GOVERNOR'S
Energy Office

2021 MAINE CLEAN ENERGY INDUSTRY REPORT

PRODUCED FOR THE STATE OF MAINE GOVERNOR'S ENERGY OFFICE

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[bw] RESEARCH PARTNERSHIP

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Executive Summary

With nearly 14,000 clean energy jobs throughout the state, Maine's clean energy economy accounts for a substantial and growing portion of the state's workforce. This clean energy workforce is set to continue to grow, as Governor Janet Mills has set the goal of reaching 30,000 clean energy jobs in Maine by 2030. These new clean energy jobs will provide career opportunities for Mainers from a wide range of backgrounds and a variety of skillsets.

This 2021 Maine Clean Energy Industry Report builds off of the *Strengthening Maine's Clean Energy Economy* report prepared by the Governor's Energy Office and the Governor's Office of Policy Innovation and the Future. This 2021 report details employment across five key sectors of the clean energy economy: Energy Efficiency; Clean Energy Generation; Alternative Transportation; Clean Grid and Storage; and Clean Fuels. The data for this report is based on the data collection effort conducted for the annual United States Energy and Employment Report (USEER).[1] The report provides historical clean energy employment data beginning in 2016. Data for this 2021 Report was collected in the fourth quarter of 2020 and all annual comparisons reference the fourth quarter of each year. 2020 was an exceptional year throughout the world economy due to the COVID-19 pandemic, and Maine's clean energy economy was not immune. The forthcoming 2022 Maine Clean Energy Industry Report will document the recovery in clean energy employment and may reveal growth from pre-pandemic levels in some subsectors. The following are key findings on clean energy employment trends in Maine based on data through 2020.

1 **Maine's clean energy economy grew faster than the overall economy between 2016 and 2019.**

The number of clean energy jobs increased by 11% between 2016 and 2019, while Maine's economy grew by 3% during the same time. This makes clean energy employment the second-fastest growing segment[2] of the economy behind Management of Companies and Enterprises (NAICS 55). Clean energy jobs within the state grew by nearly 1,500 jobs, while the overall economy grew by 18,000 jobs, meaning clean energy jobs accounted for 8% of Maine's total job growth between 2016 and 2019.

2 **Maine clean energy jobs experienced greater pandemic-related losses than the overall economy, but less severe losses compared to other states and the renewable power sector overall did not experience any pandemic-related losses.**

As a result of the COVID-10 pandemic, clean energy jobs statewide declined by 6% between 2019 and 2020, a greater decline than Maine's overall economy (-4%). Ultimately, the loss of clean energy jobs during this time accounted for 3% of the state's total job losses, though Maine's clean energy jobs proved to be resilient; clean energy job losses were less severe in Maine than losses experienced nationally and among several neighboring states. The renewable electric power sector did not experience any losses and was bolstered by growing market demand for renewables and supportive state policies as outlined in the *Strengthening Maine's Clean Energy Economy* report. Nationwide data also suggests that clean energy jobs have since made a rapid recovery but remain at lower levels than before the pandemic.

[1] https://www.usenergyjobs.org/.

[2] Compared to employment aggregated at the two-digit NAICS code level. 2016Q4 to 2019Q4.

3

Maine's clean energy workforce is adding workers, and these workers are spending a greater share of their time on clean energy activities.

The number of clean energy workers in Maine is growing, and these workers are spending an increasing share of their time on clean energy activities.[3] Between 2016 and 2019, intensity-adjusted employment—or a measure of full-time equivalents spending all their time on clean energy activities—in Maine increased by 16%, and in 2020, more than six in ten (63%) of clean energy workers were spending 100% of their time on clean energy activities.

4

Energy efficiency is the technology sector with the greatest number of clean energy workers (8,000), accounting for 58% of Maine's clean energy workforce in 2020.

Renewable electric power generation is the next largest source of employment, with nearly 2,800 workers across the state and, unlike other fields, did not see any reduction in workforce in 2020. Grid modernization & energy storage (1,500), renewable fuels (900 workers), and alternative transportation (700), account for growing shares of Maine's clean energy workforce.

5

Maine's clean energy workforce is largely representative of Maine's broader workforce, though women are underrepresented.

Clean energy workers are representative of the broader workforce along ethnic and racial lines, and clean energy boasts a greater proportion of veterans than the overall workforce. However, women only make up 26% clean energy workforce, compared to 52% of the state's overall workforce. Maine's clean energy workforce also has a greater share of veterans than the overall workforce. Maine's clean energy training and education providers can play a critical role in ensuring that the clean energy workforce is representative.

6

While most clean energy employers (69%) reported they had an adequate number of qualified clean energy workers to meet their needs, those who were hiring faced challenges.

In the fourth quarter of 2020, sixty percent of actively hiring companies reported it is "very difficult" to find qualified clean energy talent, and another 35% reported it is "somewhat difficult." Some of this hiring difficulty is likely attributable to the extraordinary volatility and disruption in the labor market caused by the pandemic, though current labor market dynamics suggest that hiring difficulty has likely increased. The state's current clean energy workforce initiatives will help ensure that Maine has trained workers that are prepared to help transition the state away from fossil fuels.

[3] For more information on intensity-adjusted employment, please see page 7.

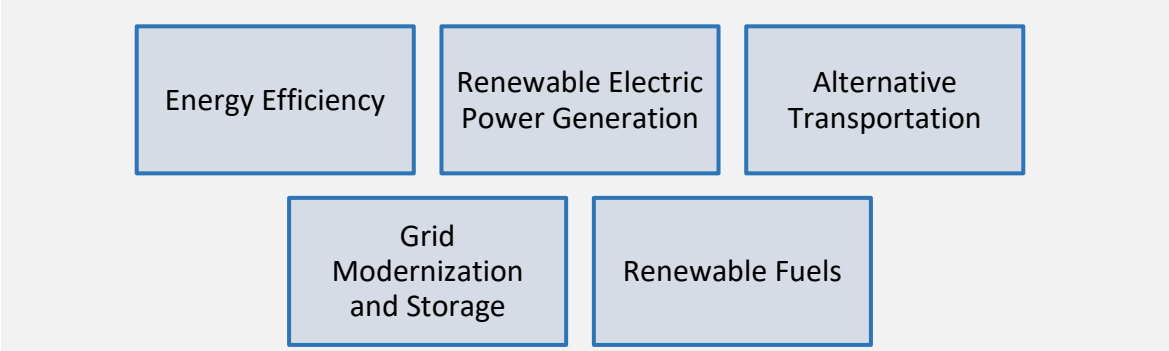
Introduction

This 2021 Maine Clean Energy Industry Report was commissioned by the Maine Governor's Energy Office (GEO), and funded by the U.S. Economic Development Administration (EDA) to better understand the scale and composition of the clean energy economy in the state. This year's report follows the initial effects of the COVID-19 pandemic and the resulting economic recession and recovery. The substantial disruptions that the pandemic has caused are visible throughout the national economy as well as the 2020 employment figures presented in this report. This disruption represents a setback after years of sustained growth. Understanding the challenges and opportunities of clean energy employment within the state gives decision-makers the data necessary to make informed policy decisions that can benefit Maine's residents and economy.

CLEAN ENERGY JOBS

This report tracks key job trends in the clean energy sector by industry, geography, and the five major technology sectors described in Figure 1 below. Within each major technology sector are clean energy sub-technologies. This report also includes electric transmission and distribution workers[4], classified under grid modernization and energy storage, because these workers will be essential in bringing renewable electric power generation online and in grid modernization activities. This sub-technology definition is specific to the state of Maine and can be found in Appendix A. In addition to technology employment, clean energy employment trends are discussed from an industry, or value chain, perspective. The data highlight trends over the last several years in key segments, such as installation, manufacturing, professional services, sales, and utilities as well as the impacts of the pandemic on clean energy jobs in each of these industries.

FIGURE 1. CLEAN ENERGY SECTORS



[4] This includes workers in NAICS 22112 Electric Power Transmission, Control, and Distribution.

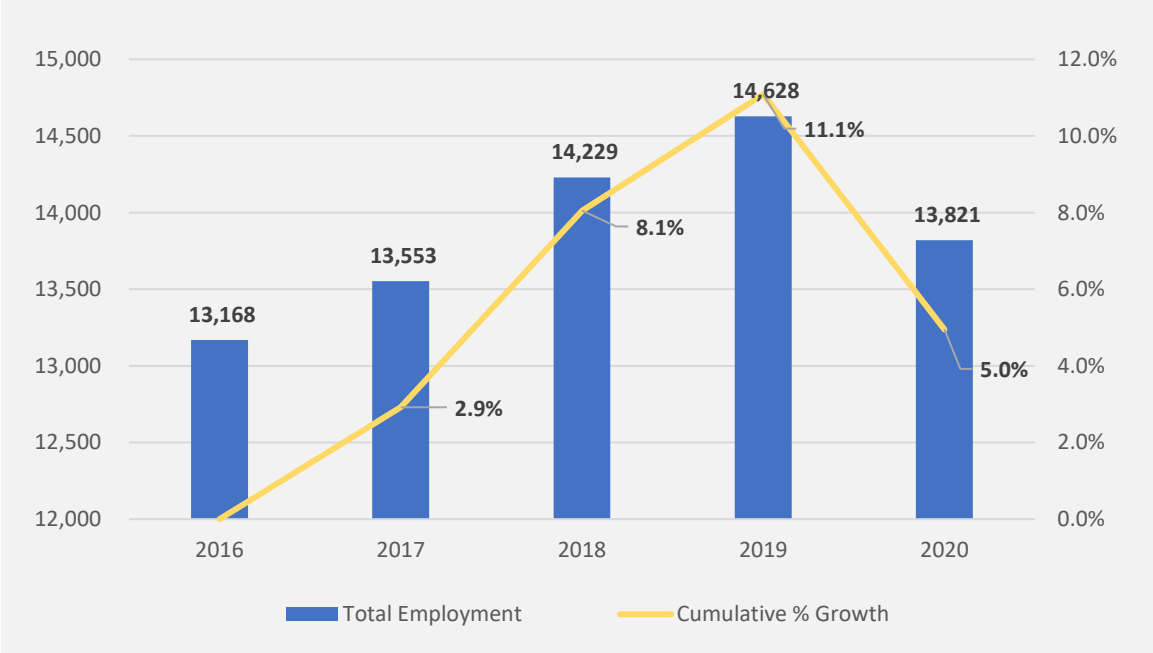
Clean Energy Industry Overview

Total Clean Energy Employment

In Q4 of 2020, clean energy accounted for 13,800 jobs in the state of Maine. This is about 800 fewer clean energy jobs than there were at the end of Q4 in 2019, representing a 6% decline. During this same timeframe, Maine's economy lost 4% of all jobs, equivalent to 27,300 jobs.[5] Ultimately, this suggests that clean energy job losses accounted for about 3% of all job losses in Maine between Q4 of 2019 and 2020. In comparison, nationwide clean energy[6] employment losses accounted for 4% of the nationwide employment losses during this time. Maine's clean energy economy had seen strong growth preceding the pandemic. Between 2016 and 2019, clean energy employment in the state increased by 11% (Figure 2).

