxes withheld by employer)

   2 = Permanent part-time employment (taxes withheld by employer)

   3 = As a temporary or independent contractor paid by your organization (taxes are not withheld)

   4 = As a temporary or contract worker employed by another organization

   5 = Union hiring hall

   6 = No, we do not employ workers within this occupational category

   7 = Don't know/ No Answer

	1	**2**	**3**	**4**	**5**	**6**	**DK/NA**
A. Occupational Category #1	1	2	3	4	5	6	7
B. Occupational Category #2	1	2	3	4	5	6	7
C. Occupational Category #3	1	2	3	4	5	6	7
D. Occupational Category #4	1	2	3	4	5	6	7

We would like to DISPLAY you about your permanent full-time employees that work at or report to your current location. [SKIP FOR ALL Q1A-D THAT DOES NOT EQUAL 1]

2. How many **permanent full-time** _[OCCUPATIONAL CATEGORY TITLE]_ report to or work from your current location? [IF NEEDED: This includes persons in the field or working remotely that report to this location]

   Record # of employees for OC #1_____

   Record # of employees for OC #2_____

   Record # of employees for OC #3_____

Record # of employees for OC #4_____

(DON'T READ) Refused

3. What is the lowest starting or entry-level wage or salary (excluding benefits) for [INSERT OC] ? [THIS IS PERMANENT FULL-TIME FOR Q3 – 5]

   A OC #1 _____ $'s per hour / month / year

   B OC #2 _____ $'s per hour / month / year

   C OC #3 _____ $'s per hour / month / year

   D OC #4 _____ $'s per hour / month / year

4. What is the highest salary for [INSERT OC] at your current location?

   A OC #1 _____ $'s per hour / month / year

   B OC #2 _____ $'s per hour / month / year

   C OC #3 _____ $'s per hour / month / year

   D OC #4 _____ $'s per hour / month / year

5. Over the last 12 months, have wages or salaries increased, decreased, or stayed the same for the average [INSERT OC] employed at your location? [THIS IS PERMANENT FULL-TIME]

   1 Increased more than 10%

   2 Increased from 5% to 10%

   3 Increased from 1% to 4%

   4 Decreased

   5 Stayed the same

   6 (DON'T READ) DK/NA

	1	2	3	4	5	DK/NA
A. Occupational Category #1	1	2	3	4	5	6
B. Occupational Category #2	1	2	3	4	5	6
C. Occupational Category #3	1	2	3	4	5	6
D. Occupational Category #4	1	2	3	4	5	6

Now we'd like to ask about benefits for those individuals that are permanent full-time employees that work at or report to your current business location.

6. What level of healthcare insurance coverage is available to [INSERT OC] at your current location?

1 = Firm contributes ALL healthcare insurance costs (premiums, coinsurance, deductibles, copayments, etc.) for employee & family

2 = Firm contributes ALL healthcare insurance costs (premiums, coinsurance, deductibles, copayments, etc.) for employee only

3 = Firm contributes SOME BUT NOT ALL healthcare insurance costs for employee & family

4 = Firm contributes SOME BUT NOT ALL healthcare insurance costs for employee only

5 = Firm does not contribute to employee's healthcare insurance costs

6 = (DON'T READ) Don't know/ No Answer

	1	**2**	**3**	**4**	**5**	**DK/NA**
A. Occupational Category #1	1	2	3	4	5	6
B. Occupational Category #2	1	2	3	4	5	6
C. Occupational Category #3	1	2	3	4	5	6
D. Occupational Category #4	1	2	3	4	5	6

7. Does your current location contribute to some type of retirement plan (401k, pension, IRAs,..) for [INSERT OC]?

   A OC #1 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   B OC #2 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   C OC #3 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   D OC #4 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

8. Does your current location offer paid time off (PTO) or paid vacation for [INSERT OC]?

   A OC #1 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   B OC #2 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   C OC #3 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

   D OC #4 _____ 1 = YES, 2 = NO, 3 = (DON'T READ) DK/NA

Now I would like to ask some of the qualifications and promotion opportunities for full-time permanent positions that work at or report to your current location.

9. Are there certificate(s), licenses, technical certification(s) or other specific educational degrees or training programs that are valued by your firm, when looking to hire [INSERT OCCUPATION]? [Single response, repeat for each occupation]

1. Yes, a certification or license is required for [INSERT OCCUPATION] (Specify certification or license) _____
2. Yes, a degree is required for [INSERT OCCUPATION] (Specify degree) _____
3. Yes, a certification or license is NOT required for [INSERT OCCUPATION], but workers with the certification are paid an additional wage premium (Specify certification or license and additional wage premium per hr/yr) _____
4. Yes, a degree is NOT required for [INSERT OCCUPATION], but workers with the degree are paid an additional wage premium (Specify degree and additional wage premium per hr/yr) _____
5. Yes, a certification or license is valued for [INSERT OCCUPATION] but not required nor paid an additional wage premium (Specify certification or license) _____
6. Yes, a degree is valued for [INSERT OCCUPATION] but not required nor paid an additional wage premium (Specify degree) _____
7. No
8. (DON'T READ) Not sure

10. At your organization do you typically promote individuals from within for [INSERT OCCUPATION], or do you primarily hire people from outside your organization?

1 Promote from within

2 Recruit from outside the organization

3 Both, promote from within and recruit from outside the organization

4 (DON'T READ) DK/NA

	1	2	3	DK/NA
A. Occupational Category #1	1	2	3	4
B. Occupational Category #2	1	2	3	4
C. Occupational Category #3	1	2	3	4
D. Occupational Category #4	1	2	3	4

[IF Q10 FOR A – D = 1 OR 3 DISPLAY Q11]

11. At your organization what are the primary positions that people have before they become [INSERT OCCUPATION]?

A OC #1 _____

B OC #2 _____

C OC #3 _____

D OC #4 _____

12. In your organization what are the primary positions that people move up to after working as a [INSERT OCCUPATION]?

A OC #1 _____

B OC #2_____

C OC #3 _____

D OC #4 _____

13. What percentage of the [INSERT OCCUPATION] workers at your firm are covered by a Collective Bargaining Agreement or Project Labor Agreement or are otherwise members or covered by one or multiple labor unions?

1. A few (1% - 25%)
2. Some (26% - 50%)
3. Most (51% - 75%)
4. All or almost all (76% - 100%)
5. None (0%)
6. (DON'T READ) DK/NA

	1	**2**	**3**	**4**	**5**	**6**
A. Occupational Category #1	1	2	3	4	5	6
B. Occupational Category #2	1	2	3	4	5	6
C. Occupational Category #3	1	2	3	4	5	6
D. Occupational Category #4	1	2	3	4	5	6

14. Of the [INSERT OCCUPATION] workers at your current location, how many live within 50 miles of the office where they work from or report to?

1 A few (0% - 24%)

2 Some (25% - 49%)

3 Most (50% - 74%)

4 All or almost all (75% - 100%)

5 (DON'T READ) DK/NA

	1	**2**	**3**	**4**	**DK/NA**
A. Occupational Category #1	1	2	3	4	5

B. Occupational Category #2	1	2	3	4	5
C. Occupational Category #3	1	2	3	4	5
D. Occupational Category #4	1	2	3	4	5

15. Does your organization inquire about criminal records on applications for job seekers for the following occupations?

    1 Yes, but a criminal offense does not automatically disqualify job seekers

    2 Yes, and our organization prefers not hire those with any criminal offense

    3 Yes, and legally the organization cannot hire those with a nonviolent criminal offense for this role

    4 (DON'T READ) DK/NA

	1	**2**	**3**	**DK/NA**
A. Occupational Category #1	1	2	3	4
B. Occupational Category #2	1	2	3	4
C. Occupational Category #3 1	2	3	4	
D. Occupational Category #4	1	2	3	4

Thank you for completing the survey. Since it sometimes becomes necessary for the project manager to confirm responses to certain questions, please verify your contact information.

da. First and Last Name (Interview note enter 99 for REF)

1. First Name

2. Last name

db. Position (Interview note enter 99 for REF)

dc. Phone (Interviewer Note 9999999999 for REF)

dd. Email (Interview note enter 99 for REF)

de. Organization Name (Interview note enter 99 for REF)

df. Organization Street Address (Interview note enter 99 for REF)

dg. Organization City (Interview note enter 99 for REF)

dh. Organization State (Interview note enter 99 for REF)

di. Organization Zip (Interviewer Note 99999 for REF)

Thank you very much for your time.

HOW DID THE SURVEY END?

1 COMPLETED INTERVIEW

2 SURVEY SAID THEY DID NOT QUALIFY

3 CALLBACK NEEDED, PARTIAL

4 REFUSAL

5 SOMETHING ELSE

PLEASE DISPOSITION CALL CORRECTLY.

Thank you for your time.

