

HELP WANTED

DIVERSITY IN CLEAN ENERGY



PRESENTED BY:

E2

Alliance to Save Energy

American Association of Blacks in Energy

Energy Efficiency for All

Black Owners of Solar Services

BW Research Partnership



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INTRODUCTION

Clean energy has a diversity problem. Despite its broad range of businesses, including construction, utilities, manufacturing, professional services, and repair and maintenance, the clean energy sector is dominated by white men. Given the incredible job growth of the energy sector over the past decade, this lack of diversity threatens to cause women, Hispanic and Latino workers, and Black workers in particular to miss out on one of America's great economic expansions.

About 61 percent of clean energy workers across America are white non-Hispanics. Black and Hispanic/Latino workers are more poorly represented in clean energy than they are across the rest of the economy, with Black people composing 8 percent of the clean energy workforce (compared with 13 percent economy-wide) and Hispanic/Latinos making up 16.5 percent (versus 18 percent economy-wide). Women represent less than 30 percent of all workers in the sector despite accounting for nearly half (48 percent) of the U.S. labor force as a whole.

As the United States looks to build back a better, cleaner, more equitable economy, a renewed focus on increasing diversity in the clean energy sector should be an economic imperative. Both the transition to a low-carbon energy system and proposed state and federal stimulus to boost the economy have the potential to create millions of new jobs across the United States. Policies that support the energy sector and its low-carbon transition should focus on the inclusion of women and underrepresented ethnic and racial groups, particularly Black workers (who are often the most poorly represented in the sector), so that economic benefits are more equitably shared.

For a list of specific policy recommendations, please see page 24.

Key Findings

4 in 10

Racial and ethnic minority groups account for nearly 4 in 10 U.S. clean energy workers

8%

Black workers are underrepresented by nearly 40 percent, comprising just 8 percent of U.S. clean energy workers

<30%

Women represent less than 30 percent of all workers in the sector despite accounting for nearly half of the U.S. labor force as a whole



Renewable energy employs the highest share of Hispanic/Latino workers in the U.S. energy sector

27%

Black, Asian, Indigenous, and multiracial workers account for more than quarter of the U.S. clean energy workforce

ABOUT THIS REPORT

Methodology

This analysis was conducted by BW Research Partnership for E2, the Alliance to Save Energy, the American Association of Blacks in Energy, Black Owners of Solar Services (BOSS), and Energy Efficiency for All. Early drafts of this report were also reviewed by the Policy Committee of BOSS. It expands on data from the 2021 U.S. Energy and Employment Report (USEER) produced by the Department of Energy, using data collected and analyzed by BW Research Partnership.

The USEER analyzes data from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages to track employment across many energy production, transmission, and distribution subsectors. For further methodology questions, see pages 201–206 of the USEER.¹

Other sources of data are noted throughout.

Terms and Racial Categories

For demographic racial groups, this report uses terminology used by the Bureau of Labor Statistics and U.S. Census, which are required to collect data on five racial groups: white, Black or African-American, American Indian or Alaska Native, Asian, and Native Hawaiian or Other Pacific Islander. Because these data are based on self-identification, the racial categories included in this report generally reflect a social definition of race recognized in this country; they are not an attempt to define race biologically, anthropologically, or genetically.²

In addition, people may choose to report more than one race to indicate their racial mixture, such as “American Indian” and “white.” People who identify their origin as Hispanic, Latino, or Spanish may be of any race. For this reason, this analysis includes filters and combinations of several categories to aid in its analysis:

- // **“White (alone)”** refers to respondents who reported as white and cited no other racial or ethnic categories (e.g., non-Hispanic white).
- // **“Hispanic and Latino”** refers to all multiracial, white, and nonwhite respondents who identified Hispanic and Latino as their ethnicity.
- // **“Indigenous”** combines all Native and Indigenous racial category responses.
- // **“Multiracial”** designates all respondents who chose two or more races, including White.
- // **“People of Color”** refers to all Black, Indigenous, Asian, and multiracial respondents.
- // **“Nonwhite alone”** distinguishes all racial and ethnic minority respondents from non-Hispanic whites.

While this report intends to examine the overall diversity of the U.S. clean energy sector, information on the representation of people with disabilities, lesbian, gay, bisexual, transgender, intersex, and queer people, immigrants, religious minorities, and young people in clean energy is limited. Based on the available data from the Bureau of Labor Statistics (BLS) and the supplemental employer survey used by the USEER, this analysis was unable to produce any findings regarding those groups.

Job Sectors Analyzed

This analysis uses the energy sector categorization from the annual USEER. Based on those categories, this report defines clean energy sectors as:

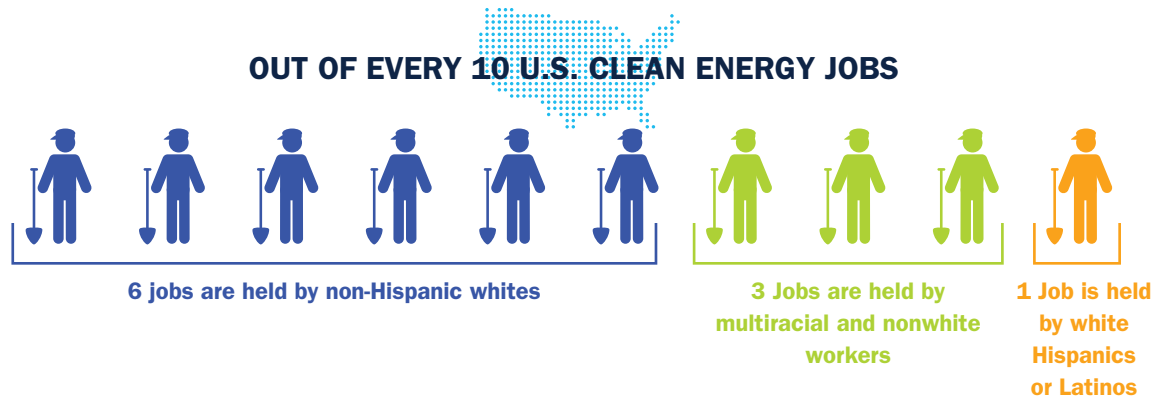
- // **Renewable Generation:** jobs in solar energy, wind energy, combined heat and power, bioenergy, low-impact hydropower, and geothermal energy.
- // **Energy Efficiency:** jobs in ENERGY STAR® appliances; LED, CFL, and other efficient lighting; traditional heating, ventilation, and air-conditioning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

Other energy employment sectors analyzed in this report include:

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

U.S. CLEAN ENERGY LABOR FORCE CHARACTERISTICS

BY RACE, ETHNICITY, AND GENDER, 2020



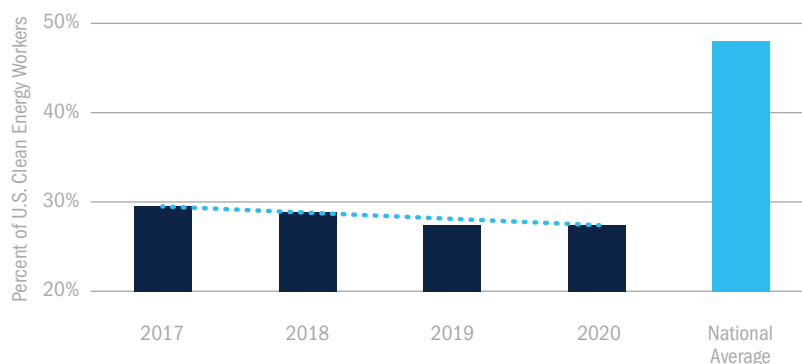
WOMEN IN CLEAN ENERGY

Women are vastly underrepresented in every energy technology and every segment of the broader energy sector's value chain, including both clean energy and fossil fuels.

While some types of jobs in the energy sector come closer to parity than others (such as positions in professional and business services), in most clean energy sectors women hold no more than 30 percent of the jobs despite constituting nearly 50 percent of the national workforce. This disparity is partly due to the energy sector's high share of occupations in industries with overall low female participation, including natural resources, construction, and maintenance. These three occupations, per BLS, accounted for just 1 percent of all full-time and salaried positions held by women nationwide in 2019.³

Taking a closer look at clean energy employment, renewable electricity generation has the highest percentage of female workers, at about 30 percent. The clean vehicles industry has the lowest proportion, at about 23 percent. In fact, female participation in the clean energy workforce has deteriorated over the past four years, exacerbated by women suffering a larger economic fallout from the COVID-19 pandemic than men. Since 2017, the presence of women in the clean energy sector has dropped more than 2 points, from 29 percent to 27 percent.

FIGURE 1: WOMEN IN CLEAN ENERGY, 2017–2020



HISPANICS/LATINOS IN CLEAN ENERGY

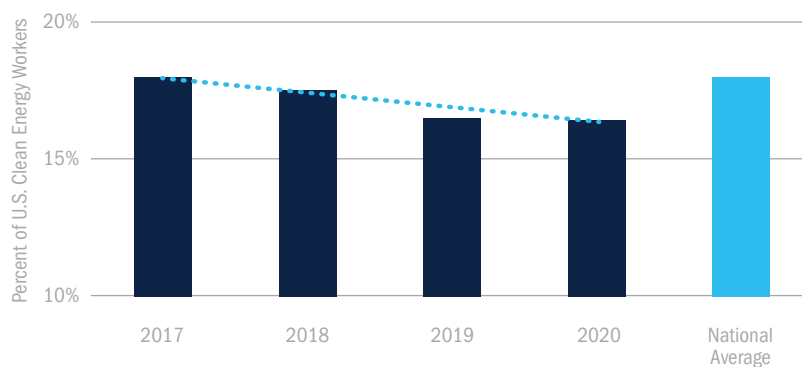
Hispanic/Latino workers represent nearly 17 percent of the clean energy workforce and 18 percent of the overall U.S. workforce. Hispanics/Latinos are most prevalent in the renewable energy sector, holding about 18 percent of the sector's total jobs, which include all wind and solar energy jobs. Hispanic and Latino worker representation is lowest in the clean fuels sector, accounting for just 12 percent of the workforce.

A closer examination of the data suggests that job gains for Hispanics/Latinos have been largely in lower-wage energy occupations such as construction labor. The rates of employment in higher-paying industrial segments and occupations continue to lag.

Partly because Latinos are often on the front lines of clean energy and are more likely to be essential and low-wage workers, they also were hit hard by the COVID-19 economic downturn as workers in service sectors were more likely to see hours cut or work shutdown due to restrictions. According to monthly clean energy unemployment data compiled for E2, an estimated 23 percent of all clean energy workers who lost their jobs in April 2020 after the COVID-19 pandemic hit the United States were Hispanic or Latino.⁴

Even before last year's pandemic-fueled economic crisis, employment in clean energy for Hispanic and Latino workers had already dropped by nearly 2 percentage points since 2017.

