



2024 RHODE ISLAND

CLEAN ENERGY
INDUSTRY REPORT

Executive Summary

The 2024 Rhode Island Clean Energy Industry Report is the tenth annual report on clean energy employment in the state. The findings in this report are based on data from the 2024 U.S. Energy and Employment Report (USEER) and are filtered for Rhode Island's (RI) definition of clean energy.

The 2024 USEER survey was administered in 2023, by telephone (more than 1,047,000 outbound calls) and web (more than 275,000 emails sent), to participants throughout the United States. The USEER provides a rich, comprehensive, and historical dataset of energy job trends dating back to 2015.¹

The Rhode Island Clean Energy Industry Report continues to offer valuable, annual data on clean energy jobs across various technology sectors and value chain segments within the state.

This information gives policymakers and other stakeholders in the clean energy sector important insights to help guide the best use of additional federal funding and support the state's progress toward its goal of achieving 100 percent renewable energy by 2033 and net-zero emissions by 2050.



¹ For more information on the U.S. Energy and Employment Report, please visit <https://www.energy.gov/policy/us-energy-employment-jobs-report-useer>

Annual Employment

This year's report shows that annual clean energy employment is growing faster than in any year since 2018, increasing by 466 workers at a rate of 3.2 percent. Clean energy job growth in 2023 was nearly double that of 2022 (466 and 254, respectively) and outpaced overall job growth statewide (3.2% vs. 1.9% overall) over the same period.

While clean energy employment has yet to achieve pre-pandemic levels in the state, this year's increasing growth shows promise that pre-pandemic employment levels will be reached soon. Rhode Island's policy climate mirrors the optimism the clean energy employment data presents; recently, RI has become the first state to launch its Home Energy and Appliances Rebates (HEAR) program. This program will increase the installation of electrification products by providing rebates for various ENERGY STAR® appliances.

Employment by Value Chain Segment

The largest value chain segment for clean energy in Rhode Island is installation, maintenance and repair, which also saw the largest job increase

over 2023, with 275 additional jobs and growing at 3.3 percent.

While this segment has yet to fully recover from pandemic job loss, as social distancing continued to lessen and more incentives for the installation of heat pumps and other energy efficiency products are implemented, it is expected to continue growing through investments in electrification rebates, along with energy storage.

Employment by Technology Sector

Every clean energy technology sector grew in employment over the last year, and all but one saw higher growth rates than the year before. The only technology sector to see a lesser growth rate from 2022 to 2023 is clean transportation; however, this sector maintained the highest growth rate of any technology in this year's report at 7.8 percent.

In Rhode Island, the number of electric vehicle registrations grew by almost half (48.8 percent), from 4,300 in 2022 to 6,400 in 2023.² The largest net gain of workers was in the energy efficiency sector, adding 225 workers, followed by renewable and efficient heating and cooling with a 119-worker increase. Renewable energy also grew, gaining 84 jobs in the clean energy economy.

² "Alternative Fuels Data Center," U.S. Department of Energy, <https://afdc.energy.gov/transatlas#/?state=RI>.

Industry Overview

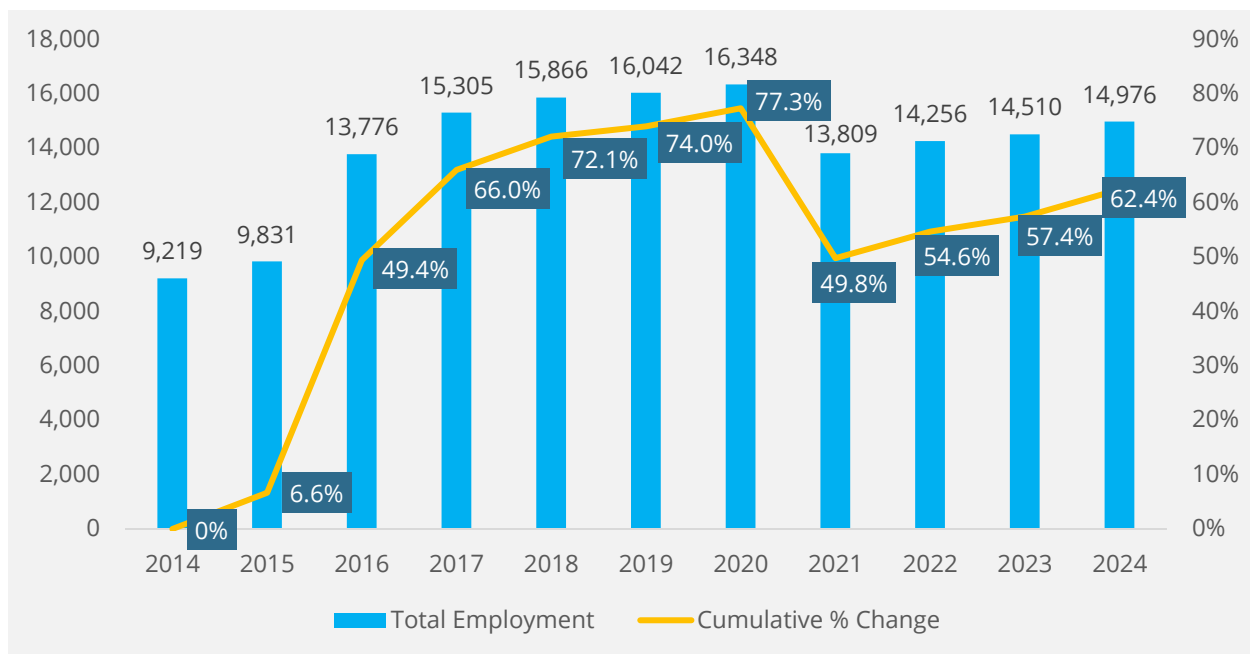
Clean energy employment continues to rise in Rhode Island, from 14,510 jobs throughout 2022, to 14,976 throughout 2023. The clean energy economy gained 466 jobs over this period, the largest net gain in five years, at a growth rate of 3.2 percent. In comparison, the overall state employment growth rate was 1.9 percent.³

Since tracking began in 2014, clean energy employment is up by 62.4 percent. While Rhode Island has yet to achieve pre-pandemic clean energy job levels, the continued growth over the last three

years indicates the state is on track to recover fully in the coming years (Fig. 1).

