

Apprenticeships: Pathways Toward Workforce Diversity in the Water Sector

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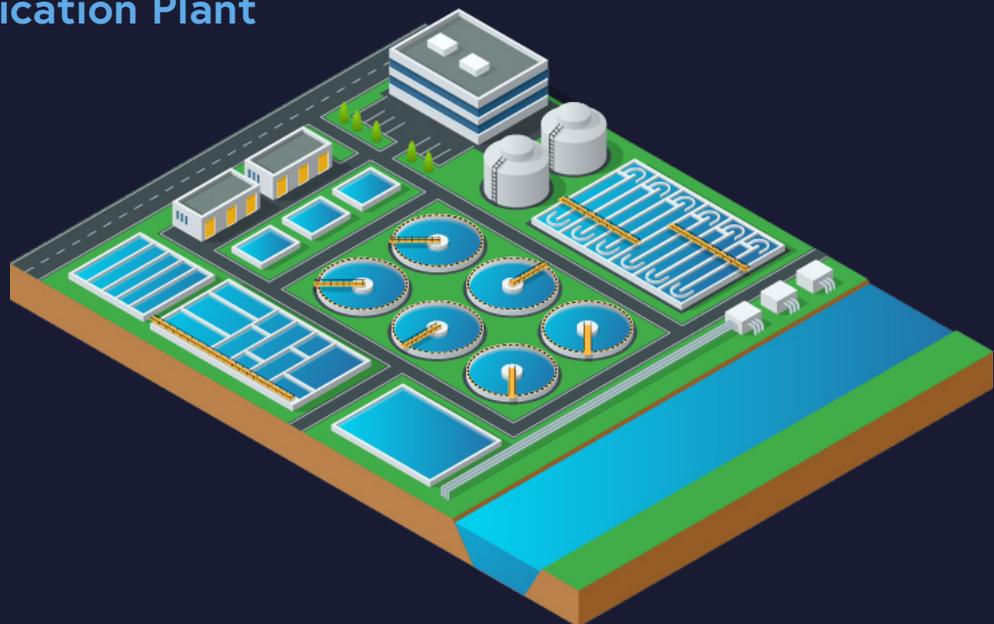
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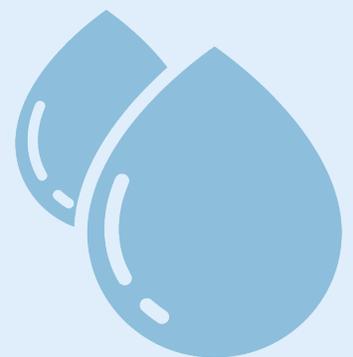
OVERVIEW

This issue brief provides data and useful resources to inform African Americans about the benefits of apprenticeships. It also identifies where apprenticeships can be found that can help them start a journey towards obtaining the middle-income and well-paying water careers available now and in the future, especially in water utilities area.

African American youth need identifiable and sustainable pathways for good careers, sustainable jobs, and business opportunities. The water sector, based on Bureau of Labor Statistics projections, is expected to see faster overall employment growth (9.9 percent) compared to all occupations nationally (7.4 percent) between 2016 and 2026. With both attrition and future growth projections in the water sector, this could lead to an average of 220,000 job openings each year—from 2016 to 2026. Almost 38 percent of the projected jobs (82,500) are expected to be in three occupations: plumbers, construction laborers, and operating engineers. An additional 9,200 annual openings are projected for water treatment operators; but these jobs and many other occupations—such as electricians, carpenters, and general and operations managers also projected to have thousands of yearly openings—require pathways using apprenticeships. In short, many of the biggest water occupations are projected to grow by thousands of positions over the next decade. Recognizing that employment projections aren't perfect, experts agree that the water workforce can clearly play a sizable role in the labor market for years to come (Brookings, 2018).

As noted, water occupations pay good middle-income wages. Specifically, 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 universal 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 than other jobs in most places across the U.S. (Brookings, 2018)

The combination of attrition and future growth in the water sector is projected to lead to approximately 220,000 occupational openings on average each year—from 2016 to 2026.

