US water workforce overview

An exploration of water workforce demographics, job opportunities and qualities, and industry needs

June 10, 2020

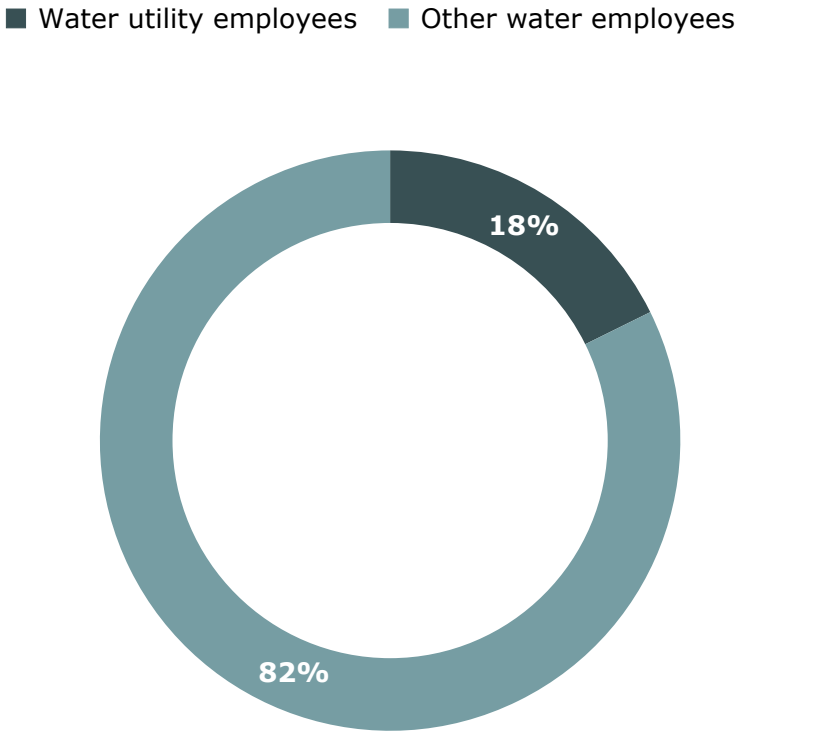
Roadmap

- Demographics
- Jobs
- Industry needs

Key water workforce demographic information

Utility share of total water workforce employment

PERCENTAGE, 2016



- In 2016, **1.7 million** workers were directly involved in "designing, constructing, operating, and governing" US water infrastructure
- Water operators, mechanics, machinists, electricians, and instrument technicians are essential to utility work
- Administrative, financial, and management occupations, such as customer service representatives and human resource specialists, also support water utility operations
- More than half of all water and wastewater utilities nationally have only one or two employees and about 85 percent have three of fewer

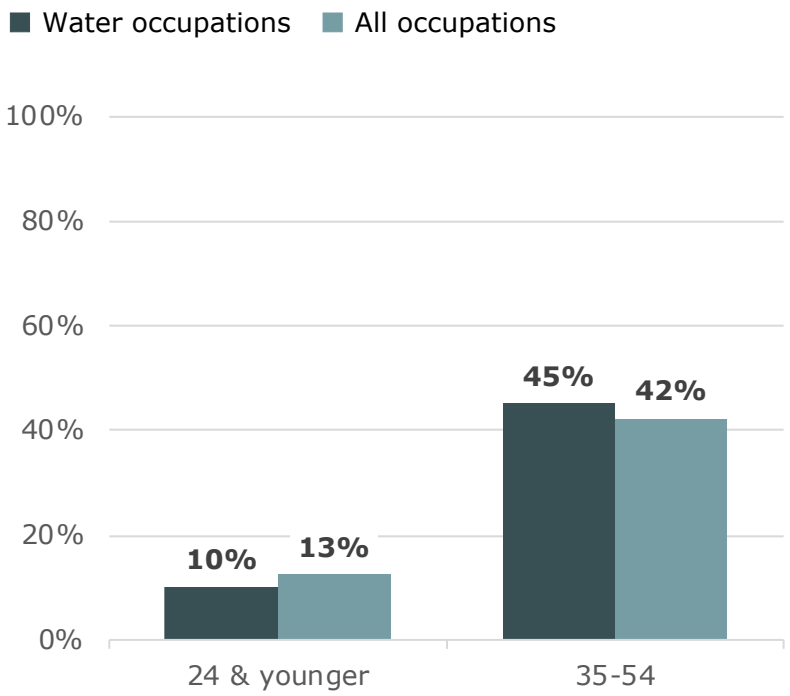
Sources: Brookings, Bureau of Labor Statistics.

The water workforce is getting older

Thousands of water workers are aging and expected to retire in coming years, creating gaps that utilities and other water employers will need to fill. **Slightly more water workers are in the "prime" of their careers** (ages 35-54 years old) compared to workers nationally, and there is a **lack of younger workers** in the industry

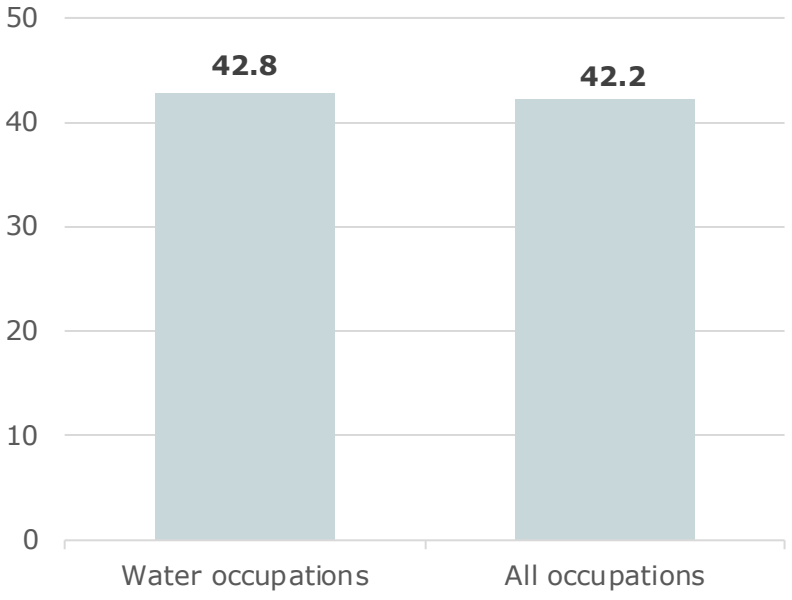
Share of workers by age, selected age categories

PERCENTAGE, 2016



Median worker age

YEARS OF AGE, 2016



Sources: Brookings, Bureau of Labor Statistics.