There are various components to Rhode Island's energy policy landscape that help bolster and facilitate clean energy job creation. In July of 2024, Rhode Island became the first state to complete Phase 1 of the National Electric Vehicle Infrastructure program (NEVI), installing four new Direct Current Fast Chargers (Level 3 stations) in Ashaway and Warwick, within commuter parking lots, along Interstate 95.

FIGURE 1. Clean Energy Employment, 2014-2024



³ "Occupational Employment and Wage Statistics." U.S. Bureau of Labor Statistics, accessed September 2024.

https://www.bls.gov/oes/2023/may/oes_ri.htm#00-0000.

Phase 2 is expected to begin in 2024, with the continued expansion of EV infrastructure, taking into consideration the concerns and feedback from both public and private partners who house chargers (identified through a recently administered state survey).⁴ This program will likely continue to add jobs in the alternative transportation sector and grow clean energy employment in the transport segment of the value chain.

On June 26, 2024, the 2024 Energy Storage Systems Act was passed to facilitate movement toward reaching Rhode Island's 100 percent clean energy goal.⁵ The bill contains components in infrastructure programming, storage targets, and utilities. The highlight of the bill is the state's new energy storage targets, with goals of 90 MW by 2026, 195 MW by 2028, and 600 MW by 2033.⁶

In addition, the Rhode Island Infrastructure Bank must provide grants and loans to facilitate the realization of these energy storage goals while the

Public Utilities Commission must establish programming to support a new electric grid and conduct a survey of the market for storage technology every three years.⁷

An increase in energy storage is expected to help with the rising demand for energy during the increasingly severe weather events, decrease costs for ratepayers by adding capacity, lower operating costs, and create jobs.⁸ These goals to vastly increase the energy storage capacity of the state will have impacts on various segments of the value chain.

More research will be necessary to ensure the most efficient technology, along with the manufacturing of energy storage components, installation, repair, and maintenance of the systems, and of course sale of the systems to home and business owners.

During the same month, June of 2024, the Renewable Ready program was signed into law. This legislation creates a new

⁴ "Rhode Island Becomes First State to Complete Phase 1 under National Electric Vehicle Infrastructure Program." *State of Rhode Island*, July 17, 2024. <https://governor.ri.gov/press-releases/rhode-island-becomes-first-state-complete-phase-1-under-national-electric-vehicle>.

⁵ "Rhode Island Passes Landmark Legislation for Clean Energy Goals." *National Caucus of Environmental Legislators*, July 19, 2024. <https://www.ncelenviro.org/articles/rhode-island-passes-landmark-legislation-for-clean-energy-goals/#:~:text=The%202024%20Energy%20Storage%20Systems,relia%20and%20ensuring%20grid%20resilience>.

⁶ "An Act Relating to Public Utilities and Carriers – 2024 Energy Storage Act." <https://webserver.rilegislature.gov/BillText/BillText24/HouseText24/H7811aa.pdf>.

⁷ Voghel, Jacquelyn. "Rhode Island adopts 2024 Energy Storage Systems Act." *Providence Business News*, July 9, 2024. <https://pbn.com/rhode-island-adopts-2024-energy-storage-systems-act/>.

⁸ "Rhode Island Passes Landmark Legislation for Clean Energy Goals." <https://www.ncelenviro.org/articles/rhode-island-passes-landmark-legislation-for-clean-energy-goals/#:~:text=The%202024%20Energy%20Storage%20Systems,relia%20and%20ensuring%20grid%20resilience>.

state program that uses federal funds within the RI Infrastructure Bank to help fund the preparation of sites for renewable energy development, specifically on publicly owned sites.

Eligible locations for these funds are “rooftops of large buildings, properties adjacent to major roads, and so-called brownfield sites.”⁹ Brownfield sites are areas where contamination may complicate the development of using the site for renewable energy.

This program is expected to help increase solar development in the state, as well as protect natural resources by using disturbed sites for renewable projects. When the deployment of renewable energy systems takes place on these sites, increases in the installation segment of the value chain are expected to occur.