FIGURE 2: HISPANIC AND LATINOS IN CLEAN ENERGY, 2017–2020



BLACK WORKERS IN CLEAN ENERGY

Despite efforts to improve diversity in various segments of the energy economy, Black workers have made few gains since 2016. Black workers represent about 8 percent of the clean energy labor force, compared with about 13 percent of the nation's total workforce—nearly a 40 percent disparity.

The clean energy sector with the highest proportion of Black workers is renewable generation (10 percent), while renewable fuels, energy efficiency, and clean vehicles all tied for the lowest (6 percent). Clean grid and storage are at 8 percent.

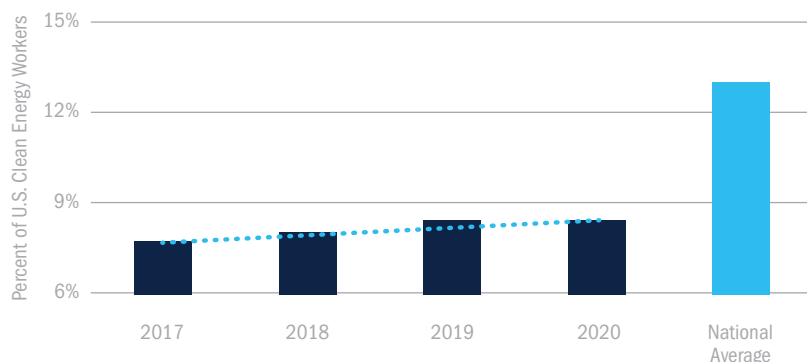
Beyond clean energy, the employment disparity for Black workers is a consistent theme across the entire energy industry. Black or African-American workers are underrepresented in nearly every category examined. Only nuclear generation matches Black workers' presence in the national labor force (13 percent); jobs in traditional TDS (11 percent), gas and diesel vehicles (12 percent), and fossil fuel generation (10 percent) are the only other energy sectors to achieve double-digit representation. Those numbers are partly due to diversity efforts by utilities and oil and gas companies, and the presence of unions at big employers such as utilities and automakers.

It's also a reflection of slow growth for clean energy in regions like the Southeast, where the Black population is higher than in other parts of the country, such as the West, where solar, wind, geothermal, and other forms of clean energy are more common. According to U.S. Census data, 54 percent of Black Americans live in the South and 10 percent live in the West. As clean energy transitions accelerate in the Southeast, Mid-Atlantic, and major metro areas across the United States, the current disparity must be addressed so that Black communities do not miss out on America's next great economic expansion.

Additionally, Black ownership of clean energy businesses is low. Development of more clean energy projects in historically marginalized communities could help create more job opportunities for Black workers—not to mention cheaper energy sources and lower expenses due to energy efficiency for the residents of those communities.

Despite having the largest disparity between employment in clean energy and employment in the overall U.S. workforce among all racial and ethnic groups, Black workers have seen their share of clean energy jobs rise slightly since 2017.

FIGURE 3: BLACK WORKERS IN CLEAN ENERGY, 2017–2020



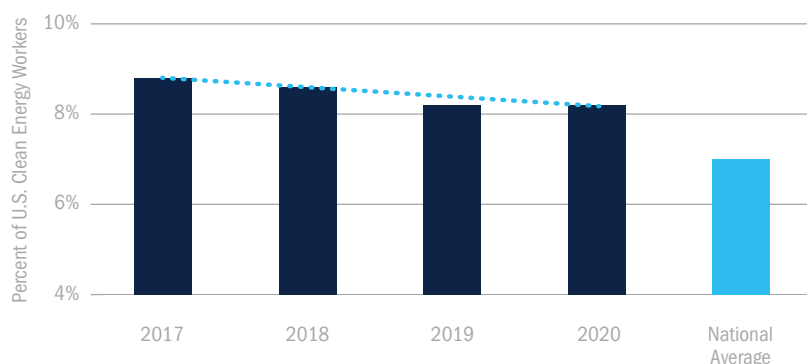
ASIANS IN CLEAN ENERGY

Asian workers represent about 8 percent of the total clean energy workforce, compared with 7 percent in the overall energy industry and 7 percent in the national labor force.

Asian workers make up a higher share of the workforce in renewable energy generation and in clean storage and grid modernization. These particular clean energy sectors also feature a higher proportion of positions in professional and business services.⁵ Economy-wide, Asian workers hold 10 percent of those jobs.⁶

Despite accounting for a higher share of workers in two of the fastest-growing clean energy sectors, the share of Asians in the overall clean energy workforce has decreased more than half a percentage point since 2017.

FIGURE 4: ASIANS IN CLEAN ENERGY, 2017–2020



PACIFIC ISLANDERS AND NATIVE AMERICANS IN CLEAN ENERGY

Pacific Islanders (or Native Hawaiians) and Native Americans (or Alaska Natives) represent about 2.5 percent of the clean energy workforce combined. That's higher than their representation across the overall U.S. labor force (1 percent).

FIGURE 5: NATIVE HAWAIIANS OR OTHER PACIFIC ISLANDERS IN CLEAN ENERGY, 2017–2020

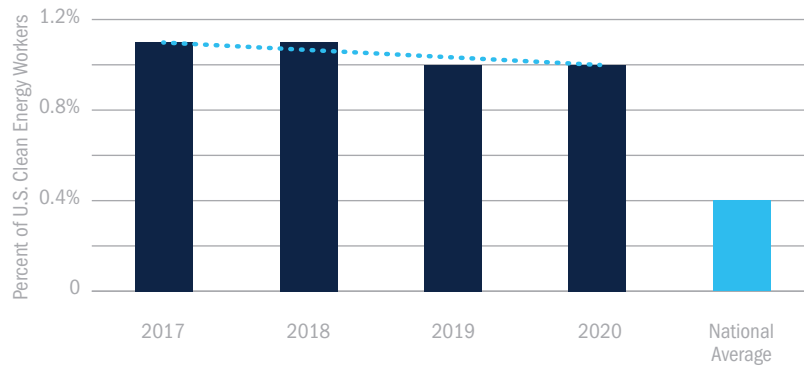
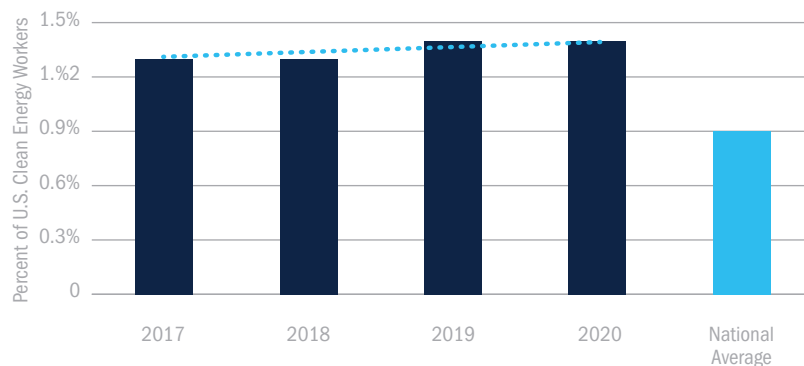


FIGURE 6: NATIVE AMERICANS OR ALASKA NATIVES IN CLEAN ENERGY, 2017–2020

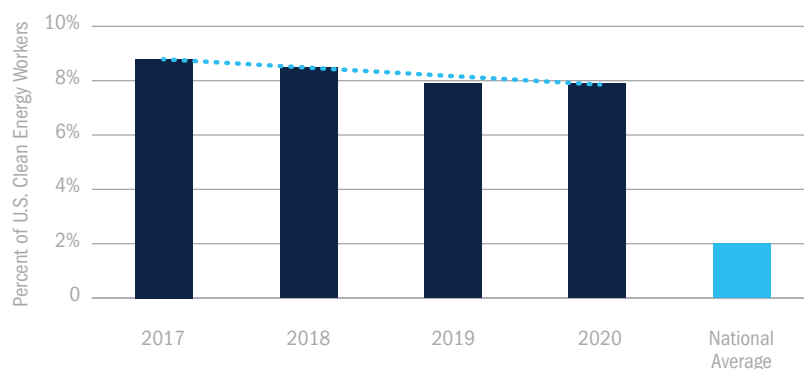


MULTIRACIAL WORKERS IN CLEAN ENERGY⁷

Those who say they are of two or more races account for nearly 8 percent of clean energy workers, almost four times the rate across the national labor force (2 percent). The relatively high rate of multiracial workers is consistent across the entire clean energy economy, accounting for at least 6 percent of the workforce in every sector.

Despite this overrepresentation (including in the overall energy industry), the share of multiracial workers in clean energy has dropped about 1 percentage point since 2017.

FIGURE 7: MULTIRACIAL WORKERS IN CLEAN ENERGY, 2017–2020

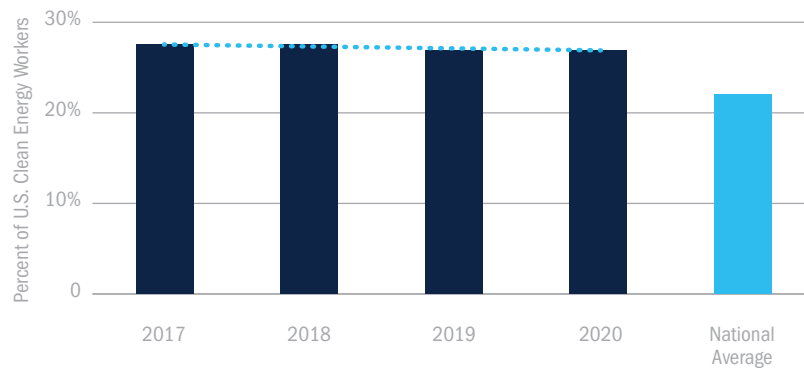


OVERALL RACIAL AND ETHNIC DIVERSITY IN CLEAN ENERGY

People of color combine to represent more than 27 percent of the clean energy workforce nationally, higher than the overall U.S. labor force (22 percent) and fossil fuels overall (26 percent). When expanded to include Hispanic and Latino workers (nonwhite alone), the share of clean energy jobs rises to more than 39 percent.

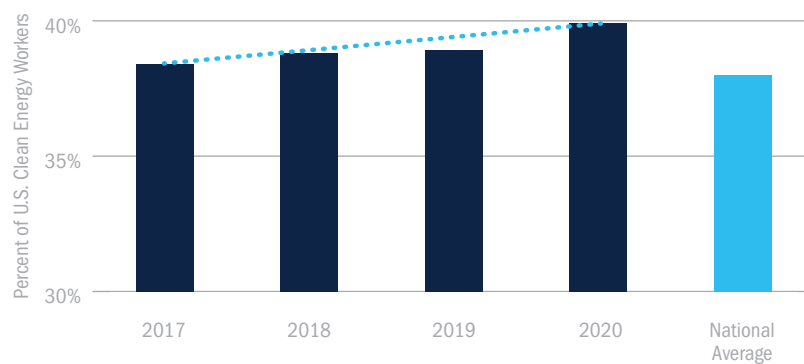
Across all energy industries, including clean energy and fossil fuels, the highest proportions of people of color and nonwhite workers are employed in renewable generation, at 29 percent, and clean storage and grid, at 28 percent.