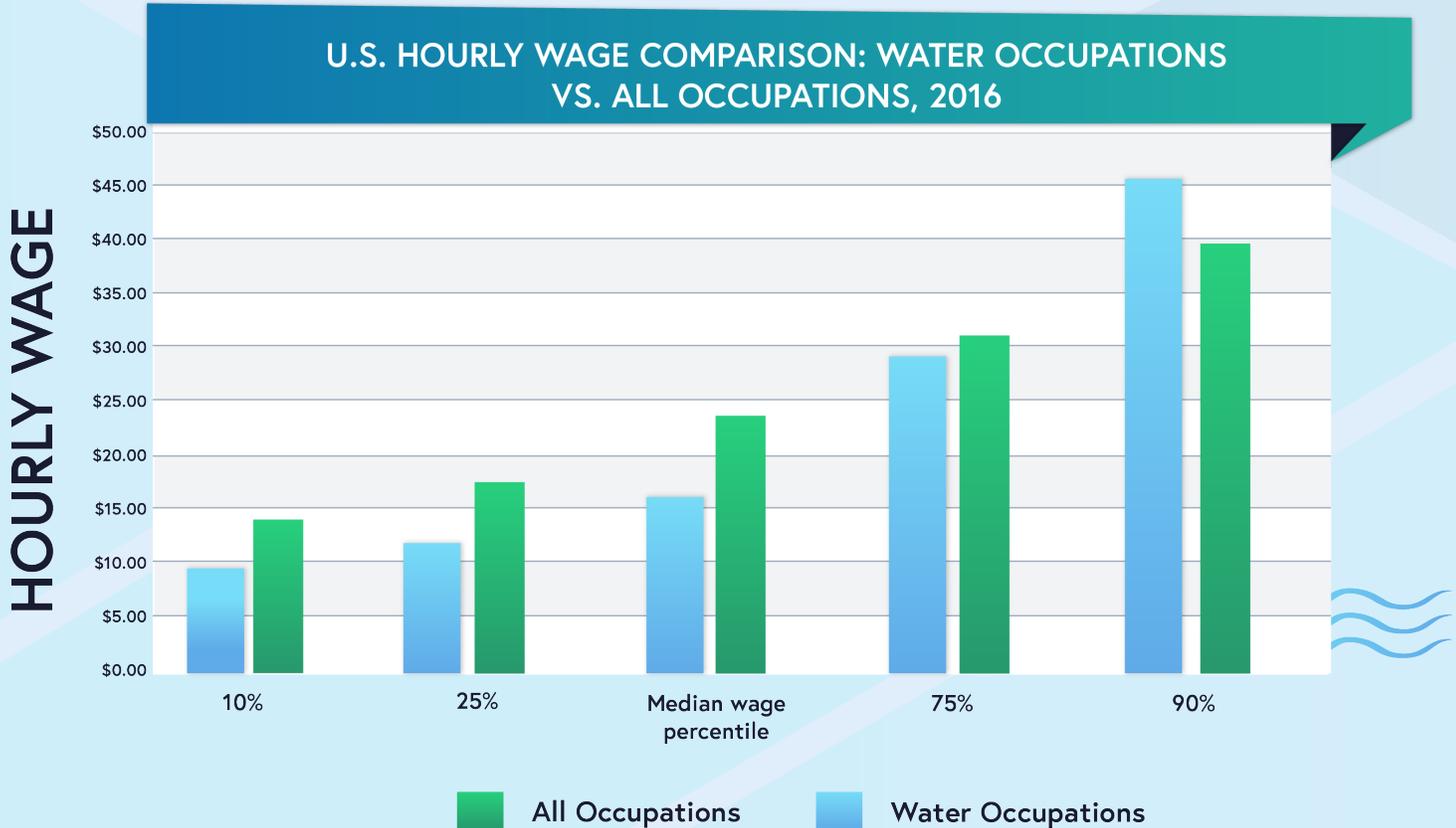


WATER, WORKFORCE, AND WAGES

In 2016, water workers, including water and wastewater utilities workers tended to 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 across the country. However, both workforce participation rates and wages among women and African American apprentices across all industries and occupations are much lower than those of other apprentices. **The Congressional Black Caucus Foundation (CBCF) will work in collaboration with the water sector and other actors to achieve a more diverse and inclusive water workforce that also receives equal pay for equal work.**

Water jobs tend to pay more than the average U.S. job, especially at lower ends of the income scale. They also require much less formal education and help workers develop a wide range of technical skills. With 1.7 million total jobs and geographic dispersion, water jobs exist throughout the country!

Figure 1



A photograph of two men in a workshop. They are both wearing clear safety glasses and blue polo shirts. The man on the right is looking down at a piece of machinery, possibly a lathe, with his hands near it. The man on the left is looking towards the same area. The background is slightly blurred, showing industrial equipment and a control panel with several buttons.

National Apprenticeship Week (NAW) is a national celebration that offers leaders in business, labor, education, and other critical partners a chance to demonstrate their support for apprenticeship & showcase their programs.

