

Equitable and Actionable Clean Energy Workforce Development Toolkit

Laura Giannini, TRC

Beth Offenbacher, TRC

Adele Ferranti, New York State Energy Research and Development Authority

ABSTRACT

Recruiting and training the next wave of clean energy workers is critical for achieving aggressive energy efficiency, renewable energy, and decarbonization goals. Additionally, ensuring that training initiatives support a diverse workforce through investments in individuals and communities with barriers to joining the clean energy economy requires deliberate program planning and engagement with a wide range of stakeholders.

The New York State Research and Development Authority (NYSERDA) has supported clean energy workforce development for more than twenty years, and the state has recently ramped up activity with an expansive portfolio of training initiatives in support of New York’s Climate Leadership and Community Protection Act, known as the Climate Act.

This paper will explore the varied program tools that NYSERDA has developed and launched — such as climate justice fellowships, career pathways training programs, clean energy internships, and other initiatives — for introducing new workers into the clean energy field in support of New York’s efficiency, renewable energy, and decarbonization goals. We will share best practices and insights from these initiatives, including how to build training infrastructure for scalability and sustainability; key elements to effective engagement of participants from disadvantaged communities and priority population groups, and challenges and strategies for assessing program impact.

People- and Community-Centered Clean Energy Transformation

Clean energy has an intrinsic human element: *people* use energy in day-to-day life, *people* are increasingly impacted by climate change, and while technological innovations are a key part of moving toward decarbonization, the *people* needed to design, manufacture, sell, install, operate, and maintain clean energy systems are a vital component for meeting energy goals.

Workforce development, which goes beyond training to include career awareness, job preparedness, and employment-focused initiatives, is the resource to support that critical human element of a clean energy transition. Recruiting and training the next wave of clean energy workers is essential for achieving aggressive efficiency, renewable energy, and decarbonization goals. Doing so in a way that maximizes access to quality jobs across all communities needs to be integrated into workforce development programs to address the challenge at scale.

These efforts go far beyond simple “plug-and-play” or ad hoc solutions. In response, NYSERDA has developed and deployed a portfolio, or a “toolkit” of programs that strategically advance progress towards New York’s aggressive climate goals, one of the most ambitious plans to reduce greenhouse gas emissions in the United States. Success requires a clear focus on building a strong, sustainable “pipeline” of clean energy talent that meets the employer market

demand while also strengthening local communities across New York State. Broad and inclusive workforce development and training efforts are needed to support the state’s clean energy and jobs agenda, which is part of New York’s path to a carbon-neutral economy.

The Climate Act aims to address the rising impacts and inequities of climate change in New York State by setting tangible requirements and goals for reaching economy-wide carbon neutrality while expanding benefits and community ownership to disadvantaged communities.¹ This includes strategies for creating opportunities for unemployed, underemployed, and other residents living in disadvantaged communities to obtain clean energy jobs. Creating these opportunities requires the identification of the various barriers that may need to be addressed to successfully prepare and match these individuals with employment opportunities and careers. Unemployed and underemployed individuals may fall in a range of demographic categories, including people who are low-income, single parents, formerly incarcerated, and veterans, for example. Investigating ways to better include women and minority-owned business enterprises (MWBs), and service-disabled veteran-owned businesses (SDVOBs) in the clean energy economy is also an aspect of achieving equitable investment.

While the clean energy industry has a need for workers, the industry also represents an opportunity to address the needs for quality jobs for individuals who are residents of disadvantaged communities and other priority populations.² NYSERDA is committed to providing an on-ramp to clean energy jobs for New Yorkers who are seeking careers in clean energy at a living wage, which in turn supports growing industry demand for clean energy talent.

