

Interagency Water Workforce Working Group Report to Congress



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FOREWORD

Ensuring that people have access to clean water that meets Federal standards is a top priority for the U.S. Environmental Protection Agency (EPA). Each day communities and businesses depend on clean and safe water for daily routines that can range from drinking a glass of water, to irrigating the crops that support our food supply, to providing water for various manufacturing processes. Behind each of these daily routines are the hundreds of thousands of skilled workers who comprise America's Water Sector Workforce. This water workforce provides clean drinking water and safe wastewater treatment every day.

A major challenge facing our nation is the likely potential for a staff shortage in the water workforce that operates and maintains our essential drinking water and wastewater infrastructure. In the next five to 10 years, water sector workers will be eligible to retire at levels that would stress the Nation's ability to operate this critical infrastructure. The clean and safe water and the way of life we have come to enjoy in this country cannot be sustained without our water protection specialists.

EPA recognizes this pending shortage and is helping to address it through focused engagement at all levels of government and with public and private water sector partners. The need for this collaborative approach led EPA to launch *America's Water Sector Workforce Initiative* in October 2020. The Initiative was a call to action and emphasized the need to recognize the vital role water professionals serve in their communities. It also brought forth efforts made by EPA and its Federal partners to work with states, tribes, utilities, local governments, and other stakeholders across the water sector to ensure that the workforce is strong, diverse, and resilient, and attracts talented individuals from many different backgrounds. EPA looks forward to continuing work with its federal partners and non-federal stakeholders to capture innovative ideas and collaborative actions so EPA can take meaningful steps to ensure America has a strong water sector workforce for generations to come.



EXECUTIVE SUMMARY

As part of the [America's Water Infrastructure Act of 2018 \(AWIA\)](#) Section 4304, as amended by Section 50211 of the [Infrastructure Investment and Jobs Act of 2021 \(IIJA\)](#), Congress directed EPA to establish and coordinate a Federal Interagency Working Group that focuses on the drinking water and wastewater utility workforce. This report provides a summary of the Working Group's efforts and serves as an opportunity to gain a deeper understanding of the challenges and opportunities related to recruitment, retention, and training of water utility workers.

This report summarizes major challenges identified through a workforce literature review and various engagements with water stakeholders, as well as Federal and water sector efforts and programs starting to address these issues. Consistent with the legislative direction provided by Congress, this report seeks to inform decision makers about the opportunities to address the workforce challenges. These opportunities, listed below, are described in terms of the "key pillars" of an effective workforce: recruitment, training, retention, and partnerships. The pillars provide an essential workforce development framework that can help utilities and communities identify the approaches that best address their specific needs and circumstances. This report also includes a series of examples on what these opportunities look like when they are implemented locally by utilities, as well as the communities and organizations that support the utilities' needs and the needs of the people they serve.

- 💧 Recruitment: Promoting awareness and value of water workforce careers can provide opportunities for improving recruitment.
- 💧 Training: Collaborations between Federal agencies, states, and the water sector can create opportunities to scale workforce development efforts nationally.
- 💧 Retention: Utilities can improve retention by working to address specific needs (e.g., upward career movement, competitive salaries, or wrap-around supportive services such as transportation, accessible technology, housing, or childcare subsidies).
- 💧 Partnership: Collaboration between utilities and various partners such as community colleges, training organizations, and other water sector organizations is critical for:
 - 💧 Educating and attracting a diverse group of individuals into meaningful careers in water.
 - 💧 Ensuring a diverse, highly trained, and sustainable workforce that can operate and maintain critical water infrastructure.

SECTION 1: OVERVIEW OF FEDERAL INTERAGENCY WATER WORKFORCE WORKING GROUP

Drinking water and wastewater utilities (referred to as water utilities) are anchor institutions that protect the environment and provide services that are vital to the health, safety, and economies of communities throughout the United States. The water workforce is essential to these efforts. Estimates indicate that about one-third of the water workforce is nearing retirement age—the majority being workers with trade jobs in mission critical positions (Curtis & Jones, 2021). The water workforce is also losing experienced workers to employment opportunities outside the sector. At present, there is limited staff to replace these workers. The loss of workers' experience and knowledge, along with the need for new skillsets to leverage evolving technologies, meet new regulations, and satisfy customer expectations, pose a significant challenge for water utilities.

To address this challenge, water utilities and their partners—including Federal and state agencies, nonprofit and educational organizations, and the private sector—have been developing and implementing innovative and equitable strategies to recruit, train, and retain a high-performing workforce. In 2020, EPA led the *America's Water Sector Workforce Initiative* to document a number of planned activities from Federal agencies and various water workforce partners to be taken to address water workforce challenges (U.S. EPA, 2020).

In the America's Water Infrastructure Act of 2018 (AWIA), Congress recognized that water utilities:

- 1) provide workers access to stable, high-quality careers; and
- 2) through investments in critical infrastructure, can also invest in the development of local workers and small businesses to ensure a strong, sustainable pipeline of skilled and diverse workers for the water workforce.

Congress also urged Federal, state, and local governments to increase collaboration to further the goal of ensuring this pipeline. In 2021, Congress directed EPA to establish and coordinate a Federal Interagency Working Group (referred to as the Working Group) to address recruitment, training, and retention challenges in the water workforce in consultation with state operator certification programs (AWIA Section 4304, as amended by Section 50211 of the Infrastructure Investment and Jobs Act of 2021 [IIJA]). In addition to federal coordination, the IIJA provides an unprecedented investment in repairing America's aging water infrastructure, making it more important than ever to collaborate effectively and to aggressively champion the water workforce.

The legislative mandate that established the Working Group is described in greater detail in [Section 1a](#). [Section 1b](#) describes the membership and activities of the Working Group conducted in accordance with the legislative mandate. [Section 1c](#) describes the stakeholder consultation procedure, including consultations with state operator certification programs. [Section 2](#) discusses the landscape of challenges facing the water workforce and the key pillars of an effective utility workforce.

Section 1a: Legislative Mandate

[AWIA](#) Section 4304, as amended by Section 50211 of the [IIJA](#), directs EPA to:

- 1) establish and coordinate a Federal Interagency Working Group on water workforce challenges,
- 2) consult with state operator certification programs, and
- 3) submit to Congress a report describing potential solutions to address the identified water workforce challenges by November 2023.



Infrastructure Investment and Jobs Act Sec. 50211. Water Infrastructure and Workforce Investment.

2. (D) Section 4304 of the America’s Water Infrastructure Act of 2018 (42 U.S.C. 300j–19e) is amended—in subsection (b)— by striking paragraph (4) and inserting the following:

(4) WORKING GROUP; REPORT. —

(A) IN GENERAL. —The Administrator shall establish and coordinate a Federal interagency working group to address recruitment, training, and retention challenges in the water and wastewater utility workforce, which shall include representatives from—






- (i) the Department of Education;
- (ii) the Department of Labor;
- (iii) the Department of Agriculture;
- (iv) the Department of Veterans Affairs; and
- (v) other Federal agencies, as determined to be appropriate by the Administrator.

(B) REPORT.—Not later than 2 years after the date of enactment of this subparagraph, the Administrator, in coordination with the working group established under subparagraph (A), shall submit to Congress a report describing potential solutions to recruitment, training, and retention challenges in the water and wastewater utility workforce.

(C) CONSULTATION.—In carrying out the duties of the working group established under subparagraph (A), the working group shall consult with State operator certification programs.

Section 1b: Interagency Water Workforce Working Group Members, Activities, and Topics

This Working Group included representatives from five Federal agencies (see below) and was co-chaired by staff from EPA’s Office of Ground Water and Drinking Water and Office of Wastewater Management. The full membership list of participants is included in [Appendix 1](#).

-  U.S. Environmental Protection Agency (EPA)
-  U.S. Department of Labor (DOL)
-  U.S. Department of Veterans Affairs (VA)
-  U.S. Department of Agriculture (USDA)
-  U.S. Department of Education (ED)

EPA hosted a series of Working Group meetings to identify and discuss workforce development activities led by federal partners and water workforce organizations. Working Group meeting agendas are provided in full in [Appendix 2](#). Meeting topics with Federal partners included water-specific initiatives undertaken by Federal agencies; broader assistance grants; apprenticeship programs; and other Federal programs without a specific water focus but with potential future applications. The Working Group also convened to review this report.

In addition, one-on-one meetings with each Federal agency, including the Working Group member(s) and additional colleagues, were conducted to discuss the Federal agency’s activities relating to water workforce development. These programs and activities are discussed in further detail in [Section 3](#).

Section 1c: Non-federal Stakeholder Consultations

The Working Group also identified and consulted with other non-federal stakeholders, including state operator certification programs and associations. These consultations were conducted in three groups:

- 💧 Group 1: Perspectives on Workforce Challenges and Their Nexus with Federal Operator Certification Requirements and Implementation by States (State Focus)
- 💧 Group 2: Perspectives on the Certification Challenges Facing the Water Workforce (Water Sector Focus)
- 💧 Group 3: Perspectives on Other Challenges Facing the Water Workforce (Utilities, Academia, Others) (Water Workforce Stakeholder Focus)

Organizations represented in these non-federal consultations included water workforce associations; various state agencies involved in the management of water, such as public health and environmental quality departments; administrators of water operator certification, training, and apprenticeship programs; and staff members of water utilities. The consultations sought additional perspectives on water workforce challenges. Insights were provided regarding non-federal programs and current initiatives to address water workforce recruitment, training, and retention challenges, as discussed in [Section 4](#). These stakeholder consultations also fulfilled the legislative directive to consult with state operator certification programs.

[Section 5](#) of this report describes opportunities to address recruitment, training, and retention challenges in the water workforce as identified through Working Group consultations with Federal partners and non-federal stakeholders.

