

# CLEAN ENERGY WORKFORCE: NEEDS AND OPPORTUNITIES FOR SOUTHWESTERN PA

▶ 2024



**Sustainable PGH**

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## EXECUTIVE SUMMARY

Energy has been and continues to be a prominent feature of southwestern Pennsylvania's economic portfolio. Now, federal and state initiatives are unlocking opportunities that build upon a decade of growth in our region's clean energy sector, driving demand for workers and services and highlighting needs to strengthen Pennsylvania's clean energy workforce development ecosystem.

The clean energy economy in Pennsylvania grew more than four percent and added nearly 4,000 new workers in 2022, according to the 2023 Clean Jobs Pennsylvania Report. It now accounts for over one-third of all energy industry jobs in the state. Further, the clean energy job sector is growing 1.5 times faster than the rest of the state's economy. Green job segments in clean energy include energy efficiency, renewable energy generation, storage and grid modernization, clean fuels, and clean vehicles.

Even with this growth, the workforce development ecosystem faces many challenges in southwestern Pennsylvania, some unique to the region and some more common. Since 2021, Sustainable Pittsburgh has convened a growing network of cross-sector stakeholders involved in the region's clean energy workforce development ecosystem. Called the Clean Energy Workforce Roundtable, the network aims to position the region to meet the demands for clean energy workers with a diverse and appropriately trained workforce.

Regional conversations with stakeholders, including Roundtable convenings, have taken place dozens of times in the past three years, enabling information sharing about current initiatives taking place in the region's clean energy industry, identifying needs, and promoting collaborative next steps for priority issues. The work underscores the need to continue developing a comprehensive regional strategy to decarbonize southwestern Pennsylvania and create the energy economy of tomorrow.

This document includes advice passed along during conversations with Roundtable participants, insights gleaned from expert presentations on regional workforce research, and written notes collected after facilitated brainstorming activities on the region's workforce development needs.

As determined through stakeholder discussions and supported by many other research reports describing regional context, four key challenges that can guide regional strategy have emerged around clean energy workforce development:

- **Improving ecosystem connectivity, global knowledge, and collaborative potential:** as many new public and private sector approaches to addressing clean energy workforce demands emerge, it is vital for partners to compete together for funding, build stronger referral networks and employment pipelines, and learn from one another to address gaps in services.
- **Improving visibility and accessibility of clean energy jobs:** the clean energy workforce ecosystem is vast; however, many that contribute to or participate in the region's clean energy workforce, as well as those who might join the growing sector, are unaware of their contributions. Increasing general awareness of clean energy sector opportunities and how to access them is needed.
- **Addressing barriers to employment in clean energy jobs:** Roundtable participants consistently raised the issues workers with barriers to employment face. Supportive service networks and employers that provide wraparound support for those experiencing transportation barriers, childcare needs, and a myriad of additional life events and experiences should be integrated into training and workplace systems.
- **Expanding training opportunities, with employment on the other side:** the workforce development ecosystem is continuously evolving to meet the needs of workers, employers, businesses and communities. With new federal and state programs supporting clean energy, roundtable participants continuously noted the need to advance a variety of training programs by enabling direct connections among programs, employers and job seekers.

Collaboration and tactical responses among employers, training providers, supportive services, and other public and private stakeholders are essential to overcoming systemic barriers to achieving successful employment outcomes for the region's burgeoning clean energy economy. Opportunities and examples exist, which can be modeled by regional stakeholders to institute sustainable solutions.

Overall, southwestern Pennsylvania is well-positioned to capitalize on federal clean energy programs, attract and retain a workforce that represents the many pathways that contribute to our region's climate resilience, center environmental justice, and build on its energy legacy. Roundtable convenings will continue to catalyze and amplify knowledge, fortifying our region's leadership in the new energy economy.

## BACKGROUND

Southwestern Pennsylvania is an attractive destination for clean energy innovators, creators and entrepreneurs, and can lead the way for many more to pursue the numerous pathways to family-sustaining job opportunities in the clean energy sector. Energy has always been a prominent feature of southwestern Pennsylvania's economic portfolio, which is why the region is in a strong position to attract clean energy investments over the next decade. New federal and state initiatives support over a decade of growth in the clean energy sector, driving demand for workers and services as well as addressing needs to strengthen Pennsylvania's clean energy workforce development ecosystem. The opportunity exists to leverage southwestern Pennsylvania's energy legacy, capitalize on federal clean energy programs, and attract and retain a workforce that can access the many economic opportunities that are arising and also contribute to our region's climate resilience.

Programs made available through the Inflation Reduction Act and Infrastructure Investment and Jobs Act target disadvantaged communities, energy communities, and environmental justice communities; these communities are highly concentrated in southwestern Pennsylvania.<sup>1</sup> Although access to opportunities in the clean energy sector are open to everyone, an equity-centered approach to workforce development is needed to enable advancement and self-determined pathways to prosperity for the unemployed, underemployed, underrepresented and under-resourced communities of southwestern Pennsylvania.

Several organizations have detailed objectives and goals that aim to leverage the versatility of clean energy, including The Center for Strategic and International Studies,<sup>2</sup> Pennsylvania's Department of Environmental Protection,<sup>3</sup> Team Pennsylvania,<sup>4</sup> the Center for the Climate and Energy Solutions (C2ES),<sup>5</sup> the Marshall Plan for Middle America,<sup>6</sup> the Roosevelt Project,<sup>7</sup> the Allegheny Conference on Community Development,<sup>8</sup> The Nature Conservancy,<sup>9</sup> RAND Corporation,<sup>10,11</sup> Reimagine Jobs,<sup>12</sup> Energy Efficiency Alliance,<sup>13</sup> the University of Massachusetts Amherst,<sup>14</sup> and the Ohio River Valley Institute.<sup>15</sup> One important common thread among all of the research and these reports is that leadership from a broad scope of perspectives is essential in shaping and shepherding the prospects of a workforce development ecosystem that enables a thriving clean energy economy in southwestern Pennsylvania.

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1. [U.S. Environmental Protection Agency. \(2023\).](#)
  2. [Ladislav, S., & Hyland, L. \(2018, July 31\). Pennsylvania's energy future. CSIS | Center for Strategic and International Studies.](#)
  3. [Pennsylvania Department of Environmental Protection. \(2018, November\). Pennsylvania's solar future plan. Department of Environmental Protection.](#)
  4. [Team Pennsylvania. \(2019, May 29\). Pennsylvania Energy Horizons Report. Team PA.](#)
  5. [Cilento, C. \(2023, May\). Manufacturing a decarbonized future in southwestern Pennsylvania. Center for Climate and Energy Solutions \(C2ES\).](#)
  6. [Resilient Cities Catalyst. \(n.d.\). The Marshall Plan for Middle America \(MP4MA\).](#)
  7. [Ansolabehere, S., Araujo, K., He, Y., Hu, A., Karplus, V., Li, K., Thom, E., & Tingley, D. \(2022, May\). The Roosevelt Project: A Low-Carbon Energy Transition in Southwest Pennsylvania. MIT Center for Energy and Environmental Policy Research \(CEEPR\).](#)
  8. [Energy Task Force of the Allegheny Conference on Community Development. \(2022, April 22\). Our Region's Energy Future: A strategy for accelerating decarbonization, investment and inclusive growth in the Pittsburgh region. Allegheny Conference on Community Development.](#)
  9. [The Coalition for Green Capital and The Nature Conservancy. \(2017, February 28\). Pennsylvania Clean Energy Market Report. The Nature Conservancy: A World Where People & Nature Thrive.](#)
  10. [Curtright, A., Strong, A., Easton-Calabria, L., Philips, B., & Ash, J. \(2024, May 23\). Economic Opportunities in Sustainability for Southwestern Pennsylvania. RAND Corporation.](#)
  11. [Gonzalez, G. C., Singh, R., Karam, R. T., & Ortiz, D. S. \(2015, August 31\). Energy-Sector Workforce Development in Southwestern Pennsylvania Aligning Education and Training with Innovation and Needed Skills. RAND Provides Objective Research Services and Public Policy Analysis | RAND.](#)
  12. [Kalafatis, S. \(2023, August 3\). Relationships and Occupations Underlying Regional Economic Transformation. Reimagine Jobs Showcase.](#)
  13. [Energy Efficiency Alliance. \(2022, August\). Workforce Development for Energy Efficiency in New Jersey and Pennsylvania. Keystone Energy Efficiency Alliance | KEEA.](#)
  14. [Pollin, R., Wicks-Lim, J., Chakraborty, S., & Semieniuk, G. \(2020, October\). Impacts of the Reimagine Appalachia & Clean Energy Transition Programs for Pennsylvania: Job Creation, Economic Recovery, & Long-Term Sustainability. Reimagine Appalachia.](#)
  15. [Goodenbery, J., Animas, E., & Gorman, J. \(2022, December\). A Clean Energy Pathway for Southwestern Pennsylvania. A report provided by Strategen on behalf of the Ohio River Valley Institute.](#)

## ABOUT THE CLEAN ENERGY WORKFORCE ROUNDTABLE

Since 2021, Sustainable Pittsburgh has convened cross-sector stakeholders involved in the region's clean energy workforce development ecosystem. Dubbed the Clean Energy Workforce Roundtable, the convenings enable networked support that aligns with regional needs and fosters collective action to help communities prepare for the anticipated increase in demand for clean energy workers and investments. The steadfast goal of the Roundtable has been to promote connectivity of the regional clean energy workforce ecosystem, thus enabling information sharing about current initiatives taking place in the region's clean energy industry, identification of needs, and promotion of collaborative next steps for priority issues in clean energy workforce development in southwestern Pennsylvania. There is a critical need for collective action that strengthens connectivity of the workforce development ecosystem and enables a comprehensive continuum of support that embraces the intersectionality of common social and economic hardships.<sup>16,17</sup> This continuum of support should provide sustained connections between economic and social infrastructure, expand access to clean energy jobs for underrepresented communities,<sup>18</sup> and enable solutions that ensure private and public investments build on each other to form an inclusive engine of economic power, addressing historic inequities in wealth building and opportunity.<sup>19,20</sup>

The Roundtable also serves as a platform for the work Sustainable Pittsburgh has undertaken following its selection as one of 10 anchor institutions nationally in Phase II of the Jobs for the Future Quality Green Jobs Regional Challenge. Through this Challenge, Sustainable Pittsburgh, closely with Partner4Work and other stakeholders, is working to develop a regional strategy for placing workers in quality green jobs. Insights learned during the Phase II planning phase will inform the implementation of a regional clean energy workforce development marketing strategy that increases awareness of training opportunities available to the region, including apprenticeship and pre-apprenticeship programs, on-the-job training, incumbent worker upskilling/reskilling and customized job training in the clean energy sector.<sup>21</sup>

Following three years of continuous engagement, dozens of expert presentations, facilitated breakout discussions, group exercises and regular networking events, the Clean Energy Workforce Roundtable is enabling stronger connections and working to showcase southwestern Pennsylvania as a leader in the clean energy sector.

