2021 VERMONT CLEAN ENERGY INDUSTRY REPORT

PRODUCED FOR THE
VERMONT CLEAN ENERGY DEVELOPMENT FUND &
VERMONT DEPARTMENT OF PUBLIC SERVICE

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Acknowledgements

This Clean Energy Industry Report is the eighth in a series of reports conducted and written by BW Research Partnership, Inc. under commission by the Clean Energy Development Fund (CEDF) of the Vermont Department of Public Service (PSD).

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Opening Letter

The year 2020 witnessed dramatic changes across the labor market due to the COVID-19 pandemic, including decreases in the number of clean energy jobs in Vermont. However, the clean energy industry lost jobs at a lower rate than Vermont overall and remains an important element of the State's economy.

The *2021 Vermont Clean Energy Industry Report* provides data that describe the magnitude of the changes in clean energy employment stemming primarily from the Coronavirus pandemic. The report documents the declines over the past year and sets a new baseline for employment going forward. Over the past year, the industry lost about 1,400 jobs bringing the number of people employed in clean energy back to levels witnessed in 2016. Although the news regarding jobs in clean energy was not encouraging, the clean energy industry performed comparatively better than the state's overall economy.

The *2021 Vermont Clean Energy Industry Report* is the 8th of a series produced by BW Research Partnership commissioned by the Clean Energy Development Fund at the Department of Public Service. The report's census of clean energy businesses was completed in the fall of 2020 amidst the on-going requirements for social distancing and enhanced safety requirements for workers and customers. The report draws from the well-established methodology used nationally to characterize energy employment for the *U. S. Energy & Employment Report* (USEER).

As Vermont recovers from the pandemic, there is opportunity to add new clean energy industry jobs related to thermal and electrical energy efficiency improvements, electrification of heating and transportation, and renewable energy production. This dynamic industry is affected by decisions and policies at the national, state, regional, and local levels on matters not just related to energy. Vermont remains committed to meeting the energy and greenhouse gas reduction goals set forth in statute. As we do so, expanding the clean energy industry can help make Vermont more affordable, provide economic opportunities around the state, and protect the state's most vulnerable people.

With increased attention focused on a low carbon future, there is ample room for economic growth in clean energy. This year's legislative session saw considerable discussion related to the people and skills needed to expand Vermont's clean energy economy. As policy makers and implementation partners advance new programs and training opportunities to achieve state energy-related goals, the *Vermont Clean Energy Industry Report* provides a tool for monitoring progress across the state.

Sincerely,

June E. Tierney, Commissioner

Andrew Perchlik, CEDF Director

Executive Summary

Following several years of steady employment numbers, this year's *Vermont Clean Energy Industry Report* comes on the heels of the global Coronavirus (COVID-19) pandemic that shocked labor markets across the world and resulted in unprecedented and historical job losses for all sectors of the U.S. economy. In the two years prior to the onset of COVID-19, both Vermont's overall labor market and the state's clean energy industry had been growing steadily at under one percent annually. This year's report highlights the impacts of the COVID-19 pandemic on clean energy businesses across the state.

Between the last quarters of 2019 and 2020, clean energy jobs in Vermont declined by 7.4 percent—a loss of roughly 1,400 jobs in 12 months—wiping out four years of job growth as total employment levels dropped back to the 2016 baseline. While these are historic job losses for Vermont's clean energy sector, clean energy businesses shed fewer jobs compared to overall statewide job losses. By comparison, the statewide economy contracted by 8.6 percent between 2019 and 2020, displacing an estimated 26,700 workers in the state. Clean energy jobs accounted for about six percent of total employment in Vermont at the end of 2020, and clean energy job losses accounted for 5.3 percent of all jobs lost during this time.

Not surprisingly, most job losses came from the renewable energy generation and energy efficiency sectors, which comprise the majority of clean energy employment in Vermont. More specifically, the solar electric power generation, renewable heating and cooling, traditional and high-efficiency HVAC, and ENERGY STAR® appliance and efficient lighting sub-sectors shed the highest number of jobs. Clean energy installation, maintenance, and repair was hardest hit of all the value chain segments, losing 683 workers and accounting for 48.5 percent of all job losses by value chain segment.

While job losses were great, many employers reported receiving financial supports through programs such as the Paycheck Protection Program (PPP), the Economic Injury Disaster Loan (EIDL) program, or other state emergency loan programs. Likely due to these programs, few of the impacted or affected businesses reported having to permanently lay off workers. Most clean energy workers across impacted firms faced either temporary layoffs, furloughs, or a reduction in work hours.

While the *Vermont Clean Energy Industry Reports* have historically provided a means to identify historical trends, this year's report provides a new pandemic baseline from which to measure the future recovery of clean energy jobs across Vermont in the coming months and years.

Introduction

The *2021 Vermont Clean Energy Industry Report* was commissioned by the Clean Energy Development Fund at the Vermont Department of Public Service (PSD). The following report is the 8th in a series of annual clean energy industry reports that track the progression of Vermont's clean energy labor market. This year's report is unique in that its publication comes amidst the COVID-19-induced economic recession, and thus allows for a point-in-time estimate of the impacts of the pandemic on Vermont's clean energy economy. This represents a point-in-time survey during a time of significant economic disruption due to the pandemic, and therefore the results do not necessarily reflect any longer-term trends.

Over the last several years, Vermont's clean energy industry had either been growing steadily or maintaining consistent employment levels. With comparisons to historical employment data dating back to 2014, this year's report provides context on the significance of the COVID-19-induced clean energy job losses as well as an important baseline from which to track the industry's economic recovery in the coming months and years.

The data indicate that while the clean energy economy suffered job losses between the last quarters of 2019 and 2020, employment in the clean energy industry declined by a smaller percentage compared to the overall statewide average, indicating that the clean energy labor market remained stronger than other sectors of the economy. As Vermont begins to recover its lost clean energy jobs, it will be important to identify what policy and financial supports can help bring back these quality jobs to Vermont residents while minimizing any unintended impacts to other sectors of the Vermont economy that were harder hit by the pandemic.

All data presented in this report is based on the 2021 United States Energy and Employment Report (USEER), a joint project of the National Association of State Energy Officials (NASEO) and the Energy Futures Initiative (EFI).[1] For more information on the USEER methodology, please refer to Appendix A of this report.