Although clean energy employment in Maine saw significant declines during the immediate aftermath of the COVID-19 pandemic, early national data suggests that much of the nationwide clean energy economy has nearly fully recovered by Q2 of 2021, a trend that Maine has likely followed (Figure 3).

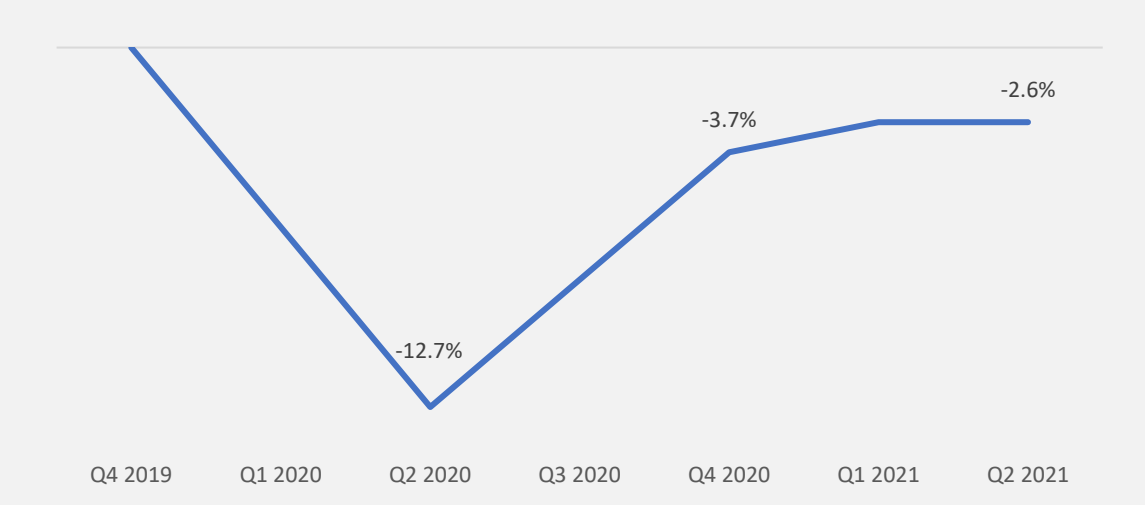
FIGURE 2. CLEAN ENERGY EMPLOYMENT IN MAINE, 2016-2020



[5] Quarterly and Annual Industry Employment and Wages. Center for Workforce Research and Information. https://www.maine.gov/labor/cwri/qcew1.html

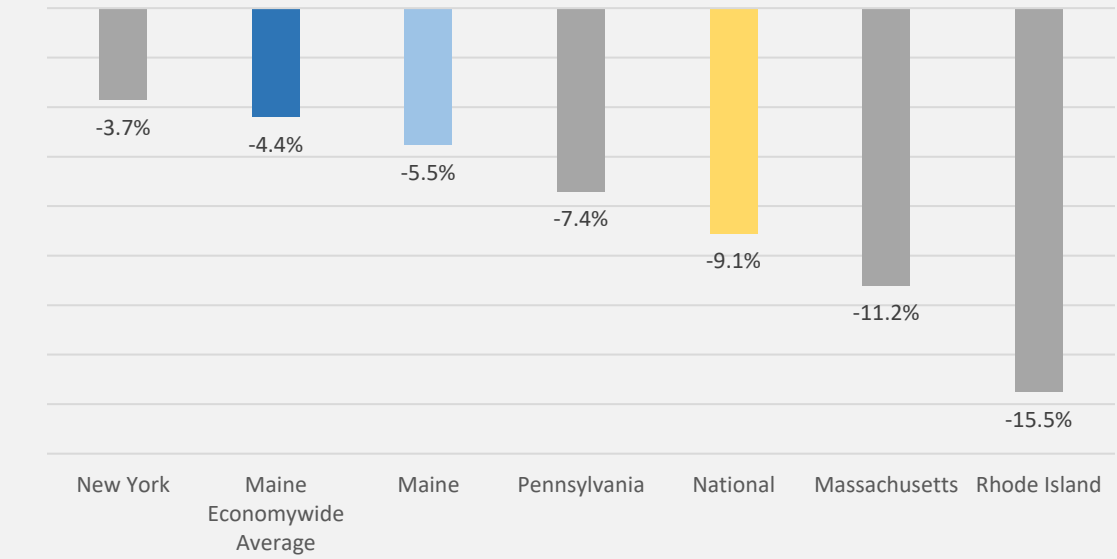
[6] Using Maine's Clean Energy Definition.

FIGURE 3. NATIONAL CLEAN ENERGY INDUSTRY COVID-19 RECOVERY, Q4 2019 – Q2 2021[7]



Maine's clean energy economy also faired the pandemic relatively well compared to other states; clean energy employment nationally and in Massachusetts and Rhode Island saw steeper declines than in Maine (Figure 4).

FIGURE 4. CLEAN ENERGY EMPLOYMENT CHANGE BY REGION, 2019-2020



[7] It should be noted that the quarterly employment change featured in this figure is slightly different from the USEER methodology upon which annual employment estimates are based on. Though the values may differ slightly, the overall trend—which features a significant decline in Q2 2020, followed by growth throughout the first two quarters of 2021—are the same. Quarterly estimates are based on Unemployment Insurance (UI) filings, while the annual USEER uses BLS QCEW data. Because the two methodologies cannot be reconciled, quarterly percent changes are used in Figure 3 to provide a visual illustration of the decline and subsequent recovery trend.

Energy efficiency is the largest segment of clean energy jobs in Maine. With more than 8,000 workers involved in energy efficiency, the segment made up 58% of Maine's clean energy workforce in 2020. Renewable electric power generation is the next largest segment of the clean energy economy, with nearly 2,800 jobs (20%).

Energy efficiency also accounts for the greatest share of clean energy establishments, with more than 1,500 business locations across the state. Another 500 business locations work within renewable electric power generation. Renewable fuels, alternative transportation, and grid modernization & energy storage each have more than 100 business locations (Figure 6).

Between 2016 and 2019, renewable fuels saw the greatest rate of growth in jobs (20%), while energy efficiency added the greatest total number (800 jobs). Renewable electric power generation also saw substantial growth between 2016 and 2019, growing by 17%.

Not all clean energy technology segments shed jobs between 2019 and 2020. Alternative transportation (3%), renewable electric power generation (1%), and grid modernization & energy storage (1%) increased during this time. The energy efficiency segment saw the greatest losses in jobs both in percentage and by absolute number, declining 10% between 2019 and 2020, equating to more than 800 jobs in the 12 month span.