SECTION 2: WATER WORKFORCE OVERVIEW: KEY PILLARS AND CHALLENGES

The number of workers in the United States water workforce is declining. According to the Brookings Institute, roughly one-third of water and wastewater treatment plant and system operators were reported to be 55 years old or older in 2021 (Kane, 2022). Staffing the water workforce is essential to meeting national drinking water and water quality standards and to maintaining and operating critical water infrastructure to provide the public with sustainable, safe water services. The impact of a labor shortage in the water workforce will have lasting consequences on public health and the economy at large. [Section 2a](#) describes the key pillars of an effective water workforce including recruiting, training, retention, and partnerships. The workforce challenges, which can intersect with one more of these pillars, are discussed separately in [Section 2b](#).





What is the Water Workforce?

There are a wide range of critical roles in the water sector; some examples include:

- providing drinking water, treating water and wastewater, and managing stormwater that are in compliance with regulatory standards;
- maintaining critical water infrastructure (e.g., storage tanks, water mains) and associated activities to ensure minimal disruption in services;
- responding to emergencies (e.g., water main breaks);
- overseeing water, sewer line, and related structures construction (e.g., lead service line inventorying and removal);
- overseeing dredging and flood control project construction;
- installing and servicing plumbing equipment;
- trenching, excavating, and preparing sites for septic systems;
- cleaning storm basins and sewers;
- managing financial plans for water utilities such as overseeing water rates and utility revenue;
- analyzing and operating remote or automated systems at water utilities such as supervisory control and data acquisition (SCADA) software;
- facilitating trainings to provide education on water-related topics;
- managing social media, communication materials, and public meetings to inform and build support within the community about the critical nature of the work performed by the water utilities;
- monitoring water quality through sampling and laboratory analysis; and
- providing environmental consulting services in support of regulatory compliance by water utilities.

Workers performing these and other associated roles at water utilities are referred to as the “**water workforce.**”

Section 2a: Key Pillars of an Effective Water Workforce

Key pillars of an effective water workforce include recruitment, competency (training), retention, and partnerships (U.S. EPA, 2022). Each pillar contributes to the objective of ensuring there are enough trained, qualified individuals who can perform the necessary functions to ensure that the public continues to have access to reliable water and wastewater services. Effective recruitment ensures that we maintain a diverse and sufficiently large pool of applicants for water workforce positions. Public health depends on minimizing knowledge gaps as the operation of critical water infrastructure transitions to the next generation of workers. In this way, retention of water workers



is essential in succession planning and to maintain institutional knowledge at water utilities. Skill competency, developed through education and training, is also important to enable water workforce members to perform at a high level and further their careers. Investing in their knowledge and hands-on experience is necessary not only to perform current water workforce functions, but also to create a strong foundation to address current and future water-related challenges. Partnerships with various organizations such as unions, community groups, academic institutions, and other utilities are an essential part of providing services (e.g., targeted outreach and training) that allow utilities to achieve their objectives of recruiting, training, and retaining a sustainable workforce. Additionally, partnerships help foster a larger water workforce community of practice. The following sub-sections provide an overview of these key pillars and how they are essential to the water workforce.

Recruitment

Water utilities require highly skilled workers to safely operate and maintain their facilities. Strong recruitment initiatives can help a water workforce employer compete effectively for needed skills and talent as well as retain a stable, robust, and qualified pool of applicants. There is a wide range of skillsets that translate to available positions within the water workforce. In addition to water utility operators, there are workers who conduct sampling, manage bill payments, communicate with the public, lead community outreach efforts, conduct water quality laboratory analyses, and perform many more distinct roles, contributing overall to a robust water workforce and a sustainable community. In many cases, the public is not aware of the diversity of careers available related to providing water and wastewater services.

To effectively recruit, applicants need to understand the tasks to be performed, opportunities for a meaningful career, and the purpose and importance of the role water utilities play in the community. The water workforce plays an integral role in protecting the public by providing an essential service and preventing the spread of disease, but lacks public visibility. Many people interact with other professionals like medical personnel, road crews, and first responders, and can visualize the services that they perform. The contributions of the water workforce to the community are largely unseen and intangible to the public. Therefore, targeted recruitment efforts to enhance awareness about the water workforce are essential.

Ensuring that current and future job seekers are aware of the wide array of careers that are worth pursuing in water is important. Intentional actions to foster this awareness through recruitment are necessary at multiple levels. Teachers, career counselors, transition specialists, and college instructors can be instrumental in ensuring young people are aware of the water workforce opportunities early and pursue the coursework or training that best prepares them for their career of interest. Apprenticeship programs can similarly increase interest by offering a wage to apprentices as they receive on-the-job training and job-related education. Recruitment activities for youth may include events and workshops about water, programs around environmental stewardship, school talks, water utility tours, and career fairs.

At the organizational level, job roles must be clearly defined with the expectation that many people are not well-versed in water-specific terminologies. Clear, specific language describing the position and the skills required to be hired and which ones can be learned on the job are important. Many water workforce skills can be learned through on-the-job experience, and there are positions that do not require a two- or four-year college degree. Clearly defined listings could help encourage and attract potential applicants to the water sector who may not have realized their



construction, laboratory, communication, or other skillsets are transferable. The inclusion of salary information within these listings could further encourage and attract potential applicants. Media campaigns or public events about water careers can also help recruitment by increasing job visibility. Water workforce careers are jobs located where people are, as there are water utilities operating in communities of every size across the United States.

Finally, intentional and focused outreach to historically underrepresented groups in scientific and technical fields is needed to recruit a more diverse group of individuals into the water workforce. Recruitment efforts in these areas must work to both increase awareness and reduce barriers to career entry. Example activities can include developing commitments to hiring local labor; offering wrap-around supportive services, like housing stipends, transportation budgets, accessible technology, childcare, or work clothing as a job feature; and creating mentorship programs designed to benefit people from underrepresented backgrounds, including people with disabilities.



Pillar in Practice

Source: “Making Water a Career of Choice: A Compendium of Water Workforce Case Studies from Across the Country” (U.S. EPA, 2022)

San Francisco Public Utilities Commission (SFPUC) has a focused recruitment initiative called their Kindergarten-to-Career strategy. This strategy involves developing science, technology, engineering, and math outreach events and school engagements. There are different programmatic elements for elementary, middle, and high school students and the experiences are scaled for their educational level. Example youth activities under this strategy include animated videos about water topics, tours of treatment plants, and the Our Water Curriculum. This curriculum is a set of lesson plans, worksheets, and content guides around the history of San Francisco’s water supply. SFPUC has also established career awareness pilots, grants to fund student-led environmental activities, and a paid internship program called SSIP CityWorks. Since 2012, these efforts have engaged more than 77,000 youth in San Francisco.

Milwaukee Metropolitan Sewerage District (MMSD) provides several programs that demonstrate the effectiveness of different types of recruitment efforts to reach broad audiences at multiple life stages. For example, MMSD also has an established partnership with WRTP BIG STEP, a statewide nonprofit which supports nontraditional candidates entering construction careers through services such as skill-building, networking, and General Educational Development (GED) tutoring. MMSD provides financial support to WRTP BIG STEP, employing the knowledge and experience of the nonprofit organization to successfully engage with underserved communities. In return, the water utility gains direct access to a pipeline of workers who have developed industry relevant skills and have a support system in place as they transition into permanent roles.

Competency (training)

Training is key to develop and retain the necessary skillsets for water professionals. Training programs related to the water workforce are critical because of the large number of skills, tools, and technologies needed to perform distinct positions within the water sector. There is a wide skill range that is pertinent to the management of water utilities, such as engineering, chemistry, waste management, machinery operation, finance, laboratory skills, surveying, and pipefitting. Training programs can help prepare recruits and existing workers with the skills needed for their role within the water workforce. These can include job shadowing or “earn while you learn” models of apprenticeship that place new hires under the guidance of a trained worker and compensate the new hires while they build requisite skillsets. Training programs can also help develop skills the water workforce needs to become future-ready, such as

computer coding, monitoring smart water utilities, and operating drones. Lastly, to encourage and promote trainings there may be services provided like childcare or transportation subsidies.

Knowledge retention for all workers is critical to help keep their abilities current, use clear written and virtual procedures to perform their work, become aware of changes to regulations and requirements around water, and develop into workplace leaders. Training activities for existing workers can take the form of leadership academies, state organized training sessions, mentorship programs, apprenticeships, and funding for partnering with educational programs. Training is also important to ensure water utility workers have the necessary knowledge to complete additional certifications and exams. For example, both engineers and water operators may be required to pass exams to demonstrate their competence in areas such as engineering design or certain water treatment processes, and to complete continuing education to stay current with the latest developments and technologies in their field. Coursework and exam preparation are needed to enable workers to achieve their certification/license.

Training can be a part of both recruitment and retention efforts. In addition to technical training, training on leadership, diversity, equity, inclusion, and accessibility (DEIA) principles and management styles can help workers learn to support an overall positive working environment that encourages worker retention and increases workplace satisfaction overall. Training programs can also recruit those undergoing major life transitions by creating a bridge into new careers or back into the workforce. For example, training programs that allow for obtaining new skills while being compensated can be attractive to the workforce in general, including service members returning to the civilian workforce, professionals returning from extended work gaps or parental leave, and people with minor criminal histories seeking new employment.

Training can be in-house, facilitated with the help of partners, or offered entirely externally to the water workforce employer. Apprenticeships, internships, certification classes, leadership training programs, job shadowing, exam prep, and college credits are examples of the many types of training activities that can benefit future members of the water workforce.