Appendix C: Summary of Energy-Related Employment in Existing Industries by NAICS Code

NAICS 21: Mining, Quarrying and Oil and Gas Extraction (Mining and Extraction)

The 2026 USEER survey found that 405,000 workers (100% in Fuels) were associated with the Mining and Extraction of oil, gas, coal, and nuclear fuel stock in 2025. This represents 71% of the total Mining and Extraction jobs in the U.S. in that year, including support activities for mining (NAICS 213) (Figure C-1)

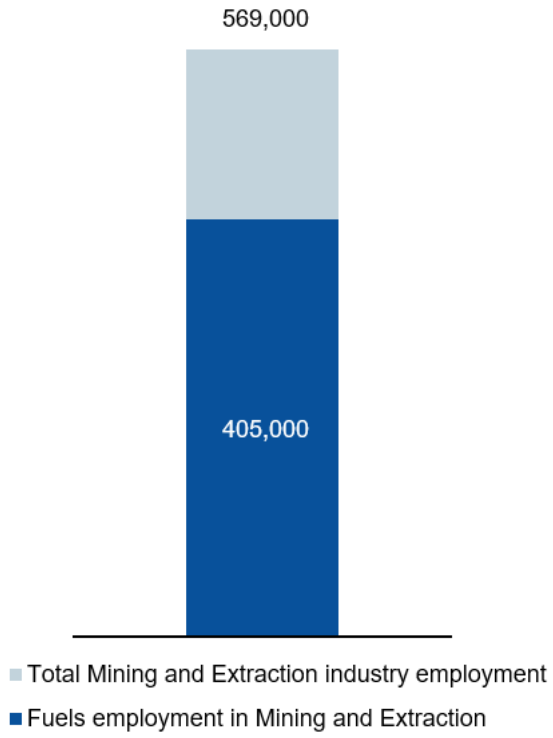


Figure C-1. Energy-Related Employment in NAICS 21

NAICS 22: Utilities

According to the standard industry definitions used by the Census Bureau, the Utilities sector comprises establishments engaged in the provision of the following utility services: electric power, natural gas, steam supply, water supply and sewage removal. In this sector, the specific activities associated with the utility services provided vary by utility — electric power includes generation, transmission and distribution; natural gas includes distribution; steam supply includes provision and/or distribution (natural gas transmission lines, however, are included under NAICS 486, Pipeline Transportation); water supply includes treatment and distribution; and sewage removal includes collection, treatment and disposal of waste through sewer systems and sewage treatment facilities.[20] This includes generating plants, but excludes waste management services.

Across the U.S., Utilities employed 878,000 workers in 2025, with nearly three-quarters working in energy generation, transmission, or distribution (Figure C-2).

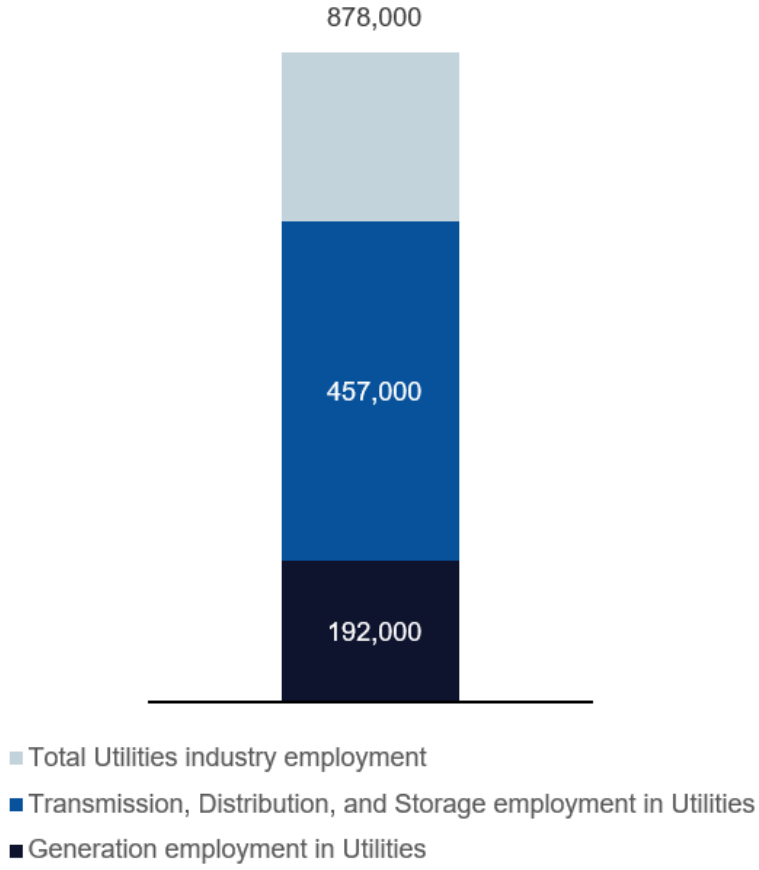


Figure C-2. Energy-Related Employment in NAICS 22

[20] U.S. Census Bureau, U.S. Department of Commerce, "Sector 22 — Utilities: The Sector as a Whole," *2022 NAICS Definition*, North American Industry Classification System, n.d.

NAICS 23: Construction

Energy-related activities account for a significant amount of employment in the Construction industry. In 2025, Electric Power Generation and Fuels (294,000 workers), and Transmission, Distribution and Storage (555,000 workers) represented 10% of total Construction employment in the U.S., while Energy Efficiency activities accounted for an additional 15% (1,278,000 workers) of the Construction workforce (Figure C-3).

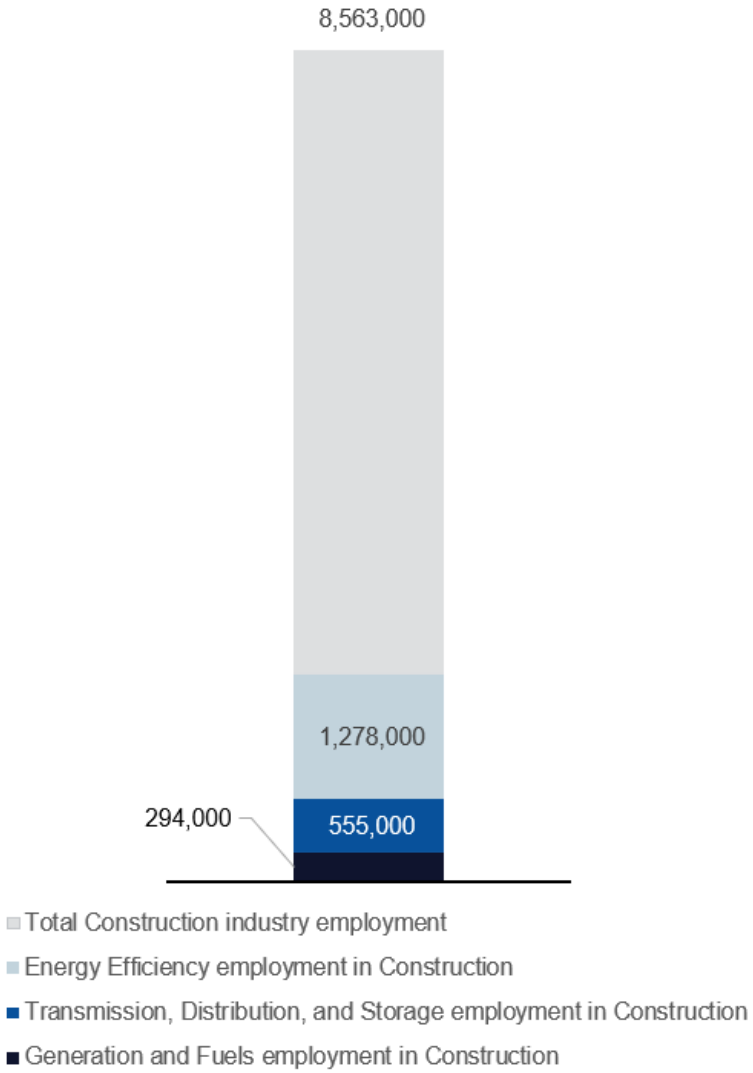


Figure C-3. Energy-Related Employment in NAICS 23

NAICS 31-33: Manufacturing

Manufacturing is an important component of the energy economy, and includes petroleum refining, nuclear enrichment, and component and finished product assembly of solar panels, wind, and natural gas turbines, and mining equipment. In addition to the totals reported in USEER, many Manufacturing jobs are affected by Energy Efficiency in their processes but are not tracked herein. Traditional energy sectors (Electric Power Generation, Fuels, and Transmission, Distribution, and Storage) accounted for about 3.4% (433,000 workers) of all Manufacturing jobs in the U.S. in 2025. Energy Efficiency product manufacturing (composed of certified products and energy-related building materials, such as insulation, windows, and doors) added 2.7% (344,000 workers) and Motor Vehicle and Component Parts manufacturers added a further 7.6% (950,000 workers) (Figure C-4).

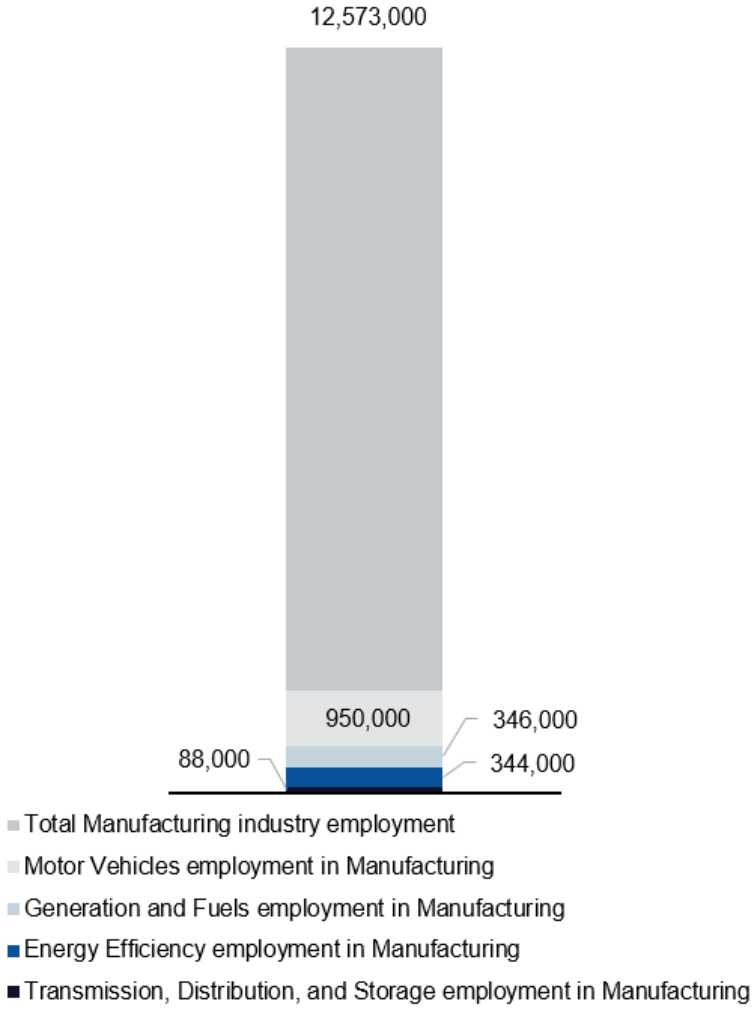


Figure C-4. Energy-Related Employment in NAICS 31-33

NAICS 42, 486, and Commodity Flow Data: Wholesale Trade, Distribution and Transport (Wholesale Trade)

Wholesale Trade, Distribution and Transport includes wholesale equipment and supplies merchant wholesalers of goods that are linked to the energy industry (including motor vehicles and motor vehicle parts and building materials). Also included in this NAICS category is all employment related to the Pipeline Transportation of Fuels and the transport (via truck, rail, air, and water) of energy commodities such as Coal, Fuel Oil, Natural Gas, Motor Vehicles and Petroleum.