FIGURE 5. CLEAN ENERGY EMPLOYMENT BY TECHNOLOGY SECTOR, 2016-2020

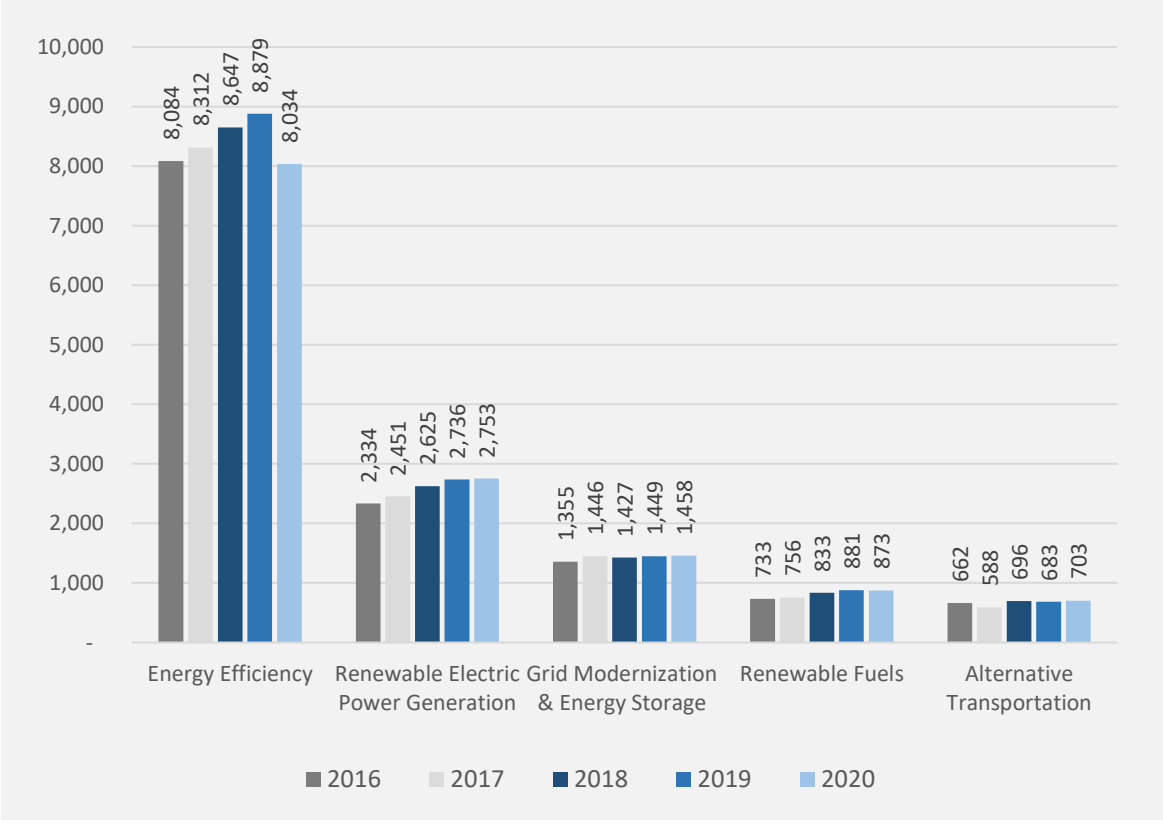
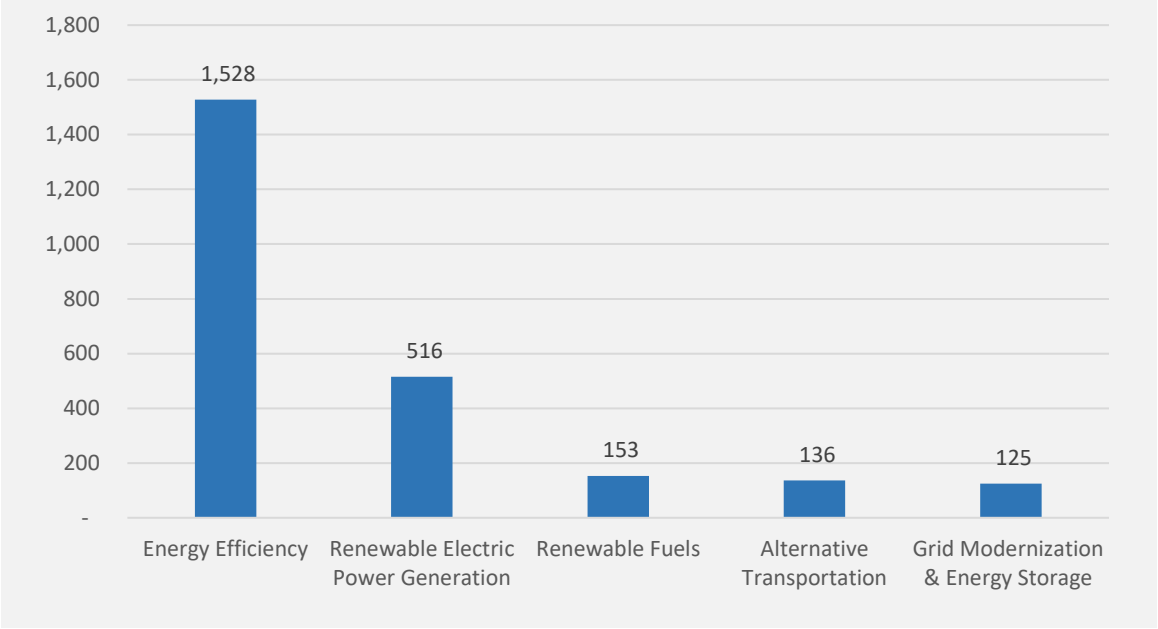


FIGURE 6. CLEAN ENERGY ESTABLISHMENTS BY TECHNOLOGY, 2020



Clean Energy Value Chain Employment

Value chain jobs examine the clean energy economy by identifying the industries in which clean energy activities are concentrated in Maine. Doing so provides context for what type of policy or workforce development assistance is needed to support clean energy employers across the state. For example, a state with a high concentration of research and development activity in the alternative transportation sector might signal the need for more early-stage investment funding to support continued prototype development and technology testing. The major value chain segments examined include construction[8], manufacturing[9], wholesale trade[10], professional and business services[11], other services[12], agriculture and forestry, and utilities.

[8] Construction 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.

[9] Manufacturing encompasses petrochemical, industrial gas, ethyl alcohol, or other basic organic chemical manufacturing as well as 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.

[10] Wholesale trade includes fuel dealers, motor vehicle and parts wholesalers, electrical equipment and household appliance wholesalers, and other wholesale related to clean energy products and technologies.

[11] Professional business services include all finance, legal, consulting, engineering, research, or architectural support.

[12] Other services is largely comprised of automotive repair and maintenance, but also includes organizational and non-profit work such as environment and conservation organizations, business associations, or advocacy organizations.

Clean energy firms involved in other services saw the greatest relative loss of jobs from 2019 through 2020 (18% or 278 jobs). Construction firms, which account for half of all clean energy jobs in Maine, saw the greatest absolute loss of employment (289 jobs), equating to a 4% decline (Figure 7). Construction, followed by professional and business services and other services, are also the segments of the value chain that account for the greatest share of clean energy business locations (Figure 8).

FIGURE 7. CLEAN ENERGY EMPLOYMENT BY VALUE CHAIN SEGMENT, 2016-2020

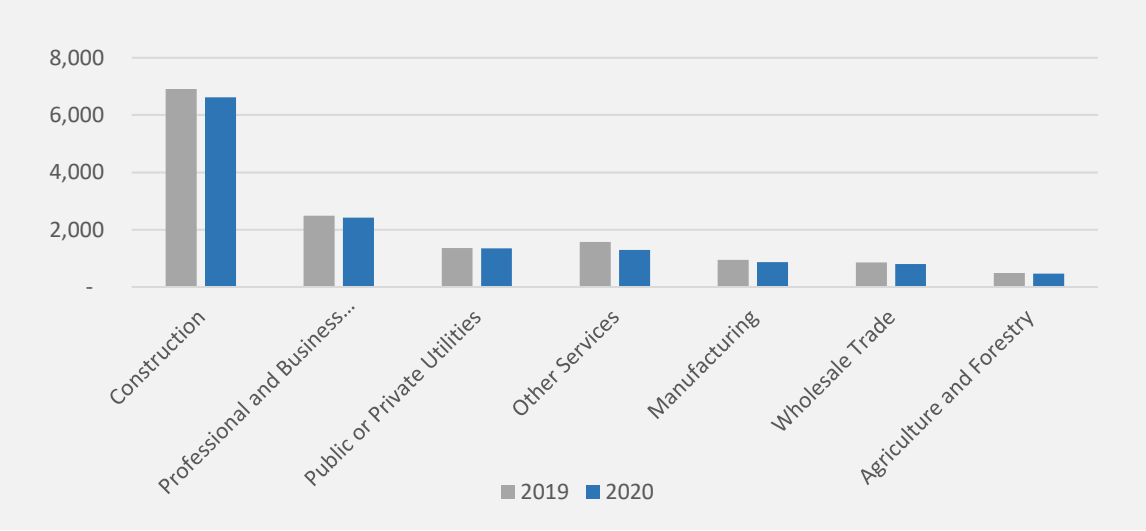
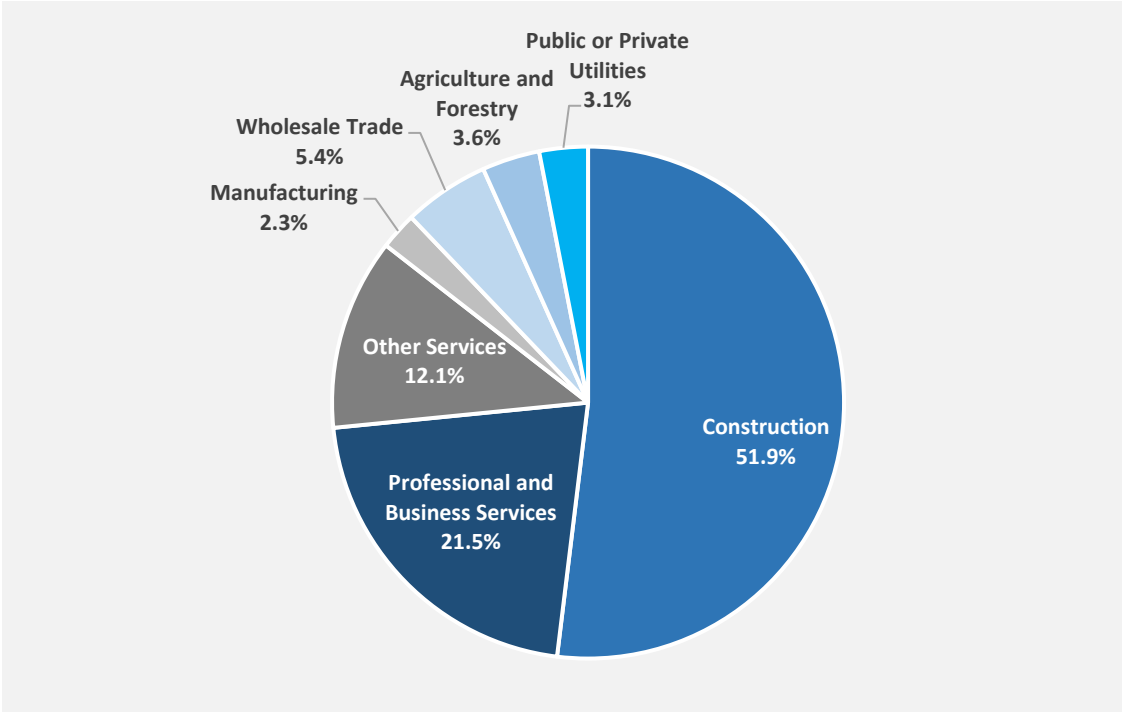