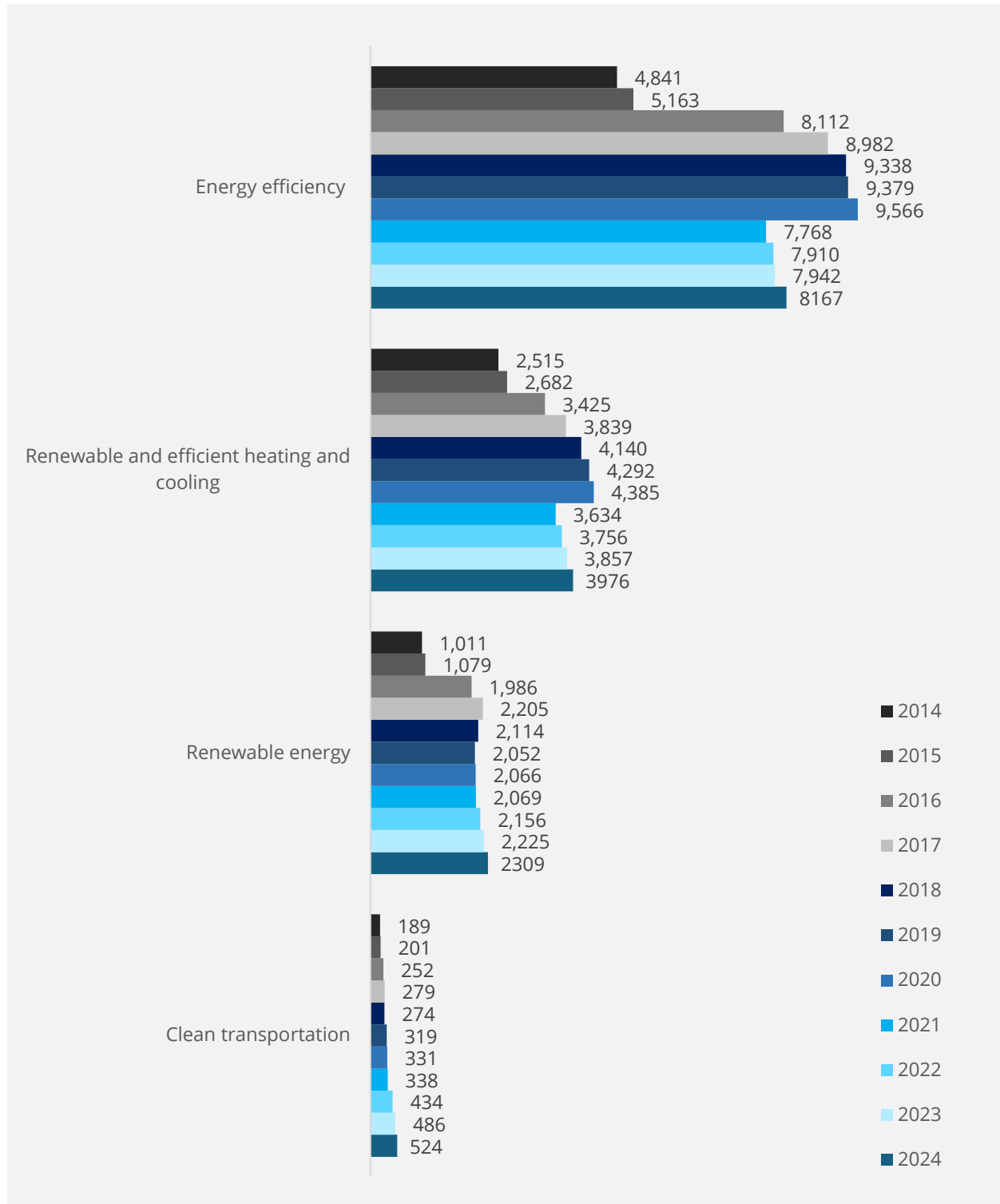
Clean Energy Technology Analysis

All clean energy technology sectors saw job growth from 2022 and 2023. The largest net gain of jobs was in energy efficiency, which is also the largest technology sector in the state and is more than twice the size of the second-biggest technology sector, renewable and efficiency heating and cooling.¹⁰

From 2022 to 2023, the energy efficiency sector gained 225 jobs at a growth rate of 2.8 percent. The largest growth rate was in clean transportation, at a staggering 7.8 percent, adding 38 new jobs to the clean energy economy. The next largest growth rate was in renewable energy at 3.8 percent (+84 jobs), followed by renewable and efficient heating and cooling at 3.1 percent (+119 jobs) (Fig. 2).

⁹ “Renewable Ready Program Signed into Law.” *State of Rhode Island General Assembly*, June 26, 2024. <https://www.rilegislature.gov/pressrelease/layouts/RIL.PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31%2D3c10%2D431c%2D8dcd%2D9dbbe21ce3e9&ID=374751&Web=2bab1515%2D0dcc%2D4176%2Da2f8%2D8d4beebdf488>.

¹⁰ While microgrid, storage, and smart grid are typically included under the “transmission and distribution” for USEER and other Clean Energy Industry Reports, they are included in the energy efficiency sector for this report per Rhode Island’s clean energy technology definition.

FIGURE 2. Clean Energy Employment by Major Technology, 2014-2024¹¹

¹¹ Other employment totaled to 707 jobs in 2015 and 663 in 2014; improved methodologies have since allowed the research team to categorize all employment into a major technology. It should be noted that 2014 and 2015 employment will not sum to 9,219 and 9,832 respectively in this chart because the “other” category is not displayed.

Renewable Energy Sector Employment

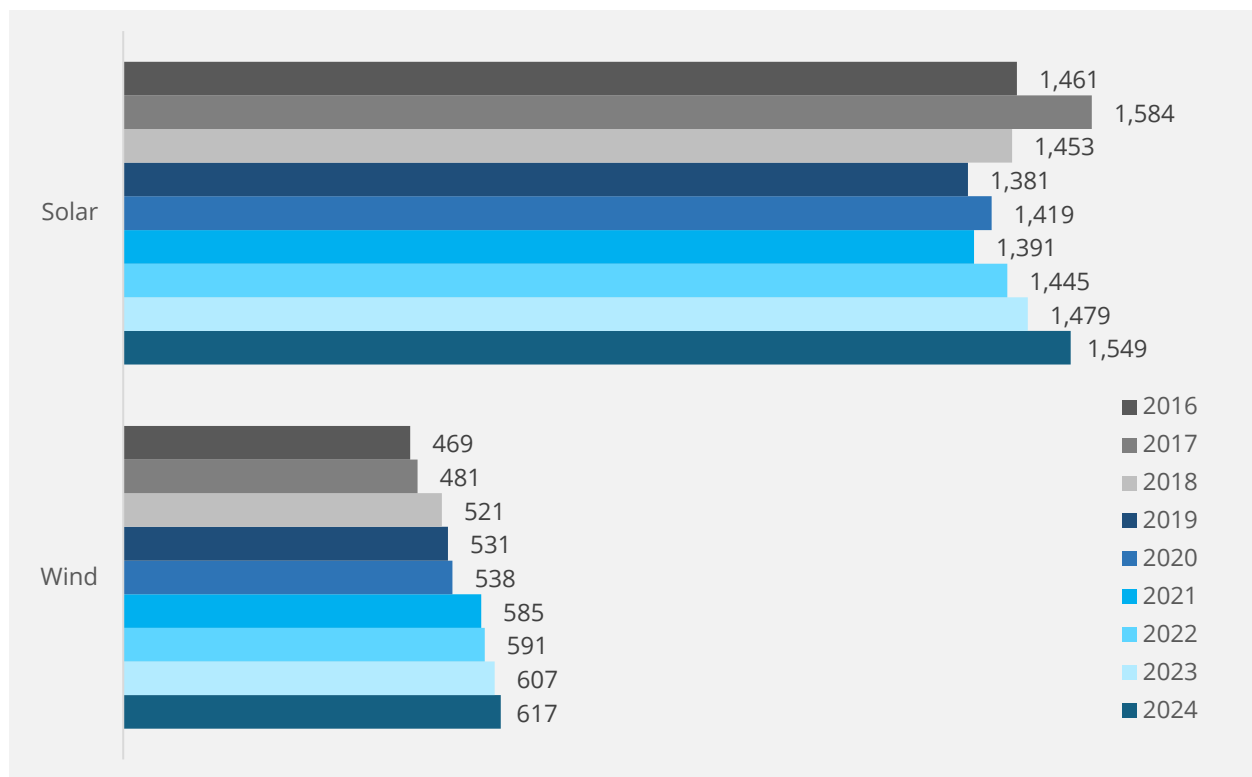
Within the renewable energy technology subsector, both the solar and wind sub-technologies saw job growth. The solar sub-technology grew at a rate of 4.7 percent, gaining 70 new jobs, while wind grew at 1.6 percent, adding 10 new jobs into the economy (Fig. 3).