Pillar in Practice

Source: “Making Water a Career of Choice: A Compendium of Water Workforce Case Studies from Across the Country” (U.S. EPA, 2022)

Ensuring the availability of sufficient training and certifications is necessary to develop and maintain a reliable and high-quality water workforce nationwide. The 1996 Amendments to the Safe Drinking Water Act (SDWA) directed EPA to develop information on recommended [operator certification requirements](#). As a result, EPA created partnerships with states, water utilities, and the public. The State-EPA Work Group provided guidelines on minimum standards for certification and recertification of operators. Although specific requirements vary from state to state, the program’s goal is to ensure safe drinking water through proper treatment and distribution. In an example of taking operator certification requirements further, the Central Utah Water Conservancy District (CUWCD) created a voluntary Lead Operator Training Program. This program involves peer-to-peer learning sessions in which participants choose from 120 possible technical skill areas, including water treatment processes or machinery operation, and conduct three months of research and a presentation about the topic. Program outcomes include a monetary bonus for completion, reductions in rotating shiftwork, and promotion opportunities. CUWCD found that creating a voluntary worker development program helped address their challenges with high turnover rates and small candidate pools. Overall, the program has an 80 percent completion rate and has contributed to a 75 percent reduction in job turnover through improved job satisfaction and increased confidence in job skills among CUWCD workers.

Retention

In addition to recruitment efforts that can attract new talent to the water workforce, it is also important that employers retain the interest and abilities of people already in these careers. Retaining workers who are knowledgeable about the water utility, for example, is critical to the operation and maintenance of water infrastructure and to meet water quality standards. There are several factors to consider related to retention. Workers remain at organizations that meet their needs. They understand the value of a good job that provides stability and security for them and their families. Organizations should consider the quality of the jobs as a tool for retaining workers, specifically, [job quality principles](#) that assure positions provide workers with fair compensation, guidance, and support to build skills around the expected requirements of their position, safe working environments, supportive services, opportunities to advance, and workplaces that are free from discrimination, harassment, and violence. The Departments of Commerce and Labor released the [Good Jobs Principles](#), to identify what comprises a good job and could be used as a framework for workers, employers and others to develop a shared vision of job quality that leads to better recruitment and less turnover.



Water utilities are often publicly owned organizations (e.g., municipalities and water districts). These organizations face competition for their workers from private industry and in-demand fields with adjacent skill requirements, like construction. Groups of water utilities or water associations may find it beneficial to conduct landscape analyses or state-of-the-industry assessments to broadly evaluate compensation and recommend areas of improvement. Water utilities need to find ways to appeal to their utilities' existing talent. Water workforce employers can leverage benefits, job security, or work-life balance attributes that can make positions more desirable. Water workforce employers can also make benefits available that help retain workers as they encounter life changes or transitions. Examples include tuition reimbursement for workers seeking further education, flexible hours, parental support through childcare subsidies or on-site daycare, and accessible accommodations for workers who have become disabled to continue their work. Workers may also need to be supported through policies that ensure paid time off benefits, including sick leave, parental leave, or safe leave (i.e., to cover days that workers take off to attend court, seek counseling, deal with domestic violence issues, transition to new housing, etc.).

Additionally, there are many aspects of successfully holding a position that workers must navigate, including reliable and accessible transportation to the job site, child or eldercare, accessible technology, appropriate attire (especially for positions that may require safety precautions), and basic housing and nutrition needs. Employers can create wrap-around services to support workers who are experiencing difficulties maintaining their employment or are otherwise at risk. Wrap-around services can include providing reimbursement for public transportation or company vehicles to get to and from work, issuing work uniforms, reimbursing internet costs or equipment costs, accessible technology, providing subsidies for childcare or on-site childcare, providing housing subsidies, and more.

Other retention activities can help workers adjust to the workplace and build their abilities over time. Newer workers may experience a learning curve or challenges as they adjust to the demands of their position. Mid-level workers may need opportunities to grow their management and leadership abilities to advance within the organization's hierarchy. Orientations and onboarding activities, social life/team-building activities, leadership training opportunities, allyship, employee resource groups, sponsorships, and mentorship programs are some initiatives that employers might pursue to improve retention.

To retain a diverse workforce, efforts must be placed on creating safe and welcoming work environments free from discrimination, harassment, and violence. Water workforce employers should strive to integrate DEIA principles into their workplace. Studies indicate that the water workforce is predominantly Caucasian and male (Kane & Tomer, 2018). Groups that are currently underrepresented in their work environments need allies to find community, mentorship, and career support. To better support all workers, employers can create a forum for workers to share their unique experiences. Safe and harassment-free workplaces are essential for retaining women and people of color in careers where they are historically underrepresented. DEIA-centered workplaces can make important strides toward educating staff on fair treatment and eliminating harassment.



Safety, at large, is very important for satisfying and retaining workers. Employers should provide safety training, certifications, and proper-fitting personal protective equipment on work premises to protect workers in accordance with Occupational Safety and Health Administration (OSHA) standards. Water workforce employers can also consider working closely with unions and state and Federal guidelines in support of fair labor and safe working conditions for workers over the course of their careers.

Retention efforts can help ensure qualified, motivated, diverse, and resilient workers throughout the water workforce. Effective retention efforts seek to engage, mentor, and support workers, and result in improved job satisfaction and decreased job turnover.



Pillar in Practice

Source: “Making Water a Career of Choice: A Compendium of Water Workforce Case Studies from Across the Country” (U.S. EPA, 2022)

Retention efforts can help workers reach the next stage of their careers and motivate them to remain at an organization long term. The Moulton Niguel Water District in California developed an internal leadership academy to help improve management styles and advance workers into leadership roles. Attendance at the Leadership Academy has resulted in 65 internal promotions in the first three years since the academy was founded.

In another example, South Platte Renew, a wastewater treatment system in Colorado, made organizational changes to improve worker retention in a process to update their organization’s Vision, Mission, and Values (VMV). This process resulted in adding a worker appreciation committee, building redundancies in staff into various departments to improve institutional knowledge retention if any staff were to leave, adding a social committee, and requiring monthly all-staff and manager meetings. The VMV changes have contributed to each worker receiving on average \$3,000 a year in benefits such as training, recognition, or tuition reimbursement. Subsequently, the utility has observed a less than 10 percent turnover in staff since the launch of the new VMV.

Partnerships

Partnerships with community groups that have specialized expertise can help utilities enhance recruitment, competency, and retention goals and challenges. Partnerships can play a crucial role where an individual water workforce employer, such as a utility, may not have the resources to identify and address their challenges. Partnerships can vary in type and scope. Examples of potential partners include other water utilities, community colleges, job skills training organizations (frequently in partnership with unions), social services organizations, and local workforce development boards. Partnerships can be short-term, such as linking up with a local park or event space to host a career fair or an informational event. Long-term partnerships can include partnering with basic job skills organizations in disadvantaged communities, offering a Registered Apprenticeship, or a water workforce employer developing a water-related curriculum with a college or university and recruiting students upon their graduation. Whether short- or long-term, partnerships can help fill gaps outside of a water employer's administrative capabilities.

Finally, recruitment-centric partnerships can include coordinating an assembly for a water-related activity with the local school district or contributing to the curriculum for a water treatment technologies course administered at a community college. Water workforce employers can also partner with trained human resources professionals or consultants to improve job listings to better set expectations, workplace accessibility accommodations, and more aspects of retention.

Partnerships can also be used to facilitate trainings and provide educational materials that may be outside the employer's capacity or expertise.

One particularly strong approach to partnership is sectoral partnership, which is a systems-level approach to equitable workforce development that aligns employer demand for a skilled workforce with available workers by bringing together a range of key partners to train and place workers into high-quality jobs. In sectoral partnerships, multiple employers support shared resources and are supported by a backbone coordinating organization. DOL's Employment and Training Administration ([ETA Sector Strategies Technical Assistance Initiative: State Support For Sector Partnerships: A Guide For Action](#)) states that "At their core, these efforts bring together businesses (by industry) and connect them with community colleges, universities, economic development, the workforce system and other community partners in an organized effort to better align education and training to the needs of the economy." Sectoral partnerships have been demonstrated to be highly effective talent development engines for industry, and have produced superb labor market results for workers, including historically underserved workers.

Partnerships can connect water workforce employers to communities and involve community leaders and local advocates. Collaborating with partners can help strengthen communities in several ways, such as providing participants with the education, life skills, and career readiness needed to secure full-time employment and financial independence. Water workforce employers can align their workforce strategy and hiring practices to support their community's broader economic development and social impact goals to benefit both the organization and their partners. Partnerships between water utilities, communities of color, women, and others can help develop a more diverse water workforce of the future. Water associations, regional and national organizations, and Federal and state agencies that focus on the water workforce are instrumental in establishing and continuing partnerships.





Pillar in Practice

Source: “Making Water a Career of Choice: A Compendium of Water Workforce Case Studies from Across the Country” (U.S. EPA, 2022)

The City of Atlanta’s Department of Watershed Management (DWM) created a series of workforce initiatives to address recruitment issues and challenges. For example, DWM partnered with other city offices and local educational institutions to provide water operator certification programs for historically underrepresented groups. DWM also partnered with:

- 1) WellSpring Living, a program for at-risk women and victims of sexual exploitation, to launch an apprenticeship program as a pathway to full-time employment; and
- 2) The City of Atlanta Department of Corrections, the Georgia Department of Corrections, and the Urban League of Greater Atlanta to create the Preparing Adult Offenders to Transitions through Training and Therapy (PAT) program. PAT aims to reduce the recidivism rate and reintegrate individuals who have been incarcerated back into the community through vocational training. DWM has permanently hired 13 program participants from the PAT program since 2018.

In another example, the Philadelphia Water Department (PWD) partnered with other agencies including Philadelphia Parks and Recreation and the Philadelphia Department of Human Services to design a workforce development program called PowerCorpsPHL. PowerCorpsPHL is a multiphase program for young adults aged 18 through 28 to gain job readiness skills and secure meaningful employment. The program is specifically designed to support disconnected young adults, and collaborates with social service programs, including alternative high schools, foster care, and probation officials, to recruit more than 50 percent of their participants. The program consists of two phases:

- 1) a full-time, crew-based service focused on team building, such as community clean ups or maintenance of public parks. Upon completion participants can earn an education award of up to \$2,000; and
- 2) an industry academy, which can involve working directly with PWD.