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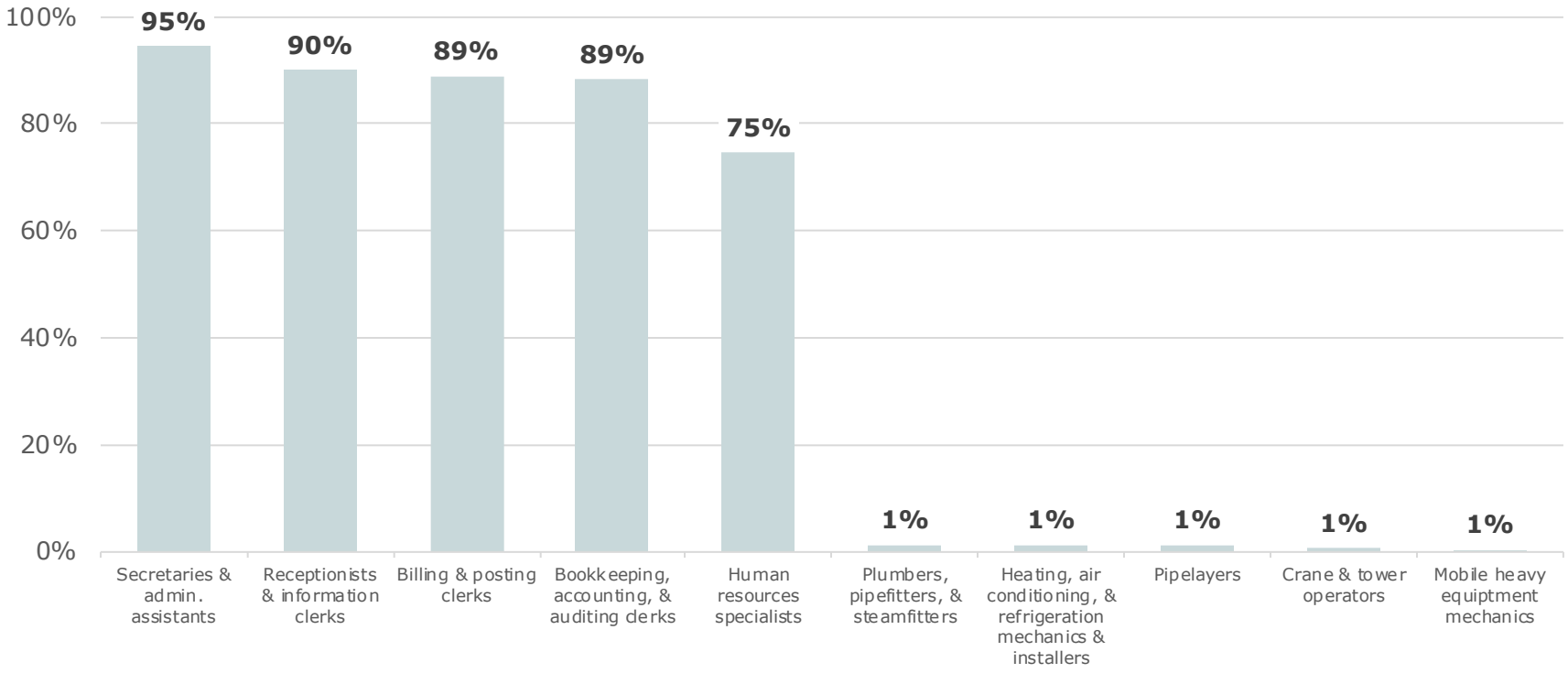
In 2016, approximately 85 percent of water workers were male

Though women make up 47 percent of the US workforce as a whole, they **only account for 15 percent of the water workforce,** and only make up **six percent of water utility CEOs**

Selected water workforce occupations with high and low shares of female workers

PERCENTAGE OF FEMALE WORKERS, 2016



Sources: Brookings, Bureau of Labor Statistics.

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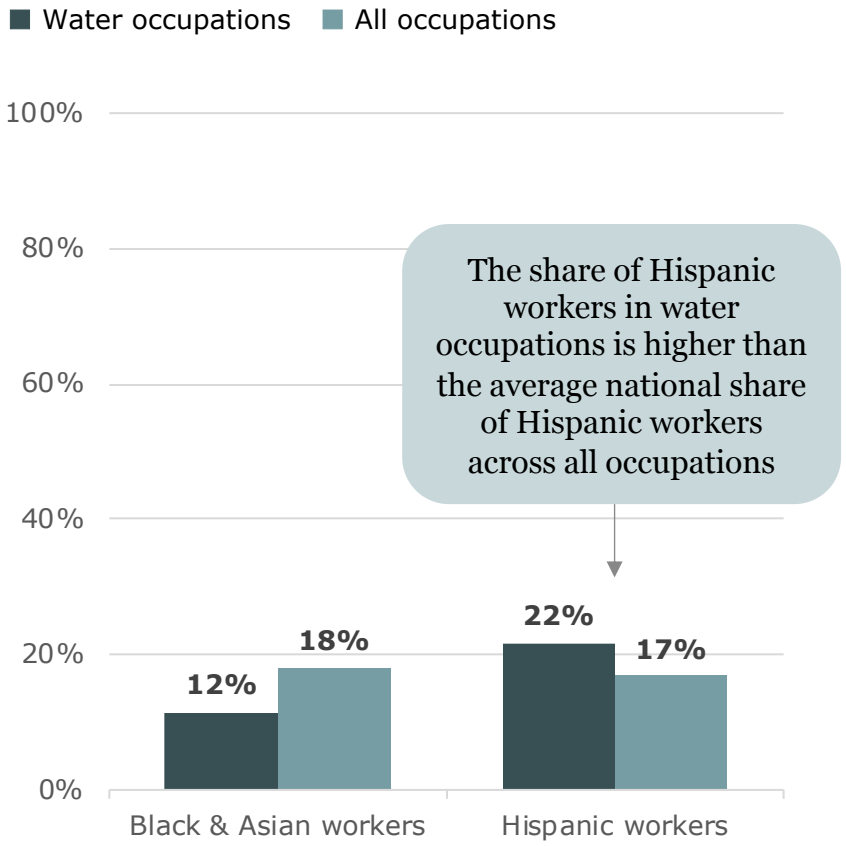
When compared to national averages, the share of black and Asian workers employed in the water sector is especially low

Share of employment by race, selected race categories

PERCENTAGE, 2016



- About two-thirds of the water workforce is white, though this ratio closely reflects that found across all occupations nationally
- Industry surveys have found that over 72 percent of water utility workers are white
- While the Hispanic share of the water workforce exceeds the national average across all occupations, Hispanic workers are underrepresented in higher-level, higher-paying water occupations
- Although many water occupations pay equitable wages, there are still gaps in Black, Hispanic, and Asian workers filling some of these positions

Sources: Brookings, Bureau of Labor Statistics.