[1] www.USEnergyJobs.org

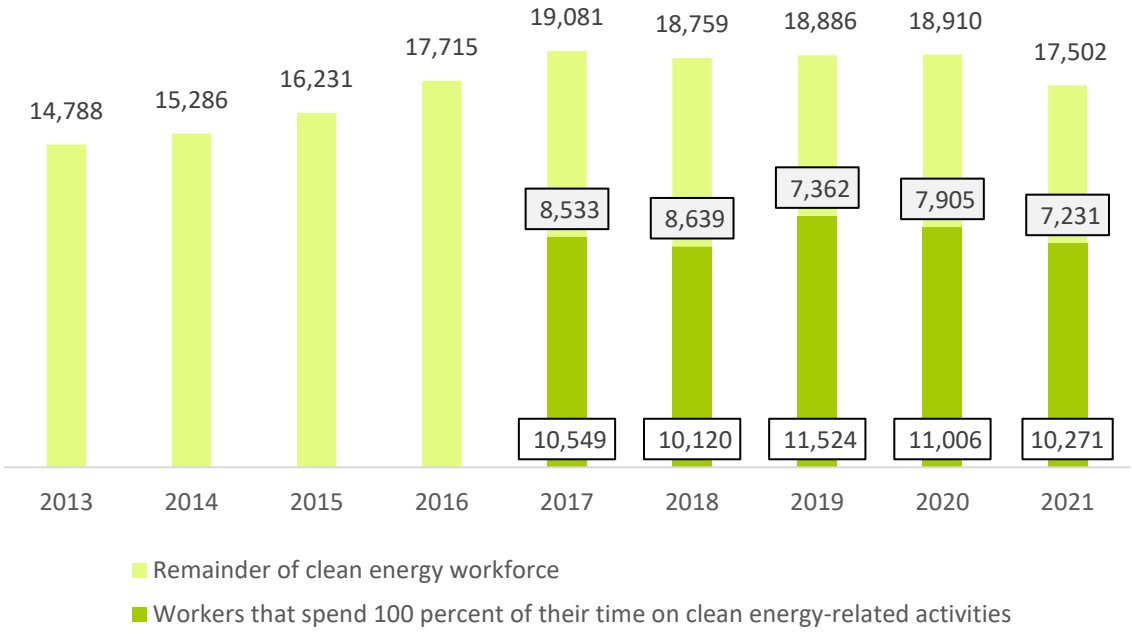
Clean Energy Employment in Vermont

Overall Clean Energy Jobs

Between the 2019 through 2020 data years, the clean energy labor market in Vermont contracted by roughly 1,400 jobs. Total employment in the clean energy economy declined by 7.4 percent during these 12 months. At the end of 2020, Vermont's clean energy industry totaled 17,502 workers. These job losses wiped out four years of employment growth, sending the state's clean energy industry back to 2016 employment levels.

These job losses are not surprising given the impacts of COVID-19 on multiple sectors of the economy across the country. However, while Vermont's clean energy industry shed jobs over the past year, job losses for clean energy businesses were lower than the overall statewide average. Between 2019 and 2020, the state's labor market lost jobs at a rate of 8.6 percent, amounting to almost 26,662 displaced workers across the state.[2] The clean energy industry accounted for 5.3 percent of total job losses during this time period.

FIGURE 1. CLEAN ENERGY EMPLOYMENT, 2013-2021



[2] Statewide employment totals are from the Bureau of Labor Statistics, Quarterly Census of Employment and Wages. Data was extracted in April 2021. At the time of this report's publications, the latest available data for 2020 from the Bureau of Labor Statistics was for September 2020.

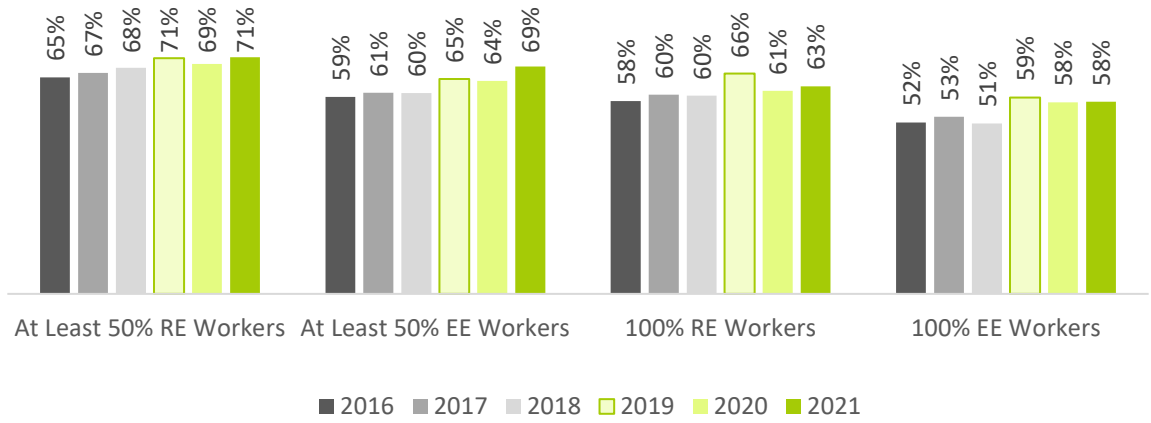
The number of workers that dedicate 100 percent of their labor hours to clean energy activities also declined by 6.7 percent or 735 jobs between 2019 and 2020 (see Figure 1). At the same time, the proportion of renewable energy and energy efficiency workers that spend between 50 to 99 percent of their time on clean energy-related activities in Table 1 below increased by two and four percentage points, respectively. This indicates that both total jobs and overall activity in the state declined. In other words, clean energy workers that kept their jobs during this period saw reduced clean energy-related project activity.

TABLE 1. CLEAN ENERGY EMPLOYMENT THRESHOLDS BY TECHNOLOGY SECTOR, 2016-2021

Workers that spend at least 50 percent of their time									
	2014	2015	2016	2017	2018	2019	2020	2021	
Renewable Energy	60%	61%	65%	67%	68%	71%	69%	69%	71%
Energy Efficiency			59%	61%	60%	65%	64%		69%

Workers that spend 100 percent of their time									
	2014	2015	2016	2017	2018	2019	2020	2021	
Renewable Energy	55%	55%	58%	60%	60%	66%	61%	60%	63%
Energy Efficiency			52%	53%	51%	59%	58%		58%

