Tracking Trends in U.S. Energy Employment

A SUPPLEMENT TO THE
2025 U.S. ENERGY AND EMPLOYMENT REPORT
(USEER)

November
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All errors or omissions are the responsibility of the authors.

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Introduction

In 2016, the U.S. Department of Energy (DOE) voluntarily conducted a vast employer survey of private-sector energy employers and published the first U.S. Energy and Employment Report (USEER). DOE or external partners continued to publish the report annually, and in 2021, under the Infrastructure Investment and Jobs Act, Congress adopted a formal requirement that DOE conduct an annual survey and publish the findings in the USEER.[1]

USEER collects energy employment data across all 50 states plus the District of Columbia and (as of 2024) the territories of Puerto Rico and the U.S. Virgin Islands. As required by Congress, the report includes employment data and demographics from energy, energy efficiency, and motor vehicle sectors.

DOE's 2025 report, released on August 29, provides data on 2024 energy sector employment. For the first time, it formally includes energy sector wage data. Unlike past editions, however, it does not offer trend analysis or comparison of 2024 data to previous years.

We have developed this follow-up report to provide the following:

1 — An overview of year-over-year employment trends
Comparing 2024 employment data with historic data uncovers trends and establishes a benchmark for future years, especially in the face of federal funding cuts, changing trade dynamics, the growth of AI, and other contemporaneous conditions.

2 — Analysis of changing workforce demographics
Shifts in workforce demographics (age, gender, race/ethnicity, veteran status, union membership, etc.) show progress and actionable gaps in representation across energy jobs.

3 — Support for policy and planning
An understanding of trends and changes gives Congress, federal agencies, state governments, labor unions, communities, and industry leaders data to guide decisions about energy, workforce, and economic development.

1 Infrastructure Investment and Jobs Act (P.L. 117-58), Div. D, Title V, § 40553, Nov. 15, 2021 https://uscode.house.gov/statutes/pl/117/58.pdf

Why are trends and year-over-year comparisons important?

Tracking the changes in employment across a range of energy subsectors is critical to the public's understanding of both the energy sector's role in the broader economy and emerging workforce development needs. Beyond illuminating strengths and vulnerabilities within our energy system, these changes can offer both leading and lagging indicators of the health of the broader economy.

That's because energy is a foundational input to all economic activity, underpinning all sectors. Energy workforce trends can thus reveal the momentum and scope of technologically driven economic transformations, with shifts often occurring before broader signs appear in GDP or labor statistics. Growth in clean energy, grid, or infrastructure employment, for example, may reflect new capital investment and industrial expansion, while declines in fossil fuel jobs may foreshadow regional slowdowns or structural transitions.

As energy projects have long lead times — with significant hiring occurring only after planning, financing, and construction are underway — energy employment may also lag broader economic trends. Firms in capital-intensive sectors like oil, gas, and utilities adjust staffing slowly in response to market changes. Regulatory, contractual, and technological factors can also slow workforce adjustments, leading energy job numbers to most clearly reflect past investment and output.

Energy Employment Trends Help:

- Forecast industrial output and infrastructure spending
- Monitor policy impacts (clean energy tax credits, tariffs, permitting reforms)
- Inform regional workforce development and transition needs

Finally, the scale, location, and trends in energy subsector employment are useful for coordinating workforce development and workforce transition efforts in the face of change and challenge.

Key Findings

Energy employment grew to 8.5 million

Energy sector employment increased by over 100,000, from 8.4 million total energy jobs in 2023 to 8.5 million in 2024. More than 87,000 of those new jobs were in clean energy. Jobs in clean energy (3.75 million in total) now represent nearly 44% of all energy jobs, an increase from their 42% share of all energy jobs in 2023.

The growth rate for energy jobs, while still positive, cooled

While energy jobs continued expanding in 2024, the rate of growth slowed compared to 2023, from 3% to 1.2%. This was also true on a sector-by-sector basis, with the exception of energy efficiency — which grew 4% in 2024 versus 3.4% growth in 2023.

Clean energy[2] jobs grew at twice the rate of the energy sector average

4 out of 5 new energy jobs were in clean energy.

Clean energy jobs grew at a rate of 2.4%, 71% faster than employment growth in the overall economy in 2024 (1.4%) and double the rate of growth for overall energy jobs (1.2%). 4 out of 5 new energy jobs were in clean energy.

Unionization rates climbed in the energy sector

Union representation across the energy sector grew from 11.4% in 2023 to 11.7% in 2024, up from 11.0% in 2020.

Batteries are dominating storage jobs and grew three times faster than overall energy jobs.

3 out of 4 net new storage jobs were in battery storage.

Jobs in storage experienced strong growth of 4.4%. 95% of new jobs in storage were in clean technologies. 3 out of 4 net new storage jobs were in battery storage.

2
The USEER definition of clean energy refers to net-zero emissions aligned technologies. This includes renewable energy, nuclear, non-fossil energy efficiency, zero emission vehicles, and carbon capture, utilization, and storage. This figure includes transmission and distribution.

Motor vehicle employment saw losses across the board

EVs saw the smallest subsector loss, at -0.95%, or roughly 1400 jobs. Gas-powered vehicles, by contrast, lost 22,000 jobs, amounting to a loss of -1.08%.

Union jobs accounted for 1 of every 3 net new jobs across the energy sector

1 out of every 3 net new jobs in the energy sector were union jobs.

34% of the net new energy jobs added in 2024 were covered by collective bargaining agreements.

In electricity generation, the majority of union jobs are in clean energy

Among the 124,265 union jobs in electric power generation, over half are in wind and solar, and more than two-thirds are in zero emissions or clean energy. There are 85,094 union jobs in clean electricity generation, compared with 39,171 in fossil-based electricity generation.

Construction drove job growth

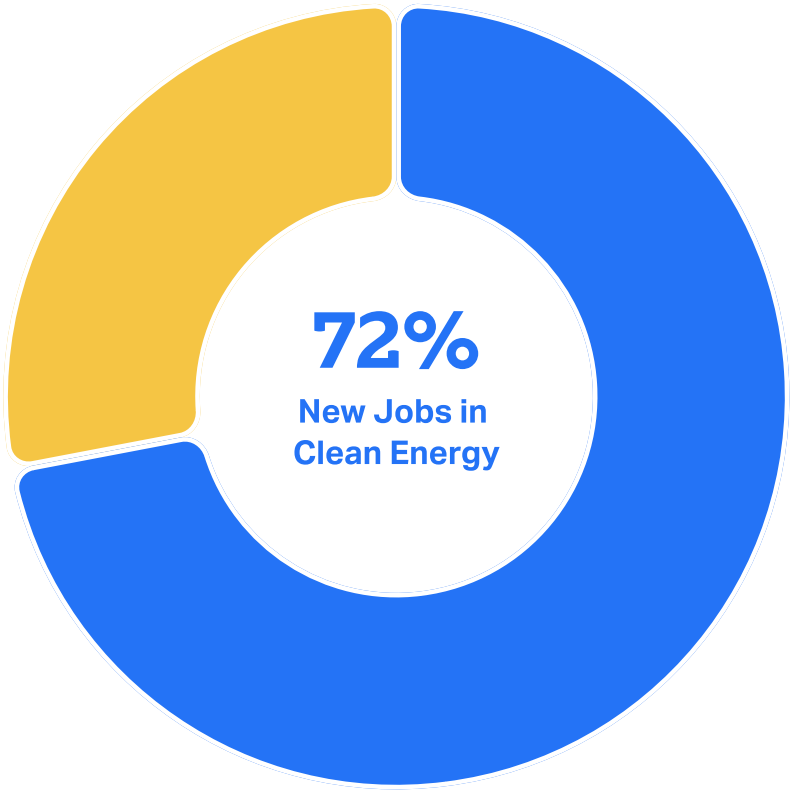
86% of net new energy jobs were in the construction industry

86% of net new energy jobs were in the construction industry. This does not account for construction of new manufacturing or supply chain structures.[3]

Energy jobs grow even higher when including Puerto Rico and the U.S. Virgin Islands (USVI)

For the first time, USEER included energy employment statistics from Puerto Rico and the USVI, which accounted for 36,500 energy jobs, 22,200 of which were in clean energy. With the additional territory numbers, U.S. total energy jobs grew 136,000, and clean energy jobs accounted for 109,300 of the total.

Figure 1
Job Growth in Clean Energy as a Percentage of Total Energy Job Growth 2022, 2023, and 2024



3
DOE collected but did not report these figures for 2024.

Policy and Economic Context

Energy employment trends offer insight into how recent policy and economic shifts have shaped the U.S. energy landscape. Between 2021 and 2022, three landmark pieces of legislation were enacted to catalyze investment in energy, infrastructure, and manufacturing: the Bipartisan Infrastructure Law (BIL), the Inflation Reduction Act (IRA), and the CHIPS and Science Act.

The BIL authorized $1.2 trillion for projects that strengthen advanced transportation, broadband, and energy infrastructure. The CHIPS and Science Act committed $280 billion over 10 years to expand domestic manufacturing, research, and workforce development. Initially, the Congressional Budget Office (CBO) estimated the cost of the clean energy tax credits in the IRA at $370[4] but later revised this to $825 billion by 2035.[5] CBO hasn't updated its estimate based on changes in the One Big Beautiful Bill (OBBA), which add new restrictions and will reduce the cost by some amount. In addition to tax credits for clean energy production, it also included tax incentives and rebates for energy-saving technologies to reduce household energy costs and combat inflation. Together, these laws aimed to drive large-scale deployment of clean energy through grants, loans, and tax credits — while spurring private investment and rewarding projects that met high labor standards or were located in low-income or energy-transition communities.

From 2022 to 2024, broader macroeconomic conditions strongly influenced investment and employment trends. The Federal Reserve's rapid interest-rate increases, intended to curb inflation, raised borrowing costs and slowed some large-scale energy and manufacturing projects. Meanwhile, global energy markets faced high volatility: oil prices surged above $100 per barrel in 2022 following Russia's invasion of Ukraine, before stabilizing near $80 in 2023–24. Natural gas prices also spiked, boosting U.S. exports of liquefied natural gas (LNG) but increasing domestic energy costs. These factors created a mixed picture for energy employment — supporting job growth in fossil fuel production and exports at the same time that IRA and BIL incentives were accelerating clean energy deployment, efficiency improvements, and supply chain onshoring.

While further changes have taken place in 2025, this report only presents data and trends through 2024.

4
The Congressional Budget Office initially estimated $370 billion https://budgetmodel.wharton.upenn.edu/issues/2022/8/5/inflation-reduction-act-comparing-cbo-and-pwbm-estimates

5
Reuters, 2025

Key Changes from 2023 to 2024

Transmission, Distribution & Storage and Energy Efficiency saw strongest growth

- Transmission, Distribution, and Storage (TDS) jobs experienced 2.6% growth, adding ~38,000 jobs.
- Energy Efficiency (EE) jobs saw 4% growth, adding ~91,500 jobs. That's a larger absolute gain than all other sectors.

Some coal and natural gas-related employment declined

- Onshore natural gas fuel employment declined -6.4%, losing ~15,600 jobs even as employment in natural gas power generation increased strongly.
- Coal fuel employment (extraction jobs) decreased -4%, losing ~2,700 jobs.
- Coal Electric Power Generation (EPG) employment decreased -4.3%, losing ~2,700 jobs.

Renewable energy technologies increased modestly

- Solar saw the largest gain of jobs in Electric Power Generation (~6,000). Solar and Wind continued to represent the largest share of jobs in EPG and grew at above average rates: 1.6% and 1.3%, respectively. In 2023, for comparison, solar grew 5.3% and wind grew 4.6%, the largest percentage gains in the EPG category.

Motor Vehicles saw a decrease

- Motor Vehicle (MV) employment decreased in 2024 by -1.7%. Because this is such a large sector, this reflected a loss of ~45,000 jobs.
- From 2022 to 2023, MV jobs had grown 2.3%, having added ~59,600 jobs from the year prior.

Some subsectors in Energy Efficiency saw especially high growth, reflecting upward trends in demand for energy saving technologies

- ENERGY STAR® certified commercial food service equipment experienced a 7.9% increase, driven by increases in construction and wholesale trade.
- ENERGY STAR® Certified ground-source or geothermal heat pumps saw a 6.7% growth rate, representing 7,100 jobs.
- ENERGY STAR® Certified air-source heat pumps jobs increased by 6.3%, driven by job gains in wholesale trade to add up to 70,600 jobs total.
- Solar thermal water heating and cooling grew 6.2% in 2024, driven by gains in construction.

ENERGY STAR® Certified data center equipment[6] grew at 16.5%, including significant employment manufacturing this equipment

- These products include enterprise servers, data center storage systems, large network equipment, and uninterruptible power supplies that use up to ~30% less energy.
- Figure 2 shows the significant growth from 2022, including 1,218 jobs added from 2023 to 2024 in the manufacturing of data center equipment.

Clean energy jobs were overwhelmingly construction jobs

- Solar, wind, battery storage, and smart/microgrids all showed increasing construction employment.
- Construction jobs — which encompass installation and maintenance — represented a large portion of the clean energy workforce in 2024: ~181,700 construction jobs were in solar and ~43,800 were in wind.
- Figure 3 shows the distribution of clean energy jobs across industries, showing that construction jobs made up the largest share (39%) of clean energy jobs. In 2024, 60% of new clean energy jobs were in construction.

Figure 2.
ENERGY STAR® certified data center equipment job growth by industry from 2022-2024

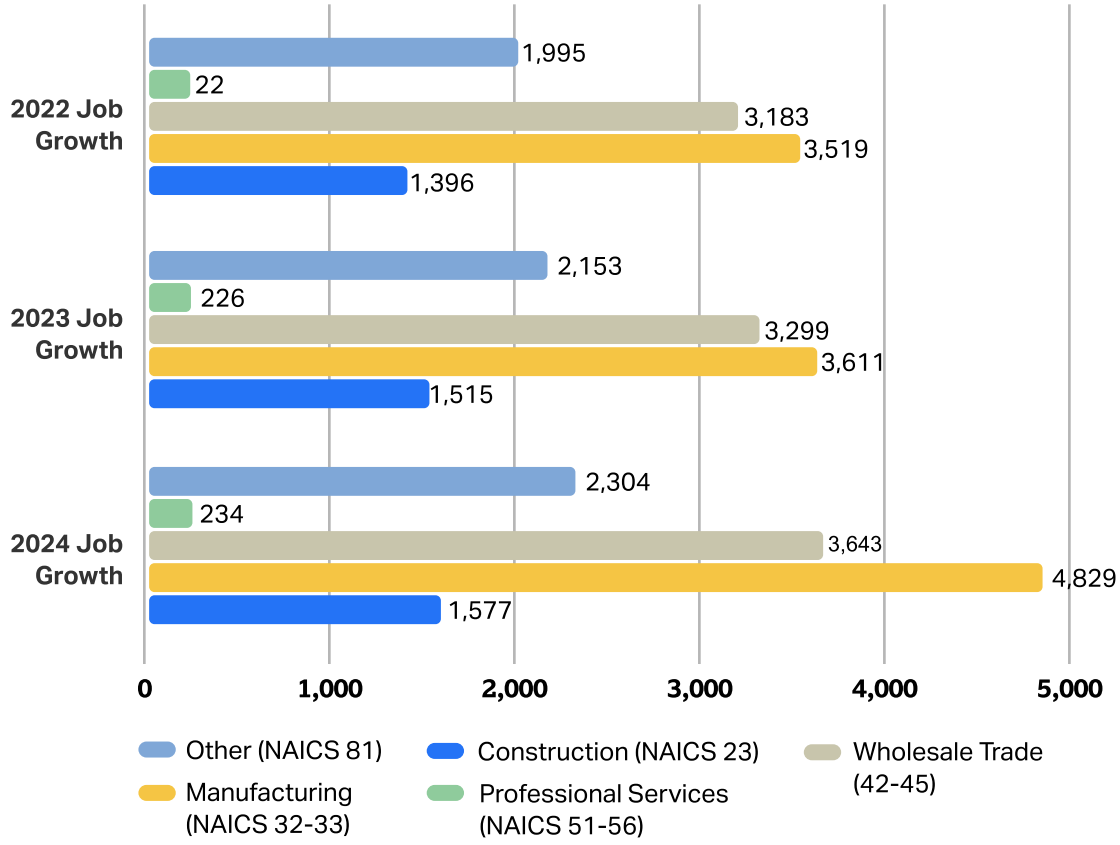
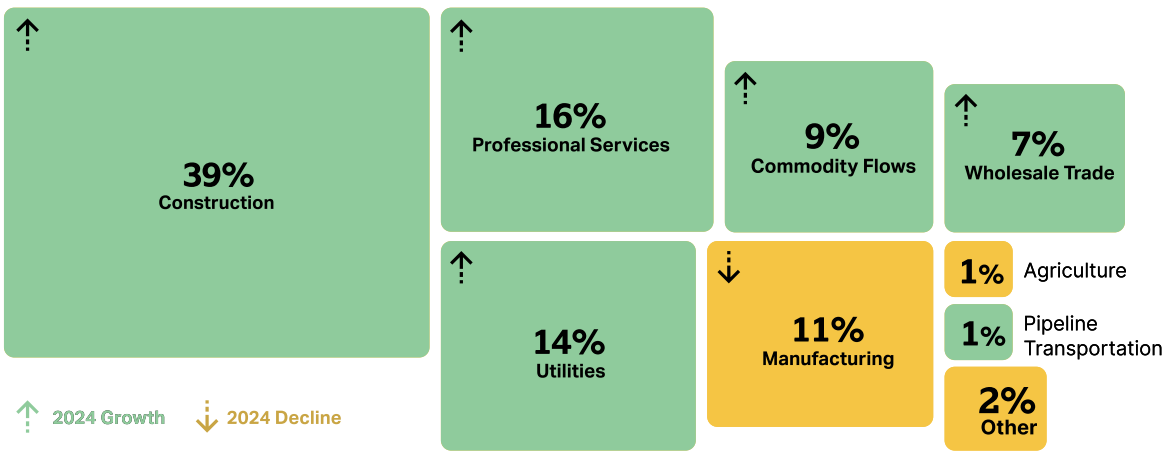


Figure 3.
Breakdown of Clean Energy Jobs and Growth by Industry



6
Enterprise servers / computer servers, Data center storage systems / storage arrays, Large network equipment (e.g. switches, routers), Uninterruptible Power Supplies (UPSs) / power distribution components that see up to 30% improved energy efficiency compared to peer products.