Participants are compensated during both phases. This partnership has helped PWD complete more projects and work orders, increase their community engagement and visibility, and successfully develop new talent. As of the end of 2022, 30 PowerCorpsPHL members are employed at PWD.

Section 2b: Water Workforce Challenges

The challenges the water workforce is facing surrounding recruiting, training, and retaining workers leaves both water utilities and the public vulnerable. This Section summarizes major challenges facing the water workforce. These were identified through a workforce literature review and various engagements with water stakeholders, such as the 2018 *National Water Sector Workforce Convening*, EPA’s 2020 *America’s Water Sector Workforce Initiative*, and the interviews and consultations conducted in the development of this report.

Workforce Challenge 1: The water workforce is aging.

As the baby boomer generation reaches retirement age, it will be a major challenge to ensure enough incoming members to the water workforce. The median age of the current workforce is 48 years old, which is slightly older than the national median across all occupations (Kane, 2022). Estimates indicate one-third of the United States water utility operators will be eligible for retirement within the next 10 years (Kane, 2022). Meanwhile, only 10 percent of the water workforce is under the age of 24 (Kane & Tomer, 2018). With an insufficient influx of new, trained talent, extensive job vacancies in the water workforce are a concerning issue that is already taking form. Institutional knowledge about water utilities cannot afford to be lost. The source of water, necessary treatment, equipment idiosyncrasies, water quality issues that may occur seasonally, and the concerns of consumers are all system-specific and take experience to manage. Not having enough water workers and the loss of staff overlap, where potential mentors can pass on system-specific knowledge, are risks to both the maintenance of critical infrastructure and public health.

Workforce Challenge 2: Replacement of aging water infrastructure creates a high demand on the water workforce.

With approximately 850 daily water main breaks in the United States, wasting trillions of gallons of drinking water and costing more than \$3 billion annually in repairs, the water workforce is in great demand for the repair and maintenance of infrastructure; however, only about 53 percent of water utilities indicate their organizations are fully prepared for meeting long-term water needs (Flancher, 2022). The aging condition of many water infrastructure systems beyond their usable service life increases vulnerability to leaks and pipe failures. Deterioration of infrastructure components is a significant threat to the treatment and distribution of drinking water, and to reliable sanitation and waste management. The IJA, also known as the Bipartisan Infrastructure Law (BIL), provides a historic investment in repairing this aging infrastructure and thus will increase the current demand on the nation's water workforce. For example, the recent focus on identifying and replacing lead service lines compounds the need for additional workers. Additionally, there are emerging concerns around long-term water availability in certain regions during drought conditions and as populations increase. To meet increasing demand and overcome water infrastructure strains, the water workforce must achieve a new level of robustness and sustainability, greater than its current status.



Workforce Challenge 3: Recruitment and retention of workers is subject to wide variation in the capacities of water utilities across the United States.

The highly localized nature of water operations can make it challenging to recruit for job openings. Several water utilities detailed some of the major workforce challenges from their perspective to the Working Group. There is wide variation in the capacities of water utilities across the United States. Depending on the resources available to them, there are differences among utilities in their abilities to recruit, retain, and train workers. For example, financial constraints of water utilities can limit their ability to offer competitive wages and advancement opportunities to retain workers over time. A water utility's ability to recruit and retain workers also varies depending on its geographic location. Small utilities in rural areas may have a limited pool of candidates for vacant operator positions and may offer less compensation compared to a larger utility, making worker recruitment and retention difficult due to

limited resources. The working demands can be very high, and there are limited funds to operate the water utility and pay for necessary upgrades to the system. Small water utilities often have only a single operator, who must be available every day. Frequently, the operation of these water utilities necessitates a wider range of expertise than that required for larger utilities, which can make recruitment challenging. They also often rely upon volunteers or share operators to reduce costs for operating the utility. This can result in contract operators being responsible for multiple utilities spread over large distances, limiting their time on site. Additionally, a lack of available supervisor positions in these small utilities can result in individual workers looking for advancement opportunities to seek other employment.

More broadly, in areas where other career options are readily available, water workforce careers might lack competitive salaries compared to other local technical industries, like manufacturing or construction, and have trouble attracting and retaining skilled talent. It is difficult to recruit new workers as some people may not want to move for job placements, especially if the salaries are lower. A representative from Missouri consulted by the Working Group described a limited pool of candidates in the rural area of the state to fill water treatment operator positions. Overall, water utilities of any size may struggle with their capacity to address the increasing demands and complexity of operating a utility. The introduction of new regulations, as well as the integration of new treatment and information/cybersecurity technologies, requires existing workers to receive additional training and new workers to develop more skills. Additionally, state agency representatives consulted by the Working Group noted pay disparities across the state for operators with the same certification/license. For example, an Ohio representative described that a Class 4 operator (i.e., the highest-level in the state) can earn around \$54,000 annually in the southeast area of their state, whereas within a larger city, the Class 4 operator would likely make \$125,000. These pay discrepancies can cause varied retention by geographic area.

Workforce Challenge 4: Water workforce careers lack public visibility.

Across the utilities, water sector organizations, education programs, and state agencies that were consulted, many described issues around public perceptions of the water workforce. The water workforce is vital for protecting public health by ensuring high quality drinking water and safe sanitation. However, at large, many people do not understand the critical nature of these careers, the efforts required to manage water and sanitation, and that water utility workers are often first responders during emergencies. Although water workforce careers provide stability and require lower post-secondary education levels than the market average, recruitment is still a challenge due to a lack of visibility about water workforce opportunities. In 2018, workers within the water workforce earned on average an hourly wage that ranged between \$14.01 to \$17.67 while the national average of hourly salaries was between \$9.27 and \$11.60 (Kane & Tomer, 2018). Although water workforce wages are higher than national averages, they are not necessarily commensurate with wages of other technically skilled industries nor wages offered by private industry. For example, according to the [U.S. Bureau of Labor Statistics' May 2023 National Industry-Specific Occupational Employment and Wage Estimates](#), the median hourly wage for [Water, Sewage and Other Systems](#) is \$25.98, while other utility industry medians such as [Electric Power Generation, Transmission, and Distribution](#) (\$47.88) and [Natural Gas Distribution](#) (\$45.01) are nearly double.

Additionally, most people are not aware of water workforce career opportunities and the types of careers available (e.g., treatment operator, billing clerk, superintendent). Specifically, a Working Group representative from the DOL mentioned that reaching out to their grant recipients about jobs pertaining to the water workforce may be a challenge as these jobs are not widely understood and may not be perceived as high-demand occupations because they employ relatively few workers in absolute terms and most job openings are due to the need to replace retiring workers. However, while these jobs may not be projected to grow substantially, often such workers are providing an essential service to the community, and outreach to DOL grant recipients, workforce organizations, and jobseekers could focus more on the importance of these jobs rather than just projected growth. The public perception of the cost of water is extremely critical, and there is a disconnect in understanding between water rates that consumers pay and the cost of operating and maintaining the water utility (including paying for the operators). Outreach by the water utility to various stakeholders in the community to help the public better understand the operations and needs

of the utilities that underlie the water services, such as water treatment and maintenance work, can help strengthen the utility's credibility and the sector's overall visibility. Additionally, numerous water utilities often adopt cutting-edge technologies, like deploying robots for sewer line inspections or drones for water tower checks, alongside technology that necessitates skillsets in cybersecurity. Showcasing and incorporating innovation into outreach efforts could help appeal to a younger population. Water utilities can no longer be the silent service provider. Focused actions to recruit talent into the water workforce are needed.

Low public awareness makes it harder to attract and recruit new hires as well as creates difficulties with retention. The Working Group also explored the important role that education and research programs have in workforce development. The education stakeholders consulted highlighted several issues that make it particularly challenging to promote the water workforce to students. In addition to the lack of public awareness about the water workforce, there is a lack of collaboration between employers and schools in facilitating water workforce opportunities such as pre-apprenticeships, apprenticeships, and internships. There are also barriers to entry into the water workforce, such as state or local civil service exams, background checks, strict hiring practices, and financial barriers. Education and research programs also described the importance of developing strong curricula for training programs. They noted that many of the hands-on skills learned through on-the-job training at water utilities can be challenging to replicate through remote learning options. Additionally, they noted that apprenticeships are needed at all career levels, not just within the skilled trade or equipment-heavy disciplines, to attract and train a range of talent into the water workforce.

Workforce Challenge 5: The water workforce lacks diversity.

The water workforce struggles with recruiting and retaining candidates of diverse backgrounds. There are severe demographic disparities in race and gender: nearly two-thirds of the water workforce is white and nearly 85 percent of workers in the water sector are male (Kane & Tomer, 2018). There is also a lack of individuals from historically underrepresented backgrounds holding higher paying positions. While there are more Hispanic workers employed in the water workforce than the national average of all occupations within the United States, the types of positions held indicate a high amount of construction and day laborer roles within the water workforce and do not reflect a diverse presence in leadership roles. Also, of the 15 percent of women who make up the water workforce, 95 percent of them hold administrative jobs (Kane & Tomer, 2018). Less than two percent of the women in the water workforce are plumbers, and about five percent are water treatment operators (Kane & Tomer, 2018). A representative from the DOL's Office of Disability and Employment Policy (ODEP) estimated that people with disabilities only made-up 3.4 percent of the water workforce in 2016 (personal communication with U.S. DOL, 2024).



