

Barriers and Opportunities for Green Jobs in New Jersey



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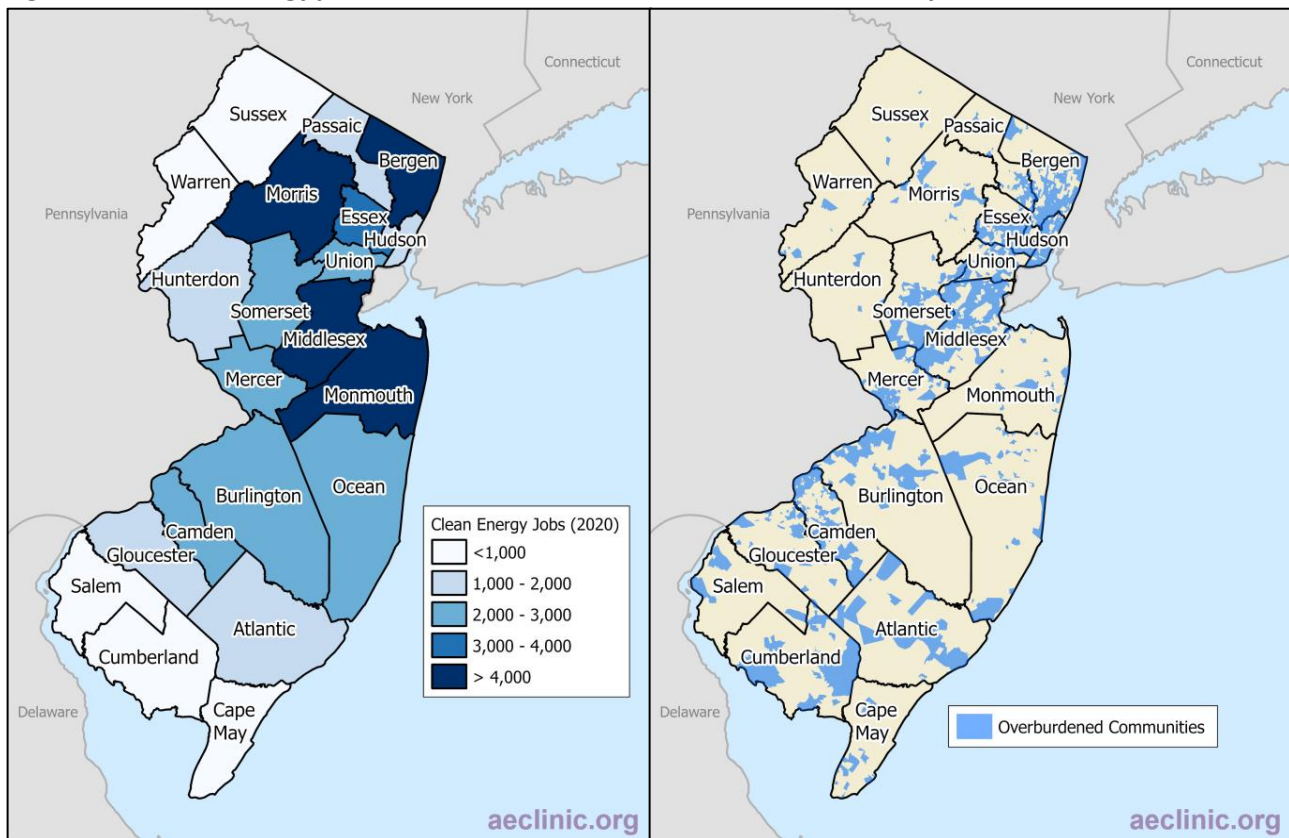
Executive Summary

A clean energy transition in New Jersey will stimulate the economy by adding new, high paying (relative to other sectors) jobs in the energy sector. However, equitable distribution of these quality opportunities is essential to redressing historical inequalities and making sure that women and racial/ethnic minorities are adequately represented in the clean energy sector. In New Jersey today, white males are overrepresented in the state’s clean energy workforce while nearly every racial/ethnic minority and women of all races and ethnicities are underrepresented. This Applied Economics Clinic (AEC) report assesses New Jersey’s current clean energy workforce, identifies barriers to green jobs that impede access to—and equitable representation within—the clean energy sector, and provides recommendations regarding how the State of New Jersey can shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs.

Many clean energy jobs are located in close proximity to New Jersey’s overburdened communities

The largest number of clean energy jobs can be found in many of the same counties that host the largest number of overburdened communities, including Bergen, Middlesex, Essex and Hudson (see Figure ES-1).

Figure ES-1. Clean energy jobs and overburdened communities in New Jersey



Note: In New Jersey, an “overburdened community” is defined as any census block group in which either: (a) at least 35 percent of households qualify as low-income, (b) at least 40 percent of residents identify as a racial/ethnic minority or as members of a tribal community, or (c) at least 40 percent of the households have limited English proficiency.

These counties also experience disproportionately high health and employment burdens: For example, Essex County has the third highest asthma hospitalization rate and fifth highest infant mortality rate in the state,

while Hudson County has the second highest rate of health uninsured individuals and fourth highest unemployment rate in the state.

Barriers to green jobs hinder workplace diversity and reinforce inequities and disparities

Not only are racial/ethnic minorities and women underrepresented within New Jersey’s clean energy sector, important barriers to green jobs exist that reinforce existing inequities and disparities (see Table ES-1). Improving the New Jersey clean energy job sector’s diversity, equity and inclusivity over time will require overcoming these barriers with intentional, targeted public and private efforts.

Table ES-1. Summary of barriers to green jobs

Types of Barriers	Definition	Examples
Educational/ Experience	Lack of a desired level of educational attainment and/or relevant work experience or training	Prohibitively expensive training programs, apprenticeship placements occurring through informal recommendations
Logistical	Lack of awareness, access, or ability to participate	Lack of transportation/internet access, limited English proficiency, lack of affordable, quality childcare and/or healthcare
Equitable Access	Underrepresentation of historically marginalized communities in clean energy jobs plus discrimination, prejudice, and bias	Resume gaps for formerly incarcerated individuals, hiring obstacles for unhoused individuals, lack of necessary credentials among undocumented individuals
Institutional	Lack of workplace policies and procedures that result in an unsafe and/or inequitable workplace environment	Clean energy employers often do not prioritize addressing a lack of diversity and lack policies to enhance diversity

Opportunities exist for breaking through these barriers

Achieving a clean energy future in New Jersey in which the workforce is diverse, equitable and inclusive will require overcoming barriers to green jobs with intentional efforts targeted at marginalized and underrepresented groups, such as racial/ethnic minorities, women, low-income households, and people with limited English proficiency. The State of New Jersey can shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs by:

- Making concerted efforts to ensure that clean energy jobs are available to all;
- Establishing policies that help link clean energy jobs to training opportunities; and
- Building demand for clean energy services.

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About the Applied Economics Clinic

Based in Arlington, Massachusetts, the Applied Economics Clinic (AEC) is a mission-based non-profit consulting group that offers expert services in the areas of energy, environment, consumer protection, and equity from seasoned professionals while providing on-the-job training to the next generation of technical experts.

AEC’s non-profit status allows us to provide lower-cost services than most consultancies and when we receive foundation grants, AEC also offers services on a pro bono basis. AEC’s clients are primarily public interest organizations—non-profits, government agencies, and green business associations—who work on issues related to AEC’s areas of expertise. Our work products include expert testimony, analysis, modeling, policy briefs, and reports, on topics including energy and emissions forecasting, economic assessment of proposed infrastructure plans, and research on cutting-edge, flexible energy system resources.

AEC works proactively to support and promote diversity in our areas of work by providing applied, on-the-job learning experiences to graduate students—and occasionally highly qualified undergraduates—in related fields such as economics, environmental engineering, and political science. Over the past four years, AEC has hosted research assistants from Boston University, Brandeis University, Clark University, Tufts University, and the University of Massachusetts-Amherst. AEC is committed to a just workplace that is diverse, pays a living wage, and is responsive to the needs of its full-time and part-time staff.

Founded by Director and Senior Economist Elizabeth A. Stanton, PhD in 2017, AEC’s talented researchers and analysts provide a unique service-minded consulting experience. Dr. Stanton has had two decades of professional experience as a political and environmental economist leading numerous studies on environmental regulation, alternatives to fossil fuel infrastructure, and local and upstream emissions analysis. AEC professional staff includes experts in electric, multi-sector and economic systems modeling, climate and emissions analysis, green technologies, and translating technical information for a general audience. AEC’s staff are committed to addressing climate change and environmental injustice in all its forms through diligent, transparent, and comprehensible research and analysis.

I. Introduction

In May 2018, New Jersey Governor Phil Murphy’s Executive Order No. 28 committed the state to achieving 100 percent clean energy by 2050.¹ New Jersey’s *2019 Energy Master Plan (EMP)*² provides a vision of what actions the State needs to take to achieve its climate and energy goals including accelerating the deployment of renewable energy and distributed energy resources, reducing energy consumption and emissions in the transportation and buildings sectors, and encouraging and supporting community participation in energy planning (especially by low- and moderate-income and environmental justice communities).

