



Center for  
Energy Workforce  
Development

# A Workforce Development Primer for **ENERGY LEADERS**

Understanding Workforce Development and  
Creating an Action Agenda for the Energy Sector

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INTRODUCTION

In September 2023, there were 9.8 million job openings in the United States, but only 5.9 million unemployed workers, meaning if every person eligible to work was employed, there would still be four million unfilled jobs throughout the country. A host of factors have created this talent gap including a reduced labor force (Don't Blame the Millennials: The Demographics Causing Talent Shortages and the Great Resignation, WTW), a 76% decline in international migration to the U.S. between 2016 and 2021 (Understanding America's Labor Shortage, U.S. Chamber of Commerce), increased retirements stemming from COVID (Bloomberg), and the gig and entrepreneurial economy that have removed workers from "traditional employment." In short, there are fewer people available to fill more jobs that exist.

Within the energy sector, this gap is particularly pronounced as industry job growth outpaced overall U.S. employment between 2021 and 2022, 3.8% compared with 3.1% in the same period (U.S. Energy & Employment Jobs Report, U.S. Department of Energy). With passage of the Inflation Reduction Act, Bipartisan Infrastructure Law and the CHIPS and Science Act, industry hiring demand is expected to increase significantly, with most estimates citing an increase of nine million jobs over the next ten years (Political Economy Research Institute). Forecasting by the Bureau of Labor Statistics, Brookings Institute, and Georgetown University suggest climate and infrastructure employers will need about 17 million replacement workers and 15 million new workers over the next decade (The Incredible Shrinking Infrastructure Workforce and What To Do About It, Brookings Institute).

Many experts forecast today's talent gap will exist, and increase, well into the late 2030s or beyond (Why Talent Shortages Persist: Moving Beyond The Great Resignation And Quiet Quitting, Forbes and The Demographic Drought, EMSI).

The shortage of people is only part of the workforce development conversation. The skills gap is the other. The Brookings Institute defines the skills gap as the "fundamental mismatch between the skills that employers rely upon in their employees, and the skills that job seekers possess, and notes that this mismatch makes it difficult for people to find jobs and for employers to find

appropriately trained workers." With new clean energy technology, continued automation, the advent of AI, the inability to fully understand the skills needed for jobs of the future that has led to reactive action, and the rapid expansion of skills required by employers, the skills gap in the U.S. appears to be getting wider. In their "Closing the Skills Gap" report, John Wiley and Sons found that 69% of U.S. Human Resources professionals surveyed in 2022 said their organization has a skills gap problem, up from 55% in a similar survey in 2021. Similarly, the National Association of Workforce Boards found that 75% of U.S. businesses reported a skilled talent shortage in 2022 (It's Workforce Development, Stupid! Part 1: The Future of Workforce, National Association of Workforce Boards).

With talent shortages becoming more pronounced and increasing concern over how to prepare individuals for evolving skills, workforce development conversations have entered the energy industry's C-level and boardroom conversations. Policy practitioners are finding increased interest from those in political circles who seek answers about how the industry intends to attract, train, and retain millions of workers, with a particular interest in learning how the industry will provide access to these new jobs to those who are currently underrepresented within the sector and/or from marginalized communities. Large-scale customers are concerned about the industry's ability to meet increasing power needs because of workforce considerations. The need for prioritized attention on workforce development was recently underscored by Congress charging the U.S. Department of Energy with the creation of a 21st Century Energy Workforce Advisory Board to ensure the industry is ready for its growing talent needs.

Despite the focus on workforce development, many energy business leaders don't fully understand the concept and what it encompasses or lack the structure to make long-term people planning a strategic business imperative. As a result, there are untapped opportunities for industry unification and action on many workforce development fronts. This report, developed by the Center for Energy Workforce Development (CEWD), in partnership with Accenture, provides a strategic overview of workforce development and suggests industry responses to the workforce development challenges before us.