See https://www.energystar.gov/products/data_center_equipment and https://www.energy.gov/femp/purchasing-energy-efficient-data-center-storage

Demographic Trends

- Women continued to be underrepresented in the energy workforce. Women represented 47% of the American workforce, but held only 26% of energy jobs in 2024.
- In 2024, formerly incarcerated people represented 1.5% of the energy workforce, increasing from 1.4% in 2023 and adding 13,400 jobs. This remained disproportionate to the national workforce average of 2.4%.
- African Americans also continued to be underrepresented in energy, making up 12.8% of the American workforce, but only 8.5% of the energy workforce in 2024 — a decline from 8.9% in 2023.
- Hispanic/Latinos were nearly proportionally represented in the energy sector, making up 18.7% of the energy workforce, compared with 19.4% in the national workforce.
- Native Hawaiian/Pacific Islander representation remained the same as two years prior, hovering at 1.3%. This is slightly higher than the national workforce (less than 1%).
- Veterans were represented at significantly higher rates in the energy workforce (9.2%) than the national workforce average (5.3%).

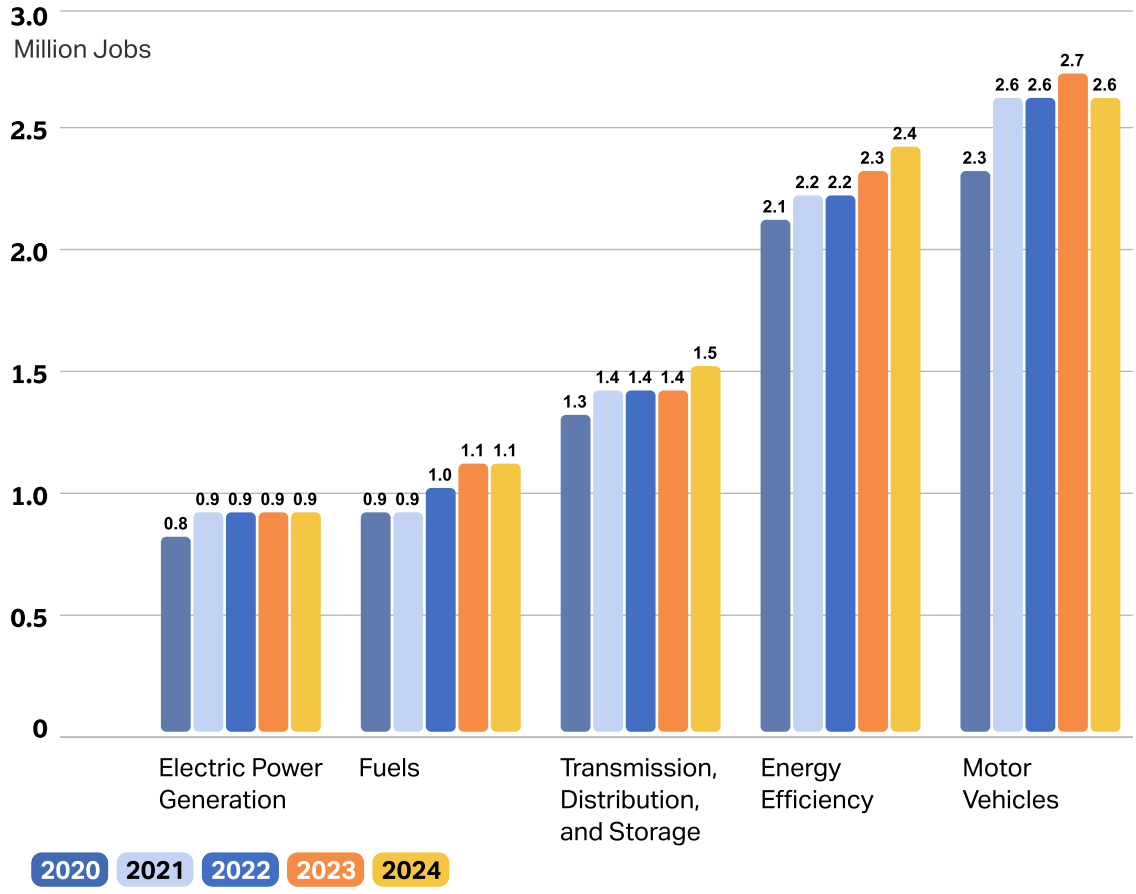
Age Distribution

- More than half of all energy workers were in the 30-54 age range.
- Representation of young workers (18-29) in the energy sector outpaced the national average (29% to 22%).
- 19% of energy workers were aged 55 and over, less than the national workforce average of 24%.

Employment by Sector

Figure 4 displays energy employment from 2020, organized by technology category. Since 2020, each category has seen growth. Every technology grew modestly from 2023 to 2024 except for motor vehicles. The following sections of the report examine employment changes in each technology sector more closely.

Figure 4. Breakdown of Energy Jobs by Industry in 2024



Employment by Sector

Electric Power Generation

Electric power generation (EPG) grew 1.6% in 2024, adding 14,949 jobs for a total of 933,799. The total unionization rate in EPG was 13.3%, a decrease from 13.7% in 2023.

Clean energy technologies accounted for 63% of new EPG employment, adding 9,469 jobs. The clean energy EPG workforce represented 70% of all EPG jobs.

As seen in Figure 5, solar and wind continued to represent the largest employment sectors of EPG technologies, with solar accounting for 370,556 jobs and land-based wind at 131,874. Both technologies saw above average increases: Solar grew 1.6%, gaining 6,011 jobs, and land-based wind grew 1.3%, adding 1,635 jobs. Offshore wind saw a 2.1% increase, representing 1,110 total jobs nationally. Growth in solar, land-based wind, and offshore wind slowed relative to years prior. In 2023, solar and wind led EPG growth at 5.3% and 4.6%, respectively. Since 2020, solar has grown 17% and land-based wind has grown 12.9%. Solar jobs were 12.2% unionized, a decrease from 13.6% in 2023. Land-based wind jobs were 13.1% unionized, an increase from 12.4% in 2023.

"The clean energy EPG workforce represented 70% of all EPG jobs."

The largest EPG percentage growth came from natural gas, increasing 3.8% in 2024, adding 4,621 jobs largely led by construction and utilities.

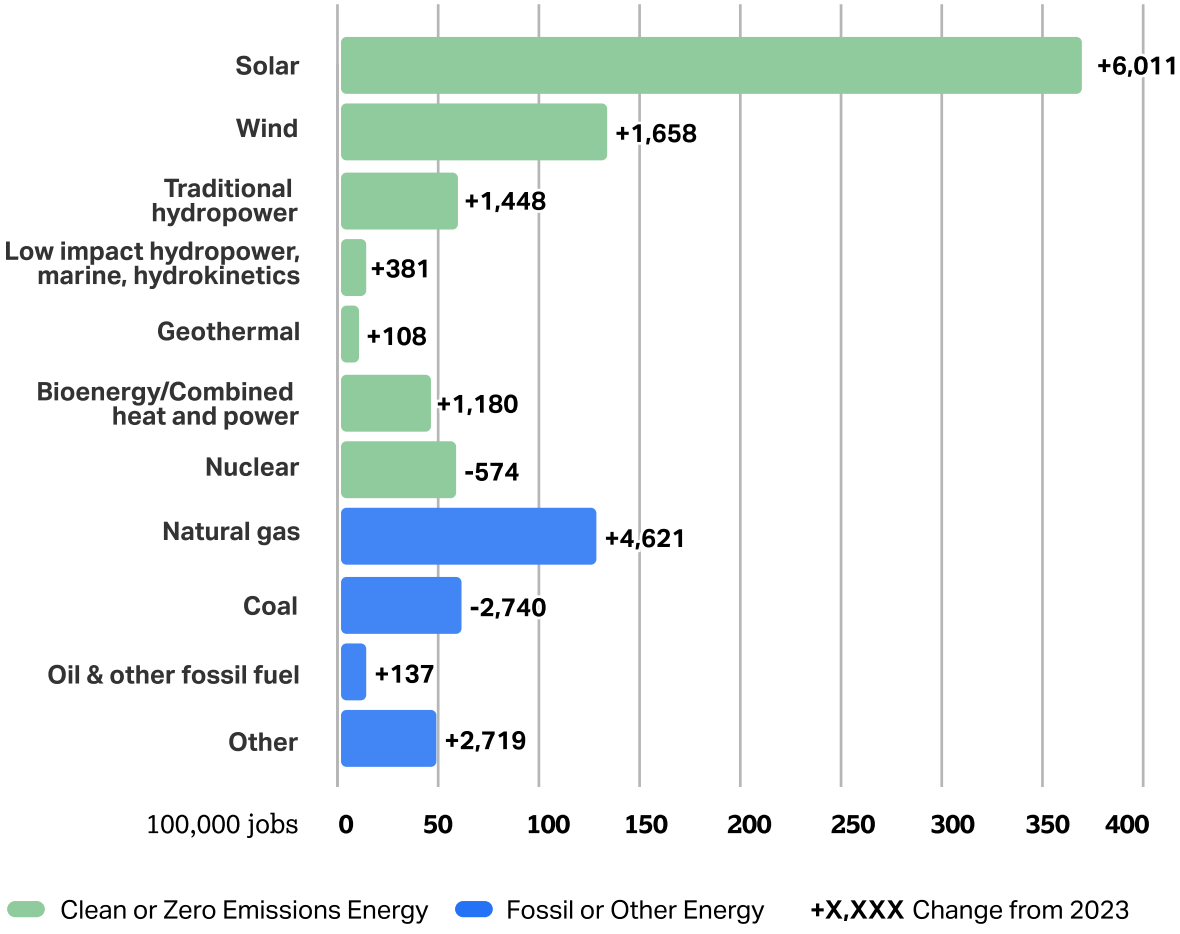
Natural gas employment continued a steady increase, as natural gas jobs grew 4% in 2023. Employment in other renewable energy EPG technologies grew steadily in 2024, including traditional hydropower (+2.6%) and low-impact hydropower (+3.2%), which added 1,829 jobs collectively. Geothermal employment grew 1.2% and bioenergy 3.4%.

Nuclear EPG employment represented 57,942 jobs and fell slightly at -1%, losing 574 jobs in 2024. The previous year, nuclear EPG had gained 1,596 jobs, representing a 2.8% increase. Since 2021, nuclear EPG has seen a 4.3% increase in jobs. Employment in nuclear fuel production (discussed in fuels below) was up last year.[7]

Coal EPG jobs saw the sharpest decrease from 2023 to 2024, at a loss of 2,740 jobs (-4.3%). This was a significantly larger decrease than the previous year, which saw a -1.4% decline.

7 The past several years have seen the completion of the massive construction project to bring the new generators online at the Vogtle plant in Georgia, and work commencing on the restart of decommissioned facilities.

Figure 5.
Distribution of Total EPG Jobs by Subsector



Employment by Sector

Transmission, Distribution, and Storage

Transmission, distribution, and storage (TDS), which includes the construction, maintenance, and also manufacturing of the pipes, wires, and storage systems that move and store energy continued a steady increase of 2.7%, adding 38,057 jobs in 2024. TDS growth cooled compared with the 2023 employment growth rate of 3.8%. The unionization rate in TDS was 21.7%, an increase from 21.2% in 2023.

As seen in Figure 6, traditional transmission and distribution has the most jobs of any subsector. It also gained the second-most energy jobs of any technology subsector (+26,437). Construction jobs accounted for the most gains in TDS (+23,760), followed by utilities (+5,730) (See Figure 8).

Jobs in storage experienced strong growth of 4.4% — a slight increase over the 4.3% growth rate in 2023. Storage subsectors that experienced the highest rates of growth were other gas (+11.5%), crude oil (+9.7%), refined petrol fuels (gas) (+7.0%), pumped hydro (7.6%), and biofuels (+5.6%).

> "94.5% of new jobs in storage were clean energy jobs."

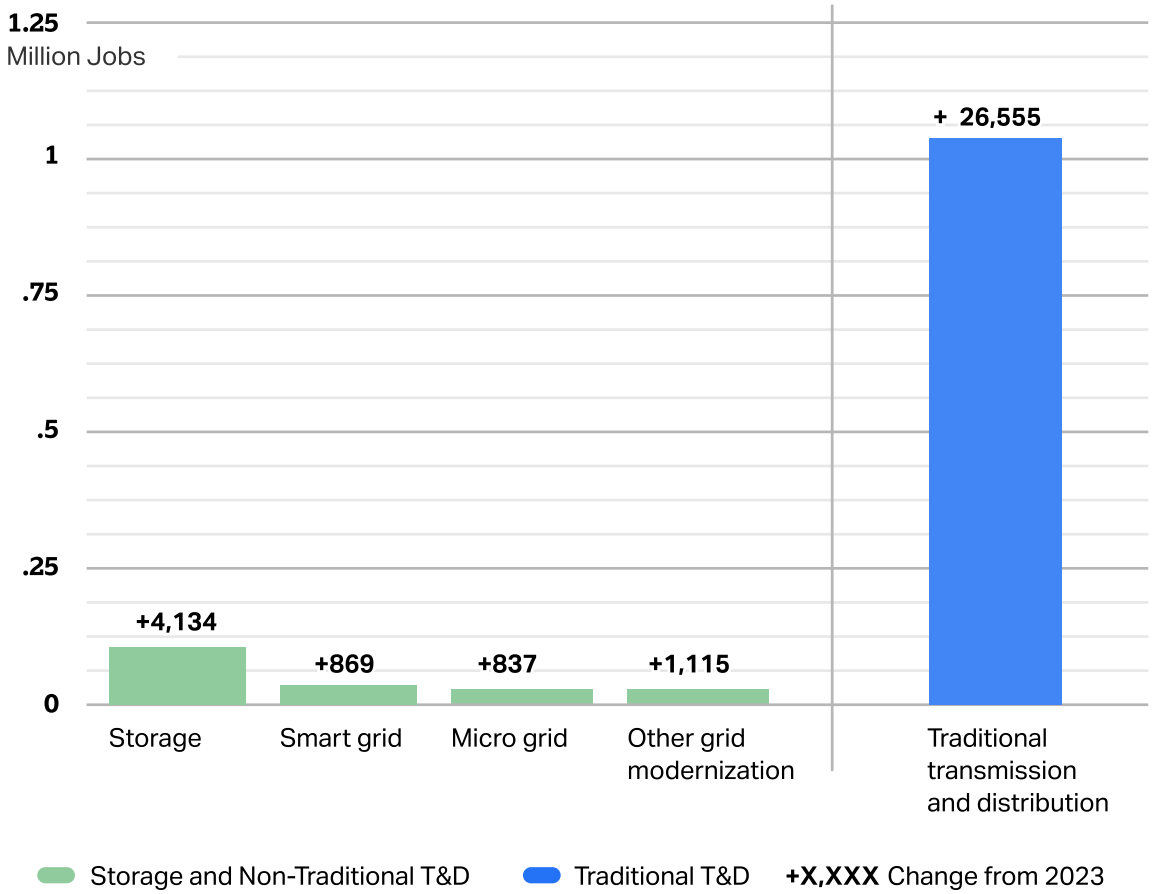
While gas, crude oil, and refined petroleum categories experienced higher growth, 94.5% of new jobs in storage were clean energy jobs (pumped hydro, battery, mechanical, thermal, biofuels, nuclear and other storage). Battery storage represents 78,809 jobs and of the 4,134 net new jobs in storage, 3,106 were in battery storage.