Rhode Island Commerce's SupplyRI initiative links RI-based suppliers to procurement opportunities and, on May 24th, 2024, announced partnerships with

the offshore wind companies Vineyard Offshore and Avangrid. They signed a Memorandum of Understanding to procure Rhode Island goods and services for their local wind projects.¹²

Avangrid spearheaded the Vineyard Wind 1 project in Massachusetts and hopes to build off this success with their New England Wind proposal in conjunction with Rhode Island, Massachusetts and Connecticut. The proposal is expected to bolster employment growth in wind power for Rhode Island, specifically in the manufacturing and distribution portions of the supply chain.

FIGURE 3. Renewable Energy Generation Employment, 2016-2024



¹² Griffen, Patrick. "Rhode Island Commerce's SupplyRI Initiative Announces New Offshore Wind Anchor Partners." *Rhode Island*

Commerce, May 24, 2024, <https://commerceri.com/19738-2/>.

Energy Efficiency Sector Employment

All sub-technologies in the energy efficiency technology sector saw growth from last year's report, except microgrid, which remained flat. The greatest growth rate was seen by the smart grid, growing at 7.4 percent; however, this only equates to 2 jobs.

The largest net growth was in the advanced building materials & other sub-tech, adding 162 workers at a rate of 3.8 percent. In addition, growth in ENERGY STAR® appliances occurred for the first time post-pandemic, increasing at a rate of 2.8 percent (+27 jobs) (Fig. 4). Given Rhode Island's new battery storage goals,

employment in the storage sub-technology will likely see growth in the coming years to reach the 90 MW goal for 2026.¹³

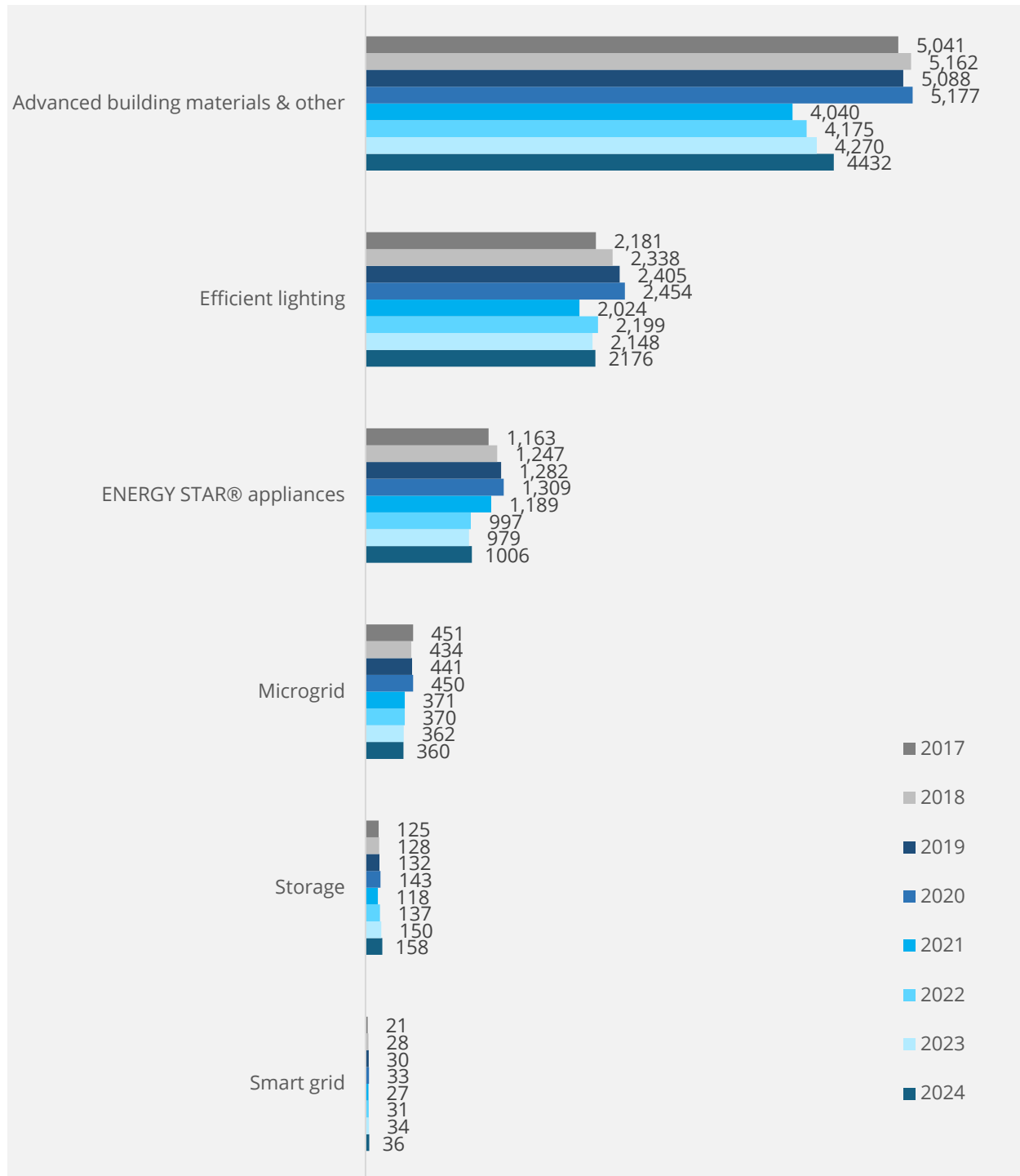
Through the Inflation Reduction Act (IRA), the Rhode Island Office of Energy Resources will be launching the Home Energy and Appliances Rebates (HEAR) program pathways in 2024. This program will provide eligible residents with rebates for electrification products, including electric load service centers, electric wiring, and various ENERGY STAR® appliances.¹⁴

The program is expected to have a positive impact on employment within the installation, maintenance, repair and operations section of the value chain.

¹³ "Energy Storage Systems Act signed into law." *State of Rhode Island General Assembly*, June 28, 2024. https://www.rilegislature.gov/pressrelease/layouts/RI_L_PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31%2D3c10%2D431c%2D8dcd%2D9d

[bbe21ce3e9&ID=374776&Web=2bab1515%2D0dcc%2D4176%2Da2f8%2D8d4beebdf488](https://www.rilegislature.gov/pressrelease/layouts/RI_L_PressRelease.ListStructure/Forms/DisplayForm.aspx?List=c8baae31%2D3c10%2D431c%2D8dcd%2D9dbbe21ce3e9&ID=374776&Web=2bab1515%2D0dcc%2D4176%2Da2f8%2D8d4beebdf488).