Reducing employment barriers to water workforce career entry can improve the diversity of individuals who participate in the water workforce. Through the Working Group consultations, several barriers to entry were identified, including the cost and study time needed for necessary exams, the appearance that those with disabilities need not apply, strict hiring practices, and the job requirements of reliable and accessible transportation, accessible technology and childcare. For example, depending on the exam required (e.g., civil service, licensure) there may be several hundreds of dollars in registration fees, preparatory course fees, and preparation material costs. A representative from the DOL's ODEP also described the need for reducing employment barriers for those who have disabilities. The ODEP representative noted that when engaging with infrastructure employment sectors (e.g., construction, water, and energy industries and their unions), there is a lack of awareness about disability issues in

the workforce, and employers do not understand the types of reasonable accommodations that can be offered. A Working Group representative from the VA also indicated that veterans with service-connected disabilities may need additional context about water workforce positions and descriptions of the physical requirements of those positions. In addition, the physical workplace may not be accessible via public transportation and may require visits to remote locations or across uneven terrain which may be challenging to accommodate for those with accessibility challenges. Direct challenges relating to water workforce hiring are not fully understood. However, the need for DEIA recruitment in the water workforce is clear given the demographic disparities identified by Kane & Tomer (2018) in the paragraph above. Water utilities need to ensure they are fostering DEIA-focused working environments that will retain workers in the long-term and attract future generations of workers. Federal participants in the Working Group also detailed challenges around accessibility of these careers, and how considerations such as flexible working hours, accurate and descriptive job postings, and efforts to improve employers' understanding of potential workplace accommodations could help people with disabilities participate in the water workforce. The Working Group also recognizes the challenges related to the tribal water workforce. In 2019, EPA convened a Tribal Infrastructure Task Force Workforce Workgroup that identified issues including high expenses to hire on-site trainers and longer travel times for trainees (U.S. EPA, 2019).

Workforce Challenge 6: There are inadequate resources to support skill development and training programs in the water sector.

Water workforce members and potential recruits need technical training. Approximately 78 percent of the overall positions related to the water workforce require at least one year of relevant work experience (Kane & Tomer, 2018). Further, specific career paths of water treatment operators, plumbers, and technicians require two to four years of related work experience. Many positions in the water workforce require technical knowledge of science, technology, engineering, and mathematics (STEM) concepts including chemistry theory, hydraulics principles, water and ventilation systems, basic plumbing, math, and statistics (Kane & Tomer, 2018). A subset of engineering positions in the water workforce also requires professional engineering (PE) licensure, which is earned through individual state licensure boards. Once earned, workers must, over the course of their careers, continually meet state-specific continuing education requirements to maintain their PE licensure. These requirements pose additional resource needs in the form of added technical training, PE licensure examination and registration fees, and facilitation of state PE license reciprocity in instances where workers accept positions in another state. Additionally, many water workforce workers must understand operating manuals and plumbing specifications, operate precision instruments, and communicate technical and non-technical information. On average, members of the water workforce use 63 different tools and technologies each (e.g., hand tools, construction and excavation equipment, accounting, design, and mapping software), compared to the six tools and technologies typically used by workers in all occupations nationally (Kane & Tomer, 2018). An ED representative participating in the Working Group emphasized the need for advancing K-12 STEM education initiatives to help bolster the future technical workforce. As many as 53 percent of the water workforce has a high school diploma or less (Kane & Tomer, 2018). Personnel can continue to develop their skills through on-the-job training, apprenticeships, certification programs, and vocational/technical school training. A skillset gap is growing, especially as the current water workforce retires and technology advances.



Another challenge in this area detailed in Working Group consultations is that training materials and operator courses tend to focus only on entry-level work. Operators need training and study materials to advance to higher-level certifications. A stakeholder from Missouri described an increasing need for the creation of upper-level training courses to help workers prepare for promotions, be more hireable, and continue their career growth. However, it may be challenging to train instructors and develop materials related to more advanced treatments and innovative technologies. There is a need for increased planning and investment in developing adequate training programs at different career stages, from various entities including Federal agencies, state agencies, and utilities, to increase public awareness around these training opportunities.

Workforce Challenge 7: There is a lack of reciprocity for water operator certifications from state to state.

EPA sets guidelines that provide states with the minimum standards for developing, implementing, and enforcing operator certification programs for drinking water systems. However, state-level requirements for operator certifications/licenses may have different exam, education, and training requirements. Variations by state can result in issues in securing employment for recently relocated operators. Some of the participating stakeholders described how the lack of standardization of the different operator classes results in challenges for states in assessing which tasks a certain class of out-of-state operator is qualified to perform. Often, the qualifications of water operators are integrated into state statute and are therefore difficult to change. According to state agencies that were consulted, the drinking water sector could benefit from additional state efforts to facilitate reciprocity of water operator certifications. This could help water utilities employ new operators from out of state by allowing their qualifications to transfer more easily when they relocate.

Workforce Challenge 8: Many water workforce positions have challenging working conditions or demanding workloads.

Some potential recruits to the water workforce may be deterred by difficult working conditions. Water workforce workers may struggle with shift work as well as routinely working weekends, nights, and holidays. Additionally, some of these positions require field work and require work during poor weather and responsibility during emergencies. These demands may impact worker retention in preference for a position where they are not exposed to the elements and are not on-call for emergency work. Additionally, water utilities may have challenging interactions with the public over issues such as water availability, interruptions in water service, water quality, and water rates. One state agency representative provided an example in which an operator may be responsible for disconnecting a household's drinking water if the customers are not paying their water bill, which can be a difficult and potentially dangerous situation. Certain responsibilities of these positions can also deter workers from moving forward with their certifications. In one example provided by a stakeholder in the Working Group consultations, an attorney in Pennsylvania held a workshop outlining the significant legal liabilities of an operator in protecting public health. This raised concerns among operators and may have affected their willingness to pursue certification/license.



SECTION 3: FEDERAL EFFORTS TO DEVELOP THE WATER WORKFORCE

Government agencies, industries, and technical experts have a history of successfully collaborating to support the water workforce and help ensure communities' water needs are met. For example, EPA convened with stakeholders, including water workforce associations and other Federal agencies, to develop the [2020 Initiative report](#) about the water workforce. Representatives from those agencies continued these discussions as part of this new Working Group. One-on-one calls with each Federal agency or department represented in the Working Group contributed additional insights on programs conducted across agency offices and their grantees. [Section 3a](#) describes both existing and upcoming Federal agency efforts that directly relate to the water workforce. [Section 3b](#) describes broader Federal efforts and initiatives that have potential synergy with or applications to the water workforce. [Appendix 3](#) provides a comprehensive list of the Federal programs detailed below that 1) focus on water workforce challenges directly; or 2) represent cross-sector workforce development efforts with the potential for future applications to the water workforce.



Section 3a: Water-Focused Federal Agency Efforts


This section, organized by Federal agency, summarizes Federal efforts specifically focused on the recruitment, training, and retention of the water workforce. Working Group members from EPA, DOL, VA, USDA, and ED described current activities and provided updates on efforts that were previously described in the [2020 Initiative report](#).





EPA has been integral in convening stakeholders to discuss water workforce challenges and documenting case studies (U.S. EPA, 2018; U.S. EPA, 2020; U.S. EPA, 2022). Specific examples of water workforce efforts undertaken by EPA include:





- 💧 [Water Sector Workforce](#) and [Building the Capacity of Drinking Water Systems](#) websites: EPA developed and manages these websites which provide a wide array of information.
- 💧 [Water Sector Workforce Webinars and Case Studies](#): Since 2019, EPA has hosted a series of webinars highlighting programs implemented by utilities and associations to support the water workforce. Topics have included: Women in Water (September 2023 and June 2022), Ensuring Diversity, Equity, and Inclusion in the Water Workforce (March 2023), Role of Academic Institutions in Creating the Water Workforce of the Future (August 2022), Technology Adoption at Utilities (December 2020), and more.


EPA has also published a compendium of Water Workforce Case Studies describing in detail how a number of utilities are implementing innovative programs to address their unique workforce challenges.


 [Knowledge Retention Tool Spreadsheet for Small Water Systems](#): EPA developed a suite of [interactive tools](#) for water utility owners and operators that includes the Knowledge Retention Tool Spreadsheet for Small Water Systems. This tool is designed to assist in the event of staffing changes or to pass knowledge to new or inexperienced staff and helps to improve the overall retention of institutional knowledge about the water utility.


 [Water Operator Hiring and Contracting Guide](#): This resource helps water utilities navigate the process of hiring or contracting operators and outlines the role of operators to support compliance with regulations.

 [Innovative Water Infrastructure Workforce Development Program](#): Established in 2021, this grant program's purpose is to fund initiatives to build public awareness around drinking water and wastewater career opportunities. EPA awarded grants to nine organizations including community colleges, universities, water workforce associations, trusts, and council groups, receiving a total of \$3.8 million in funding. The Innovative Water Infrastructure Workforce Development Program has funded activities such as:

-  preparing, educating, and informing interested students of pathways to water workforce careers;
-  providing training and other assistance to help individuals pursue a career in water with local water utilities;
-  establishing internship programs for high school students to learn about water utilities and natural resource management; and
-  enhancing the management and leadership skills of water utility administrative professionals.

 [Training and Technical Assistance to Improve Water Quality and Enable Small PWSs to Provide Safe Drinking Water grant program](#): This program supports small drinking water utilities with building their technical, managerial, and financial capacity to provide safe drinking water. It provides funding to organizations that work side-by-side with these water systems, giving these systems the training and technical assistance they need to build their capacity. Improved capacity can also help attract and retain operators.


 Drinking Water State Revolving Funds (DWSRF): Established by the 1996 amendments to the SDWA, the DWSRF is a financial assistance program to help water systems and states achieve the health protection objectives of the Act. This program is covered by the Justice40 Initiative.¹ Additionally, eligible projects are also eligible to receive assistance from the Water Infrastructure Finance and Innovation Act (WIFIA). Some workforce training costs are eligible for funding under the DWSRF program:

-  By statute (SDWA section 1452), DWSRF funds are available as loans or other financial assistance supporting the planning, design, and construction of capital infrastructure necessary


¹Established by Executive Order 14008 on *Tackling the Climate Crisis at Home and Abroad*, the Justice40 Initiative has set a goal that 40 percent of the overall benefits of certain federal investments, such as climate, clean energy, and other investment areas, flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution.

for eligible water systems to achieve or maintain compliance with the SDWA. Workforce-related project start-up costs, such as training for equipment operation, are eligible under the DWSRF infrastructure loan fund if those costs are included as part of the construction contract or engineering services. For example, if the DWSRF is funding a treatment plant upgrade at a community water system, as part of the DWSRF loan, the system can, for a limited time, pay for training its operator(s) to use the new/upgraded equipment.

