

CLEAN JOBS AMERICA 2024

IRA DRIVES CLEAN ECONOMY JOB SURGE

E2'S NINTH ANNUAL ANALYSIS OF U.S. AND STATE CLEAN ENERGY SECTOR EMPLOYMENT



METHODOLOGY

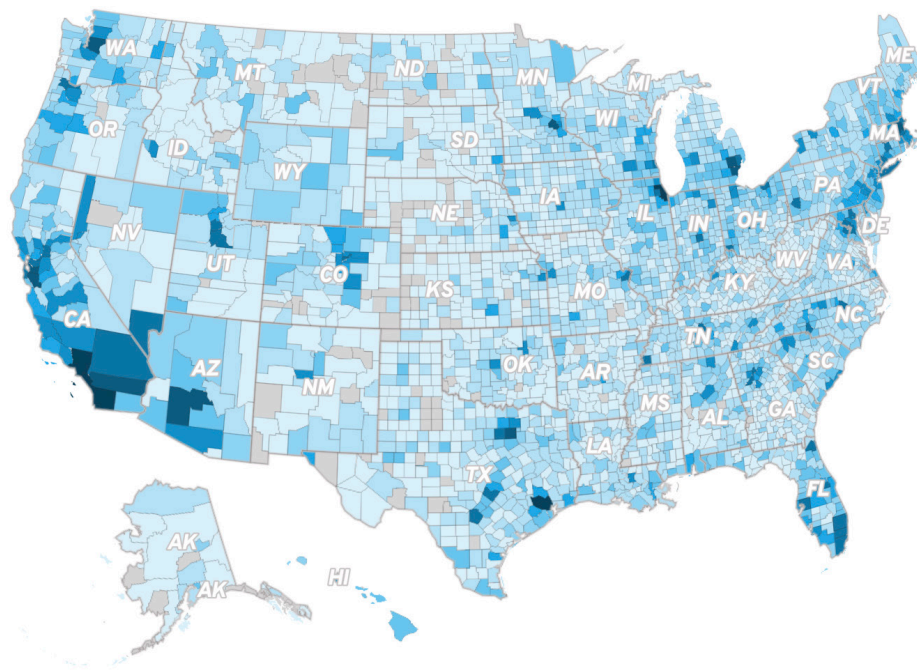
This analysis is based on employment data collected and analyzed by BW Research Partnership for the 2024 U.S. Energy and Employment Report (USEER). The USEER analyzes data from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) to track employment across many energy production, transmission and distribution subsectors.

In addition, the 2024 USEER relies on a unique supplemental survey of 42,000 business representatives across the United States. Created and conducted by BW Research, the methodology has been approved by the Office of Management and Budget (OMB) and U.S. Department of Energy (DOE). This supplemental survey is used to identify energy-related employment within key subsectors of broader industries as classified by the BLS, and to assign them into their component energy and energy efficiency sectors.

ABOUT THIS REPORT

This is the ninth annual Clean Jobs America report produced by E2 based on analysis of the USEER, which was first released by the DOE in 2016. E2 was an original proponent of the DOE producing the USEER, and was a partner on the 2018, 2019, and 2020 reports produced by the Energy Futures Initiative (EFI) and National Association of State Energy Officials (NASEO) when the DOE decided not to produce the USEER after 2017.

For additional insight into E2's Clean Jobs America 2024, including exploring the data via an interactive map, visit cleanjobsamerica.e2.org.



What we include are jobs in solar energy, wind energy, combined heat and power, bioenergy, non-woody biomass, low-impact hydro power, hydrokinetic and wave energy, geothermal, electric vehicles, hybrid electric vehicles, plug-in hybrid vehicles, hydrogen and fuel-cell vehicles, clean energy storage, smart grid, micro grid, grid modernization, advanced biofuels, and energy efficiency including ENERGY STAR and high-efficiency appliances, efficient lighting, HVAC, renewable heating and cooling, and advanced building materials. The clean energy occupations covered in this report span economic sectors including agriculture, utilities, construction, manufacturing, wholesale trade, professional services, and other services.

What we do not include are jobs for workers who may spend some of their time in clean energy but a plurality in another energy sector. For example, workers employed by an excavation business might spend the majority of their time grading and preparing drilling pads for oil or gas rigs, but they also might spend a portion of their time preparing sites for wind turbines or large solar installations. If clean energy does not account for a plurality of their work, those workers would not be counted as being employed in the clean energy economy but would instead be counted as part of another energy sector. We also do not include any jobs in traditional transmission and distribution due to an inability to accurately segment out workers by electricity source, despite many of those jobs being critical to the increased electricity from renewable generation used by the grid. Lastly, we do not include jobs in corn ethanol, woody biomass, large or traditional hydroelectric, and nuclear because of environmental issues associated with those industries. Jobs in retail trade, repair services, water or waste management, and indirect employment or induced employment are also not included.

ABOUT THE JOB SECTORS ANALYZED

- // **Renewable Generation:** jobs in solar energy, wind energy, combined heat and power, bioenergy, low-impact hydroelectric and hydrokinetic energy, and geothermal energy.
- // **Energy Efficiency:** jobs in ENERGY STAR appliances; LED, CFL, and other efficient lighting; traditional heating, ventilation, and air-conditioning systems (HVAC); high-efficiency HVAC; renewable heating and cooling; advanced building materials/insulation; and other services not specific to a detailed technology.
- // **Clean Vehicles:** jobs in plug-in hybrid vehicles, all-electric vehicles, hybrid electric vehicles, natural gas vehicles, and hydrogen and fuel-cell vehicles.
- // **Storage & Grid:** jobs in clean energy and battery storage technologies as well as microgrids, smart grids, and overall modernization of the U.S. electricity transmission and distribution system.
- // **Biofuels:** jobs in biofuels and biomass, excluding corn ethanol and woody biomass.

Other energy employment sectors analyzed in this report include:

- // **Total Energy Economy:** all employment in the U.S. energy industry as defined by the USEER, including both clean and traditional energy jobs across fuels; electric power generation; motor vehicles; energy efficiency; and transmission, distribution, and storage (TDS).
- // **Fossil Generation:** jobs in coal, natural gas, or petroleum electric power generation.
- // **Fossil Fuels:** all jobs related to fuel extraction, mining, and processing, including petroleum refineries and firms that support coal mining, oil, and gas field machinery manufacturing.
- // **Gas & Diesel Vehicles:** jobs in vehicles that run on gasoline and diesel internal combustion engines.

EMPLOYMENT YEARS ANALYZED

- // **2024:** Refers to state of employment at the beginning of 2024 (Q4 2023).
- // **2023:** Refers to state of employment at the beginning of 2023 (Q4 2022).
- // **2022:** Refers to state of employment at the beginning of 2022 (Q4 2021).
- // **COVID-19 Impact:** Refers to state of employment at the beginning of 2021 (Q4 2020)
- // **Pre-COVID-19 Impact:** Refers to state of employment at the beginning of 2020 (Q4 2019)

ENERGY TECHNOLOGY DEFINITIONS

Solar: Generating electricity using solar radiation (PV generation), solar thermal energy, or concentrated sunlight.

Wind: Generating electricity from wind's kinetic energy.

Geothermal: Using naturally produced steam found below the Earth's surface to produce electricity.

Low-Impact Hydroelectric/Hydrokinetic and Wave Energy: Similar to traditional hydroelectric, but certification criteria are aimed at ensuring the certified dam adequately protects or mitigates its impacts to river flows, water quality, fish passage and protection, watersheds, threatened and endangered species, cultural resources, and public access and recreation.

Biomass/Bioenergy: Electricity from materials derived from biological sources or any organic material.

Combined Heat and Power (CHP): Generating electricity and useful thermal energy in a single, integrated system. Heat that is normally wasted in conventional power generation is recovered as useful energy.

Storage: Includes pumped hydro storage, battery storage, thermal storage, and mechanical storage detailed technologies.

Microgrid: Group of interconnected distributed energy resources that acts as a single controllable entity with respect to the grid.

Smart Grid: An electricity supply network that uses communications technology to detect and react to local changes in usage.

Grid Modernization: Other modernization of the U.S. electricity transmission and distribution system.

ENERGY STAR Appliances: Energy efficient appliances that meet the international ENERGY STAR standard for energy efficient consumer products originated in the U.S.

Efficient Lighting: LED, CFL, and other energy efficient lighting sources.

Traditional HVAC: Services related to heating, ventilation, and air-conditioning systems (HVAC), including building retro-commissioning and retrofits connected to heating and cooling.

High-Efficiency HVAC: HVAC that meets the international ENERGY STAR standard for energy efficient consumer products originated in the U.S. or has high Average Fuel Utilization Efficiency (AFUE) rating of 90 or greater or 15 SEER or greater.

Renewable H&C: HVAC from renewable generation sources or work that increases the energy efficiency of HVAC systems.

Advanced Materials: All materials that represent advances in efficiency in buildings over traditional materials, including insulation.

Other (EE): All other services related to improving energy efficiency, including reducing water consumption, energy audits, and maintenance.

Other Biofuels: Other fuel derived directly from biomatter.

Other Ethanol/Non-Woody Biomass: Fuel made from other materials such as straw, manure, vegetable oil, animal fats, etc.

Electric Vehicles: Type of vehicle which uses one or more electric motors for propulsion, recharges with batteries and has no onboard generator or non-electric motor.

Plug-In Hybrids: A hybrid electric vehicle that uses two or more distinct types of power, such as internal combustion engine and an electric motor powered by rechargeable batteries, or another energy storage device.

Hybrid Electric Vehicles: Vehicles that use two or more distinct types of power, such as internal combustion engine plus electric motor.

Hydrogen Vehicles: Type of vehicle that uses hydrogen as its onboard fuel for motive power.

Fuel-Cell Vehicles: Type of hybrid vehicle which uses a fuel cell, instead of an engine, in combination with a storage device, such as a battery, to power its on-board electric motor.

CLEAN JOBS AMERICA 2024¹

INFLATION REDUCTION ACT DRIVES BIG GAINS IN CLEAN ENERGY JOBS

Clean energy companies added almost 150,000 jobs in 2023, growing more than three times faster than overall U.S. employment to 3,460,406 clean energy jobs nationwide. Last year's jobs spike corresponds with the first full year of historic clean energy investments and incentives under the landmark federal Inflation Reduction Act (IRA). Only the post-pandemic recovery surge of 2021 (152,000 jobs) added more new jobs in a single year.

Every clean energy sector grew at least twice as fast as overall national employment. Clean vehicles saw double-digit growth for the third consecutive year. Energy efficiency continued to lead the clean economy in total jobs. Jobs in manufacturing and other services (including vehicle maintenance and repair) accounted for nearly 60 percent of all new clean energy jobs.

Over the past three years, clean energy jobs increased 14 percent to nearly 3.5 million workers. By comparison, that's more jobs than there are nurses nationwide.²

The 149,170 new clean energy jobs created in 2023 accounted for 6.4 percent of all jobs created economy-wide, and nearly 60 percent of all jobs in the entire energy sector.

This growth sets the stage for the next several years as the industry begins to feel the full impact from historic investments and incentives in the IRA. Three hundred and forty major new clean energy projects have been announced across 40 states and Puerto Rico since the IRA passed.³ In those announcements, companies have said they are creating more than

109,000 new jobs while investing over \$126 billion in private-sector capital.⁴

The states with the most clean energy jobs remained unchanged from 2023, led by California (540,000) and Texas (268,000) and followed by New York, Florida, Illinois, Michigan, Massachusetts, Ohio, North Carolina, and Pennsylvania all with at least 100,000 jobs. Clean energy employment grew by more than 6 percent in five states (Texas, Kentucky, Alabama, West Virginia, New Mexico).

KEY FINDINGS

3.5M

ALMOST 3.5 MILLION AMERICANS WORKED IN CLEAN ENERGY AT THE START OF 2024

58%

OF OF ALL NEW JOBS IN ENERGY SECTOR WERE IN CLEAN ENERGY

1 in 16

NEW JOBS NATIONWIDE WERE IN CLEAN ENERGY

42,000

CLEAN ENERGY MANUFACTURING JOBS ADDED IN 2023

200%

CLEAN ENERGY JOBS GREW 200% FASTER THAN JOB GROWTH ECONOMYWIDE

SECTOR SUMMARY HIGHLIGHTS



RENEWABLE GENERATION: Renewable generation sectors added more than 25,000 jobs in 2023, led by solar (+18,400) and wind (+5,700). In all, almost 560,000 Americans now work in renewable generation—a 14 percent increase since 2020.



ENERGY EFFICIENCY: Energy efficiency remains the single-largest employer across the entire energy sector, employing nearly 2.3 million Americans. The sector accounted for half of all new clean energy jobs in 2023, adding nearly 75,000 workers (+3.4%).



STORAGE AND GRID MODERNIZATION: The storage and grid modernization sector added over 7,000 jobs (+4.6%) and now supports nearly 160,000 workers—more than there are highway maintenance workers.⁵ Jobs making power grids more resilient and able to handle more wind and solar generation led the sector, growing 5 percent followed by battery and energy storage (+4.3%). Since 2020, the sector increased employment by 15 percent.



CLEAN VEHICLES: Clean vehicle makers continue to lead all sectors in growth, adding over 40,000 jobs (+11.0%). Electric vehicles (EVs) led the sector, adding over 17,000 jobs (+12.9%), followed closely by hybrid EVs with 15,900 jobs added (+10.5%). Over the past three years, clean vehicle jobs have jumped nearly 60 percent. The sector continued to outgrow the gas- and diesel-powered vehicle industry (+1.5%) and now employs over 410,000 workers.

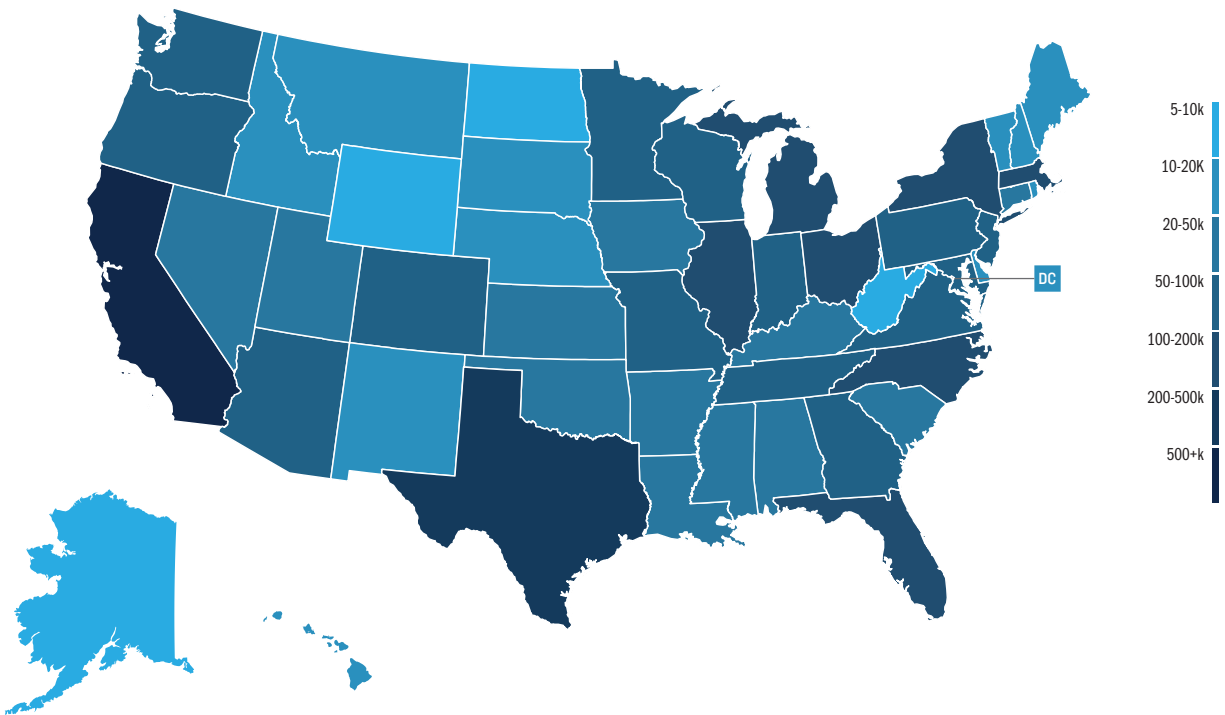


BIOFUELS: The smallest clean energy sector, biofuels added over 1,200 jobs in 2023. Since 2020, the sector has increased employment by 12 percent to more than 41,000 workers—more than there are air traffic controllers and airfield specialists nationwide.⁶

U.S. CLEAN ENERGY ECONOMY 2024 at a glance

- // Energy efficiency continues to account for the most clean energy jobs with nearly 2.3 million workers, followed by renewable generation and clean vehicles jobs.
- // Almost half of all clean energy jobs continue to be in construction (1.6 million), followed by professional services (740,600) and manufacturing (534,000).
- // The Top 10 states for total clean energy jobs remain unchanged (Illinois and Michigan flip places), but for the first time all Top 10 states were home to at least 100,000 clean energy workers.