FIGURE 2. CLEAN ENERGY EMPLOYMENT THRESHOLDS BY TECHNOLOGY SECTOR, 2016-2021



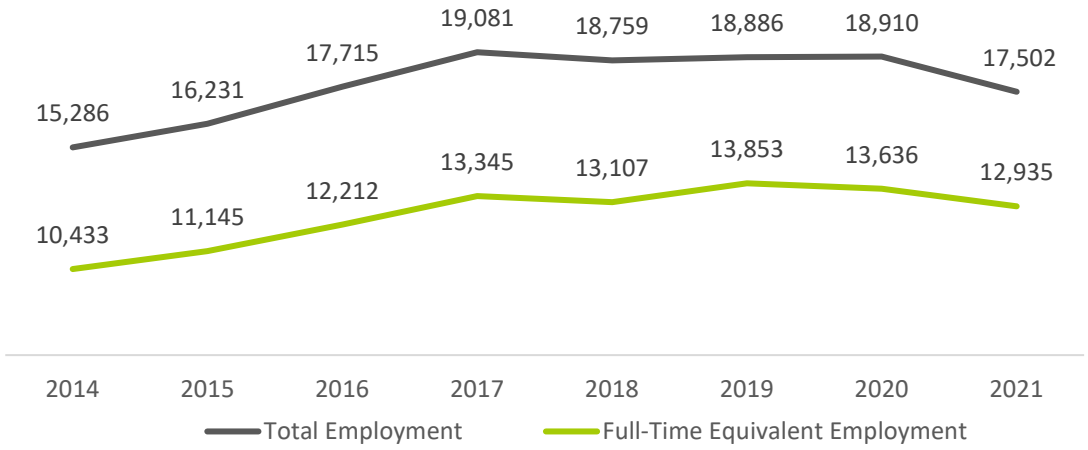
Full-Time Equivalent Clean Energy Workers

Figure 1 above highlights the total number of "100 percent" clean energy workers—those that spend their whole work week, or all their labor hours, dedicated to clean energy-related services. However, not all clean energy workers spend 100 percent of their labor hours on clean energy activities. Full-time equivalent clean energy jobs (FTEs) estimate the total amount of clean energy labor performed in the state.

In addition to those that spend 100 percent of their time working on clean energy activities, the FTE metric weights employment for the following categories as well: those that spend 0 to 49 percent of their time on clean energy work and those that spend 50 to 99 percent of their time on clean energy work. A worker that spends 0 to 49 percent of their time on clean energy activities receives a weight of 0.25 in the final FTE employment estimate, while a 100 percent clean energy worker is weighted as one FTE clean energy job.[3]

At the end of 2020, there were 12,935 full-time equivalent clean energy jobs in Vermont. Full-time equivalent jobs declined by roughly five percent compared to the end of 2019; this represents a decrease of about 700 FTE jobs in 12 months.

FIGURE 3. TOTAL & FULL-TIME EQUIVALENT CLEAN ENERGY EMPLOYMENT, 2014-2021[4]

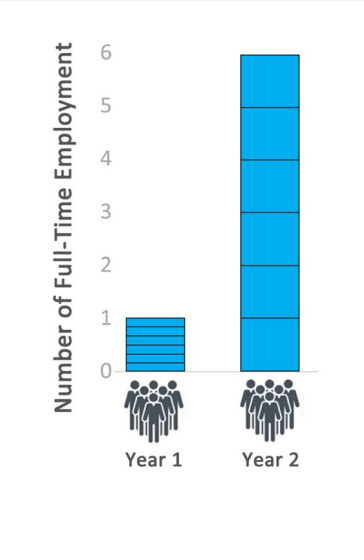


[3] This metric measures the proportion of total labor hours dedicated to clean energy activities and is unrelated to the total number of hours worked in a week. A part-time clean energy employee who works 20 hours a week with 100 percent of these hours dedicated to clean energy activities would be counted as one FTE clean energy job.

[4] In an attempt to reconcile the Vermont-specific methodology that has historically been used for these reports with the methodological updates to other clean energy reports, the research team revised both the 100 percent and FTE employment figures in last year's report and moving forward. As such, the 100 percent employment estimates presented in this report for 2017, 2018, and 2019 will not match previous Vermont Clean Energy Industry Reports (VCEIRs). However, this methodological update provides a more accurate representation of clean energy activity in Vermont and allows for comparison across other state-level clean energy reports. For more information, please refer to the Research Methodology in Appendix A.

FIGURE 4. FULL-TIME EQUIVALENT CLEAN ENERGY JOBS EXPLAINED

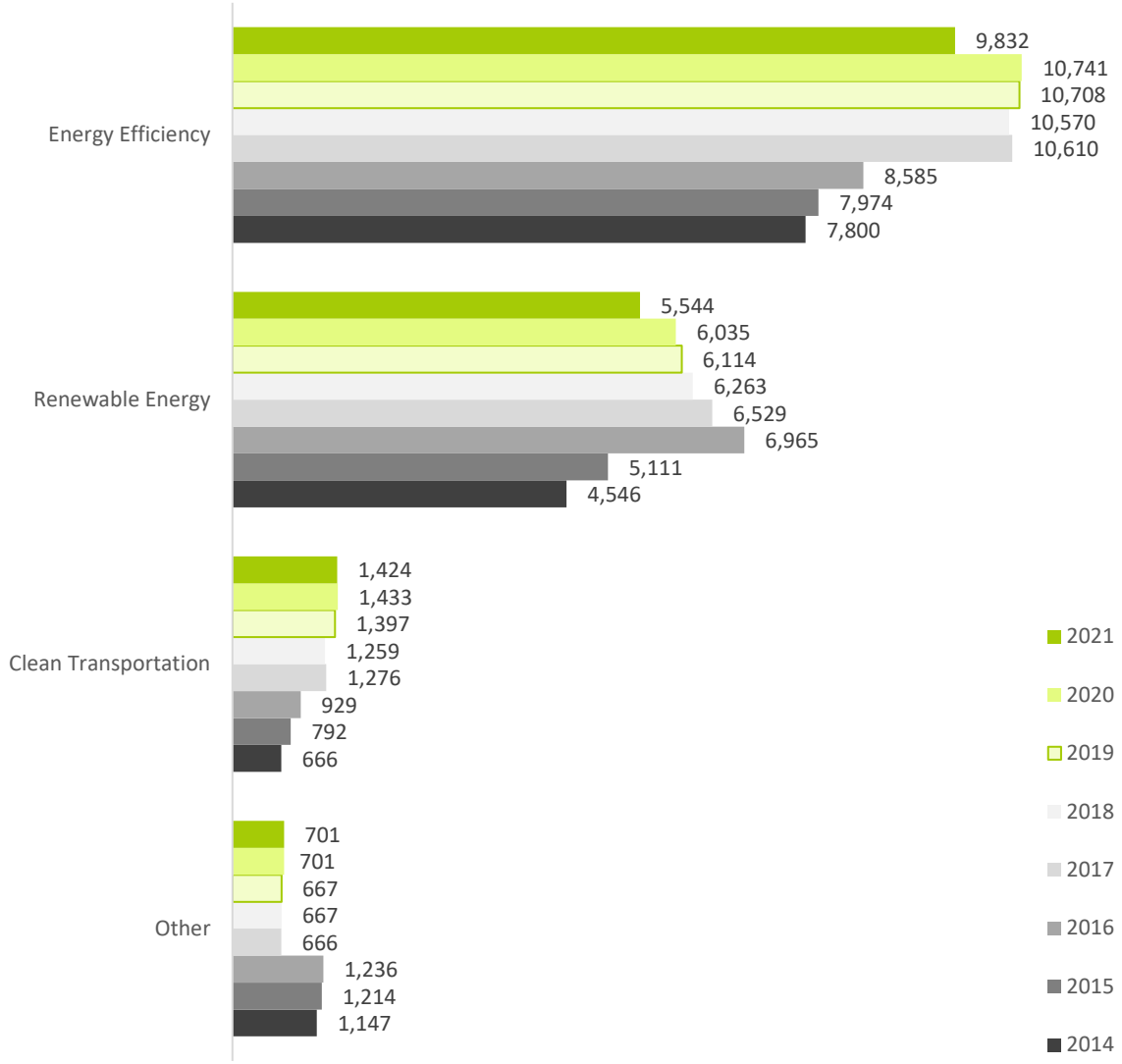
An example can illustrate the importance of tracking FTE clean energy employment. If a Heating, Ventilation, and Air Conditioning (HVAC) firm had 6 installers in 2019 who occasionally installed heat pumps, and now has 6 installers who exclusively do so, there would be no change in the total number of clean energy workers reported. However, because the number of labor hours working with heat pumps has increased, FTE jobs would show a corresponding increase.