Key Insights:

- Workforce development must be more urgently prioritized within the sector to ensure we are prepared to meet the needs of the 21st century energy workforce.
- Workforce development cannot live in an isolated silo, but rather, it should be an inter-organizational commitment involving a cross-section of teams. This work should encompass the stewardship of critical relationships between employers, labor organizations, and community partners including workforce systems, educators, and community-based organizations.
- Workforce development and its practices are changing. Energy employers should examine talent solutions that have not typically been embraced including Registered Apprenticeship Programs, sector partnerships, finding hidden talent (e.g., from immigrants and the re-entry population), adjusting degree and certification requirements where feasible, and more.
- **The industry must collaborate to:**
  - Bring greater awareness to energy careers to attract millions of people to sector employment.
  - Prepare people more quickly for increasingly technical and complex energy careers, using accessible and equitable modernized education modalities.
  - Diversify the energy workforce to benefit from new ways of thinking from those who are underrepresented in the current workforce and to ensure the sector's careers, that offer opportunities for economic mobility, are accessible to people in Justice 40 communities.
  - Leverage existing federal, state, and local workforce development resources and advocate for those we need.

THE FUNDAMENTALS OF WORKFORCE DEVELOPMENT

Workforce development goes far beyond components of talent acquisition and the historical role that Human Resources practitioners have played in hiring people for vacant positions. While workforce development responsibilities are owned by individuals within companies, it is not an internally focused discipline. Rather, workforce development encompasses the stewardship of critical relationships between employers, labor organizations, and community partners including workforce systems, educators, and community-based organizations. Workforce development is directly connected to economic development: ensuring workers are prepared with essential skills to meet demands of the local job market, paving the way for economic growth.

According to the U.S. Department of Commerce, the key components of effective workforce development strategies:

- Are **employer-led** to ensure skilled workers are connected to quality job opportunities.
- Are guided by **multiple community partners** such as educational institutions, labor unions, community-based organizations, and economic development organizations.
- Include **wrap-around services (e.g., child care support, transportation subsidies, etc.)** to support the most vulnerable populations.
- Increase educational and workplace **diversity, equity, and inclusion**.
- Prioritize proven **earn and learn models** like Registered Apprenticeships and on-the-job training.
- Lead to **stackable, industry-recognized credentials** and ensure that information about credentials is publicly accessible through open data formats that support full transparency and interoperability.
- Build **sustainable systems and partnerships** that endure to serve employers and workers beyond the federal investment.
- Connect **workforce development to economic development**.

The federal government supports critical workforce development programs, primarily through the Workforce Investment and Opportunity Act (WIOA), which currently provides about \$11 billion of annual investments, and Career and Technical Education for the 21st Century Act (Perkins V) which provides \$1.9 billion each year for workforce development through the nation's career and technical education system.

The majority of this funding is channeled through state and local workforce development boards. There are more than 580 of these agencies that serve the workforce ecosystem within their jurisdictions, functioning as intermediaries between employers and those looking for new employment opportunities, training, and supportive services. They provide direct services to both jobseekers and employers. While offerings vary within communities, businesses frequently enjoy auxiliary supportive services including job fairs, payment of wages for employees (generally not more than 50%), and training subsidies. Energy companies have not historically leveraged the resources of workforce development boards, though with today's challenged workforce needs, many are now prioritizing such engagement.



CORPORATE STRUCTURE FOR MANAGING WORKFORCE DEVELOPMENT

Historically, workforce development has been considered a Human Resources function, operating under the model that if a company needs talent, talent acquisition specialists should simply find people with the right qualifications to perform the work. Today, workforce development cannot live in any one department's isolated silo, but rather, should be an inter-organizational commitment involving a cross-section of teams including:

Leadership

Leadership buy-in is essential to explore changes to longstanding policies and requirements that may prevent access or entry into the company (e.g., pre-employment testing, job qualifications, childcare, skills, etc.).

Workforce Planning/Analytics

Strategic workforce planning is an important component of workforce development as these planners offer critical analytics about expected attrition and retirements to forecasting conversations. They bring an important internal voice to conversations about priorities in external talent strategy development.

Government Relations

Most energy policy shops have not historically included workforce issues in their portfolios of issue monitoring or management. With the historic investments being made in infrastructure modernization, decarbonization goals, and the dramatic need to attract and train people for America's Clean Energy Future, there has become an important intersectionality linking policy and the energy workforce.