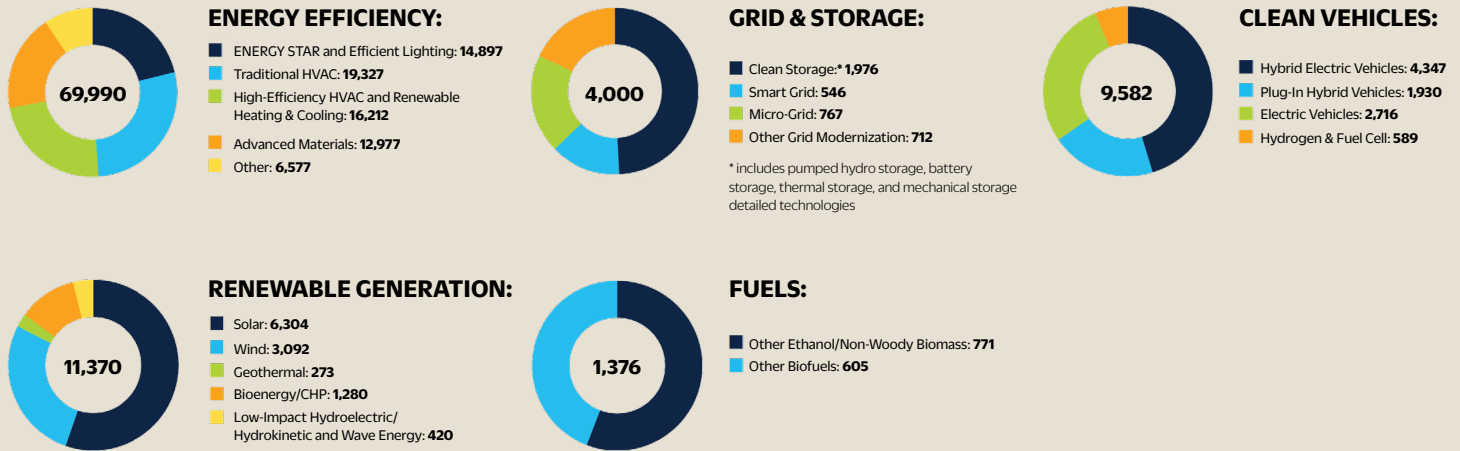
The contents of this document do not necessarily represent the views of the individuals and institutions that have or will participate in southwestern Pennsylvania's Clean Energy Workforce Development Roundtable; the views expressed are intended solely to convey what has been learned and to promote opportunities for the region to act.

## DEFINING CLEAN ENERGY JOBS

The clean energy industry is vast and its expansion outpaces national employment growth.<sup>22</sup> Jobs represented in the clean energy sector include a broad range of occupations in the energy efficiency, renewable energy generation, zero-emissions transportation, clean electrical grid and storage, and clean fuels industries.<sup>23</sup> In Pennsylvania, this includes tens of thousands of jobs in the trades such as electricians and plumbers as well as building construction specialists that work in HVAC and ENERGY STAR<sup>24</sup> systems. In the transportation sector, technicians and manufacturers that work on battery and biofuel vehicles represent thousands of Pennsylvania jobs and the engineers that design microgrid systems as well as the workers that operate and maintain those systems represent thousands more. There are also thousands working in solar, wind, geothermal and other renewable electricity resources, and those working to operate, maintain and serve those systems.<sup>25</sup>

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16. [Holzer, H. \(2011, November\). Raising job quality and skills for American workers: Creating more-effective education and workforce development systems in the states. The Hamilton Project.](#)
  17. [Heinrich, C. J., & Holzer, H. J. \(2011\). Improving education and employment for disadvantaged young men: Proven and promising strategies. The ANNALS of the American Academy of Political and Social Science, 635\(1\), 163-191.](#)
  18. [D'Elia, H. \(2024, April 29\). How to expand access to good clean energy jobs among women and people of color. Urban Institute.](#)
  19. [Giloith, R. \(2010\). Workforce intermediaries: For the 21st century. Temple University Press.](#)
  20. [Orrell, B., Wright, G., Holzer, H., Lipson, R., Deming, D. \(March 8, 2023\). What works in workforce development and how can it work better? Brookings.](#)
  21. [Fernandez, L., & Vander Zanden, S. \(2024, February 7\). Five insights from JFF's quality green jobs regional challenge. Jobs for the Future.](#)
  22. [United States Department of Energy. \(n.d.\). United States Energy & Employment Report 2023. Department of Energy.](#)
  23. [E2. \(2023\). Clean jobs Pennsylvania 2023: A comprehensive analysis of clean energy jobs across the state \[PDF\].](#)
  24. [U.S. Environmental Protection Agency. \(2024\). ENERGY STAR.](#)
  25. [E2. \(2023, December\). Clean Jobs Pennsylvania 2023.](#)

## FIG 1 // Pennsylvania Clean Energy Employment By Sectors



Source: E2. (2023, December). [Clean Jobs Pennsylvania 2023.](#)

Pennsylvania’s clean energy sector represents nearly 100,000 workers<sup>26</sup> and ranks in the top 10 nationally for the largest number of clean energy jobs. Pennsylvania’s clean energy workforce will continue to grow as the fourth fastest-growing clean energy state among the top ten.<sup>27</sup>

The energy efficiency industry alone represents the largest energy industry employer in Pennsylvania with over 10,000 energy efficiency businesses employing nearly 70,000 workers that are represented in each of Pennsylvania’s 67 counties.<sup>28</sup> Newer companies such as Eos Energy Enterprises<sup>29</sup> and NexTracker<sup>30</sup> as well as well-known companies like Westinghouse<sup>31</sup> and Duquesne Light Company<sup>32</sup> are investing in southwestern Pennsylvania’s clean energy industry, creating jobs supported by a decade worth of federal programs to decarbonize multiple sectors.<sup>33</sup>

### CLEAN ENERGY JOBS OUTLOOK

Demand for energy efficiency, solar installation and building electrification jobs are expected to increase significantly over the next decade due to new federal programs that support clean energy investments<sup>34</sup>, leading many to focus attention on the important contributions of clean energy-focused workforce development programs.<sup>35</sup> In particular, electricians, heating, ventilation, air conditioning and refrigeration (HVAC/R) mechanics and installers, and plumbers, pipefitters and steamfitters will require “more than 2,000 new workers working full-time every year for ten years on average”<sup>36</sup> which shows a sharp increase when compared to historical trends.<sup>37</sup>

26. U.S. Department of Energy. (2023). U.S. Energy & Employment Jobs Report (USEER). Department of Energy.

27. E2. (2023, December). [Clean Jobs Pennsylvania 2023.](#)

28. E4 the Future. (2023). [Pennsylvania Energy Efficiency Jobs in America. E4TheFuture.](#)

29. Shah, J. (2023, August 31). LPO announces conditional commitment to Eos energy enterprises to produce next-generation battery energy storage systems. [Energy.gov.](#)

30. [Nextracker. \(2024\). American manufacturing: Nextracker.](#)

31. [Pennsylvania Department of Community and Economic Development. \(October 24, 2023\). Westinghouse to develop innovative Evinci microreactor in latest clean energy win for Pennsylvania under Governor Shapiro's leadership.](#)

32. [Duquesne Light Company. \(May 20, 2022\). Duquesne Light Company releases whitepaper on electrification's potential to benefit the environment, economy, and local communities.](#)

33. [Sustainable Pittsburgh. \(2024\). Decarb digest.](#)

34. [National Renewable Energy Laboratory. \(2022, March\). Pennsylvania's Clean Energy Jobs Potential Through 2030. National Renewable Energy Laboratory \(NREL\) NREL.](#)

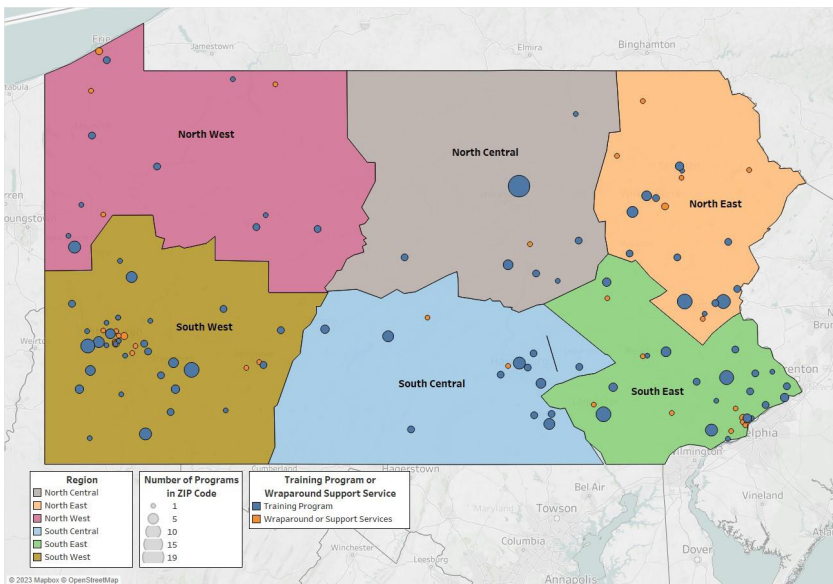
35. [Ross, M. \(2024, January 18\). Why workforce development is crucial to new infrastructure and clean energy investments. Brookings.](#)

36. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

37. [Pennsylvania Department of Environmental Protection. \(2021\). Pennsylvania 2021 clean energy gap analysis report.](#)

The demographic composition of today’s clean energy industry is also important to note. In the energy efficiency workforce specifically, at least nine out of ten workers are male with little racial diversity in certain fields<sup>38</sup> and the clean energy sector broadly shows nearly identical characteristics.<sup>39</sup> Black or African American workers are underrepresented across almost all energy technologies and sectors and account for only eight percent of the solar and wind labor force, well below the percentage of the national workforce (12%).<sup>40</sup> The energy efficiency workforce is also aging. Over half of construction and building inspectors are 55 or older, forecasting an area of great need in the near future as current workers plan for retirement.<sup>41</sup>

There are hundreds of pathways to careers in the clean energy sector and each occupation can be pursued in different ways.<sup>42</sup> There are nearly 300 unique training programs available in Pennsylvania’s energy efficiency industry alone.<sup>43</sup> Unfortunately, employers often lack the time and resources to train workers on new technologies and practices while accessibility to training and the need for streamlined wraparound and workforce development services continues.<sup>44</sup>



**FIG 2 // Pennsylvania Residential Energy Contractor Training Programs By Region**

[Source: Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report](#)

## CLEAN ENERGY WORKFORCE DEVELOPMENT ECOSYSTEM

The clean energy workforce development ecosystem is composed of a variety of stakeholders, including employers, policymakers, community-based organizations, education and workforce institutions, philanthropic organizations, and labor unions. To activate a robust clean energy workforce ecosystem in southwestern Pennsylvania, these stakeholder groups must be collaborative and focused on ensuring access to quality jobs and pathways to stable, family-sustaining careers in the clean energy sector. This means addressing the many social and economic factors experienced by individual job seekers and workers who are at the center of workforce development ecosystem activities.<sup>45</sup>

38. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

39. [E2. \(2023, December\). Clean Jobs Pennsylvania 2023.](#)

40. [Lehmann, S., Hunt, N., Frongillo, C., & Jordan, P. \(2021, April\). Diversity in the U.S. Energy Workforce: Data Findings to Inform State Energy, Climate, and Workforce Development Policies and Programs. NASEO | National Association of State Energy Officials | NASEO.](#)

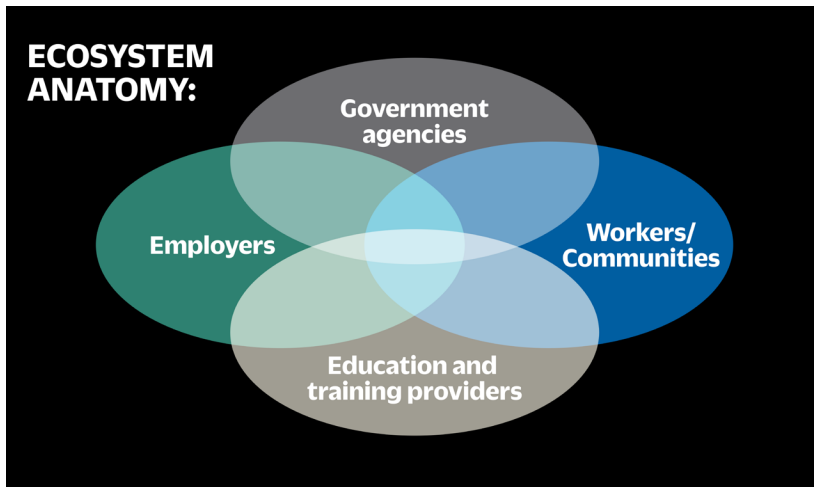
41. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

42. [American Clean Power. \(2022\). Clean energy career pathways catalog. American Clean Power with Research and Report Completed by Center for Individual & Organizational Effectiveness.](#)

43. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

44. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

45. [Schilling, J., Sirois, M., Briggs, A., Wilson, J., & Spaulding, S. \(2024, May 6\). Equitable access to quality climate infrastructure jobs: A framework for collaborative action. Urban Institute.](#)



**FIG 3 // Ecosystem Anatomy**

Source: [Sustainable Pittsburgh](#)

### ADDITIONAL LARGE-SCALE COLLABORATIVE INITIATIVES CONNECTING TO CLEAN ENERGY IN THE REGION

In response to federal clean energy initiatives, a number of new efforts are underway to connect stakeholders, build partnerships and ensure that equitable employment benefits reach communities in most need. Organizations such as Partner4Work, Pittsburgh Gateways Corporation, the City of Pittsburgh, Southwestern Pennsylvania Commission, Carnegie Mellon University, and the Energy Efficiency Alliance are taking steps regionally that also serve to nurture the connective tissue among stakeholders in the region's clean energy landscape.