¹⁴ "Home Energy Rebate Programs." *State of Rhode Island Office of Energy Resources*, accessed September 2024. <https://energy.ri.gov/energy-incentives/home-energy-rebate-program>

FIGURE 1. Energy Efficiency Employment, 2017-2024¹⁵

¹⁵ While microgrid, storage, and smart grid are typically included under the “transmission and distribution” or “clean grid and storage” sectors for USEER and other Clean Energy Industry Reports, they are included in the energy efficiency sector for this report per Rhode Island’s clean energy technology definition. “Other” energy efficiency includes variable speed pumps, other design service, software, energy auditing, rating, monitoring, metering, leak detection, policy or non-profit work, and consulting that cannot be specific to a detailed sub-technology.

Renewable and Efficient Heating and Cooling Sector Employment

Overall, employment increased in renewable and efficient heating and cooling, rising from almost 3,900 jobs throughout 2022 to 4,000 jobs throughout 2023.

The woody biomass and non-woody biomass sub-technologies remained stagnant over 2022-2023. On the other hand, traditional HVAC employment increased by 80 jobs at a rate of 5.9 percent, followed by high-efficiency HVAC,

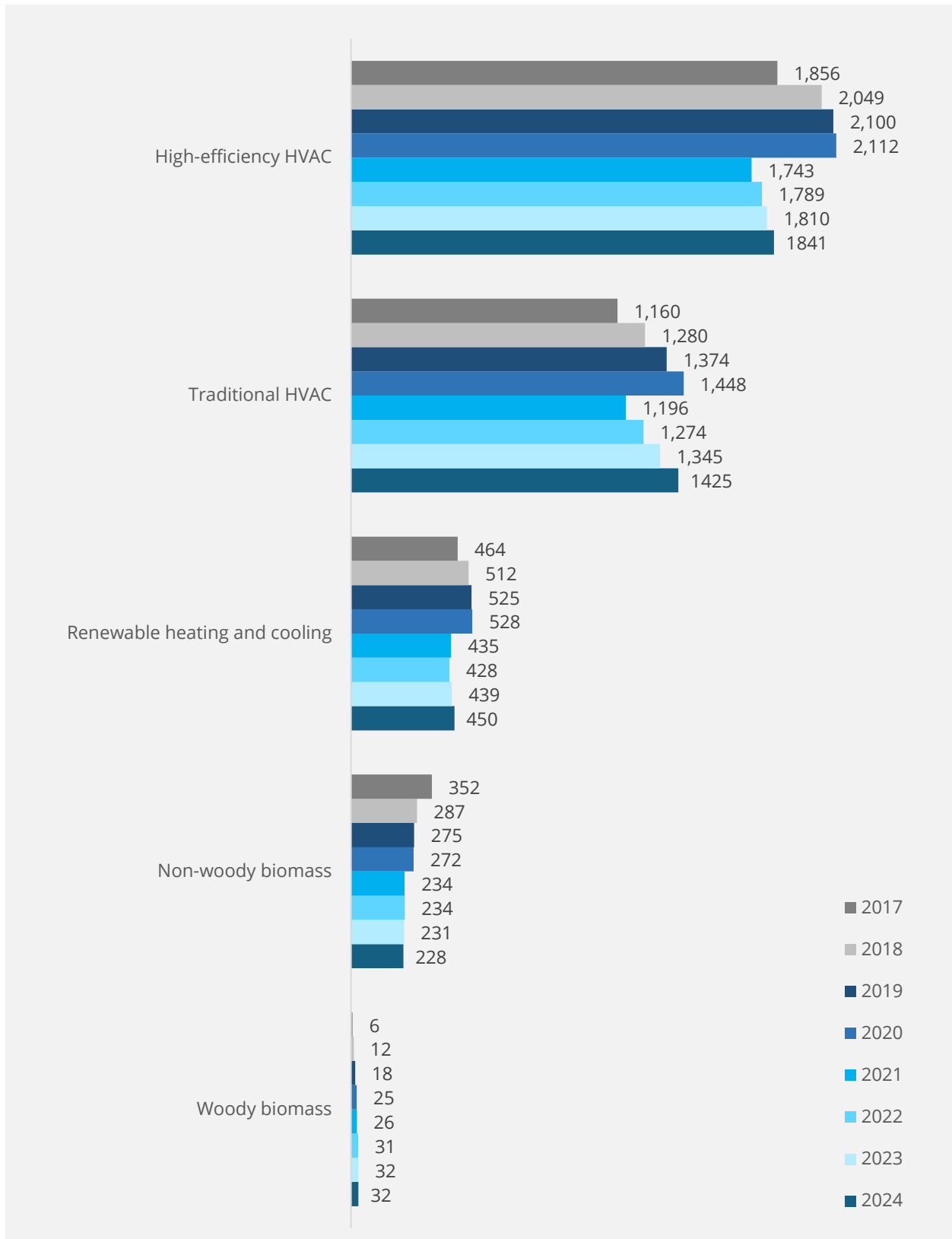
which added 31 jobs (1.7 percent growth) and renewable heating and cooling, which gained 11 jobs (2.6 percent growth) (Fig. 5).

In September of 2023, Governor Dan McKee and the Office of Energy Resources launched the Clean Heat RI Heat Pump Incentive program to install high-efficiency heat pumps. In just one year, over 2,000 eligible Rhode Island homeowners, nonprofits, and small to medium businesses received incentives from this program, exceeding the program's one-year goal by 136 percent.¹⁶ While the program continues, the incentives will be reduced as of October 1st, 2024.

¹⁶ "Incentive Amount Changes, Effective October 1, 2024." *Clean Heat Rhode Island*, September 11, 2024.

<https://cleanheatri.com/incentive-amount-changes-effective-october-1-2024/>.

FIGURE 2. Renewable Heating and Cooling Employment, 2017-2024



Clean Energy Value Chain Analysis

The major value chain segments examined include:

- Installation, maintenance, repair, and operations¹⁷
- Manufacturing¹⁸
- Trade, distribution, and transport¹⁹
- Engineering, research, and professional services²⁰
- Other²¹

The largest value chain segment of Rhode Island's clean energy economy is the

installation, maintenance, repair, and operations segment, with 8,647 workers in the economy over 2023, representing 57.7 percent of all clean energy workers in the state. This segment saw the highest net employment gains this year, increasing by 275 jobs, or 3.3 percent.

