Clean Jobs Pennsylvania 2023[1]

PENNSYLVANIA SEES GROWTH IN CLEAN ENERGY JOBS, INFRASTRUCTURE LEADS THE WAY

KEY FINDINGS

#10 for most clean energy jobs in the U.S. with over 96K employed

1.5X clean energy jobs are growing 50% faster than the rest of Pennsylvania's economy

RURAL counties have the most clean energy job growth in the Commonwealth

4th fastest clean energy job growth among top 10 states

7.3% Grid, Storage and Generation are fast growing, preparing us for the energy future

SECTOR SUMMARY HIGHLIGHTS

CLEAN ENERGY OVERALL: Pennsylvania's clean energy economy grew 4.3 percent and added nearly 4,000 new workers in 2022. Clean energy now accounts for over one third of all energy industry jobs in Pennsylvania, a strong statement for the nation's second largest energy producer.

ENERGY EFFICIENCY: Energy efficiency is Pennsylvania's largest energy sector with 69,990 workers—the eleventh largest energy efficiency sector in the nation. While the sector remains just below its pre-pandemic high of 71,443, it is expected to top pre-pandemic levels in the year 2024.

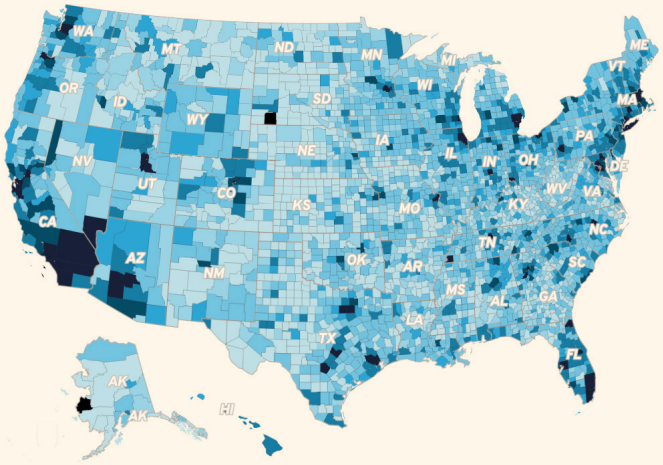
RENEWABLE GENERATION: Renewable generation grew 8.6 percent and added nearly 1,000 jobs in 2022, led by jobs in solar (6,304) and wind energy (3,092). This is the first year that renewable generation has been the fastest growing sector in Pennsylvania's clean energy economy.

STORAGE AND GRID MODERNIZATION: Pennsylvania is preparing for the future by investing in the battery storage and grid modernization industries, which grew 7.3 percent in 2022 and more than 15 percent in 2021. At 4,000 workers, the state's storage and grid sector is the tenth largest nationwide and is a vital sector for maximizing the funds in the Infrastructure Investment and Jobs Act and Inflation Reduction Act.

CLEAN VEHICLES: Clean vehicle jobs continue to make a strong showing in Pennsylvania's clean energy economy, growing 6 percent in 2022 and over 25 percent in 2021. At over 9,500 workers statewide, Pennsylvania has one of the largest clean vehicle workforces in the nation.

EXPLORE THE DATA FURTHER

Dive deeper into this report further at www.cleanjobsamerica.e2.org to explore the latest state and county clean energy employment data across the entire U.S., including national and statewide rankings by total clean energy jobs, jobs per capita, and employment growth.



For information on methodology and this report's analysis—including what technologies and sectors are counted as clean energy, what jobs are not counted, definitions of clean energy sectors and subsectors, and more—visit www.cleanjobsamerica.e2.org.

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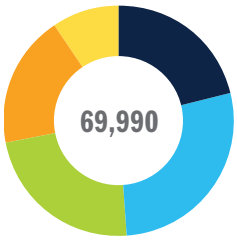
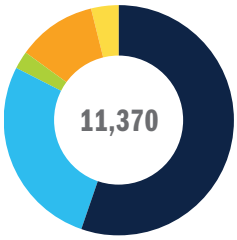
PENNSYLVANIA CLEAN ENERGY ECONOMY—AT A GLANCE