Employment in “commodity flows,” or the transportation of coal, petroleum, and other fuels by truck, rail, air, and water, was essentially flat in 2024, very different from the job loss of 16,382 experienced from 2022 to 2023.

Smart grid, microgrid and grid modernization gained a collective 2,821 jobs. EV charging grew 3.7%, adding 104 jobs, which was a marked slowdown from the 25% growth in 2023. Of the 2,892 jobs in EV charging, 45.8% were in construction.[8]

8 In USEER, a job is counted in the segment that accounts for the majority (more than 50%) of their qualifying energy-related work time for an energy sector employer, to avoid double counting of energy jobs.

Figure 6.
Distribution of Total TDS Jobs by Subsector



Employment by Sector

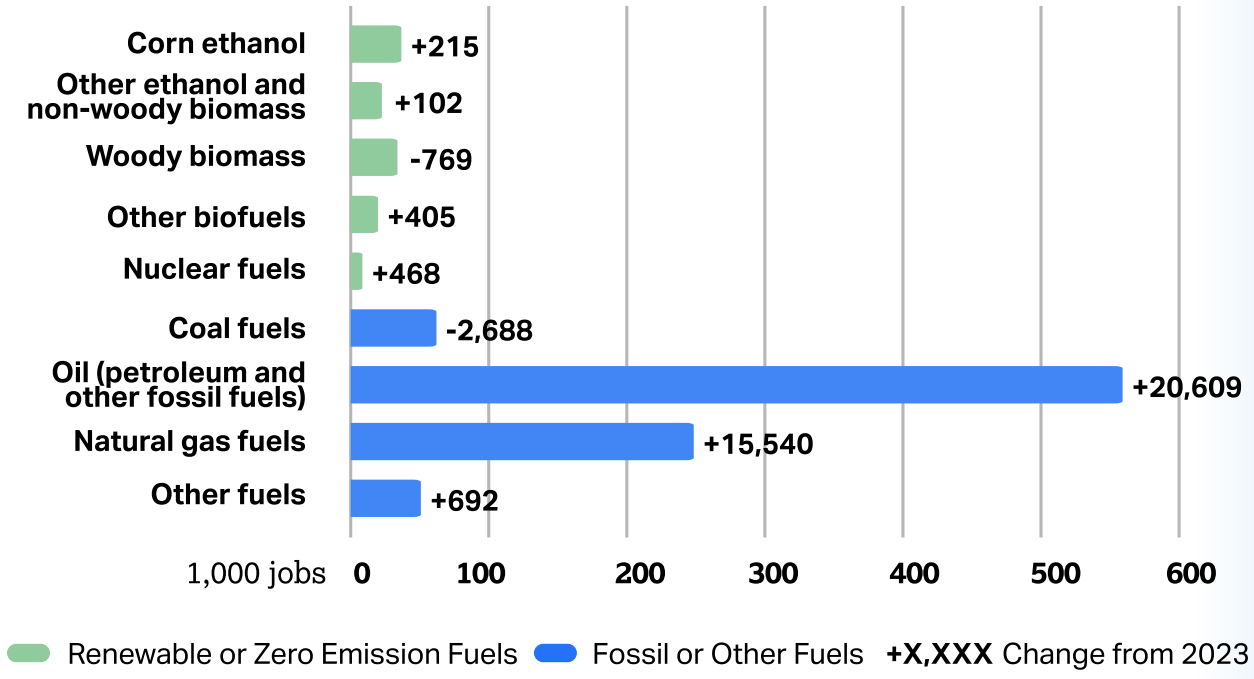
Fuels

The fuels sector, which includes mining, extracting, growing, and refining different types of fuel, as well as the distribution of fuels, accounted for 1.05 million jobs. Fuel sector employment overall stayed nearly flat, with an increase of 3,494 jobs (+0.3%), less than the 2023 increase of +1.8%. Within the sector there were both losses and gains. The unionization rate in the fuels sector was 7.5%, an increase from 7.4% in 2023. Nuclear fuels (17.8%) and coal fuels (10.8%) saw the highest rates of unionization within fuels.

Offshore natural gas employment grew slightly at 0.4%, following growth of 4.9% the previous year. Onshore natural gas experienced significant job loss of -15,633 jobs, down -6.4% in 2024, with the biggest loss in extraction. Coal and woody biomass also saw decreases (-4.0% and -2.2%, respectively).

By contrast, onshore petroleum production jobs were up 4.2%, adding 18,503 jobs. Renewable diesel fuels continued strong growth of 7.2%, similar to the rate in 2023. Nuclear fuel production jobs grew 4.9%, adding 468 jobs, mostly in professional services.

Figure 7. Distribution of Total Fuels Jobs by Subsector



Employment by Sector

Energy Efficiency

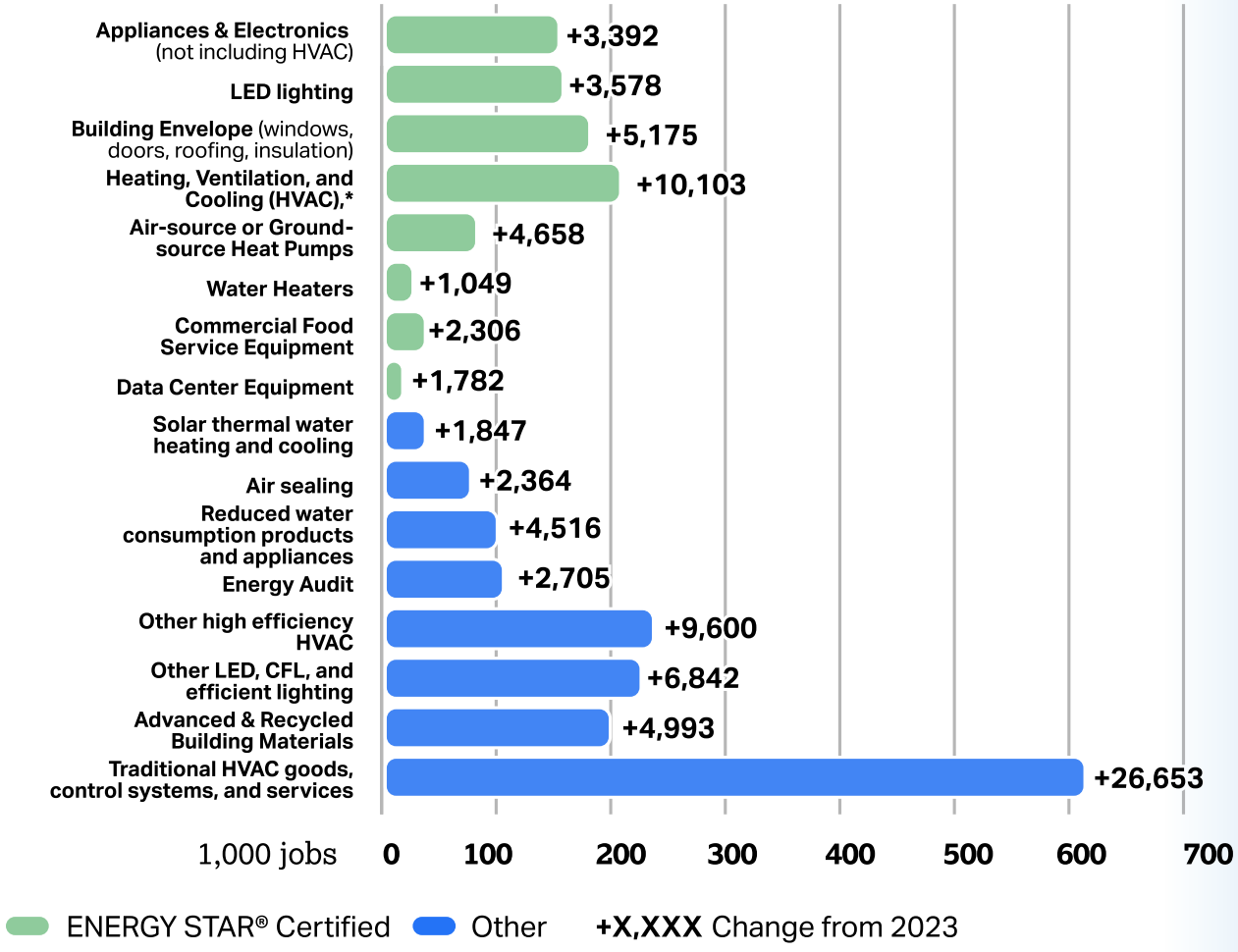
Energy efficiency employment grew the most of any technology. The increase of 4% outpaced the previous year's growth rate of 3.4%, adding 91,565 jobs for a total of over 2.38 million jobs. Energy efficiency numbers have now fully rebounded since the pandemic. In 2019, energy efficiency jobs sat at around 2.38 million jobs, dropped to 2.11 million jobs in 2020, then gained back ~275,000 to hit the current figure. The unionization rate in energy efficiency was 13.4%, an increase from 12.7% in 2023.

Job gains in energy efficiency were driven by construction (+59,073) and wholesale trade (+15,989). All energy efficiency technology subsectors experienced growth, most notably in ENERGY STAR® Certified data center equipment (+16.5%), ENERGY STAR® Certified commercial food service equipment (+7.9%), ENERGY STAR® Certified ground-source or geothermal heat pumps (+6.7%), ENERGY STAR® Certified air-source heat pumps (+6.3%), and solar thermal water heating and cooling (6.2%).

Energy efficiency employment increased by 4% outpacing the previous year's growth of 3.4%

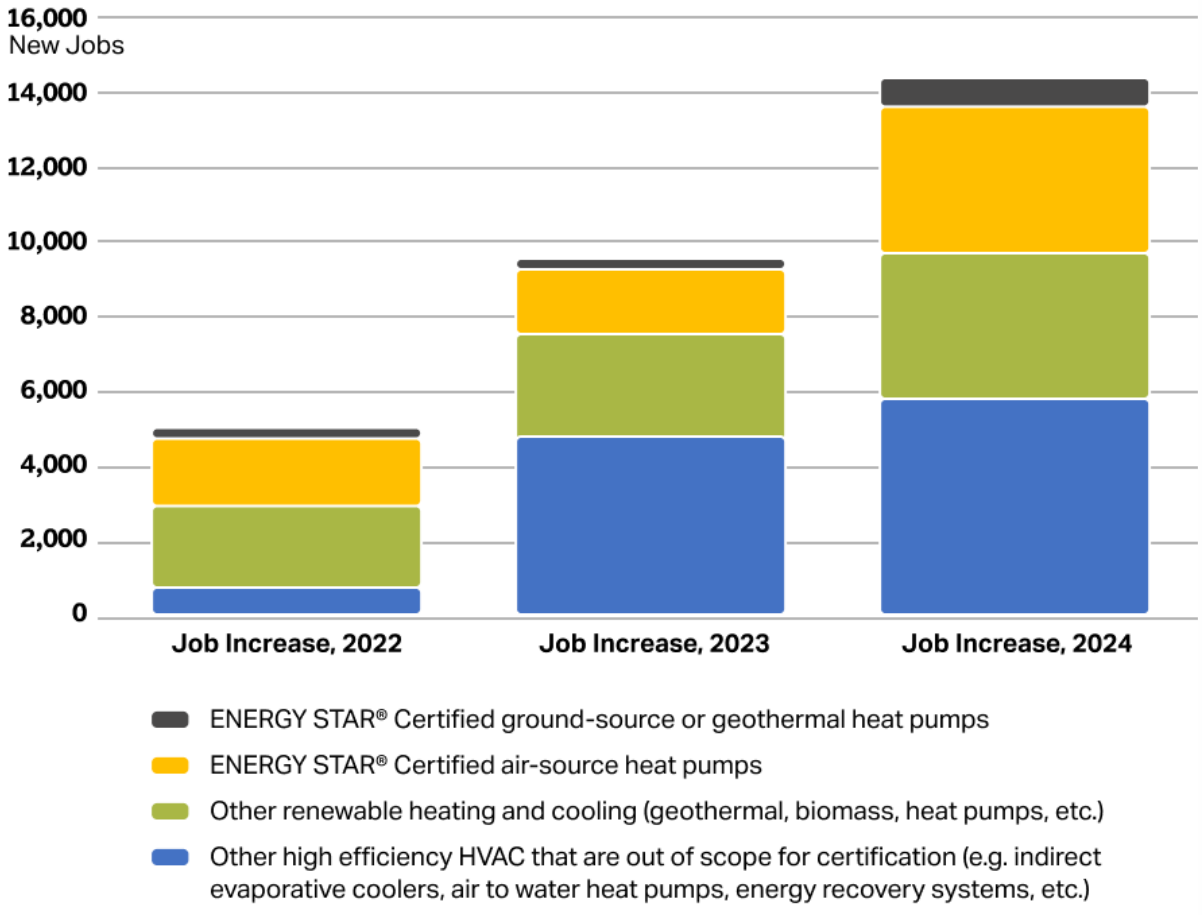
ENERGY STAR® Certified heating, ventilation, and cooling (HVAC) and both categories of heat pumps more than doubled their job growth compared with 2022-2023 gains, as seen in Figure 9. ENERGY STAR® Certified HVAC added 10,103 jobs in 2024, up from the 3,421 jobs added in 2023. Heat pumps (ground-source or geothermal and air-source) added 1,869 jobs in 2023 and saw an increase of 4,657 jobs in 2024.

Figure 8. Distribution of Total EE Jobs by Subsector



Traditional HVAC goods, control systems, and services added the most jobs (+26,653). In 2024, all technology subsectors of energy efficiency also grew, showing a strong demand for energy- and water-saving technologies by consumers. Construction (installation) and manufacturing of energy efficiency technologies added 59,073 and 9,505 jobs, respectively.

Figure 9. Heat Pump and Energy Efficient HVAC Growth, 2022-2024



Employment by Sector

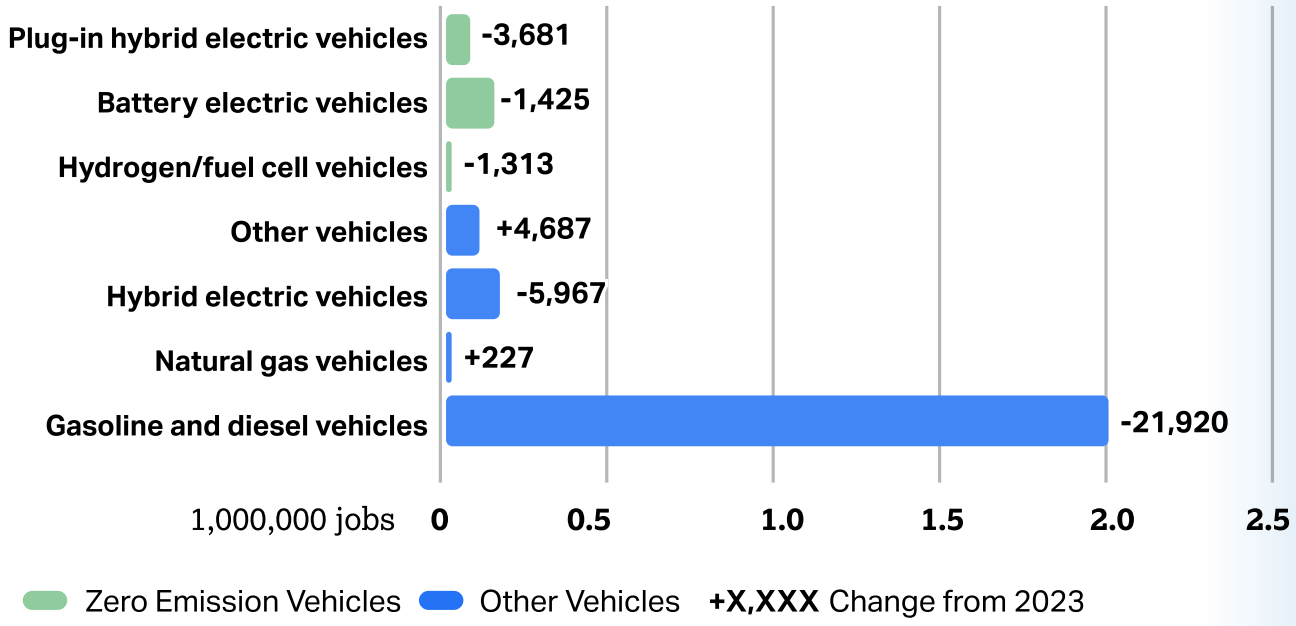
Motor Vehicles

Motor vehicles represented the largest share of energy workers at 2.63 million. However, it was also the only sector that experienced a decrease in employment, down 1.7% with a loss of 44,729 jobs, a contrast with 2023, when motor vehicles saw growth of 2.8%, adding nearly 73,000 jobs. The unionization rate in motor vehicles was 6%, a decrease from 6.2% in 2023.