FIGURE 8: PEOPLE OF COLOR IN CLEAN ENERGY, 2017–2020*



* Includes multiracial respondents who chose “white” as one of their racial identities.

FIGURE 9: NONWHITE (ALONE) WORKERS IN CLEAN ENERGY, 2017–2020*



*Includes Hispanic/Latino and multiracial respondents who included “white” as one of their racial identities.

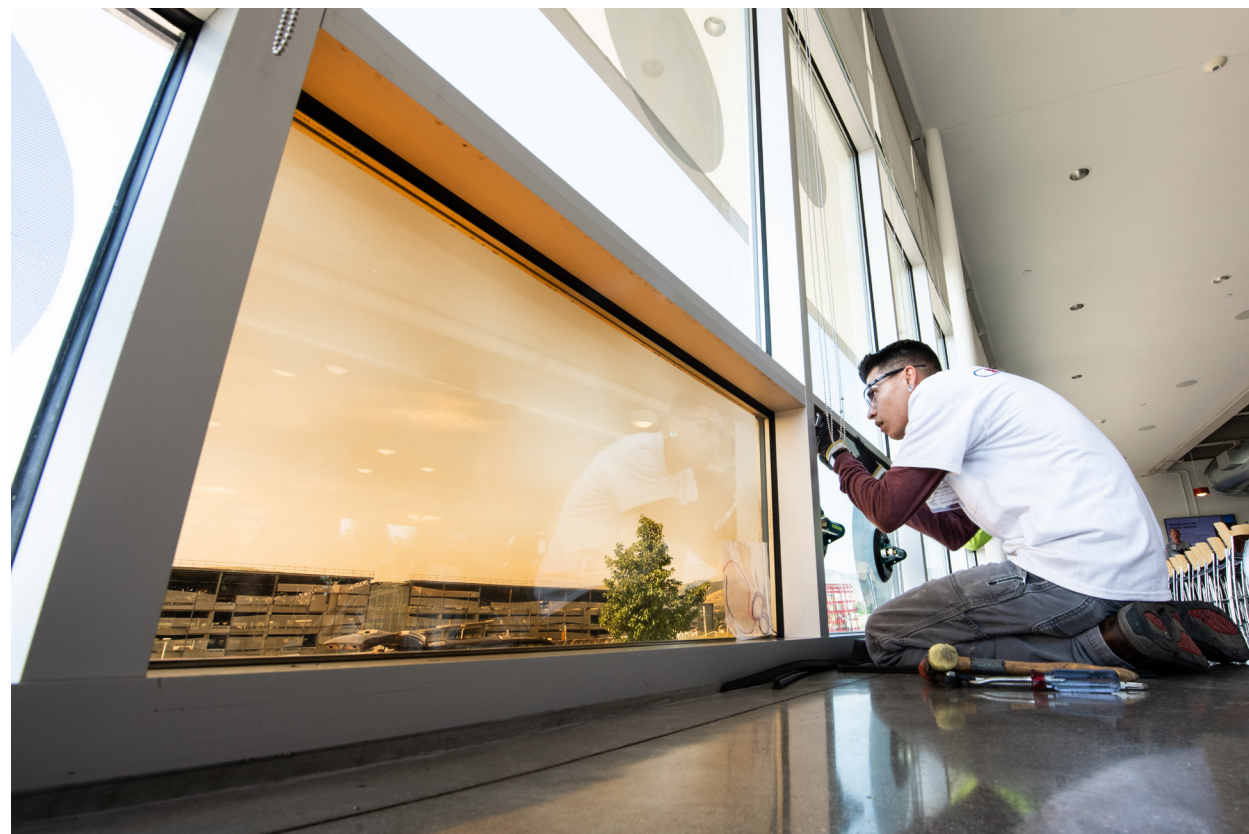
U.S. ENERGY LABOR FORCE DEMOGRAPHICS

BY SECTOR AND SUBSECTORS, 2020

Diversity in clean energy is generally about the same as, or slightly better than, diversity in the fossil fuel industry across most demographic categories. As clean energy continues to grow, becoming an increasingly large part of the nation's energy sector, the industry will need to address equity issues or risk leaving whole communities behind.

FIGURE 10: U.S. ENERGY WORKFORCE DEMOGRAPHICS COMPARED, 2020

Demographic	Overall U.S. Labor Force	Total Energy Workforce	Clean Energy Workforce	Fossil Fuel Workforce
Black/African-American	13%	10%	8%	9%
Asian	7%	7%	8%	6%
Native Hawaiian or other Pacific Islander	<1%	1%	1%	<1%
American Indian or Alaska Native	<1%	2%	1%	2%
Two or more races	2%	8%	8%	9%
Hispanic/Latino	18%	16%	17%	13%
People of color	22%	28%	27%	26%
Women	48%	25%	27%	27%



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U.S. ENERGY SECTORS COMPARED, 2020