Diversity, Equity, and Inclusion

As companies demonstrate a commitment to ensuring their workforce reflects the communities and customers served, business leaders have prioritized actions to support more diverse, equitable, and inclusive workplaces. DE&I leaders are helping organizations think differently about how to diversify their talent pool, show up differently within their communities to promote energy careers, and ensure workplace cultures that offer a sense of belonging and inclusion.

Employee Resource Groups (ERGs)

These employee-led groups can provide a particularly important voice identifying untapped and hidden talent and supporting employment-related outreach.

Talent Acquisition

This team is likely the most obvious for inclusion in a workforce development structure, but they cannot be effective in their work if the rest of the team isn't part of strategy development that influences talent funnels.

Training and Development

Organizations often turn to this team after their talent needs are determined, but there is an important role this team should play in conversations about developing the workforce. Those involved with on-the-ground experience should be leveraged in conversations with community partners to communicate about the essential skills energy employers are seeking.

Operations

Some companies have moved workforce development responsibilities to their operations team, as this group is often the closest to expected talent needs and the evolving skills the workforce will require.

Community and Economic Development

Company representatives who interface with regional economic development offices and community-based organizations often are some of the most influential voices regarding workforce development, both from their employers to the community and from external organizations back within the business.

Supply Services

This team may be considered by some as a newer player in workforce development conversations. However, as energy companies look to leverage relationships with contractors, including many first-time partners connected through new and emerging areas of energy technology, there are opportunities to explore talent development with the supplemental workforce.

Energy Company Foundation Staff

Foundation representatives have a good understanding of community needs and can bring a strong voice to requests for training and workforce preparation support. Similarly, they can help provide workforce development support in funding priorities.

# THE ESSENTIAL ROLE OF INDUSTRY-WIDE SOLUTIONING

While the sector’s workforce exceeds nine million, it comprises several micro industries (e.g., utilities, contractors, developers, manufacturers or further broken down into power generation, electrification of transportation, energy efficiency, etc.). The largest concentration of people employed in the industry’s workforce is with motor vehicles (2.6 million jobs) followed by energy efficiency employment (2.2 million jobs). The other categories that round out the top five areas of sector employment are transmission, distribution, and storage (1.4 million jobs), fuels (1 million jobs), and electric power generation (883,000 jobs) (U.S. Employment & Energy Jobs Report). No micro industry represents more than 32% of the overall energy workforce. Traditionally, companies have advocated for their own hiring needs within their communities, or they may have partnered with other similarly functioning businesses. The industry has not routinely addressed workforce development priorities as a sector, despite the fact there is an interdependence on one another.

Enter the concept of sector partnerships. Sector partnerships are collaborations among business leaders with a shared industry focus (from a shared employment region) with key community stakeholders – including community colleges and other educators, workforce development systems, economic development offices, and community-based organizations – to address essential and common workforce needs. The National Skills Coalition advocates for the importance of sector partnerships, noting these “programs are a proven way to address labor shortages and the skills mismatch that keeps their industries from hiring and keeps workers from accessing in-demand skills. These partnerships ensure training programs have capacity to close equity gaps in opportunities for training and skilled jobs that hold back people of color, women, and other underserved populations from landing in-demand, skilled jobs.”

Uniting an entire industry’s workforce development priorities automatically commands more attention as hiring demand needs are aggregated, skills training needs are more pronounced, and external partners can more visibly see the scope of industry need. As energy employers look at “how to do workforce development differently” so that they have the people needed, there is an opportunity for outreach within the industry’s ecosystem including utilities, contractors, unions, developers, manufacturers, and others to work more collaboratively to support collective workforce development needs. The concept of sector partnerships allows those in positions of strength to



support those who are more challenged, and over time, all industry players are likely to find themselves in top to bottom rungs of power positions. This notion of shared strength looks familiar within utilities and the strongest supporting the most challenged resembles the structure of mutual aid that utilities and contractors know so well – but the concept is much broader and should include a wider collaborative team.