APPRENTICESHIPS

Apprenticeships combine on-the-job, work-based learning and training with classroom instruction and are powerful tools for building the skills needed of youth for careers in various industries like the water workforce. **Apprenticeships are the most practical and efficient method to jumpstart a career and serve as excellent bridges into the water sector for high school and college students.** While water jobs don't always require four year degrees, some prior training and experience is normally required. Apprenticeships are one of the best pathways for good paying water jobs. Some of the advantages are listed below in **Table 1**:

However, access and opportunity to participate in apprenticeships has not been provided equitably to all citizens, especially African Americans and other people of color, and women. Apprenticeship training in the U.S. has a long history of racial and gender disparities as illustrated 50 years ago in Marshall and Brigg's 1967 book on African American experiences with apprenticeship.¹ Current data on apprenticeship access and completion rates continue to show disparities. Despite evidence from other countries across Europe and even as practiced in traditional guild societies where direct learning was the mode of preparing youths for careers in Africa, vocational

TABLE 1
SOME ADVANTAGES OF APPRENTICESHIPS

Narrows gender and ethnic gaps in postsecondary credentials, completion rates, and pay.	Subject to government or industry recognized training standards provided at a low cost.
Student engagement in learning high, giving opportunity to experience a job that is interesting and new.	Last between two and four years and lead to credentials certifying capability to perform the required job duties.
Combines classroom-based vocational education, structured work-based learning and paid work and production to help youth master an occupation in diverse fields/occupations.	Unlike part time high school or college jobs, apprentices see directly the connection between classroom and on-the-job learning. Real-life work experiences are part of the appeal.
Allows for better diversity in learning styles, especially for adults to be used that get best results.	Adults who lead apprenticeship programs serve as mentors, on-the-job supervisors and teachers.

education in today's public schools that can aid entry into apprenticeships has been on the decline since the 1980s. **The CBCF is working to ensure African Americans know about the value of apprenticeships as a policy and practical solution to improve their economic livelihood, particularly in light of the opportunities in the water sector.** There is an immediate need is to generate policy solutions to ensure equal and competitive pay for apprenticeships and to monitor and report on ethnic/racial and other demographics. This is because the water and other industries rely largely on apprenticeships as a strategy to create pipelines for future workforce entry, life-long learning and career progression development.

From FY 2008 through FY 2017, exit wages for apprenticeship programs were highest in the West at \$32.50 per hour and lowest in the South at only \$20.80 per hour. While nearly 90 percent of Native Hawaiian/Pacific Islander apprentices completed their apprenticeship programs in the West during this time – as did 63 percent of Hispanics/Latinos, 86 percent of AIAN apprentices, and 73 percent of Asians, only 25 percent of whites and 40 percent of African Americans completed apprenticeship programs in the South. One reason for lower completion rates and wages for African Americans

regardless of location are entry barriers like lack of knowledge and those who tend to complete the programs do so while incarcerated in prison. Incarcerated apprentices can be and usually are legally paid wages below the US minimum wage—a policy which should be changed. While Georgia and South Carolina are two southern states that have made good stride to expand apprenticeships, wages in these areas are linked to prevailing costs of living, which are lower than in the Western United States. Black women, however tend to do apprenticeships in child care which have lower wages. **The water sector can help advance more equitable wages and break down occupational segregation which leads to lower wages and restricts advancement in middle income jobs.** Supporting women and African Americans to gain the skills to successfully complete apprenticeships in water and wastewater utility jobs with higher entry salaries—before they get into trouble, is a starting point for change.² In 2016, bipartisan congressional support led to the creation and funding of ApprenticeshipUSA to the tune of \$90 million, including \$20.4 million to "promote diversity and inclusion in apprenticeships." National Equity Partners listed in the Table 2 below were identified to take up this charge and can be a source for the water sector to recruit youth, women and people of color.

¹ Marshall, F.R., & Briggs, V.M. Jr. (1967). Remedies for discrimination in apprenticeship programs. Retrieved [2/19/19] from Cornell University, ILR School site: <http://digitalcommons.ilr.cornell.edu/articles/133/>

² See McGrew, Annie and Angela Hanks. "The Case for Paid Apprenticeships Behind Bars" (Washington: Center for American Progress, 2017), available at <https://www.americanprogress.org/issues/economy/reports/2017/04/27/431384/case-paid-apprenticeships-behind-bars/>.



"National Equity Partners listed in the Table 2 below were identified to take up this charge and can be a source for the water sector to recruit women and people of color."

