

# Renewing the Water Workforce: Improving Water Infrastructure and Creating a Pipeline to Opportunity

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## Abstract

At a time when many Americans are struggling to access economic opportunity and many of the country's infrastructure assets are at the end of their useful life, infrastructure jobs offer considerable promise. Workers in these jobs earn competitive wages and face lower educational barriers to entry. They develop extensive knowledge and transferable skills that cut across multiple disciplines. And the coming wave of retirements and other employment shifts in the infrastructure sector means prospective workers can find long-term careers. The country's water infrastructure is emblematic of this significant opportunity. From pipes and pumps to rivers and lakes, water systems are in urgent need of repair, maintenance, and restoration. At the same time, water workers are in relatively short supply, both for public utilities and a wide range of other employers.

## Keywords:

Water workforce,  
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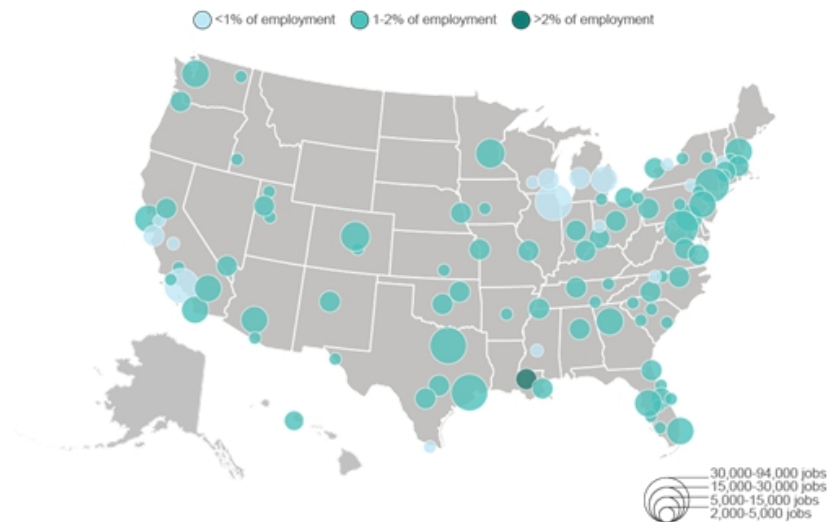
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## Background to the Study

### Water Workers Fill a Variety of Jobs and are Present in Every Region

In 2016, nearly 1.7 million workers were directly involved in designing, constructing, operating, and governing U.S. water infrastructure. From water utilities, to specialty trade contractors, to heavy and civil engineering construction, these workers carry out specialized activities crucial to the long-term operation and maintenance of the country's drinking water, wastewater, stormwater, and green infrastructure facilities. Employed across 212 different occupations, including plumbers, electricians, and instrument technicians, water workers embody many of the skilled trades. However, there are tens of thousands of other workers involved in administration, finance, and management roles. Perhaps most importantly, water workers are not isolated to only a few areas across the country, but are employed everywhere, speaking to their enormous geographic reach; they consistently represent 1 to 2 percent of total employment in the country's metro areas and rural areas.

**Fig. 1:** Water workers in the 100 largest metro areas  
*By total employment and share of employment, 2016*

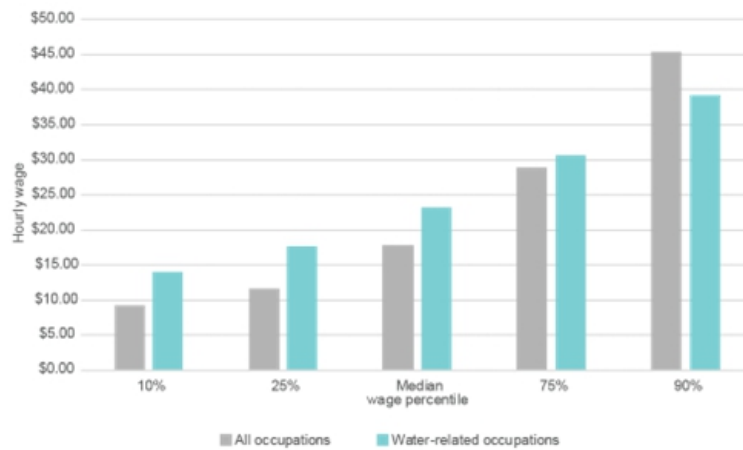


**Source:** Brookings's analysis of BLS Occupational Employment Statistics

### Water Workers Earn More Competitive and Equitable Wages

Water occupations pay well. Their average wage exceeds the national average, and their wage advantage is especially apparent at lower ends of the income scale. Water workers earn hourly wages of \$14.01 and \$17.67 at the 10th and 25th percentiles, respectively, compared to the hourly wages of \$9.27 and \$11.60 earned by all workers at these percentiles. These higher wages are also nearly ubiquitous across the water sector, with 180 of the 212 water occupations (or more than 1.5 million workers) earning higher wages at both of these percentiles. This means most water occupations earn a more livable wage in most places.