NAICS 51, 52, 53, 54, 55 and 56: Information (Software, etc.), Finance, Insurance, Professional and Business Services (Professional and Business Services)

Professional and Business Services provide support for energy-related activity in the U.S. Firms from this sector are primarily involved in software development and other information services; finance and insurance; real estate and rental and leasing; professional, scientific, and technical services; management of companies and enterprises and administrative support; and waste management and remediation services.

NAICS 81: Other Services (Repair and Maintenance/Other)

Other Services are important to the energy economy, including Repair and Maintenance and nonprofit activity. Motor Vehicles accounted for over one-fifth (22%) of the workforce in the larger industry in 2025, driven by employment in automotive repair and maintenance. Electric Power Generation and Fuels combined for 1% of the overall workforce in Other Services.

Appendix D: Transmission, Distribution, and Storage Employment by Industry

As noted in the report, Transmission, Distribution, and Storage employed 1,492,000 workers in 2025.

Using survey data, the following sections illustrate a breakdown of sector-wide employment in five broad high-level industry classifications, including Construction and Manufacturing.

Utilities

Utility companies[21] that employ transmission and distribution workers are captured entirely by their respective detailed NAICS classifications by BLS. Electric power transmission, control and distribution and natural gas distribution employed 457,000 Transmission, Distribution, and Storage workers across U.S. utility firms in 2025, an increase of more than 13,000 from 2024. This number represents just over half of energy utility employment nationwide (Figure D-1).

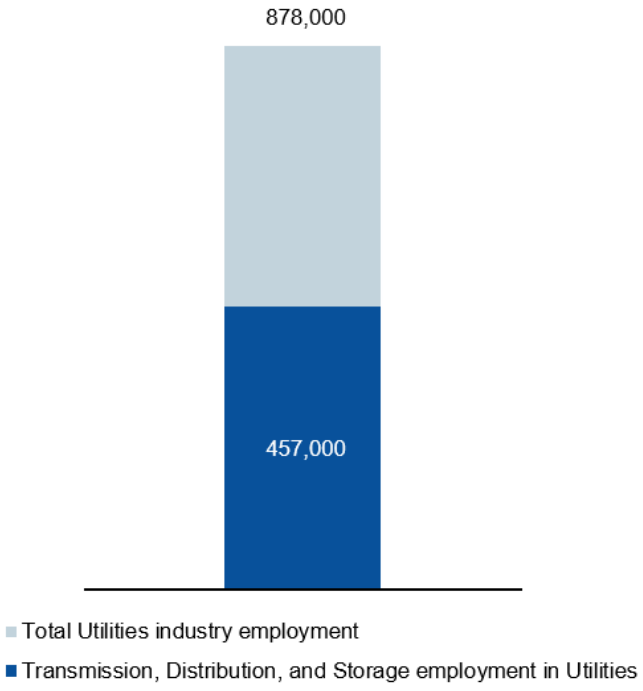


Figure D-1. Utilities Employment

[21] As with all other industries in this report, this section relies on NAICS definitions. Utility-scale power generators, for example, are classified as utilities regardless of ownership or regulation.

Construction

Construction firms contributed the most employment to Transmission, Distribution, and Storage activities in 2025, with 555,000 jobs. This work included pipeline and electric transmission and distribution activity, as well as the development of smart grids and microgrids (Figure D-2).

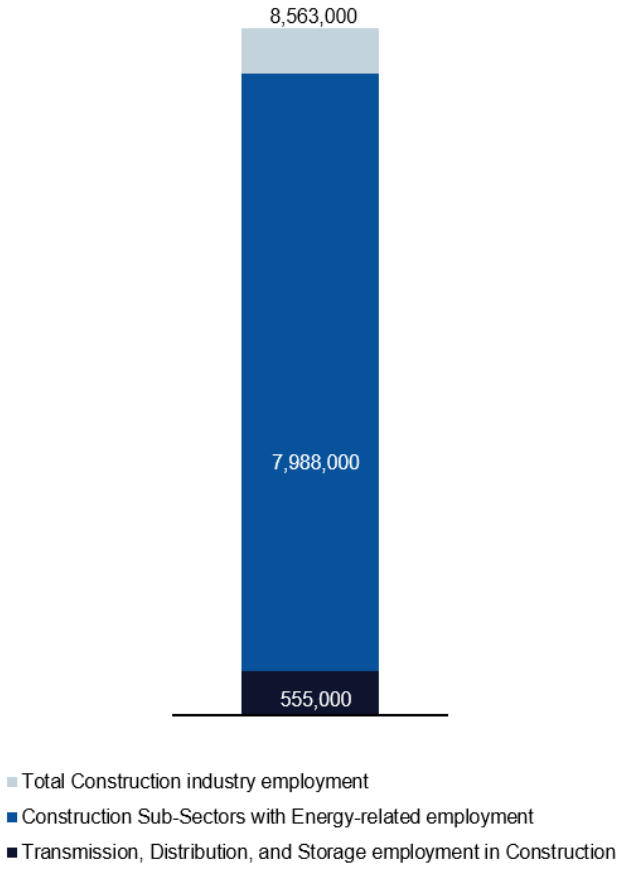


Figure D-2. Construction Employment

Manufacturing

The Manufacturing jobs in Transmission, Distribution, and Storage are found in several energy-related detailed Manufacturing industries. These include bulk manufacturing firms that assemble storage batteries, current-carrying wiring devices, air and gas compressors, sheet metal and other electrical and nonelectrical equipment or components. Of the nation's nearly 12.6 million total Manufacturing jobs in 2025, more than 23% (2,969,000 workers) were in energy-related industries that may support transmission-related infrastructure, and 3.0% of those (88,000 workers) produced products for Transmission, Distribution, and Storage in 2024 (Figure D-3).

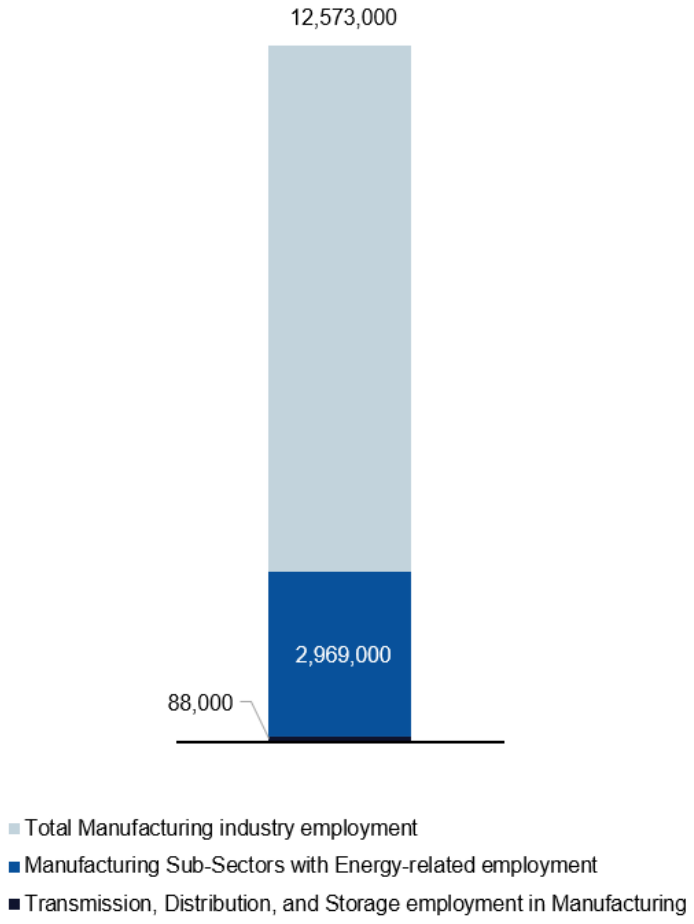


Figure D-3. Manufacturing Employment

Wholesale Trade

Several industry codes used by BLS capture employment entirely dedicated to the transport of crude oil, natural gas, and other refined petroleum products. About 123,000 jobs were included for 2025 by identifying proportional employment from energy-related commodity data for truck, rail, air, and water transport using the methodology from the first installment of the QER.[22] An additional 52,500 jobs identified by the survey are in detailed wholesale industries such as electrical equipment, wiring, appliance and electronics merchant wholesalers, while 57,800 were employed in Pipeline Transportation for crude oil and natural gas. Together, fossil fuels transport and electrical equipment wholesalers employed nearly 235,000 Transmission, Distribution, and Storage workers in 2025 (Figure D-4).[23]