TABLE 2
NATIONAL EQUITY PARTNER CONTRACT RECIPIENTS, 2016

Organization	Populations Served
Chicago Women in Trades	Women and People of Color
Jobs for the Future	Women, People of Color and Disconnected Youth
National Urban League	Women and People of Color
North Carolina A&T State University	Women, People of Color and People with Disabilities

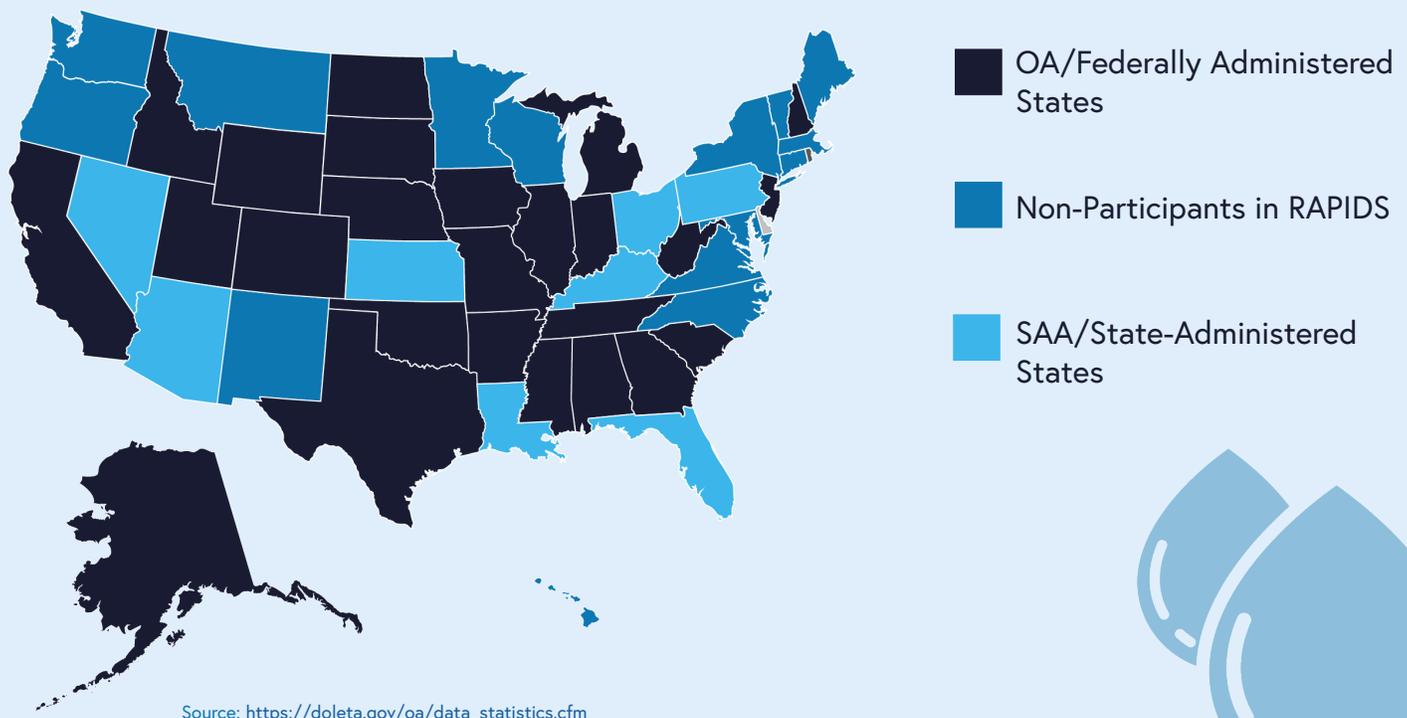
(Source: <https://www.dol.gov/newsroom/releases/eta/eta20160921>)

MAPPING APPRENTICESHIPS WITH EDUCATIONAL AND ECONOMIC OPPORTUNITY

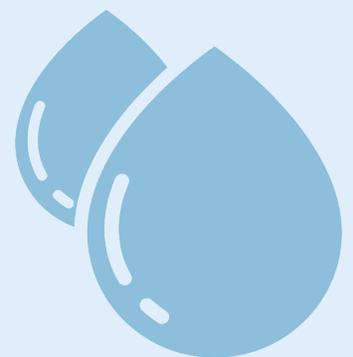
Registered Apprenticeships meet certain national criteria and allow participants to earn nationally recognized certificates of completion certifying occupational proficiency. These are more desirable than unregistered apprenticeship, and should be a first choice. If not qualified, one should then consider a pre-apprenticeship program before turning to an unregistered apprenticeship. There are about 448,000 Registered Apprentices nationwide. In addition, some employers sponsor non-registered apprenticeship programs, but there are no reliable estimates of the number of these programs or the number of apprentices they serve as administration of apprenticeships is somewhat fragmented.

Figure 2 indicates how in 25 states, the Office of Apprenticeship (OA) at the U.S. Department of Labor (DOL) directly registers and oversees apprenticeship programs. In another 25 states, and the District of Columbia, the OA delegates administrative duties to select state agencies, referred to as State Apprenticeship Agencies (SAA's). For registered or other apprenticeships, a high school diploma, General Educational Development (GED), or High School equivalency certification is a basic requirement. However, it is important to know if your state, such as New York, West Virginia, and Indiana, have replaced the GED with the TASC (Test Assessing Secondary Completion).