Additionally, sector partnerships create a more secure talent pool to mitigate long term workforce shortages. The energy sector can better develop transferable skill sets when organizations collaborate, increasing the likelihood that the job seeker can find a job in energy, preventing people from exiting industry employment.

Sector partnerships help to eliminate the troubling notions of “us vs them” by those working within the same industry and push the more effective positioning of a shared ecosystem that is stronger through collective partnership.

# TAKING ACTION FOR A SKILLED, DIVERSE ENERGY WORKFORCE

Workforce development must be more urgently prioritized within the energy sector to confirm we are people-ready for a decarbonized energy future. As the nation invests in new and emerging technologies and infrastructure modernization, there must be equal emphasis in addressing what the Center for Energy Workforce Development (CEWD) identifies as Workforce Development Action Agenda:

- How to bring greater awareness to energy careers to attract millions of people to sector employment.
- How to prepare people more quickly for increasingly technical and complex energy careers, using accessible and equitable modernized education modalities.
- Ways to diversify the energy workforce to affirm the industry benefits from new ways of thinking from those who are underrepresented in today’s workforce and to make sure the sector’s careers, that offer opportunities for economic mobility, are accessible to people in Justice 40 communities.
- How to leverage existing federal, state, and local workforce development resources and advocate for those we need and who need us.

In short, we have a dire need for individuals to build, sustain, engineer, innovate, manage, advance, and protect our energy infrastructure, and we are not yet prepared to meet the unprecedented demand. While workforce development is a local function, our sector’s stakeholders must solution together. We must think and act differently, with haste, as there has never been a more critical time in the nation’s history to address industry human capital needs than now.

Recently, CEWD has pivoted to more aggressively respond to the current workforce development challenges. Energy employers are doing the same, putting refreshed lenses to managing workforce development needs differently.

The following recommendations for employers and the list of actions being adopted by CEWD are meant to identify some of the most important steps to be taken but should not be considered exhaustive lists. The landscape is changing and with it, the needs, responses, and solutions are expanding. CEWD, in collaboration with its partner organizations, will continue to lead industry action to address the development of a skilled, diverse talent pipeline for the energy sector.