FIG 1 // PENNSYLVANIA CLEAN ENERGY EMPLOYMENT by sectors



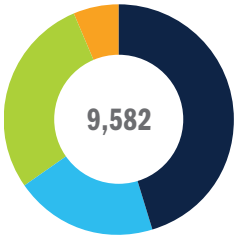
ENERGY EFFICIENCY:

- ENERGY STAR and Efficient Lighting: **14,897**
- Traditional HVAC: **19,327**
- High-Efficiency HVAC and Renewable Heating & Cooling: **16,212**
- Advanced Materials: **12,977**
- Other: **6,577**



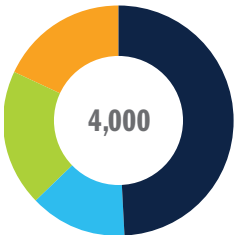
RENEWABLE GENERATION:

- Solar: **6,304**
- Wind: **3,092**
- Geothermal: **273**
- Bioenergy/CHP: **1,280**
- Low-Impact Hydroelectric/ Hydrokinetic and Wave Energy: **420**



CLEAN VEHICLES:

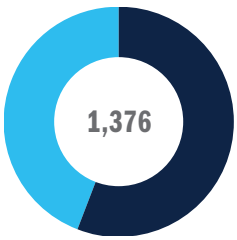
- Hybrid Electric Vehicles: **4,347**
- Plug-In Hybrid Vehicles: **1,930**
- Electric Vehicles: **2,716**
- Hydrogen & Fuel Cell: **589**



GRID & STORAGE:

- Clean Storage:* **1,976**
- Smart Grid: **546**
- Micro-Grid: **767**
- Other Grid Modernization: **712**

* includes pumped hydro storage, battery storage, thermal storage, and mechanical storage detailed technologies



FUELS:

- Other Ethanol/Non-Woody Biomass: **771**
- Other Biofuels: **605**

FIG 2 // PENNSYLVANIA CLEAN ENERGY EMPLOYMENT by value chain

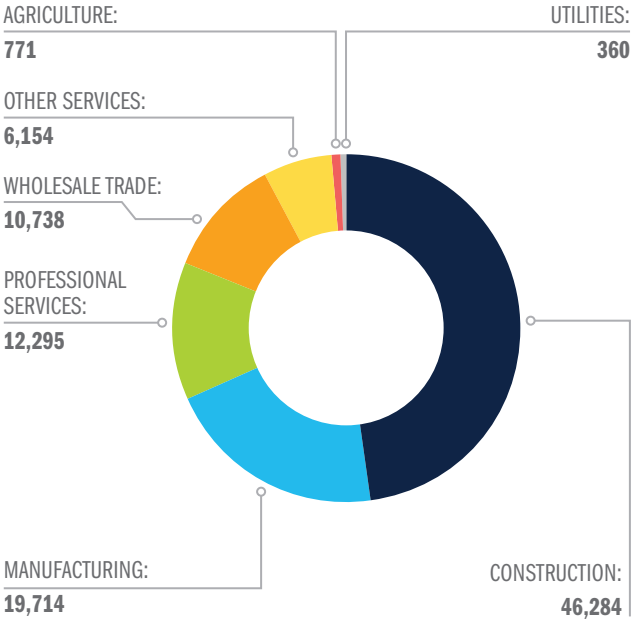
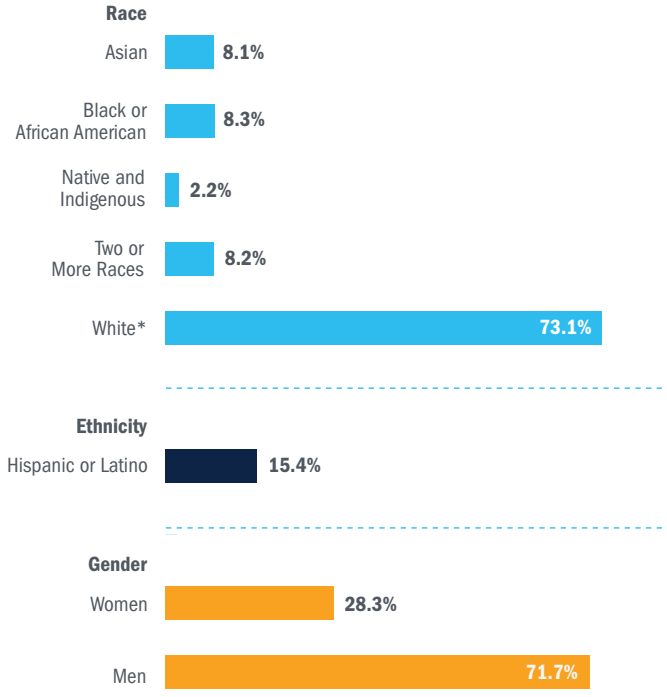
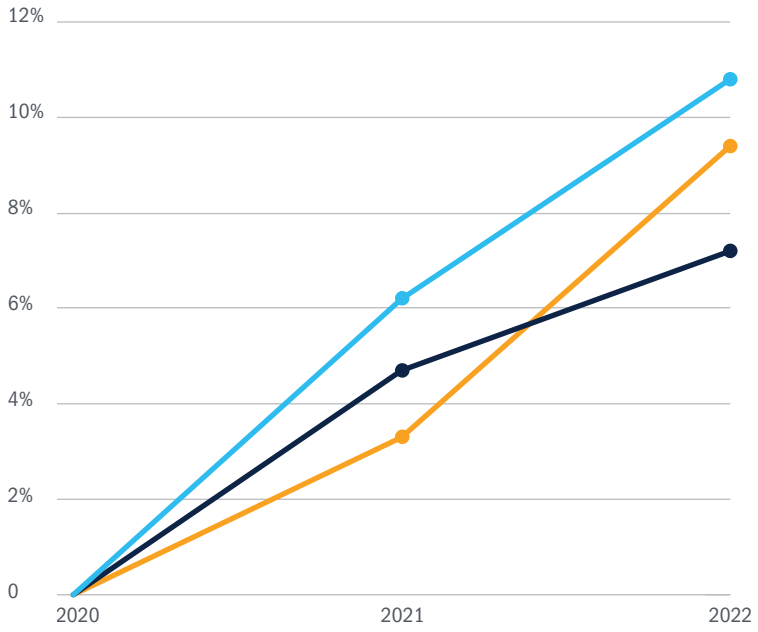