Recent convening efforts that align, inform, and/or intersect with the Clean Energy Workforce Roundtable include the following:

- **Southwestern Pennsylvania New Economy Collaborative:** an 11-county coalition including nearly 90 organizations across government, workforce boards, organized labor, educational institutions, public, private and philanthropic supporters, co-chaired by Carnegie Mellon University and the Allegheny Conference on Community Development, has secured \$62.7 million to expand pathways to careers in robotics and artificial intelligence (AI)-related fields where clean energy economic development opportunities exist.<sup>46</sup>
- **Pittsburgh Workforce Development Hub:** in partnership with the White House & Partner4Work, the City of Pittsburgh's Mayor's Office is working to build pathways into family-sustaining careers in the region. Building on the momentum for action on equitable workforce development and federal opportunities, a broad range of stakeholders are engaged in targeted sectors, including clean energy.<sup>47</sup>
- **Pittsburgh Canopy Alliance:**<sup>48</sup> the City of Pittsburgh and eight partners, including Landforce, Pittsburgh Parks Conservancy, UrbanKind and others, have received \$9 million from the U.S. Department of Agriculture's Forest Service to plant and maintain trees, combat climate change and improve access to nature in the region's disadvantaged communities<sup>49 50</sup> as well as workforce development efforts.<sup>51</sup>
- **Southwestern Pennsylvania Commission's Priority and Comprehensive Climate Action Plan:** the Southwestern Pennsylvania Commission, in partnership with its member governments, has created a Priority Climate Action Plan<sup>52</sup> which includes recommendations for reducing greenhouse gas emissions by leveraging federal opportunities to advance workforce development, particularly for the benefit of low-income and disadvantaged communities. Comprehensive climate action planning over multiple years among leaders in each of the 10 counties of southwestern Pennsylvania will support stronger awareness, capacity and knowledge of opportunities to advance clean energy jobs in the region.

46. [U.S. Economic Development Administration. \(2022\). Southwestern Pennsylvania new economy collaborative.](#)

47. [City of Pittsburgh. \(2024\). White House Workforce Talent Hub. Engage Pittsburgh.](#)

48. [Pittsburgh Canopy Alliance. \(2024\). Home.](#)

49. [Board, G. \(2023, October 19\). How a \\$9 million grant will boost Pittsburgh's urban forest. The Allegheny Front.](#)

50. [United States Department of Agriculture. \(2023, September 14\). USDA invests \\$1 billion for nearly 400 projects to expand access to trees and green spaces in communities and neighborhoods nationwide through investing in America agenda. US Forest Service.](#)

51. [United States Department of Agriculture. \(2023, November 30\). Tree-planting event commemorates investment in Pittsburgh's urban forests. USDA Forest Service.](#)

52. [Southwestern Pennsylvania Commission. \(2024\). Regional priority climate action plan for Southwestern Pennsylvania \(EPA-95318101\). Environmental Protection Agency.](#)

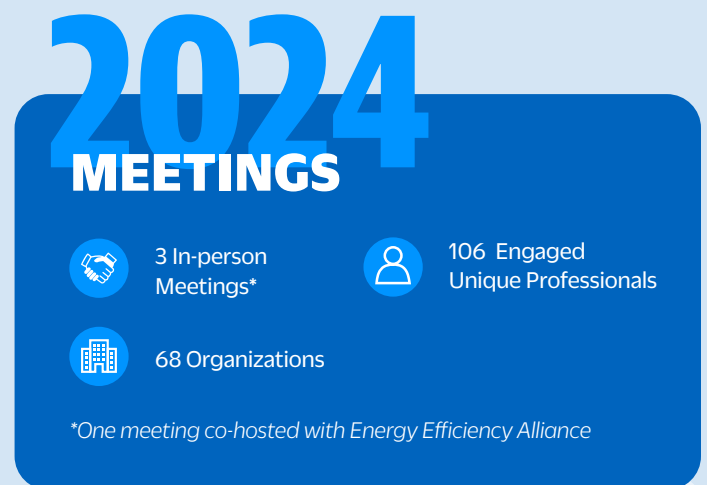


# ACTIVITIES OF THE CLEAN ENERGY WORKFORCE ROUNDTABLE

The Clean Energy Workforce Roundtable enables multi-disciplinary professionals to connect with and advance the southwestern Pennsylvania region's clean energy workforce development ecosystem. Participants promote connectivity of the regional clean energy workforce ecosystem by sharing information on activities and opportunities in the sector, and by identifying key needs and next steps for priority issues relevant to clean energy workforce development.

Meeting format:

The following visual provides an overview of how many meetings were convened per year, how many unique professionals and organizations participated as well as a list of the entities that have participated in these convenings.



Sustainable Pittsburgh has worked to engage nearly 90 regional organizations in the Clean Energy Workforce Roundtable to date, in addition to local and national foundation partners: for full list of organizations, see Appendix A.

## FEEDBACK FROM RECENT CONVENINGS

**I HAVE ENJOYED LEARNING MORE ABOUT IRA/IIJA INCENTIVES AND WOULD LIKE TO CONTINUE TO LEARN MORE.”**

**I WAS SURPRISED AT HOW MANY GREEN JOBS ARE IN PA.”**

**I WAS SURPRISED AT THE TYPE OF JOBS THAT WOULD BE ELIMINATED IF STEEL AND IRON MAKING CHANGED.”**

**CONTRACTOR SHARING THAT THEY TRAINED AN EMPLOYEE FOR 3 YEARS AND THIS EMPLOYEE LEFT FOR A BETTER-PAYING JOB. HOW CAN WE SUPPORT REALLY GOOD ON-THE-JOB TRAINING THAT LATER BENEFITS THAT EMPLOYER? ”**

**GOOD NETWORKING OPPORTUNITY AS USUAL.”**

**THE VARIETY OF TRAINING PROGRAMS WAS IMPRESSIVE.”**

## SURVEY RESULTS

Following each Clean Energy Workforce Roundtable meeting, participants were asked to rate their satisfaction with the event's expert speakers, networking opportunities, and workshop exercises. The results of these surveys have shown that participants are highly satisfied with the Roundtable activities. The average value rating tallied from Roundtable participants at 2024 meetings through August was 4.4 out of 5 and 100% of respondents indicated satisfaction with the meetings (66% responded they were “Very Satisfied” and 34% responded they were “Satisfied”). At the August meeting, 15 respondents reported that they had made a valuable connection at that gathering and 14 respondents indicated that they continued to work with a connection they had made at a previous Roundtable meeting.

Organizations that have given presentations during Roundtable meetings:

- Bridgeway Capital
- Carnegie Mellon University
- Catalyst Connection
- City of Pittsburgh
- Clean Energy Center
- Coalfield Development
- DMI Companies
- E2
- Energy Efficiency Alliance
- Jobs for the Future
- Master Builders' Association of Western PA
- Mincin Insulation
- Mitchell Plumbing, Heating and Cooling
- Pittsburgh Gateways Corporation / Energy Innovation Center
- Pennsylvania Department of Community and Economic Development
- Parkway West Career and Technology Center
- Partner4Work
- Pennsylvania Foundation for Fair Contracting
- Rising Tide Partners
- PA State Senator Lindsay Williams
- Southwestern Pennsylvania Commission
- Trade Institute of Pittsburgh

## TACTICAL EXAMPLES AND OPPORTUNITIES

Enabling an actionable, equitable and comprehensive clean energy workforce ecosystem that effectively serves job seekers, employers, educators, trainers and other workforce stakeholders is inherently challenging for several reasons. Approximately \$1 trillion is spent annually on workforce development in the United States; however, persistent social and economic challenges continue to inhibit the ability of workforce development programs to meet the needs of employers and individual workers.<sup>53</sup>

Improving clean energy workforce development requires coordinated, interdisciplinary action to achieve equitable employment outcomes and continuously improve job quality.<sup>54 55 56</sup> However, regional workforce development administrators face unstable funding, structural difficulties and an increasingly fragmented network of training providers, which has enabled inefficient and incoherent workforce development systems.<sup>57</sup> These characteristics of fragmentation and instability persist across southwestern Pennsylvania's local governance systems, and influences how equitably resources are allocated, how efficiently services are provided, and how strong the region stands in the global marketplace.<sup>58 59 60</sup>

Southwestern Pennsylvania's clean energy workforce development ecosystem faces many different challenges. Some are unique to the region, such as the need for a more cohesive regional workforce development network<sup>61</sup> among administrators and the approximately 400 occupational skills training and career management programs across the region.<sup>62</sup> Some issues are common across the United States, such as the need for targeted social and/or economic interventions to address specific racial and socio-economic workforce-related inequities.<sup>63 64 65 66 67 68</sup> Regardless of the challenge, aligned collaboration among employers, training providers, supportive services, and other public and private stakeholders helps to overcome multiple systemic barriers to achieve successful employment outcomes.<sup>69 70</sup>

## CHALLENGES IDENTIFIED

As determined through stakeholder discussions and supported by a review of the literature, several needs hinder participation in the clean energy industry. These obstacles range from individual barriers to inadequately resourced institutional systems. Four broad regional challenges have emerged, including:

- **Improving ecosystem connectivity, global knowledge, and collaborative potential:** As new public and private sector approaches to addressing clean energy workforce demands emerge, it is vital for partners to compete together for funding, build stronger referral networks, and learn from one another to address gaps in services. The success in building connected pathways that support jobseekers from awareness to training to employment depends on improving stakeholder connectivity and realizing collaborative potential.
- **Improving visibility and accessibility of clean energy jobs:** the clean energy workforce ecosystem is vast; however, many that contribute to or participate in the region's clean energy workforce are unaware of their contributions. Increasing general awareness of the clean energy sector is needed to align and link job opportunities with training and placement.

53. Manyika, J., Lund, S., Auguste, B., & Ramaswamy, S. (2021). *Creating an effective workforce system for the new economy*. McKinsey & Company.

54. Bloom, D., & Michalopoulos, C. (2001, May). *How Welfare and Work Policies Affect Employment and Income: A Synthesis of Research*. MDRC.

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64. Rutledge, M. L., & Mayes, R. D. (2024). *A culturally responsive career development group for Minoritized girls of color*. *Professional School Counseling*, 28(1a).

65. Bertrand, M., & Mullainathan, S. (2003). *Are Emily and Greg more employable than Lakisha and Jamal? A Field experiment on labor market discrimination*.

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68. Perez-Johnson, L., & Holzer, H. (2021, April). *The Importance of Workforce Development for a FutureReady, Resilient, and Equitable American Economy*. American Institutes for Research.

69. Danziger, S. K., & Seefeldt, K. S. (2003). *Barriers to employment and the 'Hard to serve': Implications for services, sanctions, and time limits*. *Social Policy and Society*, 2(2), 151-160.

70. Laboissiere, M., & Mourshed, M. (2017, February 13). *Closing the skills gap: Creating workforce-development programs that work for everyone*. McKinsey & Company.

- **Address barriers to employment in clean energy jobs:** Roundtable participants consistently raised the issues workers with barriers to employment face. Supportive service networks and employers that provide wraparound support for those experiencing transportation barriers, childcare, and a myriad of additional life events and experiences should be integrated into training and workplace systems.
- **Expanding training opportunities, with employment on the other side:** the workforce development ecosystem is continuously evolving to meet the needs of workers, employers, businesses and communities. With new federal and state programs supporting clean energy, Roundtable participants continuously noted the need to advance training programs by showcasing the variety of options available as well as enabling direct connections among programs, employers and job seekers.