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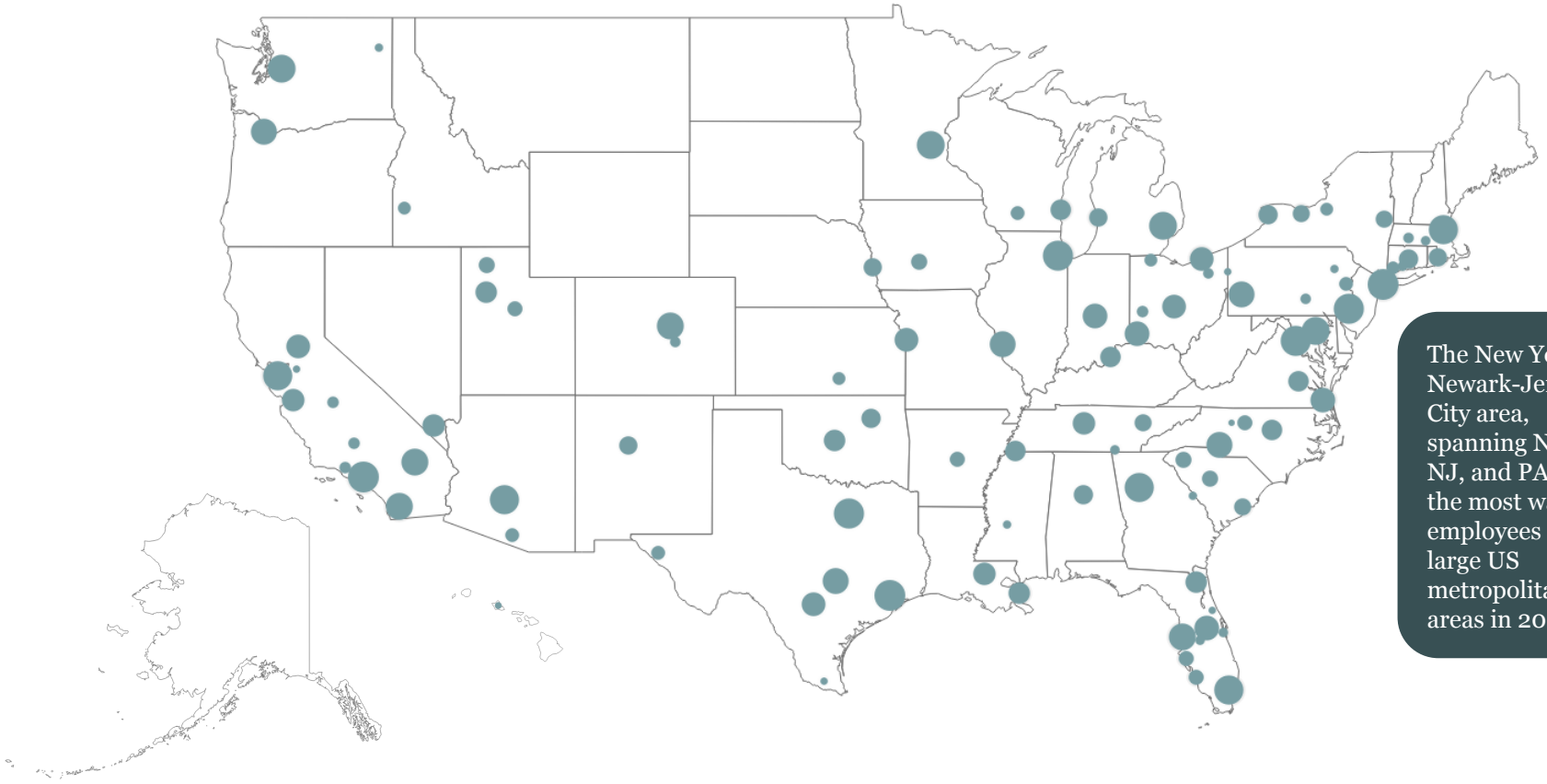
Twenty-five percent of all water workers are concentrated in ten metro areas, led by New York, Los Angeles, and Houston

Number of water workers in 100 largest metro areas

BY TOTAL EMPLOYMENT, 2016

• 2,101 - ● 93,726



The New York-Newark-Jersey City area, spanning NY, NJ, and PA, had the most water employees of large US metropolitan areas in 2016

Sources: Brookings, Bureau of Labor Statistics.