**Fig. 2:** U.S. Hourly Wage Comparison: Water Occupations vs. All Occupations, 2016

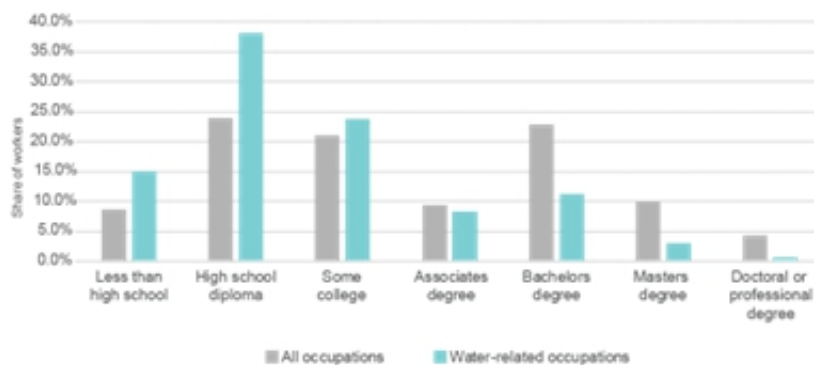


**Source:** Brookings's analysis of BLS Occupational Employment Statistics

**Water Workers often have Less Formal Education and Boast many Transferable Skills**

Even with higher pay, water occupations often do not demand much formal education. While 32.5 percent of workers across all occupations have a high school diploma or less, a majority of water workers (53 percent) fall into this category, including carpenters, welders, and septic tank servicers. Instead, water workers need extensive knowledge and skills developed on the job, underscoring the importance of applied learning opportunities. For example, 78.2 percent of water workers need at least one year of related work experience, and water treatment operators, plumbers, and HVAC technicians are among the many large occupations that require two to four years of related work experience.

**Fig. 3:** Educational Attainment for Workers in Water Occupations vs. All Occupations, 2016

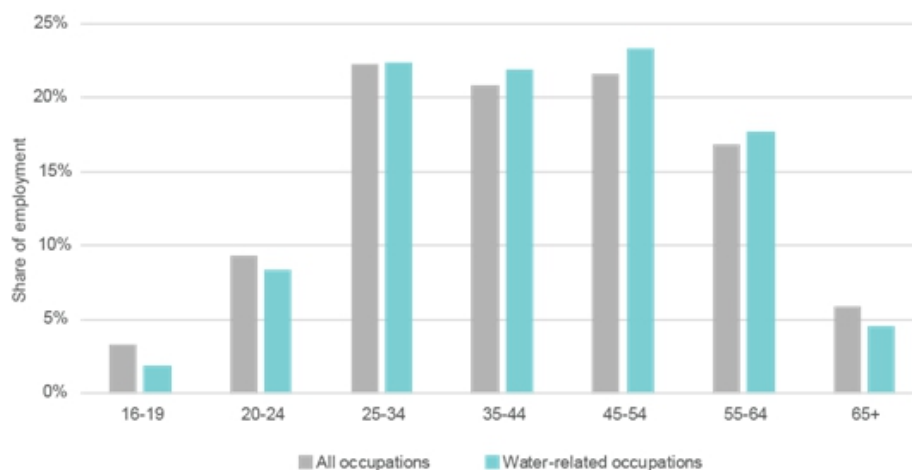


**Source:** Brookings's analysis of BLS Occupational Employment Statistics and Employment Projections data

### Water Workers Tend to be Older and Lack Gender and Racial Diversity in Certain Occupations, Pointing to the Need for Younger, More Diverse Talent

Thousands of water workers are aging and expected to retire from their positions in coming years, leading to a huge gap to fill for utilities and other water employers. Some water occupations are significantly older than the national median (42.2 years old), including water treatment operators (46.4 years old). There is a notable lack of diversity in certain water occupations. While nearly two-thirds of the water workforce is white, similar to the ratio found across all occupations nationally (65.3 percent), black and Asian workers only make up 11.5 percent of the water workforce, compared to 18 percent of those employed in all occupations nationally. While the Hispanic share of the water workforce (21.8 percent) actually exceeds the national average across all occupations (16.7 percent), this is primarily due to their concentration in construction jobs. People of color, in particular, tend to be underrepresented in higher-level, higher-paying occupations involved in engineering or management.

**Fig. 4:** Age Range of Workers in Water Occupations vs. All Occupations, 2016



**Source:** Brookings's analysis of BLS Occupational Employment Statistics and CPS data

### Overcoming Barriers to Water Workforce Development: Developing a Water Workforce Playbook

Together, water utilities, other water employers, community partners, and federal and state leaders have a long list of “to-do's” to further elevate and expand the country's water workforce opportunity. Not all places are equally equipped to accelerate their workforce development efforts, even if they have an appetite to test out new ideas. Ultimately, locally-driven actions are crucial to develop new strategies and target new investments, but the scale of the issue demands broader regional collaborations and national support to build additional financial, technical, and programmatic capacity. The country needs a water workforce playbook to accelerate thinking, action, and investment.

## **Conclusion**

Hiring and training workers have posed difficulties for several decades, but simply holding onto infrastructure workers is becoming increasingly problematic. A “silver tsunami” of workers has swelled in recent years, causing many infrastructure employers to see 10% (or more) of their workers retire annually, and as more of these workers reach the end of their careers with fewer younger workers to pick up the baton, vast amounts of institutional knowledge and skills may be lost forever. But many other workers are also simply fed up, quitting their jobs in higher numbers to seek additional pay, workplace flexibility, and other benefits, similar to other “Great Resignation” issues affecting the economy.

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