FIGURE 8. CLEAN ENERGY ESTABLISHMENTS BY VALUE CHAIN, 2020

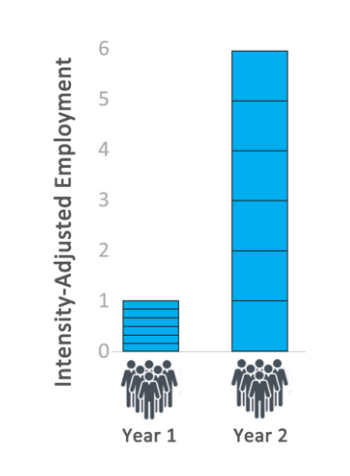


Clean Energy Employment Intensity

Intensity-adjusted clean energy job metrics are used to identify the concentration, or intensity, of clean energy activities. The clean energy employment featured in Figure 2 includes all workers that dedicate any amount of their labor hours or work week to clean energy goods and services. As such, an electrician who spends only a quarter of their work week installing or servicing solar panels would be counted as a clean energy worker in Figure 2. This definition of a clean energy worker is what is used throughout this report unless otherwise designated. The intensity-adjusted clean energy employment metric weights each of these jobs according to how much time workers were reported to spend on clean energy activities; the categories include less than half of their labor hours, half to the majority of their labor hours, or all of their labor hours.[13]

An increase in total employment would indicate that there are more workers in the labor market overall servicing clean energy technologies, while an increase in intensity-adjusted employment indicates that these workers are dedicating a larger proportion of their work week and labor hours to clean energy-specific activities; this could be the result of increased policy support or financial incentives spurring market demand for clean energy goods and services. For instance, a traditional HVAC worker might have spent only a third of their work week installing or maintaining energy efficient HVAC technologies in 2016. If a state began offering rebates in 2017 for efficient heat pumps, that traditional HVAC worker would likely be spending more of their labor hours or work week installing high-efficiency heat pumps. This increase in activity per worker would not necessarily result in overall job growth in Figure 2 but would be captured as an increase in intensity-adjusted clean energy employment in Figure 9 below.

The following examples illustrates the importance of tracking intensity-adjusted clean energy employment. If an HVAC firm had 6 installers in 2018 who only occasionally installed heat pumps, and now has 6 installers who exclusively do so, there would be no change in the total number of clean energy workers reported. However, because the number of labor hours working with heat pumps has increased, intensity-adjusted jobs would show a corresponding increase.



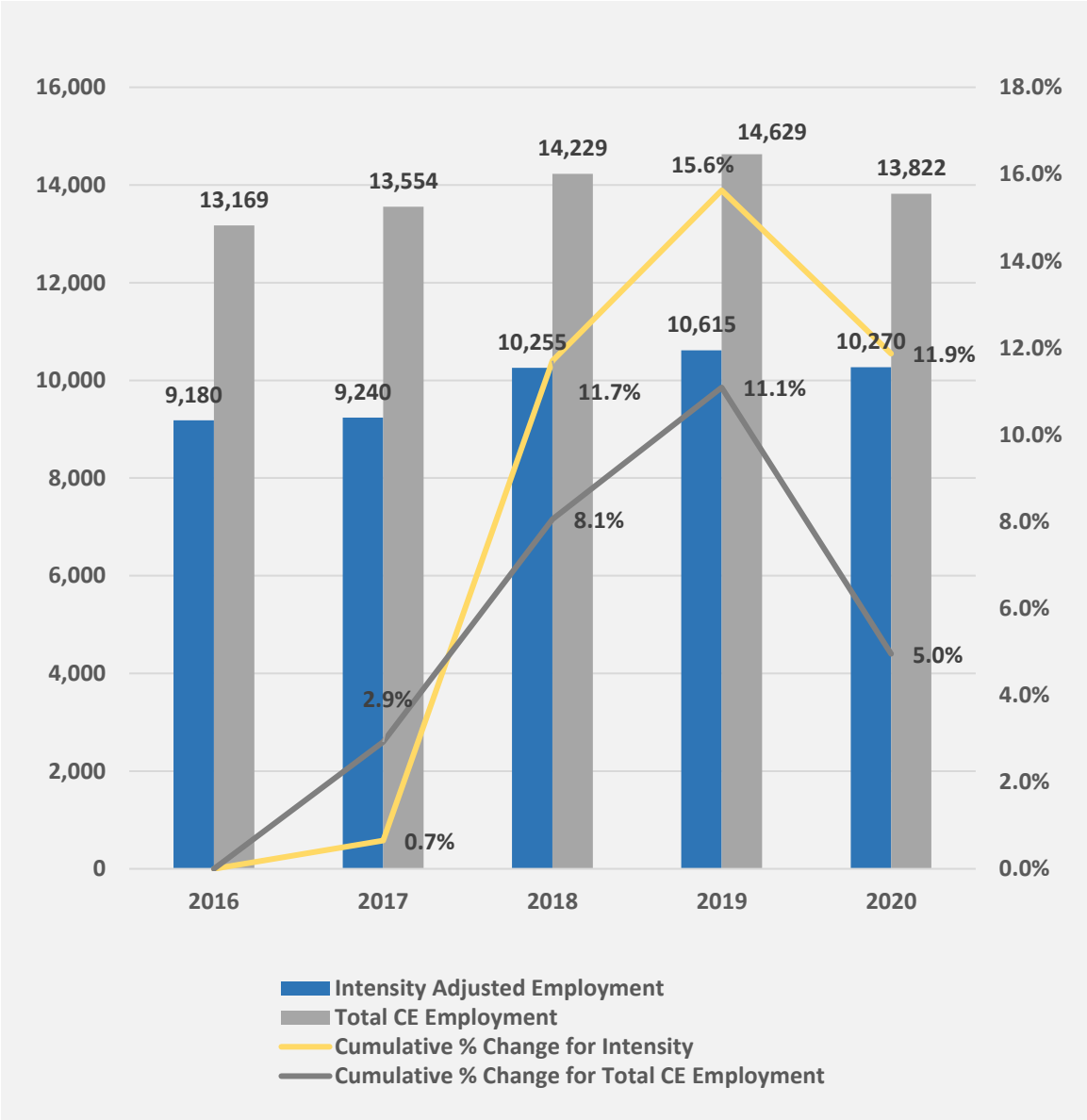
Intensity-adjusted clean energy employment (blue line) in Maine has followed an accelerated growth pattern compared to total clean energy employment (grey line). Between 2016 and 2019, cumulative

[13] These categories correspond with the following delineations: 0 to 49 percent of labor hours, 50 to 99 percent of labor hours, and 100 percent of labor hours. For a full description of this methodology, please refer to Appendix A.

intensity-adjusted employment grew by 16% compared to 11% total clean energy employment. This means that while Maine is adding clean energy workers, those workers are also spending increasing amounts of time on clean energy-related activities.

It is also noteworthy that intensity-adjusted employment was more resilient to pandemic-related economic shocks than total clean energy employment. While total clean energy employment fell 6% between 2019 and 2020, intensity-adjusted employment only declined by 3% (Figure 9). This demonstrates that clean energy activity was more pandemic-resilient, suggests that clean energy jobs may have been more resilient as well.

FIGURE 9. INTENSITY-ADJUSTED CLEAN ENERGY EMPLOYMENT, 2016-2020



The share of workers spending at least 50% of their labor hours on clean energy-related activities increased steadily between 2016 and 2020, increasing by 6.1 percentage-points (or 10% growth) (Figure 10). The proportion of workers that spend 100 percent of their time on clean energy-related activities also saw steady increases between 2016 and 2020, increasing by 6.2 percentage-points, equivalent to 11% growth (Figure 11). These trends demonstrate that Maine is increasing the number of clean energy workers while those workers are also spending a greater share of their time on clean energy activities.

FIGURE 10. 50% ENERGY-INTENSITY CLEAN ENERGY WORKERS, 2016-2020

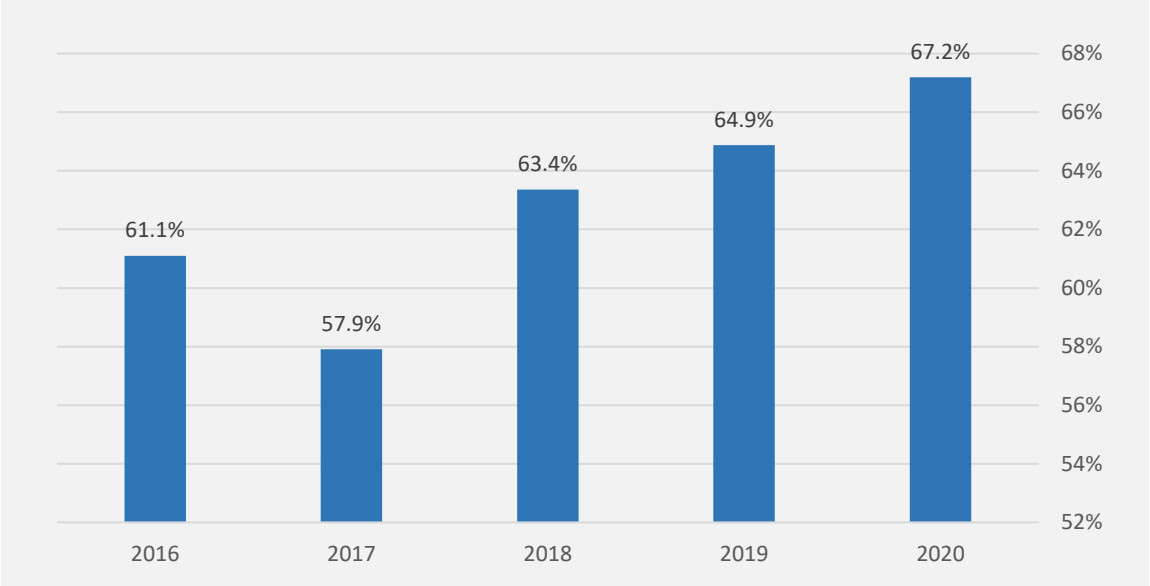
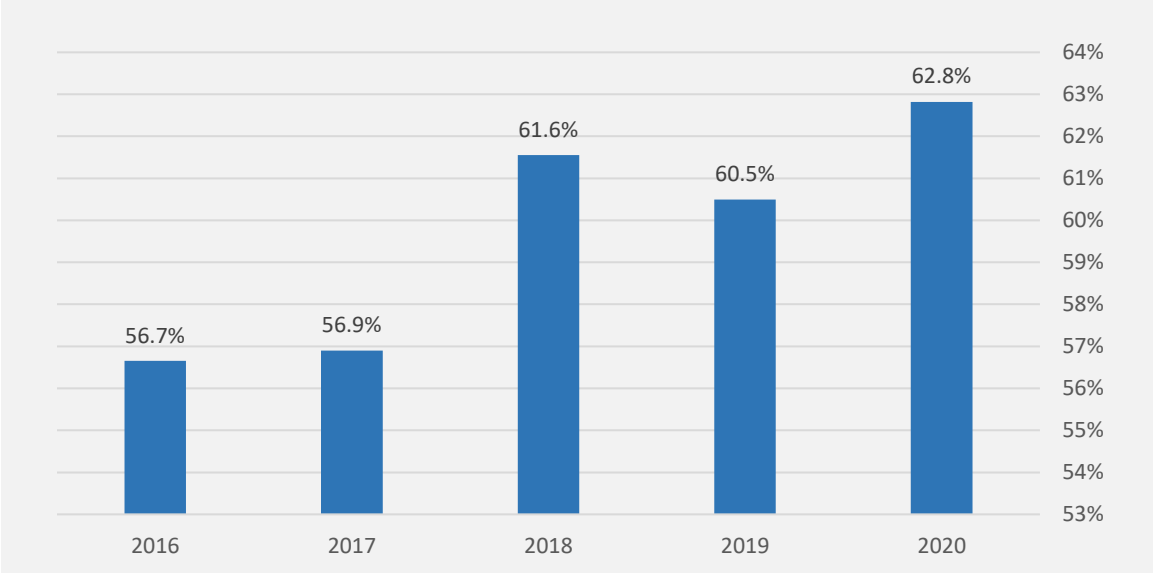