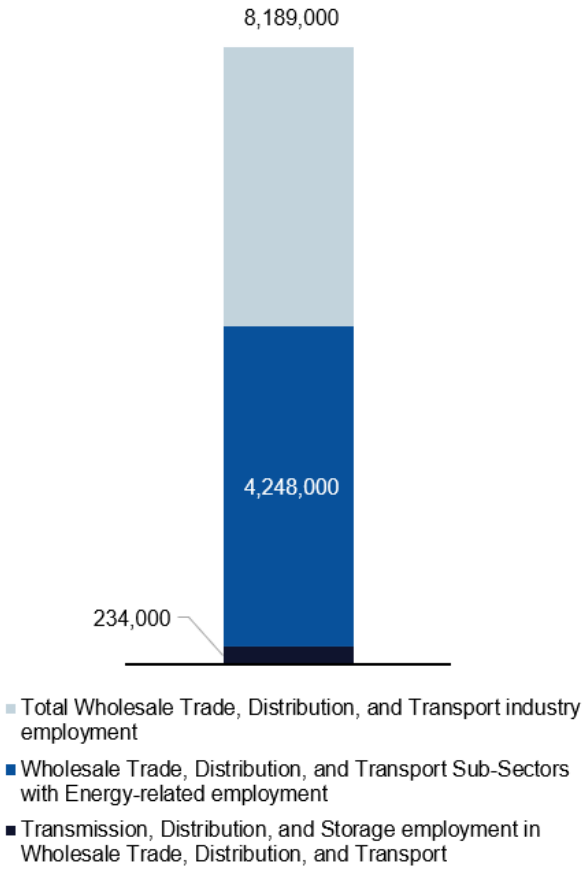


Figure D-4. Wholesale Trade Employment

[22] For the methodology, see Appendix A: Discussion of USEER Methodology.
[23] This employment figure excludes raw material and component manufacturers; the limitations of a survey-based approach prevent accurate data collection for suppliers that are significantly upstream.

Professional and Business Services

A very small proportion (1.1%) of energy-related Professional and Business Services support Transmission, Distribution, and Storage infrastructure and technology. Of the nearly 32 million workers in these detailed industry codes, the USEER identified about 143,000 who spent some of their time supporting these technologies in 2025 (Figure D-5).

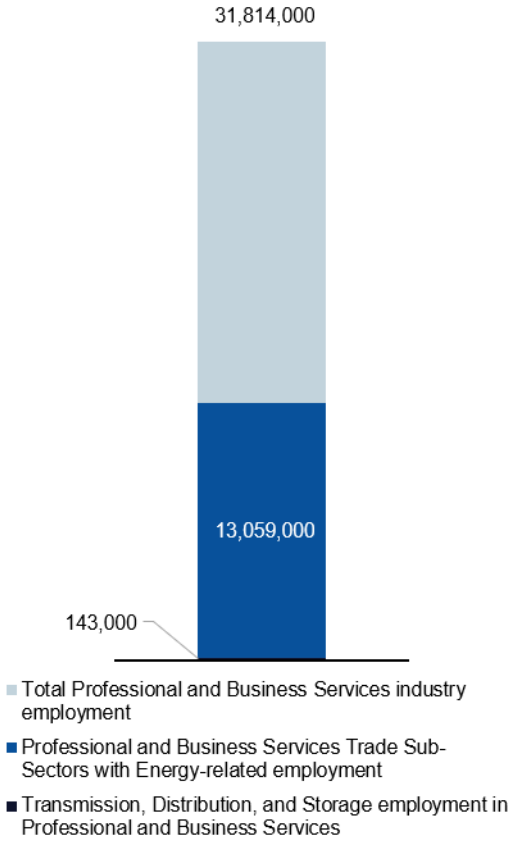


Figure D-5. Professional and Business Services Employment

Appendix E: Electric Power Generation and Fuels Employment by Industry

Agriculture and Forestry

The QCEW does not capture a significant portion of agricultural labor. The BLS estimates that its methodologies exclude the majority of agricultural workers (52%) due to the nature of the industry. In addition, forestry and logging employment is highly seasonal and relies heavily on unreported subcontractors. The 2026 USEER estimates employment in these segments using a customized model based on inputs on fuel stocks generated by the U.S. Department of Agriculture Economic Research Service (ERS).[24] Based on these inputs, an estimated 35,000 Agriculture and Forestry employees worked in 2025 to support fuel production.[25]

Mining, Extraction and Utility Generation

About 71% (405,000 workers) of all Mining and Extraction employment in the U.S. in 2025 was for Fuels used in energy production. These workers support the Fuels sector through crude petroleum[26] and natural gas extraction, as well as surface and underground coal mining (Figure E-1).[27]

[24] U.S. Department of Agriculture, Economic Research Service, "U.S. Bioenergy Statistics," n.d., accessed July 10, 2026, https://www.ers.usda.gov/data-products/us-bioenergy-statistics/.
[25] Energy- and fuel-related agricultural employment was derived using three different calculations for fuelwood, corn ethanol and biodiesel. The BLS QCEW cover exclusions were used to develop a factor for agricultural worker exclusions and this factor was applied to employment for the NAICS codes specific to each of the three fuel types. Additionally, a technology-specific percentage was derived from ERS estimates for the percentage of total wood, corn and biodiesel produced that is used for fuel. This percentage was applied together with the exclusion factor to the second quarter of 2025 QCEW employment data for fuelwood NAICS (113110, 113310, 115310), corn ethanol (11115) and biodiesel (11111) to determine the number of workers supporting agricultural fuel production.
[26] Petroleum is a liquid mixture of hydrocarbons that is present in certain rock strata and can be extracted and refined to produce fuels including gasoline, kerosene, and diesel oil.
[27] These support workers are specific to fuel mining and extraction, and do not include support for other mining and extraction activities.

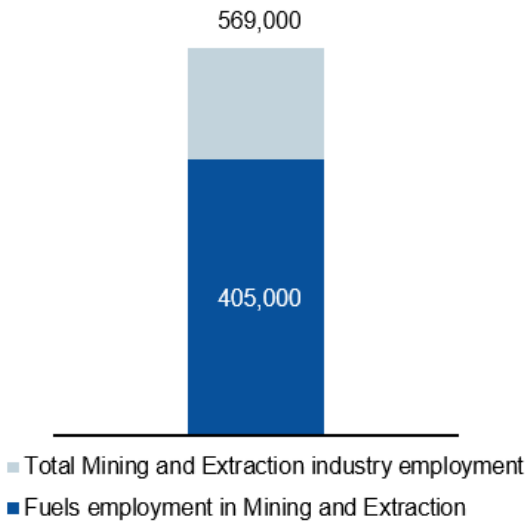


Figure E-1. Mining and Extraction Employment

Electric utility generation (in which the generating equipment is operated by the utility) employed a total of 192,000 workers across hydroelectric, fossil fuel, nuclear, solar, wind, geothermal, biomass, steam, and air-conditioning supply (including CHP) and Other Electric Power Generation in 2025. It is important to note that utility generation employment excludes any utilities that support water supply and irrigation systems or sewage treatment. It also excludes non-utility-owned or -operated generation from wind, solar, CHP, biomass, nuclear or fossil fuels (Figure E-2).

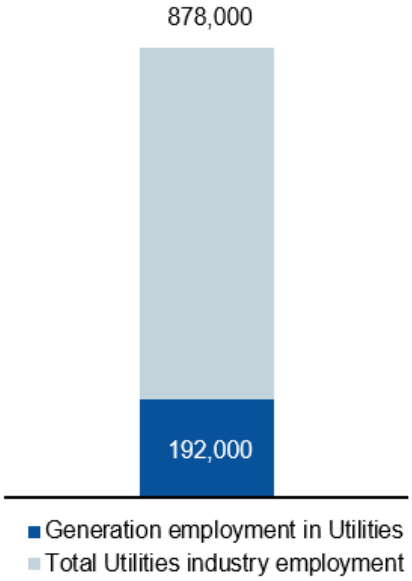


Figure E-2. Utilities Employment

Construction

For the more than 8.5 million Construction workers in the U.S., roughly 93% (7,988,000 workers) of employment in 2025 was in Construction subsectors with workers that support energy generation technologies. In these subsectors, 317,000 Construction workers supported both Electric Power Generation and Fuels production technologies. A large share (93%, or 294,000 workers) of these employees was engaged in the construction and installation of new electric generation technologies (Figure E-3).

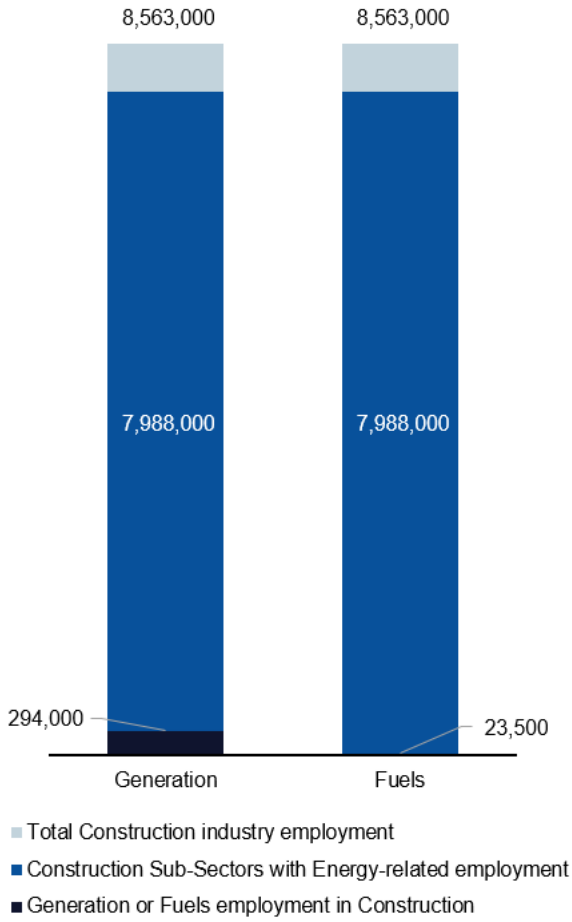


Figure E-3. Construction Employment

Manufacturing

The national Manufacturing industry employed nearly 12.6 million workers in 2025. About 24% (2.969,000 workers) of that overall Manufacturing employment comprised subsectors that could support Electric Power Generation and Fuels technologies, including petrochemical, turbine, and generator manufacturing. These detailed industries accounted for more than 2.9 million workers in 2025, 8.0% (239,000 workers) of which supported Fuels. Electric Power Generation and Fuels manufacturers include those firms working on PV arrays, turbine generators, oil and gas field machinery and other motor or generator manufacturing (Figure E-4).