FIGURE 2
MAP OF RAPIDS PARTICIPANTS
BY STATE

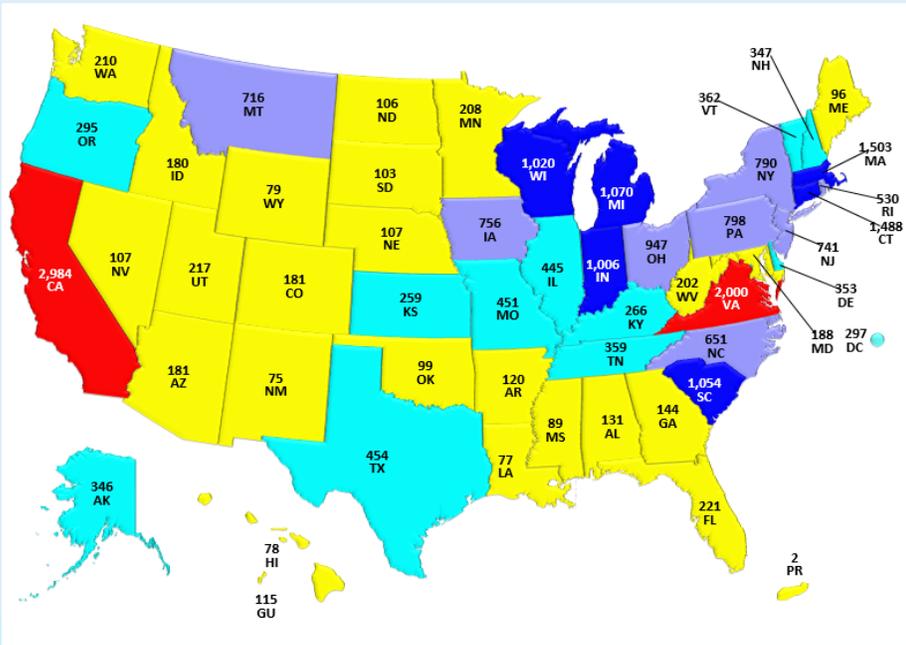


Source: https://doleta.gov/oa/data_statistics.cfm



Below is a summary of registered apprenticeship benefits and the number registered in 2018 by state across the United States.

FIGURE 3
MAP OF ACTIVE APPRENTICESHIP PROGRAMS BY STATE IN FY 2018
 (SOURCE: US DOL OFFICE OF APPRENTICESHIP)



» There are more than 23,400 registered apprenticeship programs across the nation.

» 3,229 new apprenticeship programs were established nationwide in FY 2018.

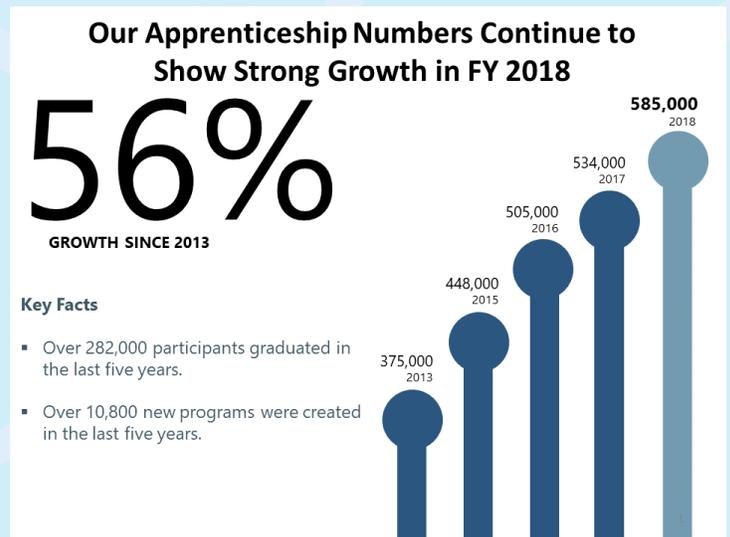
» Between 2015 and 2017, the Obama administration and Congress invested more than \$265 million in expanding apprenticeship programs.

In 2018, Congress appropriated an additional \$145 million to support these programs and the Trump administration's fiscal years 2018 and 2019 budget proposals called for \$90 million and \$200 million in apprenticeship investments, respectively.ⁱ

Across the US, apprenticeships are rising. As shown in Figure 4, while there has been a 56% growth in apprenticeships since 2013, there remains the need to expand these programs. Even so, there is no guarantee that African Americans will benefit and be selected. Entry barriers might include the need to have completed certain classes in school, and pass an aptitude test in subjects such as math, physics, and reading comprehension. Related work experience is also sometimes required in addition to passing

drug tests or a physical exam. Nonetheless, any expansion of apprenticeships should consider strategies to diversify participants and reevaluate the effectiveness of existing entry requirements as effective and valid predictors of job success.