Significant investments and a rapid increase in the rate of clean energy projects, such as energy efficiency retrofits and the installation of renewable electric power generation systems, are required for the state to achieve the emissions targets included in the Climate Act. With a substantial number of the state’s most skilled clean energy employees approaching retirement age and technologies that are evolving rapidly, New York currently has an insufficient supply of incoming skilled workers to fill the gap. The state needs a substantial influx of diverse, new talent that is prepared and adaptable to join the clean energy workforce. Employment models completed as part of the 2021 Just Transition Working Group Jobs Report forecast a more than 60 percent increase in employment in New York State from 2019 to 2030 in growing sectors

¹The law directs state authorities such as NYSERDA to ensure 40% of the benefits of spending on clean energy and energy efficiency programs are realized by disadvantaged communities. The Climate Act directs the [Climate Justice Working Group](#) to establish criteria for defining disadvantaged communities. Until the criteria are finalized, New York State has identified interim criteria for disadvantaged communities, which includes communities:

- Located within census block groups that meet the HUD 50% Area Median Income threshold, that are also located within the [DEC Potential Environmental Justice Areas](#); or
- Located within [New York State Opportunity Zones](#)

(NYSERDA 2022a)

² For the purposes of its workforce development and training solicitations, NYSERDA seeks to support groups beyond those captured by the state interim criteria for disadvantaged communities. NYSERDA defines “priority populations” as: Veterans; Individuals with disabilities; Low-income individuals, whose household’s total income is below or at 60% of the State Medium Income, or whose household has been determined eligible for or is receiving assistance through the Home Energy Assistance Program, Temporary Assistance for Needy Families, Supplemental Nutrition Assistance Program, or other human service benefit programs; Incumbent or unemployed fossil fuel workers; Previously incarcerated individuals; 16- to 24-year-olds who are enrolled in or have completed a comprehensive work preparedness training program; Homeless individuals; and Single parents.

impacted by the Climate Act within the categories of electricity, fuels, buildings, and transportation. The forecast calculations showed a minimum gain of 211,000 new jobs statewide across all studied sectors. The report projected further gains to 2050, with up to a 54 percent increase in net jobs across the primary sectors (NYSERDA 2021).

Given these factors, a robust influx of new workers is needed across the clean energy industry over the next several years to install, operate, maintain, and manage buildings, energy generation technologies, clean transportation systems, and other elements of the clean energy economy. This includes workers to fill job openings today, as well as amplifying career awareness of the opportunities in this field for school age individuals and incorporating training opportunities as early as high school to prepare the future workforce over time.

Clean Energy Workforce Development Programming Tools

NYSERDA regularly engages with clean energy businesses and industry groups to understand current and future workforce needs and to develop program frameworks that support industry-driven initiatives that 1) meet those needs of businesses and 2) reach diverse populations and provide the support needed for those individuals to gain entry into and advance in the clean energy industry.

NYSERDA’s workforce development program “toolkit” addresses these challenges through two main program areas: comprehensive skills training and job-preparedness programs for new workers called “Career Pathways” programs, and “Work-Based Learning” programs that provide funding for professional experiences for individuals gaining experience in the clean energy field. The connections between these components and clean energy jobs are illustrated in Figure 1.