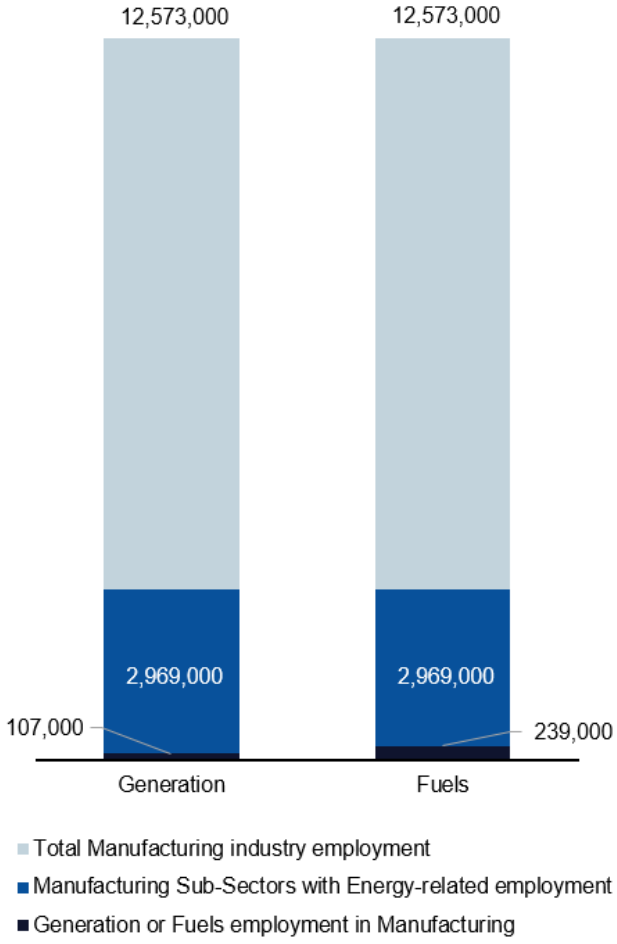


Figure E-4. Manufacturing Employment

Wholesale Trade

Of the nearly 8.2 million Wholesale Trade, Distribution, and Transport workers in the U.S., about 52% were working in detailed industries that could support Electric Power Generation and Fuels activities, including electric equipment, chemical, and Petroleum merchant wholesalers. In these Wholesale Trade, Distribution, and Transport industries, about 82,400 and 144,000 workers spent some amount of their time in 2025 supporting Electric Power Generation and Fuels applications, respectively (Figure E-5).[28]

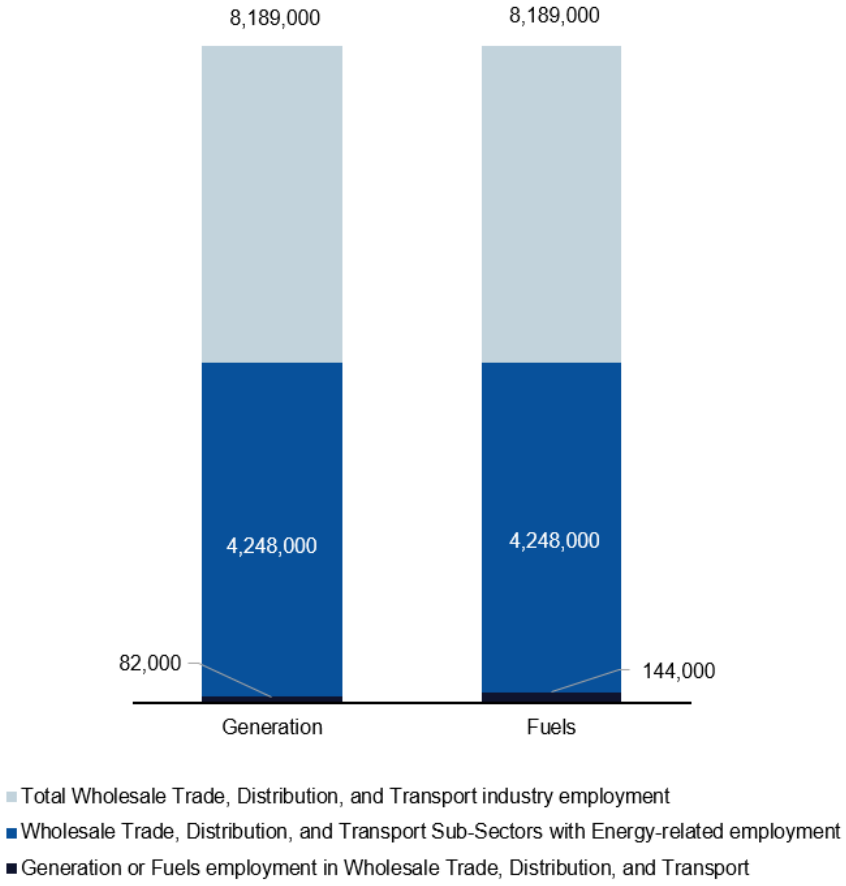


Figure E-5. Wholesale Trade, Distribution, and Transport Employment

[28] Transmission and trade of fuels are included in the Transmission, Distribution, and Storage chapter of the report.

Professional and Business Services

The Professional and Business Services industry in the U.S. employed nearly 32 million workers in 2025. In this aggregate industry, several detailed industries supported Electric Power Generation and Fuels operations with software, legal services, biotechnology research, architecture, and engineering. Of the more than 13 million jobs in these energy-related professional and business service industries in 2025, 201,000 and 178,000, respectively, supported Electric Power Generation and Fuels technologies (Figure E-6).

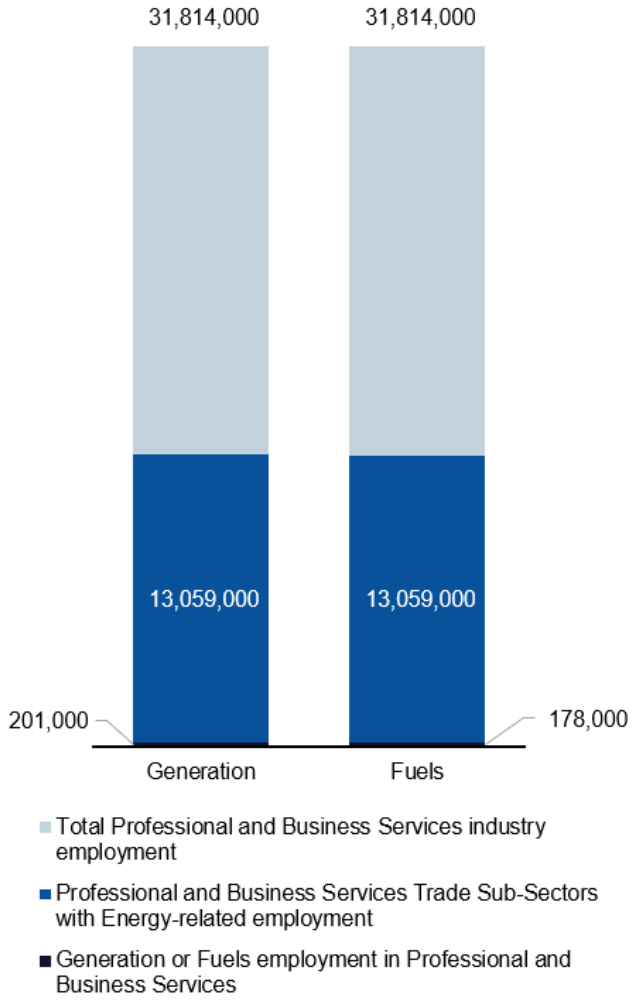


Figure E-6. Professional and Business Services Employment

Appendix F: Energy Efficiency Employment by Industry

Construction

The majority of Energy Efficiency employment (54%) identified with USEER data was in Construction firms (1,278,000 workers) in 2025. Of the 8.56 million Construction workers in the U.S., about 15% worked in 2025 to support the Construction or installation of energy-efficient technologies (Figure F-1).