The second-largest net employment gain was in the engineering, research, and professional services segment, gaining 97 jobs, with the second-highest growth rate of 3.5 percent.

The highest growth rate was within the "other" category, seeing 5.0 percent growth with an increase of 34 jobs (Fig. 6).

¹⁷ Installation, maintenance, repair, and operations is comprised of all workers engaged in residential, commercial, and industrial building construction, contracting and electrical work, insulation and weatherization, or plumbing and heating, air conditioning, and ventilation work.

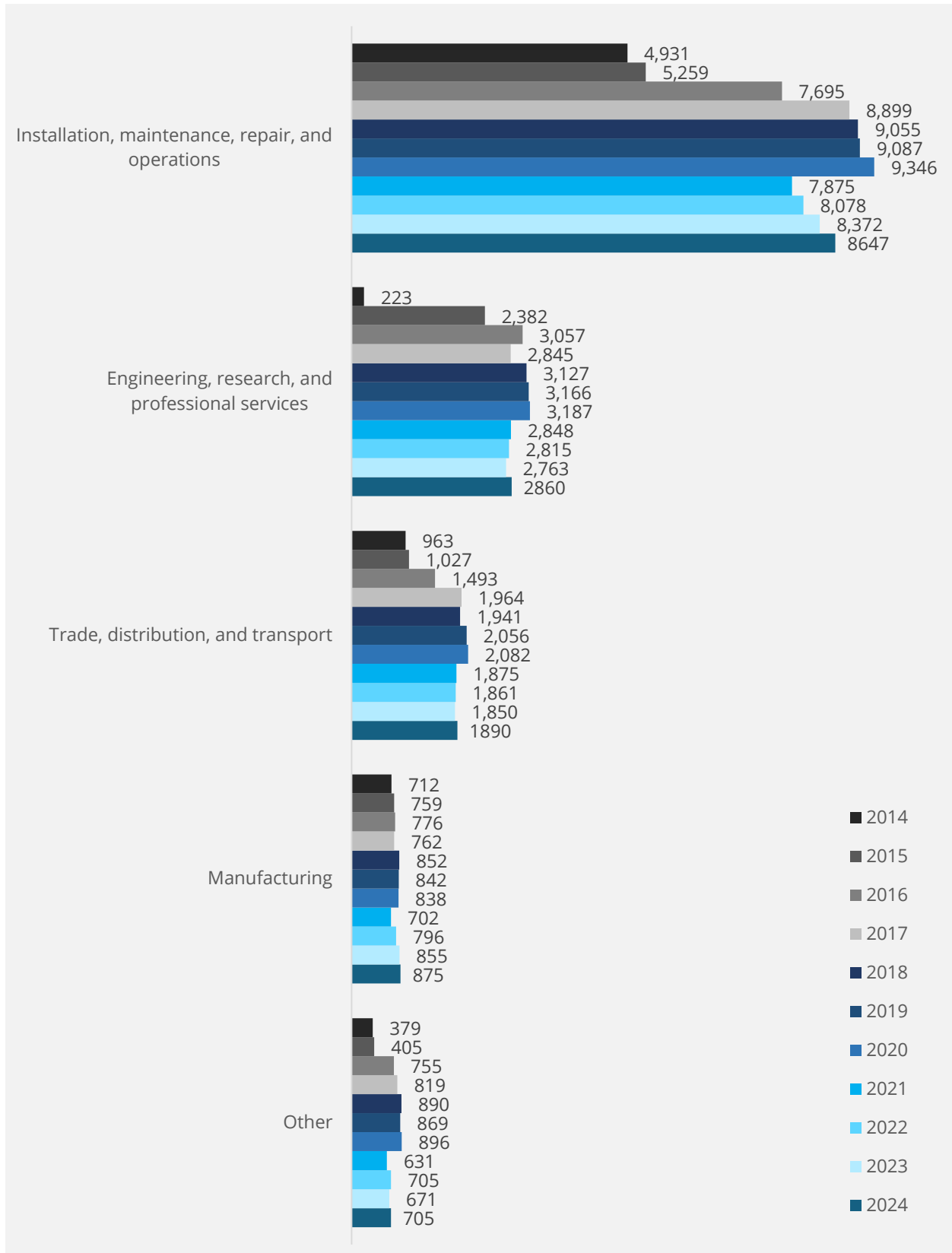
¹⁸ Manufacturing encompasses heating and air conditioning equipment manufacturing, engine and compressor manufacturing, semiconductor manufacturing, and energy efficient product, appliance, or lighting manufacturing, as well as motor vehicle and parts manufacturing.

¹⁹ Trade, distribution, and transport includes motor vehicle and parts wholesalers, electrical equipment and household appliance wholesalers, and other wholesale trade and distribution related to clean energy products and technologies.

²⁰ Professional services include all finance, legal, consulting, engineering, research, or architectural support.

²¹ Other includes utilities, organizational and non-profit work such as environment and conservation organizations, business associations, or advocacy organizations.

FIGURE 3. Clean Energy Employment by Value Chain, 2014-2024



Diversity in the Clean Energy Labor Market

TABLE 1. Clean Energy Workforce Demographics²²

	RI Clean Energy Overall	RI State Average	US CE Workforce (including Nuclear)	US Overall Workforce
Male	65.0%	47.4%	72.8%	53.1%
Female	35.0%	52.6%	26.6%	46.9%
Hispanic or Latino	12.7%	13.0%	17.8%	18.8%
Not Hispanic or Latino	87.3%	87.0%	82.2%	81.2%
American Indian or Alaska Native	0.7%	0.8%	2.3%	1.0%
Asian	3.0%	3.9%	7.0%	6.9%
Black or African American	10.4%	8.1%	9.1%	12.8%
Native Hawaiian or other Pacific Islander	0.1%	0.2%	1.2%	>1%
White	83.0%	84.8%	73.9%	76.5%
Two or more races	2.8%	2.2%	4.4%	2.8%
Veterans	6.5%	5.2%	8.9%	5.5%
55 and over	7.4%	27.3%	16.5%	23.2%

²² As with all demographic data in this report, there is a potential for reporting errors and biases. For gender specifically, it is important to note that the U.S. Census only collects data on biological “sex” and not “gender;” reporting on gender nonbinary employment should be interpreted with caution. Clean energy workforce demographics are sourced from: U.S. Energy & Employment Jobs Report (USEER). U.S. Department of Energy. 2024. Overall workforce demographics are sourced from: U.S. Bureau of Labor Statistics.