FIGURE 11: WOMEN ACROSS ENERGY SECTORS

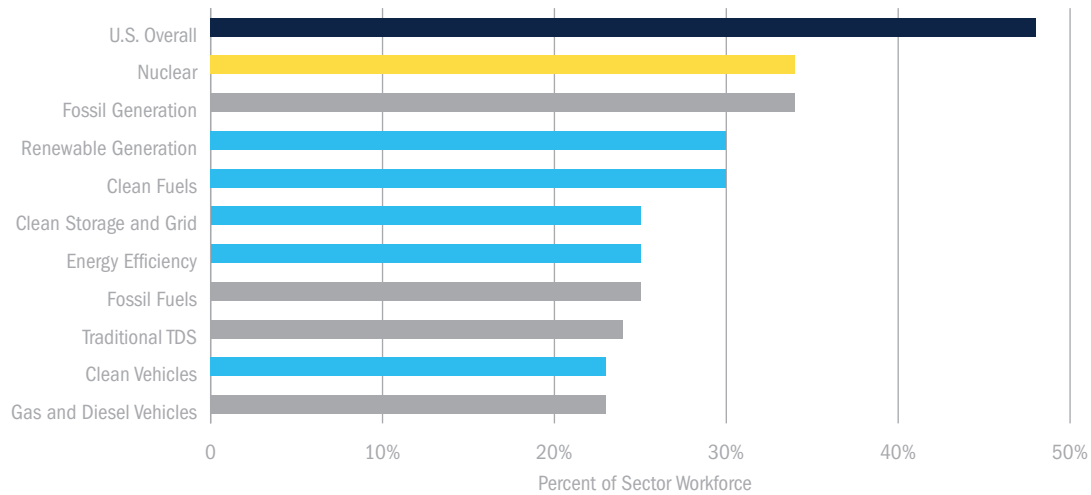


FIGURE 12: HISPANICS OR LATINOS ACROSS ENERGY SECTORS

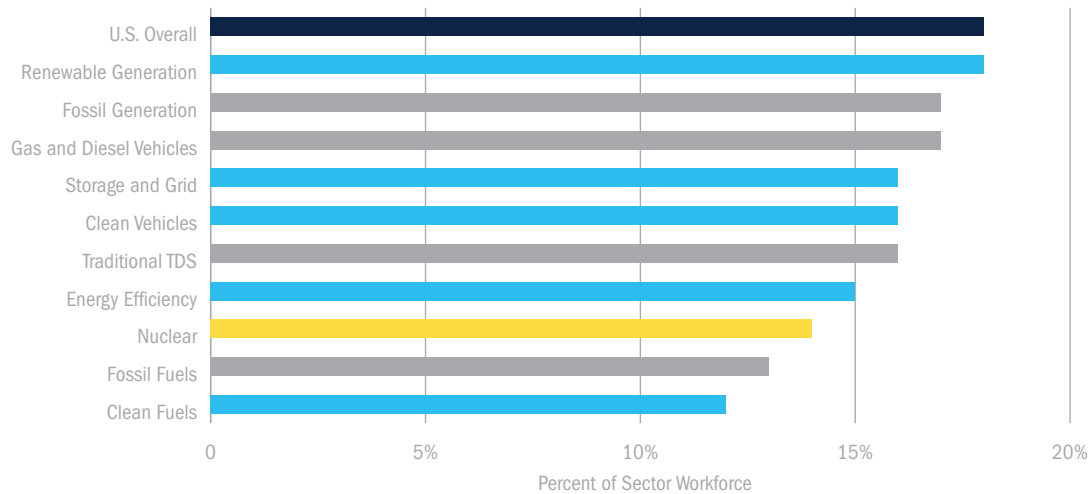


FIGURE 13: BLACK WORKERS ACROSS ENERGY SECTORS

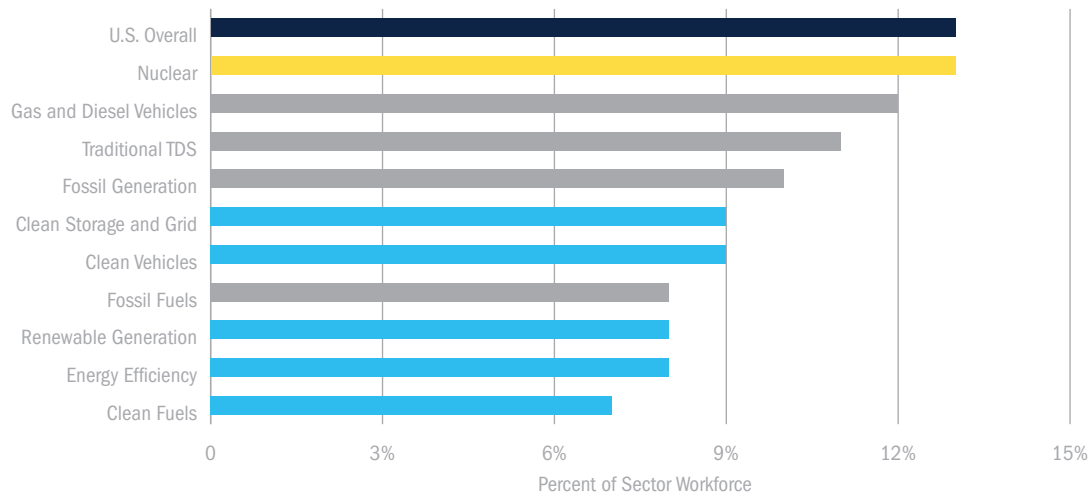


FIGURE 14: ASIANS ACROSS ENERGY SECTORS

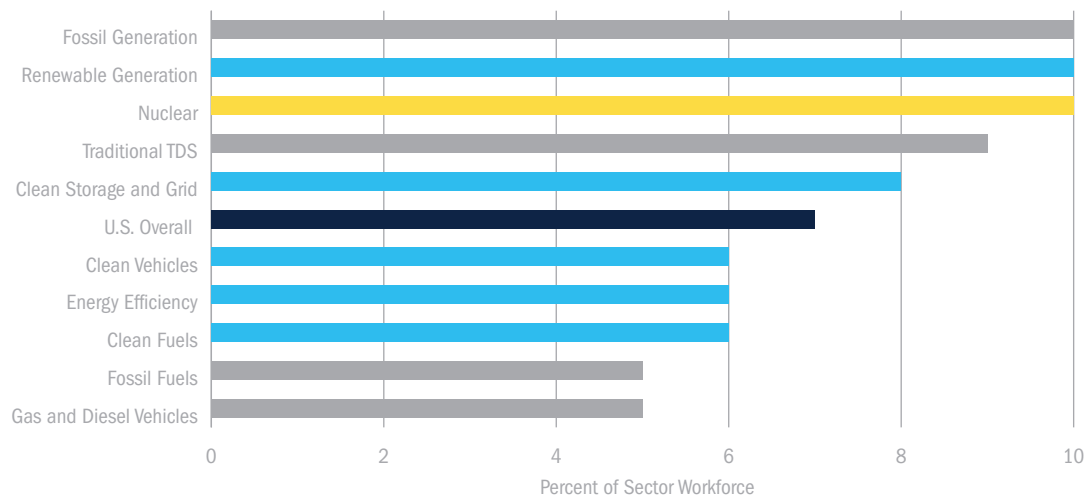


FIGURE 15: MULTIRACIAL WORKERS ACROSS ENERGY SECTORS

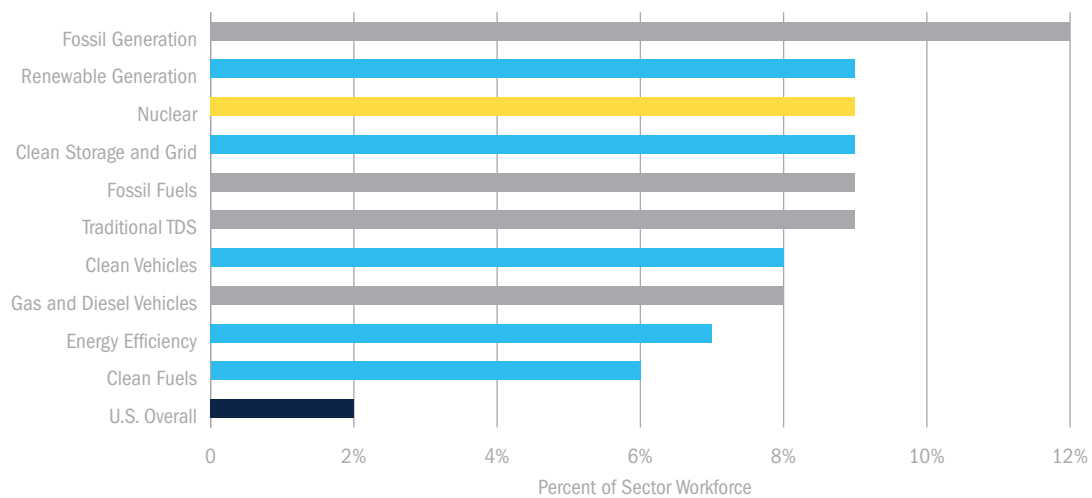
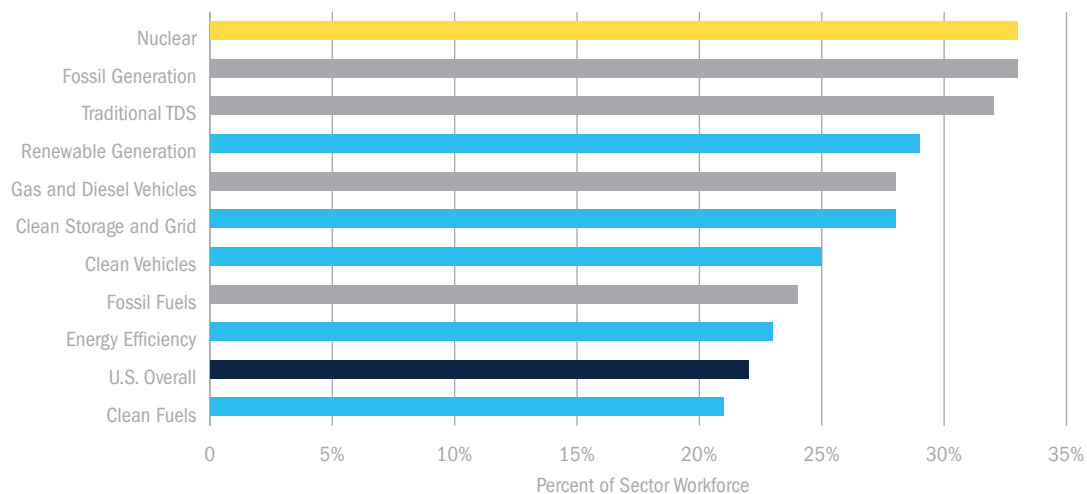


FIGURE 16: PEOPLE OF COLOR ACROSS ENERGY SECTORS





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STATE-LEVEL DIVERSITY FINDINGS

In looking at specific states, diversity in clean energy jobs depends on the overall diversity of the state and the number of jobs available in clean energy in that state.

Women hold between 22 and 30 percent of clean energy positions across all states and the District of Columbia. In nine states, women account for less than one in every four clean energy jobs, and in just one state, South Dakota, women represent 30 percent of the clean energy workforce.

People of color account for at least a quarter of the clean energy workforce in all 50 states and at least one-third of the clean energy workforce in eight states. Nonwhite alone workers overall, which include Hispanics and Latinos, account for at least 30 percent of the clean energy workforce in 49 states and the District of Columbia and more than 40 percent in 10 states. Southwestern states lead in both categories, driven primarily by the greater share of Hispanic and Latino workers across their economies.⁸

Black workers are underrepresented in almost half of all states nationwide. More concerning, Black clean energy employment lags primarily and most significantly in states with the highest percentages of Black workers in the overall economy. Despite accounting for more than 15 percent of total workers in 13 states (and D.C.), only in South Carolina do Black workers hold more than 12 percent of the clean energy jobs.⁹

Hispanic/Latino workers are slightly underrepresented nationally but outperform on the state level in 40 states and D.C. Hispanics and Latinos account for one-fifth of all clean energy workers in New Mexico and California and at least 13 percent in all other states.¹⁰

The percentage of Asian clean energy workers is at least slightly higher than their population share in all but five states and is more than double that share in 33 states. Asian workers feature most prominently in the West, making up more than

11 percent of clean energy workers in California and 9 percent in Washington. America's fastest-growing racial group does make up more than 8 percent of clean energy workers in 11 other states including Georgia, Wisconsin, Illinois, and North Carolina.¹¹ In no state do Asian workers account for a lower percent of clean energy jobs than their national population average of 6 percent.

The share of American Indian/Native Alaskan and Native Hawaiian/Pacific Islanders in clean energy jobs is larger than their state population percentage in all but eight states.¹²

The proportion of clean energy workers of two or more races is larger than their state population share in 47 states and is more than double their population share in a majority of states.¹³

FIGURE 17: TOP STATES FOR WOMEN IN CLEAN ENERGY

State	Women
South Dakota	30.7%
Nevada	29.6%
North Carolina	29.5%
Colorado	29.5%
Oregon	29.4%
Tennessee	29.4%
Illinois	29.3%
California	29.1%
Washington	29.0%
Missouri	28.8%

FIGURE 18: STATES' CLEAN ENERGY WORKFORCE DIVERSITY

*Includes all racial and ethnic minority groups, including Hispanic or Latino whites.

State	People of Color	Nonwhite (Alone)*	State	People of Color	Nonwhite (Alone)*
Alabama	26.8%	36.4%	Montana	23.1%	32.8%
Alaska	26.3%	36.2%	Nebraska	21.0%	32.8%
Arizona	25.4%	38.9%	Nevada	27.9%	41.2%
Arkansas	22.6%	31.9%	New Hampshire	23.4%	34.0%
California	31.0%	45.1%	New Jersey	25.8%	38.5%
Colorado	24.0%	37.1%	New Mexico	32.4%	46.8%
Connecticut	24.2%	36.0%	New York	28.8%	39.5%
Delaware	25.1%	35.9%	North Carolina	27.3%	38.7%
District of Columbia	25.7%	36.9%	North Dakota	24.1%	34.5%
Florida	25.9%	37.8%	Ohio	26.8%	41.5%
Georgia	26.6%	37.7%	Oklahoma	26.9%	37.8%
Hawaii	35.1%	46.8%	Oregon	23.3%	33.9%
Idaho	24.4%	34.8%	Pennsylvania	26.8%	38.9%
Illinois	27.2%	40.7%	Rhode Island	25.8%	36.8%
Indiana	25.0%	35.0%	South Carolina	32.2%	41.2%
Iowa	23.0%	25.2%	South Dakota	22.7%	34.2%
Kansas	23.5%	36.7%	Tennessee	23.2%	33.9%
Kentucky	29.9%	40.0%	Texas	27.5%	41.2%
Louisiana	23.5%	33.1%	Utah	25.0%	37.2%
Maine	21.8%	32.2%	Vermont	22.2%	32.7%
Maryland	27.9%	37.6%	Virginia	27.2%	38.4%
Massachusetts	24.0%	36.1%	Washington	26.8%	37.9%
Michigan	23.3%	36.4%	West Virginia	23.1%	33.0%
Minnesota	27.5%	40.5%	Wisconsin	28.2%	38.2%
Mississippi	22.7%	32.6%	Wyoming	22.9%	32.9%
Missouri	22.8%	34.8%			

FIGURE 19: TOP STATES FOR HISPANICS OR LATINOS IN CLEAN ENERGY

State	Hispanic or Latino
New Mexico	21.9%
California	20.0%
Hawaii	19.9%
Texas	18.9%
Nevada	18.3%
Illinois	18.2%
Iowa	17.5%
Minnesota	17.5%
Nebraska	17.5%
Arizona	17.4%

FIGURE 20: TOP STATES FOR BLACK WORKERS IN CLEAN ENERGY

State	Black or African-American
South Carolina	17.3%
Maryland	11.6%
New York	11.4%
Alabama	10.9%
Delaware	10.5%
Kentucky	10.2%
District of Columbia	10.0%
Texas	9.5%
New Jersey	9.3%
Arizona	9.1%