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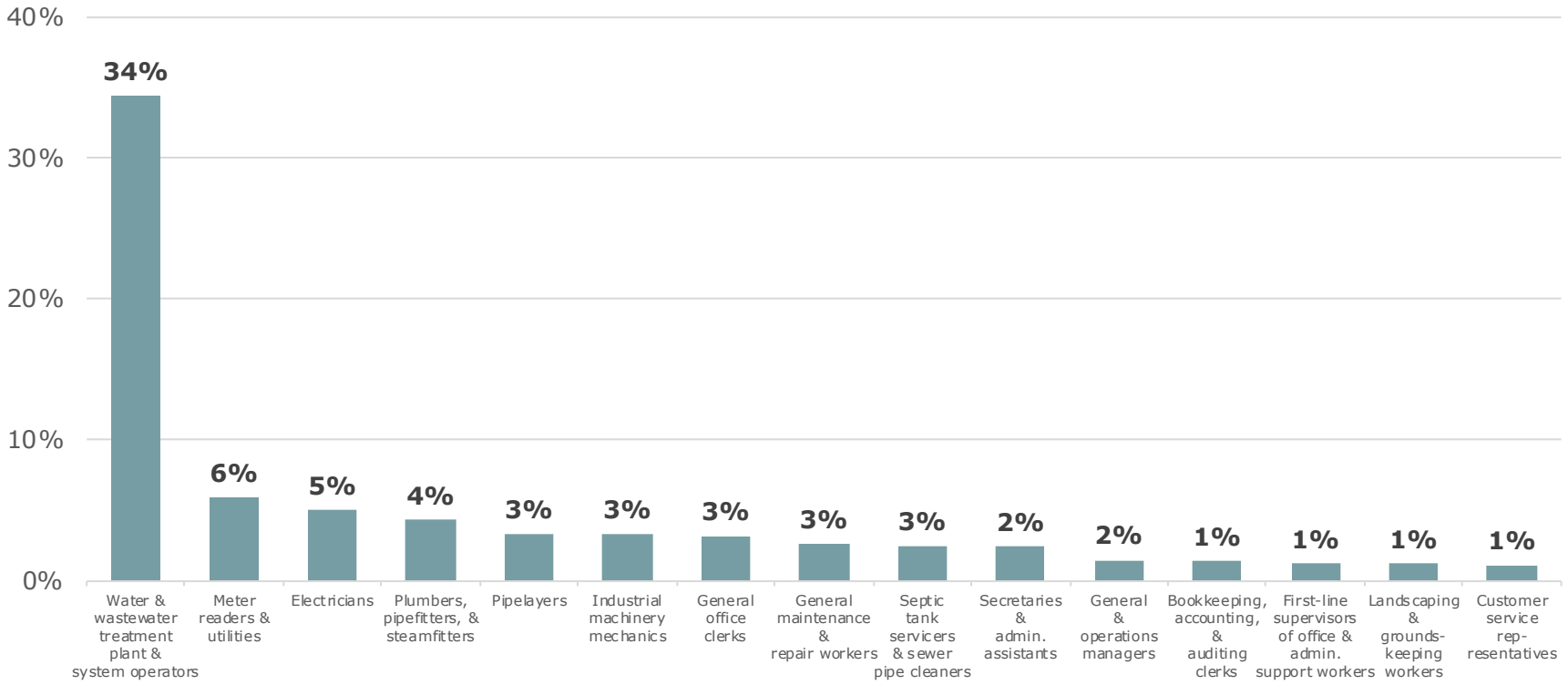
Water and wastewater treatment plant and system operators make up 34 percent of the water utility workforce

Water utility 15 largest occupations

BY SHARE OF WATER UTILITY EMPLOYMENT, 2016



Sources: Brookings, Bureau of Labor Statistics.

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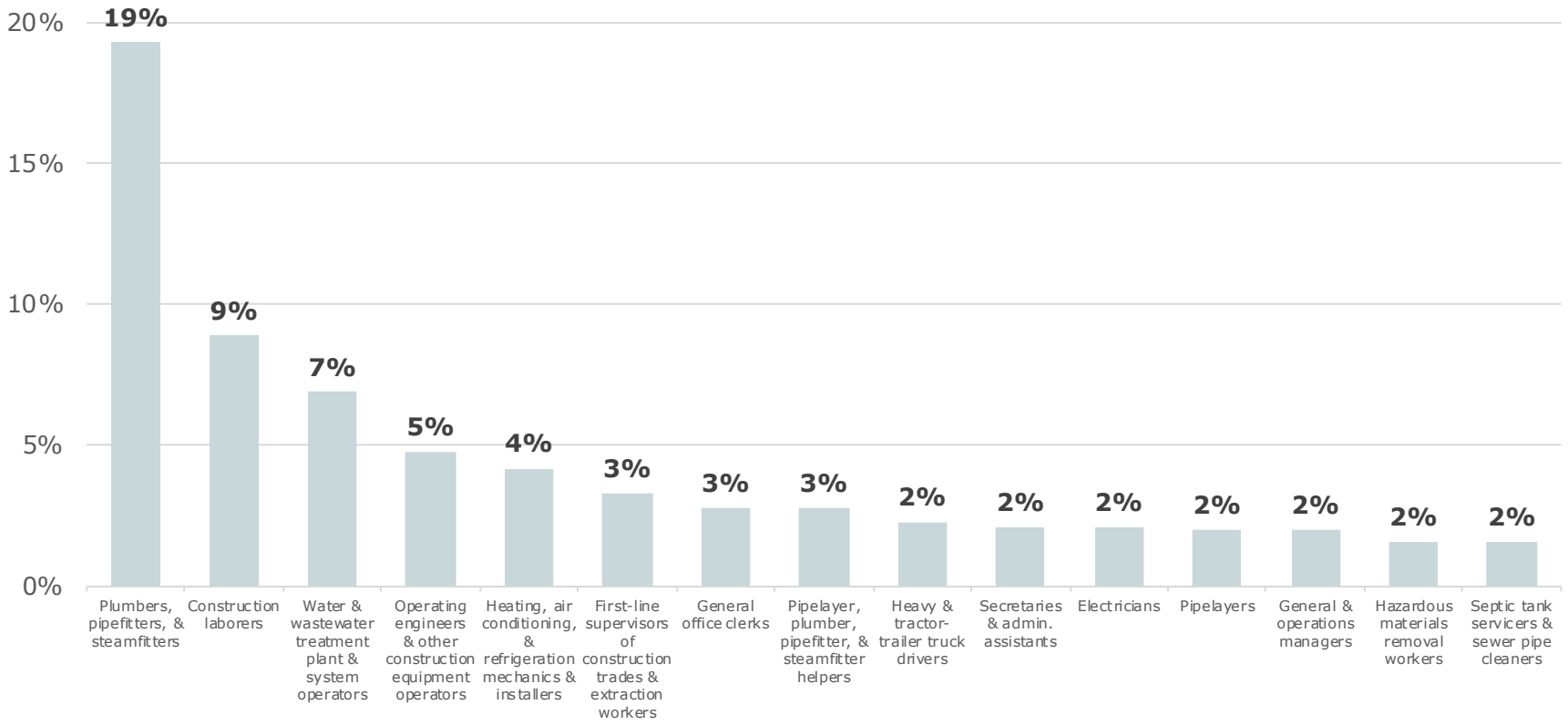
Water and wastewater treatment plant and system operators make up seven percent of the overall water workforce

Water workforce 15 largest occupations

BY SHARE OF WATER WORKFORCE EMPLOYMENT, 2016



Sources: Brookings, Bureau of Labor Statistics.