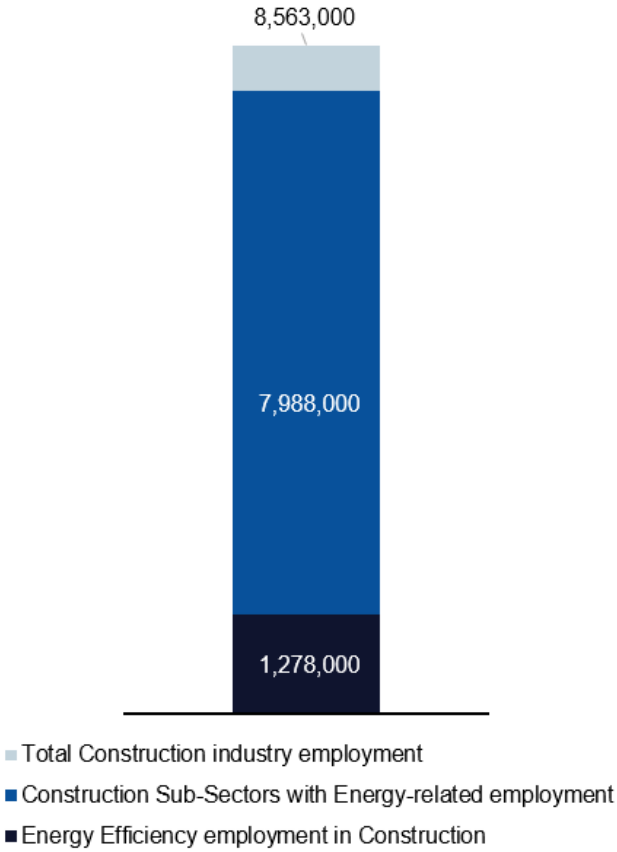


Figure F-1. Construction Employment

Manufacturing

Manufacturing activity is a sizable portion of the U.S. Energy Efficiency sector (Figure F-2). The jobs included in this section refer only to the manufacture of certified appliances or other products such as energy-efficient building and lighting services. They do not include process efficiency (e.g., manufacturers that produce goods using energy-efficient equipment, machinery, or processes). Of the 2,969,000 jobs found in relevant energy manufacturing subsectors in 2025 — such as lighting, household appliances or HVAC equipment manufacturing — about 344,000 workers manufactured energy-efficient products as defined in these appendices.

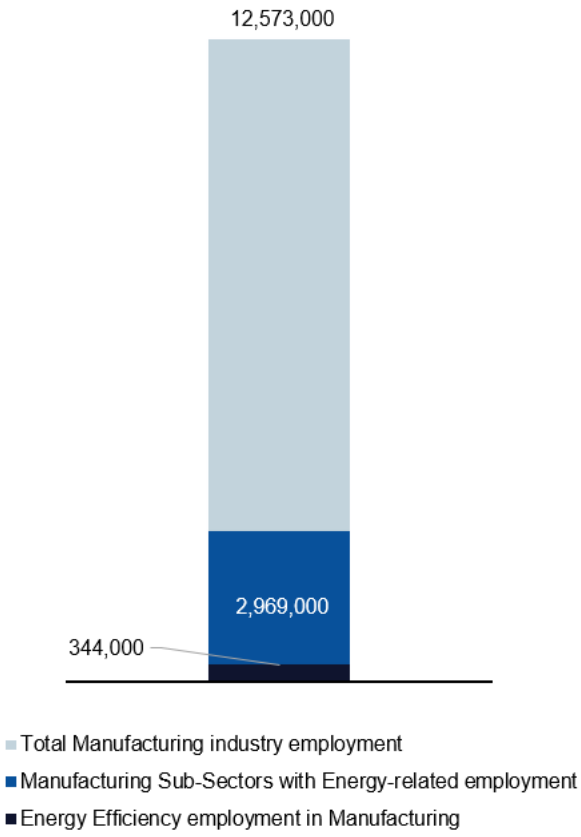


Figure F-2. Manufacturing Employment

Wholesale Trade

Approximately 52% of the nearly 8.2 million Wholesale Trade, Distribution and Transport jobs across the nation were in trade subsectors that support energy-related employment. Of these 4.25 million jobs, USEER survey data identified that about 5.0% of workers were engaged in efficiency-related work in 2025 (Figure F-3).

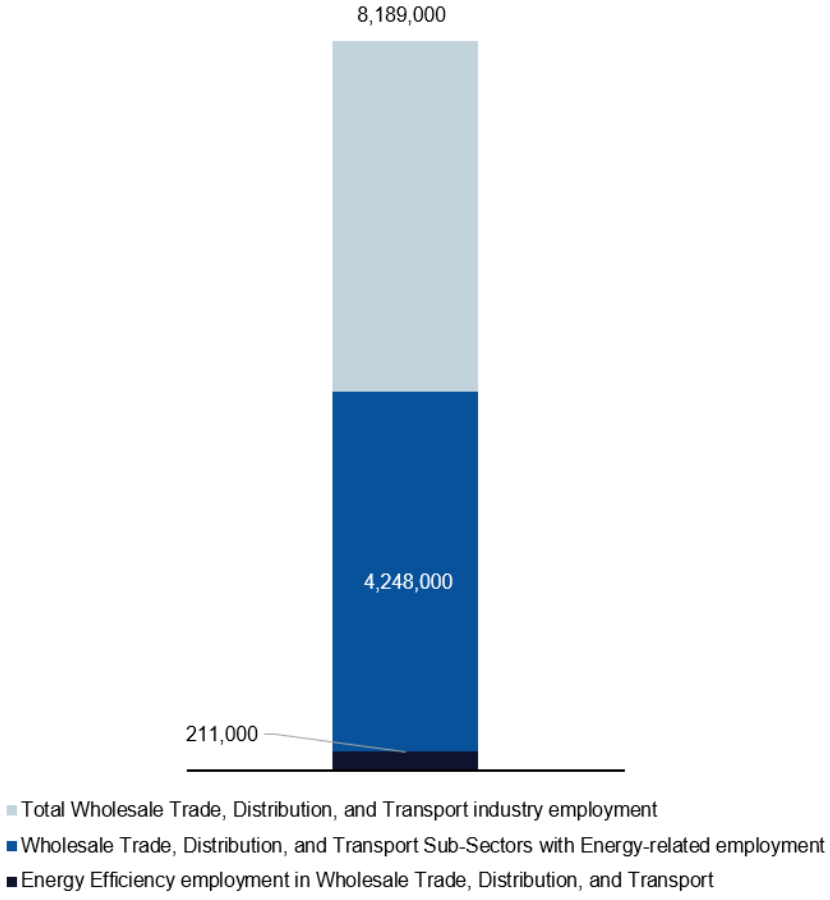


Figure F-3. Wholesale Trade Employment

Professional and Business Services

Over two-fifths (41%) of Professional and Business Services jobs may have the capacity to support the energy industry through activities including software development, finance, management, and legal services. Of these detailed subsectors, USEER survey data identified 3.8% of employees, or 492,000, who worked to support energy-efficient products and services in 2025 (Figure F-4).

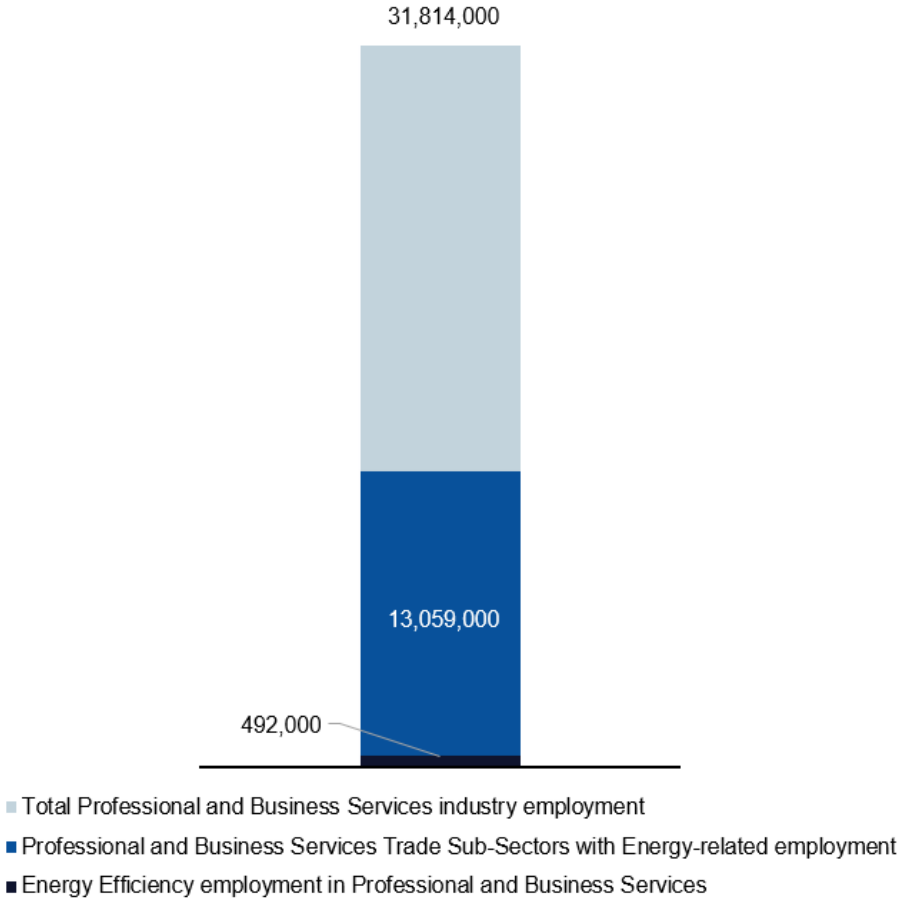
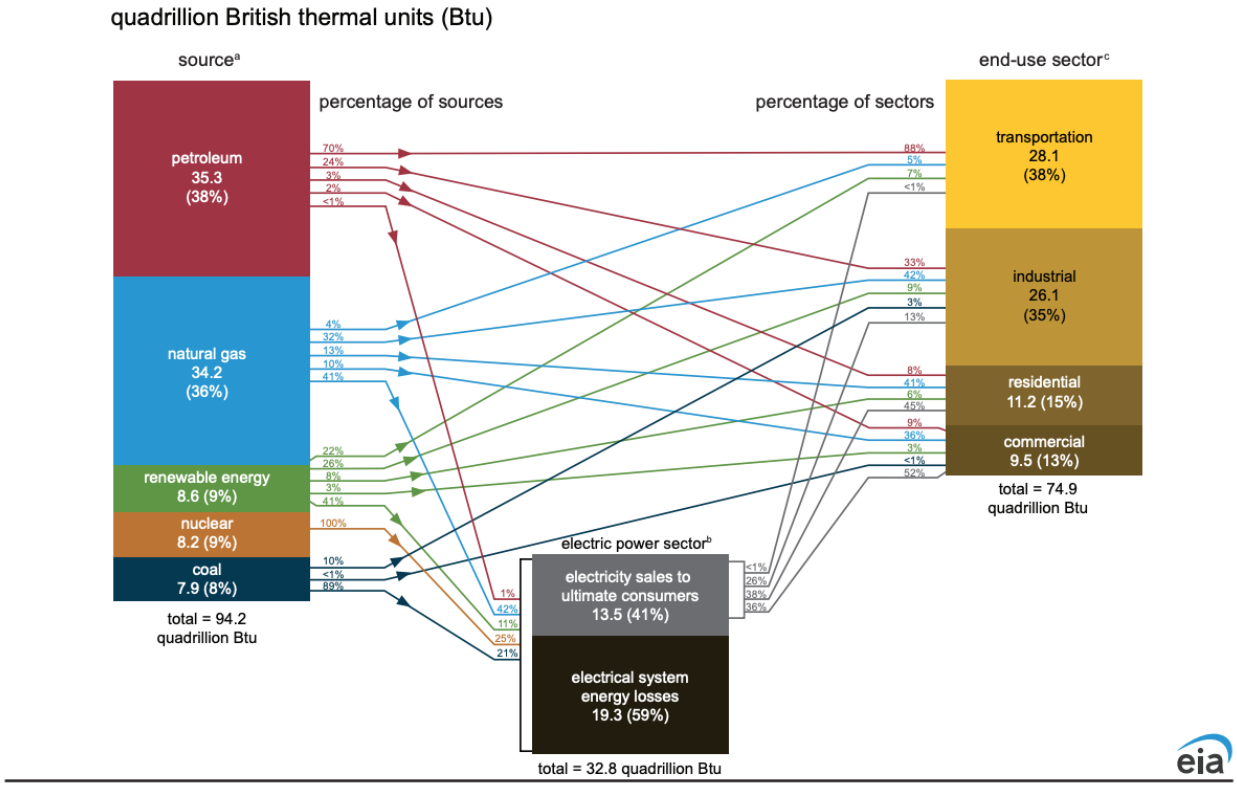