FIGURE 21: TOP STATES FOR ASIANS IN CLEAN ENERGY

State	Asian
California	11.2%
Georgia	9.8%
Washington	9.2%
Hawaii	8.6%
New York	8.5%
Virginia	8.5%
Wisconsin	8.4%
Illinois	8.3%
Nevada	8.2%
Texas	8.1%

FIGURE 22: TOP STATES FOR NATIVE HAWAIIANS OR PACIFIC ISLANDERS IN CLEAN ENERGY

State	Native Hawaiian or Other Pacific Islander
Hawaii	4.4%
Kentucky	2.8%
Nevada	1.8%
California	1.4%
Indiana	1.4%
Montana	1.4%
Utah	1.3%
Arizona	1.2%
Oklahoma	1.1%
North Dakota	1.1%

FIGURE 23: TOP STATES FOR AMERICAN INDIANS OR ALASKA NATIVES IN CLEAN ENERGY

State	American Indian or Alaska Native
Oklahoma	5.4%
Alaska	4.8%
Wyoming	2.5%
North Carolina	2.3%
New Mexico	2.2%
Alabama	2.0%
Iowa	1.9%
Arizona	1.8%
Kansas	1.7%
Kentucky	1.7%

FIGURE 24: TOP STATES FOR MULTIRACIAL WORKERS IN CLEAN ENERGY

State	Two or More Races
New Mexico	14.4%
Hawaii	12.9%
Minnesota	11.3%
California	9.8%
Wisconsin	9.6%
Rhode Island	9.5%
South Dakota	9.3%
Illinois	9.1%
Kentucky	8.3%
Nevada	8.3%



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SECTOR-LEVEL DIVERSITY FINDINGS

QUANTIFYING THE ECONOMIC BENEFITS OF WORKFORCE DIVERSITY: INNOVATION, REVENUE GENERATION, AND ENTREPRENEURSHIP

There are myriad data-backed financial and economic cases to be made for increasing the diversity of America's clean energy workforce—including at the management and executive levels—and further contributing to improving the overall racial and gender equity of the nation's economy.

Some of the most compelling evidence of the value of diversity is found at the company level, where a diverse workforce and management team has been shown to increase revenue stemming from innovation. In recent studies, a 10 percent increase in diversity was associated with a 0.8 percent increase in earnings, and companies with an above-average diversity in leadership were found to be 70 percent more likely to capture new markets.¹⁴

In a sector like clean energy, which relies heavily on innovation, there is ample room for improvement in diversifying management teams. According to a 2019 solar industry report, just 2 percent of all senior executives are Black and only one in five is a woman.¹⁵ Diversity issues like this one, and those discussed in the previous sections, are a drain on the clean energy sector's economic potential and need to be addressed.



COVID-19's Impacts

The data in this report illustrate diversity challenges that existed before COVID-19. The pandemic only exacerbated inequality in employment, as job losses from the economic fallout of the pandemic were higher for women and for racial and ethnic minorities than for other demographic groups.

Specific to the energy sector, Hispanic or Latino workers, who make up only 16 percent of all energy-related employment, accounted for about 23 percent of the sector's COVID-related job losses in 2020.

As noted in the October 2020 *Clean Jobs, Better Jobs* analysis from E2 and partners, the economic shutdown also affected underrepresented ethnic and racial groups more significantly across the nation. In April 2020, at the peak of the economic shutdown, 6 in 10 Hispanic Americans (61 percent) and more than 4 in 10 Black Americans (44 percent) reported that someone in their household had lost a job or experienced wage losses due to COVID-19; only 38 percent of white Americans reported this.¹⁶

As for job losses in clean energy, Hispanic/Latino workers suffered the most. The clean energy industry is about 16 percent Hispanic or Latino, but an estimated 23 percent of those losing jobs in the sector were Hispanic or Latino workers. All nonwhite racial and ethnic minorities, which constitute about 37 percent of the clean energy industry, accounted for 31 percent of all job losses.¹⁷

INDIVIDUAL OCCUPATIONAL FINDINGS

The following demographic findings are limited to the 15 most prevalent occupations in the clean energy sector, according to 2019 data.

FIGURE 25: WIND TURBINE TECHNICIANS

About 7 in 10 wind turbine service technicians are white, and roughly 95 percent are men. Two in 10 wind turbine service technicians are Hispanic or Latino.

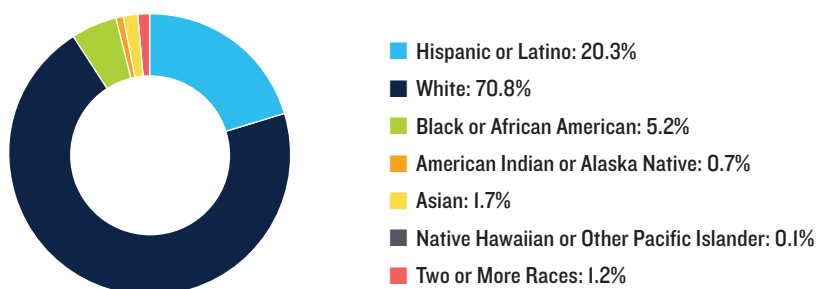
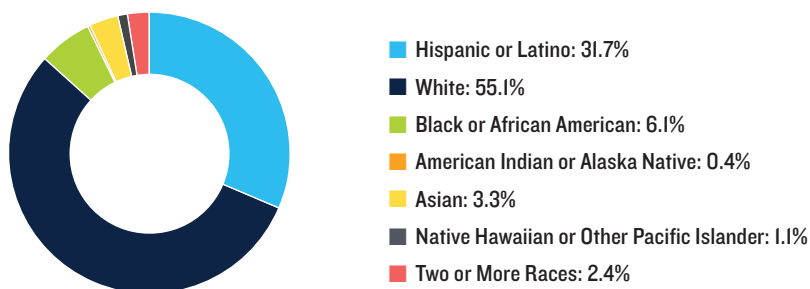


FIGURE 26: SOLAR PHOTOVOLTAIC INSTALLERS*

Fifty-five percent of solar photovoltaic (PV) installers are white, and roughly one-third are Hispanic or Latino. This occupation is also 96 percent male.



**This figure is based on May 2019 data from the Bureau of Labor Statistics. A more recent analysis of the entire solar industry (by BW Research Partnership) from the Solar Energy Industries Association, the National Solar Jobs Census 2020, found significantly higher proportions of Black, Asian, and multiracial workers in solar energy.¹⁸*

FIGURE 27: CLEAN ENERGY WELDERS, CUTTERS, SOLDERERS, AND BRAZERS

Two-thirds of welders, cutters, solderers, and brazers in the U.S. clean energy industry are white, 19 percent are Hispanic or Latino, and 8 percent are Black. The majority (94 percent) are male.

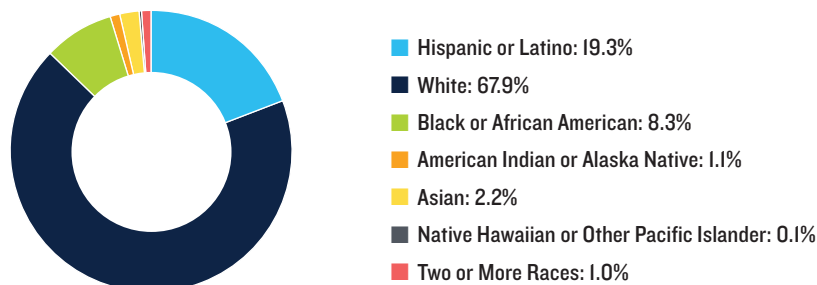


FIGURE 28: SUPERVISORS OF PRODUCTION WORKERS IN CLEAN ENERGY FIELDS

About 71 percent of individuals in this occupation are white, 14 percent are Hispanic or Latino, and about 10 percent are Black. Eight in 10 are men.

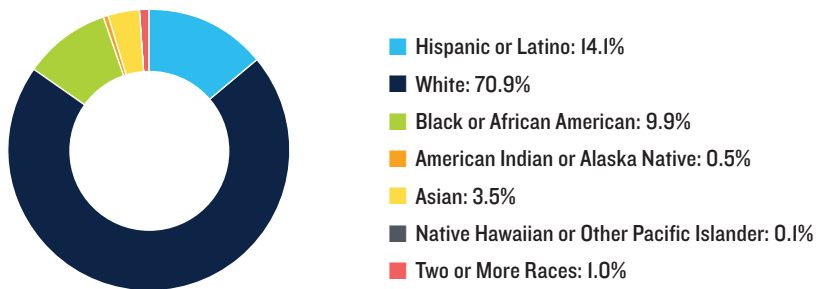


FIGURE 29: CLEAN ENERGY PRODUCT WHOLESALE SALES REPRESENTATIVES

Eight in 10 individuals in this job are white. About 9 percent are Hispanic or Latino, and 4 percent are Black. Twenty-nine percent of those in this occupation are women.

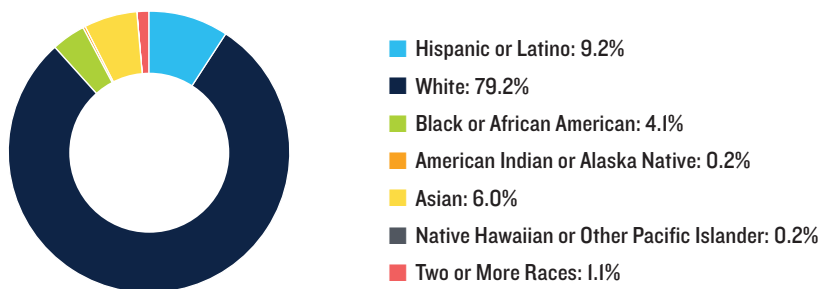


FIGURE 30: CLEAN ENERGY PLUMBERS, PIPEFITTERS, AND STEAMFITTERS

Seven out of 10 plumbers, pipefitters, and steamfitters in clean energy are white, 19 percent are Hispanic or Latino, and 6 percent are Black. The vast majority (98 percent) are men.

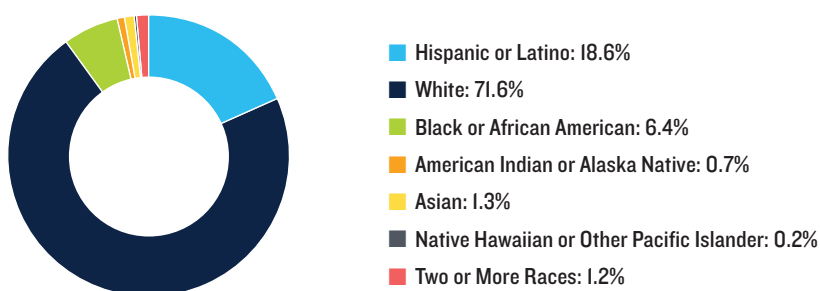


FIGURE 31: BUILDING EFFICIENCY INSULATION WORKERS

At about 26 percent, there is a higher proportion of Hispanic or Latino workers in this occupation than in other clean energy jobs. About 64 percent of individuals in this occupational group are white, and 7 percent are Black. The majority of workers are men (91 percent).