In a companion publication to this report—*Economic Impacts of a Clean Energy Transition in New Jersey*—AEC utilizes the 2019 EMP as a starting point for assessing the job and other economic impacts associated with achieving a clean energy transition in New Jersey over the next few decades.³ Some of our major findings include:

- A clean energy transition (“CLEAN” scenario⁴) in New Jersey creates more job opportunities than a business-as-usual (“BAU” scenario), introducing a net total of 287,000 new full-time jobs-years⁵ (or an average of 11,000 additional jobs in each year) between 2025 and 2050.
- The cumulative growth in green jobs (338,124 added job-years) is nearly 6.6 times greater than the job losses in gas-fired power plants (5,210 lost job-years) and oil heating (45,954 lost job-years).
- Energy efficiency, energy storage, solar panels, and EV chargers are consistent, and growing, sources of jobs throughout the modeling period (2025-2050). Offshore wind jobs are primarily related to manufacture and installation; fewer jobs remain after these resources are operational. Nonetheless, offshore wind represents a substantial source of new clean energy jobs for New Jersey; new offshore wind installations through 2030, however, are required in statute and therefore part of the State’s business-as-usual future. Our analysis focuses on jobs that will be added from actions that go beyond current statutes and therefore primarily shows added wind jobs from new policies in year 2035 and later.⁶

¹ New Jersey Governor Phil Murphy. Executive Order No. 28 (2018). Available online: <https://nj.gov/infobank/eo/056murphy/pdf/EO-28.pdf>.

² New Jersey Board of Public Utilities (NJ BPU). 2020. *2019 New Jersey Energy Master Plan: Pathway to 2050*. Available at: https://www.nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf

³ Castigliero, J.R., S. Alisalad, S. Peddada, and E.A. Stanton. June 2022. *Economic Impacts of a Clean Energy Transition in New Jersey*. Available at: <https://aeclinic.org/publicationpages/2022/06/07/economic-impacts-of-a-clean-energy-transition-in-new-jersey>

⁴ The “CLEAN” scenario represents clean energy transition measures across the electric, buildings, and transportation sectors to meet New Jersey’s energy and climate goals of achieving 100 percent clean electric supply by 2050 and the GWRA goal of an 80 percent reduction in statewide greenhouse gas emissions (relative to 2006 levels) by 2050. For this analysis, AEC based the “CLEAN” scenario on 2019 EMP’s “Least Cost” scenario with several important adjustments to update its assumptions based on more recent price information as well as replace gas- and biogas-fired resources with energy storage, but has not updated the 2019 EMP’s assumptions to reflect changes in New Jersey’s clean energy commitments.

⁵ A “job-year” is the number of “jobs per year” added up across multiple years (i.e., one job-year is the equivalent of one person working full-time for one year). For example, a worker that has the same full-time job for 5 years has one job but 5 job-years.

⁶ AEC’s analysis does not account for New Jersey’s revised offshore wind goal of 7.5 GW by 2035, which would accelerate the deployment of offshore wind compared to the 2019 EMP.

- In 2030, solar energy generation accounts for a majority of job creation in the CLEAN scenario—an additional 3,175 full-time jobs. By 2045, offshore wind alone creates 9,500 more jobs in the CLEAN scenario than the BAU scenario. Energy efficiency, solar, and energy storage account for most of the remaining job creation impacts.

Achieving 100 percent clean energy in New Jersey will create job opportunities, improve job quality, and boost productivity. AEC’s modeling results demonstrate—and several recent research studies⁷ agree—that a clean energy transition leads to an increase in jobs in the energy sector and elsewhere in the economy and that, for every dollar invested, clean energy investments generate more jobs than fossil fuel investments. In addition, clean energy jobs (1) are free of the fossil fuel-related health and safety hazards, and (2) provide additional benefits to clean energy workers in wind, solar, and energy efficient jobs. With strong labor standards, unions, “local hire” provisions, and intentional training and hiring practices for BIPOC workers, clean energy jobs can offer competitive wages and benefits, minimal occupational safety hazards, and specialized education.

This Applied Economics Clinic (AEC) report: summarizes New Jersey’s clean energy goals and clean energy job sector in relation to equity, diversity and inclusion; identifies New Jersey’s overburdened communities; presents barriers to green jobs that impede access to—and equitable representation within—New Jersey’s clean energy job sector; and provides recommendations regarding how the State of New Jersey can shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs. Our assessment finds that there are important barriers to green jobs that reinforce existing inequities in New Jersey’s clean energy workforce, including: educational/experience barriers, logistical barriers, equitable access barriers, and institutional barriers.

Section II of this report provides an overview of New Jersey’s clean energy job sector today. Section III presents an equity baseline for New Jersey, including the identification of overburdened communities throughout the state. Section IV defines and summarizes barriers to green jobs, including specific examples. Section V provides recommendations on how the State of New Jersey can shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs.

⁷ (1) Brown, T., Bicknell, C., and Nystrom, S. 2015. *Focus on Energy Economic Impacts 2011-2014*. Cadmus. Prepared for Focus on Energy. Available at: <https://focusonenergy.com/sites/default/files/WI%20FOE%202011%20to%202014%20Econ%20Impact%20Report.pdf>; (2) Phadke, A., et al. 2020. *The 2035 Report: Plummeting solar, wind, and battery costs can accelerate our clean electricity future*. UC Berkeley Goldman School of Public Policy. Available at: <http://www.2035report.com/wp-content/uploads/2020/06/2035-Report.pdf?hsCtaTracking=8a85e9ea-4ed3-4ec0-b4c6-906934306ddb%7Cc68c2ac2-1db0-4d1c-82a1-65ef4daaf6c1>; (3) Griffith, S., and Calisch, S. 2020. *No Place Like Home: Fighting Climate Change (and Saving Money) by Electrifying America’s Households*. Rewiring America. Available at: <https://www.rewiringamerica.org/policy/household-report>. (4) Esposito, D. 2021. *Studies agree 80 percent clean energy by 2030 would save lives and create jobs at minimal cost*. Energy Innovation. Available at: <https://energyinnovation.org/wp-content/uploads/2021/09/Studies-Agree-80-Percent-Clean-Electricity-by-2030-Would-Save-Lives-and-Create-Jobs-at-Minimal-Cost.pdf>. (5) International Renewable Energy Agency (IRENA). n.d. *Broad Benefits of Energy Transition towards 2050*. IRENA. Available at: <https://unfccc.int/sites/default/files/resource/3.43%20IRENA%20Nagata.pdf>. (6) Jaeger, J., et al. 2021. *The green jobs advantage: How climate-friendly investments are better job creators*. World Resources Institute. Available at: https://files.wri.org/d8/s3fs-public/2021-10/the-green-jobs-advantage-how-climate-friendly-investments-are-better-job-creators.pdf?VersionId=4g3pkXM5qB8_DEy1MhhbF8AloDhgGUY. (6) García, P., et al. April 2022. *On the Road to 100 Percent Renewables: States Can Lead an Equitable Energy Transition*. Union of Concerned Scientists (UCS), COPAL, GreenRoots, and the Michigan Environmental Justice Coalition. Available at: <https://www.ucsusa.org/resources/road-100-percent-renewables>

II. New Jersey Clean Energy Jobs Landscape

According to the U.S. Department of Energy, there were approximately 131,000 total energy workers in New Jersey in 2020 (see Table 1)—including workers at power plants, local fuel distribution companies, building and maintaining power lines and pipelines, manufacturing and installing battery storage and energy efficiency measures, and jobs related to cars and trucks.⁸ The largest number of energy jobs in the state are in motor vehicles and energy efficiency—each of which employ more than 32,000 New Jerseyans. Fewer than 19,000 New Jerseyans are employed in both the fuels and electric generation sectors (see Table 1).

Table 1. Energy-related jobs in New Jersey (2020)

SECTOR	SUBSECTOR	2020	Share of Total
Electric Generation	Solar	7,907	6.0%
	Wind	863	0.7%
	Hydro	214	0.2%
	Fossil fuels	3,159	2.4%
	Nuclear	2,501	1.9%
	Other	4,062	3.1%
Electric Generation Total		18,706	14.3%
Fuels	Fossil fuels	13,873	10.6%
	Biomass and biofuels	185	0.1%
	Other	1,245	1.0%
Fuels Total		15,303	11.7%
Transmission and distribution (T&D)	Traditional T&D	14,879	11.4%
	Storage	733	0.6%
	Smart grid	288	0.2%
	Microgrid/Other	10,224	7.8%
Transmission and Distribution (T&D) Total		26,124	19.9%
Energy Efficiency	Efficient appliances and lighting	7,167	5.5%
	Traditional HVAC	10,181	7.8%
	Efficient and renewable heating/cooling	6,594	5.0%
	Advanced materials and insulation	2,433	1.9%
	Other	6,505	5.0%
Energy Efficiency Total		32,880	25.1%
Motor Vehicles			
Motor Vehicles Total		38,034	29.0%
Total Energy Workers		131,047	100.0%

Data source: U.S. Department of Energy. 2021. "Energy Employment by State: 2021." *United States Energy & Employment Report*. Available at: <https://www.energy.gov/sites/default/files/2021-07/USEER%202021%20State%20Reports.pdf>.

⁸ U.S. Department of Energy. 2021. "Energy Employment by State: 2021." *United States Energy & Employment Report*. Available at: <https://www.energy.gov/sites/default/files/2021-07/USEER%202021%20State%20Reports.pdf>. PDF page 212.