Every subsector of motor vehicles — including both gas and electric vehicles — and component parts stayed flat or decreased slightly. In 2024, every clean vehicle sector saw a decrease in jobs: battery electric vehicles (-0.9%), plug-in hybrid vehicles (-4.9%), hydrogen/fuel cell vehicles (-6.7%). In 2023, jobs in clean vehicles had increased by 11%, with battery electric vehicles leading at 12.9% growth. Employment in gas- and diesel-powered vehicles also saw a decrease in 2024 (-1.1%), compared with the 2023 growth of 2.0%.

Battery electric vehicles experienced the smallest percent decline in motor vehicle jobs.

Figure 10. Distribution of Total MV Jobs by Subsector



Supplemental Jobs in Construction and Expansion of Clean and Advanced Energy Manufacturing and Supply Chain Infrastructure

Since 2016, USEER has gathered data on employment across the energy sector, which includes construction industry employment in major energy sectors (e.g., construction of a power plant). For the first time in 2024, USEER separately captured jobs relating to construction and upgrade of domestic energy technology manufacturing facilities or supply chain infrastructure (e.g., energy supply chain-related warehouse or port upgrades). The 2025 report did not include these figures, so it is not possible to review changes in this area.

Industry Data

The USEER tracks employment across different industries — construction, utilities, manufacturing, professional and business services, pipeline transportation, wholesale trade, distribution and transport, and other services including vehicle repair and maintenance. Figure 11 shows energy jobs by technology, with the technologies divided by industry. Motor vehicles was the largest technology sector in terms of employment and also the largest source of manufacturing jobs in the energy sector.

Figure 11.
Energy Employment by Technology Category and Industry, 2024

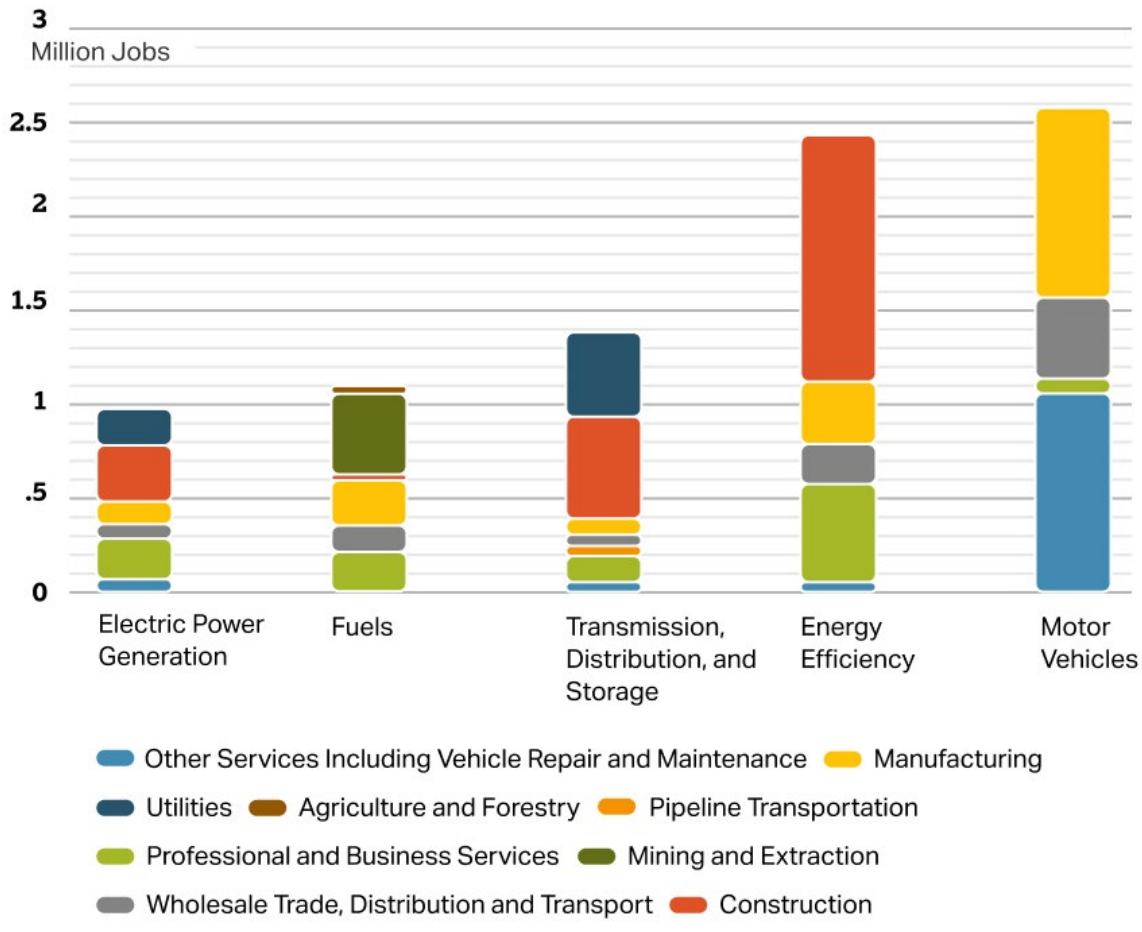


Figure 12 shows the same data organized by industry. The construction industry employs the greatest number of energy workers, mostly distributed across energy efficiency, TDS, and EPG. Manufacturing, wholesale trade, and professional services are industries represented in all five technology sectors.

Figure 12.
Energy Employment by Industry Category and Technology, 2024

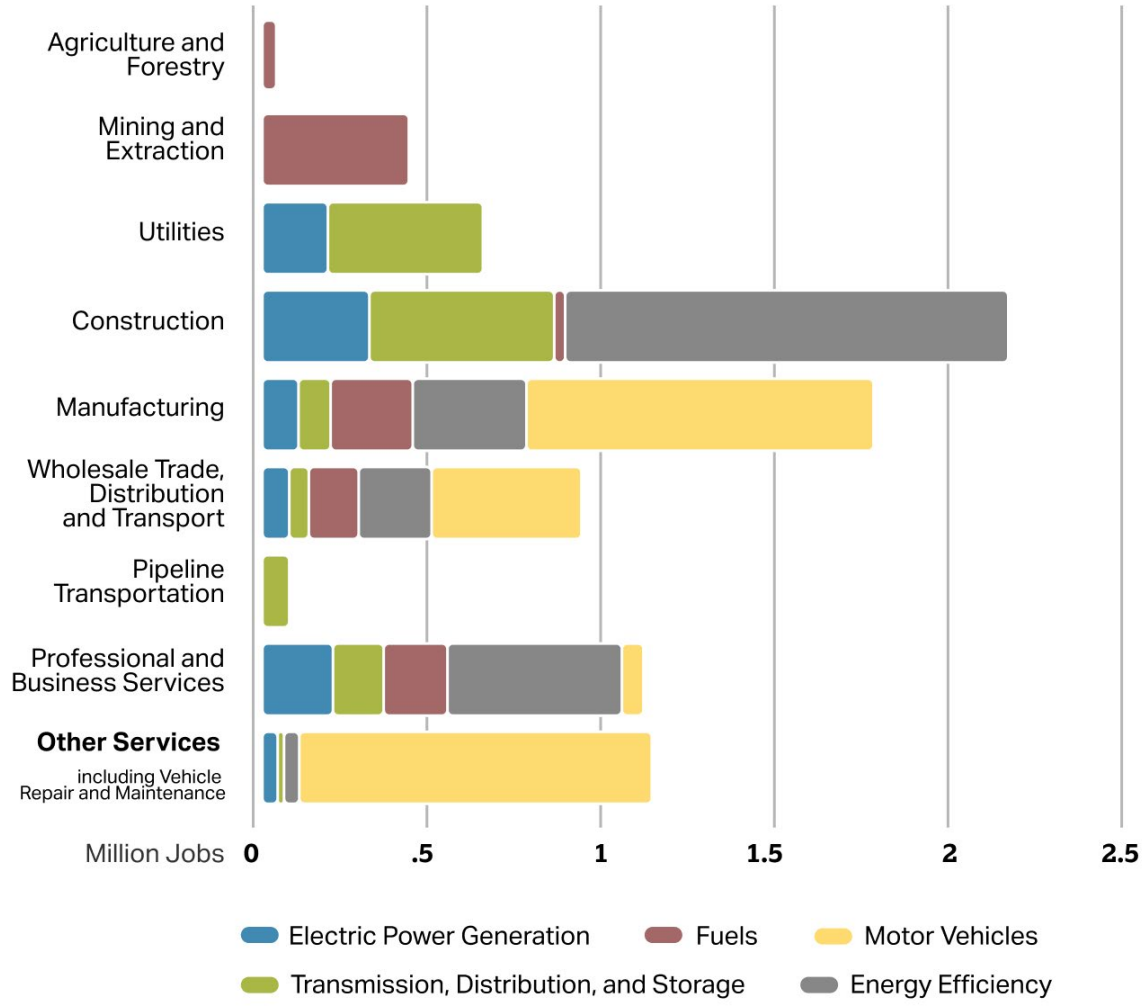


Table 1 and Table 2 show the net change in energy jobs by industry and technology in real numbers and percentage, respectively. The majority of new workers were employed in energy efficiency (+59,073) and TDS (+23,760). Manufacturing experienced a loss of 30,513 jobs in motor vehicles, while there was slight growth in professional services and wholesale, distribution and trade.

Table 1. Net Change in Energy Jobs by Industry and Technology, from 2023 to 2024

	Electric Power Generation	Transmission, Distribution, and Storage	Fuels	Energy Efficiency	Motor Vehicles	Industry Total
Agriculture and Forestry	0	0	-884	0	0	-884
Mining and Extraction	0	0	-1,822	0	0	-1,822
Utilities	641	5,730	0	0	0	6,371
Construction	4,110	23,760	1,549	59,073	0	88,493
Manufacturing	1,457	675	2,074	9,505	-30,513	-16,801
Wholesale Trade, Distribution, and Transport	2,418	620	2,019	15,990	1,533	22,579
Pipeline Transportation	0	2,561	0	0	0	2,561
Professional and Business Services	5,301	4,596	565	5,840	1,459	17,762
Commodity Flows	0	-117	0	0	-397	-514
Other Services	1,022	233	-3	1,156	-16,811	-14,403
Total change From 2023	14,949	38,057	3,497	91,565	-44,729	103,340

Table 2. Percent Change in Energy Jobs by Industry and Technology, from 2023 to 2024

	Electric Power Generation	Transmission, Distribution, and Storage	Fuels	Energy Efficiency	Motor Vehicles	Industry Total
Agriculture and Forestry	0	0	-2.4%	0	0	-2.4%
Mining and Extraction	0	0	-0.4%	0	0	-0.4%
Utilities	0.3%	1.3%	0	0	0	1.0%
Construction	1.4%	4.6%	7.2%	4.8%	0	4.3%
Manufacturing	1.4%	0.8%	0.9%	3.0%	-3.0%	-0.9%
Wholesale Trade, Distribution, and Transport	3.0%	1.2%	1.43%	8.2%	0.4%	2.5%
Pipeline Transportation	0	4.7%	0	0	0	4.7%
Professional and Business Services	2.7%	3.2%	0.3%	1.2%	2.3%	1.6%
Commodity Flows	0	-0.1%		0	-0.4%	1.2%
Other Services	2.4%	1.6%	-0.2%	2.8%	-1.6%	-1.3%
Total change From 2023	1.6%	2.7%	0.3%	4.0%	-1.7%	1.2%

Demographics

DOE is required by statute to report in USEER on the energy sector and subsector employment and demographics. To do so, it utilizes its survey of employers augmented by data from the Bureau of Labor Statistics (BLS), the Quarterly Census of Employment and Wages (QCEW), and the U.S. Energy Information Administration (EIA).

Table 3 shows the number of workers by demographic and the share in comparison to the national workforce average. Women and Black or African American workers remained underrepresented in the energy sector. The energy sector was younger than average, with a higher share of workers under the age of 30 and a lower share of workers aged 55 and older.

Table 3. United States Energy Workforce Demographics and Characteristics, 2024

	Number of Workers	Overall Energy Workforce Average	National Workforce Averages
Male	6,018,168	73.1%	52.9%
Female	2,130,414	25.9%	47.1%
Hispanic or Latino	1,542,436	18.7%	19.4%
Not Hispanic or Latino	6,689,629	81.3%	80.6%
American Indian or Alaska Native	183,623	2.2%	1.0%
Asian	535,329	6.5%	7.0%
Black or African American, not Indigenous	697,331	8.5%	12.8%
Native Hawaiian or Other Pacific Islander	103,464	1.3%	<1%
White	6,079,719	73.9%	76.3%
Two or More Races	375,964	4.6%	2.9%
Unknown Race	257,145	3.1%	n/a
Veterans	761,023	9.2%	5.3%
18 to 29	2,412,016	29.3%	21.7%
30 to 54	4,280,999	52.0%	54.5%
55 and Over	1,539,051	18.7%	23.9%
Self-Identification of Disability	178,491	2.2%	4.9%
Formerly Incarcerated	127,552	1.5%	2.4%
Represented by Unions, Collective Bargaining Agreements, and/or Project Labor Agreements	965,307	11.7%	6.7%

Table 4 shows the change in the demographic profile of the energy sector from 2023 to 2024. Some notable changes include increased employment for Hispanic and Latino workers, who held over half of all new energy jobs last year. Veteran energy employment also increased, while the share of energy jobs held by Black and African American workers declined. The decrease in two or more races and increase in unknown race was likely due to a change in the survey language to better align with U.S. Census methodology.

In terms of gender representation, the share of energy jobs held by men declined slightly but remained at about 73% — significantly higher than their share in the national workforce at 53%. Representation of women was 26%. In 2022, nearly half of new jobs were held by women, but in 2023 and 2024 women held a lower share of net new energy jobs (22%). Since women make up 47% of the national workforce, developing more proportional representation of women across the energy industry would require concerted efforts to recruit a majority of female workers each year while also retaining current female workers. In 2023, 62,148 energy workers identified as nonbinary; however, DOE did not publish the 2024 data.

Some demographic groups saw increases in energy job representation. Veterans make up 761,023 energy jobs and have greater representation in the energy workforce compared with the national workforce (9.2% to 5.3%). In 2024, veteran employment rose in every sector, most notably in electric power generation (+2,654) and TDS (+6,757). Energy continues to be a strong employment channel for veterans — especially in technical, grid, and operations roles.

Hispanic/Latino employment also increased across all sectors, and across the energy sector as a whole at a growth rate of 3.6%. This increased their share of total energy employment by 0.3%. Hispanic/Latinos made up 51.4% of all new energy jobs, adding 53,123 new jobs, with notable job growth in EPG (+8,767) and TDS (+13,705). American Indian or Alaska Native workers also saw above average growth (2.3%). They continued to represent 2.2% of the energy workforce, slightly higher than the U.S. workforce average of 1.0%. Native Hawaiian or other Pacific Islander energy workers slightly outpaced the national average and increased 9.7% from 2023. The number of formerly incarcerated workers in the energy workforce also grew significantly — up 11.7% in 2024 (+13,409).

Some groups see persistent underrepresentation. Black or African American workers saw representation decline across every energy sector, with a net reduction of 20,959 jobs. In 2024, Black or African American share of the energy workforce was 8.5%, down from 8.9% in 2023. Both are significantly lower than the national workforce average of 12.8%. Workers self-identifying with a disability declined slightly in most sectors and remained less than the national workforce average. Asian workers also remained underrepresented in energy.

In terms of age diversity, the energy sector continued to employ a significantly larger share of younger workers (aged 18-29) than the national average — 29.5% vs. 22%. All age cohorts added jobs in 2024, but the number of workers 55+ increased 5%, adding 72,977 workers and increasing the share of older workers in the energy workforce as a whole by 0.6%. The 55+ age group had the largest 2024 gains in EPG (+11,701) and TDS (+18,063). Still, the energy sector employed far fewer workers aged 55+ compared to the national average, at 19% vs 24%.