Clean Energy Jobs by Sector

The majority of employment losses in Vermont's clean energy industry were shed from the renewable energy and energy efficiency sectors. Between 2019 and 2020, energy efficiency firms lost 909 jobs—a decline of 8.5 percent—while renewable energy firms shed 8.1 percent of the labor force, or 491 workers. Employment declined by less than one percent for clean transportation firms.

FIGURE 5. CLEAN ENERGY EMPLOYMENT GROWTH BY TECHNOLOGY SECTOR, 2014-2021



Clean Energy Sector Employment

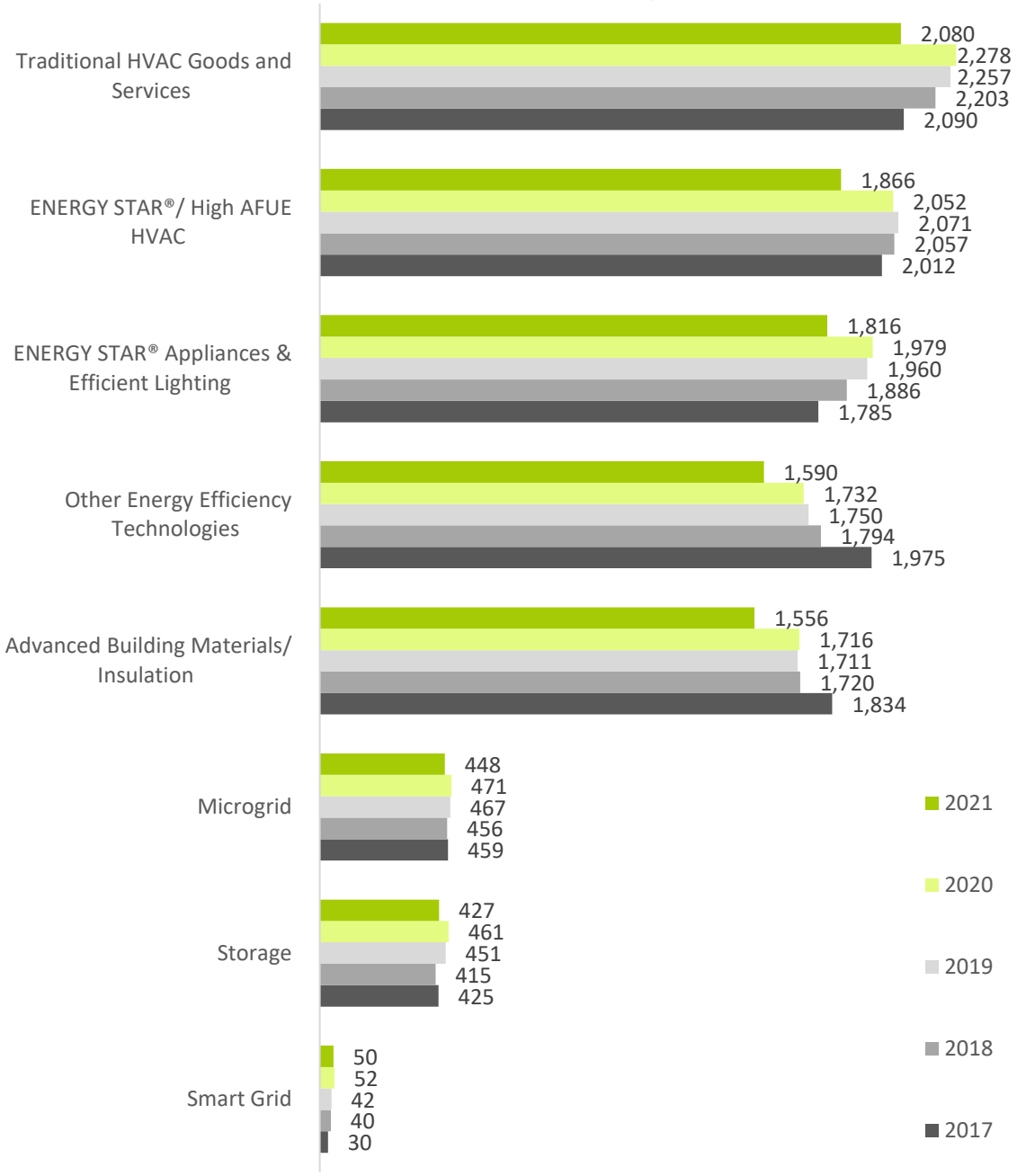
Energy Efficiency

Within energy efficiency, the storage, smart grid, and microgrid sub-sectors experienced the lowest job losses by comparison, shedding between two to 34 jobs between 2019 and 2020—a five to seven percent decline across each sector.