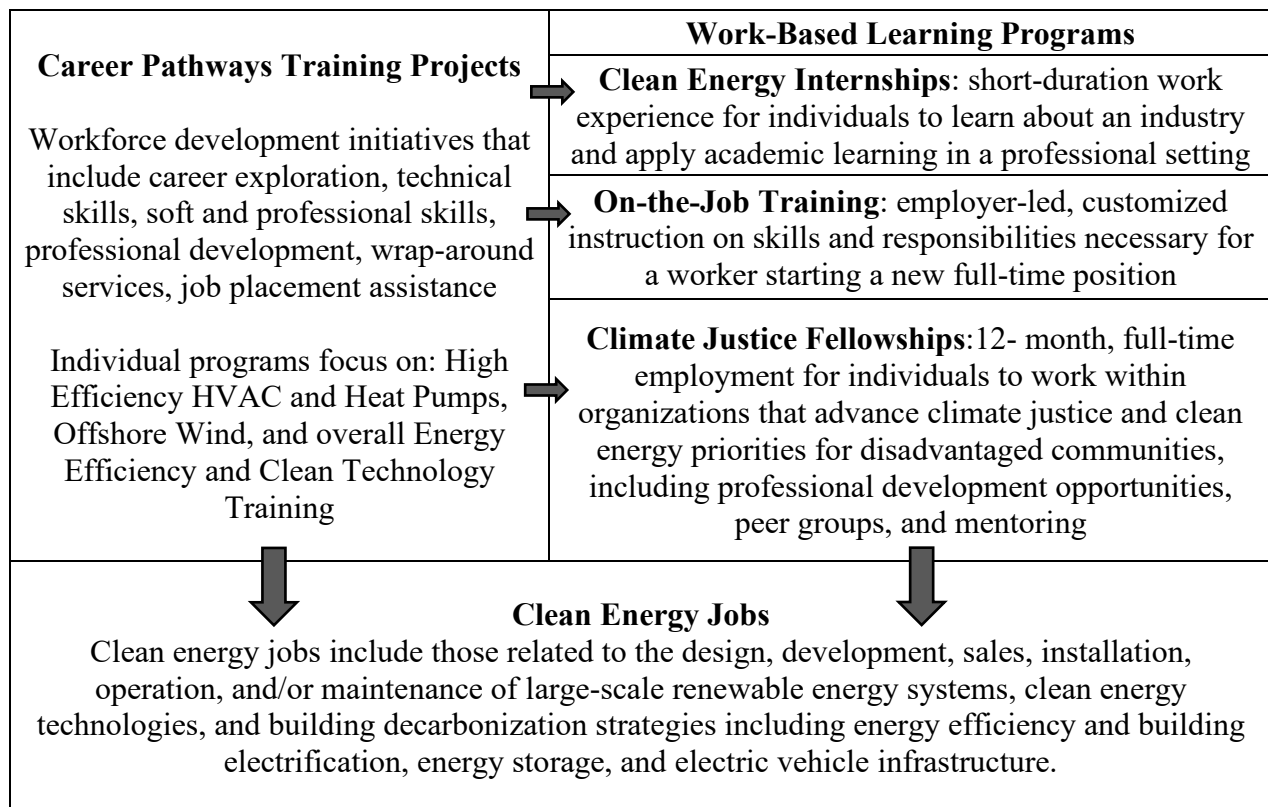


Figure 1. Components of NYSERDA’s Workforce Development Program designed to lead to placement of individuals in new clean energy jobs.

“Career Pathways” program funding supports partnerships with colleges and universities, employers, labor, community-based organizations, non-profits, manufacturers, trade associations, and others conducting a broad range of workforce development activities. Rather than prescribing preferred training models, NYSERDA provides flexibility in the structure and delivery methods of career pathway projects that meet business needs. Projects typically include a mix of classroom training, hands-on training, continuing education courses, certification programs, degree programs, internships, pre-apprenticeships, and other activities.

These market transformation programs specifically seek to leverage established education and training systems already in place. By bringing in new training content, updated equipment, new trainers, and/or enhanced opportunities for hands-on experience, training partners can build upon existing resources and their established presence in their community to deliver the workforce skills employers need. Notably, the majority of NYSERDA’s programs can serve a range of clean energy technology areas, offering support for agile, creative ideas put forth by clean industry partners in response to the market’s need for new skills and workers as technologies evolve and new technologies get adopted at scale.

To complement its technical and job-preparedness training programs for new workers, NYSERDA also provides funding through “Work-Based Learning programs.” These programs reduce the risk for businesses to hire and train new workers, while also providing individuals with valuable professional experience in the industry through internships, on-the-job training, and fellowships. All provide ways for individuals and businesses to connect and program

funding that reimburses participating businesses for a percentage of the workers' wages. Each of these programs offer higher incentives and/or participation structures that either require or encourage businesses to hire individuals from priority populations and residents of disadvantaged communities.

The following sections provide a high-level overview of the new worker programs that make up NYSERDA's workforce development toolkit.

Career Pathways Training Programs

When preparing new workers for clean energy jobs, particularly those individuals from priority populations and those with barriers to employment, simply providing technical training is generally insufficient for setting trainees up for securing jobs and successful careers. A Career Pathways workforce development approach accounts for this, and incorporates elements such as supportive services, professional skills training, job placement assistance and mentoring into training programs to support participants' transition from education and training into specific occupations in an industry sector.