FIG 1 // U.S. CLEAN ENERGY EMPLOYMENT by total clean energy workforce



TOP 10 STATES

1	California: 544,604	6	Michigan: 127,690
2	Texas: 268,035	7	Massachusetts: 123,403
3	Florida: 175,572	8	Ohio: 119,241
4	New York: 173,731	9	North Carolina: 109,723
5	Illinois: 128,871	10	Pennsylvania: 100,704

TOP 10 COUNTIES

1	LA County (CA) 101,437	6	Maricopa County (AZ) 49,919
2	Harris County (TX) 65,535	7	New York County (NY) 49,103
3	Orange County (CA) 58,520	8	Santa Clara County (CA) 49,069
4	Cook County (IL) 55,815	9	Alameda County (CA) 37,777
5	San Diego County (CA) 53,965	10	Middlesex County (MA) 37,337

To explore clean energy jobs maps further, visit cleanjobsamerica.e2.org

FIG 2 // U.S. CLEAN ENERGY EMPLOYMENT by sectors

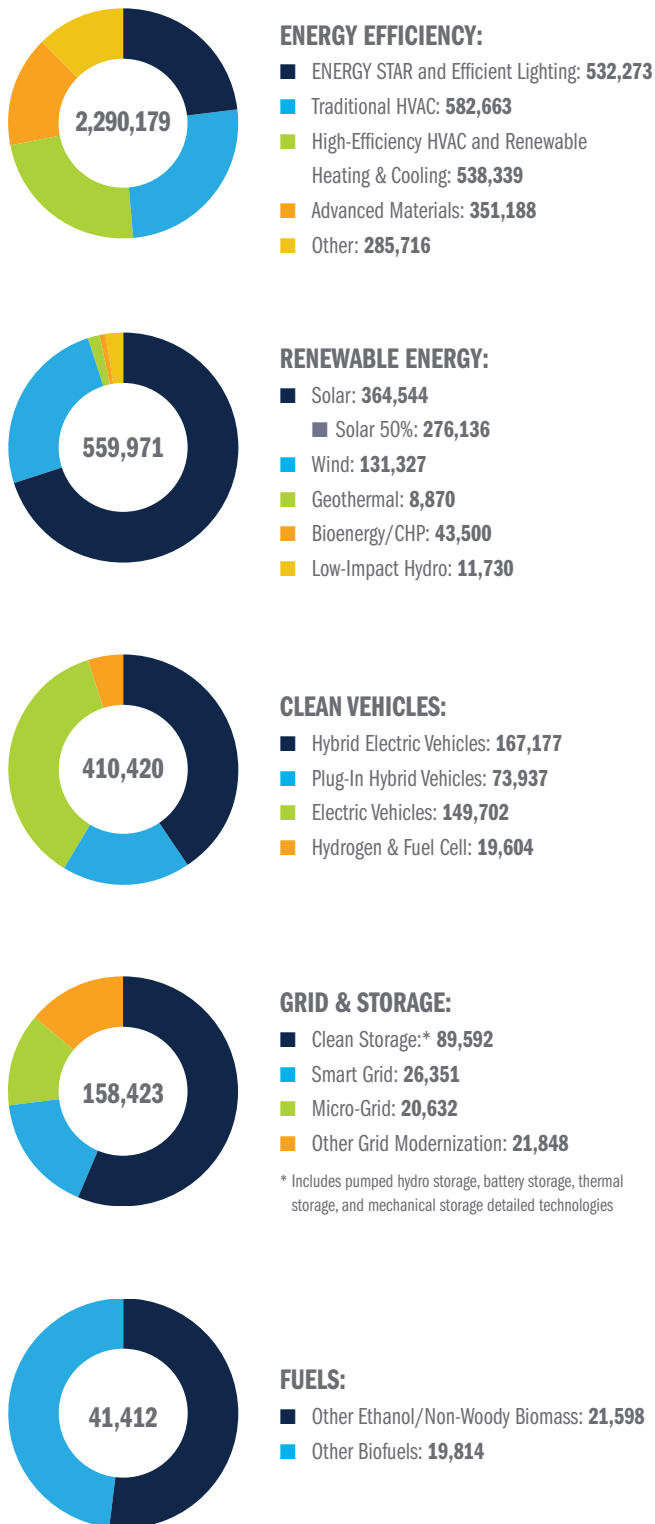


FIG 3 // U.S. CLEAN ENERGY EMPLOYMENT by value chain

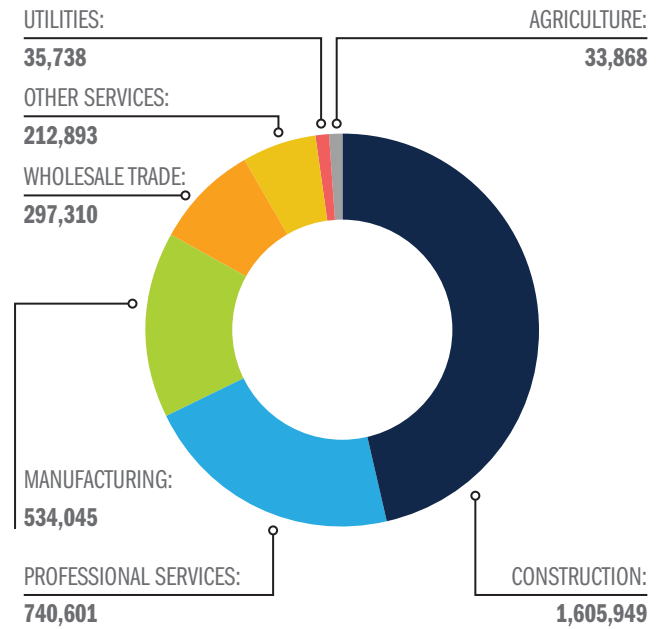
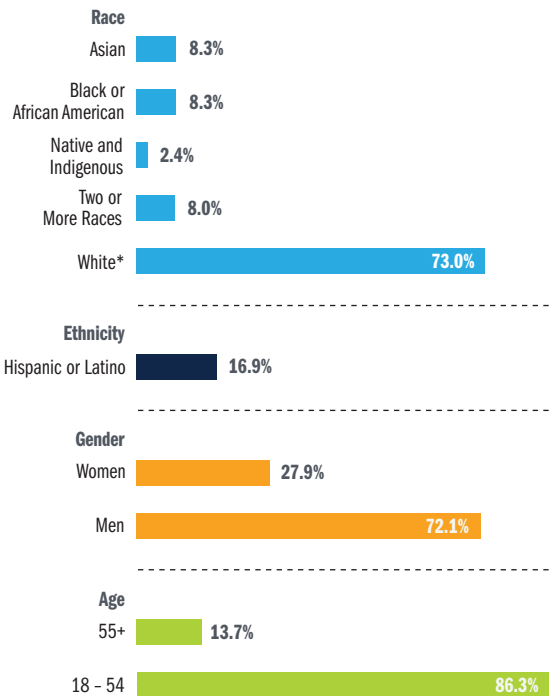


FIG 4 // U.S. CLEAN ENERGY EMPLOYMENT by demographics⁷



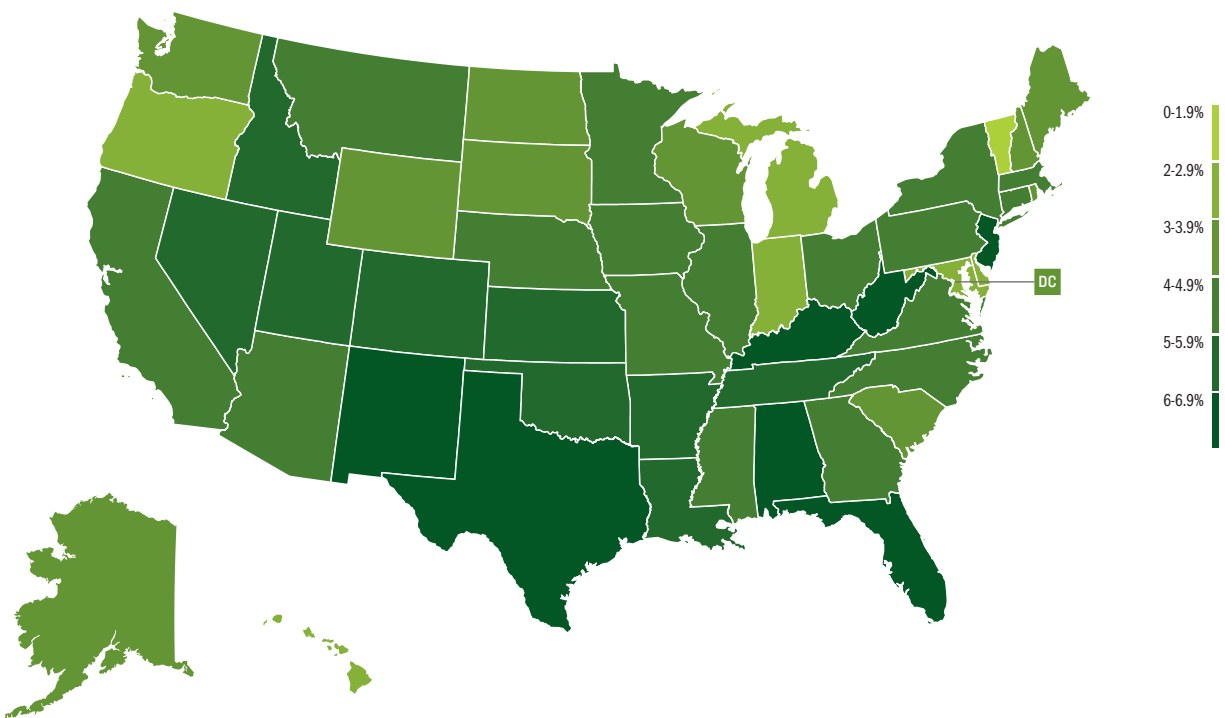
* Includes non-Hispanic and Hispanic whites.

** Information on the representation of people with disabilities, lesbian, gay, bisexual, transgender, intersex, and queer people, immigrants, religious minorities, and young people in clean energy is limited.

U.S. CLEAN ENERGY ECONOMY **by growth trends**

- // Clean energy employment grew 4.5 percent and added nearly 150,000 jobs in 2023. That was three times as fast as the growth in employment across the entire U.S. economy. Clean energy has outpaced economy-wide employment growth for the last five years.
- // Clean energy job growth also outpaced overall energy sector employment—accounting for more than 60 percent of all jobs added in the overall energy industry in 2023.
- // Southern states, led by Texas, accounted for five of the Top 10 fastest-growing states for clean energy jobs.
- // On the industry front, manufacturing and other services (including vehicle repair and maintenance) accounted for almost 60 percent of the jobs added.

FIG 5 // U.S. CLEAN ENERGY EMPLOYMENT **by fastest-growing states 2023–2024**



TOP 10 STATES

1	Alabama +6.6%	6	New Mexico +6.1%
2	Kentucky +6.5%	7	Florida +5.9%
3	Texas +6.5%	8	New Jersey +5.8%
4	Oklahoma +6.1%	9	Nevada +5.6%
5	West Virginia +6.1%	10	Utah +5.5%

TOP 10 COUNTIES

1	Upton County (TX) 1,847.7%	6	Foard County (TX) 149.0%
2	Schleicher County (TX) 814.1%	7	Anderson County (KS) 128.4%
3	Hardee County (FL) 243.3%	8	Harper County (OK) 127.2%
4	Moffat County (CO) 206.9%	9	Hopewell City County (VA) 111.7%
5	Willacy County (TX) 191.0%	10	Graham County (KS) 103.1%

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FIG 6 // U.S. CLEAN ENERGY EMPLOYMENT jobs added by industry 2024

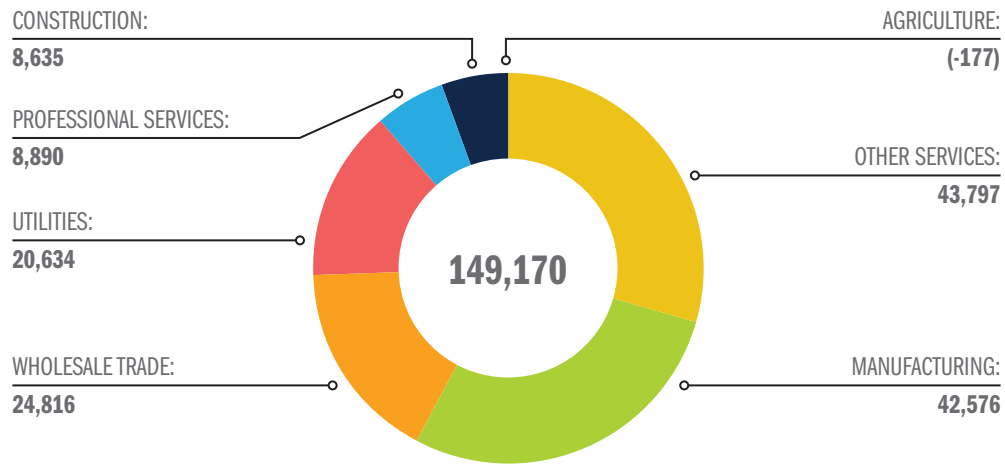


TABLE 1 // U.S. ENERGY EMPLOYMENT by sector growth trends 2020–2024

	5-yr growth*	3-yr growth	2023 Growth
Total Clean Energy	5.8%	14.0%	4.5%
Renewable Generation	10.6%	13.6%	4.7%
Storage/Grid	11.6%	14.9%	4.6%
Energy Efficiency	(-1.5%)	8.7%	3.4%
Biofuels	7.0%	11.8%	3.1%
Clean Vehicles	57.8%	57.1%	11.0%
Total U.S. Employment	5.0%	9.8%	1.5%
Total U.S. Energy Employment	2.3%	11.0%	3.1%

TABLE 2 // U.S. CLEAN ENERGY EMPLOYMENT by subsector growth trends 2020–2024

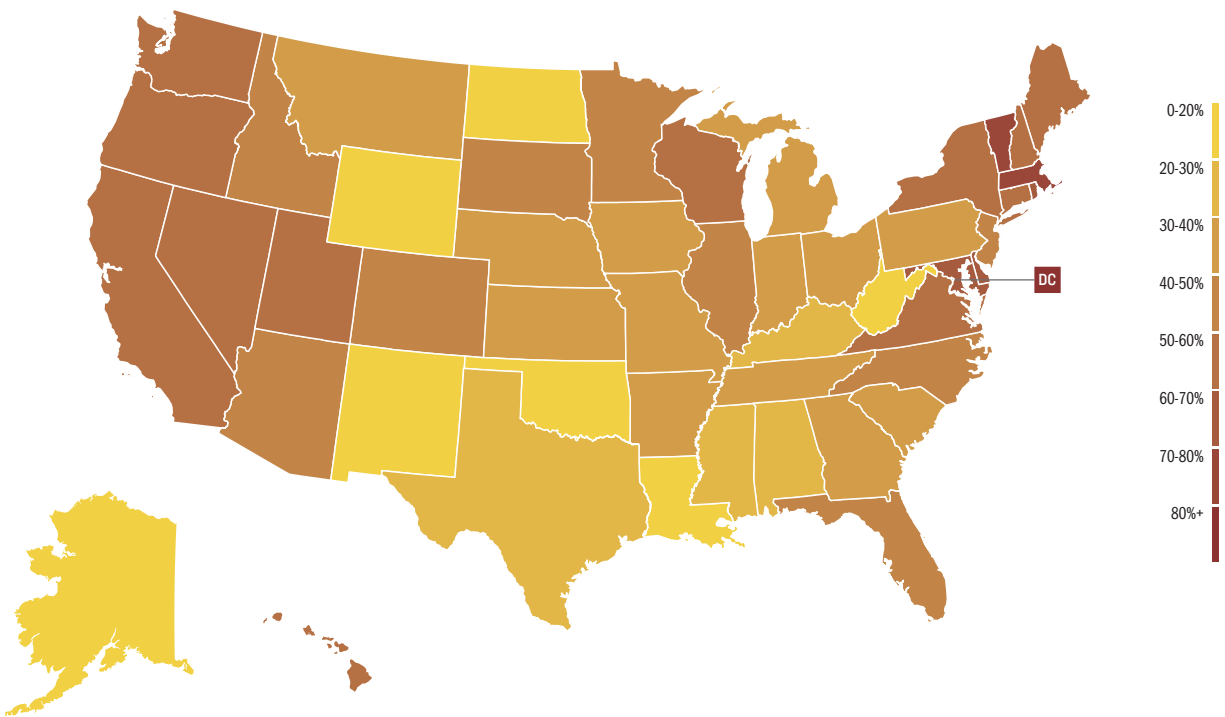
Subsector	5-Yr Growth*	3-Yr Growth	2023 Growth
Solar	8.8%	15.1%	5.3%
Wind	18.1%	12.4%	4.6%
Geothermal	4.0%	10.9%	2.7%
Bioenergy/CHP	8.1%	8.4%	2.2%
Low-impact hydroE/hydroK/wave	1.3%	4.3%	0.5%
Storage	17.4%	14.8%	4.3%
Smart Grid	4.8%	14.1%	5.8%
Micro Grid	(-4.3%)	11.2%	4.0%
Other Grid Modernization	15.9%	20.1%	5.1%
Energy STAR & Efficient Lighting	(-1.1%)	8.5%	4.0%
Traditional HVAC	0.1%	9.6%	3.2%
High-Efficiency HVAC & Renewable H&C	(-3.2%)	7.9%	2.8%
Advanced Materials	(-1.8%)	8.4%	3.5%
Other Energy Efficiency	(-1.5%)	9.1%	3.4%
Other Ethanol/Non-Woody Biomass	7.6%	11.0%	3.1%
Other Biofuels	6.4%	12.7%	3.2%
Hybrid Electric Vehicles	50.6%	39.7%	10.5%
Plug-in Hybrid Vehicles	38.9%	54.5%	8.4%
Electric Vehicles	73.9%	78.8%	12.9%
Hydrogen/Fuel-Cell Vehicles	100.1%	95.3%	11.5%

*Impact from COVID-19 included in range. Clean energy sectors lost a combined 306,000 jobs in 2020 before recovery.