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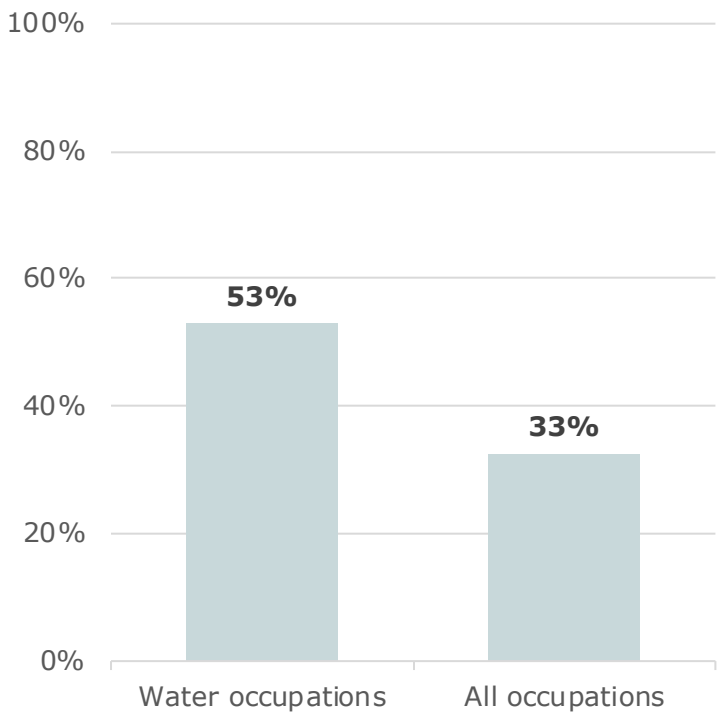
Water sector professions require less formal education

Share of workers with a high school education or less

PERCENTAGE, 2016



- Most water workers have less formal education, but require more related work experience and extensive on-the-job training
- Water workers usually require more experiential learning and certification or accreditation
- Water workers can often enter the workforce sooner as they can gain credentials on the job
- Carpenters, welders, septic tank servicers, and sewer pipe cleaners tend to possess a high school diploma or less
- The majority of these workers still earn competitive wages regardless of their educational attainment

Sources: Brookings, Bureau of Labor Statistics.

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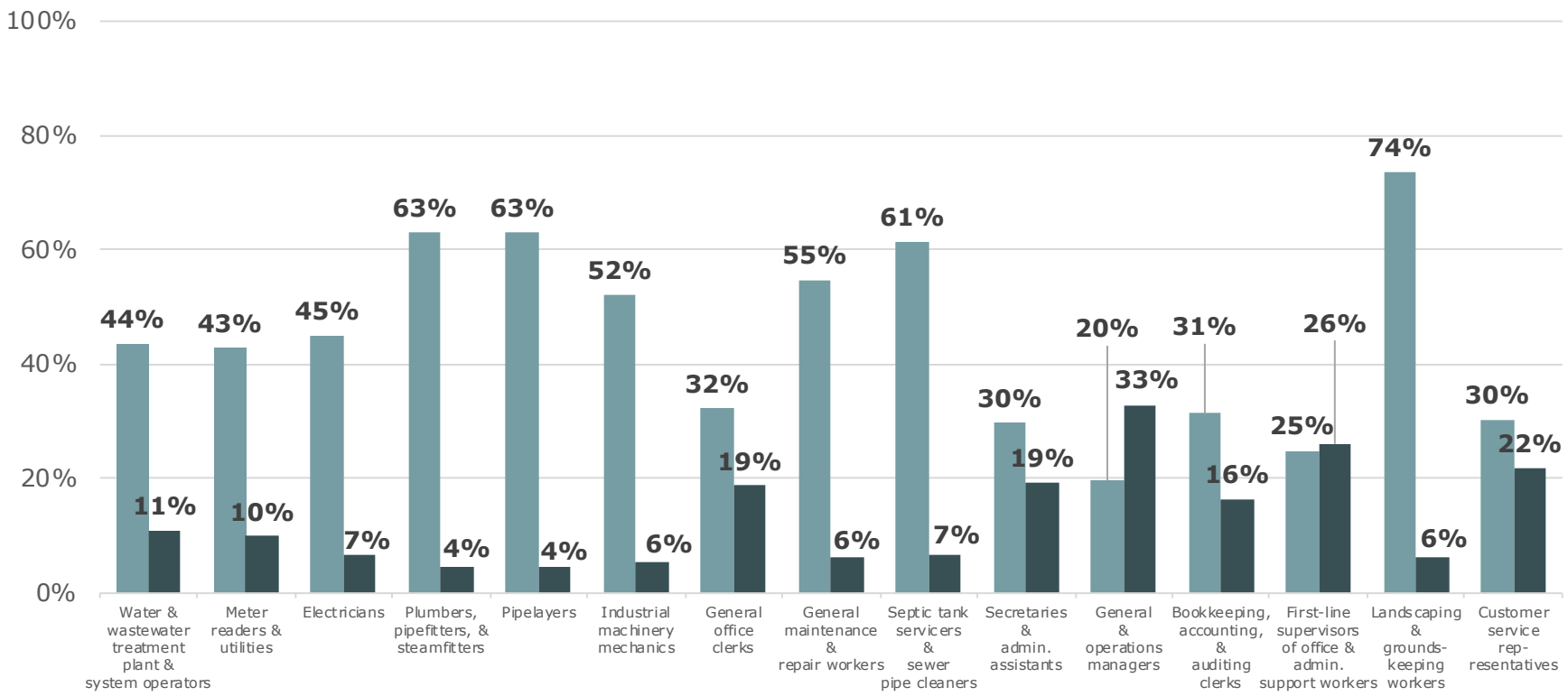
On average, 11 percent of water and wastewater treatment plant and system operators have a bachelor's degree

Educational attainment of water utility 15 largest occupations

PERCENTAGE, 2016



Sources: Brookings, Bureau of Labor Statistics.