FIG 3 // PENNSYLVANIA CLEAN ENERGY EMPLOYMENT by demographics[2]



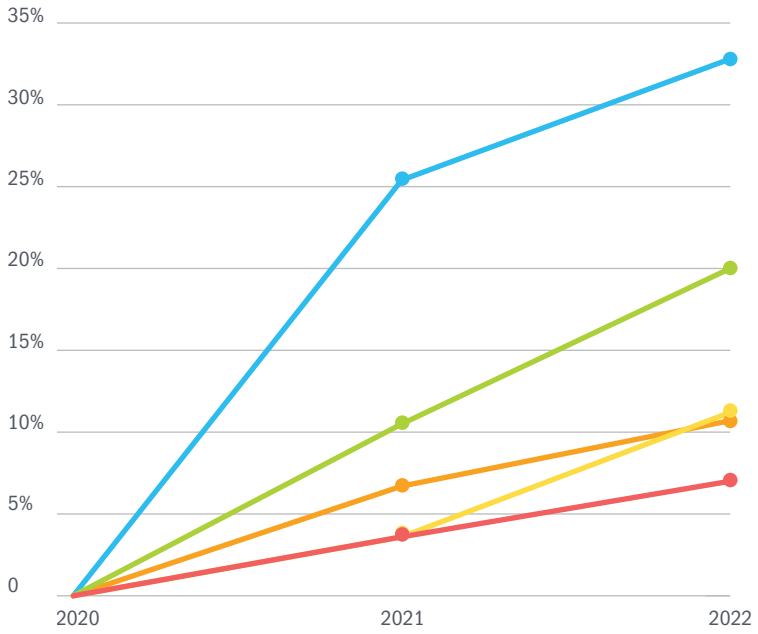
* Includes non-Hispanic and Hispanic whites

FIG 4 // PENNSYLVANIA ENERGY EMPLOYMENT by industry growth



2020	2021	2022
Pennsylvania Clean Energy Employment		
86,922	92,340 **(+6.2%)**	96,317 **(+10.8%)**
Overall Pennsylvania Employment		
5,549,371	5,807,876 **(+4.7%)**	5,950,634 **(+7.2%)**
Overall Pennsylvania Energy Employment		
249,886	258,202 **(+3.3%)**	273,364 **(+9.4%)**