The remaining sectors all shed about eight to nine percent of jobs. The traditional HVAC[5] sub-sector lost almost 200 jobs—a decline of 8.7 percent in 12 months. ENERGY STAR or high-efficiency HVAC firms shed jobs at a rate of nine percent, or 185 workers, followed by ENERGY STAR appliances and efficient lighting, which lost 163 jobs—a decline of 8.2 percent.

[5] "Traditional HVAC" workers are those that spend a portion of their time on energy efficient products and services, while "ENERGY STAR®/High AFUE HVAC" workers spend the majority of their labor hours working with energy efficient HVAC technologies.

FIGURE 6. ENERGY EFFICIENCY EMPLOYMENT BY SUB-TECHNOLOGY, 2017-2021[6]



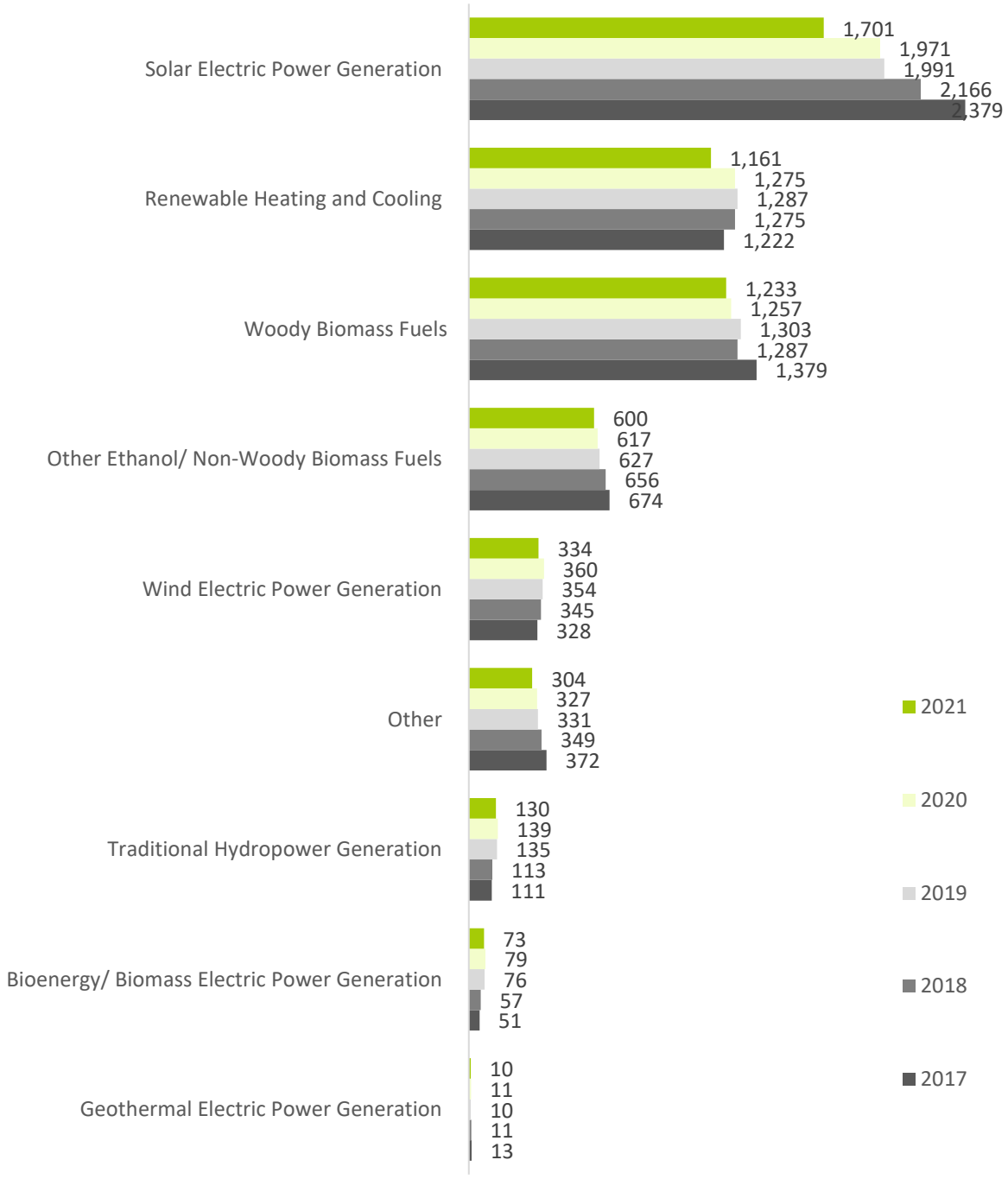
[6] "Other energy efficiency technologies" include variable speed motors, other design services not specific to a sub-technology, software not specific to a sub-technology, energy auditing, rating, monitoring, metering, and leak detection, energy efficiency policy not specific to a sub-technology, LEED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

Renewable Energy Generation

The majority of job losses within the renewable energy generation sector came from the solar electric power generation and renewable heating and cooling sub-sectors. Solar firms across Vermont shed 270 jobs between 2019 and 2020—a decline of 13.7 percent—while renewable heating and cooling businesses lost 114 jobs, for a decline of nine percent.

The remaining sub-sectors in renewable energy generation lost roughly one to 26 jobs each, ranging from two to seven percent rates of decline.

FIGURE 7. RENEWABLE ENERGY GENERATION EMPLOYMENT BY SUB-TECHNOLOGY, 2017-2021[7]