NYSERDA has developed several funding opportunities for Career Pathways training projects, including three solicitations that have supported projects in energy efficiency clean technology, building electrification, and offshore wind.³ While certain programmatic details of these programs vary, key elements are included in each to ensure these programs effectively prepare new workers for clean energy jobs and place them in jobs on a path to a successful career.

Rather than following a prescriptive approach of dictating specific training activities, NYSERDA's workforce development programs direct partners to demonstrate market need for their training, a sound project implementation plan, cost effective use of funding (including leveraging existing resources), and a plan for sustaining or adapting the training effort after the period of NYSERDA funding.

Successful projects are often partnerships between multiple organizations that coordinate the range of elements, leveraging different capabilities and areas of expertise. Often the diverse skills and experience needed to adequately prepare those with barriers to employment may not exist in one single organization. Projects may bring together team members with expertise in specialty areas such as recruitment, screening, wrap-around services, certifications, technical training, and other components of a comprehensive career pathways project. Participants in past and current clean energy Career Pathways projects include community-based organizations, technical high schools, unions, community colleges, outreach/advocacy groups, technical training providers, and workforce preparedness/job placement intermediaries, among others.

NYSERDA funding may support recruitment and screening activities, "soft skills" training (such as professional communication and time management), wrap-around or supportive services,⁴ job readiness (such as resume and interview preparation), and job placement support,

³ Energy Efficiency and Clean Technology Training (PON 3981), Career Pathway Training Partnerships for High Efficiency HVAC and Heat Pumps (PON 4463), NYS Offshore Wind Training Institute - Workforce Training & Skills Development (PON 4595).

⁴ Wrap-around or supportive services include assistance such as transportation stipends, case management, child support services, homelessness prevention, mental health counseling, legal assistance, immigrant resources, child-

while many project teams combine existing services and alternate sources of funding for these activities with NYSERDA funding for technical curriculum development, training, and equipment. Overall, Career Pathways projects are selected for funding based on:

- Applicant team credentials
- Training on skills aligned with industry demand
- Career-readiness programming
- Demonstrated understanding of wrap-around or supportive services needed for participants to be successful and resources to provide them
- Established commitments from employers to participate in work-based learning opportunities and to interview and/or hire program graduates
- Ability to effectively recruit, screen, and train individuals from priority populations/residents of disadvantaged communities.

Under the current program structure, NYSERDA has funded over thirty Career Pathways projects, with the average project receiving \$320,000 in NYSERDA funding. Example projects include:

- The Andromeda Community Initiative (ACI) in Queens, New York uses a whole-building approach to train and certify individuals from underserved communities to become entry-level construction workers. Through this program, they gain enhanced skills and an understanding of energy-efficient building operations and maintenance, green weatherization and restoration, and carbon emissions reduction. Building restoration has a significant demand for well-trained workers, and while employers struggle to fill vacancies with qualified candidates, unemployed and underemployed individuals lack the network, resources, or training to apply for those positions. ACI launched a seven-week hybrid training program consisting of classroom work and hands-on projects that allow students to pursue certifications and experience with building restoration work. The program also provides career readiness and wrap-around services as needed. Graduates of the training program are prepared for a variety of building retrofit positions related to envelope performance, energy efficiency, and green construction, and the program is slated to train 60 students.
- Stacks + Joules is a non-profit workforce development program that trains New York City high school students in advanced lighting controls, heat pumps, building integration, and professional soft skills directed toward family-sustaining careers in the growing building automation industry. Stacks + Joules received NYSERDA funding to deliver advanced training in heat pump technologies and job placement support to 80 young adults from underrepresented, low-income priority populations. Participants earn industry-recognized certificates as part of this highly interactive and engaging training program, which includes mentorship and group projects. This Stacks + Joules project involved collaboration between workforce development and social service providers, and

care, and other services that support trainees in bridging potential barriers to successful employment. (NYSERDA 2022b)

it focuses on developing the entry-level talent needed to install, maintain, and optimize residential and commercial heat pump systems, with a special emphasis on controls. The 10-week program concludes with participants being placed in internships, full-time jobs, or continuing to advanced training opportunities.