FIG 5 // PENNSYLVANIA ENERGY EMPLOYMENT by clean energy sector employment growth



2020	2021	2022
Energy Efficiency		
65,397	67,782 **(+3.6%)**	69,990 **(+7.0%)**
Renewable Generation		
9,473	10,466 **(+10.5%)**	11,370 **(+20.0%)**
Storage/Grid		
3,598	3,727 **(+3.6%)**	4,000 **(+11.2%)**
Biofuels		
1,243	1,326 **(+6.7%)**	1,376 **(+10.7%)**
Clean Vehicles		
7,211	9,040 **(+25.4%)**	9,582 **(+32.8%)**

PENNSYLVANIA CLEAN ENERGY ECONOMY—APPENDIX

Table 1 // PENNSYLVANIA CLEAN ENERGY EMPLOYMENT by county[3]

County	Total Clean Energy	Renewable Gen.	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles	Job Growth	Workers Per 1K Jobs
Adams	482	129	20	32	259	42	3.0%	14.3
Allegheny	12,705	1,834	506	82	9,658	625	3.6%	19.1
Armstrong	174	20	<10	<10	113	30	4.9%	11.2
Beaver	920	382	43	23	392	80	6.4%	19.2
Bedford	267	10	21	<10	182	50	6.1%	16.3
Berks	3,585	1,221	123	82	1,684	474	5.8%	20.8
Blair	757	39	59	<10	530	127	2.8%	13.2
Bradford	195	<10	12	<10	134	36	3.4%	8.8
Bucks	5,215	686	190	48	3,599	691	2.9%	19.5
Butler	1,477	104	57	22	1,100	194	1.5%	17.2
Cambria	635	45	27	<10	425	135	6.5%	13.2
Cameron	11	<10	<10	<10	<10	<10	6.2%	6.4
Carbon	167	28	<10	<10	97	34	-14.0%	10.6
Centre	1,032	159	69	<10	752	49	4.9%	15.6
Chester	4,789	402	213	179	3,623	373	4.4%	19.3
Clarion	163	28	<10	<10	93	36	4.7%	13.6
Clearfield	319	19	19	53	178	49	14.4%	11.0
Clinton	247	20	<10	<10	139	75	16.3%	20.3
Columbia	321	31	<10	<10	191	90	4.8%	13.5
Crawford	281	51	<10	20	161	44	2.7%	9.8
Cumberland	1,819	151	61	27	1,392	188	2.1%	13.2
Dauphin	2,116	271	120	20	1,491	213	3.6%	11.4
Delaware	3,245	341	148	42	2,422	292	3.2%	14.6
Elk	122	<10	10	<10	95	14	2.8%	9.1
Erie	1,549	178	57	82	1,065	166	3.0%	13.2
Fayette	520	81	40	<10	297	99	7.1%	14.0
Forest	11	<10	<10	<10	<10	<10	6.8%	6.1
Franklin	680	22	16	14	484	144	3.2%	11.4
Fulton	61	<10	16	<10	31	<10	4.4%	12.0
Greene	232	15	28	<10	173	16	3.8%	19.9
Huntingdon	138	15	15	<10	93	12	4.1%	11.3
Indiana	366	28	34	10	253	40	3.0%	13.5
Jefferson	538	358	12	<10	137	27	6.4%	36.2
Juniata	66	<10	<10	<10	45	13	3.8%	10.3
Lackawanna	1,220	83	148	29	809	151	3.0%	12.5
Lancaster	4,809	730	88	57	3,222	712	5.7%	19.2
Lawrence	431	22	12	<10	351	42	3.1%	16.1
Lebanon	625	69	20	<10	391	136	2.5%	12.0
Lehigh	7,734	155	113	25	6,797	644	4.3%	38.7