Figure F-4. Professional and Business Services Employment

Appendix G: Primary Energy Consumption by Source and Sector



Sources: U.S. Energy Information Administration (EIA), *Monthly Energy Review* (April 2025), Tables 1.3. 1.4c, and and 2.1a-2.6.
Note: Sum of components may not equal total due to independent rounding. All source and end-use sector consumption data include other energy losses from energy use, transformation, and distribution not separately identified. See "Extended Chart Notes" on next page.
[a] Primary energy consumption. Each energy source is measured in different physical units and converted to common British thermal units (Btu). See EIA's *Monthly Energy Review* (MER), Appendix A. Generation from noncombustible renewable energy sources are converted to Btu using the "Captured Energy Approach." See MER Appendix E.
[b] The electric power sector includes electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Energy consumed by these plants reflects the approximate heat rates for electricity in MER Appendix A. The total includes the heat content of are electricity net imports, not shown separately. Electrical system energy losses are calculated as primary energy consumed by the electric power sector minus the heat content of electricity sales to ultimate consumers. See Note 1, "Electrical System Energy Losses," at the end of MER Section 2.
[c] End-use sector consumption of primary energy and electricity sales to ultimate consumers, excluding electrical system energy losses. Industrial and commercial sectors consumption includes primary energy consumption by CHP and electricity-only plants contained within the sector.

Figure G-1. U.S. Energy Consumption by Source and Sector, 2024

Appendix H: Completed or In Progress Liquid Fuel Pipeline Miles[29]

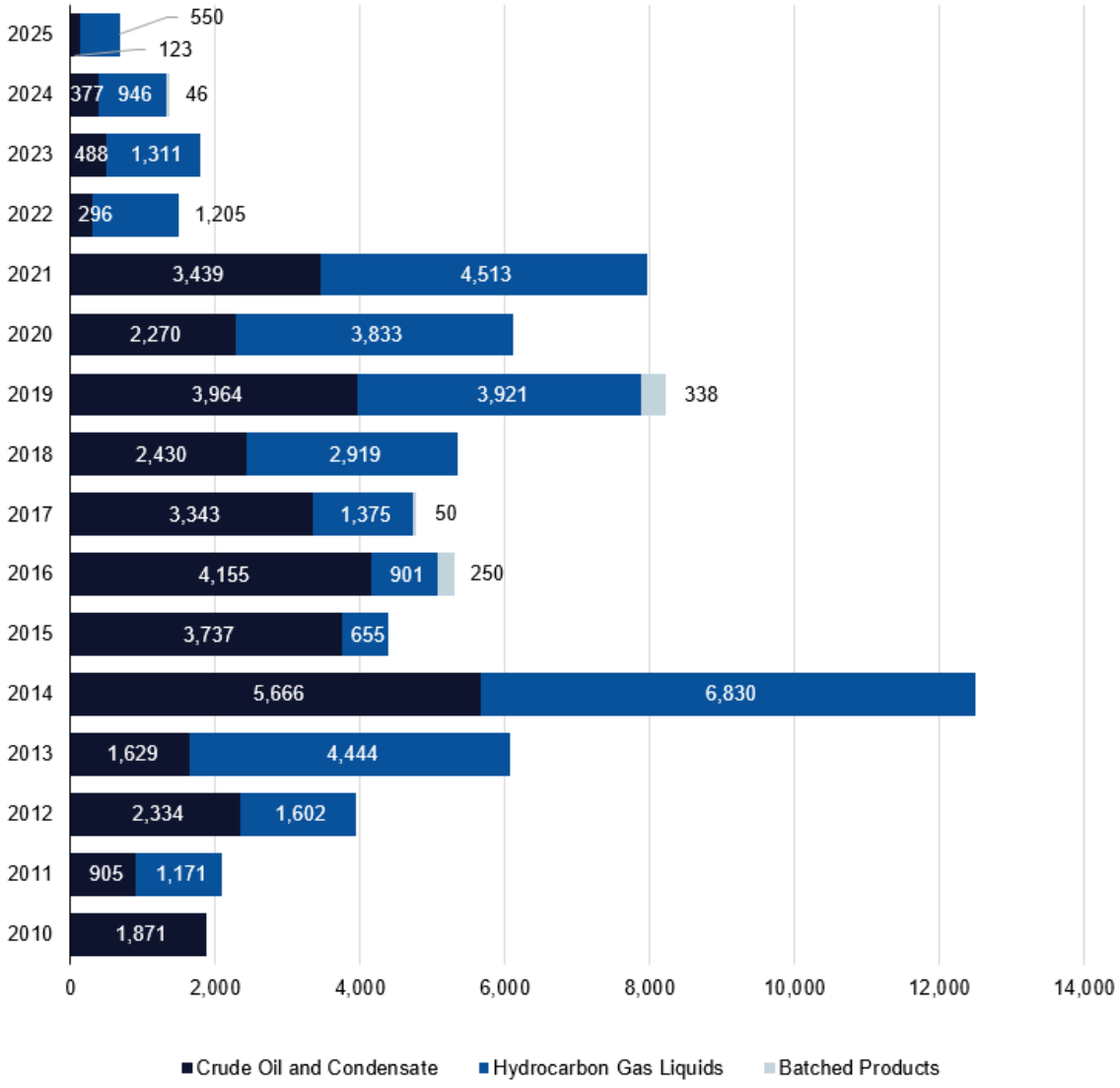


Figure H-1. Completed or in Progress Pipeline Capacity (miles) 2010-2025

[29] U.S. Energy Information Administration, "Liquid Pipeline Projects Database," n.d., accessed July 10, 2026, https://www.eia.gov/petroleum/xls/EIA_LiqPipProject.xlsx.

Appendix I: Federal Actions Since January 2025 Supporting Registered Apprenticeships in Energy Sectors

Prepared as of July 9, 2026

This Appendix section treats "energy sectors" as the five major U.S. Energy and Employment Report sectors (Electric Power Generation; Transmission, Distribution, and Storage; Fuels; Energy Efficiency; and Motor Vehicles) and also includes data centers and Critical Minerals and Materials as energy sectors for this review. This section does not include federal energy, critical-minerals, coal, data-center, or nuclear actions that lack Registered Apprenticeship language, even when they are energy-related.

The list is limited to federal actions since January 20, 2025 that directly fund, direct, streamline, promote, or otherwise support Registered Apprenticeship Programs (RAPs), or that condition energy-sector incentives on registered-apprenticeship or prevailing-wage-and-apprenticeship compliance.

I. Executive Orders and Legislation

Table I-1. Executive Orders

Executive Order	Energy-sector Connection	RAP Support
Executive Order 14277, "Advancing Artificial Intelligence Education for American Youth" - April 23, 2025[30]	Data centers and AI infrastructure; advanced manufacturing, electric-power demand, and grid-support occupations connected to AI deployment.	Section 8, "Promoting Registered Apprenticeships," directs the Secretary of Labor to seek to increase participation in AI-related RAPs and use apprenticeship intermediary contracts and discretionary funds to facilitate development of RAPs in AI-related occupations.
Executive Order 14278, "Preparing Americans for High-Paying Skilled Trade Jobs of the Future" - April 23, 2025[31]	Broadly covers high-growth and emerging sectors, including energy, construction, manufacturing, AI, and infrastructure sectors touched by USEER categories.	Directs the Secretaries of Labor, Commerce, and Education to submit a plan to reach and surpass 1 million new active apprentices, expand RAPs into new high-growth and emerging sectors, and connect education pathways with RAPs.
Executive Order 14302, "Reinvigorating the Nuclear Industrial Base" - May 23, 2025[32]	Nuclear electric power generation; nuclear fuel cycle; nuclear supply chain and energy-manufacturing workforce.	The EO's Section 5, "Expanding the Nuclear Energy Workforce," directs Labor and Education to increase participation in nuclear-energy-related RAPs and CTE pathways, use apprenticeship intermediary contracts and discretionary funds, and facilitate RAP development in underrepresented nuclear-energy occupations.