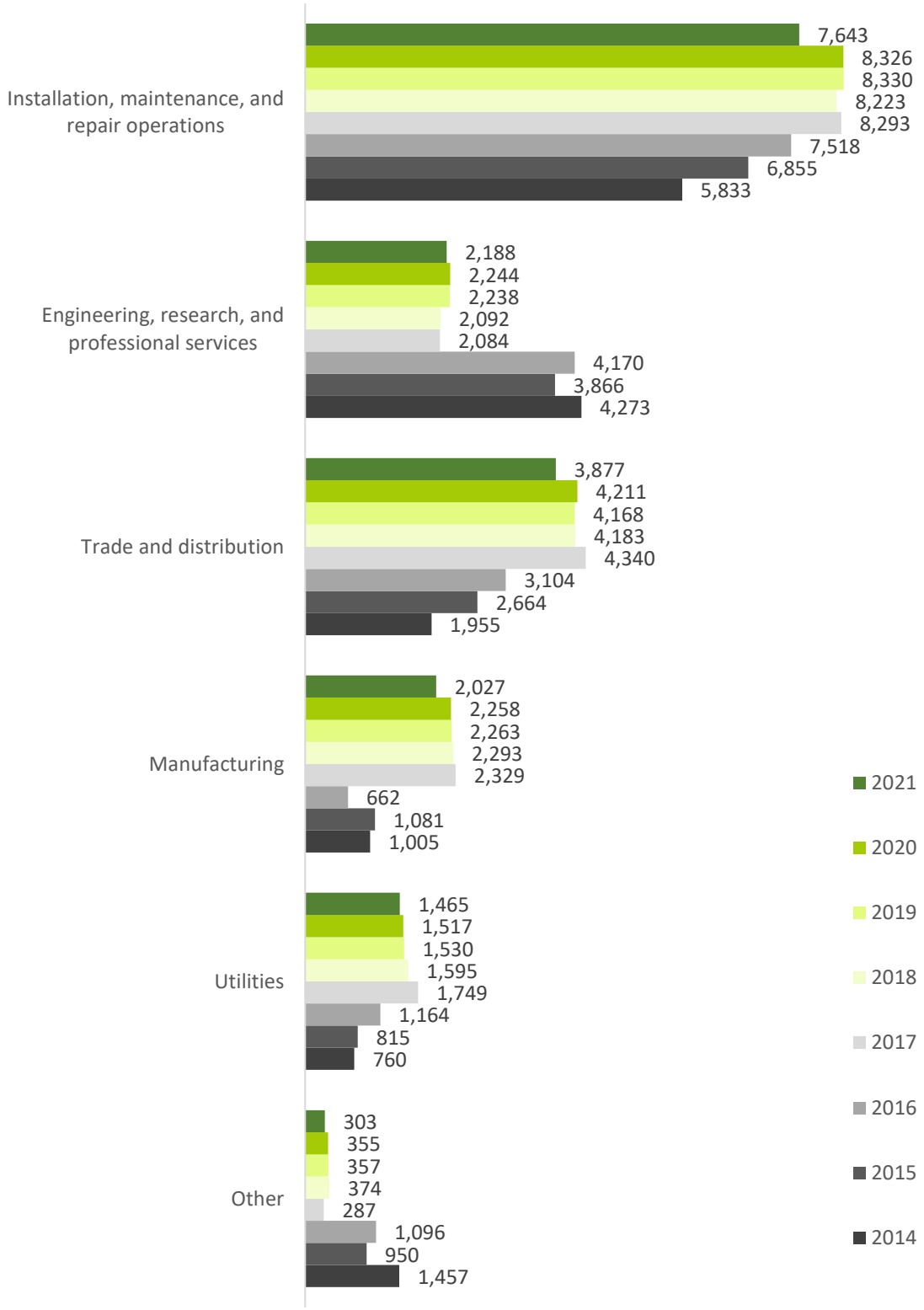
[7] While "low-impact hydropower" is included in Vermont's clean energy technology definition, it is not pictured on this graph because there were no captured jobs in in Vermont.

Clean Energy Value Chain Employment

The value chain sector that experienced the highest absolute number of job losses from 2019 through 2020 was installation, maintenance, and repair. Altogether, this value chain segment shed 683 jobs, for a decline of 8.2 percent from last year's report. The job losses in installation, maintenance, and repair account for almost half of all jobs lost in the clean energy sector, or 48.5 percent of all job losses by value chain segment.

The trade and distribution sector shed 334 jobs, a decline of 7.9 percent, followed by manufacturing, with 231 job losses or a 10.2 percent decline. Engineering, utilities, and the other value chain segment shed 52 to 56 jobs each, totaling 160 job losses altogether.

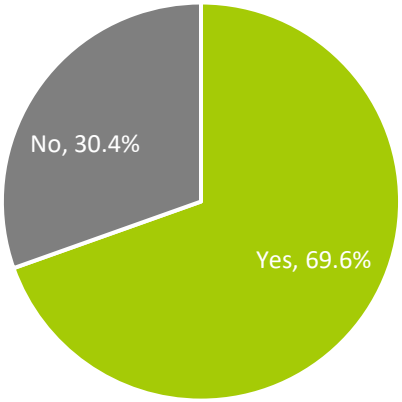
FIGURE 8. CLEAN ENERGY EMPLOYMENT BY VALUE CHAIN SEGMENT, 2014-2021



Clean Energy Hiring & COVID-19 Impacts

Of all clean energy employers surveyed, 70 percent indicated that they have an adequate number of qualified clean energy workers to meet their current needs. Only 30 percent of businesses indicated that they currently do not have an adequate number of workers. Of those, less than half—only 43—reported currently searching for new employees to fill open positions.

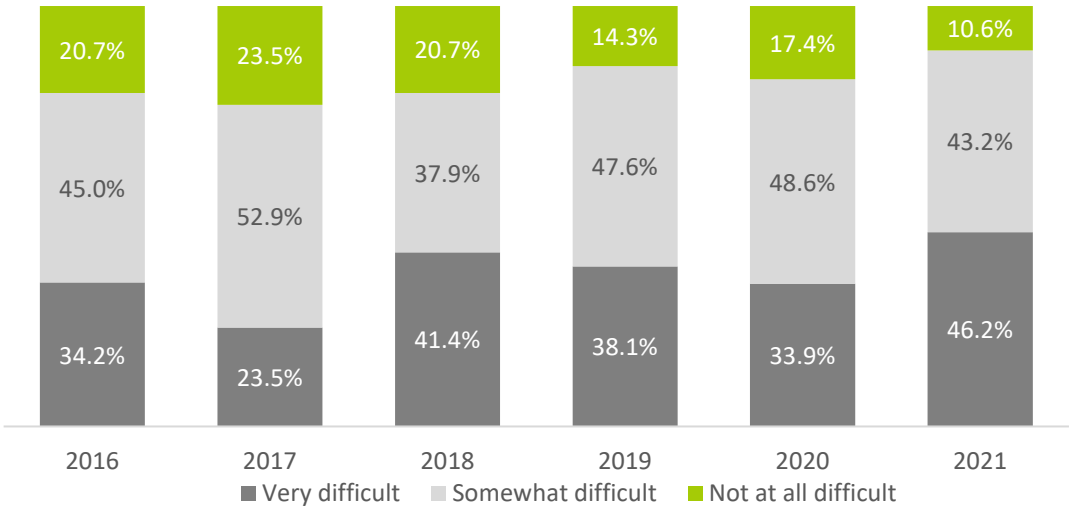
FIGURE 9. ADEQUATE WORKERS TO MEET CURRENT NEEDS, 2021



About nine in ten (89.4 percent) employers who were hiring in 2020 reported overall difficulty—the sum of very and somewhat difficult—between 2019 and 2020. This represents a seven-point increase. The proportion of employers that reported hiring had been very difficult over the year increased from 34 percent to 46 percent—12 points higher compared to last year.