FIGURE 11. 100% ENERGY INTENSITY CLEAN ENERGY WORKERS, 2016-2020



Detailed Clean Energy Sector Employment

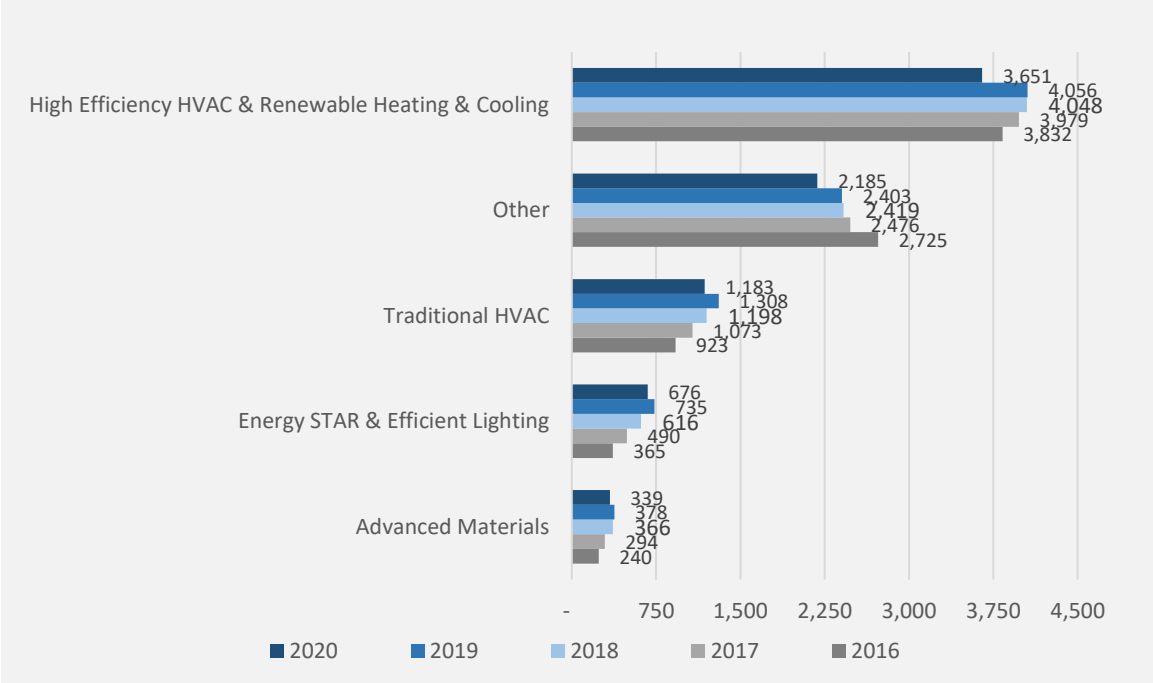
For the remainder of this report, employment is reported on a non-intensity adjusted basis.

Energy Efficiency

The energy efficiency sector encompasses all workers that are involved in the research, manufacture, sales, installation, repair, or professional service support of technologies and services designed to improve the efficiency of commercial, residential, and industrial buildings. The following are sub-technologies included in this sector: ENERGY STAR® appliances, lighting, and HVAC systems; advanced building materials and insulation technologies; solar thermal water heating and cooling; and other energy efficient technologies and processes like recycled building materials or reduced water consumption products and appliances.

High efficiency HVAC & renewable heating & cooling account for nearly half (45%) of all energy efficient employment. It is also worth noting that the 12 months between 2020 and 2021 had the highest ever number of heat pumps installed, suggesting that these employment numbers may see a significant jump in next year's clean energy industry report. "Other," which includes technologies like energy efficient software, also accounts for a substantial share (27%) of energy efficiency jobs (Figure 12). ENERGY STAR and efficient lighting and advanced material have seen the greatest rates of growth during this time; employment in ENERGY STAR and efficient lighting doubled between 2016 and 2019.

FIGURE 12. ENERGY EFFICIENCY EMPLOYMENT BY SUB-TECHNOLOGY, 2016-2020[14]



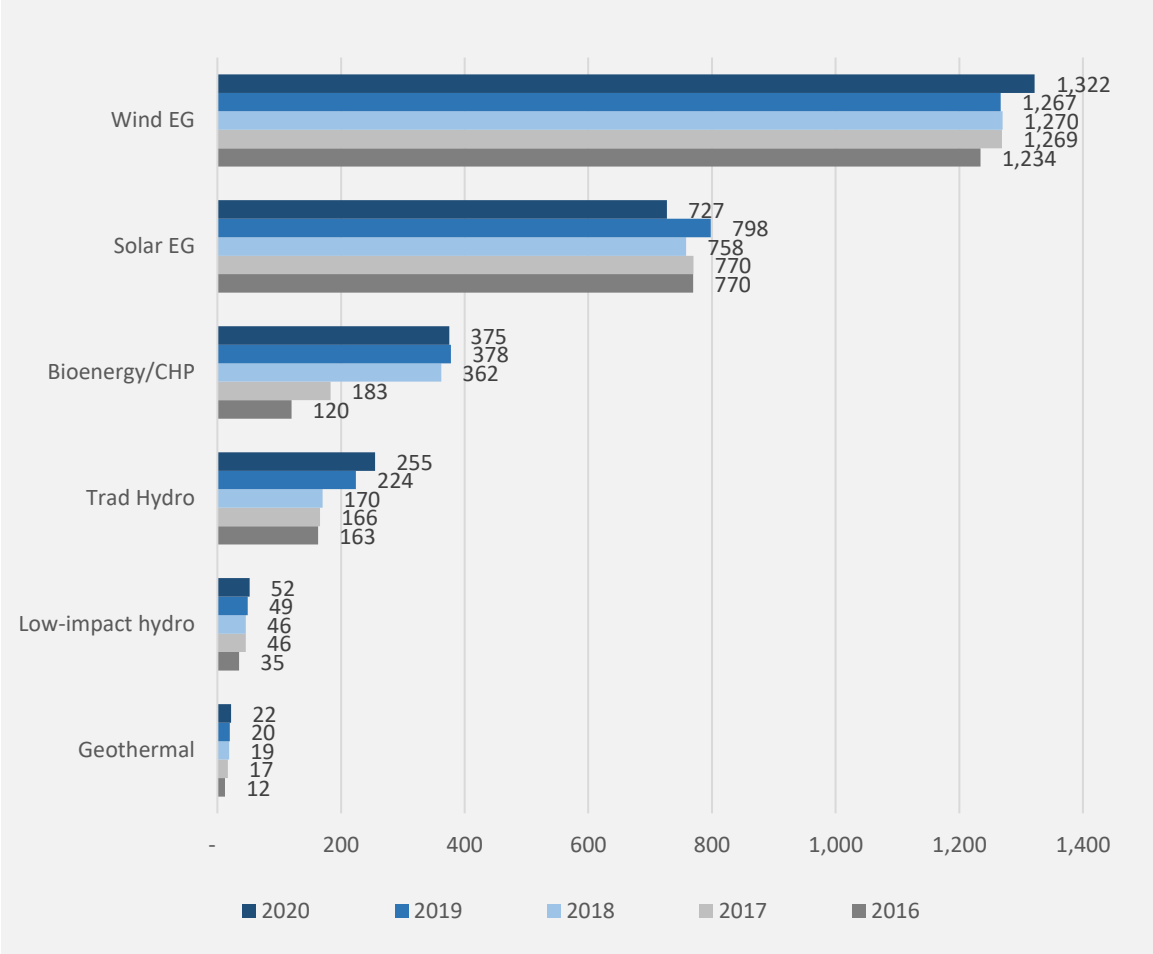
[14] Other energy efficiency technologies include variable speed motors, other design services not specific to a sub-technology, software not specific to a sub-technology, energy auditing, rating, monitoring, metering, and leak detection, energy efficiency policy not specific to a sub-technology, LEED certification, consulting not specific to a sub-technology, and phase-change materials.