U.S. CLEAN ENERGY ECONOMY **across the energy industry**

- // Clean energy accounts for more than 41 percent of all jobs across the energy sector, including gas and diesel motor vehicles.
- // In 17 states and the District of Columbia, more than 50 percent of energy industry jobs are made up by clean energy—including 10 in the Northeast alone.
- // Clean energy currently accounts for 2.2 percent of all U.S. jobs nationwide.

FIG 8 // U.S. CLEAN ENERGY EMPLOYMENT by share of state's total energy workforce



TOP 10 STATES

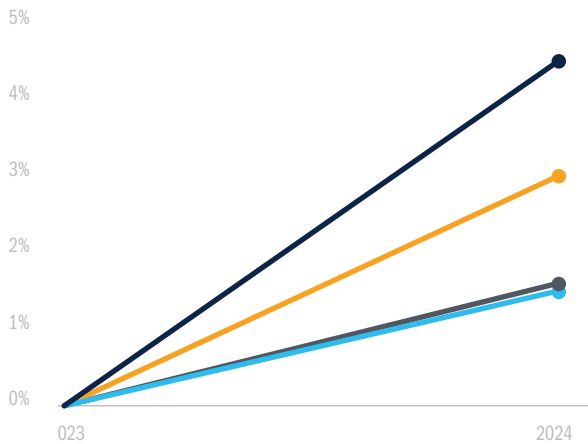
1	D.C. 80.2%	6	Delaware 61.2%
2	Vermont 72.8%	7	Connecticut 59.2%
3	Massachusetts 70.5%	8	Oregon 59.2%
4	Maryland 65.0%	9	California 58.4%
5	Rhode Island 64.7%	10	Nevada 56.1%

TOP 10 COUNTIES

1	Alpine County (CA) 98.7%	6	Mills County (TX) 94.7%
2	Blaine County (NE) 97.7%	7	Pulaski County (GA) 93.9%
3	Foard County (TX) 97.0%	8	Union County (TN) 93.3%
4	Buffalo County (SD) 96.9%	9	Calhoun County (GA) 91.8%
5	McPherson County (NE) 96.3%	10	Jefferson County (OK) 91.7%

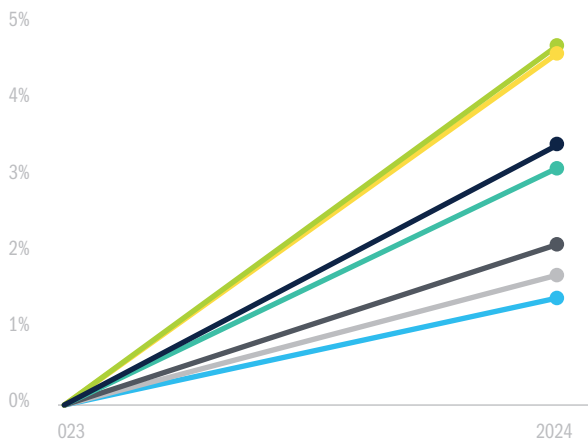
To explore clean energy jobs maps further, visit cleanjobsamerica.e2.org

FIG 9 // U.S. ENERGY EMPLOYMENT by industry 2023-2024



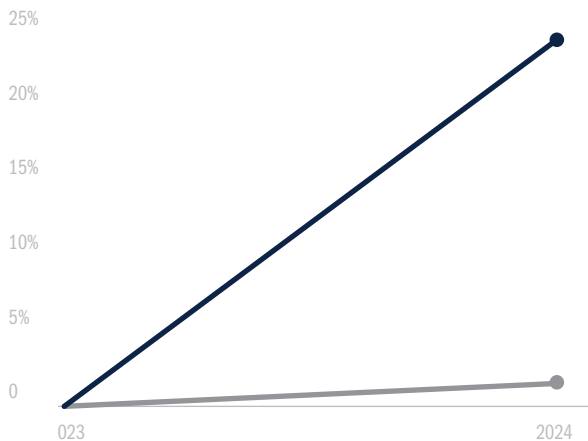
	2023	2024
Total Clean Energy	3,311,236	3,460,406 (+4.5%)
Overall U.S. Employment	152,525,285	154,848,113 (+1.5%)
Overall Energy Industry	8,096,076	8,350,487 (+3.1%)
Total Fossil Fuel⁸	1,498,933	1,523,618 (+1.6%)

FIG 10 // U.S. ENERGY EMPLOYMENT by energy sector 2023-2024



	2023	2024
Energy Efficiency	2,215,432	2,290,179 (+3.4%)
Renewable Generation	559,971	534,603 (+4.7%)
Storage/Grid	151,412	158,423 (+4.6%)
Biofuels	40,148	41,412 (+3.1%)
Fossil Fuel Generation	194,577	198,738 (+2.1%)
Fossil Fuels	865,174	879,509 (+1.7%)
Fossil Fuel TDS	439,182	445,371 (+1.4%)

FIG 11 // U.S. ENERGY EMPLOYMENT by vehicle sector growth 2023-2024



	2023	2024
Clean Vehicles	369,641	410,420 (+11.0%)
Gas & Diesel Vehicles	1,992,702	2,032,007 (+2.0%)

U.S. CLEAN ENERGY ECONOMY **sector deep drive**

America's clean energy economy is led by a wide array of states and regions with all 50 states and the District of Columbia employing workers in all 25 clean energy sectors and technology subsectors.

In fact, 40 different states along with D.C. are among the Top 5 fastest-growing or are home to the largest workforces in at least one clean energy sector or technology subsector.

TABLES 3-8 // U.S. CLEAN ENERGY EMPLOYMENT **by renewable generation 2022-2024**

RENEWABLE GENERATION OVERALL					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	559,971	1	California 136,591	1	Montana +22.6%
2023	534,603	2	Texas 47,679	2	Wyoming +21.9%
		3	Florida 28,273	3	Arkansas +12.3%
2022	515,248	4	Massachusetts 22,253	4	West Virginia +10.3%
		5	New York 22,064	5	Idaho +10.2%

SOLAR					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	364,544	1	California 117,946	1	Arkansas +28.5%
2023	346,143	2	Massachusetts 16,899	2	Montana +23.9%
		3	Texas 16,684	3	Idaho +20.5%
2022	333,887	4	New York 15,490	4	Wyoming +17.7%
		5	Florida 15,435	5	Florida +14.9%

WIND					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	131,327	1	Texas 27,381	1	Nevada +35.1%
2023	125,580	2	Illinois 9,389	2	Wyoming +34.1%
		3	California 8,132	3	Montana +33.4%
2022	120,164	4	Colorado 7,880	4	Mississippi +31.0%
		5	Indiana 6,976	5	Alaska +21.4%

GEOHERMAL						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	8,870	1	California 1,734	1
2023	8,635	2	Texas 719	2	Hawaii +5.0%	
		3	Florida 590	3	California +4.0%	
2022	8,222	4	New York 443	4	Utah +3.7%	
		5	Nevada 318	5	South Carolina +3.6%	

BIOENERGY/CHP						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	43,500	1	California 7,387	1
2023	42,568	2	Florida 5,408	2	New York +10.6%	
		3	Illinois 2,190	3	Texas +10.3%	
2022	41,491	4	Massachusetts 1,894	4	New Mexico +10.3%	
		5	Virginia 1,838	5	Oklahoma +8.7%	

LOW-IMPACT HYDROPOWER/HYDROKINETIC AND WAVE ENERGY						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	11,730	1	California 1,393	1
2023	11,677	2	Texas 1,189	2	Louisiana +9.3%	
		3	Florida 821	3	West Virginia +8.3%	
2022	11,485	4	New York 645	4	Montana +6.2%	
		5	Massachusetts 424	5	Washington +6.1%	

TABLES 9–13 // U.S. CLEAN ENERGY EMPLOYMENT by storage/grid 2022–2024

STORAGE/GRID OVERALL						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	158,423	1	California 24,940	1
2023	151,412	2	Texas 14,731	2	New Hampshire +8.8%	
		3	Nevada 9,668	3	Utah +8.0%	
2022	143,052	4	Tennessee 8,138	4	D.C. +7.6%	
		5	Massachusetts 6,995	5	Connecticut +7.6%	

STORAGE					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	89,592	1	California 18,062
2023	85,858	2	Nevada 9,181	2	New Hampshire +13.1%
		3	Texas 8,519	3	Connecticut +12.0%
2022	80,813	4	Massachusetts 5,087	4	D.C. +11.6%
		5	Michigan 2,684	5	Utah +10.9%

SMART GRID					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	26,351	1	Tennessee 6,451
2023	24,916	2	California 2,618	2	Idaho +13.5%
		3	Texas 1,873	3	California +11.3%
2022	24,225	4	Illinois 1,428	4	Maine +10.4%
		5	Florida 1,151	5	D.C. +9.9%

MICROGRID					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	20,632	1	California 2,126
2023	19,845	2	Texas 2,073	2	Mississippi +5.9%
		3	Florida 1,183	3	Maine +5.7%
2022	19,377	4	New York 1,153	4	Idaho +5.7%
		5	Massachusetts 1,087	5	Montana +5.5%

OTHER GRID MODERNIZATION					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	21,848	1	Texas 2,267
2023	20,794	2	California 2,135	2	Nevada +7.8%
		3	Oregon 1,684	3	California +7.7%
2022	18,637	4	Florida 1,428	4	Montana +7.7%
		5	Georgia 1,092	5	Mississippi +7.4%

TABLES 14–19 // U.S. CLEAN ENERGY EMPLOYMENT by energy efficiency 2022–2024

ENERGY EFFICIENCY OVERALL						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	2,290,179	1	California 302,176	1
2023	2,215,432	2	Texas 172,917	2	Nevada +6.9%	
		3	New York 129,946	3	Colorado +5.5%	
2022	2,164,914	4	Florida 125,234	4	New Jersey +5.3%	
		5	Illinois 86,728	5	Florida +5.3%	

ENERGY STAR & EFFICIENT LIGHTING						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	532,273	1	California 68,127	1
2023	511,561	2	Texas 57,744	2	South Carolina +14.0%	
		3	New York 37,549	3	Alabama +13.5%	
2022	500,026	4	North Carolina 35,471	4	North Dakota +13.4%	
		5	Florida 33,487	5	Maine +12.4%	

TRADITIONAL HVAC						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	582,663	1	California 111,955	1
2023	564,498	2	Texas 35,844	2	South Carolina +14.2%	
		3	New York 35,584	3	Iowa +11.9%	
2022	549,380	4	Illinois 29,078	4	West Virginia +9.9%	
		5	Maryland 24,905	5	New Mexico +9.8%	

HIGH-EFFICIENCY HVAC & RENEWABLE H&C						
Year	Total Jobs	Total Jobs			Fastest-Growing	
		2024	538,339	1	California 60,780	1
2023	523,908	2	Texas 38,856	2	Alabama +9.1%	
		3	New York 37,166	3	Colorado +7.1%	
2022	512,223	4	Illinois 25,957	4	New Jersey +6.5%	
		5	Florida 24,722	5	Louisiana +6.3%	

ADVANCED MATERIALS

Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	351,188	1	Michigan 39,978	1	Arkansas +11.3%
2023	339,152	2	Florida 26,610	2	Oklahoma +9.5%
		3	Texas 23,736	3	California +8.1%
2022	331,169	4	California 23,432	4	Iowa +7.7%
		5	Wisconsin 18,196	5	North Carolina +7.6%

OTHER

Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	285,716	1	California 37,884	1	West Virginia +14.7%
2023	276,313	2	Massachusetts 17,578	2	North Dakota +14.1%
		3	Texas 16,737	3	Wisconsin +14.0%
2022	272,116	4	Virginia 14,651	4	Alaska +11.7%
		5	Florida 14,220	5	New Mexico +10.5%

TABLES 20–21 // U.S. CLEAN ENERGY EMPLOYMENT by biofuels 2022–2024

BIOFUELS OVERALL

Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	41,412	1	California 5,974	1	D.C. +30.9%
2023	40,148	2	Florida 2,853	2	West Virginia +21.8%
		3	Texas 2,519	3	Utah +17.6%
2022	39,096	4	Colorado 1,976	4	Maryland +17.5%
		5	New York 1,846	5	New Mexico +16.5%

OTHER ETHANOL/NON-WOODY BIOMASS

Year	Total Jobs	Total Jobs		Fastest-Growing	
		Rank	State	Rank	State
2024	21,598	1	Hawaii 1,707	1	Utah +56.1%
2023	20,939	2	California 1,572	2	West Virginia +34.5%
		3	Colorado 1,561	3	New Mexico +33.9%
2022	20,335	4	Florida 1,459	4	Maryland +30.2%
		5	Texas 1,419	5	Alabama +24.9%

OTHER BIOFUELS					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	19,814	1	California 4,401
2023	19,209	2	Washington 1,470	2	West Virginia +16.1%
		3	Florida 1,394	3	Maryland +12.1%
2022	18,761	4	Texas 1,100	4	New Mexico +10.7%
		5	New York 837	5	Virginia +10.5%

TABLES 22–26 // U.S. CLEAN ENERGY EMPLOYMENT by clean vehicles 2022–2024

CLEAN VEHICLES OVERALL					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	410,420	1	California 74,923
2023	369,641	2	Michigan 33,953	2	Nevada +20.5%
		3	Texas 30,189	3	Alabama +19.2%
2022	325,844	4	Ohio 24,300	4	Utah +17.9%
		5	Indiana 21,703	5	Connecticut +17.4%

HYBRID EVS					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	167,177	1	California 16,014
2023	151,224	2	Michigan 15,376	2	Nevada +20.5%
		3	Texas 13,610	3	Alabama +19.3%
2022	143,318	4	Ohio 10,974	4	Connecticut +19.2%
		5	Indiana 10,974	5	New York +18.8%

PLUG-IN HYBRIDS					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	73,937	1	Michigan 6,950
2023	68,194	2	California 6,716	2	Nevada +18.9%
		3	Texas 6,274	3	Alabama +17.5%
2022	62,632	4	Ohio 5,027	4	Utah +16.6%
		5	Indiana 4,504	5	Missouri +14.4%

ELECTRIC VEHICLES					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	149,702	1	California 50,085
2023	132,638	2	Michigan 9,850	2	Nevada +21.7%
		3	Texas 8,698	3	Connecticut +20.4%
2022	105,694	4	Ohio 7,014	4	Alabama +20.2%
		5	Indiana 6,299	5	Utah +18.9%

HYDROGEN/FUEL-CELL VEHICLES					
Year	Total Jobs	Total Jobs		Fastest-Growing	
		2024	19,604	1	California 2,107
2023	17,585	2	Michigan 1,778	2	Nevada +20.7%
		3	Texas 1,607	3	Alabama +19.8%
2022	14,200	4	Ohio 1,286	4	California +18.8%
		5	Indiana 1,151	5	Utah +18.3%

U.S. CLEAN ENERGY ECONOMY Appendix

Quick Reference Guide: Per-Capita (clean energy jobs per 1,000 Jobs); CE (Clean Energy); EE (Energy Efficiency); RE (Renewable Generation); EV (Electric Vehicles); LI (Low-Impact); HydroE (hydroelectric); HydroK (Hydrokinetic); CHP (Combined Heat and Power); E (Ethanol); HVAC (Heating, Ventilation, and Air Conditioning); HE (High Efficiency); Fossil Fuel (combined fossil fuel electric power generation and fuels sector); MV (Motor Vehicles).