Work-Based Learning Programs

Through a suite of complementary work-based learning or “earn as you learn” programs - specifically its Clean Energy Internship, On-The-Job Training, and Climate Justice Fellowship programs - NYSERDA facilitates the placement of new workers, students, recent graduates, transitioning and displaced fossil fuel workers, veterans and individuals from priority populations considering career opportunities in clean energy into paid internships, fellowships, and full-time jobs across the state. The programs provide individuals and businesses with the tools to connect as well as funding to reimburse participating businesses for a percentage of the workers’ wages.

Clean Energy Internship Program

The Clean Energy Internship Program prepares the next generation of clean energy workers by funding internships with clean energy organizations. The program offers wage subsidies up to 75-90 percent of an intern’s wage for businesses, non-profit organizations, and municipalities to hire interns either during the summer or on a part-time basis during the school year. Interns can be current college or university students, recent graduates, members of priority populations, and residents of disadvantaged communities.

To help employers find candidates, NYSERDA maintains a directory of resumes from individuals across the state seeking clean energy internships. Interns have been hired in roles related to engineering, energy benchmarking, installation, technical sales, marketing, research, community engagement, and other wide-ranging activities related to clean energy careers. Employers can hire up to 30 interns during the life of the program, and there is no cap on the number of interns that can be hired by registered minority-owned, women-owned, and/or service-disabled veteran-owned businesses.

One participating employer, Shared Mobility, a Buffalo-based non-profit focused on inclusive, accessible, and low-carbon transportation solutions, has hired multiple interns through the Clean Energy Internship Program. An intern noted, “Working with [Shared Mobility] was an amazing experience full of learning and opportunity. Working on the Western New York e-bike pilot with my team opened my eyes to a fully new way of thinking with transportation and rideshare. During this internship, I have gained knowledge that I now implement... finding a new passion in mobility equity will forever stay with me.”

To date, NYSERDA has provided funding for over 1,300 clean energy interns across the state.

On-the-Job Training Program

A second work-based learning offering in NYSERDA’s toolkit is the On-the-Job Training (OJT) for Energy Efficiency and Clean Technology program, which provides wage

subsidies to eligible businesses to help reduce the financial risk of hiring and training new workers. Reimbursement of up to 50-75 percent of a new employee's wages is provided for six months for priority populations and residents of disadvantaged communities, while the reimbursement period is four months for all other workers. The reimbursement percentage range varies based on the technology sector of the employer, with the higher reimbursement offered for workers hired for jobs directly related to building electrification. Large businesses (101 or more employees) in most technology categories and renewable energy businesses only can be reimbursed for hiring members of priority populations and residents of disadvantaged communities, which has driven strong results in this area. Minority-owned, woman-owned, and service-disabled veteran-owned businesses are eligible for the maximum 75 percent reimbursement rate across all technology categories.

NYSERDA works with the New York State Department of Labor (NYSDOL) to administer the program, and the NYSDOL provides support to the businesses with finding worker candidates, conducting baseline skills assessments, and developing training plans.

Businesses have flexibility in how they use these wage reimbursements. Some organizations use the money toward additional outside training and certifications for the new workers, building out their in-house training infrastructure, or recruitment strategies such as hiring bonuses to attract workers in challenging labor markets.

In a recent survey of a sample of program participants, 80 percent of respondents indicated that the On-the-Job Training Program motivated or allowed their organization to hire individuals with non-traditional backgrounds and/or more diverse candidates than their standard recruiting processes. One clean energy employer noted, "OJT gives us the opportunity to do intentional hiring of BIPOC [Black, Indigenous, and People of Color] folks. It gives us the funds to have them go through a variety of trainings internally and externally."

To date, NYSERDA has provided funding for over 1,000 new hires in energy efficiency and renewable energy jobs with an average subsidy of \$8,500 per worker.