In research conducted by the RAND Corporation<sup>71</sup> on the Pittsburgh region’s science- and technology-focused (STF) workforce ecosystems – of which advanced manufacturing, utilities, architectural, engineering, and transportation are noted as STF sectors and are also considered clean energy job sectors – the authors report that the “lack of an integrated regional STF ecosystem compounds the barriers to equitable participation in the STF workforce. Transportation barriers inhibit access to training and jobs (particularly in surrounding counties), and a lack of STF jobs in some geographic and demographic communities limits early introduction to STF fields and contributes to perceptions of STF careers as out of reach.” The findings of this research resonate with the challenges surfaced by those engaged in Sustainable Pittsburgh’s Clean Energy Workforce Roundtable.

Resources that were consistently suggested in Roundtable discussions and will advance progress toward addressing these four needs include a landscape analysis of training programs, a skills crosswalk between relevant fields, a marketing campaign to promote regional clean energy jobs, technical assistance for local governments seeking funding for clean energy projects, and stronger collaborative connectivity to support funding applications. Further, there is a repeated desire for centralization of resources.

Using insights shared from virtual and in-person meetings, facilitated exercises and related activities, as well as the literature, the following describes the aforementioned challenges at greater length, including additional context and tactical examples and opportunities to address these challenges. This next section outlines the identified needs, an analysis of the current context affecting their fulfillment, potential opportunities, and examples of practical, tactical next steps to enable a comprehensive continuum of career and social services such that southwestern Pennsylvania meets the need for clean energy workers with a diverse and appropriately trained workforce.

### **SWPA Clean Energy Workforce Roundtable Mission:**

Our region is positioned to meet the demands for clean energy workers with a diverse and appropriately trained workforce.

## **CHALLENGE: IMPROVE ECOSYSTEM CONNECTIVITY, GLOBAL KNOWLEDGE, AND COLLABORATIVE POTENTIAL**

Notes from Roundtable convenings repeatedly include statements such as “eliminate silos,” “enhance collaboration,” or “centralize information” when participants were asked to list barriers hindering the increase in clean energy careers in southwestern Pennsylvania. Enhancing coordination of data sharing, marketing, and service delivery among training providers would yield stronger results for the region’s clean energy workforce ecosystem. Enhanced connectivity and collaboration improves all other ecosystem challenges: building awareness, reducing barriers, and expanding training and employment, and can lead to better outcomes.

71. [Zaber, M. A., Warren May, L., Sytsma, T., Phillips, B., Walsh, S. J., Li, R., Steiner, E. D., Wenger, J. B., Sousa, É. M., & Arana, J. \(2023, January 9\). Assessing Pittsburgh’s science- and technology-focused workforce ecosystem. RAND Corporation.](#)

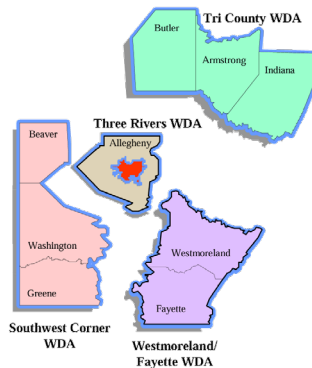
## CONTEXT

Stronger cross-sector connectivity among stakeholder groups can enable equitable access to workforce development opportunities<sup>72</sup> and is needed to foster relationships among trainers, social service providers, employers, educators, and others to incubate innovative solutions that address the many commonly experienced needs and barriers of individual job seekers and workers.<sup>73</sup>

Numerous studies have identified the need for integrating career and social services to facilitate more effective entry into the workforce.<sup>74 75</sup> Pennsylvania's Workforce Innovation and Opportunity Act (WIOA) 2024-2027 Combined State Plan encourages Local Workforce Development Boards to obtain regionally specific social service needs through partner programs as well as community and faith-based organizations.<sup>76</sup> In some cases, workforce development system administrators are working to move away from acting as a social service provider and act more like an intermediary to facilitate needed changes within the workforce development ecosystem.<sup>77</sup> The following tactical opportunities hold lessons for the Clean Energy Workforce Roundtable described above, and have features that we may incorporate here regionally to improve ecosystem connectivity, global knowledge, and collaborative potential in the region.

## TACTICAL EXAMPLE

Southwestern Pennsylvania's clean energy workforce development resources could benefit from enhanced coordination among the Local Workforce Investment Boards. The Southwest Planning Region, a nine-county workforce development planning region which is overseen by the Southwest Corner Workforce Development Board,<sup>78</sup> Partner4Work,<sup>79</sup> the Tri-County Workforce Investment Board,<sup>80</sup> and the Westmoreland-Fayette Workforce Investment Board,<sup>81</sup> coordinate on an integrated regional planning process to develop workforce development service delivery strategies.<sup>82</sup> The regional workforce investment boards in southwestern Pennsylvania have experience collaborating on strategies that benefit the broader region, including through the U.S. Department of Labor's Building Pathways to Infrastructure Jobs grant that will expand and scale industry leading registered apprenticeship programs to the nine-county area. Two of the registered apprenticeship programs are most closely aligned with the clean energy sector: Mechatronics, which will benefit the growing number of clean energy manufacturers, and EV Auto Technician.<sup>83</sup>



**FIG 4 // Workforce Development Areas**

Source: Pennsylvania Department of Labor and Industry. (2024, May). [Guide to Pennsylvania Occupational Wages](#). Center for Workforce Information & Analysis.

72. O'Leary, J., Overlay, N., & Datar, A. (2023, August 8). Rethinking the workforce development ecosystem: Grow the economy by bridging the skills gap. [Deloitte Insights](#).
73. [Jobs for the Future \(JFF\)](#). (2024, March 29). Transforming training and the eligible training provider list to serve the U.S. workforce. [Recommendations From the Workforce Transformation Policy Council](#).
74. [Board of Governors of the Federal Reserve System](#). (n.d.). [Employment and Workforce Development](#).
75. [Center for American Progress Task Force on Poverty](#). (April 25, 2007). [From poverty to prosperity: A national strategy to cut poverty in half](#).
76. [Pennsylvania Department of Labor and Industry](#). (2024). [2024-2028 Workforce innovation and Opportunity Act \(WIOA\) Combined State Plan](#). [PA Department of Labor & Industry](#).
77. [Pew Charitable Trusts](#). (2012, January 18). [Philadelphia's workforce development challenge: Serving employers, helping job seekers and fixing the system](#). [The Pew Charitable Trusts | Philadelphia Research Initiative](#).
78. [Southwest Corner Workforce Development Board](#). (2024). [About the Southwest Corner Workforce Development Board \(SCWDB\)](#).
79. [Three Rivers Workforce Development Board, also know as Partner4Work](#). (2024). [What is Partner4Work](#). [Partner4Work](#).
80. [Tri-County Workforce Investment Board](#). (2024). [About the Tri-County Workforce Investment Board](#). [Welcome to TCWIB](#).
81. [Westmoreland Fayette Workforce Investment Board](#). (2024). [About the Westmoreland Fayette Workforce Investment Board](#). [WFWIB](#).
82. [Partner4Work](#). (2023). [WIOA regional/Local plan modifications 2023](#).
83. [Partner4Work](#). (2023, December 15). [Board of Directors Briefing Book](#). [Developing a thriving workforce in the Pittsburgh area - Partner4Work](#).

An initiative to bring Workforce Investment Boards closer could evolve to incorporate elements of the Smart Energy Initiative of Southeastern Pennsylvania,<sup>84</sup> an industry partnership involving the region's workforce investment boards, planning commissions, electric utilities, community development organizations, and others. Among other programs, this group administers a Clean Energy Workforce Development Grant<sup>85</sup> to develop a clean energy training plan and recruiting support for businesses based in Berks, Chester and Montgomery Counties.

#### TACTICAL EXAMPLE

Supported by American Rescue Plan dollars, Maine's Clean Energy Partnership<sup>86</sup> provides an example of how to advance clean energy, economic development and workforce goals, working to improve awareness and financially support training programs and entry to the job market. The Partnership convenes leading experts to sustain attention to the needs of the clean energy sector and promotes collaboration to address emerging needs and build new and expand existing support chains with a goal of doubling clean energy jobs by 2030. This is a goal that could be championed in southwestern Pennsylvania through a convening of an intercounty clean energy economic development coalition that spans southwestern Pennsylvania's 10-county region to enable more coordinated responses to the region's strongest workforce needs, and uses limited resources effectively without duplicating efforts.

#### TACTICAL EXAMPLE

Stakeholders in southwestern Pennsylvania could additionally participate in the National Clean Energy Workforce Alliance<sup>87</sup> which has convened more than 500 employers, training providers and others nationally to provide information, creating a national community of practice and addressing shared workforce challenges in the renewable energy sector.

***What these examples and opportunities tell us:*** Ensuring that employers, training providers, service providers, government systems, and workers are connected and sharing information is possible, and fundamental for the creation of comprehensive pathways to employment.

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## CHALLENGE: ENHANCING VISIBILITY OF CLEAN ENERGY JOBS AND TRAINING PATHWAYS

Roundtable participants familiar with administering workforce training programs noted interest in deepening regional awareness of how skills translate between legacy industries of southwestern Pennsylvania and the opportunities for workforce development in the clean energy sector. Interest was also expressed for resources that catalog the various clean energy professions currently available in southwestern Pennsylvania along with transferable skills from other industries and occupations. Many participants noted the need to improve the visibility of clean energy training and job opportunities to enhance awareness and accessibility, particularly in disadvantaged communities of southwestern Pennsylvania; jobseekers are more likely to seek familiar roles without sufficient information about career benefits in clean energy jobs. Repeatedly, Roundtable participants noted the importance of communicating about these career pathways early in K-12 education, in addition to the re-skilling and up-skilling needs. Participants also noted the desire to integrate worker voice into public outreach and education efforts as well as adopting regional branding campaigns, hosting clean energy specific hiring events, promoting social media ambassadors, creating a clean energy job board, and ground-level marketing to targeted residents in high-priority communities.

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84. [Smart Energy Initiative of Southeastern Pennsylvania. \(2024\). About SEI. Smart Energy Initiative.](#)

85. [Smart Energy Initiative of Southeastern Pennsylvania. \(2024\). Smart energy initiative » clean energy workforce development grant. Smart Energy Initiative.](#)

86. [State of Maine Governor's Energy Office. \(2020\). Maine Won't Wait: A Four-Year Plan for Climate Action.](#)

87. [Interstate Renewable Energy Council \(IREC\). \(2024\). National clean energy workforce alliance.](#)

## CONTEXT

Establishing a common understanding of what defines a clean energy job is difficult, particularly in southwestern Pennsylvania. There are a wide range of technologies that encompass the clean energy industry,<sup>88</sup> and varying definitions for what constitutes “clean” or “renewable.”<sup>89 90</sup> The clean energy industry intersects many disciplines, and general public awareness of clean energy varies widely.<sup>91</sup> Many have analyzed southwestern Pennsylvania’s energy sector from differing perspectives and have reached varying conclusions, including from the Center for Strategic and International Studies,<sup>92</sup> Pennsylvania’s Department of Environmental Protection,<sup>93</sup> Team Pennsylvania,<sup>94</sup> the Center for the Climate and Energy Solutions (C2ES),<sup>95</sup> the Marshall Plan for Middle America,<sup>96</sup> the Roosevelt Project,<sup>97</sup> the Allegheny Conference on Community Development,<sup>98</sup> The Nature Conservancy,<sup>99</sup> RAND Corporation,<sup>100</sup> Reimagine Jobs,<sup>101</sup> Energy Efficiency Alliance,<sup>102</sup> the University of Massachusetts Amherst<sup>103</sup> and the Ohio River Valley Institute.<sup>104</sup>

Furthermore, the clean energy sector is more white and more male than the statewide working population and one in five workers is 55 years of age or older.<sup>105</sup> The lack of diversity in Pennsylvania’s clean energy workforce creates communication barriers which impacts talent recruitment, funding opportunities and market relevance for underrepresented populations. Without centralized communication channels and integrated data infrastructure<sup>106</sup> employers, workforce development experts, and job seekers are left searching without direction, which is further exacerbated by fragmented and inflexible resources to address the need for better coordination.<sup>107</sup>

## TACTICAL EXAMPLE

Sectors in the clean energy industry have created career maps<sup>108</sup> that provides users with interactive information on overlapping skills and education needed across several clean energy industries. In particular, the Solar Career Map<sup>109</sup> hosts an interactive tool that explores job opportunities and visualizes potential career paths and the necessary skills and training needed to get a solar job. The Green Buildings Career Map<sup>110</sup> explores job opportunities in construction and energy efficiency industries. These tools help users visualize possible progressions between occupations as well as the skills and training needed to obtain hundreds of occupations. Similarly, American Clean Power, a large-scale clean energy trade association, developed a Clean Energy Career Pathways Catalog,<sup>111</sup> which includes over 300 job descriptions for technical and speciality occupations in clean energy. Combining these resources and making them relevant to southwestern Pennsylvania could enable stronger awareness of and access to clean energy jobs while showcasing the region as supportive of clean energy workers and investments. This resource could also host current clean energy incentives from public and private sources available to targeted sectors, such as schools, local governments as well as public health and safety facilities throughout the region.