APPENDIX A // U.S. CLEAN ENERGY EMPLOYMENT by sector 2024

Total CE Job Rank	State	Clean Energy Jobs	CE Jobs per Capita	Share of all Energy + MV Jobs	Renewable Energy Jobs	Storage & Grid Jobs	Energy Efficiency Jobs	Biofuels Jobs	Clean Vehicle Jobs
26	Alabama	46,655	22.2	28.8%	4,183	2,052	30,341	271	9,808
51	Alaska	5,304	17.0	19.5%	420	339	4,234	43	269
19	Arizona	64,282	19.9	47.5%	12,589	2,554	44,313	388	4,438
35	Arkansas	21,742	16.8	32.7%	2,179	947	15,526	594	2,495
1	California	544,604	30.1	58.4%	136,591	24,940	302,176	5,974	74,923
18	Colorado	67,060	22.9	42.7%	18,718	3,383	37,835	1,976	5,148
27	Connecticut	44,215	26.2	59.2%	4,256	953	35,250	382	3,374
45	Delaware	12,712	26.9	61.2%	931	251	10,914	83	533
39	District of Col.	15,453	20.3	80.2%	2,372	362	12,140	55	524
3	Florida	175,572	17.8	49.9%	28,273	6,279	125,234	2,853	12,933
15	Georgia	82,163	16.9	38.2%	11,162	4,593	58,067	519	7,821
44	Hawaii	13,449	20.9	52.5%	4,817	562	5,759	1,803	508
41	Idaho	14,675	17.2	42.8%	2,402	1,197	9,532	274	1,270
5	Illinois	128,871	21.3	42.4%	19,254	5,364	86,728	1,644	15,881
12	Indiana	89,581	28.1	31.9%	12,046	3,230	51,790	812	21,703
30	Iowa	32,667	20.9	38.3%	5,968	1,537	20,153	873	4,135
32	Kansas	26,058	18.2	32.4%	4,024	1,184	17,685	315	2,849
28	Kentucky	39,596	19.8	25.2%	2,920	1,496	24,405	322	10,454
31	Louisiana	31,048	16.3	19.6%	4,975	1,731	21,940	323	2,080
43	Maine	13,450	21.1	50.2%	2,790	545	9,003	223	889
14	Maryland	82,911	30.4	65.0%	9,445	2,284	67,772	301	3,109
7	Massachusetts	123,403	33.8	70.5%	22,253	6,995	83,893	823	9,437
6	Michigan	127,690	29.0	31.8%	12,406	4,103	76,509	718	33,953
20	Minnesota	62,102	21.3	48.2%	9,060	3,027	44,511	744	4,761
34	Mississippi	21,840	18.7	29.9%	1,938	902	15,031	550	3,418
22	Missouri	59,245	20.4	36.6%	6,247	2,174	40,531	933	9,360
47	Montana	10,590	20.8	32.5%	764	482	8,518	80	747
36	Nebraska	20,425	20.1	35.6%	3,347	596	13,855	215	2,412
29	Nevada	35,158	22.6	56.1%	10,302	9,668	13,016	145	2,028
37	New Hampshire	16,856	24.5	54.6%	3,483	378	11,628	145	1,222
21	New Jersey	59,524	13.9	41.6%	12,441	1,996	38,267	490	6,331

APPENDIX A // U.S. CLEAN ENERGY EMPLOYMENT by sector 2024

Total CE Job Rank	State	Clean Energy Jobs	CE Jobs per Capita	Share of all Energy + MV Jobs	Renewable Energy Jobs	Storage & Grid Jobs	Energy Efficiency Jobs	Biofuels Jobs	Clean Vehicle Jobs
42	New Mexico	13,453	15.5	19.4%	4,904	820	6,486	171	1,073
4	New York	173,731	18.0	53.3%	22,064	4,895	129,946	1,846	14,981
9	North Carolina	109,723	22.3	49.2%	13,579	4,246	80,817	1,559	9,522
49	North Dakota	9,198	21.5	15.3%	2,263	556	5,293	176	910
8	Ohio	119,241	21.6	35.8%	11,489	3,346	78,744	1,362	24,300
33	Oklahoma	24,181	14.2	17.4%	4,038	1,707	14,867	829	2,741
23	Oregon	56,781	28.6	59.2%	8,157	3,711	40,259	761	3,892
10	Pennsylvania	100,704	16.7	36.0%	12,014	4,200	72,913	1,436	10,141
40	Rhode Island	15,021	30.5	64.7%	2,309	603	11,330	275	504
25	South Carolina	46,666	20.5	32.4%	7,046	2,078	30,235	619	6,688
46	South Dakota	12,333	27.0	42.0%	2,821	505	7,643	198	1,167
13	Tennessee	86,142	26.3	39.8%	7,025	8,138	51,465	1,225	18,290
2	Texas	268,035	19.3	27.6%	47,679	14,731	172,917	2,519	30,189
24	Utah	47,096	27.5	51.4%	9,170	1,297	32,800	164	3,666
38	Vermont	16,003	51.6	72.8%	2,328	945	10,314	644	1,771
11	Virginia	99,614	24.4	51.9%	10,742	2,940	76,685	461	8,785
16	Washington	81,080	22.6	54.8%	10,818	3,756	60,155	1,736	4,615
48	West Virginia	10,366	14.9	12.0%	1,272	895	6,950	55	1,194
17	Wisconsin	73,639	25.1	50.3%	7,179	2,458	56,868	416	6,719
50	Wyoming	8,497	30.6	18.2%	518	489	6,939	93	459
	United States	3,460,406	22.3	41.4%	559,971	158,423	2,290,179	41,412	410,420

APPENDIX B // U.S. CLEAN ENERGY EMPLOYMENT by growth 2024

CE Job Growth Rank	State	CE Total Job Growth	CE Jobs Added	Overall State Job Growth	CE Share of All New Jobs	CE Share of New Energy Jobs	RE Job Growth	Storage/ Grid Job Growth	EE Job Growth	Biofuels Job Growth	CV Job Growth
1	Alabama	6.6%	2,902	2.0%	7.2%	20.6%	1.0%	5.8%	3.9%	10.6%	19.2%
2	Kentucky	6.5%	2,432	1.8%	6.8%	32.4%	9.7%	5.9%	4.1%	6.9%	11.8%
3	Texas	6.5%	16,400	2.3%	5.2%	48.2%	7.5%	5.5%	5.1%	7.2%	13.9%
4	Oklahoma	6.1%	1,390	1.9%	4.5%	47.1%	9.2%	5.3%	5.1%	0.6%	9.4%
5	West Virginia	6.1%	594	1.2%	7.0%	79.9%	10.3%	3.8%	4.2%	21.8%	14.6%
6	New Mexico	6.1%	771	2.3%	4.0%	22.2%	3.8%	6.0%	7.0%	16.5%	9.5%
7	Florida	5.9%	9,763	2.5%	4.0%	102.1%	9.1%	7.3%	5.3%	1.4%	4.9%
8	New Jersey	5.8%	3,269	1.3%	5.8%	128.4%	4.7%	5.8%	5.3%	10.1%	10.9%
9	Nevada	5.6%	1,860	3.6%	3.4%	53.0%	3.1%	3.7%	6.9%	6.4%	20.5%
10	Utah	5.5%	2,439	2.1%	7.1%	36.8%	8.2%	8.0%	3.4%	17.6%	17.9%
11	Louisiana	5.2%	1,529	0.8%	10.5%	79.0%	4.8%	6.3%	5.0%	12.6%	6.1%
12	Colorado	5.2%	3,298	2.5%	4.6%	81.2%	3.9%	4.4%	5.5%	-0.1%	10.1%
13	Arkansas	5.1%	1,059	1.4%	5.9%	35.7%	12.3%	7.1%	3.5%	2.6%	9.7%
14	Kansas	5.0%	1,251	1.1%	8.1%	82.8%	5.0%	4.4%	4.1%	4.0%	11.6%

APPENDIX B // U.S. CLEAN ENERGY EMPLOYMENT by growth 2024

CE Job Growth Rank	State	CE Total Job Growth	CE Jobs Added	Overall State Job Growth	CE Share of All New Jobs	CE Share of New Energy Jobs	RE Job Growth	Storage/ Grid Job Growth	EE Job Growth	Biofuels Job Growth	CV Job Growth
15	Tennessee	5.0%	4,135	1.6%	7.9%	57.9%	7.1%	1.8%	2.9%	1.3%	12.7%
16	Idaho	5.0%	699	3.5%	2.4%	57.5%	10.2%	2.9%	4.6%	1.9%	1.4%
17	Missouri	5.0%	2,795	1.6%	6.3%	51.2%	6.6%	6.3%	2.5%	2.0%	15.9%
18	Nebraska	4.9%	955	2.0%	4.9%	87.0%	5.0%	6.5%	3.8%	2.0%	11.4%
19	Georgia	4.9%	3,809	1.3%	6.2%	30.7%	6.3%	5.1%	4.4%	9.1%	5.6%
20	New York	4.7%	7,774	1.7%	4.9%	104.2%	7.0%	5.8%	3.1%	3.7%	16.0%
21	Pennsylvania	4.6%	4,436	1.2%	6.0%	67.7%	5.7%	5.0%	4.2%	4.4%	6.4%
22	Iowa	4.5%	1,403	1.0%	9.5%	152.5%	3.4%	4.1%	4.2%	0.4%	8.7%
23	Massachusetts	4.5%	5,265	0.8%	17.7%	77.2%	3.0%	2.3%	3.3%	11.9%	22.5%
24	Arizona	4.4%	2,720	2.2%	3.9%	36.6%	5.4%	5.0%	3.9%	5.2%	6.2%
25	Ohio	4.4%	5,031	1.1%	8.1%	162.2%	4.7%	5.2%	3.0%	2.5%	9.2%
26	Michigan	4.3%	5,234	1.2%	9.6%	38.0%	3.4%	4.1%	1.9%	5.2%	10.4%
27	Montana	4.2%	428	1.8%	4.7%	113.0%	22.6%	6.8%	2.8%	5.9%	2.6%
28	Virginia	4.2%	4,013	1.7%	5.8%	72.5%	5.3%	7.3%	2.9%	15.0%	13.5%
29	Mississippi	4.2%	878	0.7%	10.2%	22.0%	10.0%	7.0%	3.2%	3.9%	4.6%
30	North Carolina	4.2%	4,408	2.5%	3.6%	30.6%	7.7%	10.1%	3.2%	2.6%	5.9%
31	Illinois	4.2%	5,163	0.8%	10.6%	61.6%	2.8%	3.8%	2.8%	3.6%	14.4%
32	California	4.1%	21,622	0.2%	48.6%	96.5%	2.6%	4.1%	2.6%	1.6%	14.3%
33	Minnesota	4.0%	2,415	1.2%	6.8%	63.3%	4.0%	3.5%	3.2%	4.5%	13.2%
34	Connecticut	4.0%	1,687	1.3%	7.9%	95.1%	8.4%	7.6%	2.2%	4.8%	17.4%
35	Maine	3.8%	494	1.4%	5.5%	41.8%	5.1%	5.5%	3.7%	3.0%	0.5%
36	New Hampshire	3.8%	616	1.4%	6.5%	81.3%	4.1%	8.8%	2.9%	4.5%	10.3%
37	North Dakota	3.8%	335	2.7%	3.0%	22.9%	2.7%	3.4%	3.6%	5.5%	7.5%
38	Alaska	3.4%	175	2.4%	2.4%	19.8%	9.4%	3.6%	2.6%	9.8%	6.9%
39	South Carolina	3.4%	1,518	2.6%	2.6%	27.6%	4.2%	5.0%	3.8%	1.7%	0.3%
40	Rhode Island	3.2%	470	1.3%	7.3%	94.2%	3.8%	1.6%	3.1%	-0.4%	8.3%
41	Washington	3.2%	2,529	1.6%	4.6%	71.7%	4.7%	2.8%	2.5%	0.2%	11.7%
42	Wyoming	3.2%	262	1.5%	6.5%	41.2%	21.9%	5.0%	1.4%	5.0%	11.5%
43	Wisconsin	3.1%	2,190	1.0%	7.2%	49.9%	4.6%	5.2%	2.0%	5.3%	9.8%
44	District of Col.	3.1%	459	0.7%	8.3%	88.7%	1.7%	7.6%	2.7%	30.9%	14.8%
45	South Dakota	2.8%	338	2.5%	3.0%	23.5%	2.4%	4.8%	2.6%	0.5%	4.8%
46	Oregon	2.8%	1,553	1.0%	8.0%	44.7%	3.5%	1.8%	2.1%	1.1%	11.0%
47	Hawaii	2.7%	351	0.8%	6.9%	118.2%	2.0%	2.5%	4.4%	-1.9%	7.8%
48	Maryland	2.4%	1,954	2.3%	3.2%	76.5%	4.9%	5.1%	1.8%	17.5%	5.2%
49	Delaware	2.2%	274	1.3%	4.4%	48.7%	8.0%	6.5%	1.2%	4.3%	11.1%
50	Indiana	1.8%	1,561	0.9%	5.3%	-47.2%	2.8%	3.4%	2.1%	3.0%	0.2%
51	Vermont	1.7%	262	1.5%	5.8%	56.0%	3.3%	0.6%	1.3%	-1.4%	3.5%
	United States	4.5%	149,170	1.5%	6.4%	58.6%	4.7%	4.6%	3.4%	3.1%	11.0%

APPENDIX C // U.S. CLEAN ENERGY EMPLOYMENT by industry 2024

State	Agriculture & Forestry	Utilities	Construction	Manufacturing	Trade	Prof. Services	Other Services
Alabama	893	495	20,434	12,400	2,796	7,866	1,772
Alaska	36	83	3,167	151	481	1,147	240
Arizona	172	648	36,224	4,213	2,877	16,559	3,590
Arkansas	785	233	11,289	3,612	1,961	2,584	1,278
California	1,183	6,625	229,442	75,514	55,541	134,253	42,046
Colorado	715	824	21,180	1,689	2,733	36,462	3,457
Connecticut	140	277	19,977	3,353	4,912	12,326	3,230
Delaware	35	98	8,966	505	758	1,771	580
District of Col.	0	113	5,478	12	656	8,094	1,099
Florida	526	1,522	118,278	9,241	14,522	20,522	10,960
Georgia	1,087	716	44,139	12,069	8,210	11,049	4,893
Hawaii	615	226	7,866	222	749	3,158	612
Idaho	648	165	7,253	770	683	3,798	1,358
Illinois	2,573	1,205	50,865	25,538	8,793	31,696	8,202
Indiana	1,779	513	38,042	30,123	5,978	9,628	3,518
Iowa	1,999	321	17,640	5,635	3,187	2,284	1,600
Kansas	528	384	7,552	1,838	970	13,757	1,029
Kentucky	569	224	14,287	15,610	2,642	4,821	1,444
Louisiana	603	146	20,243	2,659	2,077	3,852	1,468
Maine	427	208	7,268	782	714	2,617	1,435
Maryland	150	626	55,879	3,517	3,874	13,544	5,320
Massachusetts	26	816	43,194	11,904	18,531	40,971	7,960
Michigan	433	588	32,297	64,870	6,275	18,573	4,653
Minnesota	1,378	817	35,320	6,524	5,097	10,202	2,764
Mississippi	987	198	10,870	4,964	1,409	2,468	944
Missouri	611	434	30,964	12,146	4,341	7,705	3,044
Montana	225	122	6,149	234	899	2,359	602
Nebraska	1,150	231	11,188	2,209	2,086	2,579	982
Nevada	0	568	22,869	2,115	2,451	5,513	1,640
New Hampshire	17	144	7,800	2,810	1,343	3,789	953
New Jersey	39	658	25,972	8,884	8,946	9,130	5,895
New Mexico	254	202	6,351	1,596	594	3,863	593
New York	435	2,133	58,395	13,270	12,365	71,749	15,384
North Carolina	1,150	1,155	41,558	18,431	6,834	34,291	6,304
North Dakota	1,733	128	4,647	407	1,407	592	285
Ohio	618	713	54,723	30,304	9,788	17,068	6,026
Oklahoma	91	422	13,476	3,339	1,485	4,103	1,265
Oregon	2,356	688	27,288	10,982	2,956	9,117	3,393
Pennsylvania	767	992	46,292	21,000	11,761	12,351	7,540
Rhode Island	0	129	7,645	911	2,315	3,279	741
South Carolina	711	370	17,311	11,061	11,179	3,583	2,450
South Dakota	545	131	6,826	1,665	1,530	905	731
Tennessee	397	642	38,224	23,118	8,313	11,597	3,851

APPENDIX C // U.S. CLEAN ENERGY EMPLOYMENT by industry 2024

State	Agriculture & Forestry	Utilities	Construction	Manufacturing	Trade	Prof. Services	Other Services
Texas	2,133	5,174	133,163	31,331	24,368	53,541	18,325
Utah	3	400	29,683	1,823	4,333	8,406	2,448
Vermont	18	244	5,691	1,492	2,591	4,745	1,223
Virginia	585	715	51,935	6,894	5,323	28,014	6,147
Washington	407	788	45,115	5,870	5,246	19,881	3,772
West Virginia	466	58	7,231	853	1,048	412	297
Wisconsin	817	346	32,072	23,588	6,434	7,143	3,239
Wyoming	49	76	6,049	296	889	852	285
United States	33,868	35,738	1,605,949	534,045	297,310	740,601	212,893

APPENDIX D // U.S. CLEAN ENERGY EMPLOYMENT by renewable generation subsectors 2024

State	Solar	Wind	Geothermal	Bioenergy/CHP	Low-Impact Hydroelectric/ Hydrokinetic and Wave Energy
Alabama	1,325	1,508	118	1,058	174
Alaska	152	98	11	139	20
Arizona	10,110	1,403	157	678	240
Arkansas	800	984	71	253	72
California	117,946	8,132	1,734	7,387	1,393
Colorado	9,017	7,880	188	1,340	292
Connecticut	3,303	348	91	378	136
Delaware	731	91	21	57	31
District of Col.	1,711	356	57	144	103
Florida	15,435	6,020	590	5,408	821
Georgia	8,194	1,433	228	956	351
Hawaii	4,142	305	34	299	36
Idaho	1,078	1,065	51	132	75
Illinois	6,988	9,389	280	2,190	406
Indiana	4,298	6,976	131	481	160
Iowa	1,301	3,974	64	541	88
Kansas	1,332	2,097	63	438	95
Kentucky	2,116	294	84	310	116
Louisiana	3,980	468	99	263	165
Maine	985	1,343	33	381	48
Maryland	7,195	1,280	183	516	270
Massachusetts	16,899	2,768	269	1,894	424
Michigan	5,643	5,188	203	1,071	302
Minnesota	5,332	2,860	144	524	200
Mississippi	1,410	302	44	112	69
Missouri	3,639	1,544	131	721	214
Montana	479	165	23	60	36