In its annual *Clean Jobs America* reports, Environmental Entrepreneurs (E2)—a national, nonpartisan group of business leaders advocating for environmental policy—estimates the size of the clean energy workforce in the United States.⁹ For New Jersey, E2 estimates approximately 50,000 clean energy jobs in 2020—a more than 12 percent decrease from the 57,000 clean energy jobs that existed in 2019, prior to the COVID-19 pandemic (see Table 2).¹⁰ In 2020, the state’s total clean energy workforce accounted for about two-fifths of all energy workers and a little over 1 percent of the state’s total workforce.¹¹

Table 2. Clean energy jobs in New Jersey from 2017 to 2020

SECTOR	SUBSECTOR	2017	2018	2019	2020
Renewable Generation	Solar	8,818	9,287	9,340	7,907
	Wind	640	762	875	863
	Hydro	516	507	526	464
	Geothermal	230	243	246	216
	Bioenergy/CHP	1,697	1,517	1,582	1,481
Renewable Generation Total		11,900	12,314	12,569	10,932
Clean Fuels	Other ethanol/non-woody biomass	35	51	67	61
	Other biofuels	318	320	329	289
Clean Fuels Total		353	370	396	350
Storage and Grid	Storage	681	711	754	687
	SmartGrid	295	311	326	288
	Microgrid	473	493	492	393
	Other grid modernization	380	389	341	268
Storage and Grid Total		1,829	1,904	1,913	1,635
Energy Efficiency	Efficient appliances and lighting	7,017	7,707	8,235	7,167
	Traditional HVAC	10,382	11,070	11,635	10,181
	Efficient and renewable heating/cooling	6,553	7,167	7,639	6,594
	Advanced materials and insulation	2,421	2,811	2,899	2,433
	Other	7,441	7,451	7,574	6,505
Energy Efficiency Total		33,815	36,206	37,982	32,880
Clean Vehicles	Hybrid electric vehicles	1,670	1,905	1,973	2,042
	Plug-in hybrid vehicles	682	914	898	819
	Electric vehicles	928	1,174	994	1,054
	Methane gas vehicles	208	217	225	213
	Hydrogen and fuel cell	208	169	189	172
Clean Vehicles Total		3,696	4,379	4,278	4,299
Total Clean Energy Workers		51,594	55,174	57,139	50,096

Data source: Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s *Clean Jobs America* reports.

⁹ Environmental Entrepreneurs (E2). 2021. *Clean Jobs America 2021*. Available at: <https://e2.org/reports/clean-jobs-america-2021/>

¹⁰ Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s *Clean Jobs America* reports.

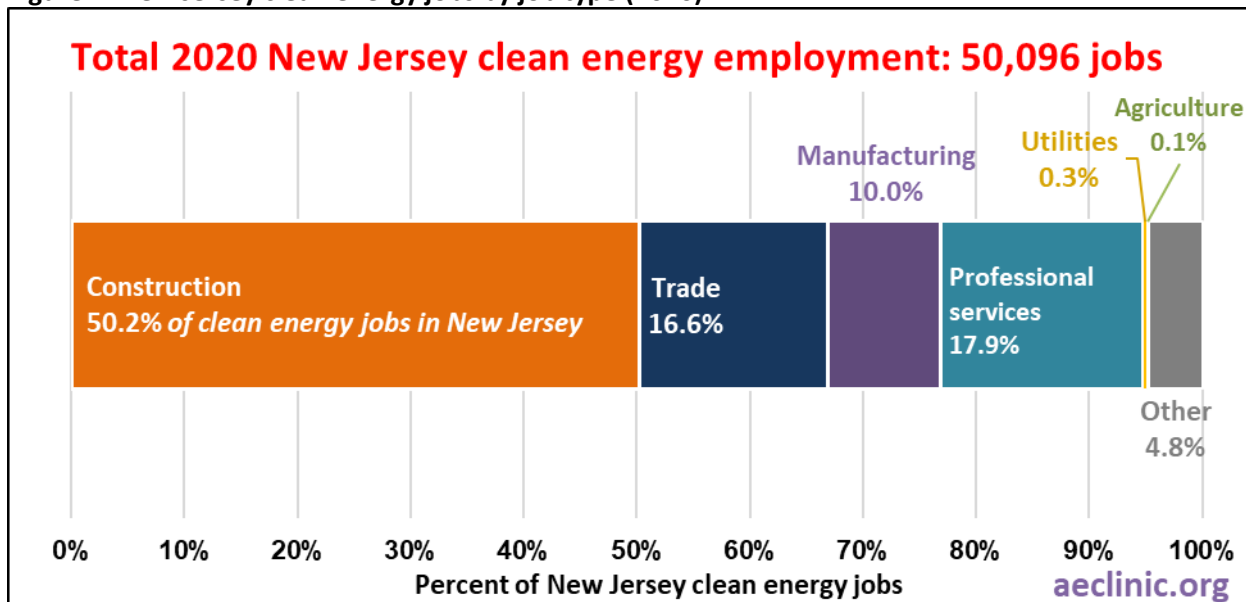
¹¹ Ibid.

In the pre-COVID era, New Jersey’s clean energy workforce had been on the rise, growing nearly 11 percent between 2017 and 2019. Clean energy workers in New Jersey include those working in zero- and low-emission energy generation (e.g., solar, wind, hydro, geothermal, and bioenergy), fuels made from waste or agricultural produces (e.g., biomass and biofuels), energy storage and electric grid operations (e.g., batteries, microgrids, etc.), energy efficiency (appliances, lighting, heating, cooling, insulation, etc.), and clean vehicles (e.g., hybrids, plug-in hybrids, electric vehicles).

Energy efficiency is the largest clean energy job sector in New Jersey and the United States as a whole—employing approximately 33,000 New Jerseyans and over 2 million workers across the country in 2020.¹² Among all workers in the electric generation sector (that is, including fossil fuels, renewables and other kinds of generation), nearly half of New Jersey’s jobs support renewable solar and wind resources. Solar and wind generation workers also account for the lion’s share of all renewable generation workers (about four-fifths, according to data used in the development of E2’s *Clean Jobs America* reports¹³). The fuel delivery and motor vehicles sectors, however, make up smaller shares of clean energy workers: For example, over 90 percent of New Jersey’s jobs in delivered fuels work with fossil fuels and 90 percent of motor vehicle jobs work with gas-powered vehicles (see Table 1 above).

According to E2 data, the largest share of clean energy jobs in New Jersey are construction jobs (50 percent), while trade, manufacturing, and professional services jobs account for an additional 45 percent of jobs (see Figure 1).

Figure 1. New Jersey clean energy jobs by job type (2020)



Data source: Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s *Clean Jobs America* reports.

¹² (1) Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s *Clean Jobs America* reports.; (2) Environmental Entrepreneurs (E2). 2021. *Clean Jobs America 2021*. Available at: <https://e2.org/reports/clean-jobs-america-2021/>

¹³ Ibid.



Among all clean energy workers in New Jersey, non-Hispanic/Latinx white males are overrepresented, while nearly every racial/ethnic minority and women of all races and ethnicities were underrepresented as of 2020 (Table 3).

Table 3. Racial and gender demographics of United States and New Jersey clean energy jobs

	White*		Black		Asian		Other (incl. Native Americans)		Two or More Races		Hispanic/Latinx		Women	
	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US
Population (%)	55%	60%	15%	13%	10%	7%	1%	1%	2%	2%	21%	18%	51%	48%
Clean jobs (%)	62%	61%	9%	8%	7%	8%	2%	2%	7%	8%	16%	17%	25%	27%

Data sources: *Clean jobs:* (1) Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s Clean Jobs America reports; (2) Environmental Entrepreneurs (E2), Alliance to Save Energy, Black Owners of Solar Services, American Association of Blacks in Energy, and Energy Efficiency for All. 2021. "Help Wanted: Diversity in Clean Energy." Available at: <https://e2.org/reports/diversity-in-clean-energy-2021/>; *Population:* U.S. Census Bureau. 2020. "QuickFacts." Available at: <https://www.census.gov/quickfacts/>

***Note:** The "White" category does not include white "Hispanic/Latinx" populations.

White people and men are overrepresented in New Jersey’s clean energy workforce:

- White people account for **55 percent** of the state’s population, but **62 percent** of the clean energy workforce,
- Black people account for **15 percent** of the state’s population, but only **9 percent** of the clean energy workforce,
- Asian people account for **10 percent** of the state’s population, but only **7 percent** of the clean energy workforce,
- Hispanic and Latinx people account for **21 percent** of the state’s population, but only **16 percent** of the clean energy workforce, and
- Women account for **51 percent** of the state’s population, but only **25 percent** of the clean energy workforce.

By comparison, nationwide statistics present a slightly less skewed demographic breakdown of clean energy jobs. While women and racial/ethnic minorities are still underrepresented in clean energy jobs, the extent of their underrepresentation is less than in New Jersey (see Table 3 above).

E2’s 2020 *Clean Jobs, Better Jobs* report notes that New Jersey’s clean energy sector ranked ninth nationwide for highest median hourly wage in 2019 with \$24 per hour, which is 11 percent greater than the statewide median wage for all sectors.¹⁴ The overrepresentation of white men in these comparatively well-paying jobs,

¹⁴ Environmental Entrepreneurs (E2), BW Research, American Council on Renewable Energy, and Clean Energy Leadership Institute. 2020. "Clean Jobs, Better Jobs: An examination of clean energy job wages and benefits." Available at: <https://e2.org/reports/clean-jobs-better-jobs/>

relative to all other demographic groups in New Jersey, exacerbates race- and gender-based inequities that are institutionalized in our economic and social systems. New Jersey Policy Perspective’s 2021 report finds that Black and Hispanic/Latinx workers in New Jersey are, respectively, 77 and 60 percent more likely to be unemployed than their white counterparts.¹⁵ In addition, gender and race-based disparities in employment outcomes have widened in New Jersey since the beginning of the COVID-19 pandemic, with women facing greater rates of underemployment compared to men, while women and minorities are overrepresented among unemployment claimants.¹⁶ To combat the systemic inequities present in the labor market, and specifically within the clean energy labor force, special attention must be devoted to training, recruiting, and ensuring the long-term employment of women and racial/ethnic minorities in clean energy jobs in New Jersey.