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89. [Natural Resources Defense Council. \(2022, June 1\). Renewable energy: The clean facts. Be a Force for the Future | NRDC.](#)

90. [United Nations. \(2024\). What is renewable energy?](#)

91. [Natural Marketing Institute. \(2011, April\). Consumer Attitudes About Renewable Energy: Trends and Regional Differences. National Renewable Energy Laboratory \(NREL\) NREL.](#)

92. [Ladislav, S., & Hyland, L. \(2018, July 31\). Pennsylvania's energy future. CSIS | Center for Strategic and International Studies.](#)

93. [Pennsylvania Department of Environmental Protection. \(2018, November\). Pennsylvania's solar future plan. Department of Environmental Protection.](#)

94. [Team Pennsylvania. \(2019, May 29\). Pennsylvania Energy Horizons Report. Team PA.](#)

95. [Cilento, C. \(2023, May\). Manufacturing a decarbonized future in southwestern Pennsylvania. Center for Climate and Energy Solutions \(C2ES\).](#)

96. [Resilient Cities Catalyst. \(n.d.\). The Marshall Plan for Middle America \(MP4MA\).](#)

97. [Transition in Southwest Pennsylvania. MIT Center for Energy and Environmental Policy Research \(CEEPR\).](#)

98. [Energy Task Force of the Allegheny Conference on Community Development. \(2022, April 22\). Our Region's Energy Future: A strategy for accelerating decarbonization, investment and inclusive growth in the Pittsburgh region. Allegheny Conference on Community Development.](#)

99. [The Coalition for Green Capital and The Nature Conservancy. \(2017, February 28\). Pennsylvania Clean Energy Market Report. The Nature Conservancy: A World Where People & Nature Thrive.](#)

100. [Curtright, A., Strong, A., Easton-Cababria, L., Phillips, B., & Ash, J. \(2024, May 23\). Economic Opportunities in Sustainability for Southwestern Pennsylvania. RAND Corporation.](#)

101. [Kalafatis, S. \(2023, August 3\). Relationships and Occupations Underlying Regional Economic Transformation. Reimagine Jobs Showcase.](#)

102. [Energy Efficiency Alliance. \(2022, August\). Workforce Development for Energy Efficiency in New Jersey and Pennsylvania. Keystone Energy Efficiency Alliance | KEEA.](#)

103. [Pollin, R., Wicks-Lim, J., Chakraborty, S., & Semieniuk, G. \(2020, October\). Impacts of the Reimagine Appalachia & Clean Energy Transition Programs for Pennsylvania: Job Creation, Economic Recovery, & Long-Term Sustainability. ReImagine Appalachia.](#)

104. [Goodenbery, J., Animas, E., & Gorman, J. \(2022, December\). A Clean Energy Pathway for Southwestern Pennsylvania. A report provided by Strategen on behalf of the Ohio River Valley Institute.](#)

105. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

106. [Lambart, J., & White, M. \(2019, June\). Barriers to Outcomes-Oriented Contracting in Workforce Development. Harvard Kennedy School Mossavar-Rahmani Center for Business and Government.](#)

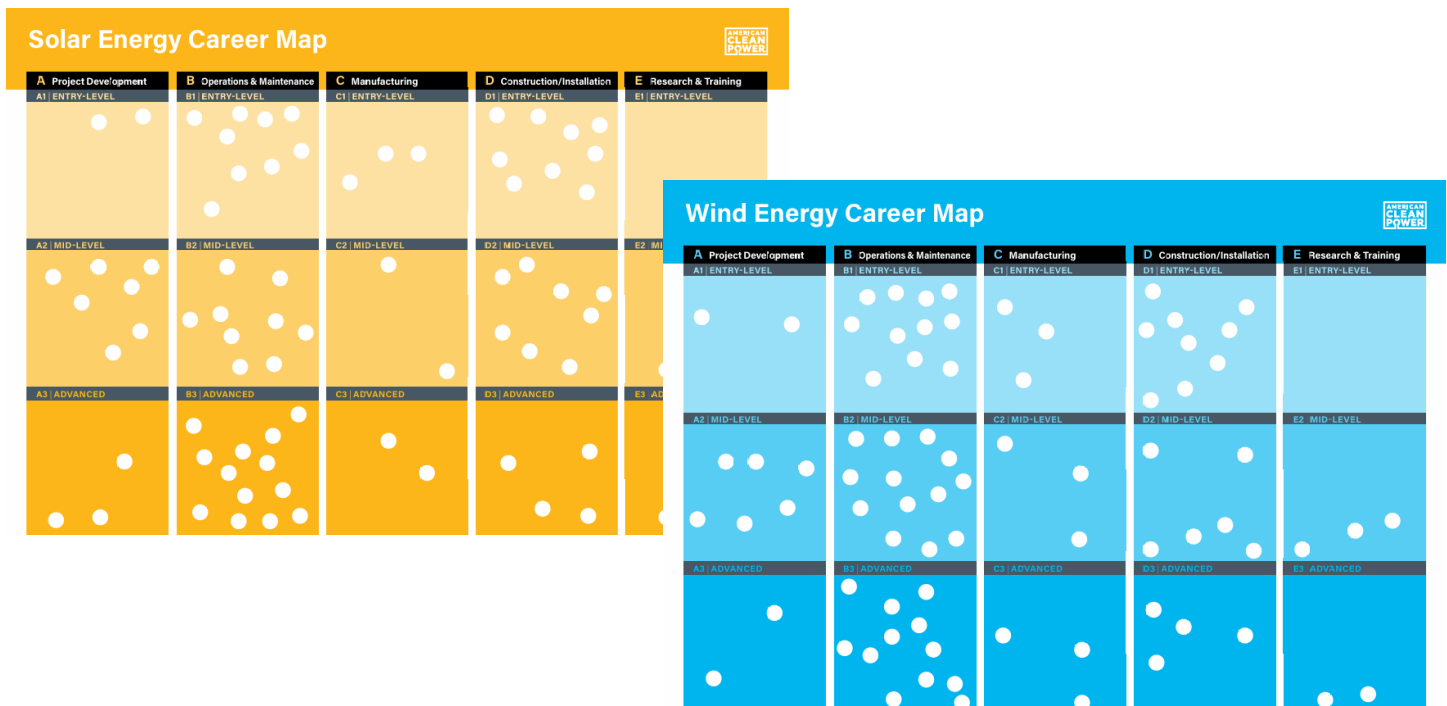
107. [Kirby, G., Lyskawa, J., & Derr, M. \(2015, January 19\). Coordinating employment services across the TANF and WIA programs. Mathematica.](#)

108. [Interstate Renewable Energy Council \(IREC\). \(2024\). Clean Energy Career Maps. IREC - Interstate Renewable Energy Council \(IREC\).](#)

109. [Interstate Renewable Energy Council. \(2024\). Solar Career Map. IREC - Interstate Renewable Energy Council \(IREC\).](#)

110. [Green Buildings Career Map. \(2024\). Green Buildings Career Map. Department of Energy, Office of Energy Efficiency and Renewable Energy.](#)

111. [American Clean Power. \(2024\). Clean energy career pathways catalog. ACP.](#)



**FIG 5 // Solar Energy Career Map & Wind Energy Career Map**

Source: [American Clean Power. \(2022\). Clean energy career pathways catalog. American Clean Power with Research and Report Completed by Center for Individual & Organizational Effectiveness.](#)

### TACTICAL EXAMPLE

The City of Pittsburgh's designation as a key workforce hub by the White House<sup>112,113</sup> prompted regional employers to be engaged on the Pittsburgh Good Jobs Principles,<sup>114</sup> which encourages several strategies for workforce development, employment practices, community engagement, and codification of best practices that ensure the benefits of these activities reach disadvantaged communities. Employers play a significant role in ensuring equitable access to family-sustaining jobs and should participate in public efforts to demonstrate their commitment to best practices and incrementally increasing standards. More municipalities and workforce investment boards throughout the southwestern Pennsylvania region can also adopt these principles and engage employers across priority industries, including the clean energy sector.

One activity that has evolved from the City of Pittsburgh's promotion of its Good Jobs Principles has been the launching of Energize Pittsburgh,<sup>115</sup> an initiative to help residents increase the energy efficiency of their homes and support jobs for disadvantaged workers and businesses. The momentum from this initiative could lead the City of Pittsburgh to adopt a model similar to PowerCorpsPHL<sup>116</sup> which engages un- and under-employed 18-30-year-olds to participate in on-the-job training on projects supported by Energize Pittsburgh which would lead to a stronger, clean energy, green infrastructure jobs base in the region. Programs such as the Pittsburgh Innovation District Skills Alliance could provide a local, replicable model to initiate action.<sup>117</sup>

112. [The City of Pittsburgh. \(2024\). White House and Pittsburgh workforce talent hub. Engage Pittsburgh.](#)

113. [Pennsylvania Department of Community and Economic Development. \(2023, May 17\). Pittsburgh receives federal designation as a key workforce hub, sending a strong signal that Pennsylvania is open for business. PA Department of Community & Economic Development.](#)

114. [The City of Pittsburgh. \(2023, November 8\). Mayor ed Gainey and acting Secretary of labor Julie Su host signing ceremony for Pittsburgh good jobs principles. City of Pittsburgh.](#)

115. [The City of Pittsburgh. \(2024, April 22\). Initiative launched to reduce energy burden for Pittsburgh households. City of Pittsburgh.](#)

116. [Power Corps PHL. \(2024\). About — PowerCorpsPHL. PowerCorpsPHL.](#)

117. [Pittsburgh Innovation District. \(2023\). Innovation District Skills Alliance \(IDSA\).](#)

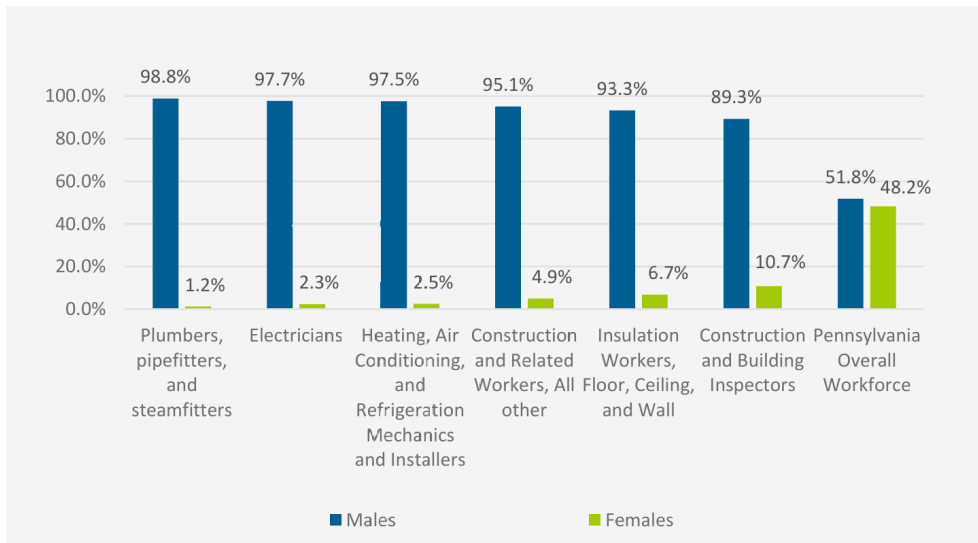


### TACTICAL EXAMPLE

Support is needed for platforms that enable stronger access to jobs in clean energy across the southwestern Pennsylvania region. In New York’s Capital Region – the metropolitan area surrounding Albany – the Capital Region Clean Energy Hub<sup>118</sup> connects community members, especially from priority populations, with opportunities to enter the clean energy workforce. Enabled by state legislation and supported by New York state government, labor, and community stakeholders, this intercounty effort involving six counties surrounding Albany, NY offers one example of an effort to consolidate activities to recruit workers, market the region as a clean energy hub, and attract federal investments under a regional collaboration with some available resources for jobseekers listed.