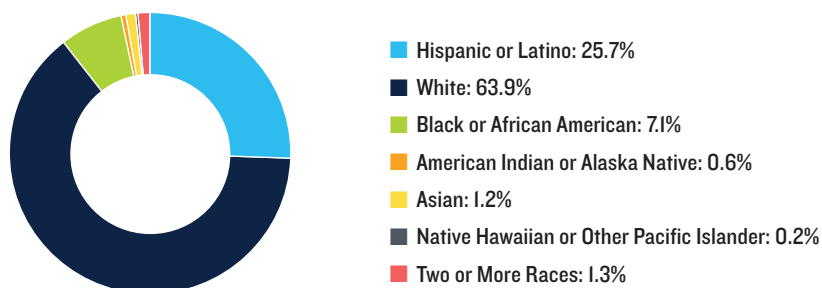


FIGURE 32: BUILDING EFFICIENCY HVAC MECHANICS, INSTALLERS, AND TECHNICIANS

Three-quarters of HVAC mechanics, installers, and technicians in the efficiency industry are white, and 15 percent are Hispanic or Latino. The vast majority are men (99 percent).

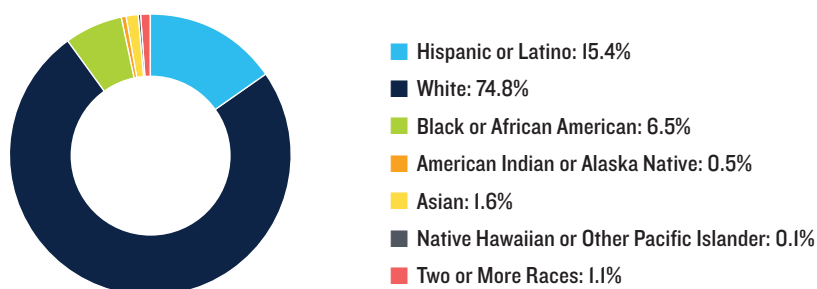


FIGURE 33: CLEAN ENERGY PROJECT CONSTRUCTION LABORERS

Roughly one-third of construction laborers in clean energy are Hispanic or Latino. About 56 percent are white, and almost 9 percent are Black. More than 9 in 10 workers (95 percent) are men.

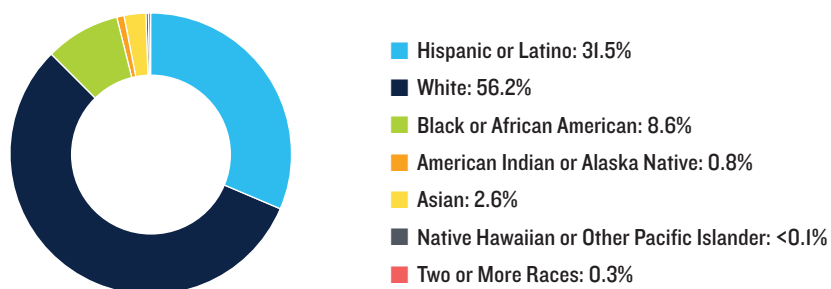


FIGURE 34: CLEAN ENERGY ELECTRICIANS

Almost three-quarters of electricians in clean energy (74 percent) are white, 16 percent are Hispanic or Latino, and 6 percent are Black. The vast majority are male (97 percent)

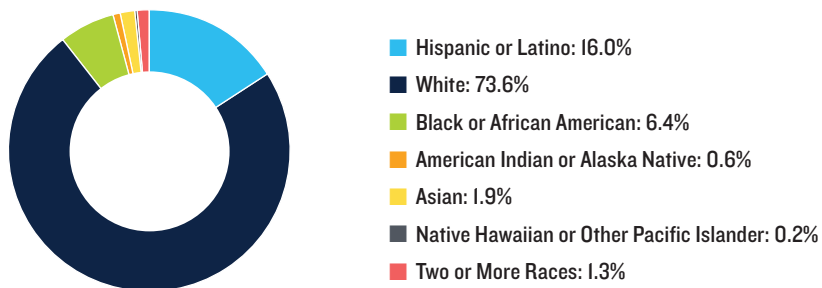


FIGURE 35: CLEAN ENERGY ELECTRICAL POWER LINE INSTALLERS AND REPAIRERS

The great majority of these workers are white. About 10 percent are Hispanic or Latino, and 7 percent are Black. Ninety-eight percent are men.

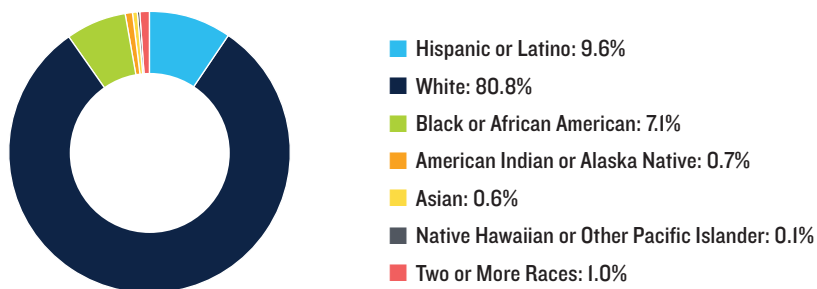


FIGURE 36: CLEAN ENERGY PROJECT CONSTRUCTION MANAGERS

Most clean energy construction managers across the nation are white (82 percent), followed by Hispanic or Latino (10 percent) and Black (3 percent). Just 11 percent of construction managers are women.

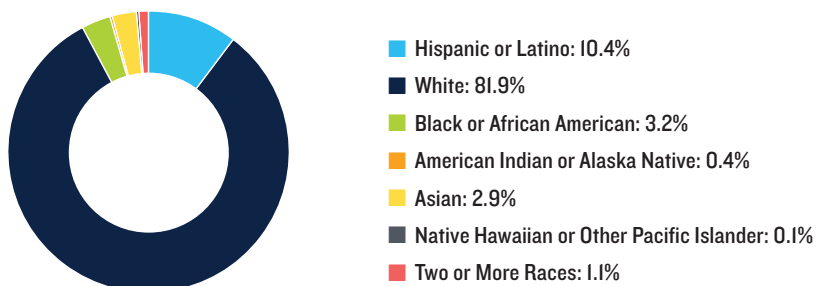


FIGURE 37: BUILDING EFFICIENCY CARPENTERS

One-quarter of carpenters in the U.S. building efficiency field are Hispanic or Latino, and 5 percent are Black. Two-thirds are white (65 percent) and most are male (97 percent).

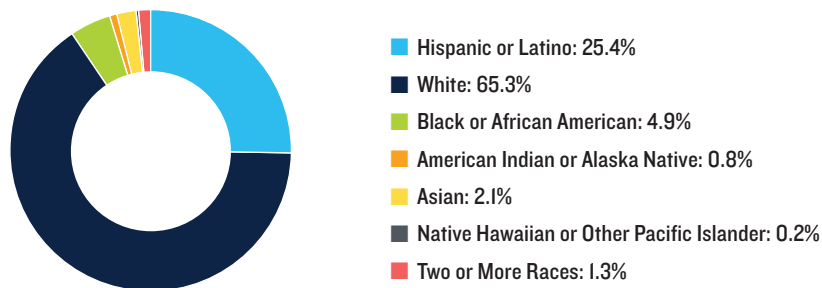


FIGURE 38: CLEAN TRANSPORTATION SERVICE MECHANICS AND TECHNICIANS

The majority of workers in this occupation are white (70 percent), followed by Hispanic or Latino (18 percent) and Black (7 percent). Ninety-eight percent are men.

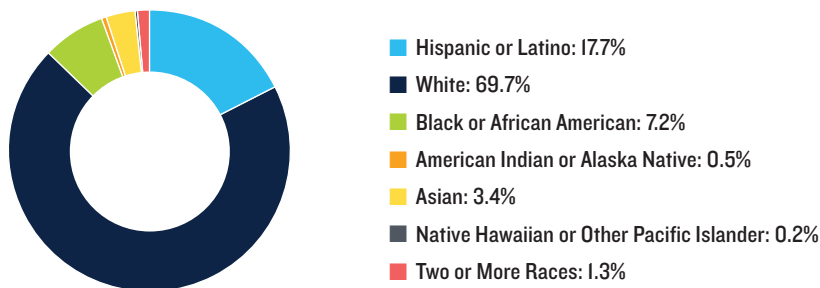
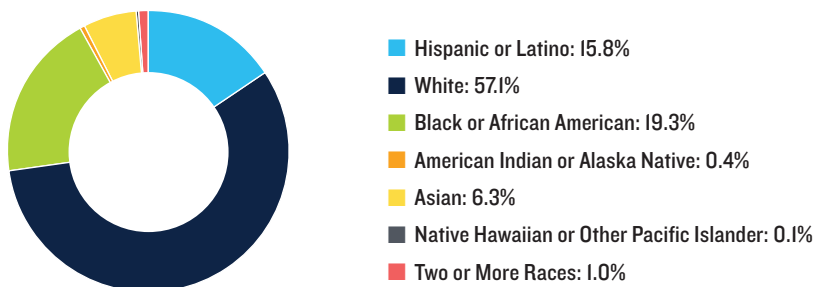


FIGURE 39: CLEAN ENERGY PRODUCT ASSEMBLERS AND FABRICATORS

Hispanic or Latino individuals make up 16 percent of this occupational group, and white individuals account for 57 percent. There is also a higher proportion of women in this occupation than in other clean energy jobs; they account for 4 out of every 10 assemblers and fabricators.



SECTOR SPOTLIGHT: ENERGY EFFICIENCY

Energy efficiency is by far the largest clean energy employer in the United States. According to the November 2020 report “Energy Efficiency Jobs in America,” more than 2 million people work in this sector, helping to reduce energy waste and lower energy costs in homes, schools, and businesses.¹⁹ While COVID-19’s economic impact clipped four years of steady job growth in the sector, energy efficiency remains significant to the overall U.S. economy and labor force.

Our analysis shows that Black, Hispanic, Latino, and female workers are all underrepresented in energy efficiency. However, as the sector seeks to recover alongside the overall economy, there are significant opportunities to broaden the diversity of its workforce.

According to “Energy Efficiency Jobs in America,” rapid growth rates and retirements of aging workers provide ideal conditions for workforce development, particularly with programs designed to promote greater racial and gender diversity. Energy efficiency positions are high-quality jobs offering above-average wages and (in many cases) benefits for young people and mid-career individuals.