III. New Jersey Equity Baseline

In September 2020, Governor Murphy signed New Jersey’s Environmental Justice Law¹⁷ which requires the New Jersey Department of Environmental Protection (DEP) to consider the ways in which new facilities contribute to environmental and public health stressors in overburdened communities when reviewing permit applications.

New Jersey’s Environmental Justice Law defines an “overburdened community” as any census block group that meets at least one of the following criteria:

- a) at least 35 percent of households qualify as low-income (i.e., have earnings at or below twice the poverty threshold, which is \$26,500 for a family of four, for a threshold of \$53,000—as determined by the United States Census Bureau¹⁸),
- b) at least 40 percent of residents identify as a racial/ethnic minority or as members of a tribal community, **or**
- c) at least 40 percent of the households have limited English proficiency.

Overburdened communities are concentrated heavily in the New York-Newark-Jersey City metropolitan area, as well as in the Philadelphia-Camden-Wilmington metropolitan area (see Figure 2). Of the 21 counties in the state, the largest number of overburdened communities can be found in: Essex, Bergen, Hudson, Middlesex, and Union Counties.¹⁹

¹⁵ Kapahi, V. September 6, 2021. “Labor Day Snapshot: New Jersey’s Uneven Recovery.” *New Jersey Policy Perspective*. Available at: <https://www.njpp.org/publications/report/labor-day-snapshot-new-jerseys-uneven-recovery/>

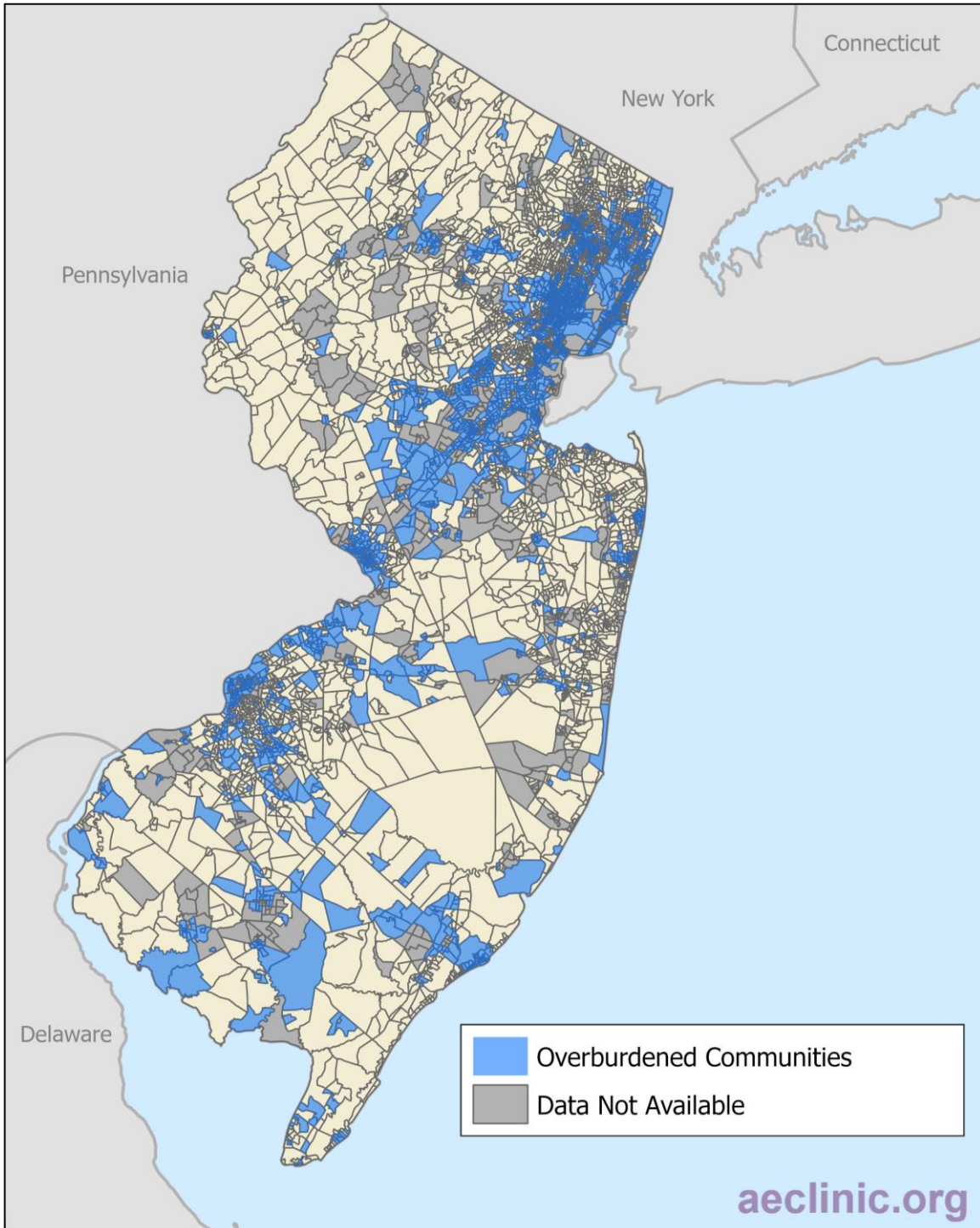
¹⁶ Ibid.

¹⁷ New Jersey Environmental Justice Law Chapter 92, Section C.13:1D-157 (2020). *An Act concerning the disproportionate environmental and public health impacts of pollution on overburdened communities, and supplementing Title 13 of the Revised Statutes*. Available at: <https://www.nj.gov/dep/ej/docs/ej-law.pdf>

¹⁸ Office of the Assistant Secretary for Planning and Evaluation. 2021. “2021 Poverty Guidelines.” Available at: <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2021-poverty-guidelines>.

¹⁹ State of New Jersey. “List of Overburdened Communities.” Available at: <https://www.nj.gov/dep/ej/communities.html>

Figure 2. Overburdened communities in New Jersey



Notes: U.S. census block groups are shown with a gray border. There were 896 U.S. census block groups (out of 6,320) for which overburdened community status could not be determined because these block groups were not included in the census data used to make the designation, likely due to small populations (The Census Bureau does not disclose certain kinds of data for very low-population areas). **Data sources:** (1) U.S. Census American Community Survey. 2020. Ratio of Income to Poverty Level in the Past 12 Months [Table ID: C17002]; (2) U.S. Census American Community Survey. 2020. Household Language by Household Limited English-Speaking Status [Table ID: C16002_001E]; (3) U.S. Decennial Census Redistricting Data. 2020. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE. [Table ID: P2].



Of the U.S. Census block groups²⁰ in New Jersey with data available for overburdened community designation:

- **22 percent** of all block groups qualified as low-income²¹ (for example, household income less than \$53,000 for a family of four—for reference, the median household income in New Jersey in 2020 was \$85,245²²),
- **2 percent** of all block groups were identified as having limited English proficiency,²³ and
- **51 percent** of all block groups were identified as meeting the racial/ethnic minority threshold.²⁴

In total, **54 percent** of New Jersey block groups, or **55 percent** of the state’s population, were identified as an overburdened community.

The largest number of clean energy jobs can be found in many of the same counties that host the largest number of overburdened communities, including Bergen, Middlesex, Essex and Hudson (see Figure 3).²⁵ These counties also experience disproportionately high health and employment burdens: For example, Essex County has the third highest asthma hospitalization rate and fifth highest infant mortality rate in the state,²⁶ while Hudson County has the second highest rate of health uninsured individuals²⁷ and fourth highest unemployment rate in the state.²⁸

²⁰ Block groups are the smallest geographic area for which the Census collects data and generally contain between 600 and 3,000 people. See: [https://www.census.gov/programs-surveys/geography/about/glossary.html#:~:text=Block%20Groups%20\(BGs\)%20are%20statistical,data%20and%20control%20block%20numbering..](https://www.census.gov/programs-surveys/geography/about/glossary.html#:~:text=Block%20Groups%20(BGs)%20are%20statistical,data%20and%20control%20block%20numbering..)

²¹ U.S. Census American Community Survey. 2020. Ratio of Income to Poverty Level in the Past 12 Months [Table ID: C17002]. Available at: <https://data.census.gov/cedsci/table?q=poverty%20status&g=0400000US34%241500000&tid=ACSDT5Y2020.C17002>.

²² United States Census Bureau. 2020. “QuickFacts New Jersey.” Available at: <https://www.census.gov/quickfacts/NJ>.

²³ U.S. Census American Community Survey. 2020. Household Language by Household Limited English-Speaking Status [Table ID: C16002_001E]. Available at: <https://data.census.gov/cedsci/table?q=C16002%3A%20HOUSEHOLD%20LANGUAGE%20BY%20HOUSEHOLD%20LIMITED%20ENGLISH%20SPEAKING%20STATUS&g=0400000US34%241500000&tid=ACSDT5Y2020.C16002>.