### TACTICAL EXAMPLE

Incorporating worker voice<sup>119</sup> into workforce development efforts ensures job recruitment, training and skills development, job quality, and workplace health and safety policies and procedures are created and maintained with and for workers. In the clean energy sector, women and workers of color are significantly underrepresented<sup>120</sup> (see chart below). Employers, trainers and workers would improve hiring and retention from incorporating asset-based language<sup>121</sup> into clean energy educational and workplace settings to ensure a sense of belonging and empowerment for underrepresented people. Roundtable conversations and research align on the need for stronger exposure to careers in fields similar to the clean energy sector for disadvantaged communities in the Pittsburgh region to help disrupt conventional perceptions of STEM fields<sup>122</sup> with recommendations for broad K-12 career exposure, targeted recruitment and advertising in underserved communities, and stronger expressions of a welcoming organizational culture from employers for women, people of color and low-income individuals.



**FIG 6 // Gender Composition Of Occupations In Pennsylvania, 2023 Q1**

[Source: Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

**What these examples and opportunities tell us:** Greater visibility of clean energy career pathways may help reduce disparities, and the region should prioritize work to better define these careers and highlight opportunities with adults and with youth.

118. [Clean Energy Capital Region. \(2024\). Workforce Development.](#)

119. [Miller, S., Piazza, M., Putnam, A., & Broady, K. \(2023, May 24\). Worker voices: Shifting perspectives and expectations on employment. Fed Communities.](#)

120. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

121. [Washington, D. \(2023, July 13\). New JFF Guide Offers Advice on How to Talk About Race. Jobs for the Future.](#)

122. [Zaber, M. A., Warren May, L., Sytsma, T., Phillips, B., Walsh, S. J., Li, R., Steiner, E. D., Wenger, J. B., Sousa, É. M., & Arana, J. \(2023, January 9\). Assessing Pittsburgh's science- and technology-focused workforce ecosystem. RAND Corporation.](#)

## CHALLENGE: ADDRESS BARRIERS TO EMPLOYMENT IN CLEAN ENERGY JOBS

Roundtable participants consistently raised the need to address the multitude of social, economic, and logistical challenges faced by current and prospective workers. Several discussions focused on the many accessibility issues jobseekers face when pursuing, applying for and securing employment opportunities.

There is a need to streamline the social service referral systems and build wraparound support networks that connect service seekers with service providers, primarily in the areas of transportation, family care, and broadband access. Additionally, supports are needed for job seekers who have previously interacted with the justice system, need supportive educational services, or who have other barriers arising from a myriad of life events and experiences. Paid and flexible training opportunities are ideal, so that trainees do not have to endure financial hardship to participate and increase their skills. Not every jobseeker will be appropriate or interested in every job. Marketing, training and reskilling should reflect that.

Roundtable participants also discussed the need for employers to offer benefits that are intentionally accessible, meaning if an employee is eligible for and receiving assistance through Supplemental Nutrition Assistance Program (SNAP) to support food security, employers should offer assistance in areas other than food security, such as transportation or childcare, to address the layers of support needed to apply for, earn, and secure employment. Stronger coordination is needed across workforce accessibility service providers and regional employers to enable connections to existing supportive resources. Participants noted the need to adopt models that were currently in practice locally to address certain impediments to meaningful employment and expand existing support systems to better accommodate workers.

### CONTEXT

Equitable opportunities can be created for women, people of color, older workers, those with a disability, those without a high school diploma, those parenting children alone, people with past involvement with the criminal justice system, people whose first language is not English, and many others.<sup>123 124 125</sup> Low-income and disadvantaged communities persistently experience a nearly double unemployment rate, face lower labor force participation, and experience household incomes of nearly half of non-disadvantaged communities.<sup>126</sup> In rural communities across Pennsylvania, logistical barriers, such as limited access to broadband,<sup>127</sup> to public transportation or a vehicle,<sup>128</sup> can reduce the likelihood of accessing career and training opportunities.

County	LIDACs	Total Census Tracts <sup>29</sup>	% of Total Census Tracts	LIDAC Population	County Population <sup>30</sup>	% of Total Population
Allegheny	107	394	27.2	249,326	1,223,583	20.4
Armstrong	7	19	36.8	22,353	68,839	32.5
Beaver	12	53	22.6	33,943	170,567	19.9
Butler	4	47	8.5	11,467	184,059	6.2
Fayette	23	36	63.9	81,540	136,466	59.8
Greene	1	10	10.0	4,204	38,686	10.9
Indiana	4	24	16.7	15,787	88,847	17.8
Lawrence	10	28	35.7	25,824	90,968	28.4
Washington	13	62	21.0	28,947	207,875	13.9
Westmoreland	20	113	17.7	47,060	365,012	12.9
<b>Total</b>	<b>201</b>	<b>786</b>		<b>520,451</b>	<b>2,574,902</b>	

**FIG 7 // LIDACs And Population Within SPC Region**

Source: [Southwestern Pennsylvania Commission. \(2024\). Regional priority climate action plan for Southwestern Pennsylvania \(EPA-95318101\). Environmental Protection Agency.](#)

123. [United States Department of Labor. \(2021, October 15\). Training and employment notice No. 12-21. Practitioners Guide to Supportive Services.](#)

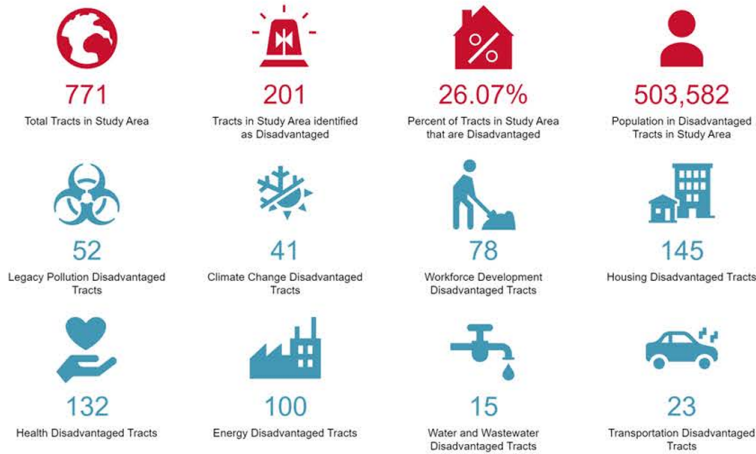
124. [Hess, C., Williams-Baron, E., Gault, B., & Hegewisch, A. \(2016, December\). Supportive services in workforce development programs: Administrator perspectives on availability and unmet needs. Institute for Women's Policy Research.](#)

125. [Perez-Johnson, I., & Holzer, H. \(2021, April\). The Importance of Workforce Development for a Future Ready, Resilient, and Equitable American Economy. American Institutes for Research \(AIR\).](#)

126. [Pennsylvania Department of Environmental Protection. \(2024\). Pennsylvania's Priority Climate Action Plan.](#)

127. [Meinrath, S., et al \(2019\). Broadband Availability and Access in Rural Pennsylvania. The Center for Rural Pennsylvania.](#)

128. [Yan, Ph.D., W. \(2006, January\). Adult Education in Rural Pennsylvania. The Center for Rural Pennsylvania.](#)



**FIG 8 // Justice40 Disadvantaged Tracts Breakdown**

Source: [Southwestern Pennsylvania Commission. \(2024\). Regional priority climate action plan for Southwestern Pennsylvania \(EPA-95318101\). Environmental Protection Agency.](#)

Some of the barriers identified are specific to the clean energy sector, such as meeting certain background standards for contract work with utilities<sup>129</sup> as well as educational barriers to entry into clean energy fields.<sup>130</sup> Many of the individual accessibility issues identified are consistently experienced across all sectors and are not characteristic of needs only experienced by the clean energy industry.

The following tactical examples identify barriers to employment in the clean energy industry that have been identified by members of the Clean Energy Workforce Roundtable. Some tactical examples also include actions taken by innovative southwestern Pennsylvania stakeholders to address those barriers. The following field tested approaches are replicable, and stakeholders are encouraged to evaluate opportunities to collaborate with partners to implement similar initiatives.

### TACTICAL EXAMPLE

**Transportation:** One of the primary barriers to finding, securing and retaining employment is access to reliable transportation given southwestern Pennsylvania’s physical landscape and widely dispersed employment centers as well as training and employment opportunities. Broadly, the Southwestern Pennsylvania Commission can take steps to organize its regional Transit Operators Committee<sup>131</sup> – including Freedom Transit in Washington County, Pittsburgh Regional Transit, Beaver County Transit Authority, Mid Mon Valley Transit Authority, Westmoreland Transit Authority, Fayette Area Coordinated Transportation, New Castle Area Transit Authority, Butler Transit Authority, Indiana County Transit Authority, Town & Country Transit in Armstrong County – and other stakeholders to coalesce on a strategy that seeks discretionary and formula funding for regional workforce development-focused transportation supportive services. Programs offered by the Pennsylvania Department of Transportation, such as the Shared-Ride Program for older Pennsylvanians,<sup>132</sup> could be replicated for job seekers to support a regionalized workforce transportation network.

Employers play an important role in expanding innovative transportation models that serve disadvantaged workers. Offering shuttle services, rideshare program incentives,<sup>133</sup> investing in bicycle infrastructure,<sup>134</sup> and mobility stipends<sup>135</sup> can alleviate specific transportation barriers workers face. Pennsylvania employers working on projects supported by the Inflation Reduction Act or Infrastructure Investment and Jobs Act can take advantage of the Commonwealth Workforce Transportation Program<sup>136</sup> to offer direct cash assistance for work and training-related transportation as well as several other supportive service needs. Employers can also

129. [This barrier was identified by clean energy employers during the employer focus group held on May 16, 2024.](#)

130. [Urban Institute. \(2024, May 1\). Who Has Access to Good Clean-Energy Jobs?](#)

131. [Southwestern Pennsylvania Commission. \(2024\). Multimodal transportation.](#)

132. [Pennsylvania Department of Transportation. \(2024\). Seniors and Persons with Disabilities. Pennsylvania Department of Transportation \(PennDOT\).](#)

133. [Smart Cities Dive. \(2022, August 22\). 6 strategies to create a successful employee carpool program.](#)

134. [Freemark, Y., Su, Y., Oliver, W., & Fiol, O. \(2022, January\). Making the Case for Improved Bicycling Infrastructure. Data and evidence to advance upward mobility and equity | Urban Institute.](#)

135. [Pittsburgh Regional Transit. \(2024\). Job perks.](#)

136. [Commonwealth of Pennsylvania. \(2023, July 31\). 4 Pa. Code subchapter JJJ. Commonwealth workforce transformation program. Pennsylvania Code & Bulletin.](#)

collaborate with one of the many community-based organizations that offer support for people with specific transportation barriers, such as those who do not have a driver's license or access to a vehicle.<sup>137</sup> A regional response from each of these entities to address this persistent workforce barrier would enable stronger employment outcomes and attract businesses and others to invest in the region.