APPENDIX D // U.S. CLEAN ENERGY EMPLOYMENT by renewable generation subsectors 2024

State	Solar	Wind	Geothermal	Bioenergy/CHP	Low-Impact Hydroelectric/ Hydrokinetic and Wave Energy
Nebraska	2,015	721	56	489	66
Nevada	9,071	297	318	519	97
New Hampshire	1,660	1,178	41	541	63
New Jersey	9,263	1,182	191	1,529	274
New Mexico	3,403	1,192	61	137	110
New York	15,490	4,482	443	1,004	645
North Carolina	9,819	1,569	247	1,574	369
North Dakota	334	1,751	20	127	32
Ohio	8,736	1,575	219	651	309
Oklahoma	1,649	2,021	73	181	114
Oregon	5,822	1,701	116	351	168
Pennsylvania	6,731	3,255	279	1,332	417
Rhode Island	1,549	617	25	83	35
South Carolina	4,112	1,801	99	888	146
South Dakota	723	1,871	19	178	30
Tennessee	5,446	770	149	428	233
Texas	16,684	27,381	719	1,706	1,189
Utah	7,945	723	97	266	139
Vermont	1,834	363	19	82	30
Virginia	5,833	2,420	252	1,838	399
Washington	5,670	3,521	160	1,172	296
West Virginia	583	505	29	108	48
Wisconsin	4,372	1,977	119	549	163
Wyoming	262	183	13	36	23
United States	364,544	131,327	8,870	43,500	11,730

APPENDIX E // U.S. CLEAN ENERGY EMPLOYMENT by storage/grid subsectors 2024

State	Storage	Smart Grid	Micro Grid	Other Grid Modernization
Alabama	936	378	316	422
Alaska	209	40	45	45
Arizona	1,544	282	392	336
Arkansas	426	170	153	198
California	18,062	2,618	2,126	2,135
Colorado	1,966	479	464	475
Connecticut	348	152	236	216
Delaware	72	90	51	39
District of Col.	125	54	110	74
Florida	2,517	1,151	1,183	1,428
Georgia	2,035	753	713	1,092
Hawaii	397	59	50	56

APPENDIX E // U.S. CLEAN ENERGY EMPLOYMENT by storage/grid subsectors 2024

State	Storage	Smart Grid	Micro Grid	Other Grid Modernization
Idaho	946	55	104	92
Illinois	2,539	1,428	689	707
Indiana	2,028	587	310	305
Iowa	819	199	221	297
Kansas	638	203	161	182
Kentucky	728	245	235	287
Louisiana	921	240	269	302
Maine	345	53	72	75
Maryland	968	453	431	433
Massachusetts	5,087	655	1,087	166
Michigan	2,684	440	458	521
Minnesota	2,037	281	350	359
Mississippi	457	150	130	166
Missouri	935	459	358	421
Montana	264	66	68	83
Nebraska	254	97	119	127
Nevada	9,181	166	156	165
New Hampshire	147	64	87	80
New Jersey	891	344	427	334
New Mexico	431	141	115	132
New York	2,352	587	1,153	803
North Carolina	1,778	864	709	895
North Dakota	337	92	62	65
Ohio	1,617	543	562	624
Oklahoma	985	234	222	265
Oregon	1,456	328	243	1,684
Pennsylvania	2,079	583	798	741
Rhode Island	150	36	360	57
South Carolina	986	502	268	323
South Dakota	311	61	59	75
Tennessee	990	6,451	344	352
Texas	8,519	1,873	2,073	2,267
Utah	628	199	239	232
Vermont	450	56	394	46
Virginia	1,283	506	572	581
Washington	2,592	387	374	403
West Virginia	473	98	130	195
Wisconsin	1,386	349	325	398
Wyoming	284	52	61	92
United States	89,592	26,351	20,632	21,848

APPENDIX F // U.S. CLEAN ENERGY EMPLOYMENT by energy efficiency subsectors 2024

State	Energy STAR/ Efficient Lighting	Trad. HVAC	HE HVAC/ Renewable H&C	Advanced Materials	Other
Alabama	2,918	6,364	3,566	14,784	2,710
Alaska	560	691	1,590	1,199	192
Arizona	8,410	10,740	12,259	7,580	5,324
Arkansas	2,399	3,206	2,991	1,070	5,860
California	68,127	111,955	60,780	23,432	37,884
Colorado	11,410	10,865	7,596	6,303	1,661
Connecticut	8,120	8,708	10,149	3,794	4,478
Delaware	1,389	3,738	2,982	1,973	833
District of Col.	1,516	2,661	4,642	624	2,697
Florida	33,487	23,196	24,722	29,610	14,220
Georgia	9,375	12,907	18,728	7,659	9,397
Hawaii	1,371	686	2,745	377	580
Idaho	1,870	2,072	4,587	814	189
Illinois	14,271	29,078	25,957	8,696	8,727
Indiana	6,442	13,254	22,062	4,788	5,244
Iowa	6,672	2,406	6,718	2,143	2,214
Kansas	4,033	2,851	3,731	3,208	3,861
Kentucky	5,513	5,633	7,336	3,359	2,564
Louisiana	4,472	7,270	4,004	4,165	2,030
Maine	1,075	1,518	3,747	378	2,286
Maryland	11,972	24,905	18,167	8,989	3,739
Massachusetts	14,782	22,501	18,345	10,688	17,578
Michigan	14,523	3,205	6,784	39,978	12,019
Minnesota	11,458	9,069	12,144	4,429	7,411
Mississippi	1,741	3,932	3,045	1,884	4,430
Missouri	6,038	20,379	10,400	2,145	1,569
Montana	2,242	3,288	1,382	1,263	344
Nebraska	1,874	3,333	4,091	2,289	2,268
Nevada	2,671	2,656	3,965	2,232	1,491
New Hampshire	2,848	2,530	4,542	480	1,228
New Jersey	8,772	11,641	8,015	2,733	7,106
New Mexico	2,062	1,351	1,634	792	647
New York	37,549	35,584	37,166	9,126	10,521
North Carolina	35,471	19,959	12,630	7,153	5,604
North Dakota	583	797	3,297	327	290
Ohio	15,988	18,643	16,120	18,193	9,800
Oklahoma	1,860	2,940	8,124	521	1,422
Oregon	5,574	10,282	10,344	8,853	5,207
Pennsylvania	15,681	20,015	16,787	13,445	6,985
Rhode Island	3,182	1,425	2,291	3,001	1,431
South Carolina	2,876	2,962	8,002	6,170	10,224
South Dakota	1,096	2,121	2,035	766	1,624
Tennessee	11,328	9,137	17,928	6,572	6,499

APPENDIX F // U.S. CLEAN ENERGY EMPLOYMENT by energy efficiency subsectors 2024

State	Energy STAR/ Efficient Lighting	Trad. HVAC	HE HVAC/ Renewable H&C	Advanced Materials	Other
Texas	57,744	35,844	38,856	23,736	16,737
Utah	6,826	4,242	7,611	9,043	5,077
Vermont	1,875	2,187	3,010	1,599	1,642
Virginia	19,540	17,692	14,013	10,790	14,651
Washington	14,820	18,089	7,881	6,837	12,529
West Virginia	1,972	926	1,200	2,511	341
Wisconsin	21,115	9,279	6,569	18,196	1,709
Wyoming	2,780	1,950	1,071	495	643
United States	532,273	582,663	538,339	351,188	285,716

APPENDIX G // U.S. CLEAN ENERGY EMPLOYMENT by biofuels + clean vehicles subsectors 2024

State	Biofuels		Clean Vehicles			
	Other Ethanol/ Non-Woody Biomass	Other Biofuels	Hybrid Electric Vehicles	Plug-In Hybrid Vehicles	Electric Vehicles	Hydrogen/ Fuel-Cell Vehicles
Alabama	70	201	4,441	2,010	2,842	514
Alaska	11	33	122	54	78	14
Arizona	75	314	2,006	917	1,281	234
Arkansas	448	147	1,128	517	719	132
California	1,572	4,401	16,014	6,716	50,085	2,107
Colorado	1,561	415	2,322	1,070	1,482	274
Connecticut	71	311	1,679	485	1,064	147
Delaware	30	53	241	110	154	28
District of Col.	34	21	236	108	152	28
Florida	1,459	1,394	5,850	2,661	3,742	680
Georgia	130	389	3,574	1,552	2,299	396
Hawaii	1,707	96	231	102	149	26
Idaho	43	231	574	263	366	67
Illinois	1,205	439	7,224	3,334	4,470	852
Indiana	534	279	9,749	4,504	6,299	1,151
Iowa	643	230	1,868	854	1,194	218
Kansas	159	156	1,287	590	822	151
Kentucky	186	136	4,761	2,093	3,065	535
Louisiana	148	175	946	419	607	107
Maine	39	184	402	183	257	47
Maryland	98	202	1,407	512	1,015	175
Massachusetts	261	562	2,585	1,179	5,371	302
Michigan	174	544	15,376	6,950	9,850	1,778
Minnesota	374	370	2,154	978	1,378	250
Mississippi	399	151	1,547	703	989	180
Missouri	703	230	4,229	1,933	2,704	494
Montana	27	53	338	153	216	39

APPENDIX G // U.S. CLEAN ENERGY EMPLOYMENT by biofuels + clean vehicles subsectors 2024

State	Biofuels		Clean Vehicles			
	Other Ethanol/ Non-Woody Biomass	Other Biofuels	Hybrid Electric Vehicles	Plug-In Hybrid Vehicles	Electric Vehicles	Hydrogen/ Fuel-Cell Vehicles
Nebraska	80	135	1,090	498	696	127
Nevada	63	82	917	418	585	107
New Hampshire	27	118	552	254	352	65
New Jersey	135	355	2,868	1,294	1,838	331
New Mexico	49	123	486	220	311	56
New York	1,009	837	7,397	2,223	4,563	798
North Carolina	1,004	555	4,313	1,953	2,758	499
North Dakota	70	105	411	187	263	48
Ohio	986	376	10,974	5,027	7,014	1,286
Oklahoma	697	132	1,243	559	796	143
Oregon	154	607	1,758	806	1,123	206
Pennsylvania	800	636	4,600	1,996	2,895	650
Rhode Island	228	47	248	95	137	24
South Carolina	374	245	3,030	1,375	1,932	351
South Dakota	119	79	526	244	334	62
Tennessee	984	242	8,240	3,801	5,275	974
Texas	1,419	1,100	13,610	6,274	8,698	1,607
Utah	46	118	1,653	765	1,053	196
Vermont	576	68	1,123	510	138	-
Virginia	159	302	3,966	1,817	2,537	465
Washington	265	1,470	2,095	937	1,343	240
West Virginia	19	36	540	246	344	63
Wisconsin	114	302	3,036	1,391	1,937	355
Wyoming	63	30	207	95	132	24
United States	21,598	19,814	167,177	73,937	149,702	19,604

APPENDIX H // TOTAL ENERGY SECTOR EMPLOYMENT 2022–2024

State	2024 Clean Energy Jobs	2023 Clean Energy Jobs	2022 Clean Energy Jobs	2024 Fossil Fuel Jobs	2023 Fossil Fuel Jobs	2022 Fossil Fuel Jobs	2024 Clean Vehicle Jobs	2023 Clean Vehicle Jobs	2022 Clean Vehicle Jobs
Alabama	46,655	43,753	41,646	11,664	11,277	9,905	9,808	8,228	7,436
Alaska	5,304	5,129	4,995	12,258	12,193	10,777	269	252	246
Arizona	64,282	61,562	59,209	9,777	9,619	9,502	4,438	4,178	3,808
Arkansas	21,742	20,683	19,861	6,775	6,711	6,015	2,495	2,274	2,277
California	544,604	522,982	503,880	79,311	78,429	71,502	74,923	65,567	52,459
Colorado	67,060	63,762	60,990	29,683	29,316	25,891	5,148	4,675	4,129
Connecticut	44,215	42,529	41,363	4,833	4,757	4,299	3,374	2,875	2,470
Delaware	12,712	12,439	12,248	1,540	1,448	1,250	533	480	448
District of Col.	15,453	14,995	14,230	1,064	1,054	951	524	456	302
Florida	175,572	165,809	157,968	32,033	31,819	29,506	12,933	12,325	10,973

APPENDIX H // TOTAL ENERGY SECTOR EMPLOYMENT 2022–2024

State	2024 Clean Energy Jobs	2023 Clean Energy Jobs	2022 Clean Energy Jobs	2024 Fossil Fuel Jobs	2023 Fossil Fuel Jobs	2022 Fossil Fuel Jobs	2024 Clean Vehicle Jobs	2023 Clean Vehicle Jobs	2022 Clean Vehicle Jobs
Georgia	82,163	78,354	74,883	9,074	8,857	8,089	7,821	7,405	7,306
Hawaii	13,449	13,098	12,854	2,752	2,718	2,578	508	472	413
Idaho	14,675	13,976	13,350	1,572	1,458	1,177	1,270	1,252	1,291
Illinois	128,871	123,708	120,178	28,601	28,452	26,061	15,881	13,877	13,071
Indiana	89,581	88,020	85,298	15,152	14,837	13,557	21,703	21,667	20,160
Iowa	32,667	31,264	30,237	5,922	5,957	5,695	4,135	3,803	3,438
Kansas	26,058	24,808	23,717	18,036	18,056	17,042	2,849	2,554	2,298
Kentucky	39,596	37,164	35,060	14,728	14,295	12,197	10,454	9,354	8,372
Louisiana	31,048	29,519	28,014	66,025	65,770	58,361	2,080	1,960	1,770
Maine	13,450	12,955	12,453	2,141	2,078	1,840	889	884	875
Maryland	82,911	80,957	79,884	6,355	6,309	5,990	3,109	2,956	3,131
Massachusetts	123,403	118,137	113,239	10,105	9,819	9,074	9,437	7,706	5,905
Michigan	127,690	122,456	118,573	13,530	13,220	12,302	33,953	30,744	28,204
Minnesota	62,102	59,687	57,757	9,280	9,219	8,415	4,761	4,205	3,821
Mississippi	21,840	20,961	19,884	10,174	10,071	9,153	3,418	3,266	2,962
Missouri	59,245	56,450	54,073	6,929	6,815	6,404	9,360	8,074	7,106
Montana	10,590	10,162	9,865	5,860	5,867	4,972	747	728	724
Nebraska	20,425	19,470	18,730	2,684	2,603	2,359	2,412	2,165	2,023
Nevada	35,158	33,298	32,305	4,108	4,086	3,698	2,028	1,683	1,591
New Hampshire	16,856	16,240	15,867	2,340	2,257	2,077	1,222	1,108	1,050
New Jersey	59,524	56,255	53,108	16,880	17,034	15,795	6,331	5,708	4,980
New Mexico	13,453	12,683	11,973	31,142	28,907	22,775	1,073	980	914
New York	173,731	165,956	160,183	15,665	15,408	14,058	14,981	12,913	10,835
North Carolina	109,723	105,315	103,472	9,745	9,565	8,876	9,522	8,994	8,405
North Dakota	9,198	8,863	8,578	33,445	32,397	24,660	910	846	788
Ohio	119,241	114,210	109,368	29,226	29,629	28,728	24,300	22,247	19,858
Oklahoma	24,181	22,791	21,497	58,564	58,316	51,678	2,741	2,507	2,324
Oregon	56,781	55,227	53,728	1,707	1,628	1,455	3,892	3,506	3,115
Pennsylvania	100,704	96,268	92,340	41,523	41,119	35,686	10,141	9,533	9,040
Rhode Island	15,021	14,551	14,291	1,005	914	755	504	465	416
South Carolina	46,666	45,148	43,701	8,560	8,494	8,211	6,688	6,668	6,821
South Dakota	12,333	11,996	11,807	1,613	1,614	1,482	1,167	1,113	1,149
Tennessee	86,142	82,007	77,101	5,780	5,634	4,995	18,290	16,228	12,799
Texas	268,035	251,635	237,869	304,288	298,735	261,375	30,189	26,497	22,218
Utah	47,096	44,657	43,319	12,996	12,464	10,887	3,666	3,110	2,912
Vermont	16,003	15,740	15,648	686	597	460	1,771	1,711	1,707
Virginia	99,614	95,601	92,017	13,917	13,449	11,520	8,785	7,741	6,533
Washington	81,080	78,551	76,735	7,082	6,921	6,130	4,615	4,132	3,751
West Virginia	10,366	9,771	9,491	29,900	27,994	22,127	1,194	1,042	1,066
Wisconsin	73,639	71,449	71,107	7,878	7,831	7,413	6,719	6,118	5,774
Wyoming	8,497	8,235	8,209	22,339	21,730	17,936	459	412	379
United States	3,460,406	3,311,236	3,188,155	1,078,246	1,059,752	937,640	410,420	369,641	325,844