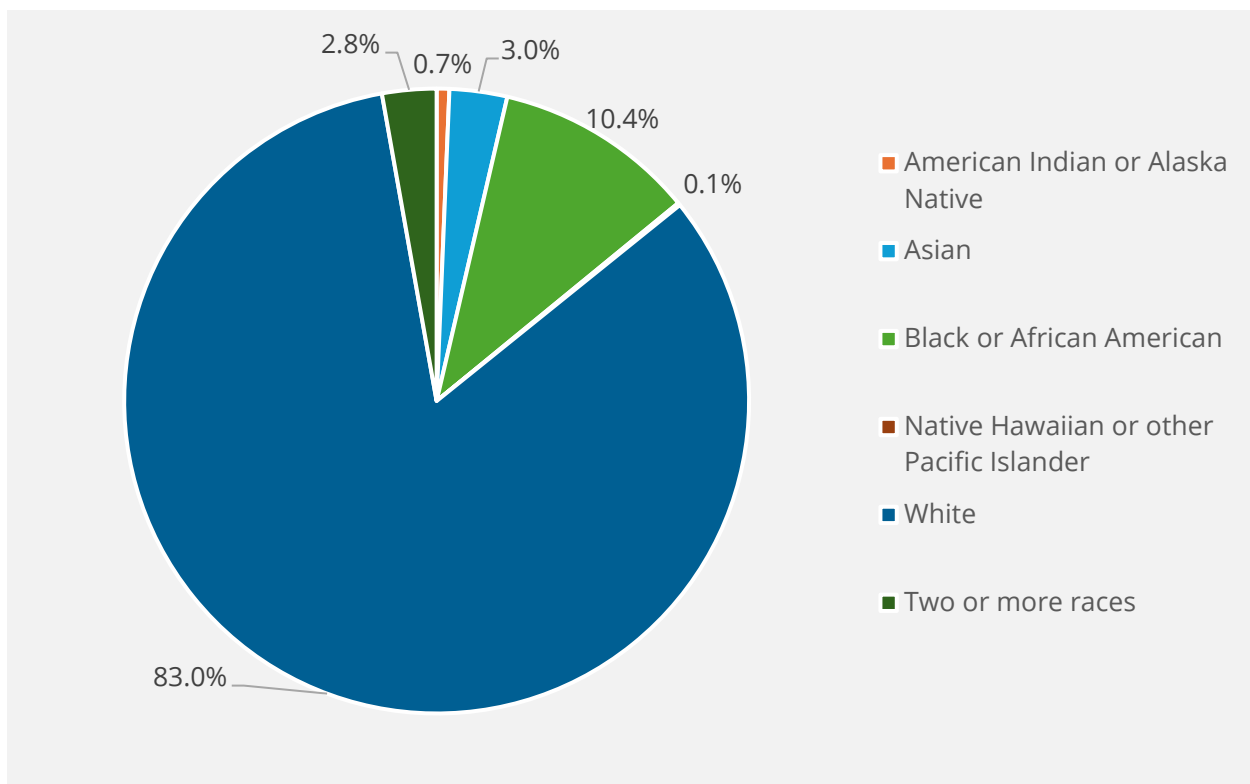
Demographics of Current Clean Energy Workforce by Race

When asked to self-identify race, current clean energy workers in Rhode Island reported a make-up of 83.0 percent White workers, 10.4 percent Black or African

American workers, 3.0 percent Asian workers, 2.8 percent of two or more races, 0.7 percent American Indian or Alaska Native, and 0.1 percent Native Hawaiian or other Pacific Islander (Fig. 7).

These results are consistent with last year's report and the overall state of the workforce in Rhode Island.

FIGURE 4. Clean Energy Workforce Demographics by Race²³



²³ U.S. Energy & Employment Jobs Report (USEER). U.S. Department of Energy. 2024.

Demographics of Current Clean Energy Workforce by Gender

The current clean energy workforce is made up of 65.0 percent male-identifying workers and 35.0 percent female-identifying workers, a 1.4 percent decrease in female-identifying workers from 2023 (Fig. 8).

When looking at Rhode Island’s clean energy, construction, manufacturing, and management occupations, the highest percentage of female representation is in the management industry at 42.7 percent. This is followed by the clean energy industry at 35.0 percent, then the manufacturing industry at 32.2 percent.

The industry with the least female representation is construction at only 4.2 percent (Table 2).

FIGURE 5. Clean Energy Workers by Gender²⁴

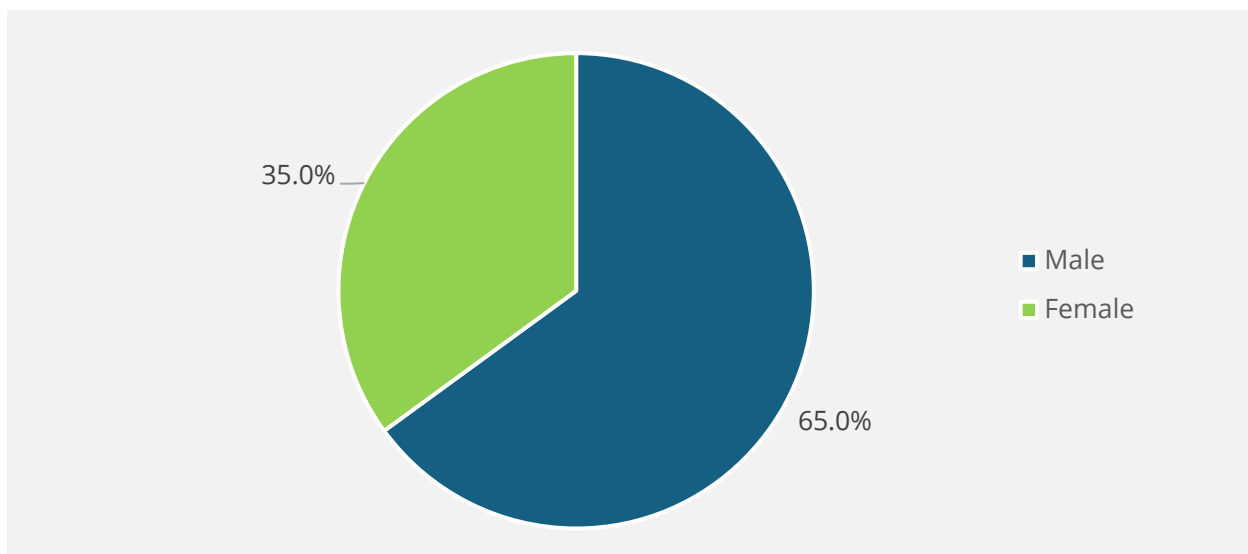


TABLE 2. Benchmarks for Gender Distribution in Rhode Island Industries²⁵

	RI Clean Energy Overall	RI Construction Overall	RI Manufacturing Overall	RI Management Overall
Male	65.0%	95.8%	67.8%	57.3%
Female	35.0%	4.2%	32.2%	42.7%