Renewable Electric Power Generation

Clean energy generation jobs encompass all workers engaged in the research, development, production, manufacture, sales, installation, maintenance, repair, or professional service support of renewable electricity generating technologies. Such clean energy generation technologies include solar, wind, geothermal, bioenergy, and hydropower.

Nearly all sub-technologies in renewable electric power generation (REPG), with the exception of solar (which saw notable declines between 2019-2020), grew between 2016 and 2020. Wind (including onshore and off-shore) electric generation (EG) remains the largest source of employment within REPG, maintaining more than 1,300 jobs across the state (Figure 13).

FIGURE 13. RENEWABLE ELECTRIC POWER GENERATION (REPG) EMPLOYMENT BY SUB-TECHNOLOGY, 2016-2020[15]



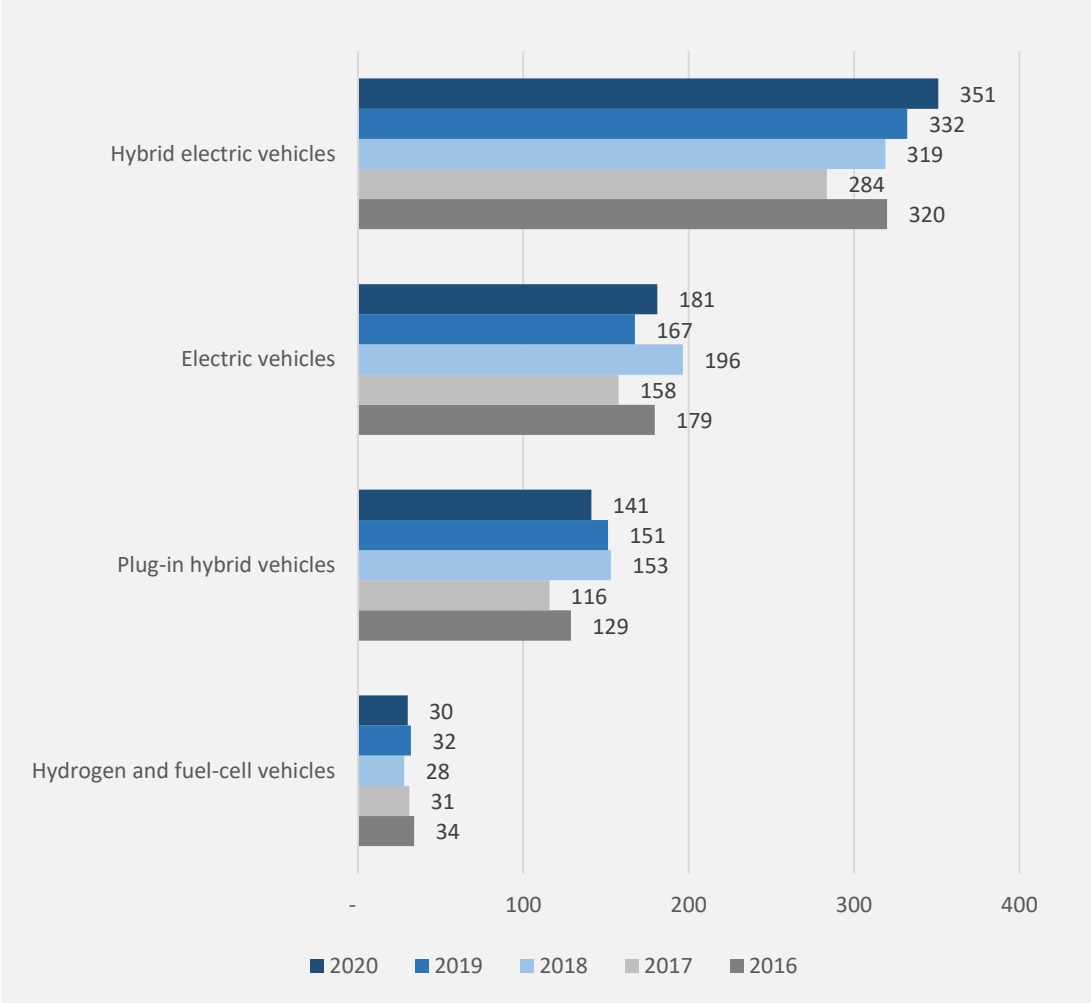
[15] The wind energy employment estimate represents both land-based and offshore wind energy. CHP is Combined Heat and Power.

Alternative Transportation

The alternative transportation sector is comprised of workers that support the manufacture, sales, repair and maintenance, and professional business support—such as legal, financial, engineering, or consulting services—of alternative vehicle technologies. Alternative transportation includes technologies like plug-in hybrid, hybrid electric, electric, hydrogen, and fuel cell vehicles.

Hybrid electric vehicles is the largest source of alternative transportation in the state, accounting for half of alternative transportation jobs. Plug-in hybrid vehicles and hybrid electric vehicles have also seen the greatest absolute and relative increase in jobs, each growing by 10% between 2016 and 2020 (Figure 14).

FIGURE 14. ALTERNATIVE TRANSPORTATION EMPLOYMENT BY SUB-TECHNOLOGY, 2016-2020

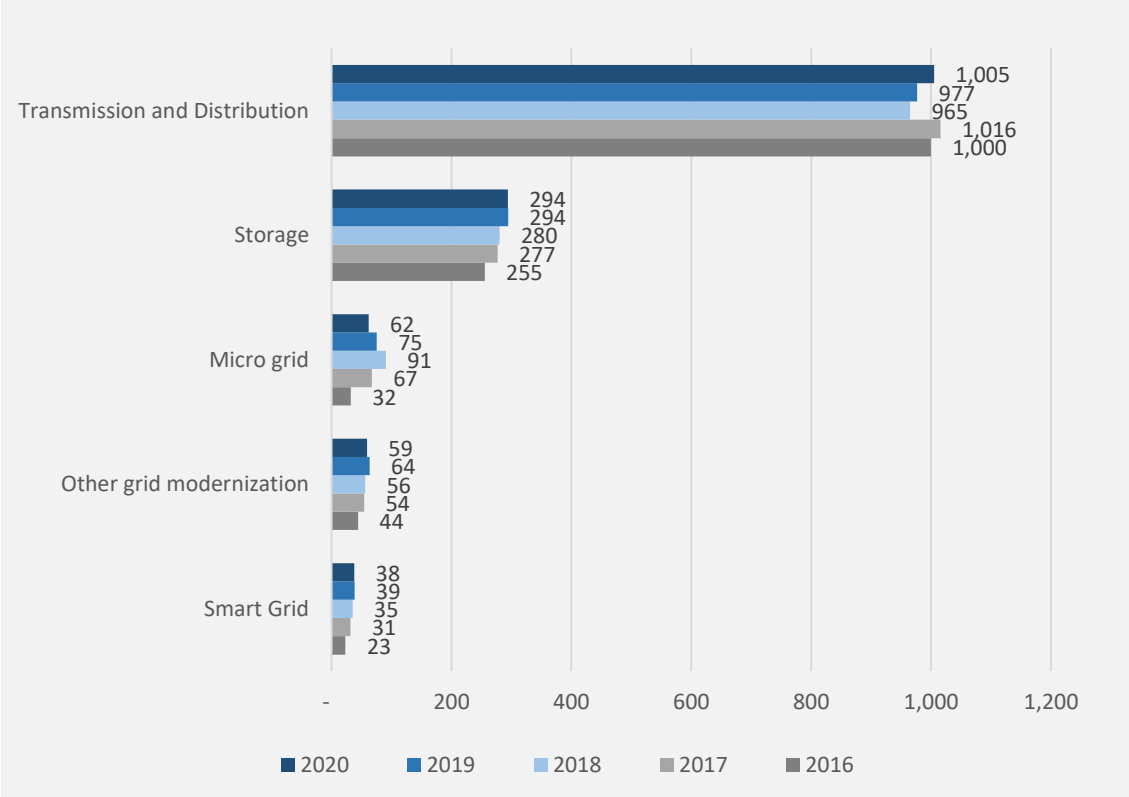


Grid Modernization & Storage

For the purposes of this report, grid modernization and storage workers include any individual that supports the deployment (construction), manufacture, wholesale trade, or legal, financial, and engineering services of smart grid and energy storage technologies. This also includes electrical transmission and distribution[16] workers.

Electric transmission and distribution accounted for two-in-three grid modernization & storage jobs (69%) in 2020. Electric transmission and distribution jobs are a significant part of the clean energy workforce in Maine, and will play a growing role as more transition and distribution infrastructure is needed to support the growing amount of renewable energy generated around the state. Clean storage—which includes pumped hydropower storage[17], battery storage[18], mechanical storage[19], thermal storage[20], and biofuel storage (including ethanol and biodiesel), accounts for the next-greatest share of grid modernization & storage employment (Figure 15).

FIGURE 15. GRID MODERNIZATION & STORAGE EMPLOYMENT BY SUB-TECHNOLOGY, 2016-2020



[16] This consists of Electric Power Transmission, Control, and Distribution (NAICS 22112) workers.

[17] Hydroelectric energy storage used by electric power systems for load balancing. This method stores the gravitational potential energy of water pumped from a lower elevation reservoir to a higher elevation.

[18] This includes battery storage for solar generation and lithium batteries, lead-based batteries, other solid-electrode batteries, vanadium redox flow batteries, and other flow batteries.

[19] This includes flywheels and compressed air energy storage.