Climate Justice Fellowship Program

The NYSERDA Climate Justice Fellowship program supports New York State's commitment to environmental and climate justice – ensuring an equitable clean energy transition for all New Yorkers, especially those disproportionately burdened by environmental health hazards who would benefit the most from clean energy. These fellowships support the professional development, training, and mentoring of full-time fellows who are members of priority populations or residents of disadvantaged communities.

Fellows work with community-based organizations, universities, municipalities, climate tech innovators and startups, and clean energy businesses to assist with and support community engagement activities, clean energy project development and implementation, partnership building, clean energy startups, or other projects that advance climate justice and clean energy priorities in disadvantaged communities.

NYSERDA is funding wages and wrap-around services, for a total of \$40,000 per fellow, for approximately 150 fellowships. NYSERDA and host employers are working with state and federal agencies, nonprofits, foundations, and other partners to leverage existing resources, additional wrap-around services, training, and professional development opportunities to

continue the acceleration of New York’s climate justice efforts. Employers must provide comprehensive health benefits at little or no cost to the fellow as part of the project’s required cost share. Example Climate Justice Fellowship activities include the following:

- Sustainable Westchester, a non-profit consortium of 45 municipalities, is hosting a fellow to conduct research and outreach to residents in low- and moderate-income and environmental justice communities in order to increase program participation in projects such as the Westchester Power Solar Credit offering and other Sustainable Westchester initiatives.
- Comrie Enterprises, a Minority and Woman Owned Business Enterprise (MWBE), is hosting a fellow to create a marketing and outreach program serving Spanish-speaking and other disenfranchised communities; enrolling community members in training to become heat pump/green energy installers; and educating community members about how to access clean energy resources.
- The City of Albany’s Office of Sustainability is hosting a fellow to help the city advance climate justice and equity by establishing strategies, policies, and programs for the city’s disadvantaged communities. Programs are focused on coordinating outreach with local clean energy efforts, addressing barriers to energy efficiency and electrification, protection from rising costs of future stranded fossil fuel infrastructure, promoting equity in the development and ownership of clean energy assets, increasing participation in designing clean energy policies and programs, and promoting job opportunities in the clean energy economy.

Cross-Cutting Program Connections

By design, projects funded through NYSERDA’s workforce development and training programs, including its various work-based learning programs, can be combined to maximize funding and outcomes for participants. Businesses, after learning that their interns are a good fit for their organization, can hire those interns through the OJT program or the Climate Justice Fellowship program for longer-term engagement and receive additional funding to do so. Climate Justice Fellows can also be hired as full-time employees through the OJT program at the conclusion of their fellowship to continue their environmental justice and clean energy work.

NYSERDA offers limited funding for wages directly through its Career Pathways programs, so training organizations are encouraged to use the Clean Energy Internship Program and/or OJT funding to satisfy the job placement requirements connected to their projects and help their training participants gain professional work experience.

One successful example of this approach is the Hope Program, a NYC-based not-for-profit organization, which is receiving funding for a high efficiency HVAC and heat pump training project preparing low-income individuals for careers with HVAC companies installing and servicing high efficiency HVAC equipment. The Hope Program established partnerships with local HVAC contracting firms that committed to providing internships for program graduates, and these internships are co-funded through the NYSERDA Clean Energy Internship Program. This provides invaluable real world, hands-on work experience at the conclusion of the classroom training portion of their program. The students are working one-on-one with lead

installers on installation, repair, and maintenance of HVAC systems, including cold climate air source heat pumps and ground source heat pumps. Their internships will include supporting experienced installers to complete tasks such as on-site preventative maintenance, routine repair work, and calibration after installation, allowing the students to apply skills learned in the training program.

These program connections help businesses evaluate and develop new talent to grow their businesses, and training participants gain valuable experience putting their new skills to immediate use in the field. This work experience is often a critical step for these individuals to start full-time employment, either with their internship employer or another business in the field.