²⁴ U.S. Decennial Census Redistricting Data. 2020. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE. [Table ID: P2]. Available at: <https://data.census.gov/cedsci/table?q=race&g=0400000US34%241500000&tid=ACSDT5Y2020.B02001>.

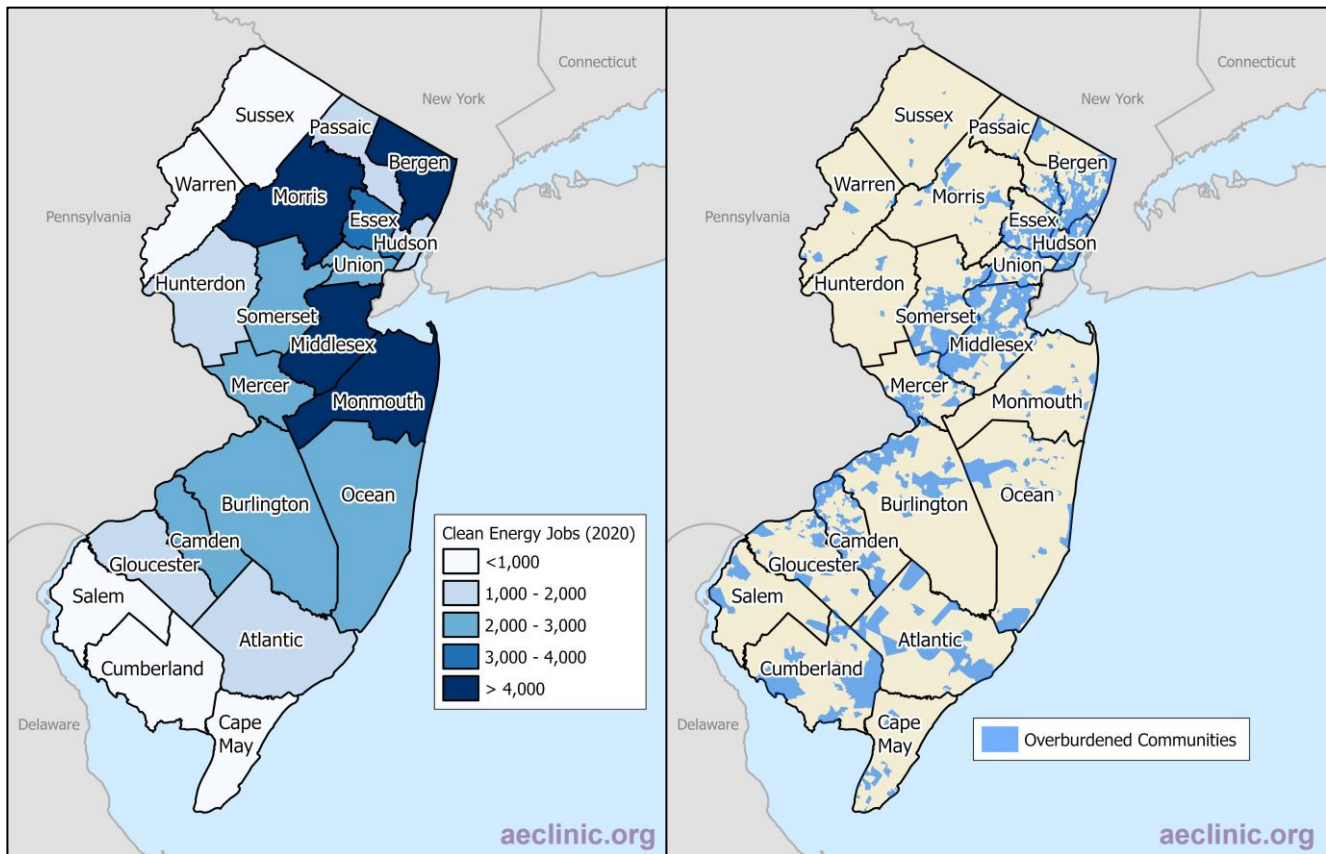
²⁵ “List of Overburdened Communities.” Available at: <https://www.nj.gov/dep/ej/communities.html>.

²⁶ Ibid.

²⁷ NJ Department of Health. 2020. “Dashboard for Hudson County-All Available Indicators”. Available at: <https://www-doh.state.nj.us/doh-shad/community/snapshot/report/CommunityInd/GeoCnty/9.html?PageName=>

²⁸ New Jersey Department of Labor and Workforce Development, Bureau of Labor Market Information. April 2022. “New Jersey Counties Unemployment Rates-February 2022-(Preliminary, Not Seasonally Adjusted)”. Available at: https://www.nj.gov/labor/lpa/pub/emppress/pressrelease_index.html.

Figure 3. Clean energy jobs and overburdened communities in New Jersey



Data sources: *Clean Energy Jobs:* (1) Personal Communication with Uchenna Bright at Environmental Entrepreneurs (E2) on March 4, 2022. Data used in the development of E2’s Clean Jobs America reports; (2) Environmental Entrepreneurs (E2). 2021. Clean Jobs America 2021. Available at: <https://e2.org/reports/clean-jobs-america-2021>; *Overburdened Communities:* (1) U.S. Census American Community Survey. 2020. Ratio of Income to Poverty Level in the Past 12 Months [Table ID: C17002]; (2) U.S. Census American Community Survey. 2020. Household Language by Household Limited English-Speaking Status [Table ID: C16002_001E]; (3) U.S. Decennial Census Redistricting Data. 2020. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE. [Table ID: P2].

IV. Barriers to Green Jobs

Not only are racial/ethnic minorities and women underrepresented within New Jersey’s clean energy sector, important barriers to green jobs exist that reinforce existing inequities and disparities, including educational/experience barriers, logistical barriers, equitable access barriers, and systemic barriers (see Table 4). Improving the New Jersey clean energy job sector’s diversity, equity and inclusivity over time will require overcoming these barriers with intentional, targeted efforts such as free clean energy job training programs, establishing diversity programs and policies for clean energy employers, offering resume-building and hiring assistance in multiple languages, or providing direct incentives for hiring employees from certified training programs.

Table 4. Summary of barriers to green jobs

Types of Barriers	Definition	Examples
Educational/ Experience	Lack of a desired level of educational attainment and/or relevant work experience or training	Prohibitively expensive training programs, apprenticeship placements occurring through informal recommendations
Logistical	Lack of awareness, access, or ability to participate	Lack of transportation/internet access, limited English proficiency, lack of affordable, quality childcare and/or healthcare
Equitable Access	Underrepresentation of historically marginalized communities in clean energy jobs plus discrimination, prejudice, and bias	Resume gaps for formerly incarcerated individuals, hiring obstacles for unhoused individuals, lack of necessary credentials among undocumented individuals
Institutional	Lack of workplace policies and procedures that result in an unsafe and/or inequitable workplace environment	Clean energy employers often do not prioritize addressing a lack of diversity and lack policies to enhance diversity

Educational/Experience Barriers

Key obstacles to gaining and maintaining clean energy jobs: Lacking access to the desired level or type of educational attainment, workforce readiness or work experience such as training, mentorship, apprenticeship experience, or digital literacy necessary for many clean energy jobs.

Most clean energy jobs typically do not require more than a high school or associate degree, yet these jobs do tend to require education specific to the fields of science, technology, engineering, and mathematics (STEM) and/or relevant work/training experience.²⁹ There are challenges and barriers to obtaining the education, workforce readiness, and on-the-job training needed to successfully get hired for a clean energy job, especially for those typically underrepresented in the clean energy job sector, such as women or racial/ethnic minorities.³⁰ Educational and experience barriers shrink the pool of potential clean energy job applicants in ways that reinforce and amplify existing racial and gender disparities in clean energy jobs.

Educational barriers include high costs and significant time commitments for those seeking degrees or certifications from institutions of higher education. Educational barriers can also include a lack of role models and peers for groups underrepresented in clean energy jobs. Obstacles may also originate from a systemic

²⁹ Muro, M., et al. 2019. "Advancing inclusion through clean energy jobs." Brookings Metropolitan Policy Program. Available at: https://www.brookings.edu/wp-content/uploads/2019/04/2019.04_metro_Clean-Energy-Jobs_Report_Muro-Tomer-Shivaran-Kane.pdf, p. 22

³⁰ Ibid, p. 25-26

lack of access to high-quality education for women and people of color,³¹ who find themselves particularly underrepresented in STEM classes—which can be discouraging due to the lack of peers and can result in unequal career and academic advising.³² Mentorship programs can help enhance diversity and inclusion by creating formal relationships that encourage individuals from underrepresented groups to build career paths.³³

Experience barriers include limited exposure and/or accessibility to clean energy skills training programs, mentorships, apprenticeships, or internships. Many apprenticeship placements occur through informal, word-of-mouth recommendations and through networks of families or communities, which, according to the Workforce Planning Board of Grand Erie, may lead to interested individuals without existing connections facing difficulties in accessing apprenticeship opportunities.³⁴ White men are often overrepresented in both STEM classes³⁵ and in related apprenticeship programs,³⁶ which can result in the opportunities for learning and mentorships being most readily available to this group. According to the United Nations Children’s Fund, women in STEM fields report that a lack of market access, key investors, and investment opportunities create challenges in advancement.³⁷ Research from the National Center for Education Statistics has also shown that language barriers and perceived discrimination can make learning opportunities inaccessible to minorities and women.³⁸

In New Jersey, clean energy job training and certification programs are primarily offered through community colleges, universities, and technical schools, which may present important cost barriers, particularly for low-income individuals (see Table 5). In the 2020-2021 academic year, the average cost of tuition and fees for a full-time undergraduate student in New Jersey to attend an in-state public four-year school was \$39,477 per year—a 4 percent increase from two years before³⁹—and the rise in tuition is consistent with all other types of higher education institutions, including community colleges.⁴⁰ Examples of clean energy job training programs in New Jersey include a federal grant-funded program accessible to private businesses, nonprofits and government agencies to hire and train energy efficiency workers and community college training and certificate programs in offshore wind, green construction, and green buildings.