FIGURE 4
GROWTH IN U.S. APPRENTICESHIPS FY 2013-2018
 (SOURCE: [HTTPS://WWW.DOLETA.GOV/OA/Data_statistics.cfm](https://www.doleta.gov/OA/Data_statistics.cfm))

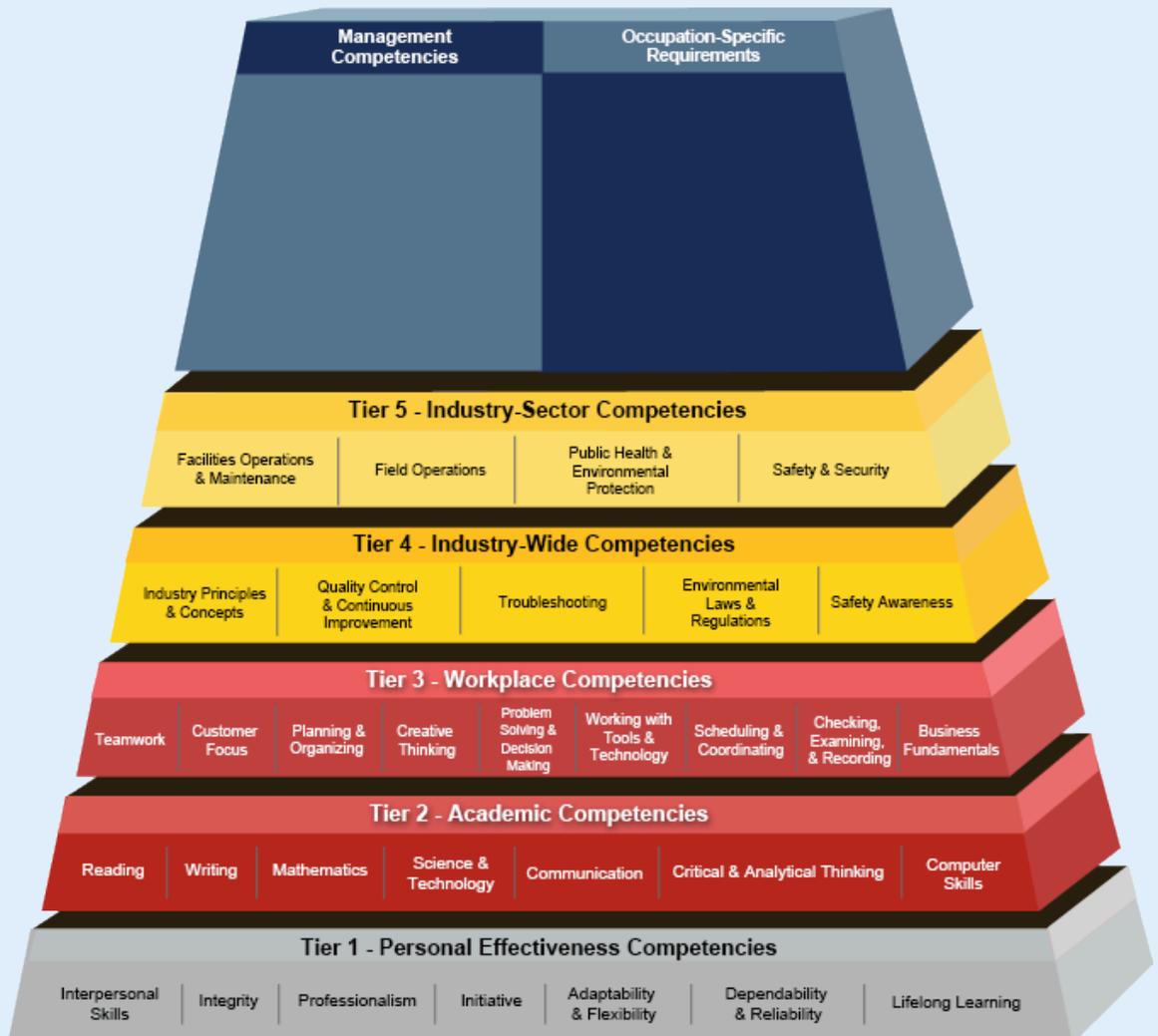


APPRENTICESHIPS, TRAINING AND WORKFORCE DEVELOPMENT OPPORTUNITIES IN THE WATER SECTOR

To get an apprenticeship, you must first apply and get through varied and competitive processes. Figure 5 shows some of the standard water and wastewater worker competencies developed by DOL and water actors apprenticeship programs must have across all ethnicities that ultimately determine pipeline opportunities.