Table 4. Demographic Changes From 2023 to 2024

	2023 Total	2024 Total	Loss/Gain	%
Male	5,943,655	6,018,168	74,514	1.3%
Female	2,107,472	2,130,414	22,942	1.1%
Hispanic or Latino	1,489,313	1,542,436	53,123	3.6%
Not Hispanic or Latino	6,623,961	6,689,629	65,668	1.0%
American Indian or Alaska Native	179,482	183,623	4,141	2.3%
Asian	532,880	535,329	2,449	0.5%
Black or African American, not Indigenous	718,291	697,331	-20,959	-2.9%
Native Hawaiian or Other Pacific Islander	94,326	103,464	9,138	9.7%
White	6,028,835	6,079,719	50,884	0.8%
Two or More Races	389,933	375,964	-13,969	-3.6%
Unknown Race	170,940	257,145	86,205	50.4%
Veterans	744,128	761,023	16,895	2.3%
18 to 29	2,390,642	2,412,016	21,374	0.9%
30 to 54	4,256,560	4,280,999	24,439	0.6%
55 and Over	1,466,073	1,539,051	72,977	5.0%
Self-Identification of Disability	180,429	178,491	-1,938	-1.1%
Formerly Incarcerated	114,142	127,552	13,409	11.7%
Represented by a Union	929,510	965,307	35,797	3.9%

Table 5 displays the demographic breakdown of all technology subsectors compared with the national workforce average and overall energy workforce average. At 73.1% male, the energy workforce remains much more male dominated than the overall workforce average of 52.9%. Females (25.9% of the overall energy workforce) see the highest representation in EPG jobs at 29.7%. White workers make up 76% of the fuels energy sector. Hispanics/Latinos (18.7% of the overall energy workforce) see their highest representation in EPG at 20.9%. Black or African Americans are highest represented in TDS at 9.5%. Veterans see their highest share of representation in fuels and motor vehicles at above 10%. TDS is the most racially and ethnically diverse sector, with many ethnicities seeing higher representation than the overall energy workforce average. Workers 55 and older are most represented in motor vehicles at 22%.

Table 6 shows the demographic breakdown of EPG subsectors. Females make up a larger share of EPG subsectors than the overall energy workforce average, with representation above 30% in coal, natural gas, and nuclear EPG. Hispanic/Latinos are represented at over 20% in solar and wind — higher than the energy workforce average. Asian workers have higher representation in EPG categories than the overall energy workforce average, with highest levels in low impact hydropower, traditional hydropower, and natural gas. Black or African Americans in EPG see the highest representation in traditional hydropower and nuclear jobs. Veterans, at 9.2% of overall EPG jobs, see representation above 11% in combined heat and power, low impact hydrogen and biomass. Formerly incarcerated individuals see their highest share of EPG jobs in traditional hydropower at 3.2%.

Table 5. Demographic Distribution by Technology Sector

	National Workforce Averages	Energy Workforce Average	EPG	TDS	Fuels	Energy efficiency	Motor Vehicles
Male	52.9%	73.1%	69.7%	74.0%	73.7%	73.4%	73.3%
Female	47.1%	25.9%	29.7%	24.6%	25.6%	25.9%	25.2%
Hispanic or Latino	19.4%	18.7%	20.9%	18.8%	14.9%	18.4%	19.8%
Not Hispanic or Latino	80.6%	81.3%	79.1%	81.2%	85.1%	81.6%	80.2%
American Indian or Alaska Native	1.0%	2.2%	1.7%	2.7%	1.8%	2.7%	1.9%
Asian	7.0%	6.5%	8.7%	8.4%	6.4%	6.1%	5.1%
Black or African American, not Indigenous	12.8%	8.5%	8.6%	9.5%	8.9%	8.3%	7.9%
Native Hawaiian or other Pacific Islander	<1%	1.3%	1.4%	1.2%	1.1%	1.4%	1.2%
White	76.3%	73.9%	71.5%	70.2%	76.0%	74.6%	75.1%
Two or More Races	2.9%	4.6%	4.9%	4.6%	4.4%	3.4%	5.6%
Unknown Race	n/a	3.1%	3.3%	3.4%	1.3%	3.7%	3.2%
Veterans	5.3%	9.2%	8.5%	7.4%	10.6%	8.9%	10.3%
18 to 29	21.7%	29.3%	28.5%	26.5%	31.0%	30.3%	29.4%
30 to 54	54.5%	52.0%	54.5%	55.0%	49.6%	54.2%	48.4%
55 and over	23.9%	18.7%	17.0%	18.5%	19.4%	15.5%	22.2%
Self-Identification of Disability	4.9%	2.2%	1.9%	2.2%	1.6%	2.9%	1.8%
Formerly Incarcerated	2.4%	1.5%	1.4%	1.5%	1.6%	1.7%	1.4%
Represented by a Union	6.7%	11.7%	13.3%	21.7%	7.5%	13.4%	6.0%

Table 6. Demographic Distribution by Electric Power Generation

	Energy Workforce Average	Solar	Wind	Combined heat and power	Low impact hydro-power	Traditional hydropower	Coal EPG	Natural gas EPG	Nuclear EPG	Oil EPG	Biomass EPG	Other EPG
Male	73.1%	70.7%	70.6%	70.9%	71.8%	72.5%	65.5%	66.7%	66.6%	**74.0%**	68.7%	70.0%
Female	25.9%	28.8%	28.8%	28.8%	27.5%	27.0%	**34.0%**	32.6%	31.8%	25.9%	29.4%	29.4%
Hispanic or Latino	18.7%	**24.0%**	21.9%	20.2%	20.0%	17.6%	15.7%	19.3%	15.6%	19.2%	19.7%	18.3%
Not Hispanic or Latino	81.3%	76.0%	78.1%	79.8%	80.0%	82.4%	84.3%	80.7%	**84.4%**	80.8%	80.3%	81.7%
American Indian or Alaska Native	2.2%	1.5%	1.6%	1.3%	2.5%	1.7%	1.8%	1.6%	**3.2%**	1.6%	1.6%	1.5%
Asian	6.5%	8.3%	8.9%	8.0%	9.3%	**9.7%**	9.0%	9.3%	8.6%	9.1%	8.3%	9.4%
Black or African American, not Indigenous	8.5%	7.7%	7.8%	7.3%	8.5%	10.5%	9.8%	10.1%	**10.7%**	8.6%	9.7%	7.1%
Native Hawaiian or other Pacific Islander	1.3%	1.5%	1.4%	1.0%	1.6%	1.3%	**1.7%**	1.3%	1.3%	1.4%	1.4%	1.3%
White	73.9%	73.0%	71.3%	**73.5%**	70.4%	70.0%	71.1%	68.9%	67.7%	72.0%	72.0%	72.8%
Two or More Races	4.6%	4.8%	5.6%	5.0%	4.0%	3.8%	3.1%	**6.0%**	4.7%	4.5%	3.2%	4.8%
Unknown Race	3.1%	3.2%	3.4%	**4.0%**	3.6%	3.0%	3.4%	2.9%	3.7%	2.8%	3.7%	3.1%
Veterans	9.2%	8.3%	9.2%	11.1%	**11.5%**	8.9%	7.6%	8.8%	7.5%	9.0%	11.1%	6.8%
18 to 29	29.3%	**30.4%**	29.3%	27.7%	29.0%	26.0%	25.3%	26.5%	23.8%	29.3%	27.0%	29.9%
30 to 54	52.0%	54.2%	53.7%	50.1%	52.4%	54.2%	54.0%	56.4%	**58.7%**	52.6%	51.1%	55.2%
55 and over	18.7%	15.4%	17.0%	**22.2%**	18.6%	19.7%	20.6%	17.1%	17.5%	18.1%	21.9%	14.9%
Self-Identification of Disability	2.2%	2.3%	2.2%	2.1%	**2.6%**	1.8%	2.1%	2.2%	1.3%	2.4%	2.4%	2.4%
Formerly Incarcerated	1.5%	1.5%	2.2%	2.3%	1.5%	**3.2%**	2.0%	1.9%	2.1%	2.0%	1.5%	1.5%
Represented by a Union	11.7%	12.2%	13.1%	13.4%	13.1%	13.7%	14.6%	17.4%	**19.4%**	11.2%	13.1%	4.3%

Union Membership

The total number of union jobs in energy increased by 35,797, or 3.7%, from 2023, and 34% of net new energy jobs were covered by collective bargaining agreements. The percentage of workers represented by a union (or covered under a project labor or collective bargaining agreement) in the energy workforce was 11.7%, up from 11.4% in 2023. That's nearly 50% higher than 2024's private sector average of 6.7%. Over 965,000 workers in the energy sector were represented by a union. The highest shares of energy workers represented by a union were in energy efficiency and TDS, as shown in Figure 13. Subsectors with high levels of unionization were nuclear EPG (19.4%), nuclear fuels (17.8%), and natural gas EPG (17.4%).

Figure 13. Jobs Represented by a Union, 2024

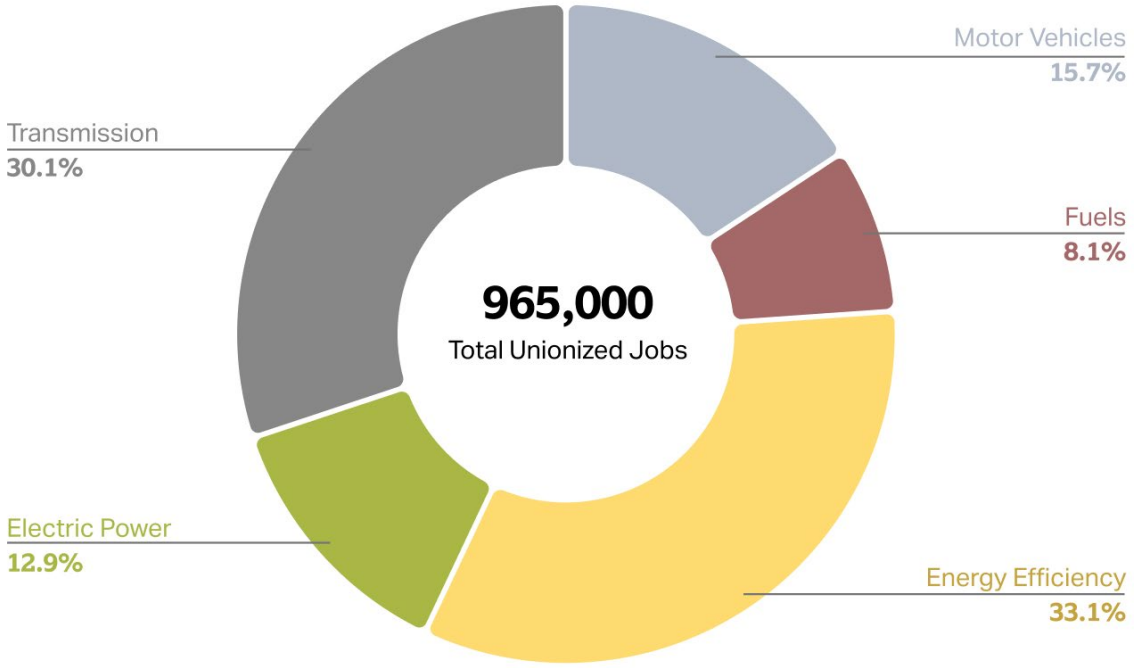
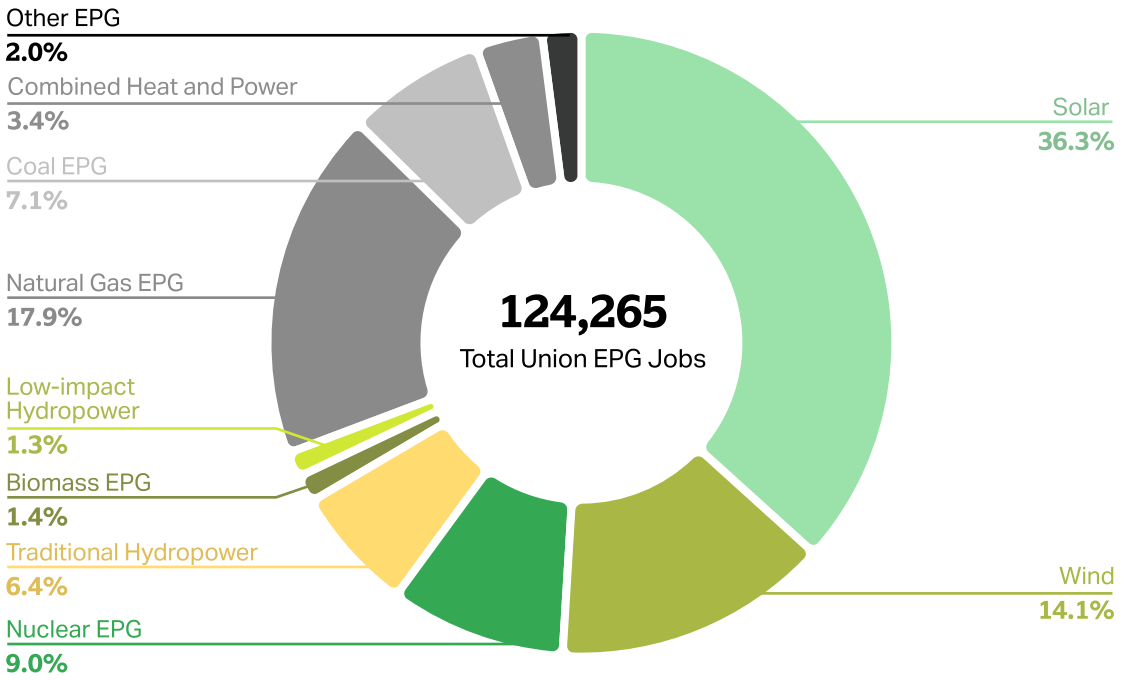


Figure 14 shows the distribution of union jobs in the electric power generation sector. Among the 124,265 union jobs in electric power generation, over half were in wind and solar, and more than two-thirds were in zero emissions or clean energy. There were 85,094 union jobs in clean electricity generation (shown in shades of green) compared with 39,171 in fossil-based electricity generation (shown in shades of grey).

Figure 14. Distribution of Union Jobs in Electric Power Generation, 2024



In 2023 and 2024, DOE published data analysis on the diversity and inclusion programs between union and nonunion employers, as well as differences in ease of hiring skilled workers. DOE did not publish that analysis in the 2025 report, nor did they publish the data that would allow for an independent analysis.

Figure 15 shows the increase in union density across energy technologies from 2020 to 2024. Union density increased across all technology sectors, with particularly strong growth in TDS from 17% to 22%. Energy efficiency union rates also increased from 10% to 13%.