³¹ Edelman, D. 2021. *Who Will Get All the New Green Jobs? Equitable Workforce Development Policy for a Changing Climate*. Prepared for The Next 100. Available at: https://thenext100.org/wp-content/uploads/pdf_greenjobsa_next100_FINAL-1.pdf

³² Chen, X., and M. Soldner. 2013. *STEM Attrition: College Students’ Paths Into and Out of STEM Fields*. Prepared for National Center for Education Statistics. <https://nces.ed.gov/pubs2014/2014001rev.pdf> p.4

³³ Schnieders, A. August 2020. “4 Ways Mentoring Can Empower Your Diversity and Inclusion Initiatives.” Available at: <https://www.td.org/insights/4-ways-mentoring-can-empower-your-diversity-and-inclusion-initiatives>.

³⁴ Lopata, J., et al. 2015. *Barriers to Attracting Apprentices and Completing their Apprenticeships*. Prepared for the Workforce Planning Board of Grand Erie. Available at: <https://irp-cdn.multiscreensite.com/1a9192fe/files/uploaded/Barriers%20to%20Attracting%20Apprentices.pdf>, p.4

³⁵ Chen, X., and M. Soldner. 2013.

³⁶ Lopata, J., et al. 2015.

³⁷ Sánchez-Tapia, I., and A. Alam. 2020. *Towards an equal future: Reimagining girls’ education through STEM*. Prepared for UNICEF. Available at: <https://www.unicef.org/media/84046/file/Reimagining-girls-education-through-stem-2020.pdf>, p.13

³⁸ Chen, X., and M. Soldner. 2013. p.4; Footnote 5

³⁹ New Jersey Office of the Secretary of Higher Education. 2020. “New Jersey Tuition and Fees Dashboard.” Available at: <https://www.state.nj.us/highereducation/dashboard-tuition.shtml>

⁴⁰ Ma, J., and M. Pender. 2021. *Trends in College Pricing and Student Aid*. Prepared for CollegeBoard. Available at: <https://research.collegeboard.org/media/pdf/trends-college-pricing-student-aid-2021.pdf>, p. 3



Table 5. Clean energy job training and certification programs in New Jersey

Institution	Program	Description
Bergen Community College	Certificate In Construction Management: Sustainability Specialization	One-year standing certificate program that prepares students to enter the green buildings construction field. To qualify, a student must have 30-hours of construction safety training, taken a Green Advantage Program, and an LEED Green Associate Exam.
Atlantic Cape Community College	Global Wind Organization safety training program	Safety training program to prepare workers for jobs in New Jersey's growing offshore wind industry. A new Wind Training Center will be operational in Fall 2022, with \$25,000 pledged by the Atlantic Cape Foundation towards scholarships for up to 1,800 students in the Wind Training Center Program in its first year.
Rutgers	Green Job Training Partnership Program	Training in: building energy audits and retrofits, wind/solar/distributed energy resource energy design, maintenance and installation, environmental cleanup, and green building management and operation. Program consists of 8-10 weeks of training followed by 3-6 month internship placement where employers are reimbursed for 50 percent of the \$15 hourly wage.
Gloucester County Institute of Technology	Welding program	Gloucester County Institute of Technology is a four-year vocational-technical public high school that offers a welding program to prepare workers for jobs in heavy steel offshore wind component manufacturing.
Mercer County Community College	Solar/Energy Technology: Certificate of Proficiency	Standing certificate program (with a 31-credit requirement) that includes learning about renewable energy systems, building construction systems, basic circuitry and electronic components, metalworking, energy auditing, solar panel installation, and weatherization for existing structures as well as job searches, resume writing, and interview skills.
Department of Labor and Workforce Development	Clean Energy Jobs Training Program: PSE&G Partnership Grant	\$1 million in funding (between June 2021 - June 2022) for private businesses, nonprofits, and government agencies to recruit, train, and employ 2,000 residents from PSE&G service areas to build a qualified energy efficiency workforce. Grants range from \$75,000 to \$166,500 per awardee (for a minimum of 50 participants). The program targets low-income individuals, formerly incarcerated individuals, displaced homeowners, eligible migrants and seasonal workers.
Raritan Valley Community College	HVAC - Environmental Control Technology Program	1-Year Certificate and 2-Year Associate of Applied Science Degree in environmental control technology, including work on HVAC/R systems, climate-controlled systems, and their installation, repair, or maintenance.
Rowan College of South Jersey	Wind Turbine Technician Training	\$819,019 grant to develop a wind turbine technician training program that offers a Wind Turbine Technician Career and Technical Education Certificate, a Wind Turbine Technician Academic Certificate, and an Associate of Applied Science (AAS) in Wind Power and Turbine Technology. The certificates will launch in January 2023 and the AAS Degree in Fall 2023.
Isles nonprofit	Center for Energy and Environmental Training (CEET)	CEET (part of the Isles nonprofit) trains individuals to enter or grow careers in energy and environmental health fields via certification courses. Course topics include air leakage control, AC/heat pump, heating professionals, multi-family auditors, and ventilation and indoor air quality standards. Certification fees range from \$240 to \$1,795.
Bergen County Technical Schools	Full-Time Day Program: Short-Term Training, High Wage Careers	Offers specialized professional training (totaling 1,053 to 1,200 hours) for high-demand occupations in heating, air conditioning, ventilation, refrigeration maintenance, and green technology (wind and solar) systems. Program fees range from \$13,000 to \$14,500 and do not include the cost of industry exams or certifications.
Eastwick College	Electrician Apprenticeship	A 9- to 18-month program (depending whether a student is day-time or night-time) that allows students to become licensed electricians, including training in alternative energy sources, and secure apprenticeships that may permit Union access.

Note: This is not an exhaustive list of training and certification programs in New Jersey. See Appendix A for citations.

Programs such as Governor Murphy’s Community College Opportunity Grant Program—which makes community college free for New Jersey residents with household incomes under \$65,000—offer an important step forward in closing structural gaps in education access.⁴¹ A Brookings Institution assessment finds that expanding the free community college program to apply to *all* students at *all* higher education institutions in the state, regardless of income or degree type, would not only provide substantial relief for students just over the threshold for whom higher education is still prohibitively costly, but also reduce major opportunity barriers to racial and gender minorities—who are disproportionately harmed and deterred by the costs of education required for social mobility.⁴²

Logistical Barriers

Key obstacles to gaining and maintaining clean energy jobs: Lacking awareness, access, and/or ability to participate in clean energy jobs/training due to issues like lack of awareness regarding potential opportunities, lack of affordable transit and childcare options, or limited English proficiency.

Examples of logistical barriers include lack of consistent access to transportation or a strong internet connection, limited English proficiency, and a lack of affordable, quality childcare and/or healthcare. Many of these barriers are more likely to pose challenges to particular communities or demographics, including immigrants, people living with disabilities, and women. As is often the case, inequities like these tend to compound one another in ways that disproportionately impact the most vulnerable: for example, low-income households are more likely to face mobility challenges⁴³ that prevent them from accessing healthcare and result in poorer health outcomes.⁴⁴ They are also more likely to utilize lower-cost childcare services, which lead to poorer development and learning outcomes, further exacerbating existing inequities.⁴⁵

Having access to reliable transportation means owning a personal vehicle, having reliable, affordable public transportation nearby one’s residence, or having active transportation options like safe sidewalks and bike lanes in order to commute to and from a job. Individuals located in rural and environmental justice communities may lack the option for walking or taking public transportation entirely—either because of lack of availability and/or safety concerns (such as, dangerous road designs (i.e., narrow lanes), a lack of signage, and higher speed limits, all of which present a risk to pedestrians).⁴⁶ When public or active transportation options are not available, having consistent access to a personal vehicle is essential to commute to and from a

⁴¹ Johnson, B. February 26, 2021. “N.J. makes free community college program permanent as Murphy signs law.” *NJ.com*. Available at: <https://www.nj.com/education/2021/02/nj-makes-free-community-college-program-permanent-as-murphy-signs-law.html>

⁴² Perry, A.M. June 27, 2019. “To boost black students, we should give free college to students who don’t need it.” *Brookings Institution*. Available at: <https://www.brookings.edu/blog/brown-center-chalkboard/2019/06/27/to-boost-black-students-we-should-give-free-college-to-students-who-dont-need-it/>

⁴³ U.S. Department of Transportation Federal Highway Administration. 2014. “FHWA NHTS Brief: Mobility Challenges for Households in Poverty.” Available at: <https://nhts.ornl.gov/briefs/PovertyBrief.pdf>.

⁴⁴ Syed, S. T., Gerber, B. S., & Sharp, L. K. 2013. “Traveling Towards Disease: Transportation Barriers to Health Care Access.” *J Community Health*, 38 (5), p. 976–993. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4265215/>.