- By statute (SDWA section 1452), state DWSRF managers have the authority to take a portion of the federal capitalization grants from EPA as “set-asides” for specific purposes. These set-asides may be used for a variety of work-force related training programs, including on-the-job-training, operator certification programs, training demonstrations of monitoring technology and techniques, training on new and existing drinking water regulations, and training in contingency and emergency response. This training is wholly separate from the capital infrastructure-related training mentioned above. States have the discretion to set aside up to approximately 31 percent of each federal capitalization grant for set-aside activities.

 Clean Water State Revolving Funds (CWSRF): The CWSRF was established by the 1987 amendments to the Clean Water Act (CWA). The CWSRF is a financial assistance program for a wide range of water quality infrastructure projects, including municipal wastewater treatment, nonpoint source pollution control, and stormwater runoff mitigation. This program is covered by the [Justice40 Initiative](#). Additionally, eligible projects may also be eligible to receive assistance from the WIFIA. Some workforce training costs are eligible for CWSRF funding:

- By statute (CWA section 603(c)(1)), CWSRF funds may be provided for the “construction of publicly owned treatment works.” Similar to the DWSRF, project start-up costs, such as limited training during the start-up period for equipment operation, may be eligible under the CWSRF infrastructure loan fund if those costs are included as part of the construction contract or engineering services.

 [State Revolving Fund \(SRF\) BIL Implementation Memo](#): EPA’s March 8, 2022, memorandum outlines a strategy for collaborative implementation, with states, local communities, and Tribes, of the \$43 billion in water infrastructure funding that is flowing through the Clean Water and Drinking Water SRFs under the BIL. It covers Clean Water and Drinking Water SRF provisions of the BIL. EPA listed supporting American workers and renewing the water workforce as one of the key priorities, committing to working with states, tribes, and territories – as well as labor organizations, employers, and educators – to renew America’s water workforce and create good-paying jobs in communities across America. The memo reiterates that workers on projects receiving SRF BIL funding are required by law to be paid prevailing wages under the Davis-Bacon Act, and that states should be enforcing those requirements as they implement SRF BIL funding. It also encourages pre-apprenticeships, Registered Apprenticeships, and youth training programs that open pathways to employment. Recipients of SRF funding are encouraged to support safe, equitable, and fair labor practices by adopting collective bargaining agreements, local hiring provisions (as applicable), project labor agreements², and community benefits agreements.

²Project labor agreements are pre-hire collective bargaining agreements negotiated between construction unions and construction contractors that establish the terms and conditions of employment for construction projects. For more information, see the [DOL’s Project Labor Agreement Resource Guide](#).

- ◆ [Lead Service Line Replacement Accelerators](#): Established through BIL's historic investment in water infrastructure, this partnership between EPA, four states, and about forty communities aims to address barriers and accelerate progress toward eliminating water pipe materials made of lead, including documenting the location of these lines and replacing them. The program will support the development of community engagement plans which aim to engage community members in these water infrastructure improvement projects to identify and replace lead service lines. As EPA works directly with these states and their communities, the Agency will glean information on labor and workforce development challenges and share those lessons learned nationally, to help other states and communities facing similar challenges. For example, Accelerator communities in New Jersey are exploring collaboration with local community colleges, technical colleges, and universities to support the lead service line inventory process. Students would be trained in service line material identification, and then would survey lines across their campuses and community, collecting and reporting the data. Their work would be incorporated into the service line inventory and expose students to a career in the water workforce.

- ◆ [Water Technical Assistance \(WaterTA\)](#): Also established through BIL's investment in water infrastructure, EPA's WaterTA program is working with individual communities to understand their needs and to develop tailored solutions. In addition to water infrastructure, EPA's WaterTA providers can assist communities with establishing programs and practices that address workforce needs. Under the WaterTA Community Solutions Team pilot program, Tunica County, Mississippi leveraged the technical assistance it received to assess workforce needs and develop sustainable solutions that integrate workforce programming, such as expanding a local apprenticeship program.

- ◆ [Tribal Infrastructure Task Force Workforce Workgroup](#): In 2019, EPA convened a workgroup including tribal utility personnel, tribal consortia representatives, technical assistance providers, and Federal representatives from the Indian Health Service, Bureau of Indian Affairs, USDA, and EPA. Many tribal water utilities support small populations in remote rural communities and may face difficulties maintaining a full workforce due to a variety of factors. These include longer travel distances for trainees or lack of educational resources compared to urban areas. The subsequent report identified approaches to address recruitment, training, and retention challenges for the infrastructure sector with applications to water (U.S. EPA, 2019). These approaches included:
 - ◆ launching a public relations campaign around infrastructure career opportunities;
 - ◆ analyzing training needs and providing support to the water workforce in gaining access to appropriate certifications and trainings; and
 - ◆ providing resources to existing staff through competitive compensation and recruiting management positions from within the water utility.

- ◆ [WaterSense Program](#): This voluntary program focuses on advancing water-efficient products and services. It also labels [programs that certify irrigation professionals](#) who are trained on water efficiency. To date WaterSense has labeled 8 programs throughout the country. One of the programs, the Qualified Water Efficient Landscaper Program, operated by the Sonoma-Marín Saving Water Partnership, has been adopted by 20 organizations including water utilities, non-governmental organizations, and academic institutions. Their educational program is also offered in Spanish. These and other WaterSense-labeled programs have certified more than 4,500 professionals throughout the country, including water utility staff, and have been useful in areas seeking to build a trained workforce that can tackle outdoor water use.



DOL's [Office of Apprenticeship](#) within the ETA ensures equitable access to Registered Apprenticeship programs, provides training to employers and training programs, and helps establish guidelines around apprenticeable occupations. An apprenticeable occupation is one which requires independent judgement and the application of manual, mechanical, technical, or professional skills, which are best learned through an organized on-the-job training course with related and supplemental instruction.

In 2023, the DOL signed a Memorandum of Understanding with EPA seeking to promote cooperative efforts between both agencies in promoting good jobs that support the green economy and to develop strong training and career pathways into these jobs. The 'green economy' represents a wide range of industries essential to protecting the environment and human health. It includes water infrastructure as well as other environmentally related fields (e.g., engineering; environmental preservation, protection, and remediation; and environmental justice). Specifically for workforce development, the memorandum describes collaborative efforts towards:

- 💧 Exploring strategies for ensuring that EPA's unprecedented BIL and Inflation Reduction Act (IRA) investments, such as workforce training and development programs funded under the IRA's Environmental and Climate Justice Block Grants, produce high quality jobs for workers.
- 💧 Evaluating EPA's existing workforce development programs, including the Innovative Water Infrastructure Workforce Development program, to identify opportunities to enhance, scale, and align those programs with other workforce development initiatives to maximize their impact.
- 💧 Encouraging and incentivizing state and local governments to leverage funding to invest in environmental job training through EPA's State Revolving Fund resource program.
- 💧 Promoting best practices for creating and expanding education and training programs, including how state, tribal, and local governments can partner with the state and local workforce boards, job centers, community colleges, and apprenticeship and training programs.

Additional examples of DOL programs directly related to the water workforce include:

- 💧 [Apprenticeship.gov](#): DOL developed and manages this one-stop portal for jobseekers, and employers, and other workforce system entities. Presently, the Registered Apprenticeships Job Finder has more than 300 open positions across the United States related to the keyword "water," including:
 - 💧 Plumbing/Well Water Apprentice
 - 💧 Apprentice Lineman/Water Operator
 - 💧 Water Pipefitter Apprentice
 - 💧 Water/Wastewater Treatment Plant Operator Apprenticeship
 - 💧 Utilities Maintenance Mechanic Apprentice in Water Production
- 💧 [Water and Wastewater Competency Model](#): In 2016, DOL and EPA co-led a workgroup to update this model, which identifies skills required for various water workforce positions and can be used to help design and guide future apprenticeship programs.



VA holistically supports service members and eases their transition into the civilian workforce. In 2020, EPA and the VA signed a Memorandum of Understanding agreeing to collaborate on promotional activities that will support career development opportunities for veterans with disabilities within the water workforce. The following program has integrated part of the MOU agreement to promote a veteran workforce in the water sector:

- 💧 [VA Non-Paid Work Experience \(NPWE\) program](#): This program provides eligible service members and veterans with technical training and practical job experience in Federal, state, or local government agencies. The NPWE program is a crucial effort toward developing water workforce opportunities for military personnel. NPWE provides participants monthly allowances to cover their living expenses. As NPWE offers direct allowance to eligible participants, this program is provided to agencies at no cost. EPA continues to coordinate with water sector organizations to highlight the important benefits that the NPWE program offers to state and local employers in meeting government water workforce needs.



USDA administers a variety of grant programs related to water infrastructure improvements which are available to support organizations and associations focused on workforce development and advancing rural communities. In February 2020, EPA Office of Water and USDA-Rural Development Rural Utilities Service signed a [Memorandum of Agreement](#) which describes continuing efforts to support the water workforce and promote awareness of rural water sector careers. The program below relates to efforts by USDA to support the water workforce:

- 💧 [Technical Assistance and Training \(TAT\) Grant](#): This grant program managed by USDA allows public entities, Federally-recognized tribes, and private nonprofit corporations to receive technical support to improve community water and wastewater utilities. Water workforce development has been funded through and supported by the TAT grant program since fiscal year 2018. The national water apprenticeship program and the delivery of water and wastewater training programs for tribal water and wastewater workforce development were included among the [project descriptions recommended for TAT funding in fiscal year 2022](#).