Figure 15.
Unionization Rates Across Technology Sectors, 2020-2024

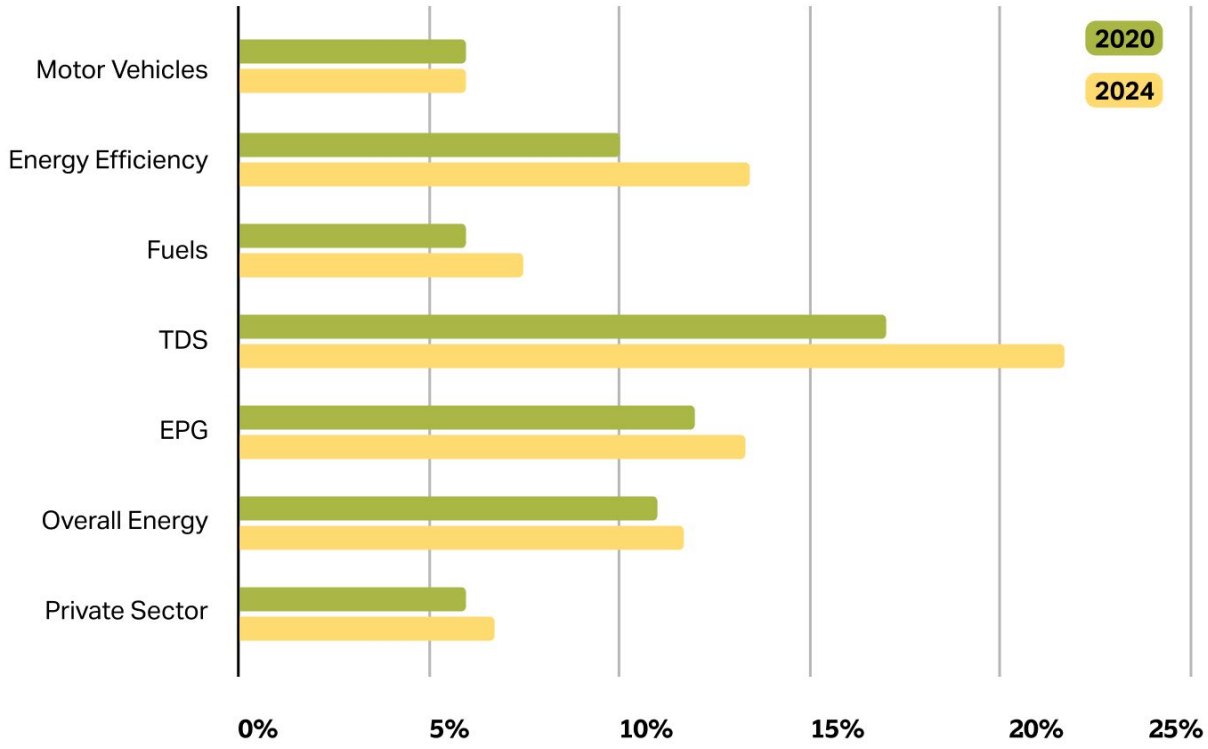
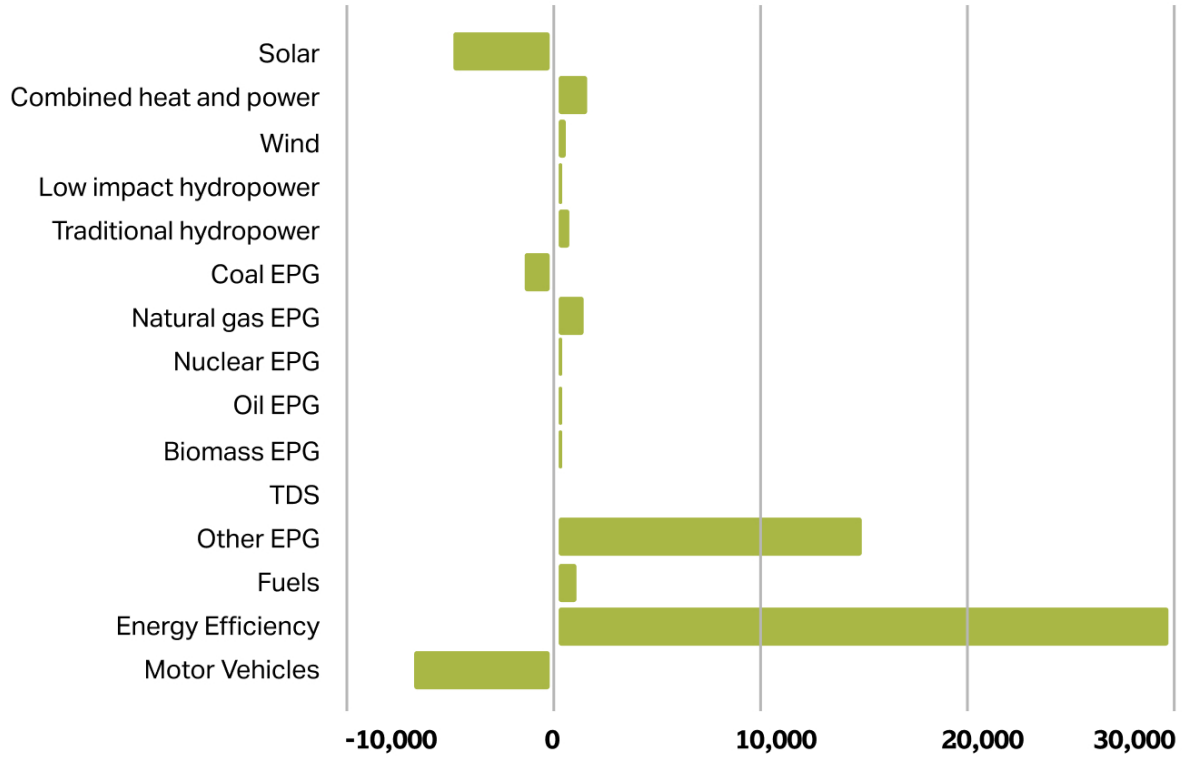


Figure 16 shows the change in union jobs from 2023 to 2024. As the motor vehicle sector lost jobs in 2024, there was also a loss of union jobs in that sector: 14% of the motor vehicle jobs lost in 2024 were union jobs. Solar and coal electric power generation also showed a reduction in union jobs.

Figure 16. Change in Union Jobs, 2023 to 2024

The total number of union jobs in energy increased by 35,797, or 3.7% growth, from 2023, and 34% of net new energy jobs were union jobs or covered by collective bargaining agreements.



Wages

2024 was the first year in which the USEER survey collected wage and benefits data for workers across the energy economy, and the 2025 DOE report covers this in detail. The median wage for the energy sector in 2024 was $58,810 – 18.8% higher than the median wage across sectors nationwide at $49,500. Table 7 provides the average wage across sectors compared with the U.S. average. The 2025 USEER further breaks down 2024 wages in each technology by primary occupations and shows wages for low, medium and high earners.

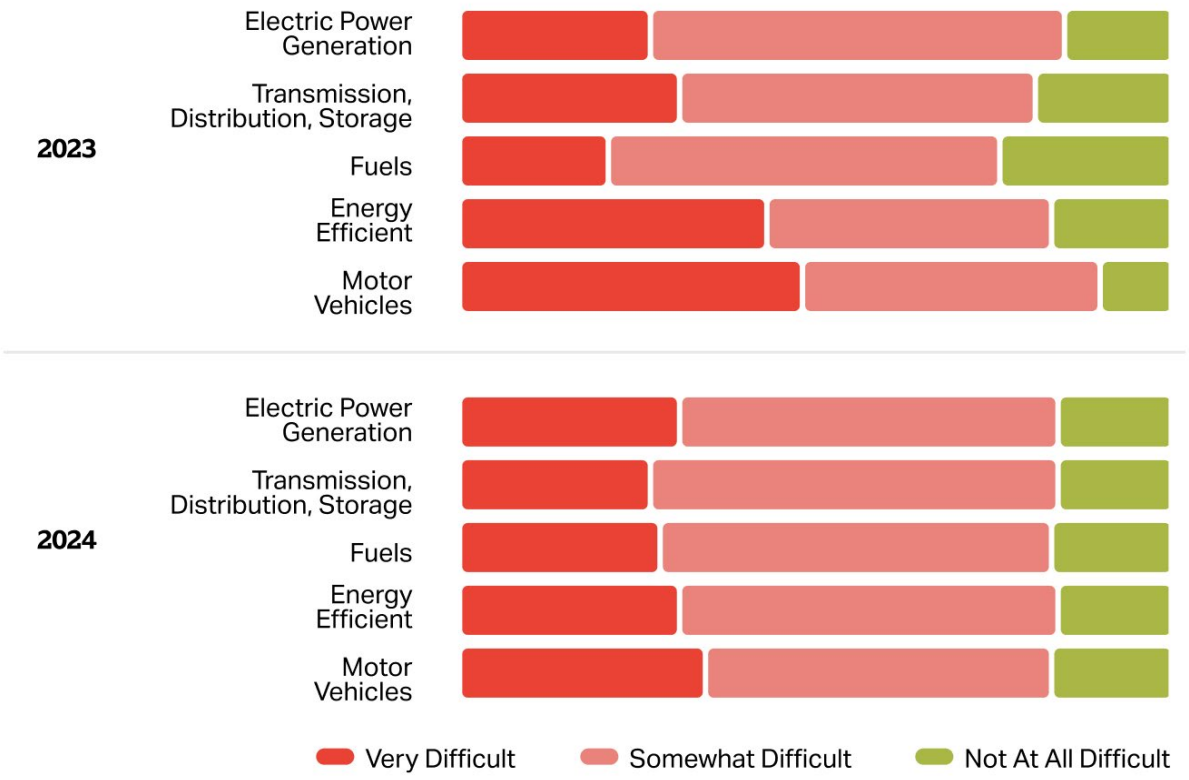
Table 7.
Median Wage Across Energy Sector and U.S. National Average

U.S. Average	Fuels	Electric Power Generation	Transmission, Distribution, and Storage	Energy Efficiency	Motor Vehicles and Component Parts
$49,500	$62,780	$65,430	$59,840	$59,390	$53,620

Employers' Perspectives on Workforce Issues

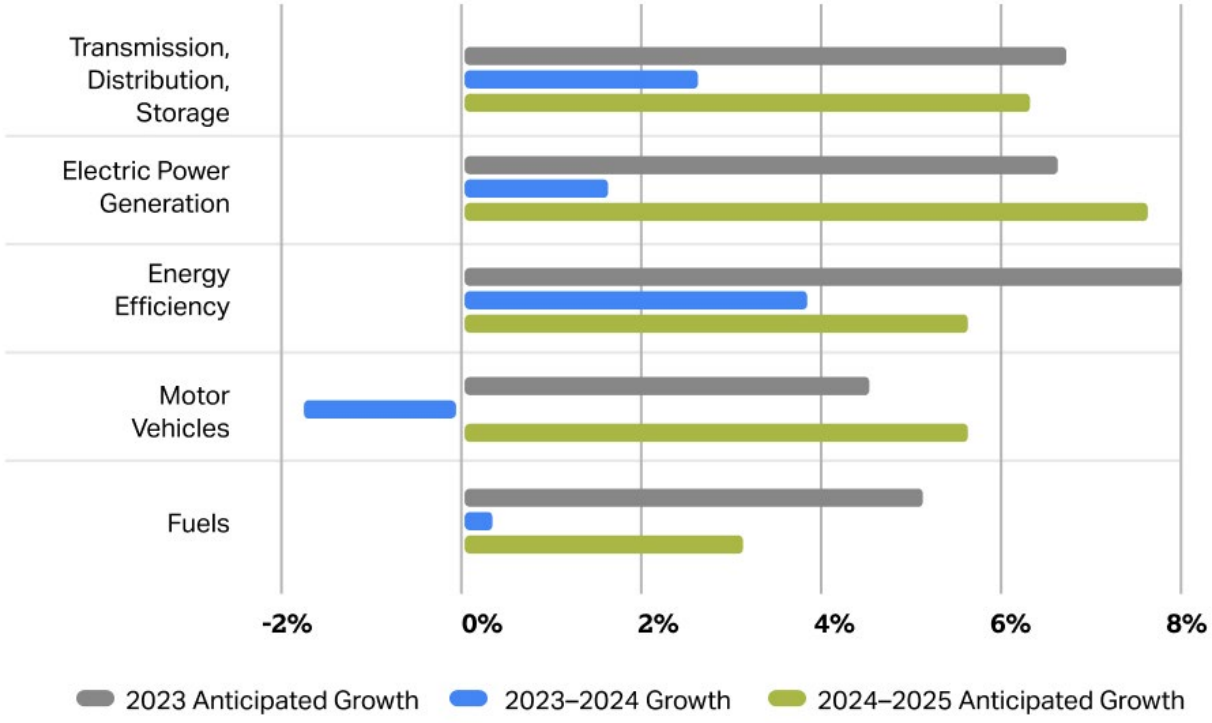
USEER collects data on employers' perspectives on finding qualified workers and anticipated growth. Figure 17 shows that in comparison to 2023, the share of employers finding hiring "very difficult" declined for motor vehicles, energy efficiency, and TDS. Employers reporting finding hiring "very difficult" increased for fuels and EPG.

Figure 17.
Hiring Difficulty by Technology



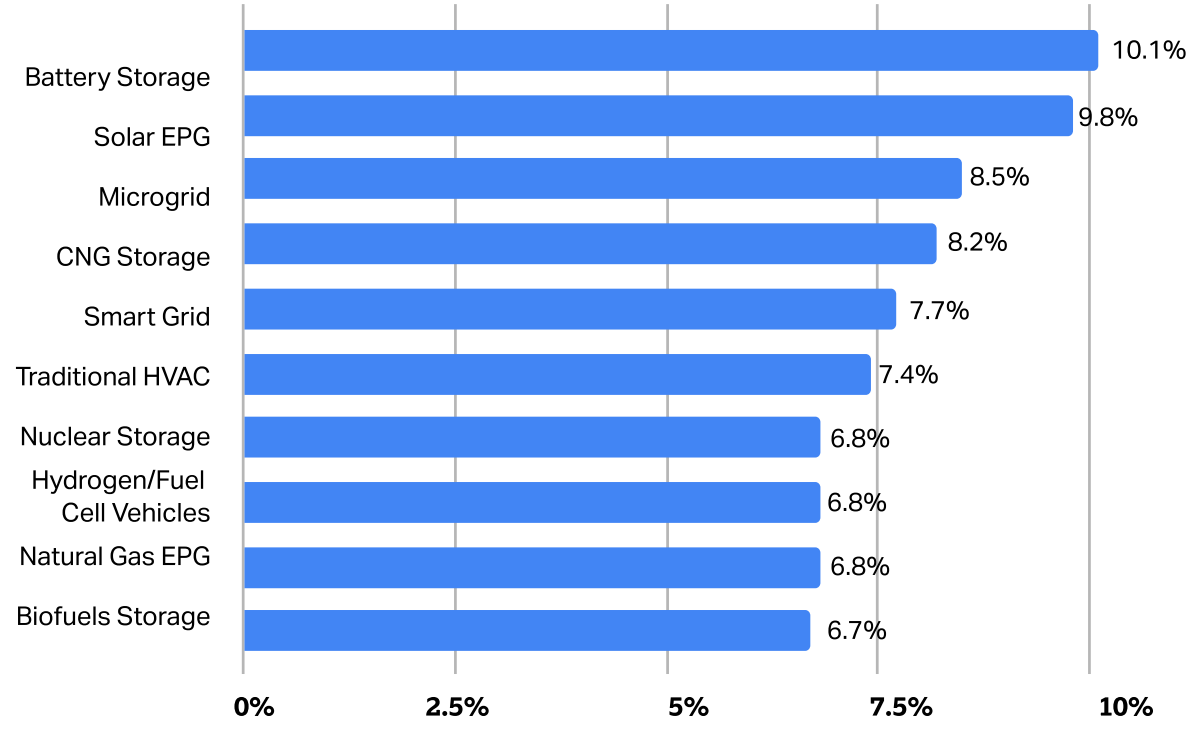
Employers' expectations of future growth are often unreliable predictions of actual job growth. Figure 18 shows actual employment changes by technology from 2023 to 2024 compared with employer expectations in 2023. In the 2024 report, employment in TDS and fuels surpassed employers' expectations from 2022 to 2023. The 2025 USEER data shows that all technology sectors experienced far less growth than employers anticipated. Despite an overall slow year of growth across the energy job sector, employers remained optimistic for job growth from 2024 to 2025.

Figure 18.
Anticipated Employment Change in 2023 and 2024 vs. Actual Employment Change, 2023 to 2024



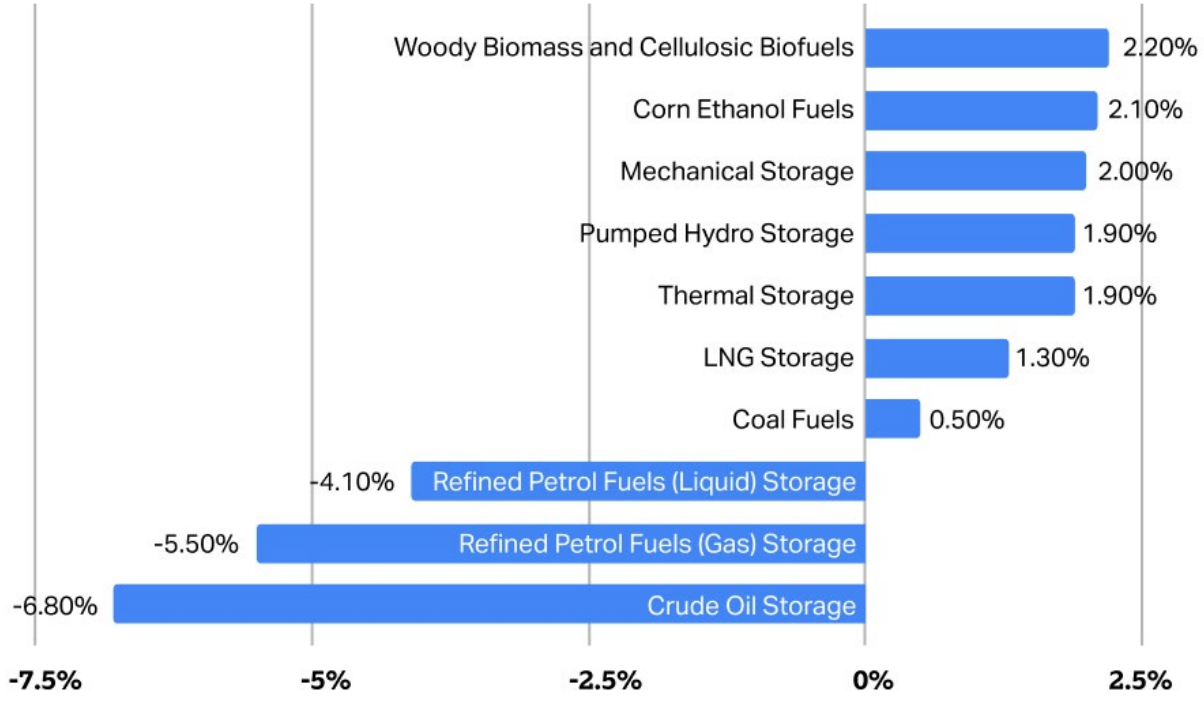
The subsectors with the highest rates of optimism are shown in Figure 19. Employers anticipated the most growth in battery storage and solar EPG in 2025.