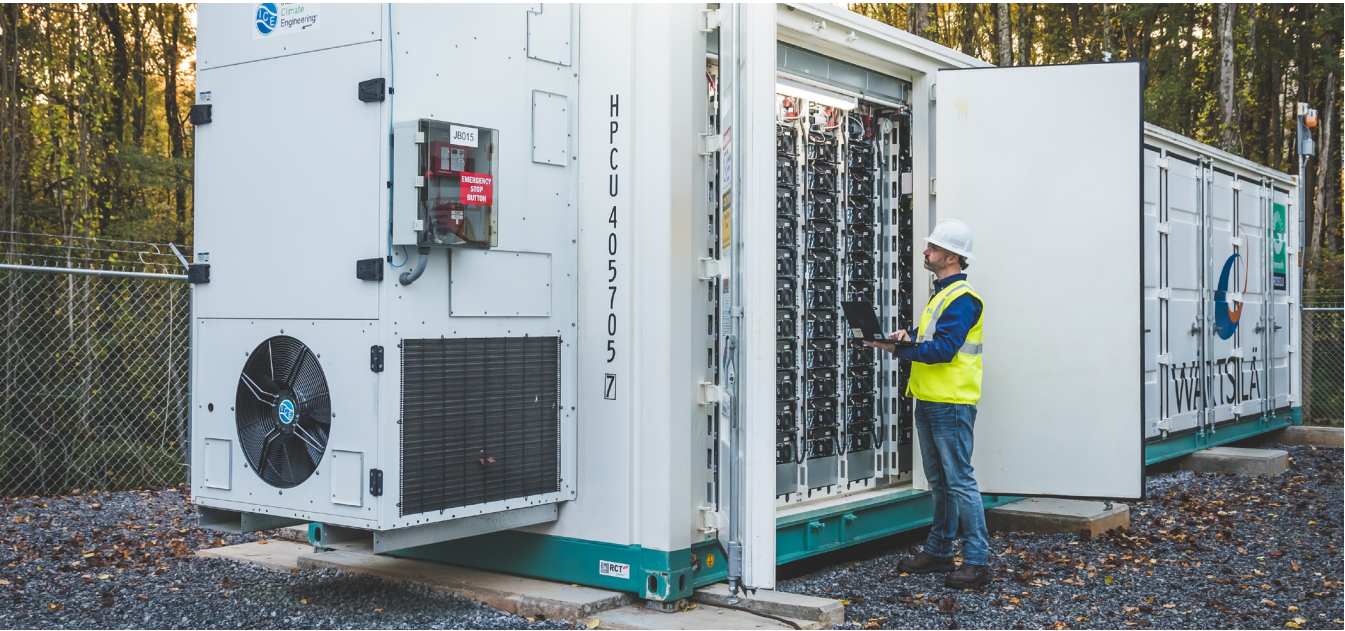


Image source: Duke Energy

# WORKFORCE DEVELOPMENT ACTION AGENDA FOR THE ENERGY SECTOR

## Select Workforce Development Actions for Employers

### Bring greater awareness to energy careers to attract millions of people to sector employment:

- Rebrand the public's understanding of energy careers and connect with students and career-seekers in modernized, dynamic ways.
- Forge partnerships with community-based organizations that can be effective partners in increasing the visibility of energy careers, particularly among those underrepresented in today's industry workforce.
- Stand-out amongst other community employers based on modern-day practices that are sought by those entering and returning to the workforce.
- Support STEM curriculum in K-12 education, including the development of high school pipelines through internships, work-based learning experiences, and Career and Technical Education program partnerships.
- Socialize transferable skills/experience and how those skills can transition to energy career pathways.



### Prepare people for increasingly technical and complex energy careers more efficiently and quickly, using modernized education modalities:

- Conduct more in-house (incumbent worker) and on-the-job training, as it will be increasingly difficult to find talent with required skills.
- Develop Registered Apprenticeship Programs (RAPs), especially those for jobs associated with new and emerging energy technologies.
- Support modernized and expedited learning experiences, including gamification-style training, that will quickly advance learners to be career ready.
- Create shared learning platforms, allowing companies with similar education needs to share expenses associated with digital training and development.
- Partner with those in the broader energy ecosystem to ensure job-readiness training programs support collective needs.
- "Future-proof" employees by arming them with training for tomorrow's essential skills.
- Hire for a candidate's future potential, not their past history.
- Dedicate resources (funding and time) to internal trainee positions that will lead to a skilled internal workforce.
- Create mentorship programs for first generation employees and training participants.
- Utilize AI in assessing training and development needs.
- Prioritize partnerships with community colleges and technical schools.
- Build strategic partnerships with schools and community organizations that can support individuals in their preparation for energy careers.



### Diversify the energy workforce:

- Continue to prioritize initiatives to make sure the energy workforce more closely reflects the communities and customers it serves. (See the DE&I Roadmap for Industry Change.)
- Remove barriers that prevent hiring from those who have been incarcerated.
- Eliminate barriers that prevent those from disadvantaged communities from full employment opportunities by ensuring childcare, transportation, and related subsidies are provided.
- Address real and perceived barriers that have prevented individuals from pursuing industry careers including experience, degree, pre-employment testing, and certification requirements.
- Combat ageism as part of DE&I strategies, attracting people with life-experience and technical know-how skills from the 50+ community.

### Leverage existing federal, state, and local workforce development resources and advocate for those we need:

- Engage with workforce development boards so that the sector's voice is included in conversations about employer hiring, training, and skilling needs. (Locate workforce development boards on [www.careeronestop.org](http://www.careeronestop.org).)
- Explore development of sector partnerships.
- Seek investment in workforce development programs, targeting those that have proven to be successful.
- Support programming that will 1) remove structural barriers that impede workforce development progress by energy employers; 2) support the extensive training and development needs required to prepare individuals for evolving and increasingly technical energy careers; and 3) strengthen the workforce system's ability to support energy employers with their 21st century workforce needs. (See additional information on energy workforce policy focus areas on <https://cewd.org/workforce-policy-education/>.)