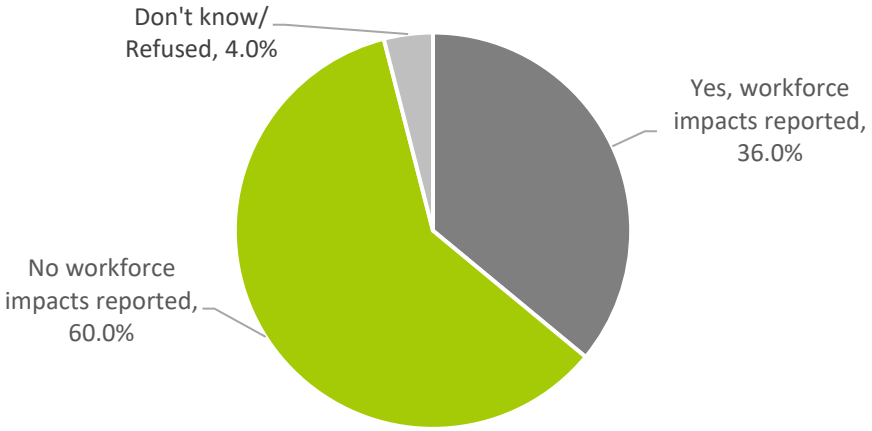
Though it appears as if hiring difficulty increased compared to last year's report, it is important to note that responses to this question are based on the small sample of employers that reported seeking workers over the course of 2020. It is possible that clean energy industry sectors are still experiencing difficulty attracting qualified workers, but more detailed research on clean energy employers' hiring experiences over the last 12 months may help to better understand the pandemic's effect on clean energy hiring in Vermont.

FIGURE 10. EMPLOYER-REPORTED HIRING DIFFICULTY, 2016-2021



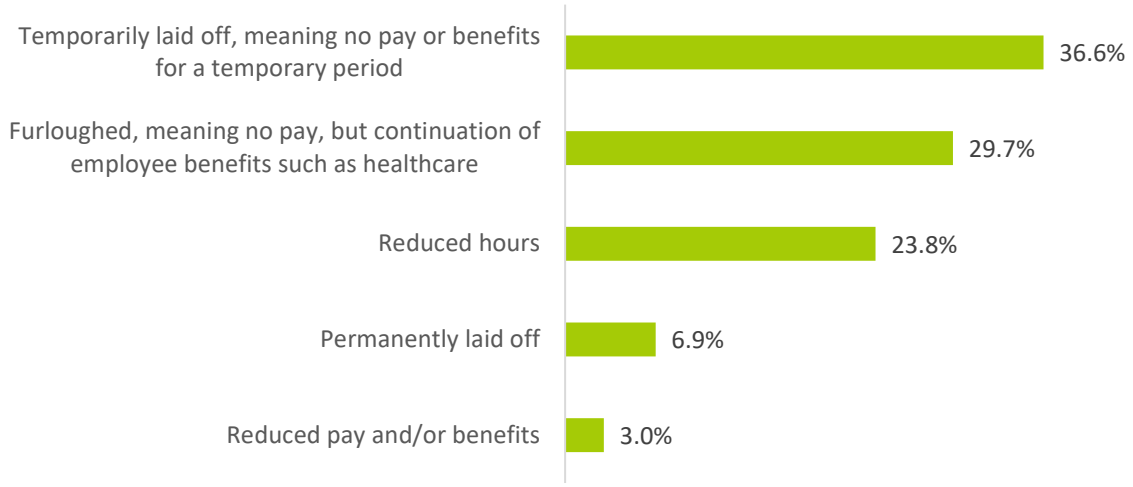
The majority of firms in Vermont indicated that they did not have to layoff, furlough, or reduce pay for their clean energy workers as a result of COVID-19 and related-stay-at-home orders (60 percent). Of the 36 percent of firms that indicated their workforce had been impacted by COVID-19 restrictions, 37 percent of the workforce was temporarily laid off, 30 percent were furloughed, and 24 percent of workers suffered a reduction in hours. Only seven percent of employment at affected or impacted firms indicated that they had to permanently layoff clean energy staff.[8]

FIGURE 11. COVID-19 WORKFORCE IMPACTS, 2021



[8] The 2020 survey did not include specific follow-up questions for those firms impacted by COVID-19 and as such, outside of employment data, there is limited additional information regarding the impacts of COVID-19 on Vermont's clean energy industry. Future research may be conducted to better understand the impacts of COVID-19 on the state's specific clean energy technology sectors, such as solar or energy efficiency.

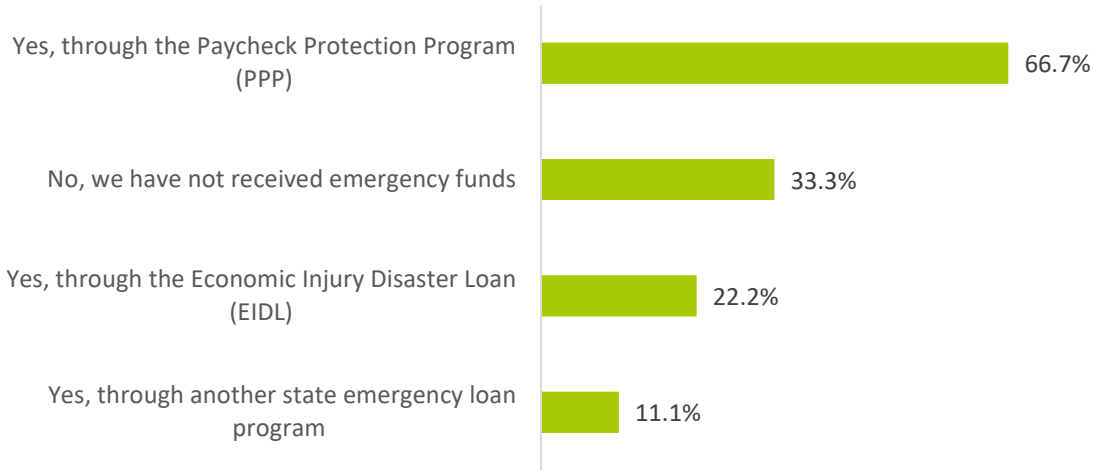
FIGURE 12. COVID-19 WORKFORCE IMPACTS, 2021



Sixty-seven percent of clean energy businesses in Vermont reported receiving emergency financial relief through the Paycheck Protection Program (PPP). Less than a quarter indicated receiving support through the Economic Injury Disaster Loan (EIDL), and 11 percent received funds through other state emergency loan programs.