Scaling for Greater Community and Climate Impact

The aggressive paths established by the Climate Act and other similar climate initiatives underscore the need to train and add people to the clean energy workforce in a targeted, large-scale, and long-term manner. Utility rate payer funds and other current sources of clean energy program funding cannot directly support all activities associated with workforce development of that magnitude. If just a quarter of the 211,000 new jobs projected by the Just Transition Working Group Report forecast for New York State were to participate in a standalone, comprehensive career pathway training program, at an average cost of \$8,000 - \$12,000 per person, the cost would exceed \$500 million for training and job preparedness activities for those individuals. Sourcing alternate funding, such as philanthropic organizations who may invest in results-oriented training programs, may be an option, and ultimately, maximizing participation by businesses and employers to build their workforces is key. As more business recognize that investing in the future workforce is not only beneficial, but essential, to their continued success, the connection between training and jobs can be achieved at a larger scale.

For a utility or public entity looking to substantially grow clean energy workforce development by scaling up current programming, it is essential to recognize and engage with the broad range of partners who can contribute to these efforts. The clean energy workforce development and training space includes a diverse array of organizations provide training and related services, including but not limited to:

- Colleges and universities
- Community colleges
- Community-based organizations (CBOs) and non-profit organizations focusing on career training, job preparedness and/or placement
- Contractors
- Engineering and design firms
- Equipment suppliers/distributors
- Manufacturers
- Private technical training providers
- Renewable energy project developers, owners, and system service providers
- Technical/vocational schools
- Trade associations
- Training and job placement intermediaries
- Unions

By exploring shared needs and missions and encouraging engagement and partnerships, this varied group of entities are all needed to play a role in scaling up clean energy workforce development. For example, manufacturers benefit from contractors knowing how to sell and the proper way to install and maintain their new technologies, while educational institutions can better prepare their students for careers by having up-to-date equipment for training. Several keys tactics for project scalability that NYSERDA has deployed include:

- Fostering partnerships – Encourage partnering through funding opportunities and facilitating introductions and information/opportunity sharing between diverse organizations. Examples of this include:
 - The NYSERDA workforce development and training program maintains a “Partner Connector” website to share contact information between interested parties who are seeking out new collaboration opportunities.
 - NYSERDA has leveraged existing technical training materials to reach new audiences. Partnering with National Grid’s Grid for Good initiative, which supports youth from disadvantaged backgrounds, NYSERDA sponsored a two-hour introductory heat pump course. This course reached hundreds of Grid for Good participants, educating them on the motivations for and benefits of electrification, introducing the major components of heat pump systems, providing an overview of heat pump design, and discussing considerations of residential heat pump design. This initiative fostered career awareness among a generation of young people with strong environmental interests and introduced key technologies necessary to fight climate change in the building sector.
- Building on Existing Infrastructure – Educational institutions, community action agencies, and CBOs already have channels to reach students as well as physical infrastructure and personnel for instruction.
 - By bringing clean energy curriculum, supplementary technical training content, equipment, and/or industry partnerships to established training providers, conventional trade programs, certificate programs, and/or other offerings can readily adapt to produce clean energy workers.
 - Community action agencies, with their local, grass-roots engagement capacity, are frequently the key to reaching residents of priority communities and disadvantaged communities. Often the wrap-around services related to professional skills development, case management, and social services support that these community organizations already provide, when paired with technical training and an internship or pre-apprenticeship, can prepare someone with barriers to employment for success in the clean energy industry. NYSERDA actively engages with community action agencies, CBOs, and educational institutions across New York, learns what their current programs offer, explores how activities related to clean energy workforce development can be expanded, and pursues innovative models to partner with these organizations.

- Connecting industry to education/training providers – Training providers are understandably hesitant to prepare students for jobs in emerging areas without strong potential for employment, “for jobs that don’t exist yet.” Navigating the timing of having workers ready at the right time for these new and growing industries and right-sizing the training initiative, while having an eye on opportunities to scale up training, is a delicate balance. By connecting industry groups and individual businesses to education/training providers, as NYSERDA’s Career Pathways program requires, the employers can help inform the training needed for their immediate and short-term hiring needs, as well as assist with projections for long-term trends. This commitment from industry to hire trainees can help education and training entities commit to continuing and expanding clean energy training programs.
- Highlighting Case Studies – Sharing outcomes of workforce development activities is a key component necessary for motivating others to build on what was accomplished with individual training projects. Case studies⁵ from NYSERDA programs that highlight successful training projects and human-interest stories of individual participants are compelling and serve multiple purposes. These case studies are shared online and via social media as well as with training partners as part of highlighting the career opportunities that are available to all types of individuals across New York State. They:
 - Provide information on successful training and partnership models,
 - Illustrate to businesses how partnerships with new training partners can benefit their organizations, and
 - For job seekers, lets individuals see people they can relate to being successful in clean energy jobs.