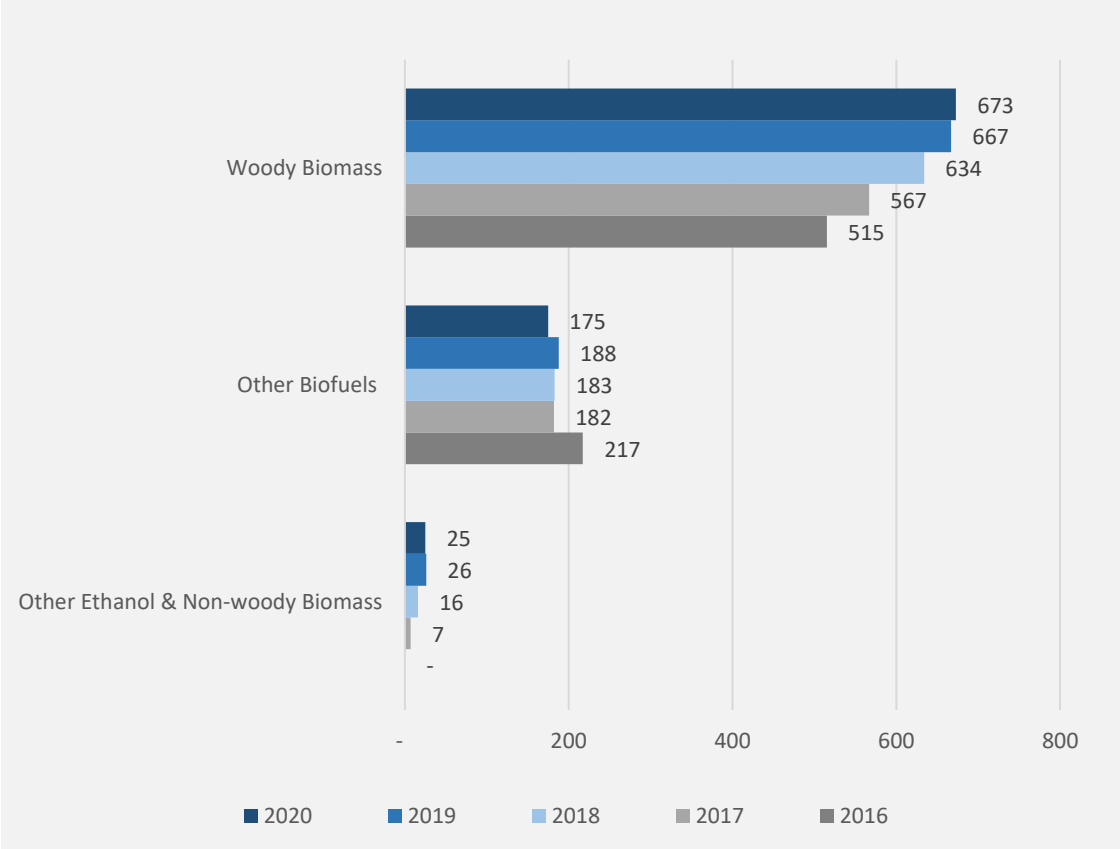
[20] Temporary storage of energy for later use when heating or cooling is needed.

Renewable Fuels

The renewable fuels sector includes all workers involved in the production, distribution and sales, or professional and business service support for clean fuels and clean fuel technologies that use woody (including trees and woody plant parts) and non-woody (this includes fuel made from straw, manure, vegetable oil, and animal fats) biomass.

The renewable fuels sector accounts for nearly 900 jobs across Maine. Woody biomass is the largest sub-technology sector by employment, accounting for 77% of renewable fuels jobs. Employment growth among renewable fuels has largely been driven by woody biomass, which saw a 31% increase in employment between 2016 and 2020. Other Biofuels (which is other fuel derived directly from living matter) has seen modest declines between 2016 and 2020 (Figure 16).

FIGURE 16. RENEWABLE FUELS EMPLOYMENT BY SUB-TECHNOLOGY, 2016-2020[21]

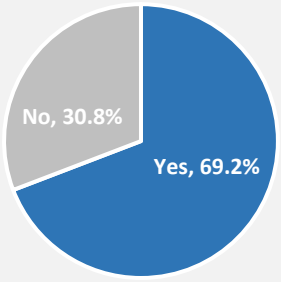


[21] Other ethanol/ non-woody biomass includes fuel made from other materials such as straw, manure, vegetable oil, or animal fats.

Clean Energy Hiring & COVID-19 Impacts

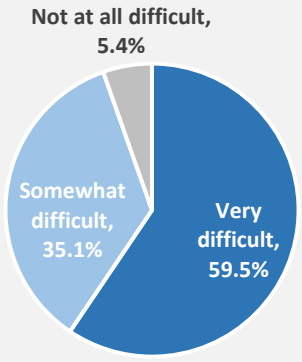
About seven in ten (69%) clean energy employers in Maine indicated that there are an adequate number of clean energy workers to meet their current needs.[22] 31% of clean energy employers that stated their company does not have an adequate number of qualified energy employees. Of those employers, 76% reported currently searching for employees to fill vacant positions, suggesting that some businesses may be discouraged from looking after being unable to find qualified employees for so long (Figure 17).

FIGURE 17. DOES YOUR COMPANY HAVE AN ADEQUATE NUMBER OF WORKERS TO MEET CURRENT NEEDS? (2020)



Most companies currently seeking workers stated that it was difficult to find qualified talent; a majority (60%) of clean energy employers in Maine reported that finding qualified applicants to fill positions is "very difficult," and another 35% stated it was "somewhat difficult." Only 5% of clean energy employers in the state noted that it was "not at all difficult" to find qualified talent (Figure 18). It should be noted that responses to this question are based on the small sample of employers that reported seeking workers over the course of 2020. It is also noteworthy that 2020 experienced unprecedented levels of churn in the labor markets, likely exacerbating any preexisting hiring challenges.

FIGURE 18. EMPLOYER-REPORTED HIRING DIFFICULTY, 2020



[22] This section does not include responses from transmission and distribution employers within Grid Modernization & Energy Storage.

Despite the labor market disruptions caused by the pandemic, most (62%) clean energy employers in Maine reported that they did not have to lay off, furlough, or reduce the pay of any of their energy workers (Figure 19). Of the 36% of clean energy firms that had to make staffing changes, 31% reported reducing clean energy workers' hours, 27% reported permanently laying off staff, and 18% reported reducing employee pay and/or benefits (Figure 20).

FIGURE 19. DID YOU HAVE TO LAY OFF, FURLOUGH, OR REDUCE PAY OF ANY ENERGY WORKERS? (2020)

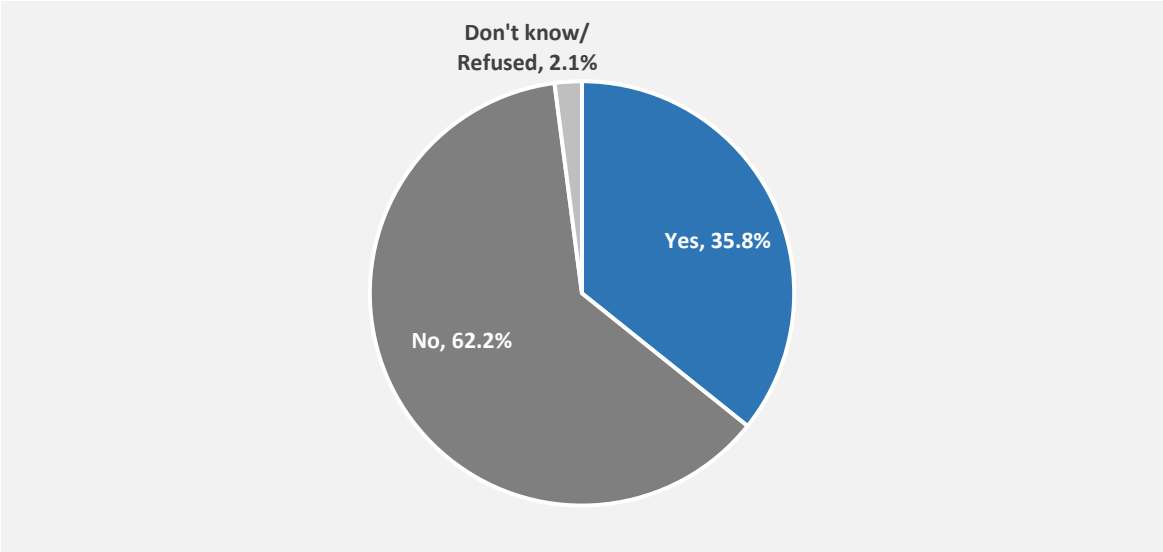
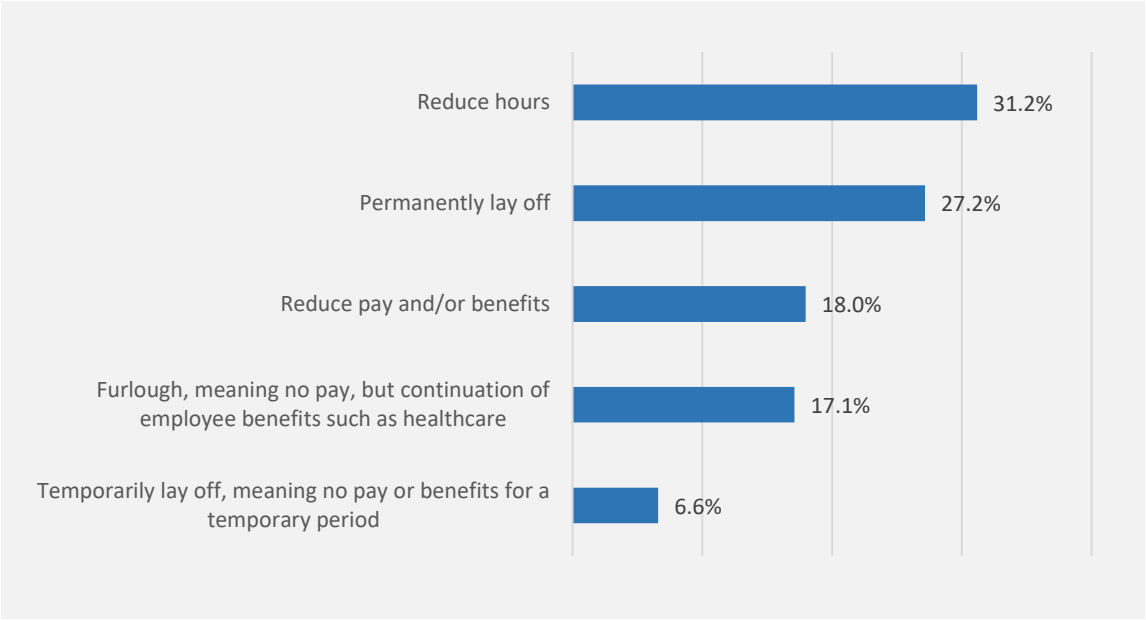
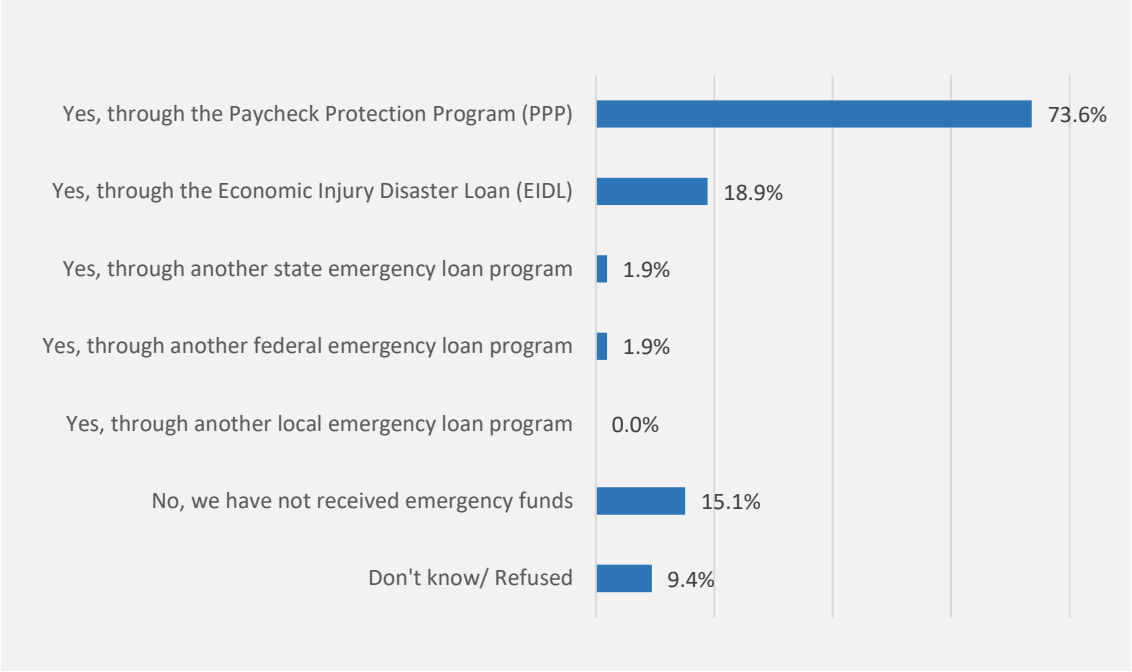