About a third of clean energy businesses (33 percent) reported receiving no emergency funds over 2020.

FIGURE 13. COVID-19 RELIEF PROGRAMS & ASSISTANCE, 2021[9]



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

Appendix A: Research Methodology

EMPLOYMENT DATA

In congruence with previous reports, this year's Clean Energy Industry Report is based on the 2021 United States Energy and Employment Report (USEER). The 2021 USEER utilized data from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (BLS QCEW 2020 Q2), as well as survey data. The survey was designed and implemented by BW Research Partnership, with management from Energy Futures Initiative (EFI) and the National Association of State Energy Officials (NASEO). 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. These data are then analyzed and applied to existing public data published by the BLS QCEW, effectively constraining the potential universe of energy establishments and employment.

The survey was administered by phone and by web from September 2020 through January 2021, with more than 6,400 outbound calls and 494 emails sent to participants across Vermont. The phone survey was conducted by ReconMR. The web instrument was programmed internally, and each respondent was required to use a unique ID in order to prevent duplication.

The sample was split into two categories, the known and unknown universes. The known universe includes establishments that have previously identified as energy-related, either in prior research or some other 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 resulting employment calculations and estimates. Over the summer of 2020, 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 to cleaning the original known energy database, BW Research also supplemented with industry association contact lists by technology (biofuels, coal, oil, and gas, energy storage, energy efficiency, solar, and wind), new companies from the unknown database that took the 2020 survey, 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 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.

In total, 363 business establishments in Vermont participated in the survey effort. 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 +/- 4.90 percent for Vermont at a 95 percent confidence interval.

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 A
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 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.

100 PERCENT & FULL-TIME EQUIVALENT JOBS

To reconcile the Vermont-specific methodology that has historically been used for these reports with the methodological updates to other clean energy reports, the research team determined it best to revise both the 100 percent and FTE employment figures in last year's 2020 report and moving forward. As such, the 100 percent employment estimates presented in this report for 2017, 2018, and 2019 will not match previous Vermont Clean Energy Industry Reports (VCEIRs). However, this methodological update provides a more accurate representation of clean energy activity in Vermont and allows for comparison across other state-level clean energy reports. The revised methodology is explained below.

Full-time equivalent (FTE) jobs are extrapolated using state employment thresholds by technology weighted on census division and previous year's data. These thresholds are adjusted for response bias between our known and unknown universes, then the proportion of firm revenues from energy projects are incorporated. 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 spend all their time on clean energy activities. 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. FTE jobs are the sum of these products.

Because the 100 percent employment estimates are a subset of the overall FTE metric, these employment figures have also been updated accordingly using the above methodology.

Appendix B: 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: Renewable Energy Generation; Clean Grid and Storage; Energy Efficiency; Clean Fuels; and Clean Transportation. These jobs also include supporting services such as consulting, finance, tax, and legal services related to energy.

The State of Vermont categorizes sub-technologies differently from the USEER data collection effort and reports. The below lists identify which sub-technologies are specific to Vermont's clean energy definition. They are placed in their respective USEER category, with additional in-text and footnote explanation as to where they would fall for the Vermont Clean Energy Industry Report.

RENEWABLE ENERGY GENERATION

Renewable energy generation jobs cover all utility and non-utility employment for renewable electricity-generating technologies. Included in these employment estimates are any firms engaged in renewable energy facility construction, generation equipment manufacturing, wholesale parts distribution, and professional and business services such as consulting, finance, administrative, and legal support for the following renewable energy generation sub-technologies:

- Solar Photovoltaic Electric Generation
- Concentrated Solar Electric Generation
- Wind Generation
- Geothermal Generation
- Bioenergy/Biomass Generation
- Low-Impact Hydroelectric Generation, including wave/kinetic generation
- Traditional Hydroelectric Generation
- Combined Heat and Power
- Other Renewable Electric Power Generation
- Renewable Heating and Cooling[10]
    - Solar Thermal Water Heating and Cooling
    - Other Renewable Heating and Cooling (geothermal, biomass, heat pumps, etc.)

[10] For Vermont, "renewable heating and cooling" is included under the "renewable energy generation" sector, while for USEER data collection, this sub-technology is categorized under "energy efficiency".

RENEWABLE FUELS[11]

These jobs encompass all work related to the production of clean fuels. Fuels employment spans industries such as agriculture and forestry, manufacturing, professional and business services, wholesale trade, transportation, and construction.

It is important to note the difference between bioenergy electricity generation jobs and woody biomass fuels jobs. The former includes workers that are involved in the utility generation of electricity from materials derived from biological sources or any organic material, while the latter encompasses those workers who are engaged in fuel development from these materials such as manure, vegetable oil, trees and woody plants, and other living matter. Bioenergy generation workers are expressly involved in the electricity-producing component (including the construction of facilities and manufacture and wholesale trade of generators or turbines) while woody biomass workers are involved in the production, refinement, and distribution of those fuels used to produce the electricity. Vermont includes the following renewable fuel sub-technologies under the overall renewable energy generation sector:

- Woody Biomass, including cellulosic biofuel
- Non-Woody Biomass, including biodiesel

ENERGY EFFICIENCY

- Traditional HVAC goods, control systems, and services
- 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
- ENERGY STAR® Appliances & 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
    - Reduced Water Consumption Products and Appliances
    - Recycled Building Materials

[11] For Vermont, “non-woody biomass” and “woody biomass” are included under the “renewable energy generation” sector, while for USEER data collection, these sub-technologies are categorized as “fuels”.

CLEAN GRID & STORAGE[12]

Electric Power Transmission and Distribution

- Smart Grid
- Microgrids
- Other Grid Modernization

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
- Biofuel, including ethanol and biodiesel storage

CLEAN TRANSPORTATION

- Hybrid Electric Vehicles
- Plug-In Hybrid Vehicles
- Electric Vehicles

[12] For Vermont, these are included under the "energy efficiency" sector, while for USEER data collection, these sub-technologies are categorized under "transmission, distribution, and storage" (or clean grid and storage for clean energy-specific industry reports).