

INFRASTRUCTURE WORKFORCE FACT SHEET: PENNSYLVANIA

JOSEPH W. KANE

B | Brookings Metro

Additional data, findings, and recommendations are available in the main report, [Seizing the U.S. infrastructure opportunity: Investing in current and future workers](#).

This fact sheet explores major infrastructure workforce needs in Pennsylvania, with an emphasis on the transportation and energy sectors—the two main employers for these workers. To help leaders better understand the current landscape of actors and actions involved in these issues, the fact sheet briefly summarizes: levels of infrastructure employment; challenges in hiring, training, and retention; and opportunities for innovation that invest in current and future workforce development.

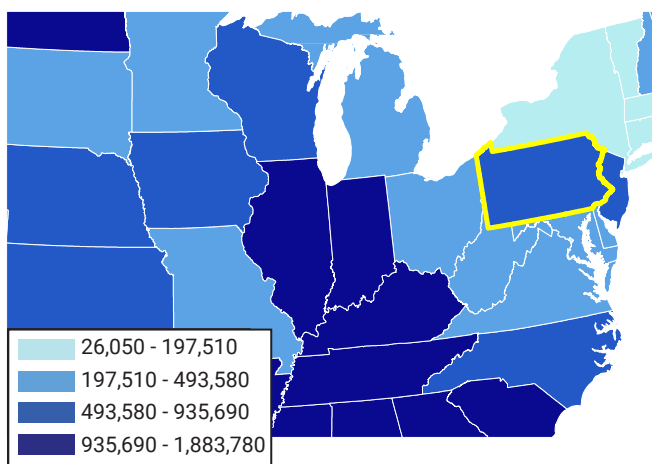
Ultimately, several leaders involved in infrastructure construction, operation, and maintenance need to collaborate with those involved in workforce development (and vice versa). On the infrastructure side, these include the Pennsylvania Department of Transportation and Department of Environmental

Protection at the state level, among numerous local entities. On the workforce side, these include the Pennsylvania Department of Labor and Industry, the Workforce Development Board, and the Workforce and Economic Development Network of Pennsylvania (WEDnetPA), among several educational institutions, labor groups, community-based organizations, and other groups. Major employers include the Southeastern Pennsylvania Transportation Authority, Erie-Western PA Port Authority, Columbia Gas, and PECO (a subsidiary of Exelon), among others.

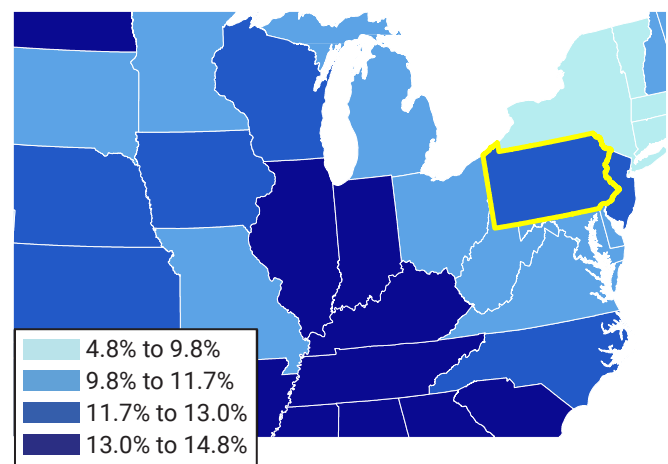
LEVELS OF INFRASTRUCTURE EMPLOYMENT

Pennsylvania employs nearly 671,000 infrastructure workers, representing 12% of its entire workforce. This total ranks 6th nationally, on par with states such as Illinois, Ohio, and Georgia. However, this share ranks 23rd nationally, on par with national averages and neighboring states such as New Jersey, and speaking to the wide variety of other service industries and activities in the region.

Total infrastructure employment, 2021



Infrastructure share of total employment, 2021



SOURCE: Brookings analysis of BLS Occupational Employment Statistics

Similar to most states nationally, the largest infrastructure occupations include those involved in trade and logistics, such as material movers and truck drivers, but other sizable occupations include those involved in the skilled trades and other infrastructure design and operation activities, such as electricians and civil engineers. As the main report describes, this means that investments in on-the-job training and work-based learning opportunities are crucial to support this workforce.

CHALLENGES IN HIRING, TRAINING, AND RETENTION

Employers and workers in Pennsylvania face a variety of challenges to fill these careers:

- Prospective workers lack awareness of relevant training programs, [struggle to afford](#) enrolling in them, and are [entering them in lower rates](#) than demanded by employers. For instance, an average of 3,000 individuals complete construction trade apprenticeships annually across the state, which is well below the annual number of job openings in construction-related occupations (5,000+).
- [An aging and shrinking workforce](#) in different parts of the state is limiting recruitment and retention, including in needed construction activities.
- [Persistent worker shortages](#) in transit operator and maintenance departments are problematic and leading to service in agencies, including in [Pittsburgh Regional Transit](#).
- [Clean energy employers have reported hiring difficulties](#) related to a small applicant pool, lack of experience, and competition with other industries, especially for skilled electricians.
- There have been [struggles assisting displaced workers](#) (especially in sectors impacted by COVID-19 like hospitality and retail) transition into infrastructure careers.
- [Equipping workers with needed \(and evolving\) credentials is a challenge](#), particularly for new clean energy technologies related to heat pumps and air conditioning.

OPPORTUNITIES FOR INNOVATION

Several ongoing—or emerging—efforts are advancing infrastructure workforce development and offer guidance for other potential actions in years to come:

- The state has invested in several career and technical education efforts in recent years. This has included a \$60 million to boost skills and training in science, technology, engineering, and math (STEM) fields as part of the [PAsmart Grants effort](#). In addition, in 2022, the Department of Labor & Industry awarded [\\$2.8 million in schools-to-work grants](#) to 12 programs aimed at helping underserved students enter careers in the construction trades.
- Numerous education and training collaborations have emerged, including the [Workforce and Economic Development Network of Pennsylvania \(WEDnetPA\)](#), created in partnership with the Pennsylvania Commission for Community Colleges.
- Regional efforts, including [Philadelphia Works](#), have formed a new type of workforce development hub among employers, educators, and others around construction career pathways, including the [development of a new plan](#) for six counties in Southeast Pennsylvania.
- The Pennsylvania Department of Transportation has prioritized workforce development in several future-looking areas, such as connected and autonomous vehicles (via a [strategic plan](#) and the [PennSTART](#) training facility) and [electric vehicles](#).
- The [Pennsylvania Climate Action Plan](#) and [Pennsylvania Solar Future Plan](#) both stress the need for upskilling and reskilling efforts statewide. The latter, for instance, describes credentialing in solar design, finance and engineering, installation, and solar ecology, including coordination among educational institutions and labor groups.
- A \$2.5 million [Clean Energy Workforce Development Grant program](#) is supporting the state's manufacturing sector and training of HVAC mechanics, electricians, and solar installers.