⁴⁵ Morrissey, T. 2020. “Addressing the need for affordable, high-quality early childhood care and education for all in the United States.” Prepared for the Washington Center for Equitable Growth. Available at: <https://equitablegrowth.org/addressing-the-need-for-affordable-high-quality-early-childhood-care-and-education-for-all-in-the-united-states/>.

⁴⁶ Rural Health Information Hub. N.d. “Safety Considerations.” Available at: <https://www.ruralhealthinfo.org/toolkits/transportation/4/safety>.

job or training program. Owning or leasing a vehicle comes with the responsibilities of regular maintenance, fees, and fuel costs. Viable alternatives to personal vehicle ownership—such as vehicle sharing programs (i.e., programs that allow an individual to use a vehicle on a short-term basis and return it to a designated parking space⁴⁷) or ride sharing services (i.e., smartphone applications that enable an individual to purchase one-way transportation⁴⁸), also entail substantial costs:⁴⁹ As calculated by the Hutchins Center on Fiscal and Monetary Policy at Brookings in 2020, the average cost per ride for a ride sharing service, such as a cab or an Uber, is over \$20 more than the per-ride cost of driving a personal vehicle.⁵⁰

According to 2021 research from the President’s National Infrastructure Advisory Council, access to reliable, high-speed, broadband internet is something that many rural, Indigenous, and low-income communities lack.⁵¹ Internet access allows potential clean energy jobs workers to receive online training, see job postings, apply for a job, and develop digital literacy (a requirement for many clean energy jobs).⁵² The President’s National Infrastructure Advisory Council’s report also indicates that rural, remote communities may also lack clean energy infrastructure entirely, resulting in clean energy jobs being sited closer to the urban centers. Facilities located in rural, remote communities are often smaller, and this is sometimes synonymous with lower pay and fewer employee benefits.⁵³

A lack of affordable, quality childcare and/or healthcare can prevent potential clean energy sector workers from obtaining and/or keeping jobs.⁵⁴ A 2019 report from the Center for American Progress describes caregivers’ three options: pay a substantial share of their income on high-quality childcare, pay a smaller share of their income on lower-quality childcare, or remain out of the workforce to be a full-time caregiver.⁵⁵ Data from the Economic Policy Institute (EPI) reveal that childcare in New Jersey is expensive and inaccessible, costing an average of \$13,000 per year for infant care and nearly \$11,000 per year for 4-year-old child care—only slightly cheaper than the in-state tuition for a four-year public college (\$13,600).⁵⁶ Childcare costs for one child account for 14.6 percent of the median household income for a New Jersey family; with two children,

⁴⁷ City of Boston. N.d. “Car Share Boston.” Available at: <https://www.boston.gov/departments/transportation/car-share-boston>.

⁴⁸ Goodwill Community Foundation, Inc. N.d. “Sharing Economy – What is Ridesharing?” Available at: <https://edu.gcfglobal.org/en/sharingeconomy/what-is-ridesharing/1/>.

⁴⁹ New America. 2020. “Addressing Youth Apprenticeship Transportation Barriers: How Employers Can Lead” [Blog Post]. New America. Available at: <https://www.newamerica.org/education-policy/edcentral/addressing-youth-apprenticeship-transportation-challenges-how-employers-can-lead/>

⁵⁰ Hwang, H., Winston, C., & Yan, J. October 2020. *Measuring the Benefits of Ridesharing Services to Urban Travelers: The Case of The San Francisco Bay Area*. Prepared for the Hutchins Center on Fiscal and Monetary Policy at Brookings. Available at: https://www.brookings.edu/wp-content/uploads/2020/10/WP70-Uber_1.pdf, p. 9

⁵¹ The President’s National Infrastructure Advisory Council. 2021. Workforce and Talent Management Study. Available at: https://www.cisa.gov/sites/default/files/publications/NIAC_Workforce%20and%20Talent%20Management%20Study_PRE-DECISIONAL_Final%20508.pdf, p. 16

⁵² The President’s National Infrastructure Advisory Council. 2021. Workforce and Talent Management Study. Available at: https://www.cisa.gov/sites/default/files/publications/NIAC_Workforce%20and%20Talent%20Management%20Study_PRE-DECISIONAL_Final%20508.pdf, p. 14

⁵³ The President’s National Infrastructure Advisory Council. 2021. Workforce and Talent Management Study, p. 59

⁵⁴ Schochet, L. March 2019. *The Child Care Crisis is Keeping Women out of the Workforce*. Center for American Progress. Available at: <https://cf.americanprogress.org/wp-content/uploads/2019/03/ECPP-ChildCare-Crisis-report-2.pdf>, p. 3

⁵⁵ Ibid, p. 1

⁵⁶ EPI. October 2020. “Child care costs in the United States: New Jersey.” Available at: <https://www.epi.org/child-care-costs-in-the-united-states/#/NJ>

this figure jumps to 26.8 percent of total household income, compared to average rent in the state: 17 percent.⁵⁷ EPI found that if childcare costs were capped at 7 percent of household income, it would become affordable to 33,549 more New Jersey parents, who would then be able to join the workforce, expanding the state economy by \$4.2 billion.⁵⁸

Limited English proficiency can also prevent potential clean energy sector workers from obtaining and or/keeping jobs because of a lack of non-English language access and/or educational infrastructure for individuals to become more English-language proficient.⁵⁹ Research from the Metropolitan Policy Program at Brookings demonstrates that individuals with limited English proficiency are often concentrated in lower-paying positions.⁶⁰

Equitable Access Barriers

Key obstacles to gaining and maintaining clean energy jobs: Historical, systemic inequities have resulted in an underrepresentation of marginalized communities in the clean energy sector, and these communities continue to face discrimination, prejudice, and bias that prevent their increased participation.

Due to the persistence of barriers that include systemic racism (in which racial/ethnic minorities are disproportionately likely to be incarcerated, impoverished, or unemployed) and systemic sexism (the perpetuation of oppression and discrimination against women and girls in rights, opportunities, laws, and cultural practices) clean energy jobs are dominated by white men. Both in New Jersey specifically and across the country, racial/ethnic minorities, women, and other marginalized groups are not reaping equal or equitable benefits from the job creation that results from transitioning from polluting, fossil fuel energy to clean energy sources.⁶¹ According to the 2021 research from E2, historically marginalized communities are not only underrepresented in clean energy jobs but also face discrimination, prejudice, and bias across all types of jobs and workplaces.⁶² A 2021 report by the Social Research and Demonstration Corporation explains that this inequity has resulted in discouragement and difficulty in entering and remaining in the clean energy workforce⁶³ as well as more limited potential for upward mobility.⁶⁴ Historically marginalized communities include (but are not limited to): women, racial/ethnic minorities, formerly incarcerated individuals, undocumented individuals, unhoused individuals, veterans, individuals with disabilities, low-income individuals, single parents, and lesbian, gay, bisexual, transgender, queer, intersex, and asexual (LGBTQIA+) individuals.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Wilson, J. 2014. *Investing in English Skills: The Limited English Proficient Workforce in U.S. Metropolitan Areas*. Prepared for the Metropolitan Policy Program at Brookings. Available at: https://www.brookings.edu/wp-content/uploads/2014/09/metro_20140924_investing_in_english_skills_report.pdf, p. 2

⁶⁰ Ibid, p. 12

⁶¹ BW Research Partnership. 2021. "Help Wanted: Diversity in Clean Energy." E2., p. 5

⁶² BW Research Partnership. 2021. "Help Wanted: Diversity in Clean Energy." E2. Available at: <https://e2.org/wp-content/uploads/2021/09/E2-ASE-AABE-EEFA-BOSS-Diversity-Report-2021.pdf>, p. 5

⁶³ The Social Research and Demonstration Corporation. 2021. *Barriers to employment and training for equity-seeking groups*. Available at: <https://www.srdc.org/media/553157/training-barriers-for-equity-seeking-groups-final-report.pdf>, p. 14

⁶⁴ Ibid, p. 18

Formerly incarcerated individuals face substantial difficulty in becoming hired due to the gap in their resume when they are not working or receiving job training while incarcerated.⁶⁵ According to the *New York 2021 Clean Energy Industry Report*, many New York employers have no plan to increase hires among formerly incarcerated individuals.⁶⁶ Data from the Prison Policy Initiative reveal that New Jersey has an incarceration rate of 341 per 100,000 people, with a total of 39,000 New Jerseyans behind bars at any given moment and an additional 152,000 on parole or probation (For context, the United States has an average incarceration rate of 664 per 100,000 people, while all other founding NATO countries are at 129 or less.⁶⁷) Importantly, the Prison Policy Initiative has found that racial/ethnic minorities are disproportionately incarcerated compared to white individuals: As of 2010, the incarceration rate in New Jersey for Black people (1,992 per 100,000) was 9 times higher than that of white people (218 per 100,000).⁶⁸

Unhoused individuals face important hiring obstacles, such as the lack of a home address⁶⁹ and access to clean clothes or a shower, together with a greater likelihood of suffering from mental illness⁷⁰ or disability, which can make it difficult to access a worksite or perform a job.⁷¹ According to the National Coalition for the Homeless, other barriers for unhoused individuals include a lack of marketable job skills, a lack of access to transportation, poor credit scores, criminal histories, and a lack of access to technology—all of which are essential to finding and maintaining employment.⁷²

Undocumented individuals face the challenge of lacking important documentation or credentials for becoming employed. According to the National Conference of State Legislatures, education or credentials received outside of the United States are not always recognized by potential employers.⁷³ As a result, these individuals may accept lower-paying jobs for which they are overqualified and must re-enroll in an educational program to obtain accepted credentials.⁷⁴

Institutional Barriers

Key obstacles to gaining and maintaining clean energy jobs: Workplaces can be unsafe and/or inequitable as a result of a lack of procedures and policies to address issues like discrimination and harassment and/or a workplace culture that fails to take those issues seriously.