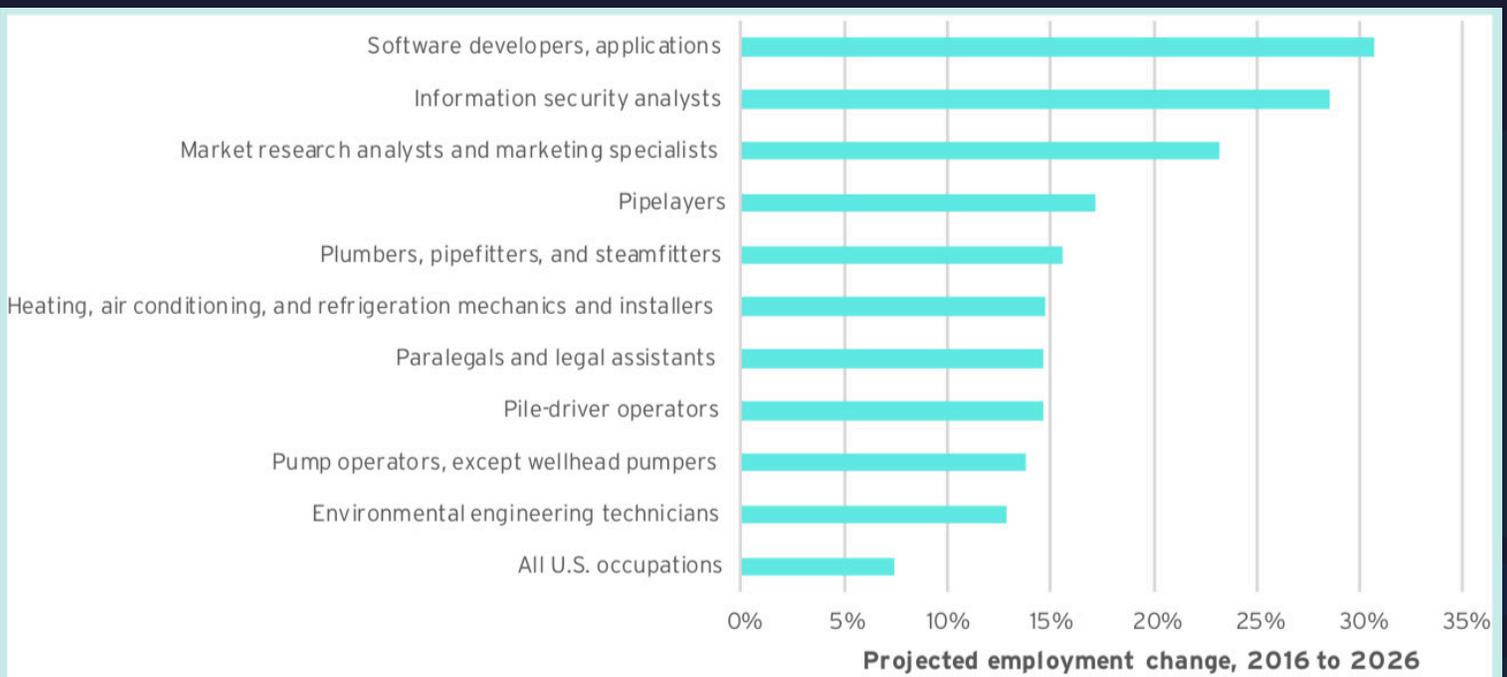
Examples and guides about the model's use are provided on the Competency Model Clearinghouse (<https://www.careeronestop.org/competencymodel/>). The American Water Works Association (AWWA), Environmental Protection Agency, Office of Water and the Water Environment Federation (WEF), all worked together to create the competency model framework used by the Department of Labor's Employment and Training Administration (ETA).

FIGURE 5
STANDARD COMPETENCIES FOR WATER & WASTEWATER UTILITIES JOBS
 (JAN 2018, DOL)



Apprenticeships are needed not just to create a pipeline for traditional water blue collar jobs like construction workers and pipe-layers, but also for Science, Technology, Engineering and Math (STEM) jobs like information technology (IT). Figure 6 below shows the top 10 water growth jobs through 2026.

FIGURE 5 TOP 10 JOB PROJECTED TO HAVE BIGGEST GROWTH IN THE WATER SECTOR VS ALL US OCCUPATIONS 2016-2026 (2018)



Source: Brookings analysis of BLS Employment Projections data

Finally, it is important to note some of the emerging and model workforce programs, including some from the water sector, that show promise for facilitating African American skills development at different levels of youth and young adulthood and learning stages. Examples from Biloxi, Mississippi to San Francisco, California where wide disparities in jobs exists between disadvantaged African Americans and whites are provided in Table 3 below.