Focus on Training “Sustainability”

The ongoing viability or sustainability of initiatives funded by NYSERDA’s workforce development programs is essential for program design. In all large-scale training projects, NYSERDA requires participants to outline how elements of their project can be continued past the duration of the NYSERDA funding both at the time of the initial proposal and as part of program wrap-up.

By funding training infrastructure, such as curriculum development, training equipment, and train-the-trainer activities, NYSERDA reduces the financial burden of these up-front costs for new, expanded, and/or updated clean energy training initiatives. Program participants can then use those resources to host additional cohorts of students moving forward.

⁵ NYSERDA Case Studies, Workforce Development section: www.nyserda.ny.gov/about/publications/case-studies-and-features

Results and Metrics

To verify progress toward program goals and to demonstrate effectiveness of rate payer fund investments, NYSERDA regularly reviews numerous metrics for each workforce development and training initiative. Career pathways training program participants report on:

- Completion rates of training program participants
- General demographics of training participants (e.g., disadvantaged community member, low-income individual)
- Placement metrics for participants in internships and/or full-time jobs
- Trainee survey results

For Work-Based Learning projects, NYSERDA monitors the retention rate for new hires during their on-the-job training program period as well as metrics on the overall number of hires from priority populations and disadvantaged communities. The program team regularly runs analyses on numbers of businesses participating, hiring rates, activity among different technology sectors, and other reports to understand the program's impact on employment activities. NYSERDA also looks at the geographic distribution of participation across the state to monitor the balance of investment in different regions and across different demographics.

While there is interest in assessing direct impact on wages and retention rates for participating individuals beyond the period during which NYSERDA funding is provided, that is outside the scope of current program assessment activities. While long-term employment and wage data can be challenging and/or costly to collect at scale, NYSERDA is exploring evaluation strategies to capture this for a sample of training projects as part of a new program model, leveraging Department of Labor data and a randomized control study model to assess impact.

Beyond numerical completion rates and job placement metrics, the people dimension is a key part of understanding and broadcasting program impact. Through case studies and testimonials, as noted previously, NYSERDA is expanding the use of storytelling directly from employers and new workers to highlight workforce development outcomes. Letting individuals tell their stories of success, particularly across diverse participants, is a compelling way to allow others to see themselves pursuing a career in clean energy. In addition to sharing these stories through conference and interest group presentations, NYSERDA is exploring opportunities to distribute short and long-form video content through statewide and national career awareness platforms, in schools, and through community-based organizations.

Conclusion

Fostering the human element of the clean energy transition through workforce development and training requires flexible, deliberate investments and a range of tools to support the variety of organizations involved in the education and employment space and the diverse individuals being trained. Initiatives that introduce opportunities in the clean energy industry to workers from diverse backgrounds, meet these individuals “where they are,” bring together supportive services and technical skills training, and work directly with businesses for a direct

path to employment offer tremendous opportunity for those wanting to join the clean energy workforce and for the industry at large. By removing barriers those individuals may have in obtaining training and jobs, workforce development programs give individuals the opportunity to earn impactful, gainful employment while playing a key role in scaling up the capacity of clean energy businesses to complete more clean energy projects.

We look to all interested stakeholders for collaboration opportunities — to share strategies, best practices, and resources — to expand recruitment and training and connections to employment for the next generation of clean energy workers. Growing an effective clean energy workforce is critical to achieving aggressive efficiency, renewable energy, and decarbonization goals, and by committing to improve access to quality jobs across all communities, the scale of this challenge can be met.

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