Figure 19.
Highest Anticipated Growth by Detailed Technology for 2025



The subsectors with the lowest rates of optimism are shown in Figure 20, with the least anticipated growth coming from refined petrol fuels and crude oil storage.

Figure 20.
Lowest Anticipated Growth by Detailed Technology for 2025



State-by-State Comparisons

The 2025 USEER report includes state-level fact sheets and country-level data. Figure 21 shows the distribution of energy jobs by state. Figure 22 shows energy job growth and losses across the U.S. In Figure 22, the top five states for overall energy job gains in 2024 were Texas (+16,352), California (+8,917), Florida (+6,923), New York (+5,958), and Georgia (+5,412), largely driven by increases in energy efficiency. Five states experienced overall energy job losses, largely driven by changes in motor vehicles and fuels: Indiana (-6,407), Ohio (-3,376), Kentucky (-1,298), North Dakota (-719), and West Virginia (-264).

Figure 21.
Heat Map of Overall Energy Jobs by Number of Jobs, 2024

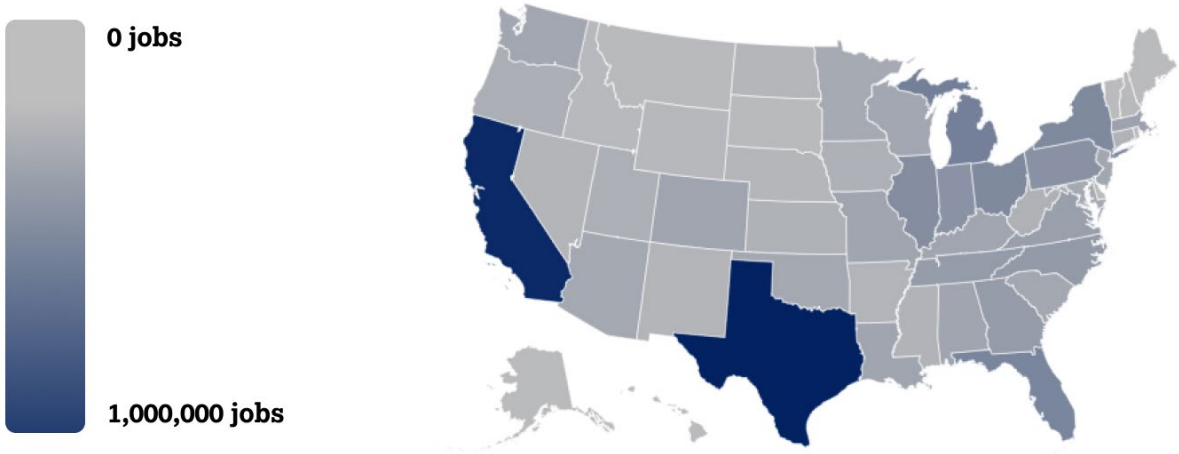


Figure 22.
Heat Map of Overall Energy Job Change, by Number of Jobs 2023 to 2024

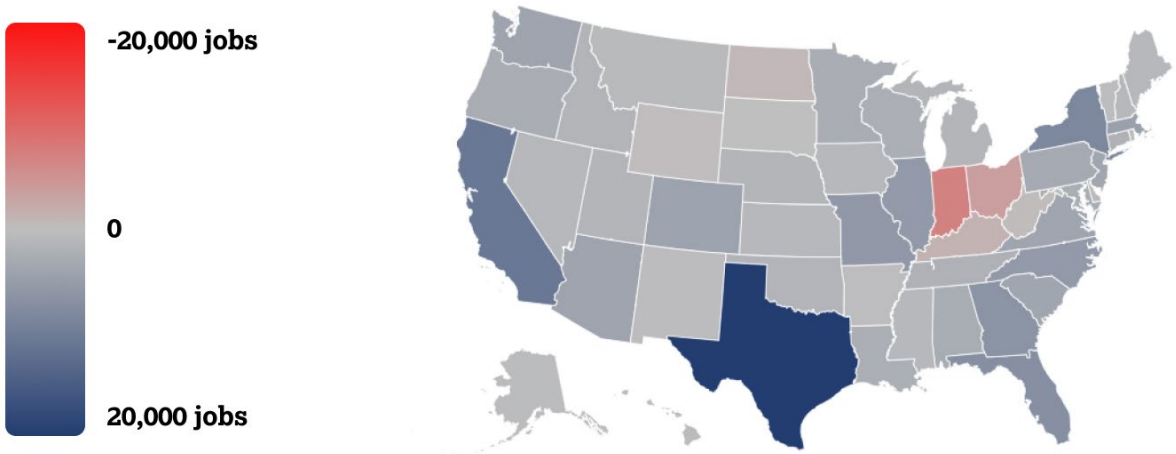


Figure 23 shows the top industry by state in terms of number of energy jobs. Figure 24 shows the technology sector with the largest percent increase in jobs 2024.

Figure 23.
Industry with Largest Number of Energy Jobs by State in 2024

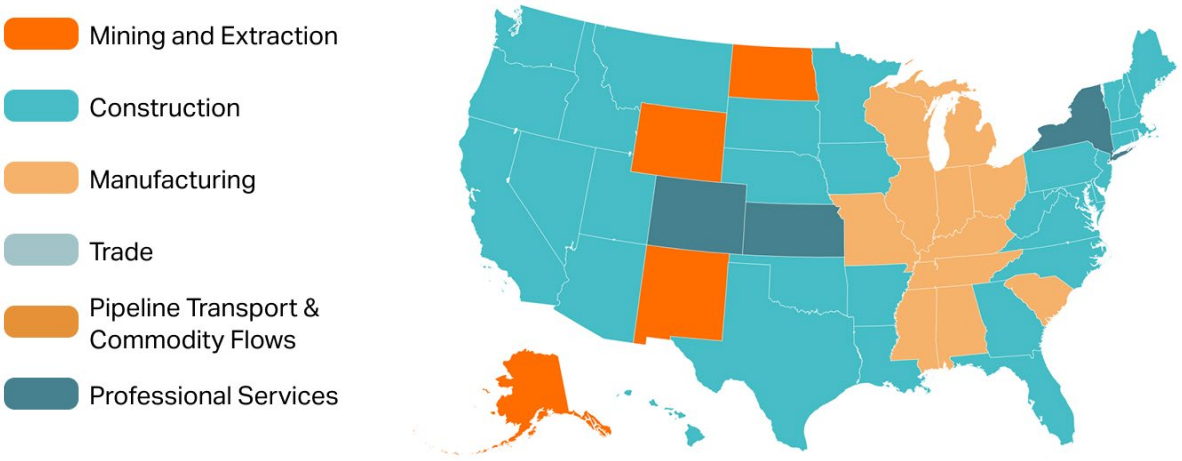
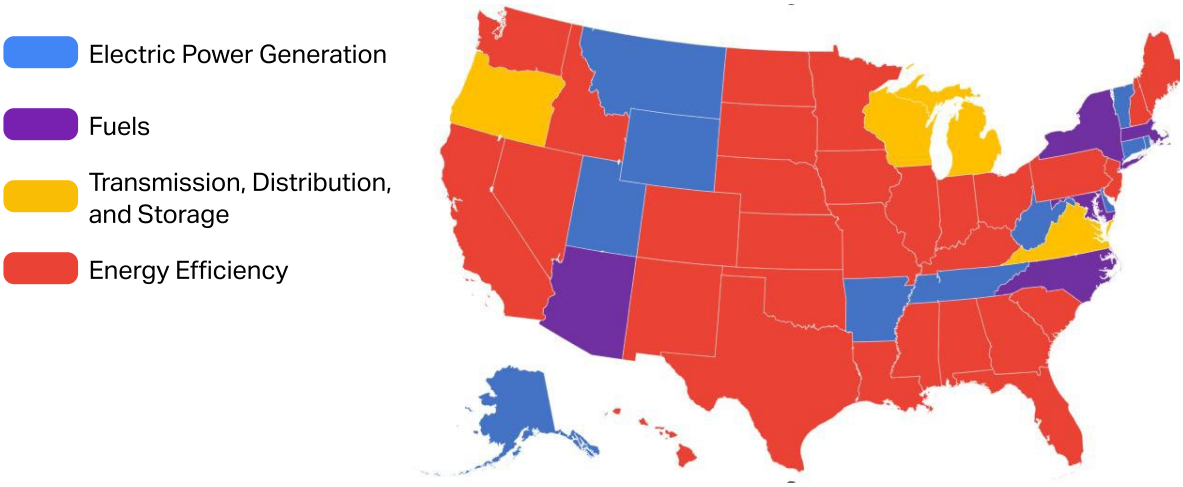


Figure 24.
Technology Sector Largest Percent Increase in Energy Jobs from 2023 to 2024



Overwhelming, the most energy jobs in 32 states and the District of Columbia are in the construction industry. The construction industry encompasses the skilled trades and contracting firms that build, install, and retrofit energy infrastructure. This includes many jobs such as electricians, plumbers, pipefitters, carpenters, equipment operators, roofers, and general laborers engaged in constructing power plants, renewable energy systems, transmission lines, building retrofits, and energy-efficient structures. Workers in this sector are responsible for turning designs into reality — installing solar panels, erecting wind turbines, wiring EV charging stations, upgrading HVAC systems, and implementing building efficiency improvements. Construction industry employment in energy reflects both new clean energy installations and modernization of existing fossil and utility infrastructure, making it one of the largest and most directly impacted industries in the energy transition.

There is a strong manufacturing belt through the midwest to the south. Manufacturing in the energy economy spans a wide range of facilities — from small precision-part producers to large industrial plants — and plays a pivotal role in domestic supply chains, industrial competitiveness, and job creation tied to the clean energy economy. Fossil energy resources are likely responsible for the highest concentration of energy jobs in the mining and extraction industry in Wyoming, North Dakota, Alaska, and New Mexico.

Figure 24 shows the technology sector with the largest percent increase in jobs 2024. 30 states saw the greatest increase in energy efficiency, and 11 states saw the greatest increase in EPG jobs. The other states saw the highest percent growth in TDS and fuels.

The following maps show clean energy trends across states by technology sector. Figure 25 shows the clean or zero emission technologies providing the greatest number of jobs in each state, while Figure 26 is a more granular breakdown showing which subsectors of clean or zero emission technologies have the highest level of employment by state.

Energy efficiency (which saw the most job gains of any technology sector) dominates across most states, showing widespread adoption of efficiency retrofits. Across most of the U.S., high efficiency HVAC and other renewable heating/cooling jobs led, followed by subsectors in efficient lighting. States in yellow lead in jobs related to grid upgrades, storage integration, and new transmission lines.

Figure 25.
Technology Sector for Clean or Zero Emissions with Largest Number of Energy Jobs in 2024

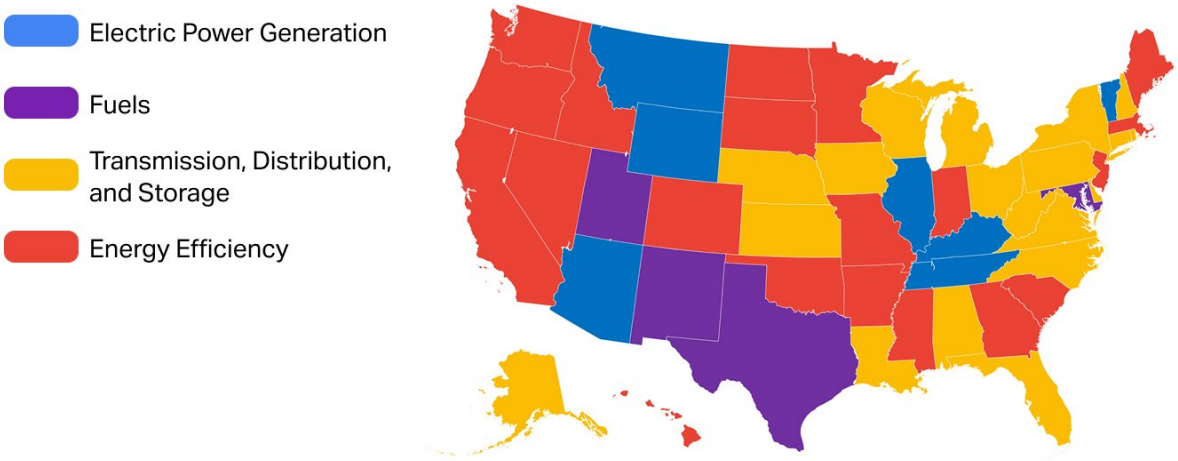


Figure 26.
Technology Subsector for Clean or Zero Emissions with with Largest Number of Energy Jobs in 2024

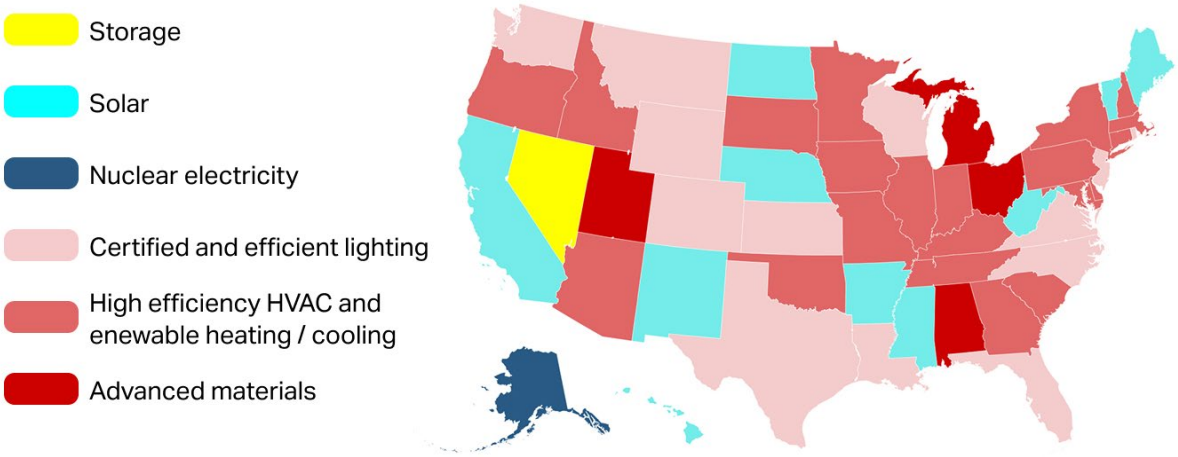
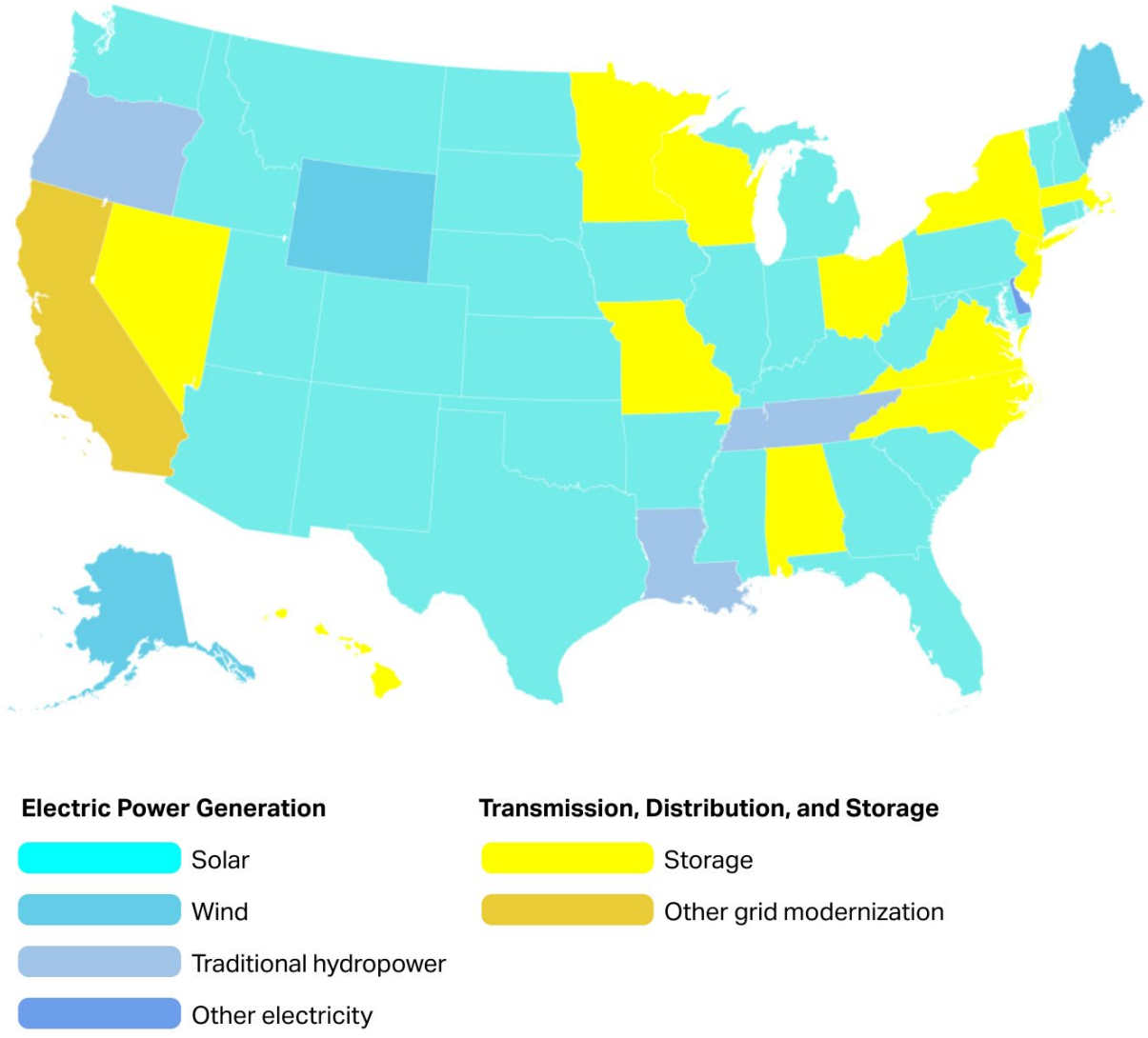


Figure 27 shows the highest growth in the clean or zero emission employment subsector. The breakdown of clean energy employment by state reflects howthe clean energy transition is geographically diverse — with each region contributing in different ways to national decarbonization goals.