Section 3b: Broader Federal Efforts Applicable to the Water Sector

Issues with recruitment, training, and retention in the water workforce are a subset of larger workforce challenges across the infrastructure sector. Transportation, energy, structures, and water are among the different critical infrastructure sectors for which there is an increasing demand for labor, especially to deliver on objectives funded by the [IIJA](#) such as: deliver clean water to all American families and eliminate the nation's lead service lines, repair and rebuild roads and bridges, and upgrade power infrastructure to deliver clean, reliable energy across the country. There is a broad need for workers with technical abilities, vocational training, and other infrastructure-relevant skills. Various Federal agencies have programs addressing workforce development, STEM education, and other initiatives to help the United States prepare for future challenges around both

an aging population and aging infrastructure. This section describes the broader assistance grants, inclusive apprenticeships, and other Federal programs reported by the Working Group members that provide cross-sector workforce development opportunities and which have the potential for future applications to the water workforce.







The majority of EPA's workforce development efforts are specific to a given environmental objective (e.g., workforce efforts supporting water sector programs, or workforce efforts supporting brownfields and land revitalization programs). Several of EPA's water workforce-specific efforts are detailed in [Section 3a](#), including the [Innovative Water Infrastructure Workforce Development Program](#). During a 2018 national water sector workforce convening facilitated by EPA, participants identified a broader potential initiative that may have future water workforce applications, indicating there are transferable skills between careers in transportation and in water (e.g., engineers, construction workers, electricians, and machinists), and that Federal efforts to recruit, train, and retain workers with infrastructure sector-applicable skillsets can directly benefit the water workforce with additional planning and coordination (U.S. EPA, 2018).




U.S. Department of Labor

DOL is a workforce-centric department, with offices including the Women's Bureau (DOL-WB), ETA, and ODEP. The DOL contributed information via this Working Group about broader initiatives that could have future water workforce applications. These initiatives include:


 [Women in Apprenticeship and Nontraditional Occupations \(WANTO\)](#): This DOL-WB program provides technical assistance to employers and labor unions to encourage the recruitment, training, and retention of women in apprenticeable and nontraditional occupations. In 2022, the WANTO grant program awarded \$3.4 million to five community-based organizations for technical assistance activities which can include offering a pre-apprenticeship program, providing presentations for employers, and facilitating conversations about difficulties in recruiting and retaining women. A DOL Working Group representative noted that the WANTO program could have important parallels that should be considered in the process of developing registered water workforce apprenticeship opportunities. [Recent WANTO grant recipients](#) focus on Registered Apprenticeship programs related to construction, information technologies, and manufacturing, which are relevant skills to the water sector. The recipients will provide one or more of the following types of technical assistance:


-  developing pre-apprenticeship or nontraditional skills training programs to prepare women for a variety of careers;
-  providing ongoing orientations for employers, unions, and workers on creating a successful environment for women to succeed in those careers; and
-  setting up support groups, facilitating networks, or providing support services for women to improve their retention.


 [Job Corps](#): This program is the largest residential youth career training program with 123 campuses nationwide. Job Corps addresses training and recruitment by providing eligible young people from the




ages of 16 through 24, personal and career counseling, academic and career technical training, support services and job placement services to enter into an entry-level job, Registered Apprenticeships, military or further post-secondary education. Job Corps has served over two million individuals since 1964. Technical training currently provided by Job Corps can potentially provide transferrable skills into the water workforce. Additionally, introducing technical training specifically related to the water workforce may provide program participants with knowledge and skills relating to the water workforce. This program is covered by the Justice40 Initiative. Job Corps currently offers career technical training in 10 high-growth industry sectors, several of which are within the infrastructure sector:

1. Advanced Manufacturing
2. Automotive and Machine Repair
3. Construction
4. Finance and Business
5. Healthcare
6. Homeland Security
7. Hospitality
8. Information Technology
9. Renewable Resources and Energy
10. Transportation

 [Good Jobs Initiative](#): This DOL initiative provides guidance to agencies that receive BIL and IRA funds. This guidance is focused on the creation of high-quality job opportunities as well as the characteristics of those opportunities, with an emphasis on supporting underserved communities. DOL provides technical assistance through this initiative by developing job quality and equity standards, and ensuring that these standards reflect the goal of retaining workers and ensuring retaliation-free work environments. The DOL's publication, [Good Jobs in Federal Investments: a toolkit for employers, workers and government](#), provides information and tools on how to increase job quality through federal funding but the information can also inform employers on how to create good jobs in their respective sectors. State and local water workforces can apply the toolkit model to improve existing or new positions in the water sector, thus aiding in retention. Additionally, the Good Jobs Initiative website features an example of a high-quality job and describes a partnership between the City of Newark, New Jersey, labor unions, and local and state government to replace lead service lines in the water utility. Newark set forth contracting goals for the work including 25 percent minority-owned businesses and seven percent women-owned businesses. The project also included project labor agreements that required the contractors to hire inclusively from underrepresented populations for jobs in active construction. Many workers who were trained for this project experienced improved financial conditions and have been retained into the water workforce. This example demonstrates how the Good Jobs Initiative guidance can continue to be applied to recruitment, training, and retention challenges in the water workforce.

 [Apprenticeship Building America \(ABA\) Grant Program](#): This ETA program aims to strengthen and increase enrollment in Registered Apprenticeship programs. These services are primarily provided through state and local workforce development systems. Many water occupations are positioned to be supported under this program as they are already considered apprenticeable or suitable for Registered Apprenticeship training.

 [Job Accommodations Network \(JAN\)](#): ODEP created JAN as the leading source of free, expert, and confidential guidance on job accommodations and disability employment issues. An ODEP representative

-  mentioned that certain employment sectors are aware of this network and ways to make workplaces more accessible, but some sectors, including various infrastructure partners ODEP has worked with, are less aware. This program is offered to employers across any job sector. Employers in the water workforce can utilize JAN to better understand and receive guidance on accommodating people with disabilities in the water workforce.
-  [Transition Assistance Program \(TAP\)](#): TAP provides information, resources, and tools to service members and their family, including children and spouses, to help transition from military to civilian life. TAP is cooperatively managed by the DOL, the Departments of Defense and Homeland Security, ED, VA, and the Small Business Administration. This program was established by Congress in the National Defense Authorization Act (NDAA) for Fiscal Year 1992. Service members begin TAP one year prior to separation or two years prior to retiring. TAP's interactive online courses and modules are designed to engage, educate, and empower service members as they prepare to transition from active duty. TAP covers career and employment topics such as civilian occupations and related assistance programs. TAP also provides information on priority of service for veterans in the receipt of employment, training, and placement services provided under qualified DOL job training programs. Providing resources related to the water workforce and creating water workforce programs that qualify as DOL training programs can aid in recruitment and training for veterans to the water workforce.
-  [YouthBuild](#): This pre-apprenticeship program provides job training and educational opportunities for youth ages 16 to 24 who left high school without a diploma and face other barriers to employment. YouthBuild focuses on developing vocational skills in construction and other in-demand industries, including health care, information technology, and hospitality. An ETA representative stated that skills developed via YouthBuild are likely transferrable to the water sector. This program is covered by the Justice40 Program.



VA





U.S. Department
of Veterans Affairs


U.S. Department of Veterans Affairs

The following VA efforts relate to supporting service members and their families through employment services and could have future extensions toward promoting veteran participation in the water workforce:

-  [Veteran Readiness & Employment \(VR&E\)](#): This program provides employment options and addresses education and training needs for military members with service-connected disabilities. A Working Group representative from VA stated that a challenge they face is reducing barriers for those with disabilities. The representative suggested creating reference materials describing the most sought-after positions in the water workforce and listing the physical requirements of those positions to help market these positions through the VR&E program. If Federal, state, or local government agencies provide water workforce opportunities through the program, this could help promote recruitment and training.
-  [Integrated Disability Evaluation System \(IDES\)](#): This program is a joint Department of Defense and VA disability evaluation process for Service members who have been found potentially unfit for continued service for medical reasons and referred to IDES by their branch of service. Through this integrated program, the Department of Defense assesses a Service member's fitness for continued service using the same examinations and standards that VA uses to determine eligibility for disability compensation benefits. If a Service member is found unfit for continued service, they are eligible to receive VA VR&E services. This program also addresses training and recruitment. While the VA's VR&E Service focuses on connecting veterans with jobs after they leave the service, the IDES program can serve as a resource to increase awareness of water workforce careers among transitioning Service members.

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[Economic Development Initiatives \(EDI\)](#): These initiatives connect veterans located in specific geographic areas with various benefits, services, and employment opportunities. A VA representative explained that the program provides in-person events, such as career fairs. During the career fairs, employers from the water workforce can participate in recruitment. EDI also provides in-person events in economically distressed areas twice a year. The [2020 Initiative report](#) described a collaboration between EPA and VA Outreach, Transition, and Economic Development (VA-OTED) to facilitate water sector participation in the VA Economic Investment Initiative program, now referred to as EDI, which is still ongoing.
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[Personalized Career Planning and Guidance \(PCPG\)](#): This program supports service members who have specialized goals with job preparedness. PCPG services include career choice assistance, educational and employment plans, academic and adjustment counseling, VA benefits coaching, resume writing, and interviewing skills. Incorporating resources and career guidance specific to the water sector may aid in recruiting and training service members, veterans, and their dependents to the water sector.
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[SkillBridge](#): This program gives service members opportunities to obtain civilian work experience. During the last 180 days of service, a service member's job training and work experience are matched with civilian work opportunities. SkillBridge members receive military compensation and benefits while participating in civilian work experience to help them transition out of the service. Industry partners provide the training and work experience. Efforts to identify additional industry partners within the water workforce as potential placements for SkillBridge participants could help recruit veterans into the water workforce.