County	Total Clean Energy	Renewable Gen.	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles	Job Growth	Workers Per 1K Jobs
Luzerne	1,670	316	39	22	1,128	165	3.9%	11.5
Lycoming	712	47	48	20	505	93	3.7%	14.5
McKean	148	<10	<10	<10	115	19	1.7%	10.6
Mercer	494	14	13	<10	342	120	1.9%	11.5
Mifflin	137	<10	<10	<10	91	29	1.7%	8.5
Monroe	443	20	14	<10	324	80	3.0%	8.0
Montgomery	9,249	1,013	439	59	6,984	754	3.6%	18.1
Montour	123	<10	<10	<10	44	69	10.2%	7.4
Northampton	1,249	49	41	17	991	151	1.6%	10.4
Northumberland	420	32	56	10	219	102	3.8%	16.0
Perry	125	<10	<10	<10	90	21	3.8%	16.0
Philadelphia	8,991	818	196	118	7,356	503	3.4%	12.9
Pike	103	16	<10	<10	68	13	2.7%	8.9
Potter	53	<10	20	<10	21	<10	4.9%	10.7
Schuylkill	549	64	12	28	354	91	3.3%	11.1
Snyder	206	10	18	<10	142	34	3.3%	13.2
Somerset	437	44	18	<10	247	126	3.7%	18.5
Sullivan	24	<10	<10	<10	14	<10	4.7%	17.7
Susquehanna	120	<10	<10	<10	89	19	3.3%	13.4
Tioga	229	27	21	<10	125	49	4.8%	18.1
Union	184	58	<10	<10	99	24	5.1%	10.7
Venango	159	12	<10	<10	110	28	2.2%	9.5
Warren	104	<10	<10	<10	56	24	3.6%	8.0
Washington	1,428	50	84	<10	1,154	131	3.2%	16.7
Wayne	244	<10	<10	<10	189	41	1.2%	16.6
Westmoreland	2,224	258	101	26	1,592	247	4.2%	17.1
Wyoming	124	22	<10	<10	76	19	9.3%	13.5
York	3,622	557	214	51	2,377	423	4.1%	20.0
PA State	**96,317**	**11,370**	**4,000**	**69,990**	**1,376**	**9,582**	**4.3%**	**16.19**

Note: 2,700 clean energy jobs are in an unknown or undefined county

Table 2 // PENNSYLVANIA CLEAN ENERGY EMPLOYMENT by metro

Metro Area	Total Clean Energy	Renewable Gen.	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Philadelphia-Camden-Wilmington	**31,489**	3,260	1,185	447	23,984	2,613
Pittsburgh	**19,448**	2,729	838	169	14,306	1,406
Allentown-Bethlehem-Easton	**9,151**	232	160	44	7,885	829
Lancaster	**4,809**	730	88	57	3,222	712
Harrisburg-Carlisle	**4,060**	427	189	48	2,973	422
York-Hanover	**3,622**	557	214	51	2,377	423

Metro Area	Total Clean Energy	Renewable Gen.	Storage/Grid	Biofuels	Energy Efficiency	Clean Vehicles
Reading	**3,585**	1,221	123	82	1,684	474
Scranton--Wilkes-Barre--Hazleton	**3,013**	421	192	53	2,013	335
Erie	**1,549**	178	57	82	1,065	166
State College	**1,032**	159	69	<10	752	49
Altoona	**757**	39	59	<10	530	127
Williamsport	**712**	47	48	20	505	93
Johnstown	**635**	45	27	<10	425	135
Lebanon	**625**	69	20	<10	391	136
Youngstown-Warren-Boardman	**494**	14	13	<10	342	120
New York-Newark-Jersey City	**103**	16	<10	<10	68	13

Note: An additional 11,200 clean energy jobs are found in rural or nonmetropolitan areas[4]

1 Unless otherwise stated, all data is based on 2022 Q4 employment data and surveys collected and analyzed by the BW Research Partnership for the 2023 U.S. Energy and Employment Report (USEER), June 2023, Department of Energy (DOE). Employment data used in this analysis comes from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) and a nationwide employer survey of 34,200 business establishments administered in Q1 2023. See Pages 201-206 for methodology questions.

2 Information on the representation of people with disabilities, lesbian, gay, bisexual, transgender, intersex, and queer people, migrants, religious minorities, and different age demographics 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 those groups.

3 United States Bureau of Labor Statistics (BLS) 2022 Q4 employment, all ownerships (accessed June 2023).

4 Rural clean energy jobs are calculated based on the Bureau of Labor Statistics' (BLS) nonmetropolitan area for every state, which is any area not designated as a metropolitan area by BLS. This is the most commonly used definition to analyze rural and small-town trends, and is available at https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/what-is-rural. New Jersey, Rhode Island, and the District of Columbia contain no nonmetropolitan statistical areas.