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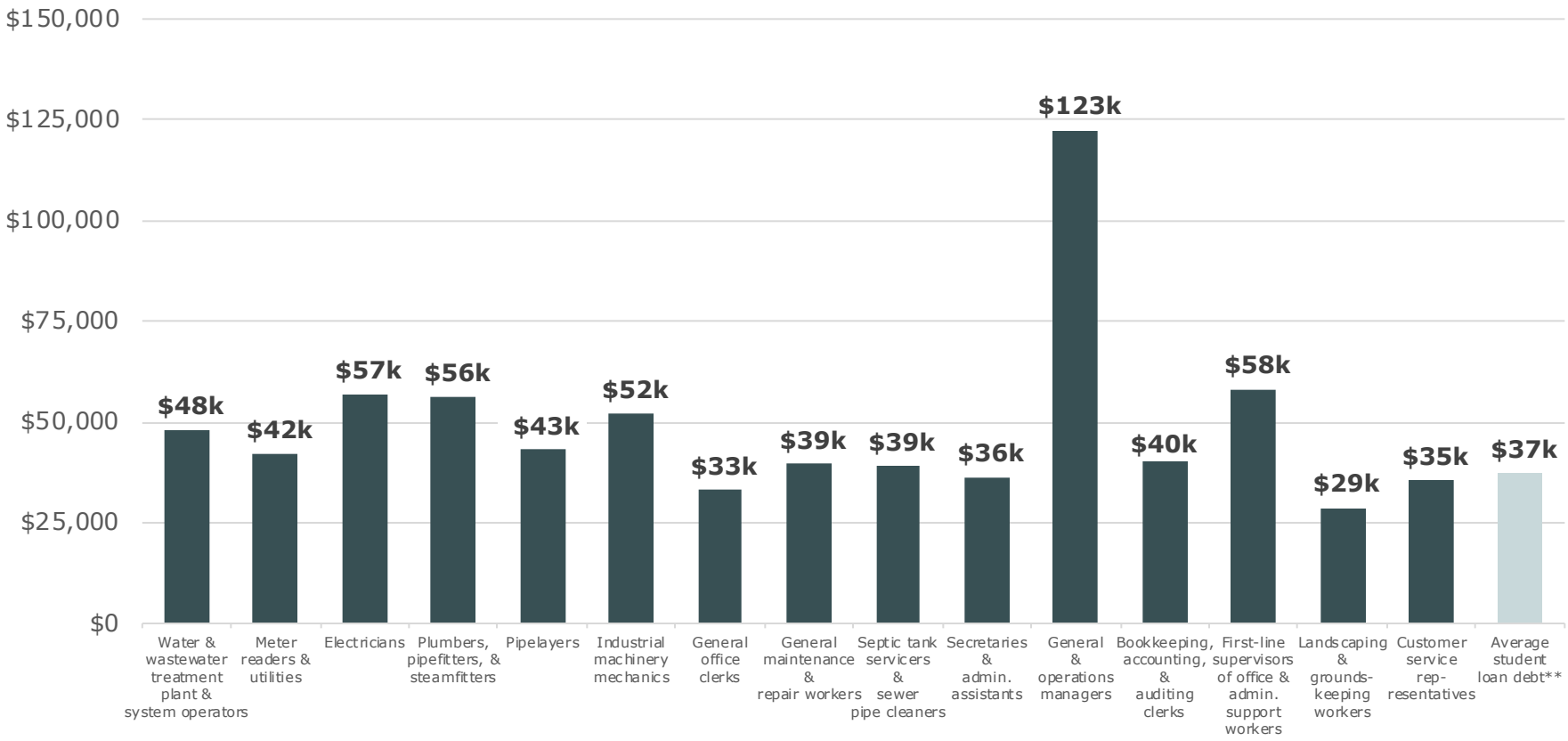
There are a range of salaries possible in water careers that often do not require college and student loan debt

Average annual wages of water utility 15 largest occupations* and average student loan debt

DOLLARS, 2016



*Calculated using average hourly wage and a 2,087-hour work year

**Borrowers who graduated college in 2016

Sources: Brookings, Bureau of Labor Statistics, US Office of Personnel Management, Debt.org.

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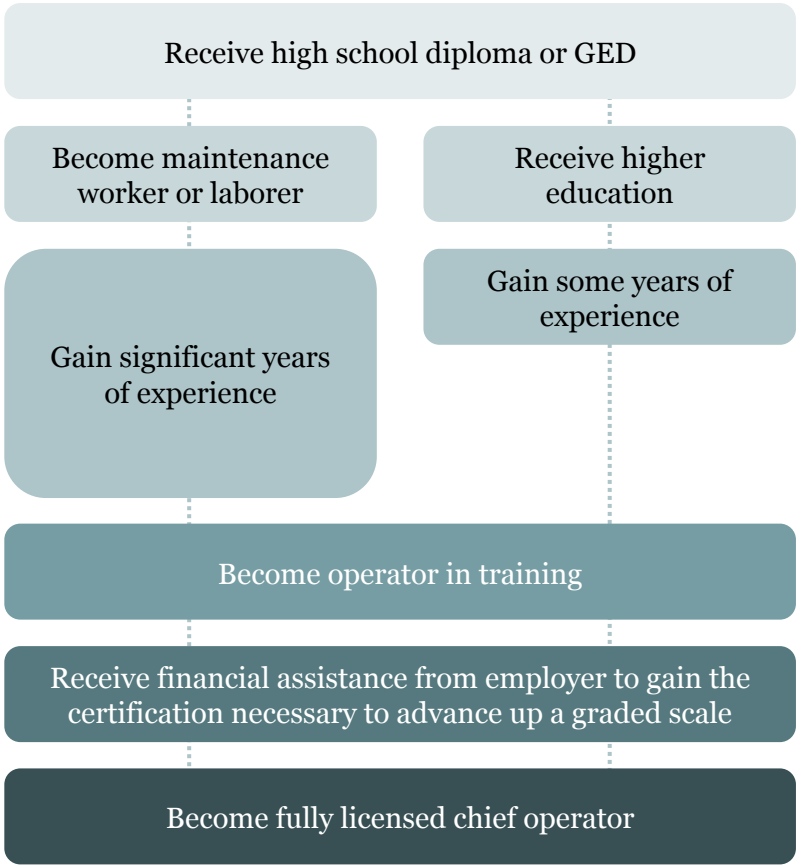
Spotlight: traditional and non-traditional water system operator career pathways*

Traditional pathways



Non-traditional pathways

"My supervisor was a pool guy and a butcher before this. Another guy I work with was an electrical engineer. I was a plumber and a cable technician. We have a guy with mechanic *(sic)* background. So we all come from different backgrounds."

—Plant Operator, quoted in the Lowell Center and Massachusetts Workforce Alliance's 2012 report, *Promoting Entry to Career Pathways in the Drinking Water and Wastewater Sector*

Non-traditional water training programs:

- Weeks-long water "boot camps"
- Pre-apprenticeship programs and internships
- Water training through vocational high schools, community colleges, and adult education programs

*Abbreviated summaries of example pathways

Sources: Brookings, Lowell Center for Sustainable Production University of Massachusetts Lowell and The Massachusetts Workforce Alliance.