²⁴ U.S. Energy & Employment Jobs Report (USEER). U.S. Department of Energy. 2024.

²⁵ Demographic data is pulled from the United States Energy and Employment Report 2024 (USEER 2024) as well as JobsEQ’s “Occupational Diversity” page, 2023Q4, based on place of residence, for workers across all industries in Rhode Island. Obtained July 2024.

Conclusions

Rhode Island's clean energy industry employment is on the rise at rates unseen since 2018. While the state has not yet recovered all the COVID-19 pandemic-induced job losses, continued growth is anticipated. Many of the initiatives and programs deployed this year have successfully increased demand for labor in the industry.

Incentives continue to grow, and the state strives to meet its clean energy goals through policy such as the new energy storage target, deployment of HEAR programming, increasing renewable energy potential on brownfields, and increasing offshore wind manufacturing

opportunities. These incentives are larger than ever before and likely to supercharge the sector – a point echoed by employers in their growing optimism.

However, challenges remain. With unemployment low across the region, finding workers is becoming increasingly difficult. To meet demand and ensure equitable growth, Rhode Island must focus on workforce development while addressing issues such as transportation, housing, and labor market equity. In addition, the state will need to continue supporting its labor market as it works toward clean energy goals like its new energy storage target.

Methodology

This year's Clean Energy Industry Report is based on the data collected for the 2024 United States Energy and Employment Report (USEER).

The 2024 USEER utilizes data from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (BLS QCEW 2022 Q3) and Current Employment Statistics (CES Table B-1), as well as survey data.

Due to anomalies in BLS QCEW 2023 Q4 motor vehicle and motor vehicle parts manufacturing employment caused by the September 2023 United Auto Workers (UAW) strike, revised 2023 Q3 and 2022 Q3 data were used.

The 2024 USEER includes revised 2022 employment numbers (from the 2023 USEER) for motor vehicle and motor vehicle parts and any other employment number that relies on an aggregation that includes motor vehicle and motor vehicle parts employment, including total energy at the national and state level.

The survey was designed and implemented by BW Research Partnership. For the past decade, national, state, and local energy-related data collection and analysis efforts have used this survey methodology.

The survey uses a stratified sampling plan based on industry code (North American Industry Classification System or NAICS),

establishment size, and geography to determine the proportion of establishments that work with specific energy-related technologies, as well as the proportion of workers in such establishments that work with the same technologies.

These data sets are analyzed and applied to existing public data published by the BLS QCEW, effectively constraining the potential universe of energy establishments and employment.

The 2024 USEER survey was administered by telephone (more than 1,047,000 outbound dials) and by web (with more than 275,000 emails sent) to participants throughout the United States.

The sample was split into two categories: the known and unknown universes. The known universe includes establishments previously identified as energy-related, either in prior research or another manner (such as membership in an industry association or participation in government programs).

These establishments were surveyed, census-style, and their associated establishment and employment totals were removed from the unknown universe for both sampling and for resulting employment calculations and estimates.

As in previous years, over the summer of 2023, BW Research cleaned, deduplicated, added to, and refined its database to reflect churn (companies out of business, moved, no longer in energy), unverified (no answer, answering machine, fast-busy, disconnect, etc.), verified, and other available demographic tags (industry, technology, sub-technology, size, etc.).

In addition, BW Research supplemented with industry association contact lists by technology (biofuels, coal, oil, natural gas, energy storage, energy efficiency, solar, and wind), new companies from the unknown database that took the survey for the 2023 USEER and contact lists from subcontractors.

BW Research also appended contact information, including six-digit NAICS codes, contact, employment, and location information.

The unknown universe includes hundreds of thousands of businesses in potentially energy-related NAICS codes across agriculture, mining, utilities, construction, manufacturing, wholesale trade, professional services, and repair and maintenance.

Each of these segments and their total reported establishments (within the BLS QCEW) were carefully analyzed by size (employment – provided by the Census Bureau’s County Business Patterns) and state to develop representative clusters for sampling.

With clean data files in place, BW Research developed a general methodology for state employment estimation that has a few variations depending on sub-technology. Steps in the process are listed below.

100% NAICS

These are NAICS codes where 100% of the reported employment is energy-related AND 100% are allocated to a specific sub-technology. Examples include solar electric power generation, hydroelectric power generation, and motor vehicle manufacturing.

Actual Survey Responses

These include the reported sub-technology employment totals by company location. Responses from establishments in 100% NAICS codes are excluded.

Known Database

Employment is allocated by location for verified establishments in the known when the following conditions are met: 1) have InfoUSA or DatabaseUSA appended data; 2) did not take a survey (or actual survey response would be used); and 3) are not in a 100% NAICS.

Remainder

This represents remaining employment based on statistical extrapolation.

Industry Mix

Industry mix is the national proportion of industries that contribute to sub-technology employment. The mix of these industries (by 6-digit NAICS) is used to create proportions by state, and remainder employment is allocated by these proportions. This “industry mix” was developed by analyzing completed survey incidence nationally for all clean energy sub-technologies over five years.

BW Research provided additional analysis of the publicly released Department of

Energy data that included data from the Bureau of Labor Statistics, the Energy Information Administration, the U.S. Census Bureau, JobsEQ, the BW Research Partnership Energy Employment Index, and historical data from prior Rhode Island Clean Energy Industry Reports.

Of importance to note, the USEER excludes any employment in retail trade NAICS codes — motor vehicle dealerships, appliance and hardware stores, and other retail establishments.