On average, the median wage for energy efficiency workers is more than \$24 per hour, about 28 percent higher than the national median, according to the *Clean Jobs, Better Jobs* report from E2, the American Council on Renewable Energy, and the Clean Energy Leadership Institute.²⁰ (The report found that workers in energy efficiency, renewable energy, grid modernization and storage, clean fuels, and clean vehicles all significantly outearned the national median wage for all jobs; these sectors also enjoyed higher levels of unionization and better health care and retirement benefits than the wider private sector.)

JOB SPOTLIGHT: WIND TURBINE TECHNICIAN AND SOLAR PV INSTALLER

A closer look at two of the fastest-growing jobs in the country—wind turbine technician and solar PV installers—reveals just how much is to be gained by making the clean energy workforce more equitable, especially for Black workers.

Wind turbine technicians are engaged in the installation and repair of wind turbines and their component parts. They are responsible for ensuring that wind turbines run efficiently and effectively. As wind generation capacity continues to rise in the United States, these maintenance and inspection positions are becoming increasingly important. To date, the nation is home to more than 60,000 wind turbines across 41 states and two territories. Six states have more than 20 percent of their electricity generated from wind turbines.²¹

Black workers are significantly underrepresented in these in-demand, high-paying jobs (senior technicians make close to \$40 per hour), filling only 5 percent of all positions. Women hold just 5 percent of these jobs as well. The majority are held by white workers (71 percent) and Hispanics or Latinos (20 percent).²²

In solar PV it’s a similar story. Solar PV installers play a crucial role in the build-out of America’s clean energy infrastructure, and the job growth rate has been booming, with average annual growth over the past decade close to 50 percent. Senior-level installers earn as much as \$35 per hour and have health care and retirement packages. Yet Black workers hold just 8 percent of these jobs.

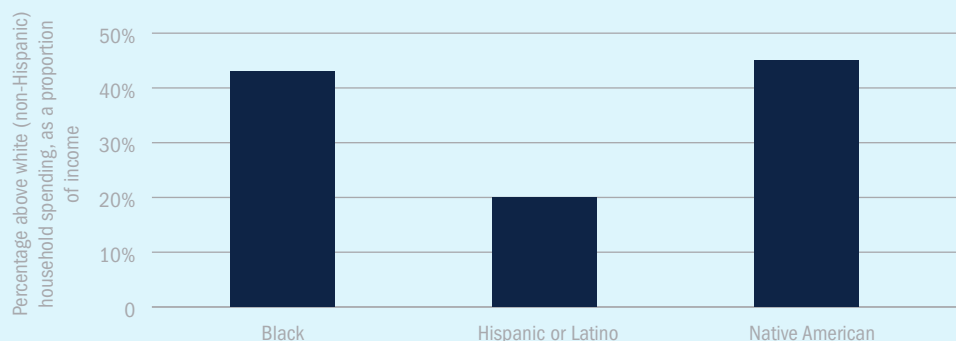
The Burden of Energy Costs

Expanding energy efficiency not only creates jobs for people of color—it reduces expenses for households of color. According to a September 2020 report from the American Council for an Energy-Efficient Economy, one-fourth of all U.S. households and two-thirds of low-income ones have high energy burdens, meaning they spend more than 6 percent of their income on utility bills.²³

The report found stark demographic disparities.

“The median energy burden for Black households is 43% higher than for non-Hispanic white households (4.2% versus 2.9%), and the median energy burden for Hispanic households is 20% higher than that for non-Hispanic white households (3.5% versus 2.9%).”²⁴

FIGURE 40: DISPROPORTIONATE HOUSEHOLD SPENDING ON ENERGY



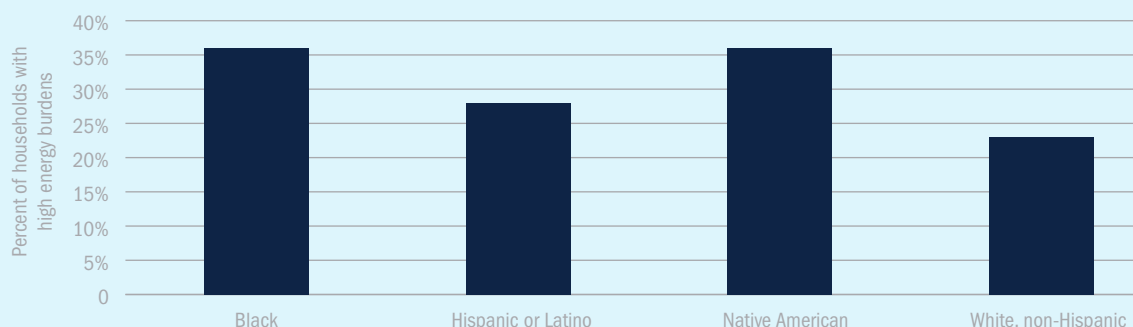
Source: *How High Are Household Energy Burdens?*, American Council for an Energy-Efficient Economy. September 2020

Strengthening energy efficiency programs at the local, state, and federal levels and targeting them to better reach households that need them most can help alleviate such energy burdens. Expanding weatherization assistance, building more efficient affordable housing, creating accessible grants or other financing, and offering tax incentives or rebates are some of the available options to help low-income and lower-middle-income families sharply reduce their energy bills. Addressing fundamental challenges such as housing quality and access to broadband are also critical to achieving more equitable access to efficiency.

Additionally, when structured appropriately, such investments can deliver jobs and entrepreneurial opportunities in historically marginalized communities. By ensuring that disadvantaged communities receive a fair share of investment and that workers hired to carry out projects are from those communities, we can increase participation in energy efficiency programs while also helping to diversify the energy efficiency workforce.

At the same time, we also must begin properly valuing energy efficiency in affordable housing by recognizing the long-term cost burden created by inefficient buildings.

FIGURE 41: PERCENTAGE OF HOUSEHOLDS WITH HIGH ENERGY BURDENS



Source: *How High Are Household Energy Burdens?*, American Council for an Energy-Efficient Economy. September 2020



POLICY MATTERS

This analysis indicates that more needs to be done to address racial inequities in clean energy and the broader economy. As we rebuild the U.S. economy in the wake of COVID-19, we have a chance to do it in ways that create new opportunities for people of color. As Congress and state lawmakers focus on clean energy's role in the recovery, they should focus as well on rebuilding the economy more equitably.

President Biden's Justice40 initiative mandating that 40 percent of the benefits from federal climate action go to disadvantaged communities is a step in the right direction. But there are many steps lawmakers can take—right now—to ensure greater diversity in the clean energy workforce in the months and years ahead.

FOR WORKERS

- // Support education and job training for members of historically underserved communities to expedite their involvement in the development of clean energy solutions.
- // Invest in apprenticeship programs in the transportation industry and industry-academic partnerships to prepare underrepresented populations for entry into career positions.
- // Enhance and enforce hiring and procurement policies that benefit low-income communities, people of color, and women.

FOR BUSINESSES

- // Create and fund “green banks” and other financing mechanisms through more traditional financial institutions that can help jump-start clean energy companies, and include specific metrics for investing in minority-owned companies and communities.
- // Collaborate with the clean energy industry to increase business opportunities for minority entrepreneurs and improve the diversity of suppliers in the public and private sectors.
- // Support and advance clean energy programs, including renewable portfolio and energy efficiency standards, with specific metrics for jobs and economic development in economically disadvantaged areas.

FOR COMMUNITIES

- // Strategically and cooperatively engage low-income and disadvantaged communities on energy policies at all levels to help address the energy and employment needs of these communities while also protecting the environment.
- // Ensure that underserved communities hosting clean energy resources and facilities—such as solar and wind farms and clean energy and clean vehicle factories—directly benefit from the presence of these facilities with jobs and supplier opportunities and the opportunity to own clean energy assets.
- // Design codes, regulations, and policies to address minimum energy, water, and health performance in existing multifamily buildings, and provide resources to support their equitable implementation.
- // Adopt adequate funding and performance targets, such as energy savings, for efficiency programs serving under-resourced communities.
- // Ensure that state housing finance agencies make ever-increasing commitments to efficiency and health improvements in properties receiving low-income housing tax credits.

CONCLUSION

Clean energy and clean transportation are key to building a stronger, more resilient, and more equitable economy in the wake of COVID-19.

As policymakers in Washington and in our states look to advance clean energy and clean transportation programs and the employment, business, and economic opportunities that come with them, they must do more to ensure that these opportunities are available to all Americans regardless of ethnicity or gender and address the inequities in clean energy that currently exist.

APPENDIX

TABLE A1: OVERALL ENERGY EMPLOYMENT DEMOGRAPHICS, 2020*

Demographic	Overall U.S.	All Energy	Generation	Fuels	TDS	Energy Efficiency	Motor Vehicles
White**	76%	74%	69%	77%	69%	77%	73%
Black or African-American	13%	10%	9%	8%	11%	8%	12%
Asian	7%	7%	10%	5%	9%	6%	5%
Native Hawaiian or Other Pacific Islander	<1%	1%	1%	1%	1%	1%	1%
American Indian or Alaska Native	<1%	2%	1%	2%	2%	1%	2%
Two or More Races	2%	8%	10%	8%	9%	7%	8%
Hispanic or Latino	18%	16%	18%	14%	16%	15%	17%
People of Color	22%	28%	31%	24%	32%	23%	28%
Women	48%	25%	32%	26%	24%	25%	23%

* Includes clean energy and fossil fuel generation jobs.

** Includes non-Hispanic and Hispanic whites.

TABLE A2: CLEAN ENERGY EMPLOYMENT DEMOGRAPHICS, 2020

Demographic	Overall U.S.	All Clean Energy	Renewable Generation	Renewable Fuels	Clean Grid & Storage	Energy Efficiency	Clean Vehicles
White**	76%	73%	71%	79%	71%	77%	75%
Black or African-American	13%	8%	8%	7%	9%	8%	9%
Asian	7%	8%	10%	6%	8%	6%	6%
Native Hawaiian or Other Pacific Islander	<1%	1%	1%	1%	<1%	1%	<1%
American Indian or Alaska Native	<1%	1%	1%	1%	2%	1%	2%
Two or More Races	2%	8%	9%	6%	9%	7%	8%
Hispanic or Latino	18%	17%	18%	12%	16%	15%	16%
People of Color	22%	27%	29%	21%	28%	23%	25%
Women	48%	27%	30%	30%	25%	25%	23%

*Includes non-Hispanic and Hispanic whites.