In Massachusetts, wastewater operators may substitute education for experience in gaining certification

A state example of substituting education for experience in water system operator career paths*

Grade of "full" operator	Required years of experience	Education may be substituted for up to ____ years of experience
Grade 1	1	.5
Grade 2	3	2
Grade 3	5	3
Grade 4	6	4
Grade 5	6	4
Grade 6	7	5
Grade 7	8	5

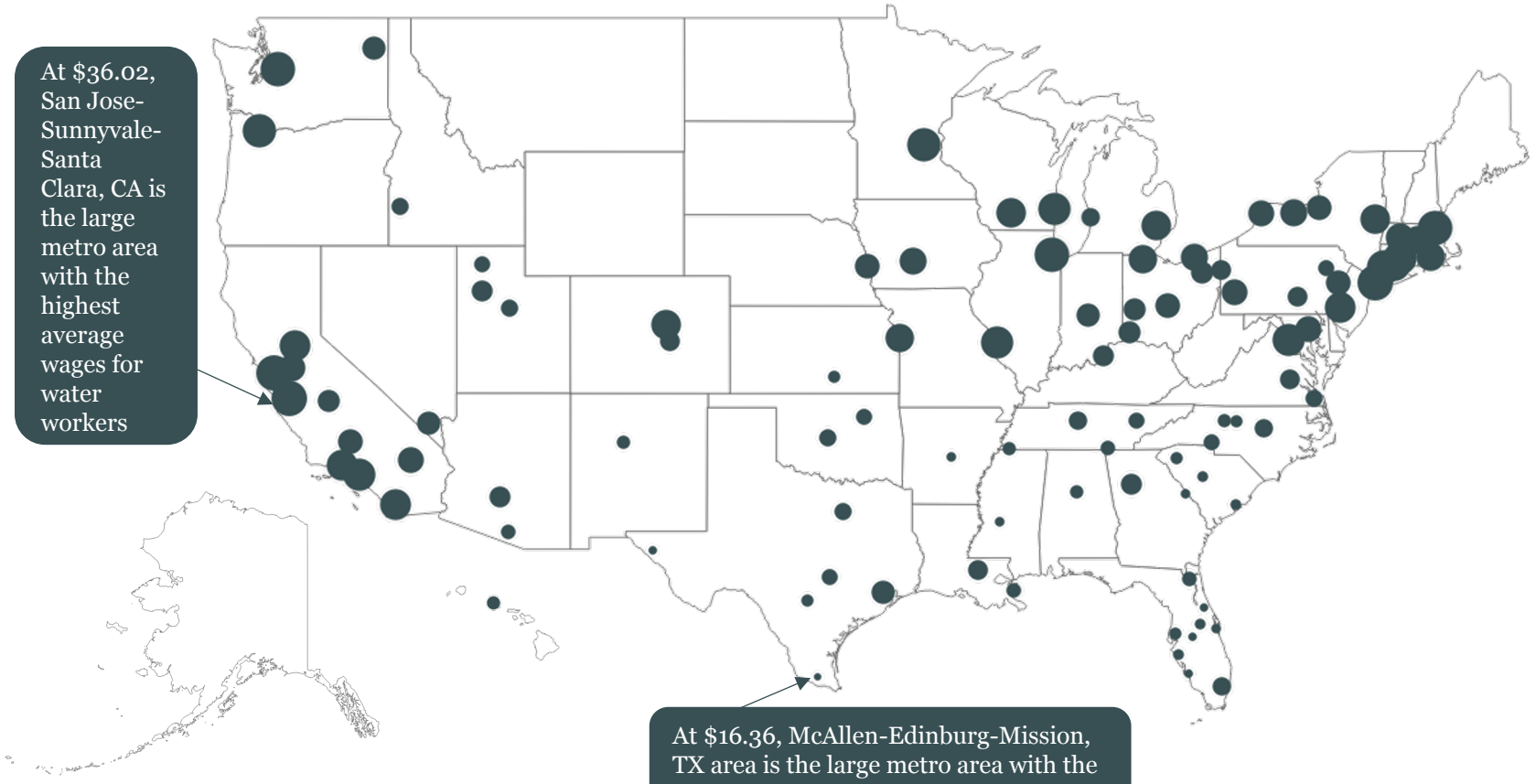
*Note that passing examinations is also required and only select degrees and courses of study are applicable substitutes for experience
Sources: Brookings, Lowell Center for Sustainable Production University of Massachusetts Lowell and The Massachusetts Workforce Alliance.

At $25.22/hour, water workers earn higher average wages than workers nationally, who earn an average of $23.86/hour

Average wages for water workers in 100 largest metro areas

2016

- $16.36 - $36.02

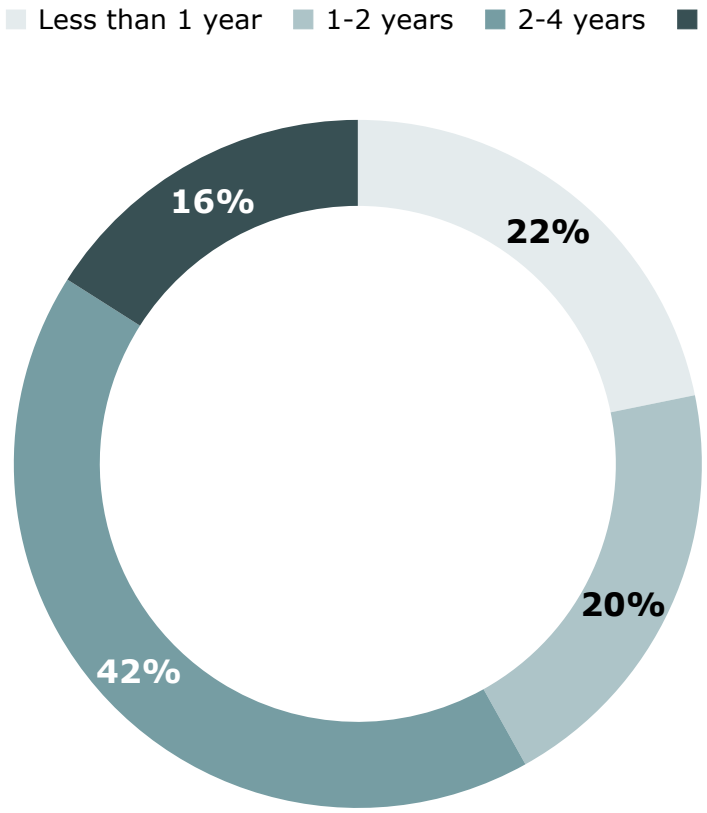


Sources: Brookings, Bureau of Labor Statistics.