APPENDIX H // TOTAL ENERGY SECTOR EMPLOYMENT 2022–2024

State	2024 Gas & Diesel Vehicles Jobs	2023 Gas & Diesel Vehicles Jobs	2022 Gas & Diesel Vehicles Jobs	2024 Total Energy Jobs	2023 Total Energy Jobs	2022 Total Energy Jobs	2024 Overall State Employment	2023 Overall State Employment	2022 Overall State Employment
Alabama	64,723	57,474	56,702	161,782	147,660	143,098	2,101,125	2,054,394	2,007,007
Alaska	1,919	1,851	1,917	27,176	26,292	24,765	311,629	305,344	299,357
Arizona	31,036	30,074	28,262	135,272	127,840	123,508	3,231,371	3,163,042	3,057,805
Arkansas	17,560	16,426	15,838	66,544	63,572	61,763	1,293,983	1,275,330	1,236,063
California	154,535	155,492	158,800	932,273	909,876	885,539	18,111,429	18,153,035	17,622,235
Colorado	24,732	25,083	24,284	157,160	153,096	146,238	2,930,128	2,845,050	2,776,384
Connecticut	13,327	13,394	13,706	74,632	72,859	71,570	1,690,004	1,670,682	1,639,884
Delaware	3,018	2,904	2,906	20,780	20,218	19,617	472,857	465,279	451,984
District of Col.	39	83	243	19,278	18,761	17,911	759,939	760,023	749,370
Florida	80,980	81,747	76,291	351,934	342,373	327,007	9,870,072	9,581,728	9,241,147
Georgia	69,176	64,576	60,075	215,319	202,929	194,908	4,866,355	4,796,359	4,629,754
Hawaii	2,999	2,989	2,838	25,603	25,306	24,461	643,299	633,476	613,795
Idaho	9,506	9,637	9,509	34,308	33,092	32,356	854,904	831,189	802,322
Illinois	80,115	75,566	73,598	304,126	295,743	288,814	6,051,872	6,020,866	5,877,314
Indiana	135,200	141,107	146,099	280,900	284,211	285,967	3,187,120	3,160,961	3,089,279
Iowa	23,749	23,616	23,979	85,399	84,480	83,599	1,563,982	1,551,719	1,527,441
Kansas	16,188	15,718	15,820	80,469	78,958	77,247	1,431,759	1,418,778	1,381,000
Kentucky	70,562	66,526	65,623	156,950	149,453	143,994	2,004,416	1,966,625	1,919,766
Louisiana	14,738	14,519	14,236	158,568	156,634	147,338	1,905,381	1,884,694	1,853,853
Maine	5,884	6,118	6,122	26,795	25,612	24,927	636,802	628,779	613,677
Maryland	21,026	20,863	20,752	127,479	124,926	123,101	2,730,400	2,674,687	2,648,432
Massachusetts	14,300	14,848	16,188	174,946	168,129	163,437	3,655,401	3,642,181	3,556,919
Michigan	203,535	198,730	208,021	401,720	387,936	393,207	4,407,761	4,360,513	4,250,847
Minnesota	26,766	25,700	24,915	128,916	125,100	121,402	2,909,907	2,886,221	2,823,664
Mississippi	21,652	22,012	22,032	72,937	68,945	67,022	1,170,906	1,161,087	1,147,285
Missouri	51,909	48,596	46,325	162,015	156,555	151,777	2,906,339	2,870,012	2,804,806
Montana	5,035	5,120	4,917	32,537	32,158	30,875	510,019	499,156	488,956
Nebraska	14,154	13,683	13,780	57,326	56,228	55,344	1,018,535	996,898	978,540
Nevada	11,884	10,427	10,125	62,637	59,128	57,804	1,556,696	1,508,729	1,432,570
New Hampshire	6,347	6,336	6,181	30,879	30,121	29,508	689,220	676,238	662,228
New Jersey	32,404	32,160	31,389	143,045	140,500	135,172	4,293,084	4,223,612	4,123,726
New Mexico	6,135	6,074	6,124	69,502	66,035	57,920	868,281	845,699	819,116
New York	56,184	56,374	57,338	325,693	318,233	312,394	9,627,050	9,476,185	9,195,839
North Carolina	62,065	61,439	60,294	223,095	208,682	204,813	4,917,928	4,776,568	4,646,589
North Dakota	5,211	5,124	5,128	60,137	58,672	50,657	427,012	419,986	407,932
Ohio	128,930	128,673	130,495	333,110	330,009	326,660	5,514,546	5,466,851	5,352,629
Oklahoma	17,833	17,037	16,464	138,629	135,676	124,431	1,697,138	1,661,712	1,604,478
Oregon	19,702	19,792	19,609	95,972	92,499	90,543	1,985,457	1,960,508	1,914,974
Pennsylvania	61,673	61,676	59,417	279,521	272,965	258,202	6,023,445	5,950,634	5,807,876
Rhode Island	3,928	3,999	3,880	23,217	22,719	22,024	492,310	488,149	475,481
South Carolina	49,897	49,546	48,264	143,911	138,405	136,442	2,278,046	2,219,196	2,147,851
South Dakota	7,440	7,306	6,921	29,339	27,902	27,176	455,952	446,860	435,500

APPENDIX H // TOTAL ENERGY SECTOR EMPLOYMENT 2022–2024

State	2024 Gas & Diesel Vehicles Jobs	2023 Gas & Diesel Vehicles Jobs	2022 Gas & Diesel Vehicles Jobs	2024 Total Energy Jobs	2023 Total Energy Jobs	2022 Total Energy Jobs	2024 Overall State Employment	2023 Overall State Employment	2022 Overall State Employment
Tennessee	83,398	83,659	83,659	216,246	209,102	202,637	3,276,905	3,225,424	3,123,276
Texas	166,875	157,895	154,447	969,801	935,801	880,692	13,905,413	13,587,904	13,012,661
Utah	19,207	17,982	18,122	91,676	85,044	82,239	1,713,548	1,677,840	1,624,055
Vermont	1,398	1,609	1,638	21,976	21,508	21,361	310,299	303,744	298,675
Virginia	39,353	39,411	39,870	191,851	186,318	179,940	4,089,768	4,016,939	3,917,973
Washington	26,284	25,276	23,902	148,022	144,498	140,640	3,590,875	3,558,959	3,427,042
West Virginia	7,208	6,699	6,490	86,062	85,319	72,750	693,453	683,438	674,428
Wisconsin	37,503	37,030	36,920	146,405	142,018	141,530	2,936,570	2,912,288	2,832,567
Wyoming	2,787	2,728	2,599	46,618	45,981	41,606	277,422	270,607	267,245
United States	2,032,007	1,992,702	1,983,055	8,350,487	8,096,076	7,827,932	154,848,113	152,317,914	148,293,597

APPENDIX I // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, total clean energy jobs

	State	County	Clean Energy Jobs		State	County	Clean Energy Jobs		State	County	Clean Energy Jobs
1	CA	Los Angeles	101,437	26	FL	Palm Beach	18,268	50	CO	Denver	12,968
2	TX	Harris	65,535	27	CA	San Bernardino	17,685	51	OR	Washington	12,826
3	CA	Orange	58,520	28	IN	Marion	17,486	52	MD	Baltimore	12,800
4	IL	Cook	55,815	29	TX	Tarrant	17,143	53	MO	St. Louis	12,769
5	CA	San Diego	53,965	30	NC	Wake	17,122	54	CA	San Mateo	12,692
6	AZ	Maricopa	49,919	31	FL	Orange	16,936	55	UT	Utah	12,313
7	NY	New York	49,103	32	NV	Clark	16,921	56	NY	Queens	11,993
8	CA	Santa Clara	49,069	33	OR	Multnomah	16,652	57	MA	Norfolk	11,863
9	CA	Alameda	37,777	34	FL	Hillsborough	16,235	58	CT	Fairfield	11,859
10	MA	Middlesex	37,337	35	CA	Contra Costa	15,644	59	TN	Davidson	11,447
11	CA	San Francisco	36,133	36	NY	Suffolk	15,582	60	MD	Prince George's	11,218
12	TX	Dallas	36,000	37	DC	District of Columbia	15,453	61	OH	Hamilton	10,945
13	WA	King	34,665	38	FL	Broward	15,405	62	TN	Shelby	10,780
14	MI	Oakland	28,852	39	MD	Montgomery	14,513	63	FL	Duval	10,507
15	CA	Riverside	26,796	40	GA	Fulton	13,869	64	KY	Jefferson	9,994
16	MA	Suffolk	23,848	41	CT	Hartford	13,839	65	PA	Montgomery	9,722
17	MN	Hennepin	21,504	42	OH	Cuyahoga	13,732	66	MI	Kent	9,719
18	MI	Wayne	21,394	43	MI	Macomb	13,403	67	NY	Westchester	9,612
19	CA	Sacramento	20,261	44	MA	Essex	13,377	68	MA	Worcester	9,566
20	NC	Mecklenburg	19,586	45	IL	DuPage	13,323	69	NY	Erie	9,448
21	VA	Fairfax	19,548	46	NY	Nassau	13,262	70	PA	Philadelphia	9,313
22	FL	Miami-Dade	19,406	47	OH	Franklin	13,261	71	CT	New Haven	9,246
23	TX	Travis	19,310	48	PA	Allegheny	13,215	72	MO	Jackson	9,235
24	TX	Bexar	18,980	49	WI	Milwaukee	13,021	73	GA	Henry	9,206
25	UT	Salt Lake	18,678					74	CA	Fresno	9,189

APPENDIX I // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, total clean energy jobs

	State	County	Clean Energy Jobs		State	County	Clean Energy Jobs		State	County	Clean Energy Jobs
75	CA	Kern	9,112	84	KS	Johnson	8,214	93	WA	Snohomish	7,355
76	HI	Honolulu	9,063	85	IN	Elkhart	8,152	94	AL	Jefferson	7,346
77	FL	Pinellas	8,962	86	PA	Lehigh	8,103	95	MD	Baltimore City	7,320
78	WI	Dane	8,880	87	CA	Sonoma	8,025	96	CO	Jefferson	7,209
79	CA	Ventura	8,702	88	MD	Anne Arundel	8,010	97	TN	Hamilton	7,155
80	DE	New Castle	8,675	89	WI	Waukesha	7,985	98	CA	Yolo	7,087
81	NV	Storey	8,660	90	CO	Arapahoe	7,539	99	GA	Cobb	7,077
82	RI	Providence	8,630	91	CA	San Luis Obispo	7,522	100	SC	Greenville	6,903
83	NY	Kings	8,422	92	TX	Collin	7,435				

APPENDIX J // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, clean energy job growth

	State	County	Job Growth	2023 CE Jobs	Jobs Added		State	County	Job Growth	2023 CE Jobs	Jobs Added
1	TX	Upton	1847.7%	214	203	28	MS	Coahoma	60.5%	152	57
2	TX	Schleicher	814.1%	110	98	29	SC	Colleton	59.6%	185	69
3	FL	Hardee	243.3%	196	139	30	NC	Hoke	59.5%	442	165
4	CO	Moffat	206.9%	150	101	31	TX	Baylor	52.7%	232	80
5	TX	Willacy	191.0%	105	69	32	CO	Clear Creek	52.4%	85	29
6	TX	Foard	149.0%	52	31	33	IN	Washington	52.1%	304	104
7	KS	Anderson	128.4%	75	42	34	TN	Sequatchie	51.4%	101	34
8	OK	Harper	127.2%	48	27	35	NC	Brunswick	50.1%	1,315	439
9	VA	Hopewell City	111.7%	373	197	36	IA	Henry	49.4%	217	72
10	KS	Graham	103.1%	20	10	37	OK	Pottawatomie	49.2%	252	83
11	MN	Swift	96.4%	230	113	38	FL	Alachua	48.9%	2,640	867
12	CO	Lake	94.3%	70	34	39	NJ	Salem	47.6%	968	312
13	OK	Dewey	92.7%	210	101	40	WI	Grant	45.6%	475	149
14	NC	Randolph	90.8%	1,328	632	41	TX	Concho	45.5%	64	20
15	MO	Callaway	90.2%	1,288	611	42	TX	Carson	45.2%	132	41
16	TX	Donley	87.7%	58	27	43	KY	Nicholas	44.8%	19	6
17	TX	Borden	78.0%	105	46	44	MO	Webster	44.4%	211	65
18	LA	Franklin	74.3%	63	27	45	KY	Warren	43.9%	2,823	862
19	MO	Wright	74.2%	132	56	46	NV	Carson City	42.5%	516	154
20	CO	Cheyenne	69.5%	20	8	47	OK	Roger Mills	42.0%	57	17
21	SD	Oglala Lakota	66.5%	55	22	48	TX	Matagorda	41.0%	805	234
22	NY	Orleans	64.9%	675	266	49	CO	Logan	40.9%	723	210
23	GA	Habersham	64.3%	186	73	50	NV	Lander	40.6%	84	24
24	NE	Nemaha	64.1%	197	77	51	KS	Rice	40.6%	53	15
25	TN	Gibson	63.6%	610	237	52	MN	Kittson	40.4%	31	9
26	TX	Glasscock	61.9%	42	16	53	TX	Mills	40.1%	92	26
27	TX	Kinney	61.6%	23	9	54	TX	Starr	40.1%	199	57

APPENDIX J // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, clean energy job growth

	State	County	Job Growth	2023 CE Jobs	Jobs Added
55	NV	Mineral	38.8%	49	14
56	TX	Lamb	38.5%	116	32
57	TX	Potter	38.5%	2,066	574
58	GA	Seminole	38.4%	82	23
59	MO	Carroll	38.3%	65	18
60	KY	Casey	38.2%	35	10
61	MT	Beaverhead	37.4%	85	23
62	TX	Scurry	37.3%	629	171
63	IA	Cherokee	36.5%	112	30
64	MN	Lincoln	36.2%	108	29
65	NJ	Somerset	35.9%	3,329	880
66	UT	Rich	35.6%	34	9
67	OK	Caddo	35.4%	435	114
68	OK	Stephens	35.4%	232	61
69	CO	Yuma	34.4%	191	49
70	TX	Jack	34.4%	203	52
71	WA	Klickitat	34.1%	330	84
72	TX	Palo Pinto	33.5%	211	53
73	WI	Columbia	33.5%	627	157
74	NM	Rio Arriba	33.1%	104	26
75	NM	Los Alamos	32.6%	211	52
76	TX	Nolan	32.2%	473	115
77	NY	Wyoming	32.1%	388	94

	State	County	Job Growth	2023 CE Jobs	Jobs Added
78	ND	Williams	31.9%	801	194
79	MN	Pipestone	31.2%	146	35
80	CO	Summit	31.1%	477	113
81	OH	Meigs	31.1%	105	25
82	NC	Burke	30.9%	496	117
83	LA	Tangipahoa	30.8%	382	90
84	KS	Gove	30.8%	22	5
85	TX	Childress	30.0%	40	9
86	NM	Quay	29.7%	112	26
87	TX	Zapata	29.7%	122	28
88	NV	Nye	29.3%	299	68
89	TX	Floyd	29.1%	150	34
90	GA	Walker	28.9%	200	45
91	TX	Milam	28.9%	129	29
92	VA	Louisa	28.8%	1,073	240
93	CO	Grand	28.4%	150	33
94	ND	Oliver	28.3%	115	25
95	KS	Lincoln	28.2%	123	27
96	OH	Paulding	28.1%	150	33
97	NY	Oswego	28.1%	927	203
98	CO	Lincoln	28.0%	69	15
99	MS	Jefferson	27.8%	190	41
100	TX	Howard	27.4%	862	186

APPENDIX K // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, clean energy job density⁹

	State	County	2023 CE Jobs	Total County Jobs	CE Jobs per 1K
1	TX	Kenedy	135	272	497.4
2	IL	Pulaski	542	1,181	459.3
3	NV	Storey	8,660	19,490	444.3
4	VA	Surry	596	2,125	280.5
5	NV	Eureka	31	111	279.0
6	NE	Blaine	36	133	273.8
7	TX	Roberts	47	201	233.9
8	OK	Jefferson	217	986	220.0
9	GA	Pulaski	613	2,807	218.4
10	TX	Somervell	834	3,828	217.8
11	TX	Borden	105	491	213.9
12	IL	Edwards	431	2,081	207.0
13	NE	McPherson	13	65	205.2

	State	County	2023 CE Jobs	Total County Jobs	CE Jobs per 1K
14	MS	Jefferson	190	932	204.4
15	TX	Schleicher	110	572	191.9
16	VT	Essex	100	576	173.7
17	ND	Oliver	115	683	169.0
18	GA	Burke	1,231	7,468	164.8
19	TX	Baylor	232	1,549	149.9
20	GA	Montgomery	227	1,517	149.4
21	IN	Fountain	694	5,058	137.2
22	SD	Hyde	61	452	135.9
23	KS	Lincoln	123	922	133.5
24	TX	Foard	52	396	132.0
25	GA	Jefferson	634	4,970	127.5
26	IA	Wayne	270	2,125	126.9

APPENDIX K // U.S. CLEAN ENERGY EMPLOYMENT by top 100 counties, clean energy job density⁹