[30] Executive Order 14277, "Advancing Artificial Intelligence Education for American Youth," Federal Register 90, no. 80 (April 28, 2025), https://www.federalregister.gov/documents/2025/04/28/2025-07368/advancing-artificial-intelligence-education-for-american-youth.
[31] Executive Order 14278, "Preparing Americans for High-Paying Skilled Trade Jobs of the Future," Federal Register 90, no. 80 (April 28, 2025), https://www.federalregister.gov/documents/2025/04/28/2025-07369/preparing-americans-for-high-paying-skilled-trade-jobs-of-the-future.
[32] Executive Order 14302, "Reinvigorating the Nuclear Industrial Base," Federal Register 90, no. 102 (May 29, 2025), https://www.federalregister.gov/documents/2025/05/29/2025-09801/reinvigorating-the-nuclear-industrial-base.

Table I-2. Enacted legislation

Legislation	Energy-sector Connection	RAP Support
Public Law 119-21, H.R. 1, enacted July 4, 2025[33]	Fuels, clean hydrogen, carbon capture, advanced nuclear, energy-efficient homes, clean-electricity investment, advanced-energy manufacturing, and critical materials through affected tax-credit provisions.	This law's energy-tax provisions support RAPs where increased credit amounts depend on prevailing-wage and apprenticeship (PWA) compliance. IRS implementation materials after enactment identify PWA/RAP-linked increased credit treatment for provisions including 45Z (transportation fuels), 45 (advanced nuclear), 45Q (carbon capture), 45V (hydrogen), 45L (energy-efficient homes), and investment/advanced-energy credits such as 48, 48C, and 48E.

II. Federal Agency Programs and Initiatives

Table I-3. Federal Agency Programs and Initiatives

Federal Program or Initiative	Energy-sector Connection	How it Expands or Supports Registered Apprenticeship Programs
DOE Apprenticeships & Workforce Development initiative[34]	All energy sectors	DOE recognizes that **Registered Apprenticeship Programs (RAPs)** are a central workforce strategy for building the energy workforce. RAPs help workers access good energy careers, help employers build and retain skilled talent, and help U.S. energy industries stay competitive. DOE is focused on creating, scaling, and improving access to energy-sector RAPs and pre-apprenticeships that feed into RAPs.
DOL State Apprenticeship Expansion Formula Grants, Round 3[35]	Technology, AI, advanced manufacturing, supply chain, transportation, building trades, and construction; these touch data centers, energy efficiency, motor vehicles, fuels, energy supply chains, and grid/building trades.	DOL awarded nearly $84 million to expand RAPs in traditional and emerging industries and to help states and territories expand apprenticeship capacity.

[33] Public Law 119-21, H.R. 1, 119th Cong. (July 4, 2025), https://www.govinfo.gov/app/details/PLAW-119publ21; Internal Revenue Service, "Internal Revenue Bulletin: 2026-09," accessed July 9, 2026, https://www.irs.gov/irb/2026-09_IRB; Internal Revenue Service, "Instructions for Form 8835," accessed July 9, 2026, https://www.irs.gov/instructions/i8835; Internal Revenue Service, "Instructions for Form 8933," accessed July 9, 2026, https://www.irs.gov/instructions/i8933; Internal Revenue Service, "Instructions for Form 8908," accessed July 9, 2026, https://www.irs.gov/instructions/i8908; Internal Revenue Service, "Instructions for Form 7210," accessed July 9, 2026, https://www.irs.gov/instructions/i7210; Internal Revenue Service, "Instructions for Form 3468," accessed July 9, 2026, https://www.irs.gov/instructions/i3468.

[34] U.S. Department of Energy, "Apprenticeships & Workforce Development," accessed July 9, 2026, https://www.energy.gov/apprenticeships-workforce-development.

[35] U.S. Department of Labor, Employment and Training Administration, "US Department of Labor Awards Nearly $84M in Grants to Expand Registered Apprenticeships," June 30, 2025, https://www.dol.gov/index.php/newsroom/releases/eta/eta20250630.

Federal Program or Initiative	Energy-sector Connection	How it Expands or Supports Registered Apprenticeship Programs
DOL-SBA Memorandum of Understanding to Support Domestic Manufacturing and RAPs[36]	Manufacturing sectors that overlap with USEER motor vehicles/components, advanced energy manufacturing, semiconductors/data-center supply chains, and nuclear/energy equipment manufacturing.	DOL and SBA agreed to coordinate services for small manufacturers, including helping expand RAPs and hands-on training; DOL's federal advanced-manufacturing apprenticeship page identifies automotive, semiconductors, shipbuilding, and nuclear energy as advanced-manufacturing sectors.
American Manufacturing Apprenticeship Incentive Fund[37]	Advanced manufacturing, including automotive/motor vehicles, semiconductors, nuclear energy, and energy-related supply chains.	DOL announced a $35.8 million cooperative agreement, administered through Arkansas, to provide incentive payments to employers nationwide to develop, expand, or join advanced-manufacturing RAPs.
Registered Apprenticeship System Guidance and 30-day Registration-Determination Shot Clock[38]	Systemwide; applies to energy-sector RAP sponsors in all USEER sectors	DOL issued guidance to improve flexibility, reduce administrative burden, and accelerate final apprenticeship-program determinations to within 30 days, supporting faster registration of RAPs, including energy-sector programs.
Pay-for-Performance Incentive Payments Program[39]	Nuclear energy infrastructure, AI infrastructure/data centers, semiconductors, transportation, telecommunications, and other energy-adjacent infrastructure.	DOL announced up to $145 million for cooperative agreements using incentive payments to expand new and existing RAPs in targeted industry sectors, including AI, semiconductor, and nuclear energy infrastructure.
State Apprenticeship Expansion Formula grants, Round 4 / TEGL No. 08-25[40]	AI infrastructure/data centers; nuclear energy infrastructure; advanced manufacturing; domestic mineral production; IT.	DOL made about $85 million available to states and territories to expand RAP capacity, register programs, support apprentices and employers, and direct support to state-identified industries, including nuclear energy infrastructure and domestic mineral production.

[36] U.S. Department of Labor, "US Department of Labor, SBA Sign Memorandum of Understanding to Support American Manufacturing," July 16, 2025, https://www.dol.gov/newsroom/releases/osec/osec20250716; Apprenticeship.gov, "Advanced Manufacturing," accessed July 9, 2026, https://www.apprenticeship.gov/apprenticeship-industries/advanced-manufacturing.
[37] U.S. Department of Labor, Employment and Training Administration, "US Department of Labor Announces $35.8M Initiative to Expand Registered Apprenticeships in Advanced Manufacturing," December 19, 2025, https://www.dol.gov/newsroom/releases/eta/eta20251219-0; Apprenticeship.gov, "Active Awards," accessed July 9, 2026, https://www.apprenticeship.gov/investments-tax-credits-and-tuition-support/active-awards; Apprenticeship.gov, "Advanced Manufacturing."
[38] U.S. Department of Labor, Employment and Training Administration, "US Department of Labor Issues Guidance to Expand Registered Apprenticeship Programs," March 9, 2026, https://www.dol.gov/newsroom/releases/eta/eta20260309.
[39] U.S. Department of Labor, Employment and Training Administration, "US Department of Labor Announces $145M Funding Opportunity to Expand Registered Apprenticeships," February 13, 2026, https://www.dol.gov/newsroom/releases/eta/eta20260213-0.
[40] U.S. Department of Labor, Employment and Training Administration, Training and Employment Guidance Letter No. 08-25, April 10, 2026, https://www.dol.gov/sites/dolgov/files/ETA/advisories/TEGL/2025/TEGL%2008-25/TEGL%2008-25%20a.pdf.

Federal Program or Initiative	Energy-sector Connection	How it Expands or Supports Registered Apprenticeship Programs
Integrating AI in Registered Apprenticeships initiative / AI Registered Apprenticeship Innovation Portal[41]	Data centers, telecommunications, advanced manufacturing, AI infrastructure, and energy demand created by AI/data-center buildout.	DOL launched a national initiative to embed AI skills into RAPs, including developing AI curricula, apprenticeship standards, employer technical assistance, and pipelines for occupations tied to data centers, telecommunications, and advanced manufacturing.
National Apprenticeship Week (NAW) 2026 and AI Infrastructure Registered Apprenticeship Accelerator Activities[42]	AI/data centers, energy systems supporting AI factories, construction, and energy infrastructure; DOL also tied NAW 2026 to nuclear-industrial-base and AI workforce executive-order implementation.	DOL used National Apprenticeship Week 2026 as a national RAP promotion and implementation initiative; Apprenticeship.gov listed an AI Infrastructure Registered Apprenticeship Accelerator event focused on AI factories, hyperscale data centers, and supporting energy systems.

[41] U.S. Department of Labor, Employment and Training Administration, "US Department of Labor Launches Landmark Initiative to Integrate Artificial Intelligence Skills into Registered Apprenticeships Nationwide," April 1, 2026, https://www.dol.gov/newsroom/releases/eta/eta20260401; Apprenticeship.gov, "AI in Registered Apprenticeship Innovation Portal," accessed July 9, 2026, https://www.apprenticeship.gov/AI-in-registered-apprenticeships.
[42] U.S. Department of Labor, "US Department of Labor Announces National Apprenticeship Week 2026," accessed July 9, 2026, https://www.dol.gov/newsroom/releases/eta/eta20260128-0; Apprenticeship.gov, "AI Infrastructure Registered Apprenticeship Accelerator Event," accessed July 9, 2026, https://www.apprenticeship.gov/national-apprenticeship-week/events/ai-infrastructure-registered-apprenticeship-accelerator-event.