TABLE 3

**EMERGING & MODEL WATER-RELATED WORKFORCE
INTERNSHIP, APPRENTICESHIP & OTHER PROGRAMS**

CITY/STATE

Moore Community House Women in Construction (WinC)ⁱⁱ - is a pre-apprenticeship program in Biloxi, Mississippi, founded in 2008 to train women for apprenticeships and nontraditional career pathways in construction, skilled craft trades, and advanced manufacturing. These are all skills that can be used for water industry jobs.

Biloxi, Mississippi

Preparing Adult Offenders To Transition Through Training and Therapy (PAT³)– is a court based and paid job training program for youth offenders (ages 16-29) with felonies to learn life skills through the acquisition of job skills and training, educational assistance, social awareness and personal responsibility. Atlanta Department of Watershed Management trains the participants with other local partners.

Atlanta, Georgia

PowerCorps Program – is a six month, full time paid training program for youths 18-25 that provides on-the-job training for green infrastructure and landscape maintenance skills along with life skills coaching and other skills training to address barriers to employment. Camden County Municipal Utilities Authority runs and hires the participants.

Camden, New Jersey

WEF InFLOW (Introducing Future Leaders to Opportunities in Water) - The Water Environment Federation (WEF) InFLOW is a new scholarship initiative that strives to identify promising students from underrepresented minority groups who are interested in professional careers in the water industry.

National, WEF office in Virginia

ⁱⁱ The Department of Labor has compiled a guide for implementing pre-apprenticeship programs specifically for women. The guide builds on best practices from several pre-apprenticeship programs including Chicago Women in the Trades, Oregon Tradeswomen Inc., Women in Nontraditional Employment Roles, Apprenticeship and Nontraditional Employment for Women, and Nontraditional Employment for Women. Many of these organizations, along with Mississippi Women in Construction, are also part of the Department of Labor's Apprenticeship USA Intermediary Contract, working to expand access to apprenticeship to women and other underrepresented populations. <https://tinyurl.com/yd2cblvh>

CONCLUSION

A major barrier to entry in middle skilled and paying jobs for African Americans and other excluded groups has been lack of experience. Racism, nepotism, dearth of federal funds for vocational and technical education in high schools, and non-inclusive unions with strong links to employers, have also been barriers to diversity and inclusive access by African Americans to apprenticeships critical for jobs in the water sector. The time to address these barriers and change inequitable practices is now. CBCF is taking leadership in partnership with others to identify critical pathways and policy solutions for an inclusive and representative water sector workforce, particularly in water utilities, that reflect the communities they serve and overall US changing demographics. Funding water infrastructure repairs is one policy recommendation with potential to increase African American numbers in water careers with middle income jobs. Initiatives to increase national awareness of apprenticeships among people of color particularly by people of color is another recommendation, as well as providing transport, child care or other needs some potential apprentices might have since most apprenticeships are entered into by youth 18 and older. Other policy recommendations include increasing funding to vocational and technical training in predominately Black high schools, expanding apprenticeship programs with support from both government and businesses, and increasing support for youth capacity building in science, technology, engineering and math.

Find your apprenticeship opportunity now!

Registered apprenticeships in water/wastewater treatment plant and system operators can be found here: <https://www.mynextmove.org/profile/apprenticeship/51-8031.00>

US Department of Labor (DOL) Apprenticeship Listing: <https://www.apprenticeship.gov/apprenticeship-finder/listings>

US DOL Employment and Training Administration: State-by-State maps for active apprentices, new apprentices, completers, active programs, and new programs, visit the webpage: https://doleta.gov/oa/data_statistics.cfm.

US EPA compilation of water and wastewater apprenticeships: https://www.epa.gov/sites/production/files/2015-11/documents/workforcefactsheetscompilation_revisedfinal.pdf

The National Rural Water Association (NRWA): <https://nrwa.org/initiatives/apprenticeship-program/> NRWA was awarded \$6 Million to Develop a National Apprenticeship Program. NRWA has prioritized developing a federally sanctioned, nationwide apprenticeship

YOUTH and others can search for water careers in the database at Career one stop site: GetMyFuture sponsored by the U.S. Department of Labor in partnership with the American Job Center Network <https://www.careeronestop.org/GetMyFuture/site-search.aspx?keyword=Water>

Association for Career and Technical Education lists community colleges providing training for water workers: www.acteonline.org

For international water careers visit these sources:

African Water Association (AFWA) - The African Water Association (AFWA) is a Pan-African association with a membership comprised of sector utilities and governmental agencies in Africa. One main goal is to initiate, encourage and promote any action of co-operation and exchange in professional training. <https://afrialliance.org/african-water-association-afwa/>

Josh's Water Jobs: this site provides information on global water careers from entry to senior levels <https://www.joshswaterjobs.com>



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