	State	County	2023 CE Jobs	Total County Jobs	CE Jobs per 1K
27	GA	Henry	9,206	74,562	123.5
28	LA	Cameron	510	4,170	122.3
29	UT	Beaver	323	2,723	118.7
30	WI	Florence	97	824	117.3
31	IL	Boone	1,308	11,610	112.6
32	TN	DeKalb	636	5,757	110.6
33	SD	Aurora	90	813	110.5
34	IL	Pope	73	671	108.4
35	KY	Webster	301	2,804	107.3
36	IL	Calhoun	77	726	106.7
37	MT	McCone	60	564	106.5
38	VA	Louisa	1,073	10,125	105.9
39	KS	Coffey	373	3,542	105.3
40	OK	Dewey	210	2,043	102.8
41	TX	Scurry	629	6,188	101.6
42	IL	Washington	646	6,356	101.6
43	TN	Union	280	2,859	97.9
44	FL	Jefferson	287	2,982	96.2
45	TX	Floyd	150	1,559	96.0
46	MS	Benton	99	1,038	95.6
47	IL	De Witt	474	4,976	95.3
48	NE	Jefferson	313	3,345	93.5
49	IA	Winnebago	350	3,746	93.4
50	TX	Madison	410	4,455	92.0
51	CO	Logan	723	7,875	91.8
52	MO	Callaway	1,288	14,868	86.6
53	GA	Madison	335	3,916	85.5
54	OR	Morrow	565	6,625	85.3
55	IA	Delaware	542	6,483	83.7
56	WY	N/A	132	2,126	82.9
57	DE	N/A	116	4,298	82.9
58	GA	Taylor	203	1,643	80.2
59	TN	Houston	1,116	1,451	80.1
60	TX	Jack	104	2,536	80.0
61	IN	Decatur	476	14,076	79.3
62	SD	Stanley	149	1,316	79.1
63	IA	Hancock	456	6,018	79.0

	State	County	2023 CE Jobs	Total County Jobs	CE Jobs per 1K
64	IL	Putnam	473	1,901	78.4
65	SC	Fairfield	14	5,830	78.2
66	TX	Nolan	77	6,052	78.2
67	NE	Sioux	397	185	78.0
68	VT	Grand Isle	5,836	997	77.5
69	OH	Morrow	314	5,238	75.8
70	OH	Wood	3,314	77,023	75.8
71	NC	Madison	1,649	4,155	75.6
72	CO	Broomfield	92	43,842	75.6
73	IN	Gibson	66	21,935	75.2
74	GA	Crawford	92	1,224	75.1
75	TX	Oldham	1,391	886	74.7
76	TX	Mills	59	1,269	72.9
77	IN	Shelby	805	19,121	72.8
78	TX	Hall	1,430	819	72.0
79	TX	Matagorda	1,914	11,225	71.7
80	MD	Calvert	551	19,975	71.6
81	OH	Shelby	214	27,086	70.7
82	VT	Orange	273	7,877	70.0
83	LA	Madison	214	3,071	69.7
84	VA	Manassas Park City	51	3,942	69.1
85	TX	Upton	607	3,116	68.8
86	KS	Wichita	862	740	68.5
87	WA	Jefferson	64	9,006	67.3
88	TX	Howard	5,729	12,910	66.7
89	TX	Concho	85	963	66.5
90	MN	Stearns	37	86,611	66.2
91	NV	Lincoln	7,087	1,291	66.1
92	GA	Webster	61	569	65.9
93	CA	Yolo	36	108,494	65.3
94	OR	Sherman	197	939	65.2
95	NE	Boyd	42	558	65.2
96	NE	Nemaha	108	3,023	65.1
97	TX	Glasscock	58	648	65.0
98	MN	Lincoln	664	1,672	64.3
99	TX	Donley	665	909	64.0
100	OH	Wyandot	6,601	10,394	63.9

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Abilene, TX	1,438	24.2%	403	36	<10	810	189
Akron, OH	5,784	3.9%	209	83	54	4,567	871
Albany, GA	994	4.8%	149	20	<10	717	102
Albany-Schenectady-Troy, NY	9,732	3.6%	1,825	398	91	6,674	745
Albuquerque, NM	7,295	5.1%	3,136	187	21	3,390	561
Alexandria, LA	1,047	3.9%	273	87	29	576	82
Allentown-Bethlehem-Easton, PA-NJ	9,942	4.5%	287	170	49	8,473	964
Altoona, PA	784	4.0%	39	59	<10	549	134
Amarillo, TX	2,881	28.6%	748	76	<10	1,714	341
Ames, IA	1,009	9.3%	410	16	22	488	73
Anchorage, AK	3,290	2.4%	199	170	32	2,709	180
Ann Arbor, MI	3,575	1.4%	348	114	13	2,408	692
Anniston-Oxford-Jacksonville, AL	643	9.2%	51	15	<10	362	212
Appleton, WI	3,528	3.0%	220	77	<10	2,839	389
Asheville, NC	5,738	2.8%	1,224	44	31	3,960	480
Athens-Clarke County, GA	1,118	4.6%	316	23	<10	687	85
Atlanta-Sandy Springs-Roswell, GA	53,145	4.6%	4,991	2,615	314	41,386	3,839
Atlantic City-Hammonton, NJ	1,418	4.1%	311	88	26	871	122
Auburn-Opelika, AL	1,181	8.2%	46	46	15	790	284
Augusta-Richmond County, GA-SC	5,099	6.3%	913	504	35	3,280	368
Austin-Round Rock, TX	25,155	4.2%	5,808	1,449	28	16,308	1,562
Bakersfield, CA	9,112	5.7%	3,203	331	247	3,943	1,388
Baltimore-Columbia-Towson, MD	39,696	1.8%	3,804	1,116	112	33,156	1,508
Bangor, ME	1,427	3.0%	301	50	24	900	152
Barnstable Town, MA	2,779	4.4%	472	84	<10	1,959	257
Baton Rouge, LA	7,940	6.7%	698	437	32	6,335	438
Battle Creek, MI	2,521	4.1%	123	<10	<10	1,605	781
Bay City, MI	690	21.3%	58	18	<10	473	137
Beaumont-Port Arthur, TX	4,702	1.3%	1,211	196	218	2,809	269
Bellingham, WA	2,716	2.8%	668	78	62	1,732	177
Bend-Redmond, OR	3,237	2.3%	1,015	137	<10	1,916	165
Billings, MT	2,213	-0.7%	74	111	<10	1,802	221
Binghamton, NY	1,457	9.2%	82	120	<10	1,039	208
Birmingham-Hoover, AL	11,206	3.9%	1,021	463	32	8,255	1,436
Bismarck, ND	1,682	5.2%	507	66	<10	977	129
Blacksburg-Christiansburg-Radford, VA	2,349	8.1%	89	70	<10	1,138	1,046
Bloomington, IL	1,923	4.6%	434	43	19	836	591
Bloomington, IN	1,116	3.9%	209	37	<10	781	86
Boise City, ID	7,606	4.5%	1,145	670	56	5,145	590
Boston-Cambridge-Newton, MA-NH	98,546	3.6%	18,815	5,546	531	67,725	5,930
Boulder, CO	5,174	4.8%	2,036	336	83	2,434	284

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Bowling Green, KY	3,010	41.9%	215	203	<10	1,709	878
Bremerton-Silverdale, WA	1,552	2.8%	106	73	<10	1,265	104
Bridgeport-Stamford-Norwalk, CT	11,859	3.5%	785	201	382	9,841	651
Brownsville-Harlingen, TX	1,549	10.6%	378	65	<10	820	285
Brunswick, GA	448	10.0%	65	<10	<10	308	65
Buffalo-Cheektowaga-Niagara Falls, NY	10,894	3.9%	1,484	949	69	6,458	1,933
Burlington, NC	943	4.2%	47	<10	<10	726	160
Burlington-South Burlington, VT	7,089	1.2%	880	569	166	4,835	640
Canton-Massillon, OH	3,106	3.7%	71	43	20	2,316	656
Cape Coral-Fort Myers, FL	6,024	3.3%	530	105	35	4,901	452
Cape Girardeau, MO-IL	595	4.8%	39	13	<10	429	107
Carson City, NV	516	45.4%	80	130	<10	199	104
Casper, WY	1,377	3.5%	62	71	<10	1,131	104
Cedar Rapids, IA	3,070	3.3%	771	89	73	1,871	266
Champaign-Urbana, IL	1,673	5.4%	160	61	61	1,095	296
Charleston, WV	1,717	5.5%	126	194	<10	1,206	190
Charleston-North Charleston, SC	8,861	3.3%	1,714	359	61	5,593	1,134
Charlotte-Concord-Gastonia, NC-SC	34,637	2.9%	5,888	660	195	24,598	3,296
Charlottesville, VA	3,039	2.9%	972	84	12	1,855	116
Chattanooga, TN-GA	7,913	2.5%	1,044	1,010	70	3,794	1,994
Cheyenne, WY	1,392	3.0%	61	57	18	1,178	78
Chicago-Naperville-Elgin, IL-IN-WI	96,164	3.6%	12,760	4,426	561	68,638	9,779
Chico, CA	2,053	3.0%	659	36	45	1,053	259
Cincinnati, OH-KY-IN	20,140	3.9%	1,561	350	82	15,007	3,140
Clarksville, TN-KY	2,102	4.7%	230	91	57	1,168	556
Cleveland, TN	1,720	25.8%	671	403	32	534	81
Cleveland-Elyria, OH	20,193	3.1%	1,540	304	162	15,079	3,108
Coeur d'Alene, ID	1,202	8.0%	236	77	<10	804	83
College Station-Bryan, TX	1,691	4.2%	147	62	<10	1,293	188
Colorado Springs, CO	5,786	2.5%	1,162	238	85	3,680	621
Columbia, MO	1,557	10.2%	79	16	10	1,227	225
Columbia, SC	6,972	3.9%	1,005	181	74	5,139	573
Columbus, GA-AL	1,597	16.3%	110	184	<10	1,074	227
Columbus, IN	2,222	5.7%	53	44	<10	1,476	643
Columbus, OH	20,735	4.2%	1,591	440	92	14,685	3,926
Corpus Christi, TX	4,738	6.5%	1,022	612	16	2,753	335
Corvallis, OR	966	5.7%	192	47	<10	684	36
Crestview-Fort Walton Beach-Destin, FL	2,160	5.7%	200	37	20	1,761	142
Cumberland, MD-WV	472	3.9%	23	<10	<10	405	36
Dallas-Fort Worth-Arlington, TX	71,365	4.1%	7,573	3,345	83	50,534	9,830
Dalton, GA	1,450	3.6%	1,087	18	<10	243	100
Danville, IL	301	3.1%	24	12	<10	178	77

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Danville, VA	737	10.4%	70	17	<10	432	216
Davenport-Moline-Rock Island, IA-IL	3,704	3.7%	801	121	80	2,275	427
Dayton, OH	6,994	4.8%	343	115	55	5,278	1,203
Decatur, AL	1,104	4.9%	78	52	<10	883	85
Decatur, IL	1,175	5.1%	127	22	<10	670	352
Deltona-Daytona Beach-Ormond Beach, FL	3,358	9.1%	355	118	24	2,541	319
Denver-Aurora-Lakewood, CO	39,923	4.1%	12,082	2,010	653	22,353	2,825
Des Moines-West Des Moines, IA	7,808	3.5%	1,114	194	55	5,530	915
Detroit-Warren-Dearborn, MI	68,555	4.3%	5,069	912	150	42,765	19,660
Dothan, AL	1,490	9.7%	392	41	15	922	120
Dover, DE	1,390	2.1%	73	19	21	1,197	81
Dubuque, IA	1,161	2.9%	153	25	<10	804	171
Duluth, MN-WI	2,432	5.9%	272	145	<10	1,802	209
Durham-Chapel Hill, NC	7,406	4.4%	2,114	95	22	4,642	533
Eau Claire, WI	2,076	3.4%	101	39	25	1,712	199
El Centro, CA	1,374	8.9%	567	23	199	425	161
Elizabethtown-Fort Knox, KY	1,006	20.1%	21	132	<10	521	328
Elkhart-Goshen, IN	8,152	2.3%	370	331	19	1,766	5,668
Elmira, NY	617	5.4%	34	12	<10	439	127
El Paso, TX	4,797	8.5%	625	136	<10	3,205	829
Erie, PA	1,603	3.5%	184	56	83	1,104	176
Eugene, OR	3,305	2.7%	315	174	15	2,413	389
Evansville, IN-KY	3,368	2.1%	338	99	107	2,505	320
Fairbanks, AK	822	9.7%	136	64	<10	570	49
Fargo, ND-MN	2,894	1.6%	496	94	49	1,880	375
Farmington, NM	854	4.0%	63	414	11	291	74
Fayetteville, NC	2,577	10.1%	82	80	356	1,789	270
Fayetteville-Springdale-Rogers, AR-MO	3,803	4.0%	338	159	34	2,952	321
Flagstaff, AZ	910	1.4%	261	26	<10	555	68
Flint, MI	3,465	5.6%	266	30	<10	1,625	1,539
Florence, SC	1,421	7.4%	286	106	<10	875	147
Florence-Muscle Shoals, AL	1,229	8.7%	73	36	<10	734	377
Fond du Lac, WI	1,325	2.9%	48	148	<10	996	131
Fort Collins, CO	3,946	8.8%	486	155	115	2,825	365
Fort Smith, AR-OK	2,639	6.0%	109	391	33	1,896	210
Fort Wayne, IN	5,866	1.7%	510	246	50	3,585	1,475
Fresno, CA	9,189	3.7%	1,866	241	195	4,886	2,000
Gadsden, AL	710	4.0%	32	154	<10	360	162
Gainesville, FL	2,689	47.7%	411	20	14	2,135	109
Gainesville, GA	1,361	4.7%	78	28	<10	796	456
Glens Falls, NY	1,167	3.9%	578	<10	<10	498	78
Goldsboro, NC	874	1.8%	24	<10	15	708	119
Grand Forks, ND-MN	1,047	-0.1%	175	30	17	705	120

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Grand Junction, CO	1,233	6.8%	192	55	37	773	174
Grand Rapids-Wyoming, MI	14,941	3.5%	1,221	1,848	154	8,165	3,554
Great Falls, MT	803	9.1%	25	28	27	661	62
Greeley, CO	3,090	4.0%	815	228	413	1,365	270
Green Bay, WI	3,908	2.7%	229	97	12	3,335	235
Greensboro-High Point, NC	7,909	11.5%	342	719	45	5,599	1,205
Greenville, NC	1,359	1.9%	144	12	10	1,090	103
Greenville-Anderson-Mauldin, SC	9,240	2.8%	1,097	200	196	6,378	1,368
Gulfport-Biloxi-Pascagoula, MS	2,396	3.2%	111	66	<10	2,046	169
Hagerstown-Martinsburg, MD-WV	1,613	3.1%	77	44	<10	1,320	165
Hanford-Corcoran, CA	459	3.1%	52	12	24	245	126
Harrisburg-Carlisle, PA	4,287	5.6%	399	311	49	3,081	447
Harrisonburg, VA	1,528	4.6%	55	18	<10	1,124	323
Hartford-West Hartford-East Hartford, CT	16,791	3.8%	1,655	278	<10	13,470	1,388
Hattiesburg, MS	996	3.8%	47	46	<10	793	102
Hickory-Lenoir-Morganton, NC	2,254	8.8%	117	155	13	1,472	498
Hinesville, GA	113	10.4%	<10	<10	<10	81	26
Holland, MI	849	1.0%	91	19	17	583	139
Hot Springs, AR	565	5.9%	47	<10	17	445	47
Houma-Thibodaux, LA	845	4.4%	38	71	13	646	77
Houston-The Woodlands-Sugar Land, TX	77,434	7.1%	14,136	4,983	1,172	51,698	5,446
Huntington-Ashland, WV-KY-OH	2,385	5.9%	117	92	<10	1,675	500
Huntsville, AL	8,224	6.7%	1,265	284	19	5,294	1,362
Idaho Falls, ID	1,287	4.9%	295	72	15	769	136
Indianapolis-Carmel-Anderson, IN	28,817	1.0%	6,133	858	159	18,900	2,767
Iowa City, IA	1,256	6.9%	273	26	<10	866	85
Ithaca, NY	1,005	9.2%	191	27	<10	524	260
Jackson, MI	1,308	4.8%	100	11	<10	789	406
Jackson, MS	5,620	3.9%	477	277	39	3,683	1,144
Jackson, TN	1,996	3.1%	453	150	27	986	380
Jacksonville, FL	13,274	4.1%	1,695	391	126	9,969	1,093
Jacksonville, NC	836	4.4%	56	<10	<10	682	85
Janesville-Beloit, WI	1,475	3.9%	39	39	<10	1,119	272
Jefferson City, MO	2,267	39.4%	1,069	144	15	867	172
Johnson City, TN	1,471	3.5%	80	100	<10	1,097	184
Johnstown, PA	660	4.6%	46	28	<10	440	143
Jonesboro, AR	843	3.7%	53	18	49	612	111
Joplin, MO	1,263	3.2%	30	120	20	764	328
Kalamazoo-Portage, MI	3,593	2.4%	576	65	77	2,310	565
Kankakee, IL	603	2.4%	46	22	22	386	127
Kansas City, MO-KS	24,882	3.4%	2,977	623	220	16,909	4,153
Kennewick-Richland, WA	4,846	4.4%	1,572	146	174	2,781	172
Killeen-Temple, TX	1,847	5.7%	163	50	<10	1,280	352