Figure 27.
Clean or Zero Emission EPG and Non-Traditional TDS Subsector with Highest Growth in Jobs (2024)



Two-thirds of storage jobs are associated with electricity storage for grid services. Figures 28 and 29 show the highest levels of employment and growth in 2024 among EPG subsectors plus storage. Solar dominates in both highest EPG employment and job gains across most of the U.S. Figure 29 is an indicator of where states are shifting their energy investments. For example, while coal EPG accounted for the most energy jobs in Wisconsin in 2024, storage was responsible for the largest job gains. In Texas, Idaho, Iowa, and Indiana, wind represents the greatest number of EPG jobs, but solar saw the most year-over-year gains. Storage accounts for the greatest number of jobs in 5 states and was responsible for the greatest growth in 9 states.

Figure 28.
EPG + Storage Largest Number of Energy Jobs in 2024

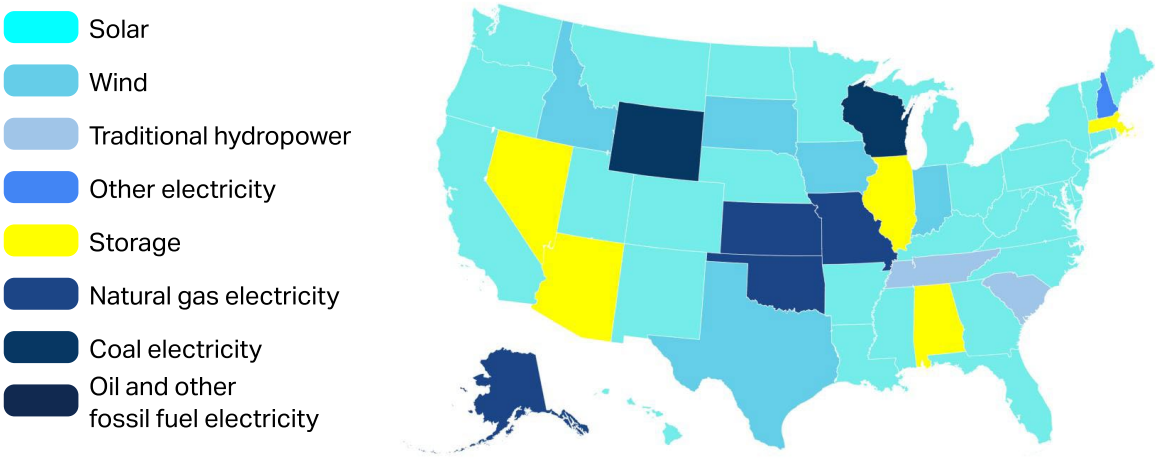
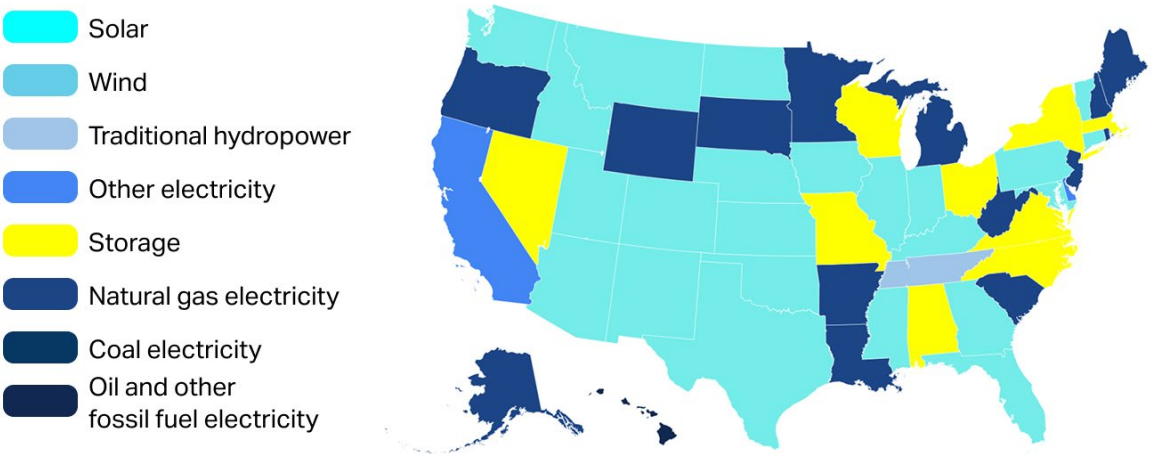


Figure 29.
EPG + Storage Largest Growth in Jobs from 2023 to 2024



Figures 30 and 31 provide a highly granular look at where different parts of the energy economy are concentrated, with each color representing the largest source of energy-related jobs by sector (Figure 30) and subsector (Figure 31) in that county. While state-level data shows certain patterns, there is high variability across counties. The dominant technology for energy jobs at the county level is motor vehicles, which includes manufacturing, sales, maintenance, and repairs. There is a fuel belt through the middle of the country and clustered in oil, gas, and coal producing regions. Transmission, distribution, and storage and electric power generation are large sources of energy jobs in many counties.

Figure 30.
Sector with Highest Number of Jobs by County, 2024

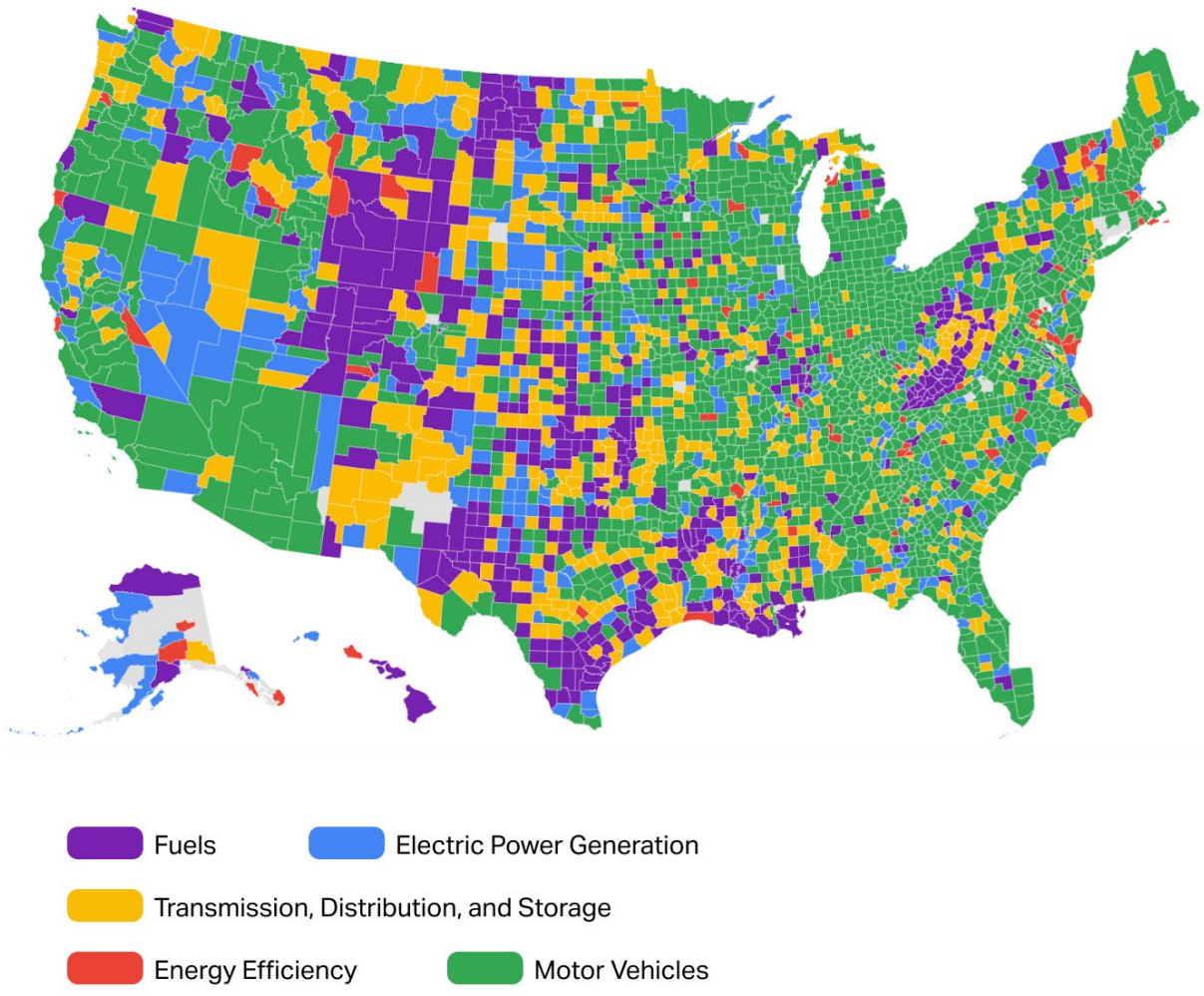
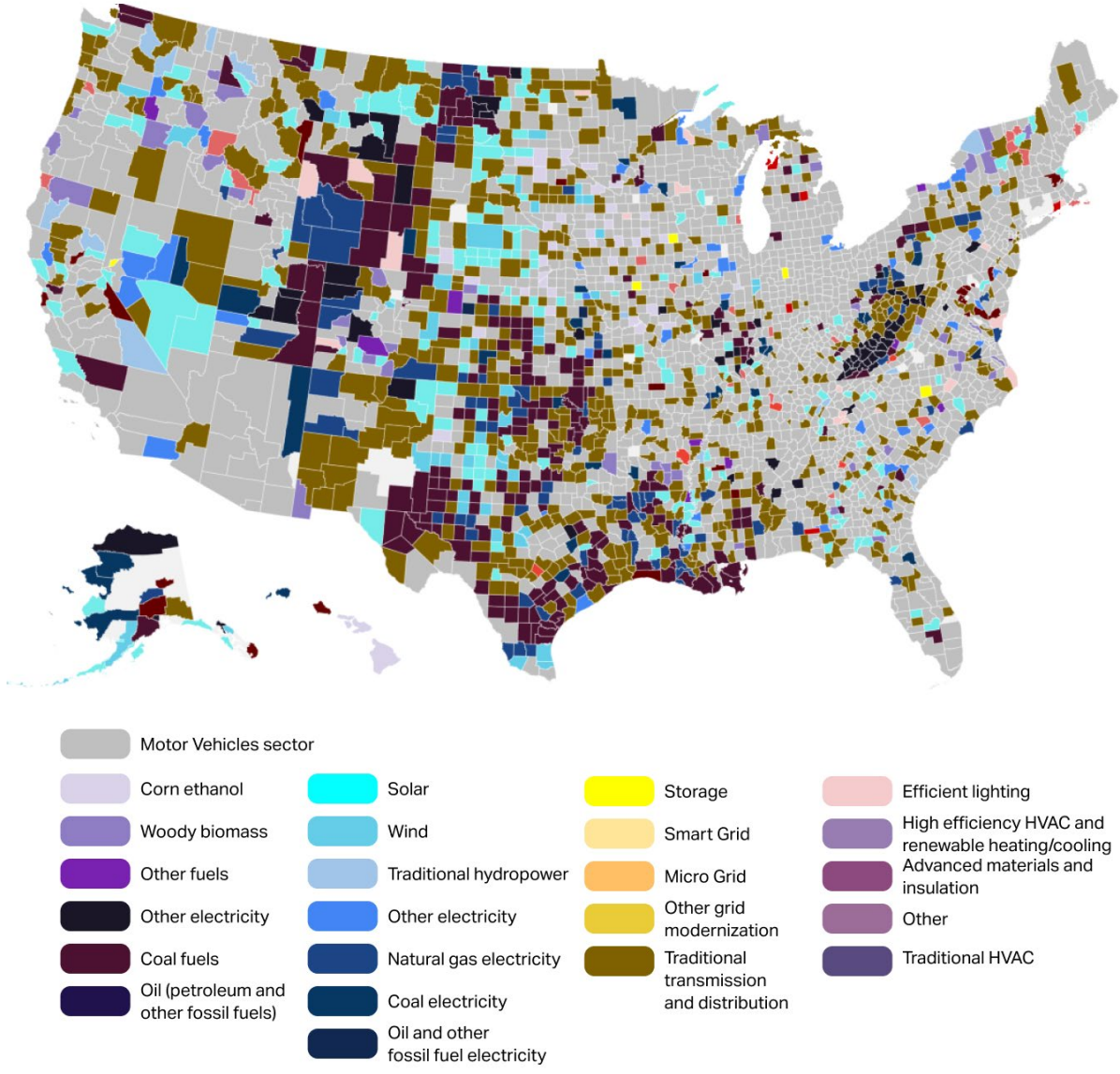


Figure 31 shows the subsector with the highest employment by county. Motor vehicle subsectors were not broken out at the county level by DOE this year. Even with the high growth of clean energy jobs, fossil resources remain the largest source of energy jobs in many counties. The dark blues and purples show coal, oil, and gas fuels. Yellow-brown shows transmission and distribution, which is a large source of energy jobs in many counties, and the sector with the highest growth of energy jobs in all but 10 states. There is a band of counties across the middle of the country where wind and solar are the subsectors with the most jobs, and counties across the country where ethanol and woody biomass are the largest sources of energy jobs. Figure 31 depicts a dynamic and diverse energy system — one that leverages the unique energy resource assets of different communities while also creating new hubs of manufacturing and efficiency investments.

Figure 31.
Subsector with Highest Number of Jobs by County, 2024



Conclusion

For four years in a row, from 2021 to 2024, the U.S. experienced steady growth in overall energy energy employment, driven by particularly strong growth in clean energy. Since the end of 2021, 638,800 energy jobs have been added to the U.S. economy. 72% of them (456,800) were in clean energy. In 2024, investments in and maintenance of transmission and distribution networks supported jobs and job growth across the country. Storage, solar, and wind also saw continued growth. Energy efficiency jobs grew in every state in the country. Unionization rates in energy continued to climb, with 1 of every 3 net new jobs covered by a collective bargaining agreement.

Recent policy changes, however, complicate the path ahead. Federal priorities under the new administration have shifted decidedly away from clean energy, and a series of project cancellations have followed. At the same time, many projects are now accelerating in a bid to qualify for investment and production tax credits that now expire much earlier. It will be important to track employment trends in the future, to ensure the U.S. has the workforce it needs to support a 21st-century energy system.