### TACTICAL EXAMPLE

Family Care Supports: providing childcare, elder care, parental care, mental health care, and disability care – collectively, family care supports – have been consistently identified as a barrier to entering the workforce. The Pennsylvania Early Learning Investment Commission and Pennsylvania Chamber of Commerce found that childcare issues result in a nearly \$3.47 billion loss annually to Pennsylvania's economy and that 38% of parents postpone upskilling, and 10% voluntarily leave the workforce due to childcare issues.<sup>138</sup> Members of the Clean Energy Workforce Roundtable noted that family care support must prioritize accessibility and flexibility, meaning hours must be flexible, part-time options should be available, and rates need to be affordable. Regional models have emerged in southwestern Pennsylvania, such as the partnership between Pittsburgh International Airport and La Petite Academy to provide on-site childcare for airport employees,<sup>139</sup> which demonstrates that employers can structure family care supports to accommodate critical family needs to keep families together during trying times and workers on the job to address their responsibilities.

As more private childcare providers face closure due to staffing shortages and rising costs<sup>140</sup> employers can play a critical role in supporting the family care needs of applicants and workers. Research shows that companies that offer childcare benefits in their employment packages see better results in recruiting, retention, and productivity.<sup>141</sup> However, most employers face limitations in providing direct family care services. To bridge this gap, Local Workforce Investment Boards and Departments of Human Services can collaborate with regional economic development organizations and family care supportive service providers to develop strategies that provide technical assistance and best practices for employer-sponsored family care models.<sup>142</sup>

### TACTICAL EXAMPLE

Broadband and Technology Access: limited or no access to reliable broadband services with current, user-friendly devices inhibits: workers from obtaining skills and finding meaningful employment, employers from finding qualified workers, trainers and educators from reaching targeted populations and providing learning services, and governments from enabling locally organized action to address workforce needs. Millions of Americans still lack access to broadband services, with 43% of adults with incomes below \$30,000/year reporting no broadband services.<sup>143</sup> And although 19% of rural households lack access to broadband as opposed to 14% of urban households, the actual number of urban households that lack broadband services is three times larger than rural households.<sup>144</sup>

The COVID-19 pandemic sparked many now field-tested approaches employers implemented to accommodate remote workers, and although many clean energy jobs cannot be completed remotely, the models that emerged to assist workers accessing broadband, computers, mobile devices, hotspot devices and adjacent needs can be replicated by employers, such as providing reimbursements and equipment to support specific technology needs.<sup>145</sup> Local libraries, community centers and community based organizations can work with Local Workforce Investment Boards and employers to develop and provide digital resources and platforms that support employee recruitment, retention and development, such as leveraging social networking platforms, offering virtual self-help and wellness seminars, providing safe and secure broadband access as well as skills development programs for career progression.<sup>146</sup>

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137. [United Way of Pennsylvania. \(2024\). Pennsylvania 211. Pennsylvania Get Connected Get Help.](#)

138. [Pennsylvania Chamber of Commerce. \(2021, June\). The Impact of Childcare on Business and the Workforce. PA Chamber.](#)

139. [Pittsburgh International Airport. \(2024\). Childcare center. Fly Pittsburgh.](#)

140. [Sorensen, K. \(2021, December 23\). KDKA on the serious childcare challenges in the Pittsburgh region. KDKA Kidsburgh.](#)

141. [Kos, E., Clark, K., De Santis, N., & Joseph, T. \(2024, March 26\). Childcare benefits more than pay for themselves at US companies. Boston Consulting Group \(BCG\) Global.](#)

142. [Gitlin, S., Gummadi, A., Krivkovich, A., & Modi, K. \(2022, May 9\). The childcare conundrum: How can companies ease working parents' return to the office? McKinsey & Company.](#)

143. [Campbell, S., Castro, J., & Wessel, D. \(2021, August 18\). The benefits and costs of broadband expansion. Brookings.](#)

144. [Campbell, S., Castro, J., & Wessel, D. \(2021, August 18\). The benefits and costs of broadband expansion. Brookings.](#)

145. [Deloitte. \(2020\). Addressing the impact of COVID-19 Remote Workforce Expenses. Deloitte US | Audit, Consulting, Advisory, and Tax Services.](#)

146. [Stokes, N. \(2022, February 9\). 3 ways your organization can use technology to recruit, retain and develop talent. Forbes.](#)

## TACTICAL EXAMPLE

Legal Support: job seekers who have previously interacted with the justice system face barriers to accessing employment opportunities, and this is particularly true in the clean energy sector, which often provides contracted services for critical infrastructure systems and projects overseen by several government agencies that have strict background check requirements. Legal aid services are available in southwestern Pennsylvania for people of all backgrounds to address a plethora of legal issues. Neighborhood Legal Services<sup>147</sup> is a trusted resource that serves many counties in southwestern Pennsylvania and offers low-income neighbors access to legal services and advice. With coordinated support from regional workforce development stakeholders, this critical service could be more strongly supported to increase opportunities for those that have previously interacted with the justice system to enter the clean energy workforce. Policymakers can take action to re-evaluate background requirements for certain project categories and limit background restrictions only to necessary job types within a project. They can also integrate resources for criminal record expungement so employers can support employees facing this barrier.

## TACTICAL EXAMPLE

Educational Support: there are a wide variety of educational needs that job seekers, employers, trainers, educators and many others must consider, and aligning educational needs with employment opportunities is often best addressed on a case by case basis.

- For southwestern Pennsylvanians seeking support for obtaining a GED, Literacy Pittsburgh offers several free courses, including GED preparation classes with support to apply for scholarships that pay for GED testing fees.<sup>148</sup>
- For immigrants, refugees and others with language barriers, language translation can be a strong barrier to employment, especially in technical settings of the clean energy sector. Programs offered by Literacy Pittsburgh<sup>149</sup> and Hello Neighbor<sup>150</sup> offer no-cost, online and in-person wraparound supportive services for immigrants and refugees. Partners could collaborate with these programs to incorporate clean energy industry-specific training into existing programs.
- The Council for Adult and Experiential Learning and its regional partners – Vibrant Pittsburgh, Catalyst Connection, and the Pittsburgh Council on Higher Education’s Pittsburgh Scholar House – are piloting an end-to-end program called the Regional Upskilling Alliance for low-opportunity populations to support adult learners in navigating opportunities to obtain living wage employment and advance their careers.<sup>151</sup>

Employers can take steps to incorporate information into job applications that direct applicants to resources that can help them obtain the minimum qualifications of a position. For example, if a position requires a high school diploma or GED/equivalency, employers could partner with Literacy Pittsburgh to include actionable resources for job seekers to obtain a GED available in the job description. This model can be incorporated across all positions to reference reskilling and upskilling opportunities for potential and current employees.

In some fields, employers are removing educational requirements for certain positions in job descriptions, particularly for entry- and mid-level roles, and focusing more on skills-based hiring<sup>152</sup> to increase accessibility. This approach could support increased employment in several clean energy occupations. There are also efforts underway to explore the uses of AI to implement workforce development tools that can assist job seekers in navigating their career path.<sup>153</sup>

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147. [Neighborhood Legal Services. \(2024\). About us.](#)

148. [Literacy Pittsburgh. \(2024\). Free GED preparation classes.](#)

149. [Literacy Pittsburgh. \(2024\). Free English classes for immigrants and refugees.](#)

150. [Hello Neighbor. \(2024\). About us.](#)

151. [Council for Adult and Experiential Learning. \(2024\). Regional Upskilling Alliance.](#)

152. [Crist, C. \(2023, December 13\). Nearly half of companies say they plan to eliminate bachelor's degree requirements in 2024. Higher Ed Dive.](#)

153. [Jobs for the Future. \(2024, July 15\). Use cases for generative AI in workforce development. Jobs for the Future \(JFF\).](#)

## TACTICAL EXAMPLE

Employers Supporting Other Employee Needs: with so many different barriers facing the clean energy workforce, employers can play a critical role to help reduce barriers for job seekers as well as current employees to increase applicant pools and grow their operations. Small business case management services offered through the Pennsylvania Business One-Stop Shop and Department of Community and Economic Development<sup>154</sup> could bridge some of the barriers that prevent small businesses from providing childcare, transportation, medical accommodations, educational or other supportive needs.<sup>155</sup>

As more southwestern Pennsylvania communities adopt Community Benefit Agreements with assistance from regional experts, such as Fair Shake Environmental Legal Services<sup>156</sup> and Reimagine Appalachia,<sup>157</sup> businesses and projects will be increasingly expected to incorporate supportive services that address persistent regional barriers to employment. Clean energy employers can take steps to organize with regional workforce development stakeholders to develop tactical solutions that reduce barriers to employment in the clean energy sector.

**What these examples and opportunities tell us:** Those facing any of a variety of barriers to employment benefit from integration of clean energy workforce development initiatives with specific social service networks. This helps maximize efficient and effective service delivery.

## CHALLENGE: EXPAND TRAINING OPPORTUNITIES, WITH EMPLOYMENT ON THE OTHER SIDE

Roundtable conversations with employers consistently reveal significant and persistent demand for trained workers with limited social and economic impediments to employment. There is a diversity of funding sources – employer-funded, grant-funded, or student-funded – and a diversity of enrollment: some training programs have waitlists, whereas others have difficulty sourcing students. Resources to support training with supportive services, provided employers are engaged and committed, can be catalytic.

## CONTEXT

Pennsylvania is home to many training opportunities that offer pathways to careers in clean energy. In the energy efficiency industry, there are just under 300 training programs related to HVAC, plumbing, electrical and other professions in the building trades.<sup>158</sup> General building trades skills are useful and broadly helpful skills for job seekers – in addition to some 40-hour certificates that can be achieved and are valuable, such as OSHA, first aid/CPR, and LEED construction certification for workers in the field. There are also hundreds of training programs available in the clean energy sector across Pennsylvania offered by educational institutions: community colleges, universities, technical colleges, and private schools with many certification and licensing programs.<sup>159</sup>

There are programs such as the United Brotherhood of Carpenters and Joiners of America's Solar Installer Training Program,<sup>160</sup> and the Pennsylvania Laborers' solar classes.<sup>161</sup> The International Brotherhood of Electrical Workers has included North American Board of Certified Energy Practitioners (NABCEP) certification for PV Installation Professionals since 2009.<sup>162</sup> There are also a growing number of related training programs being

154. [Pennsylvania Department of Community and Economic Development. \(2024\). Small business assistance in PA. PA Department of Community & Economic Development.](#)

155. [Pennsylvania Department of Environmental Protection. \(2024\). Energy workforce development. Department of Environmental Protection.](#)

156. [Fair Shake Environmental Legal Services. \(2024\). Community benefits.](#)

157. [Reimagine Appalachia. \(2024\). Community benefits. Reimagine Appalachia.](#)

158. [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

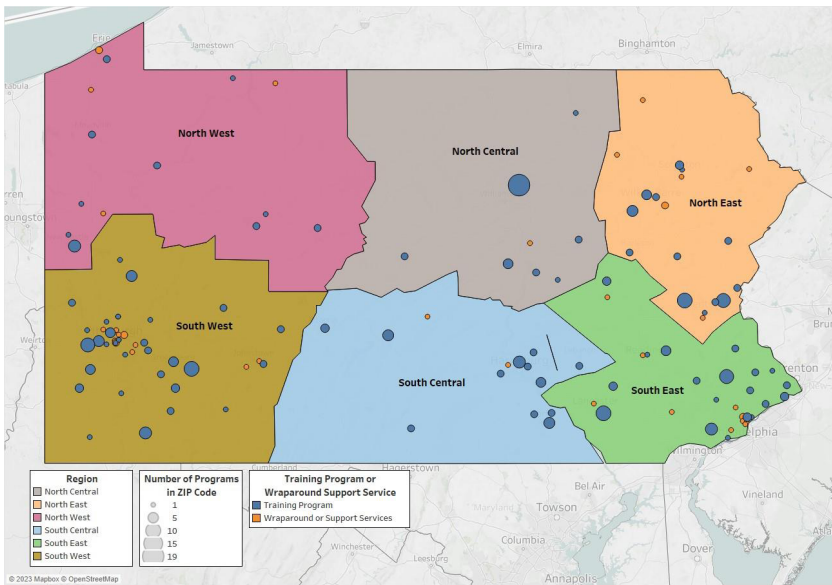
159. [Pennsylvania Department of Environmental Protection. \(2024\). Energy workforce development. Department of Environmental Protection.](#)

160. [United Brotherhood of Carpenters and Joiners of America. \(2024\). Solar installer training program](#)

161. [PA Laborers Training Center. \(2024, March 11\). New solar classes available. PA Training Center.](#)

162. [International Brotherhood of Electrical Workers. \(2024\). IBEW. IBEW > Home.](#)

offered locally in southwestern Pennsylvania, including programs from the Pennsylvania College of Technology's Clean Energy Center,<sup>163</sup> Pittsburgh Gateways' Intro to the Construction Trades,<sup>164</sup> Green Building Alliance's Leadership in Energy and Environmental Design (LEED) course,<sup>165</sup> Duquesne Light Company's Lineworker Prep Program,<sup>166</sup> the Community College of Allegheny County's Solar Photovoltaic Technician program most recently launched in partnership with New Sun Rising,<sup>167</sup> CASA's Building Green Futures Program<sup>168</sup> and many more. Apprenticeship and pre-apprenticeship programs must be registered with the state. Pre-apprenticeships need to be tied to an existing apprentice program, and a registered apprenticeship program, in turn, must be connected to at least one employer. Apprenticeships include over 2,000 hours of on-the-job training and 144 hours minimum instructional time.