FIGURE 20. TYPES OF WORKER SEPARATIONS, 2020



Three quarters (76%) of clean energy employers in Maine reported receiving emergency financial relief through one or more program. The Paycheck Protection Program (PPP) was the program most often utilized by clean energy employers; 74% reported receiving funds through the program. 19% of employers reported receiving funds through the Economic Injury Disaster Loan (EIDL) program (Figure 21).

FIGURE 21. DID YOUR COMPANY RECEIVE ANY COVID-19 RELIEF PROGRAMS & ASSISTANCE? (2020)[23]



[23] This was a multiple-choice question, and respondents were given the option to select yes for more than one program. Individuals who selected "no, we have not received emergency funds" were not able to select "yes" for any other response.

Clean Energy Demographics

The clean energy workforce in Maine is representative of some populations and less representative among others. Women are relatively underrepresented in clean energy, accounting for roughly a quarter (26%) of Maine's clean energy workforce compared to 52% of the state's overall workforce.[24] However, Maine's clean energy workforce is more representative by race and ethnicity and has a strong representation of veterans (8%) relative to the overall workforce (5%) (Table 1).

TABLE 1. CLEAN ENERGY DEMOGRAPHICS, 2020[25]

	ME Clean Energy, 2020	ME Overall Economy[26]
Female	25.5%	51.6%
Male	74.5%	48.4%
White	91.6%	94.4%
Hispanic/Latino	3.9%	1.9%
Black	3.1%	2.1%
Asian	2.3%	1.5%
Native American	0.7%	0.6%
Pacific Islander	0.2%	0.1%
Two or More Races	2.2%	1.4%
Veterans	7.5%	5.2%
55 and Over	20.8%	27.7%

[24] Male workers similarly make up a majority (73%) of the US Clean Energy workforce.
[25] The demographic estimation for additional sectors cannot be provided due to low sample sizes.
[26] Demographic data for Maine overall are compiled from JobsEQ using the average of four quarters ending in Q1 2020.

Appendix A: Clean Energy Technology List

A clean energy job is defined as any worker that is directly involved with the research, development, production, manufacture, distribution, sales, implementation, installation, or repair of components, goods, or services related to the following sectors of Clean Energy Generation; Clean Grid and Storage; Energy Efficiency; Clean Fuels; and Alternative Transportation. These jobs also include supporting services such as consulting, finance, tax, and legal services related to energy.

RENEWABLE ELECTRIC POWER GENERATION

- Solar Photovoltaic Electric Generation
- Concentrated Solar Electric Generation
- Wind Generation
- Geothermal Generation
- Bioenergy/Biomass Generation, including Combined Heat and Power
- Low-Impact Hydroelectric Generation, including wave/kinetic generation
- Traditional Hydroelectric Generation

GRID MODERNIZATION & ENERGY STORAGE

Electric Power Transmission and Distribution

- Electric Power Transmission, Control, and Distribution
- Smart Grid

Storage

- Pumped Hydropower Storage
- Battery Storage, including battery storage for solar generation
    - Lithium Batteries
    - Lead-Based Batteries
    - Other Solid-Electrode Batteries
    - Vanadium Redox Flow Batteries
    - Other Flow Batteries
- Mechanical Storage, including flywheels, compressed air energy storage, etc.
- Thermal Storage

ENERGY EFFICIENCY

- Traditional HVAC goods, control systems, and services
- High Efficiency HVAC and Renewable Heating and Cooling
    - ENERGY STAR Certified Heating Ventilation and Air Conditioning (HVAC), including boilers and furnaces with an AFUE rating of 90 or greater and air and central air conditioning units of 15 SEER or greater
    - Solar Thermal Water Heating and Cooling
    - Other Renewable Heating and Cooling (geothermal, biomass, heat pumps, etc.)
- ENERGY STAR® and Efficient Lighting
    - ENERGY STAR Certified Appliances, excluding HVAC
    - ENERGY STAR Certified Electronics (TVs, Telephones, Audio/Video, etc.)
    - ENERGY STAR Certified Windows and Doors
    - ENERGY STAR Certified Roofing

    - ENERGY STAR Certified Seal and Insulation
    - ENERGY STAR Certified Commercial Food Service Equipment
    - ENERGY STAR Certified Data Center Equipment
    - ENERGY STAR Certified LED Lighting
    - Other LED, CFL, and Efficient Lighting
- Advanced Building Materials/Insulation
- Other Energy Efficiency
    - Recycled Building Materials
    - Reduced Water Consumption Products and Appliances

RENEWABLE FUELS

- Woody Biomass
- Other Ethanol and Non-Woody Biomass, including biodiesel

ALTERNATIVE TRANSPORTATION

- Plug-In Hybrid Vehicles
- Electric Vehicles
- Hybrid Electric Vehicles
- Hydrogen and Fuel Cell Vehicles

Appendix B: Research Methodology

EMPLOYMENT DATA

Data for the 2021 Maine Clean Energy Industry Report is taken from data collected for the 2021 US Energy and Employment Report (USEER). The survey was administered by phone and web. The phone survey was conducted by ReconMR, and the web instrument was programmed internally. Each respondent was required to use a unique ID in order to prevent duplication.

The 2021 USEER survey in Maine resulted in more than 3,200 calls and nearly 800 emails to potential respondents. More than 280 business establishments participated in the survey. These responses were used to develop incidence rates among industries as well as to apportion employment across various industry categories in ways currently not provided by state and federal labor market information agencies. The margin of error is +/-5.79 percent at a 95 percent confidence level.

INTENSITY-ADJUSTED CLEAN ENERGY EMPLOYMENT

Intensity-adjusted clean energy employment was extrapolated using state employment thresholds by technology weighted on census division and previous year's data. Employment thresholds are survey data from questions asking what percent of a firm's employment spends at least 50 percent of their time working on energy-related activities and what percent spends all of their time. Using the adjusted thresholds, employment by state is then split into three groups, those that spend all (100 percent) of their time on energy-related activities, those that spend a majority (50 to 99 percent) of their time, and those that spend less than a majority (0 to 49 percent) of their time. These employment groups are weighted 0.25 on the less than a majority group, 0.75 on the majority group, and 1 on the 100 percent group. Intensity-adjusted employment estimates are sum of these products.

Appendix C: Regional Clean Energy Employment

The following table provides clean energy employment data by county for total clean energy jobs in Q4 2020.

County Name	Clean Energy Jobs	Jobs in Energy Efficiency
Androscoggin County	983	649
Aroostook County	473	209
Cumberland County	4,676	3,184
Franklin County	263	103
Hancock County	730	510
Kennebec County	1,055	719
Knox County	333	251
Lincoln County	332	199
Oxford County	248	173
Penobscot County	1,569	921
Piscataquis County	79	43
Sagadahoc County	305	258
Somerset County	508	349
Waldo County	510	160
Washington County	174	80
York County	1,334	906
N/A[27]	248	164

[27] This category includes all clean energy jobs that could not be attributed to a single county.