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Kingsport-Bristol-Bristol, TN-VA	3,153	3.6%	260	175	41	2,194	483
Kingston, NY	987	4.1%	107	10	29	697	143
Knoxville, TN	12,053	5.0%	594	1,029	224	7,712	2,494
Kokomo, IN	1,457	3.9%	37	77	<10	392	949
La Crosse-Onalaska, WI-MN	1,752	3.7%	85	25	<10	1,467	174
Lafayette, LA	2,387	5.2%	112	156	48	1,837	235
Lafayette-West Lafayette, IN	2,789	0.9%	212	36	23	1,187	1,331
Lake Charles, LA	1,989	4.6%	36	120	42	1,708	82
Lake Havasu City-Kingman, AZ	773	3.5%	47	33	<10	554	137
Lakeland-Winter Haven, FL	3,707	7.3%	720	66	26	2,490	405
Lancaster, PA	5,061	5.3%	799	92	57	3,359	754
Lansing-East Lansing, MI	4,447	4.9%	393	87	14	2,435	1,519
Laredo, TX	1,143	4.6%	114	60	<10	685	283
Las Cruces, NM	1,052	5.8%	228	16	73	658	77
Las Vegas-Henderson-Paradise, NV	16,921	7.3%	5,758	676	76	9,104	1,306
Lawrence, KS	667	7.4%	104	<10	<10	503	47
Lawton, OK	438	1.7%	47	12	63	284	32
Lebanon, PA	649	5.6%	71	21	<10	405	143
Lewiston, ID-WA	369	4.3%	29	24	<10	284	28
Lewiston-Auburn, ME	1,036	13.1%	159	31	<10	758	80
Lexington-Fayette, KY	6,455	5.0%	315	155	19	4,063	1,903
Lima, OH	1,585	13.1%	401	<10	244	491	443
Lincoln, NE	3,691	5.0%	456	96	<10	2,688	448
Little Rock-North Little Rock-Conway, AR	6,361	5.7%	696	183	75	4,892	515
Logan, UT-ID	1,348	10.2%	57	207	<10	905	174
Longview, TX	2,648	5.0%	157	130	<10	2,153	207
Longview, WA	637	4.4%	48	41	<10	485	53
Los Angeles-Long Beach-Anaheim, CA	159,957	3.7%	26,271	9,403	617	98,783	24,884
Louisville/Jefferson County, KY-IN	13,995	4.6%	1,245	265	171	8,902	3,413
Lubbock, TX	2,298	4.1%	181	58	<10	1,642	414
Lynchburg, VA	2,795	3.2%	417	74	<10	2,079	223
Macon, GA	1,135	4.0%	123	26	<10	862	115
Madera, CA	819	2.4%	111	11	32	510	154
Madison, WI	10,176	5.0%	1,025	411	98	7,841	801
Manchester-Nashua, NH	5,165	2.9%	895	83	37	3,818	331
Manhattan, KS	588	4.3%	31	19	<10	482	52
Mankato-North Mankato, MN	912	5.9%	<10	36	25	693	150
Mansfield, OH	1,218	4.5%	20	17	<10	855	322
McAllen-Edinburg-Mission, TX	2,598	5.8%	382	73	<10	1,661	478
Medford, OR	1,895	6.4%	288	88	10	1,333	176
Memphis, TN-MS-AR	13,026	3.4%	522	1,053	180	9,688	1,582
Merced, CA	1,290	13.3%	328	18	80	553	311
Miami-Fort Lauderdale-West Palm Beach, FL	53,079	5.5%	9,845	2,923	362	36,482	3,467

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Michigan City-La Porte, IN	1,027	5.4%	101	20	<10	821	78
Midland, TX	1,677	4.0%	179	150	<10	1,062	285
Milwaukee-Waukesha-West Allis, WI	23,313	1.0%	2,139	615	32	19,200	1,327
Minneapolis-St. Paul-Bloomington, MN-WI	40,972	3.7%	4,010	2,000	193	31,956	2,813
Missoula, MT	1,204	-1.5%	80	41	<10	972	106
Mobile, AL	3,870	4.6%	247	200	30	3,026	367
Modesto, CA	4,517	3.7%	523	117	490	2,513	874
Monroe, LA	1,031	4.4%	118	33	<10	772	106
Monroe, MI	1,625	7.3%	832	43	10	555	185
Montgomery, AL	3,869	8.6%	206	108	<10	2,410	1,135
Morgantown, WV	872	5.4%	68	64	<10	681	58
Morristown, TN	1,587	5.3%	569	40	13	438	528
Mount Vernon-Anacortes, WA	1,371	2.5%	308	99	45	844	76
Muncie, IN	834	1.2%	44	23	<10	553	208
Muskegon, MI	1,144	1.1%	169	45	13	705	213
Myrtle Beach-Conway-North Myrtle Beach, SC-NC	2,528	-3.5%	242	31	36	2,089	129
Napa, CA	1,411	2.1%	139	34	32	1,066	141
Naples-Immokalee-Marco Island, FL	3,272	3.8%	211	19	39	2,793	209
Nashville-Davidson--Murfreesboro--Franklin, TN	28,903	5.4%	1,421	3,187	428	17,296	6,571
New Haven-Milford, CT	9,246	3.6%	1,180	131	<10	7,108	827
New Orleans-Metairie, LA	9,344	4.0%	1,871	384	32	6,548	509
New York-Newark-Jersey City, NY-NJ-PA	164,676	4.5%	23,698	3,820	1,116	124,183	11,858
Niles-Benton Harbor, MI	1,292	6.2%	199	20	38	733	301
North Port-Sarasota-Bradenton, FL	6,185	4.2%	566	133	74	4,824	589
Nonwich-New London, CT	2,672	7.6%	532	78	<10	1,928	133
Ocala, FL	2,188	12.3%	413	25	11	1,367	372
Ocean City, NJ	380	6.6%	22	<10	<10	299	50
Odessa, TX	1,883	14.3%	467	78	<10	1,085	253
Ogden-Clearfield, UT	8,957	4.9%	397	161	46	7,110	1,244
Oklahoma City, OK	9,086	5.9%	1,001	582	267	6,039	1,197
Olympia-Tumwater, WA	1,954	2.9%	153	90	29	1,539	143
Omaha-Council Bluffs, NE-IA	9,061	3.9%	984	267	40	6,924	846
Orlando-Kissimmee-Sanford, FL	25,000	3.8%	4,676	328	1,044	17,090	1,862
Oshkosh-Neenah, WI	3,338	3.3%	207	236	31	2,116	749
Owensboro, KY	791	3.3%	14	11	13	534	219
Oxnard-Thousand Oaks-Ventura, CA	8,702	2.0%	1,306	274	258	5,561	1,304
Palm Bay-Melbourne-Titusville, FL	4,775	6.5%	580	100	74	3,717	304
Panama City, FL	1,446	3.5%	77	26	<10	1,221	117
Parkersburg-Vienna, WV	476	6.6%	33	29	<10	335	78
Pensacola-Ferry Pass-Brent, FL	3,115	6.1%	260	74	20	2,451	310
Peoria, IL	3,612	8.2%	456	97	366	2,460	234
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	50,555	4.3%	5,939	1,674	549	38,096	4,297
Phoenix-Mesa-Scottsdale, AZ	51,267	4.5%	10,935	1,714	305	35,010	3,303

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Pine Bluff, AR	408	7.4%	79	<10	17	253	54
Pittsburgh, PA	20,275	4.3%	2,866	910	170	14,841	1,488
Pittsfield, MA	1,664	4.9%	125	75	<10	1,274	182
Pocatello, ID	627	2.3%	66	91	11	423	37
Portland-South Portland, ME	6,170	2.8%	1,118	297	89	4,332	334
Portland-Vancouver-Hillsboro, OR-WA	40,736	2.5%	5,535	2,776	261	29,890	2,274
Port St. Lucie, FL	3,196	2.8%	575	30	16	2,302	272
Prescott, AZ	1,285	9.4%	76	22	<10	1,079	105
Providence-Warwick, RI-MA	20,609	5.1%	3,327	910	327	14,493	1,552
Provo-Orem, UT	12,445	3.6%	5,243	234	45	6,471	453
Pueblo, CO	1,309	8.4%	289	97	22	803	97
Punta Gorda, FL	898	7.4%	86	<10	<10	710	91
Racine, WI	2,214	3.8%	96	22	<10	1,756	335
Raleigh, NC	18,750	4.9%	1,554	1,018	67	15,273	837
Rapid City, SD	2,289	3.3%	515	141	<10	1,484	148
Reading, PA	3,778	5.4%	1,287	158	83	1,748	502
Redding, CA	1,656	8.0%	342	38	<10	942	324
Reno, NV	14,706	2.4%	2,637	8,785	37	2,825	422
Richmond, VA	15,852	3.8%	1,672	563	320	12,106	1,189
Riverside-San Bernardino-Ontario, CA	44,481	4.6%	9,399	2,175	246	22,742	9,918
Roanoke, VA	3,903	5.9%	382	242	<10	2,697	581
Rochester, MN	1,620	4.6%	34	63	50	1,311	163
Rochester, NY	9,159	9.8%	898	376	674	5,898	1,313
Rockford, IL	3,506	6.2%	227	39	20	2,167	1,053
Rocky Mount, NC	1,080	1.1%	51	12	37	925	56
Rome, GA	378	9.1%	41	<10	<10	192	136
Sacramento--Roseville--Arden-Arcade, CA	35,748	4.4%	12,290	908	1,028	17,316	4,207
Saginaw, MI	2,964	3.5%	1,084	17	<10	1,181	675
St. Cloud, MN	6,262	-0.3%	3,937	147	<10	1,785	389
St. George, UT	1,916	7.5%	64	105	<10	1,540	203
St. Joseph, MO-KS	964	1.1%	109	232	<10	513	100
St. Louis, MO-IL	28,241	3.3%	2,556	696	304	21,531	3,154
Salem, OR	3,930	0.9%	179	279	79	3,033	360
Salinas, CA	3,129	1.9%	614	56	279	1,700	481
Salisbury, MD-DE	1,505	-5.7%	141	18	22	1,215	109
Salt Lake City, UT	19,008	6.5%	2,693	461	35	14,450	1,368
San Angelo, TX	1,027	11.6%	106	236	<10	545	139
San Antonio-New Braunfels, TX	22,686	10.8%	3,889	1,214	770	12,817	3,997
San Diego-Carlsbad, CA	53,965	6.8%	14,889	2,233	451	31,621	4,771
Sandusky, OH	936	5.4%	161	<10	24	315	428
San Francisco-Oakland-Hayward, CA	106,509	3.3%	34,592	4,065	342	53,176	14,334
San Jose-Sunnyvale-Santa Clara, CA	49,448	2.9%	16,338	2,723	119	27,887	2,381
San Luis Obispo-Paso Robles-Arroyo Grande, CA	7,522	7.8%	4,835	113	28	2,079	467

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Santa Cruz-Watsonville, CA	2,531	2.2%	455	78	105	1,350	543
Santa Fe, NM	1,149	6.5%	506	20	<10	553	64
Santa Maria-Santa Barbara, CA	4,705	4.6%	694	143	151	3,186	530
Santa Rosa, CA	8,025	2.1%	3,144	194	50	3,810	826
Savannah, GA	2,178	8.1%	152	112	<10	1,699	212
Scranton--Wilkes-Barre--Hazleton, PA	3,217	6.8%	541	183	53	2,086	354
Seattle-Tacoma-Bellevue, WA	48,754	3.0%	5,142	2,368	247	38,450	2,547
Sebastian-Vero Beach, FL	1,020	9.1%	177	<10	<10	758	71
Sheboygan, WI	967	2.3%	88	29	<10	779	64
Sherman-Denison, TX	800	3.4%	80	151	<10	448	120
Shreveport-Bossier City, LA	2,606	4.3%	620	188	<10	1,528	264
Sioux City, IA-NE-SD	1,726	3.2%	245	46	20	1,166	249
Sioux Falls, SD	4,476	2.1%	1,046	162	48	2,781	440
South Bend-Mishawaka, IN-MI	3,305	1.9%	879	106	18	1,881	421
Spartanburg, SC	5,348	1.8%	860	442	42	1,845	2,160
Spokane-Spokane Valley, WA	4,974	3.3%	488	271	53	3,716	446
Springfield, IL	1,769	3.1%	306	36	22	1,221	185
Springfield, MA	7,002	7.0%	1,568	274	166	4,185	809
Springfield, MO	4,246	5.6%	226	299	34	2,611	1,076
Springfield, OH	929	6.3%	25	<10	14	362	523
State College, PA	1,074	4.3%	166	64	<10	789	52
Stockton-Lodi, CA	6,613	13.8%	1,193	584	352	2,910	1,574
Sumter, SC	609	8.6%	95	85	<10	392	29
Syracuse, NY	5,190	7.6%	709	215	51	3,540	675
Tallahassee, FL	2,964	4.6%	568	82	26	2,014	275
Tampa-St. Petersburg-Clearwater, FL	28,124	6.6%	4,898	1,424	773	19,250	1,779
Terre Haute, IN	1,509	0.4%	135	40	<10	884	443
Texarkana, TX-AR	792	6.4%	47	17	<10	489	234
Toledo, OH	12,380	1.8%	3,097	727	41	5,504	3,011
Topeka, KS	1,673	3.7%	135	74	<10	1,263	197
Trenton, NJ	3,069	2.6%	739	95	<10	1,983	247
Tucson, AZ	6,794	2.3%	1,059	192	16	5,031	496
Tulsa, OK	7,208	2.9%	777	478	206	4,999	747
Tuscaloosa, AL	2,824	9.6%	110	63	11	1,432	1,209
Tyler, TX	1,976	3.0%	222	126	<10	1,339	286
Urban Honolulu, HI	9,063	2.8%	3,123	420	752	4,393	374
Utica-Rome, NY	1,431	6.4%	96	52	<10	924	350
Valdosta, GA	993	13.4%	24	350	10	563	47
Vallejo-Fairfield, CA	3,088	2.4%	183	296	21	1,995	593
Victoria, TX	613	8.6%	86	43	<10	407	77
Vineland-Bridgeton, NJ	532	-6.1%	18	13	31	394	77
Virginia Beach-Norfolk-Newport News, VA-NC	15,859	5.4%	1,005	345	18	12,953	1,538
Visalia-Porterville, CA	2,981	3.2%	388	56	383	1,541	613

APPENDIX L // U.S. CLEAN ENERGY EMPLOYMENT by metropolitan area

MSA	Total Clean Energy Jobs	Job Growth	Renewable Generation	Storage/ Grid	Biofuels	Energy Efficiency	Clean Vehicles
Waco, TX	1,976	4.3%	120	49	<10	1,506	301
Warner Robins, GA	1,480	4.3%	715	19	<10	534	205
Washington-Arlington-Alexandria, DC-VA-MD-WV	90,393	3.0%	11,048	2,419	139	73,003	3,785
Waterloo-Cedar Falls, IA	1,495	2.0%	269	26	13	1,001	186
Wausau, WI	2,171	3.4%	102	28	<10	1,842	194
Weirton-Steubenville, WV-OH	1,007	3.1%	598	18	<10	352	39
Wenatchee, WA	1,084	0.4%	139	25	206	664	49
Wheeling, WV-OH	754	1.4%	72	37	<10	573	70
Wichita, KS	5,019	4.0%	289	65	32	4,095	538
Wichita Falls, TX	761	5.7%	111	26	<10	494	129
Williamsport, PA	736	3.4%	48	47	20	523	98
Wilmington, NC	3,303	2.4%	386	56	12	2,630	218
Winchester, VA-WV	944	3.4%	24	22	<10	758	135
Winston-Salem, NC	5,220	-1.2%	239	773	35	3,743	430
Worcester, MA-CT	9,566	6.0%	1,165	529	76	6,380	1,415
Yakima, WA	2,050	4.1%	237	51	447	1,167	147
York-Hanover, PA	3,755	3.7%	571	212	51	2,473	448
Youngstown-Warren-Boardman, OH-PA	3,779	9.4%	424	237	27	2,532	560
Yuba City, CA	820	2.2%	92	40	40	489	159
Yuma, AZ	1,401	11.9%	46	472	42	719	122

Note: About 440,000 clean energy jobs nationwide are in rural or non-metropolitan areas.

Endnotes

- 1 Unless otherwise stated, all employment data is based on the 2024 U.S. Energy and Employment Report (USEER), August 2024, Department of Energy (DOE).
- 2 May 2023 National Occupational Employment and Wage Estimates, Bureau of Labor Statistics (BLS). Available at https://www.bls.gov/oes/current/oes_nat.htm.
- 3 Clean Economy Works Announcement Tracker, E2. Available at <https://e2.org/announcements>.
- 4 Ibid.
- 5 May 2023 National Occupational Employment and Wage Estimates, Bureau of Labor Statistics (BLS). Available at https://www.bls.gov/oes/current/oes_nat.htm
- 6 Ibid.
- 7 Information on the representation of people with disabilities, lesbian, gay, bisexual, transgender, intersex, and queer people, immigrants, religious minorities, and young people in clean energy is limited. Based on the available data from the Bureau of Labor Statistics (BLS) and the supplemental employer survey used by the USEER, this analysis was unable to produce any findings regarding these groups.
- 8 Includes fossil fuel employment across transmission, distribution, and storage; electric power generation; and fuels.
- 9 United States Bureau of Labor Statistics (BLS) 2023 Q4 employment, all ownerships (accessed August 2024).

On Diversity & Equity

A good economy and good environment should be for all. For that reason, E2 supports policies that advance diversity and equity and ensures that the benefits of a clean economy—jobs, savings, opportunities, health—are extended to all communities. Environmental justice is considered in every policy on which we work, and diversity and inclusivity are tantamount in everything we do. Internally, we will prioritize making our membership more representative of America as a whole and addressing internal biases that can keep us from fulfilling our goals.

ABOUT E2



E2 is a national, nonpartisan group of more than 11,000 business leaders, investors and others who advocate for smart policies that are good for the economy and good for the environment. E2 members have founded or funded more than 2,500 companies, created more than 600,000 jobs, and manage more than \$100 billion in venture and private equity capital.