Select Actions Being Taken by CEWD:

To bring greater awareness of energy careers to attract millions of people to sector employment, CEWD is acting to:

- Launch the Power Your Possibility, Fuel Your Future career awareness initiative to raise the visibility of clean energy careers to attract career-ready adults and students to vital industry positions. Strategies have been developed to increase awareness of sector careers by those who have been historically underrepresented in the industry's workforce.
- Provide career prospects with one-stop shopping about the breadth of industry careers, guidance on how to access them, and offer supportive services to help people prepare for careers in energy.



To prepare people for increasingly technical and complex energy careers more efficiently and quickly, using modernized education modalities, CEWD is acting to:

- Ensure "energy" is recognized as a national Career Cluster, removing a significant barrier to the discipline being readily and accessibly taught in schools. (Learn more about the National Career Clusters Framework ® at <https://careertech.org/what-we-do/career-clusters/>.)
- Connect high school and post-secondary learners with energy education through the Energy Industry Fundamentals 2.0 curriculum, that will educate 500,000 over the next ten years.
- Create youth apprenticeship programs that will provide additional support to connect students with clean energy careers.
- Develop industry-created Registered Apprenticeship Programs to prepare individuals for careers in new and emerging energy technologies beginning with the identification of key employment skills, competency models, and career pathways.
- Support companies that want to create Registered Apprenticeship Programs for clean energy careers.
- Create curriculum for an Energy Technician Associate Degree that can be offered to technical schools to expedite accessibility to much-needed training programs and explore how to have this degree attainable for students between grades 11-13, which will likely be of particular value to learners in rural communities.
- Explore industry developed hubs that can provide hands-on training experiences for educators and students alike, so that they are exposed to practical experiences that will support career readiness.

To diversify the energy workforce to affirm the industry benefits from new ways of thinking from those currently underrepresented in today's workforce and to make sure the sector's careers, that offer opportunities for economic mobility, are accessible to people in Justice 40 communities, CEWD is acting to:

- Support company, labor, and industry action to create more diverse, equitable, and inclusive workplaces through recommendations from the DE&I Roadmap for Industry Change.
- Create partnerships with organizations serving diverse constituents to provide a talent funnel into energy careers – offering visibility to industry careers, preparatory or pre-apprenticeship programs to ensure career readiness, and building trust within communities that haven't been exposed to energy careers.
- Provide free, national support for individuals interested in energy careers that will help remove barriers to employment (e.g., test prep, math tutoring, etc.)

To leverage existing federal, state, and local workforce development resources and advocate for those we need, CEWD is acting to:

- Collaborate with the Department of Energy, Department of Labor, the White House, the National Association of Workforce Boards, and others to communicate industry workforce development priorities.
- Guide industry companies on how to more proactively engage in state, local, and national opportunities for workforce development, especially related to industry training.



CONCLUSION

As the energy sector readies itself for a decarbonizing future and a clean energy economy, human capital needs must be prioritized in concert with technical, operational, maintenance, construction, and development needs; they cannot be considered as an after-thought. Partnerships across the sector, with workforce entities in local markets, with training partners, and with community-based organizations serving diverse groups of people will be hallmarks of how companies respond to the historic hiring and training needs before them. Companies must double-down on new strategies to bring greater visibility to industry careers and think differently about legacy hiring and training norms.

To challenge themselves, industry leaders should look not just to each other for best practices in workforce development strategy, but to other sectors for innovative practices in attracting, training, and retaining the best and brightest talent to meet the needs of the 21st century energy workforce.

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The Center for Energy Workforce Development (CEWD) is a non-profit consortium of energy companies, contractors, associations, unions, educators, and business partners working together to ensure a skilled, diverse workforce pipeline to meet future industry needs.

CEWD is grateful for the engagement of its national association partners including the American Gas Association, American Public Gas Association, American Public Power Association, Association of Energy Service Providers, Distribution Contractors Association, Edison Electric Institute, Electric Power Research Institute, National Rural Electric Cooperative Association, and the Nuclear Energy Institute.

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