**FIG 9 // Pennsylvania Residential Energy Contractor Training Programs By Region**

Source: [Pennsylvania Department of Environmental Protection. \(2023\). Pennsylvania energy efficiency workforce needs report.](#)

Other states have developed specialized training programs that target disadvantaged populations or environmentally sensitive areas which could be replicated in Pennsylvania to ensure the benefits of clean energy workforce development investments are directed where the need is greatest. Grid Alternatives<sup>169</sup> in Washington D.C. is a workforce training program that helps under-resourced communities with skill development and provides homeowners in underserved communities with no-cost solar system installation. Power52's Energy Professional Training<sup>170</sup> program provides 12 months of case management, mentorship and simulated lab training to economically empower Maryland communities through clean energy access. The Center for Sustainable Careers trains residents in brownfield remediation and weatherization and places trainees in full time jobs with supportive case management for Baltimore residents.<sup>171</sup>

### TACTICAL EXAMPLE

PA Department of Labor and Industry Clean Energy Workforce Development Grant: In 2022, Partner4Work was awarded \$500,000 to work with Pittsburgh Gateways and PA CareerLink alongside employers, businesses and additional community partners in Allegheny County to create a coordinated industry partnership that will create a pipeline for individuals from underserved communities to access training and the quality jobs available

163. [Pennsylvania College of Technology. \(2024\). Clean Energy Center.](#)

164. [Pittsburgh Gateways. \(2024\). Introduction to the construction trades.](#) Pittsburgh Gateways Corporation.

165. [Green Building Alliance. \(2024\). Green building professional accreditations.](#)

166. [Duquesne Light Company. \(2024\). Lineworker Prep Program.](#)

167. [Community College of Allegheny County. \(2024\). Solar photovoltaic technician.](#)

168. [CASA. \(2024, January 31\). Building green futures program | York workforce readiness program.](#) We Are CASA.

169. [Grid Alternatives. \(2024\). Grid Alternatives Mid-Atlantic.](#) GRID Alternatives | People. Planet. Employment.

170. [Power52. \(2024\). Power52 Energy Institute.](#) Power52 Foundation.

171. [Civic Works. \(2018\). Center for Sustainable Careers.](#)

within the clean-energy sector.<sup>172</sup> Through this work, at least 30 local clean energy employers will be connected to community partners and training providers to expand their talent pipeline, receive Diversity, Equity, and Inclusion (DEI) hiring and onboarding training to increase equity within their job opportunities, and access tailored support through the public workforce system.

#### TACTICAL EXAMPLE

Commonwealth of Pennsylvania: Via an EPA-administered Inflation Reduction Act program, the Commonwealth has received nearly \$400 million to reduce industrial sector emissions in Pennsylvania through a program called RISE PA.<sup>173</sup> Pennsylvania's Priority Climate Action Plan forecasts increased workforce needs in industrial decarbonization, particularly for electricians, heating, air conditioning, and refrigeration (HVAC/R) mechanics and insulation workers.<sup>174</sup> Southwestern Pennsylvania accounted for 44% of greenhouse gas emissions from large emitters in 2021 and about 30% of facilities reporting emissions to the U.S. Environmental Protection Agency are located in the Pittsburgh and southwestern Pennsylvania region,<sup>175</sup> the largest concentration of any Pennsylvania region. Employers working on projects that reduce greenhouse gas emissions from the industrial sector and receive funding from the Inflation Reduction Act or Infrastructure Investment and Jobs Act can access the Commonwealth Workforce Transformation Program for funding to support training and the needs of job seekers that are facing barriers to securing and maintaining employment.<sup>176</sup>

#### TACTICAL EXAMPLE

Commonwealth of Pennsylvania's Energy Development Authority (PEDA) and several multi-state coalitions (GRID Alternatives, Growth Opportunity Partners, Clean Energy Fund of Texas and Inclusive Prosperity Capital, Inc.) have received hundreds of millions of dollars through the EPA-administered Inflation Reduction Act-funded Solar for All program to develop and implement low-income residential solar installation programs.<sup>177</sup> The Commonwealth's program alone aims for 14,000 solar installations on Pennsylvania households over a five-year period.<sup>178</sup> Improvements can also include home repairs to enable solar as well as battery storage and other building efficiency and resilience benefits. Local solar installers and businesses that support the solar and home improvement industry will be in high demand due to this program's implementation, indicating an opportunity to integrate workforce development into the Solar for All program's design and 2025 implementation.

#### TACTICAL EXAMPLE

Manufacturing the New Energy Economy in Appalachia: Catalyst Connection and its partners across Maryland, New York, Ohio, Pennsylvania and West Virginia are using a \$10 million grant from the Appalachian Regional Commission to support manufacturers in entering the renewable energy, smart-grid, green building, electric vehicle and other decarbonized industries.<sup>179</sup> Catalyst Connection also received more than \$700,000 in October 2024 from the US Department of Labor to increase women's participation in apprenticeship and nontraditional occupations in manufacturing.<sup>180</sup>

***What these examples and opportunities tell us:*** Job growth is happening and will accelerate with the construction of thoughtful jobseeker/community-to-training-to-employment pipelines, supercharged by federal investment.

172. [Pennsylvania Department of Labor and Industry. \(2022\). 2022 Clean Energy Workforce Development Grant Awardees. Department of Labor & Industry.](#)

173. [Commonwealth of Pennsylvania. \(2024, July 22\). Shapiro administration secures nearly \\$400 million in federal funding to create jobs and cut pollution.](#)

174. [BW Research Partnership. \(2024, February 16\). RISE PA Workforce Assessment. Evergreen Action.](#)

175. [Dutzik, T., Masur, D., & Deemer, A. \(2024, May 9\). Pennsylvania's Dirty Dozen: The Keystone State's top climate polluters. PennEnvironment.](#)

176. [Commonwealth of Pennsylvania. \(2023, July 31\). 4 Pa. Code subchapter JJJ. Commonwealth workforce transformation program. Pennsylvania Code & Bulletin.](#)

177. [United States Environmental Protection Agency. \(2024, September 6\). Solar for all. US EPA.](#)

178. [Pennsylvania Department of Environmental Protection. \(2024, September 6\). Solar for all. Department of Environmental Protection.](#)

179. [Appalachian Regional Commission. \(2024\). Catalyst Connection: Bringing a new energy to Northern Appalachia.](#)

180. [US Department of Labor announces \\$6M in grants to expand job opportunities for women in apprenticeships, nontraditional occupations | U.S. Department of Labor \(dol.gov\)](#)



## CONCLUSION

Governments, workforce development administrators, educational providers, community-based organizations and employers all have a role to play in addressing the many gaps and barriers to enabling a thriving clean energy workforce ecosystem in southwestern Pennsylvania. Employers of any size can tap into mentorship programs that pair vulnerable populations with organizational leadership; governments can improve interagency collaboration and incentivize an ecosystem-based approach for disadvantaged populations; educational providers can be a connector among governments, employers and the community; and community-based organizations can engage in effective marketing, workforce programming and support wraparound service delivery.<sup>181</sup>

The projected growth of clean energy in southwestern Pennsylvania offers an opportunity to transform the regional workforce development landscape for the betterment of all. To meet this moment, there is an elevated need for bold, regional action that strengthens connectivity of the clean energy workforce ecosystem with supportive service systems and infrastructure. We stand at a point in time where we can build systems in equitable ways, such that workers can go beyond simply finding a job to instead embarking on career pathways that enable self-determined prosperity. The workforce has changed – and will continuously change – and the systems designed to support the workforce must change with it.

Southwestern Pennsylvania is well-positioned to leverage its energy and environmental justice legacy, capitalize on federal clean energy programs, and attract and retain a workforce that represents the many pathways that can contribute to our region's climate resilience. Roundtable convenings will continue to innovate ways to amplify knowledge and catalyze progress, with hundreds of stakeholders regionally working increasingly well together to fortify our region's leadership in the new energy economy.

181. [Deloitte. \(2023, February\). Building a Workforce Development Ecosystem That Works: Supporting Vulnerable Populations. Deloitte US | Audit, Consulting, Advisory, and Tax Services.](#)

## APPENDIX A

List of Organizations that Sustainable Pittsburgh has worked to engage in the Clean Energy Workforce Roundtable to date, in addition to local and national foundation partners.

- 3R Sustainability
- A.W. Beattie Career Center
- ACTION Housing
- Allegheny College
- Allegheny Conference on Community Development
- Allegheny County Economic Development
- Allegheny Solar
- Allegheny Strategy Partners
- Bridgeway Capital, Inc.
- Building Performance Association
- Calfo Home Services
- Carnegie Mellon University
- Catalyst Connection
- Chatham University
- City of Pittsburgh
- City of Pittsburgh Office of the Mayor
- Clayton Avenue Consulting
- Clean Energy Center
- CLEARResult
- Coalfield Development
- Columbia Gas
- Commonwealth of Pennsylvania
- Communitopia
- Community College of Allegheny County
- County of Indiana
- DMI Companies
- DNV Energy Services USA Inc
- Duquesne Light Company
- E2
- Eaton
- EIS Solar
- Energy Efficiency Alliance
- Energy Efficiency Empowerment
- Fayette County Chamber of Commerce
- Fay-Penn Economic Development Council
- Foundry Green Homes
- Franco Harris Pittsburgh Center at Penn State
- Goodwill of Southwestern Pennsylvania
- Green Building Alliance
- Home Mechanix LLC
- Homewood Children's Village
- InnovatePGH
- International Union of Operating Engineers Local 66
- Jobs for the Future
- Keystone Research Center
- Landforce
- Latino Community Center
- League of Women Voters of PA
- Low Country Building Solutions
- Master Builders Association of Western PA
- Mincin Insulation Service
- Mitchell Plumbing, Heating, and Cooling
- Neighborhood Allies
- New Sun Rising
- One Universe Energy LLC
- Operation Better Block
- Parkway West Career Training Center
- Partner4Work
- Pennsylvania and Appalachian Sustainable Business Networks
- Pennsylvania College of Technology - Clean Energy Center
- Pennsylvania Department of Community & Economic Development
- Pennsylvania Department of Environmental Protection
- Pennsylvania Department of Environmental Protection, Energy Programs Office
- Pennsylvania Home Matters Duquesne
- Pennsylvania Solar Center
- Pennsylvania Foundation for Fair Contracting
- Pittsburgh Community Reinvestment Group
- Pittsburgh Gateways Corporation/ Energy Innovation Center
- Pittsburgh Technology Council
- PNC PartnerUp
- Rebuilding Together Pittsburgh
- ReImagine Appalachia
- Revive Heating and Cooling LLC.
- Rising Tide Partners
- Riverside Center for Innovation
- ROCIS - Reducing Outdoor Contaminants in Indoor Spaces
- Southwestern Pennsylvania Commission
- Start Here Health, LLC
- Steamfitters 449
- Team Humanity
- Tenny Group
- Thar Energy, LLC
- The Climate Reality Project
- The Energy Doctor
- Trade Institute of Pittsburgh
- University of Pittsburgh
- Urban League of Greater Pittsburgh
- Vibrant Pittsburgh
- Viewpoint Public Affairs



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