TABLE 1C: TRADITIONAL ENERGY EMPLOYMENT DEMOGRAPHICS, 2020

Demographic	Overall U.S.	Fossil Generation	Fossil Fuels	Overall Fossil Fuels	TDS	Nuclear	Gas and Diesel Vehicles
White**	78%	81%	71%	76%	69%	77%	77%
Black or African-American	12%	6%	9%	8%	11%	8%	8%
Asian	6%	6%	8%	5%	9%	6%	5%
Native Hawaiian or Other Pacific Islander	>1%	1%	>1%	<1%	1%	1%	>1%
American Indian or Alaska Native	>1%	1%	2%	2%	2%	1%	2%
Two or More Races	2%	5%	9%	9%	9%	7%	8%
Hispanic or Latino	18%	9%	16%	13%	16%	15%	16%
People of Color	22%	33%	24%	26%	4832	33%	28%
Women	47%	30%	25%	25%	24%	25%	23%

*Includes non-Hispanic and Hispanic whites.

TABLE 1D: STATE CLEAN ENERGY EMPLOYMENT DEMOGRAPHICS, 2020

State	Male	Female	Hispanic or Latino	American Indian or Alaska Native	Asian	Black or African-American	Native Hawaiian or Other Pacific Islander	Two or More Races	People of Color	Nonwhite alone	White (alone)
Alabama	76.1%	23.9%	14.1%	2.0%	6.8%	10.9%	0.8%	6.2%	26.8%	36.4%	63.6%
Alaska	74.9%	25.1%	13.2%	4.8%	6.5%	7.6%	0.8%	6.4%	26.3%	36.2%	63.8%
Arizona	73.9%	26.1%	17.4%	1.8%	7.0%	9.1%	1.2%	6.3%	25.4%	38.9%	61.1%
Arkansas	75.5%	24.5%	14.6%	1.5%	6.6%	7.5%	0.8%	6.1%	22.6%	31.9%	68.1%
California	70.9%	29.1%	20.0%	1.4%	11.2%	7.3%	1.4%	9.8%	31.0%	45.1%	54.9%
Colorado	70.5%	29.5%	16.6%	1.2%	7.5%	6.5%	0.9%	7.8%	24.0%	37.1%	62.9%
Connecticut	73.6%	26.4%	15.1%	1.2%	7.3%	8.5%	0.9%	6.3%	24.2%	36.0%	64.0%
Delaware	72.6%	27.4%	13.1%	1.1%	6.7%	10.5%	0.8%	5.9%	25.1%	35.9%	64.1%
District of Columbia	71.5%	28.5%	15.0%	1.2%	7.0%	10.0%	0.9%	6.6%	25.7%	36.9%	63.1%
Florida	72.6%	27.4%	15.6%	1.2%	7.2%	9.0%	0.9%	7.6%	25.9%	37.8%	62.2%
Georgia	73.0%	27.0%	15.2%	1.2%	9.8%	8.8%	0.8%	6.0%	26.6%	37.7%	62.3%
Hawaii	75.5%	24.5%	19.9%	1.2%	8.6%	8.1%	4.4%	12.9%	35.1%	46.8%	53.2%
Idaho	71.3%	28.7%	14.7%	1.1%	6.5%	7.9%	0.8%	8.0%	24.4%	34.8%	65.2%
Illinois	70.7%	29.3%	18.2%	1.1%	8.3%	7.8%	0.9%	9.1%	27.2%	40.7%	59.3%
Indiana	73.4%	26.6%	16.0%	1.5%	7.1%	7.3%	1.4%	7.8%	25.0%	35.0%	65.0%
Iowa	71.5%	28.5%	17.5%	1.9%	6.9%	6.5%	0.8%	7.0%	23.0%	25.2%	74.8%
Kansas	74.5%	25.5%	16.7%	1.7%	7.3%	5.8%	0.8%	7.9%	23.5%	36.7%	63.3%
Kentucky	71.8%	28.2%	14.1%	1.7%	6.9%	10.2%	2.8%	8.3%	29.9%	40.0%	60.0%
Louisiana	75.0%	25.0%	13.7%	1.2%	6.5%	8.7%	1.0%	6.1%	23.5%	33.1%	66.9%
Maine	74.2%	25.8%	13.3%	1.1%	6.3%	7.6%	0.8%	6.0%	21.8%	32.2%	67.8%

State	Male	Female	Hispanic or Latino	American Indian or Alaska Native	Asian	Black or African-American	Native Hawaiian or Other Pacific Islander	Two or More Races	People of Color	Nonwhite alone	White (alone)
Maryland	74.3%	25.7%	14.1%	1.2%	7.5%	11.6%	0.9%	6.7%	27.9%	37.6%	62.4%
Massachusetts	73.6%	26.4%	14.9%	1.2%	7.2%	8.1%	0.8%	6.7%	24.0%	36.1%	63.9%
Michigan	75.3%	24.7%	16.8%	1.7%	6.8%	6.6%	0.9%	7.3%	23.3%	36.4%	63.6%
Minnesota	72.6%	27.4%	17.5%	1.4%	6.9%	6.9%	1.1%	11.3%	27.5%	40.5%	59.5%
Mississippi	75.7%	24.3%	13.0%	1.1%	6.3%	8.6%	0.8%	5.9%	22.7%	32.6%	67.4%
Missouri	71.2%	28.8%	15.5%	1.1%	7.2%	6.7%	0.9%	7.0%	22.8%	34.8%	65.2%
Montana	74.1%	25.9%	12.9%	1.1%	6.3%	7.4%	1.4%	7.0%	23.1%	32.8%	67.2%
Nebraska	74.1%	25.9%	17.5%	1.2%	6.5%	5.3%	0.8%	7.2%	21.0%	32.8%	67.2%
Nevada	70.4%	29.6%	18.3%	1.3%	8.2%	8.3%	1.8%	8.3%	27.9%	41.2%	58.8%
New Hampshire	72.6%	27.4%	13.6%	1.1%	7.7%	7.4%	0.8%	6.3%	23.4%	34.0%	66.0%
New Jersey	74.6%	25.4%	15.9%	1.2%	7.3%	9.3%	0.9%	7.0%	25.8%	38.5%	61.5%
New Mexico	72.9%	27.1%	21.9%	2.2%	7.1%	7.9%	0.9%	14.4%	32.4%	46.8%	53.2%
New York	74.2%	25.8%	14.9%	1.5%	8.5%	11.4%	1.0%	6.3%	28.8%	39.5%	60.5%
North Carolina	70.5%	29.5%	15.4%	2.3%	8.0%	8.5%	0.8%	7.7%	27.3%	38.7%	61.3%
North Dakota	76.8%	23.2%	13.9%	1.4%	7.8%	6.0%	1.1%	7.7%	24.1%	34.5%	65.5%
Ohio	73.0%	27.0%	16.1%	1.4%	8.0%	8.2%	0.9%	8.3%	26.8%	41.5%	58.5%
Oklahoma	77.3%	22.7%	14.2%	5.4%	6.3%	7.7%	1.1%	6.5%	26.9%	37.8%	62.2%
Oregon	70.6%	29.4%	15.0%	1.3%	7.6%	6.4%	0.9%	7.1%	23.3%	33.9%	66.1%
Pennsylvania	72.4%	27.6%	15.1%	1.4%	7.8%	8.7%	0.9%	8.0%	26.8%	38.9%	61.1%
Rhode Island	75.0%	25.0%	16.0%	1.1%	6.5%	7.8%	0.8%	9.5%	25.8%	36.8%	63.2%
South Carolina	75.2%	24.8%	13.5%	1.2%	6.4%	17.3%	0.9%	6.4%	32.2%	41.2%	58.8%
South Dakota	69.3%	30.7%	14.9%	1.0%	6.4%	5.3%	0.8%	9.3%	22.7%	34.2%	65.8%
Tennessee	70.6%	29.4%	13.4%	1.4%	6.6%	7.8%	0.8%	6.7%	23.2%	33.9%	66.1%
Texas	72.4%	27.6%	18.9%	1.3%	8.1%	9.5%	0.9%	7.7%	27.5%	41.2%	58.8%
Utah	72.9%	27.1%	16.2%	1.3%	6.8%	8.5%	1.3%	7.1%	25.0%	37.2%	62.8%
Vermont	74.5%	25.5%	13.3%	1.2%	6.5%	7.5%	0.9%	6.1%	22.2%	32.7%	67.3%
Virginia	71.9%	28.1%	15.8%	1.1%	8.5%	8.9%	1.0%	7.8%	27.2%	38.4%	61.6%
Washington	71.0%	29.0%	15.4%	1.4%	9.2%	7.2%	1.1%	7.9%	26.8%	37.9%	62.1%
West Virginia	76.7%	23.3%	12.9%	1.1%	6.3%	9.0%	0.8%	5.9%	23.1%	33.0%	67.0%
Wisconsin	73.5%	26.5%	14.9%	1.1%	8.4%	8.3%	0.9%	9.6%	28.2%	38.2%	61.8%
Wyoming	74.1%	25.9%	12.9%	2.5%	6.3%	7.4%	0.8%	5.9%	22.9%	32.9%	67.1%
Total U.S.	72.6%	27.4%	16.5%	1.4%	8.2%	8.4%	1.0%	7.9%	26.9%	39.0%	61.0%

ABOUT THE PARTNERS

E2 (Environmental Entrepreneurs) is a national, nonpartisan group of business leaders, investors, and professionals from every sector of the economy who advocate for smart policies that are good for the economy and good for the environment.

The Alliance to Save Energy is a bipartisan, nonprofit coalition of business, government, environmental, and consumer leaders advocating to advance federal energy efficiency policy.

American Association of Blacks in Energy (AABE) is a national association of energy professionals, founded and dedicated to ensure the input of African-Americans and other minorities into the discussions and developments of energy policies, regulations, R&D technologies, and environmental issues.

Energy Efficiency for All (EEFA) unites people from diverse sectors and backgrounds to collectively make multifamily affordable homes energy and water efficient. EEFA builds power to change policies and practices by seeding and supporting coalitions in 12 states.

Black Owners of Solar Services (BOSS) is the largest community of African-American professionals working in the solar photovoltaic (PV) space. We are entrepreneurs, financiers, veterans, attorneys, engineers, contractors, developers, and other peer partners. We possess deep knowledge, experience, and strategic access to the multi-trillion-dollar, emerging solar and clean energy technology marketplace that is fast reshaping sustainability, infrastructure resilience, and livelihoods in our country and across the globe. We have established roots and relationships in all communities, and particularly those disproportionately impacted by climate change, in the United States and abroad. Our collective efforts are making communities more resilient, sustainable, and economically powerful.

BW Research Partnership is a full-service economic and workforce research consulting firm with offices in Carlsbad, California, and Wrentham, Massachusetts. It is the nation's leading provider of accurate, comprehensive energy and clean energy research studies, including the *United States Energy and Employment Report* (USEER), National Solar Jobs Census, wind industry analyses for the National Renewable Energy Laboratory and the Natural Resources Defense Council, and state-level clean energy reports for Massachusetts, New York, Illinois, Vermont, Iowa, Rhode Island, Florida, and Missouri, among others.

ENDNOTES

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