Though water occupations often require significant training, water workers can sometimes gain this experience while working

Related work experience often required in water occupations

SHARE OF EMPLOYMENT, 2016



- Most water workers have less formal education, but require more related work experience and extensive on-the-job training
- Water workers can often gain experience while working and receiving a paycheck, sometimes by joining apprenticeship programs
- Water treatment operators, plumbers, and HVAC technicians (among other large water work occupations) require two to four years of experience
- The more extensive work experience required by many water jobs may help explain the small share of workers under the age of 24 in the water workforce

Sources: Brookings, Bureau of Labor Statistics.

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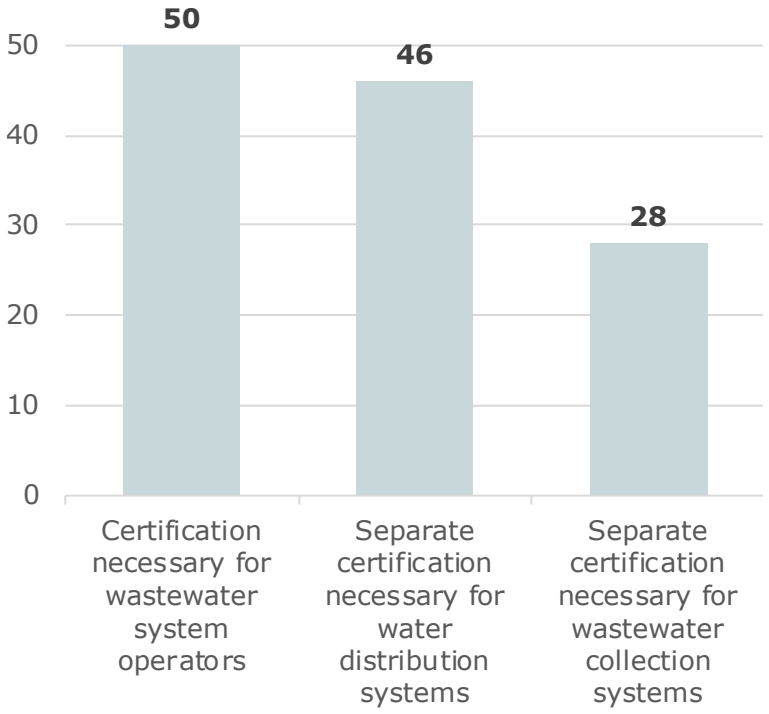
Water and wastewater system operator requirements are specified by states

Water and wastewater system operator certifications

NUMBER OF STATES, 2017



- Federal guidelines specify that states must require the following for operator certification:
  - Pass an exam demonstrating that the operator has the necessary skills, knowledge, ability, and judgement
  - Have the defined minimum amount of relevant experience or education
- States must require operators to acquire state-approved training for certification renewal
- Most states do not recognize certification from other states, which makes mobility and recruitment challenging
- Advocacy organizations should work to encourage reciprocity for operator certificates between states

Sources: American Water Works Association.

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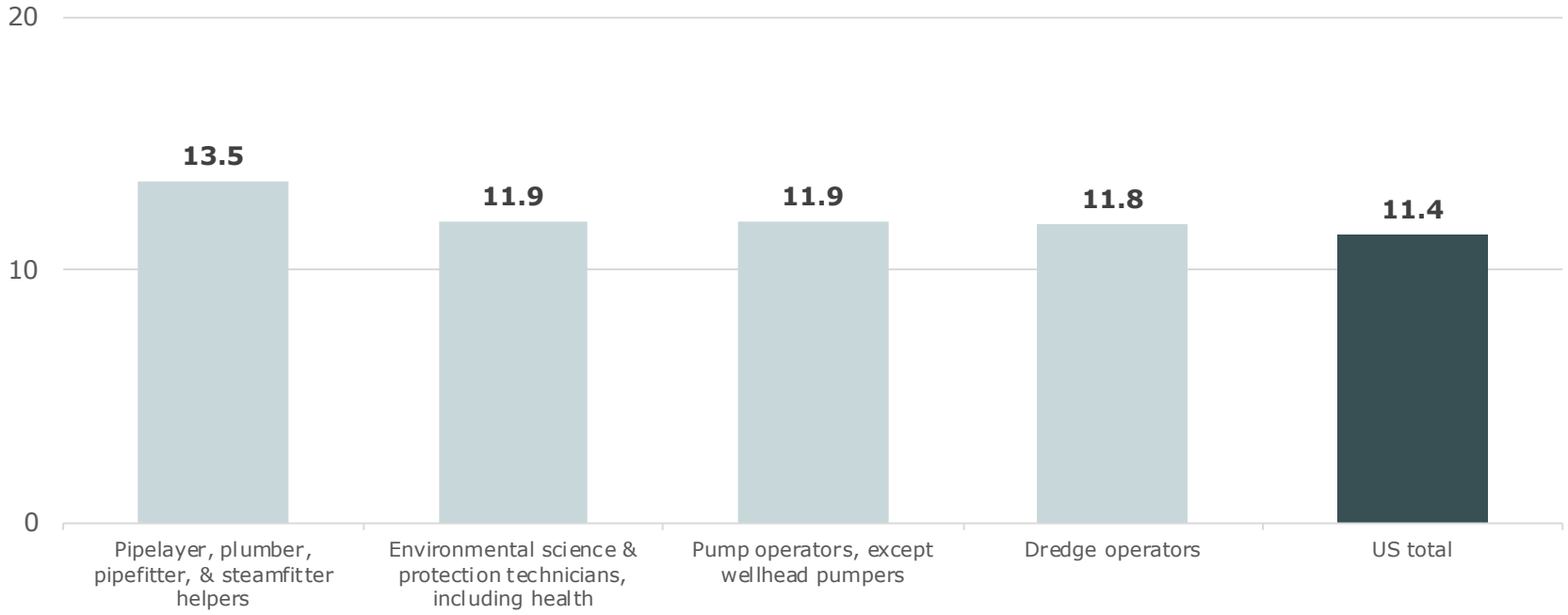
Some jobs filled by water workers have high rates of labor force exits, career changes, or both

The Bureau of Labor Statistics' occupational separations rate measures the number of workers projected to permanently leave their current jobs due to labor force exits (including retirements) and career changes. A high occupational separation rate can signal potential struggles within the occupation

Selected occupations with high occupational separations rates*

OCCUPATIONAL SEPARATIONS RATE, 2018-2028 ANNUAL AVERAGE



*Occupational separations rate drawn from analysis of all workers within selected occupation, not just workers in the water workforce

Sources: Brookings, Bureau of Labor Statistics.

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