⁶⁵ Green for All. 2011. “Best Practices in Green Re-Entry Strategies.” Green for All. Available at: <https://www.thedreamcorps.org/wp-content/uploads/2019/11/GFA-Reentry-Paper.pdf>, p. 3

⁶⁶ NYSERDA. 2021. “New York Clean Energy Industry Report.” NYSERDA. Available at: <https://www.nyserdan.ny.gov/-/media/Files/Publications/Clean-energy-industry/2021-CEI-GEN-report.ashx>, p. 49

⁶⁷ Prison Policy Initiative (PPI). n.d. “New Jersey profile.” Available at: <https://www.prisonpolicy.org/profiles/NJ.html>

⁶⁸ Ibid.

⁶⁹ Gabriel, I., Schoen, E., Ciudad-Real, V., & Broslawsky, A. 2020. *Homelessness and Employment*. Prepared for the Homelessness Policy Research Institute. Available at: <https://socialinnovation.usc.edu/wp-content/uploads/2020/08/Homelessness-and-Employment.pdf> p.5

⁷⁰ Ibid, p. 3

⁷¹ Ibid, p. 4

⁷² The National Coalition for the Homeless. N.d. “Employment and Income.” Available at: <https://nationalhomeless.org/issues/economic-justice/>.

⁷³ Morse, A., & Chanda, I. July 2018. “Barriers to Work: Improving Access to Licensed Occupations for Immigrants with Work Authorization.” National Conference of State Legislatures. Available at: <https://www.ncsl.org/research/labor-and-employment/barriers-to-work-immigrants-with-work-authorization.aspx>.

⁷⁴ Ibid.

Institutional barriers are workplace procedures, policies, and culture,⁷⁵ or lack thereof, that result in an unsafe and/or inequitable workplace environment. Institutional barriers include:

- a lack of workplace protections,
- incidences of discrimination, abuse and/or harassment,
- failures of management to appropriately address abuse and harassment, or
- a lack of programs or policies that aim to increase workplace diversity.

Many clean energy employers do not necessarily prioritize enhancing diversity and inclusion and—if they do—do not have policies in place to back up those commitments. For example, New York’s 2021 *Clean Energy Industry Report*⁷⁶ surveyed clean energy employers in New York and found that:

- 48 percent felt that ensuring equal opportunities for people of color is ‘very important,’
- 35 percent felt that placing a high priority on a diverse workplace is ‘very important,’
- 33 percent felt that implementing policies and programs that address the lack of diversity is ‘very important,’

Despite one-third to one-half of surveyed employers stating that diversity and equal opportunity is ‘very important’:

- only 14 percent had promotion policies for women, and
- only 12 percent had promotion policies for racial and ethnic minorities.⁷⁷

These percentages were lower when employers were asked about whether their companies have strategies or policies to increase hires for females, ethnic and racial minorities, LGBTQ+ individuals, and veterans.⁷⁸ In a study done by Perceptyx—a consulting firm specializing in employee analysis—researchers discovered that 76 percent of the companies they evaluated completely lacked diversity and inclusion goals.⁷⁹ Out of the energy-related companies evaluated, 57 percent require all employees to attend diversity, equity, and inclusion training.⁸⁰

⁷⁵ Winters, M. 2020. “Equity and Inclusion: The Roots of Organizational Well-Being.” [Blog Post]. Stanford Social Innovation Review. Available at: https://ssir.org/articles/entry/equity_and_inclusion_the_roots_of_organizational_well_being#

⁷⁶ NYSERDA. 2021. “New York Clean Energy Industry Report.” NYSERDA. Available at: <https://www.nysesda.ny.gov/-/media/Files/Publications/Clean-energy-industry/2021-CEI-GEN-report.ashx>, p. 46

⁷⁷ Ibid, p. 48

⁷⁸ Ibid, p. 47

⁷⁹ Perceptyx. N.d. “Elevating Equity: The Real Story of Diversity and Inclusion.” Prepared for Josh Bersin. Available at: <https://ss-usa.s3.amazonaws.com/c/308463326/media/27436024f0b84dfd274918375735238/202102%20-%20DEI%20Report.pdf>

⁸⁰ Ibid.

V. Opportunities for Green Job Development

Achieving a future of clean energy jobs in New Jersey that is diverse, equitable and inclusive will require overcoming barriers to green jobs with intentional efforts targeted at marginalized and underrepresented groups, such as racial/ethnic minorities, women, low-income households, and people with limited English proficiency. In practice, the clean energy job sector will expand as the transition away from polluting fossil fuels towards clean energy sources continues to gain momentum. Lower education requirements would suggest fewer barriers to achieving an equitable and inclusive clean energy workforce, but current job representation fails to live up to this potential. The clean energy sector is a source of good, well-paying jobs, but a greater-than-equitable share of those jobs go to white men. Clean energy jobs have:

- **Good pay:** Clean energy workers have higher wages than the average worker,
- **Good opportunities for new employees:** Entry-level clean energy workers earn more than other entry-level jobs—meaning that there is less pay disparity across job levels in the clean energy sector than in other sectors, and
- **Low education and training barriers:** Educational requirements in the clean energy sector tend to be lower than other sectors.⁸¹

Clean energy jobs tend to require more scientific and training-based skills than the average job, however, which underscores the importance of widely accessible, affordable education, training, certificate, and apprenticeship programs. Enhancing diversity in these programs may require targeted outreach in underrepresented communities, private-public partnerships,⁸² partnerships with historically Black colleges and universities, and/or utilization of federal grant money for clean energy job training.⁸³

Enhancing the diversity of clean energy workers will also require actions that overcome barriers that are not specific to educational/experience skills, such as logistical barriers, equitable access barriers, and systemic barriers. For example: building capacity within marginalized communities by offering remote work options, childcare support, or transit support; creating demand for clean energy workers in rural areas by strategically directing investments; or mandating workplace diversity policies and engaging stakeholders to understand, develop and promote more inclusive workplace practices.⁸⁴

The State of New Jersey can shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs by, for example:

- Making concerted efforts to ensure that clean energy jobs are available to people who do not live

⁸¹ Muro, M., Tomer, A., Shivaram, R. and Kane, J. April 2019. “Advancing inclusion through clean energy jobs.” *The Brookings Institution*. Available at: https://www.brookings.edu/wp-content/uploads/2019/04/2019.04_metro_Clean-Energy-Jobs_Report_Muro-Tomer-Shivaram-Kane.pdf.

⁸² Ibid.

⁸³ Glover, P. July 22, 2021. “The clean energy economy has a diversity problem. Let’s change that as we build back.” *Canary Media*. Available at: <https://www.canarymedia.com/articles/workforce-diversity/the-clean-energy-economy-has-a-diversity-problem>.

⁸⁴ Fazeli, S. September 2021. “Energy Sector Workforce Diversity, Access, Inclusion, and the Policy Case for Investment: Recommendations for State Energy Office Action.” Available at: [https://www.naseo.org/Data/Sites/1/documents/tk-news/workforce-diversity-report_final2\[2\].pdf](https://www.naseo.org/Data/Sites/1/documents/tk-news/workforce-diversity-report_final2[2].pdf).



near clean energy infrastructure or education/training centers and/or do not have the knowledge about, or access to, these opportunities by—for example—mandating that training opportunities be offered in remote communities and be offered and advertised in multiple languages;

- Establishing policies that help link clean energy jobs to training opportunities and target those training opportunities at underrepresented groups to ensure a large, diverse, qualified group of potential clean energy workers; and
- Building demand for clean energy services by ensuring that utilities pursue energy efficiency, updating building codes, passing clean energy legislation, and increasing clean energy investments.⁸⁵

A more diverse and inclusive clean energy workforce will help drive the clean energy transition forward in a way that equitably benefits all communities, because diversity, equity, and inclusion help ensure that a range of backgrounds, opinions, and perspectives are represented in the clean energy sector.⁸⁶ Marginalized communities bear disproportionate burdens from polluting energy infrastructure and—when they are equitably included in the clean energy sector—are key to developing the solutions that will reduce emissions, enhance energy security, reliability and resilience, improve air quality and public health, and ensure energy affordability.⁸⁷

⁸⁵ Ettenson, L. March 2019. “Clean Energy Jobs Still Lead, But Worker Diversity Needed.” *NRDC*. Available at: <https://www.nrdc.org/experts/lara-ettenson/clean-energy-jobs-still-lead-worker-diversity-needed>.

⁸⁶ Ferris, N. November 2021. “Why a diverse workforce would benefit the clean energy transition.” *Energy Monitor*. Available at: <https://www.energymonitor.ai/policy/just-transition/why-a-diverse-workforce-would-benefit-the-clean-energy-transition#:~:text=Diversity%20is%20not%20a%20zero,ensure%20it%20benefits%20all%20communities.&text=Diversity%20is%20not%20only%20about,range%20of%20opinions%20and%20perspectives..>

⁸⁷ Golden, S. May 2020. “4 reasons clean energy jobs are key to economic recovery.” *GreenBiz*. Available at: <https://www.greenbiz.com/article/4-reasons-clean-energy-jobs-are-key-economic-recovery>.

Appendix A: Sources for Table 5

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