USDA supports many activities to bolster the economies of rural geographical areas by providing workforce-related opportunities such as training courses, leadership/management development programs, and resources to obtain equipment for educational purposes. [More than 97 percent](#) of drinking water utilities in the United States serve fewer than 10,000 people and most of these utilities serve small communities in rural areas. Therefore, water workforce careers may be a viable option for people seeking work in areas targeted by USDA programs. The following programs may provide opportunities to address water workforce challenges:

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[Resource Guide for Rural Workforce Development](#): The [USDA Rural Development Innovation Center](#) created this guide as a consolidated summary of job creation, technical assistance, and training opportunities for individuals living and working in rural areas. The guide highlights topics such as workforce development planning; infrastructure financing; and education, training, and apprenticeship. Several programs highlighted within the guide have potential future applications for training people from rural communities in new, employable skills.
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[Rural Economic Development Loan and Grant \(REDLG\) program](#): This program funds projects to create jobs and retain workers in rural areas. Funds can be awarded for a variety of projects that help create or enhance jobs, including obtaining facilities and equipment for education and training purposes.
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[Rural Business Development Grant \(RBDG\) program](#): This program provides support for projects that encourage economic development of a rural area. It can fund activities such as training, leadership development, and providing technical assistance to existing or prospective rural entrepreneurs and managers. The RBDG program also funds rural distance learning programs that provide educational instruction or job training instruction related to potential employment or job advancements for adult students. This includes workforce development training.


 [Water & Waste Disposal Loan & Grant Program](#): This program provides funding and grants to drinking and wastewater utilities in small, rural communities. [Projects](#) focus on improving the capacity of water infrastructure. This includes adding water service connections, developing sewer lines, and constructing pump stations. Investments through these projects also improve the economic viability and living conditions in rural communities, which can attract and retain workers. Opportunities may exist to engage communities and increase public awareness about the water workforce while improvements funded by the Water & Waste Disposal Loan & Grant Program are being implemented locally. This program is covered by the Justice40 Program.




ED's [Office of Career, Technical, and Adult Education \(OCTAE\)](#): OCTAE provides national leadership and oversight for career and technical education (CTE) services to youth and adults primarily in high schools and technical and community colleges. Under OCTAE, recipients can receive the tools necessary to obtain higher paying jobs. An OCTAE representative noted that many community and technical colleges offer programs that relate to the water workforce including plumbing, installation of utility equipment, and operator courses. Community colleges have a framework to advance these technical programs and can be utilized in developing water workforce technical training moving forward. In addition, ED has several STEM education and technical skill-building initiatives that could have water workforce extensions.

Support provided by OCTAE includes assistance to states for improving the quality and implementation of technical career programs, analysis of current job market skill needs, support establishing national initiatives to states implementing CTE programs, and discretionary grant programs, which are provided through the [Perkins Career and Technical Education Act](#). ED has several STEM education and technical skill-building initiatives that could have water workforce extensions:

 The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins V): Perkins V provides Federal funds to States, local education agencies, and community and technical colleges to improve the quality of CTE. To better meet the needs of current and future job market skills, local education agencies and community and technical colleges conduct comprehensive local needs assessments to ensure the program offerings address state, regional, and local workforce and economic development needs. Perkins V grants provide funds for CTE programs for youth and adults. Since 2020, EPA, in collaboration with ED and local education agencies, has worked to identify states whose water and wastewater training or educational programs could benefit from this grant. For example, the State of New Jersey described in their [Perkins V Plan](#) that they have recently approved the use of state bonds to expand CTE programs to increase the number of students participating in construction, utilities, and energy career pathways.

 [Raise the Bar: Unlocking Career Success \(UCS\) Initiative](#): The UCS initiative is a partnership between ED, and the U. S. Departments of Commerce, and Labor to increase and expand access to high-quality CTE programs to help young people pursue jobs in in-demand fields. Among the goal of the program is to enable all high school graduates to earn up to 12 college credit hours. OCTAE stated that, as the initiative takes form, some of the credit hours could be granted in chemistry, hydrology, engineering, or other water workforce relevant subject areas.


 Career Connected High Schools Initiative-- Perkins Innovation and Modernization Grant Program, cohort 2023: This program awarded grants to partnerships between local education agencies, institutions of


higher education (including community colleges), and employers. The objective of this program is to support early enrollment in postsecondary and career-connected coursework, work-based learning opportunities, and academic and career-connected instruction across the last two years of high school and the first two years of postsecondary education. The activities related to the Career Connected High Schools Initiative are authorized under the [Perkins Innovation and Modernization \(PIM\) grant program](#). The purpose of the PIM grant program is to identify, support, and rigorously evaluate evidence-based and innovative strategies and activities to improve and modernize CTE and ensure that workforce skills taught in CTE programs funded under the federal Carl D. Perkins Career and Technical Education Act of 2006 (Perkins V), align with labor market needs.

SECTION 4: STAKEHOLDER ORGANIZATION WATER WORKFORCE EFFORTS

In addition to the Federal-partner-led workforce development activities discussed in the previous Section, the Working Group discussed and identified workforce development activities led by water-affiliated organizations. In accordance with the legislative mandate, the Working Group also hosted dedicated sessions to consult with state operator certification programs and other non-federal stakeholders to hear their perspectives on water workforce challenges. The Working Group heard from a variety of stakeholders, including water workforce associations, educational and research programs, state-level agencies, and water utilities. [Section 4a](#) summarizes workforce development efforts taken by water sector associations and [Section 4b](#) focuses on efforts by utilities.

Section 4a: Workforce Efforts Led by Water Workforce Associations

 **National Rural Water Association (NRWA):** This nonprofit organization—in collaboration with 50 affiliated State Rural Water Associations—provides support to water utility professionals in small or rural communities across the country. NRWA offers training on operator certification, financial sustainability, environmental compliance, utility management, and governance in all 50 states. NRWA hosts several programs and initiatives aimed toward addressing water workforce challenges:

-  **NRWA Apprenticeship program:** In 2017, NRWA developed their Registered Apprenticeship program with USDA grant support and through collaboration with State Rural Water Associations, DOL, EPA, and local water utilities. This apprenticeship program is the first nationally recognized DOL Registered Apprenticeship program for water and wastewater utilities operators. It offers little-to-no-cost training through the earn-and-learn apprenticeship model to attract, train, and retain the next generation water workforce. NRWA developed a National Guideline Standard



(NGS) for Water and Wastewater Systems Operation Specialists. The NGS is an industry recognized template of high-quality program standards for apprenticeship programs. NRWA currently has 24 state apprenticeship programs, 506 registered apprentices, and 96 graduated apprentices.

- 💧 **Utility Management Certification:** In 2020, NRWA established a nationally recognized credential which allows water operators to obtain a designation indicating their occupational proficiency. Established credentials allow a worker's work experience to be recognizable to other employers nationwide, increasing their employment opportunities.

💧 **Rural Community Assistance Partnership (RCAP):** RCAP offers technical assistance, trainings, resources, and support to rural communities and tribal lands. The partnership includes more than 300 technical assistance providers in all 50 states as well as Puerto Rico and the U.S. Virgin Islands. Additionally, RCAP has utilized EPA funding to successfully develop and deliver training that addresses compliance with the SDWA. RCAP's work relates to water workforce development in the following areas:

- 💧 **WaterOperator.org:** RCAP, in partnership with the University of Illinois and funded by EPA, developed a website and database consisting of more than 17,000 free resources for small utility operators. The website also provides information on both RCAP training events and other water-related training events nationwide, with more than 11,000 training events added annually.
- 💧 **Water Operator-In-Training programs:** In 2022, RCAP provided trainings about water utility management and operations to approximately 537 board members, 872 operators, 619 utility staff, and a total of 2,359 attendees funded by the USDA Technical Assistance and Training (TAT) Grant program and exceeding goals established in the [2020 Initiative report](#).

💧 **Water Environment Federation (WEF):** This technical association, with more than 30,000 individual members, serves water professionals, researchers, industry practitioners, and more. WEF contributes to the increased availability and variety of technical resources related to the water industry and regularly hosts conferences and trainings. Example water workforce efforts from WEF include:

- 💧 **WorkForWater.org:** In a joint effort with the American Water Works Association (AWWA), WEF developed this website of resources for students and job seekers to find and prepare for jobs in the water workforce. The website features descriptions of various career paths in water, job boards, and a map graphic that offers state-specific certification information for all 50 states as well as Puerto Rico and the District of Columbia.
- 💧 **Introducing Future Leaders to Opportunities in Water (InFLOW) program:** This program, founded in 2018, increases diversity and inclusion in water workforce careers through scholarship opportunities to attend WEF training programs and events. The program has two tracks, which focus on exposure to water science topics and job readiness. More than 100 scholars have participated since the program was founded. The program has partnerships with historically black colleges and universities and other academic audiences to provide online learning activities, conference registrations, and networking opportunities.
- 💧 **National Green Infrastructure Certification Program (NGICP):** Green infrastructure focuses on nature-based designs which restore or mimic the natural flow of water through rain gardens, permeable pavements, and other tactics. WEF and several partner water and wastewater utilities developed the NGICP to create a standard for implementing these designs and help water workforce workers gain certification in this marketable new skill area. As of 2023, 616 individuals have been certified under this program.

Association of State Drinking Water Administrators (ASDWA): This professional organization supports state drinking water programs by providing technical resources and national representation on issues relating to drinking water management. ASDWA has a variety of resources, reports, and events related to advancing the water workforce such as:

- State Drinking Water Contract Operator Laws and Resources Table: Contract operators (i.e., the operator works for a company and typically manages multiple water utilities) are used by many utilities nationwide. Rules and requirements around their work, such as how many utilities one operator can be responsible for, may vary from state to state. ASDWA developed a comprehensive table of all state drinking water program contractor operator laws to help share information and resources among the states. This resource can help states when they need to determine the qualifications of operators who relocate to their state or how a certification/license from another state compares to their requirements, and therefore can assist with securing employment and retaining water operators.

American Water Works Association (AWWA): This professional society's membership includes more than 4,300 water utilities and 51,000 individuals from the water workforce. AWWA offers technical and education materials around water, advocates for safe water, and conducts knowledge-sharing through publications. In addition to developing WorkForWater.org with WEF, AWWA provides outreach, events, and learning materials for the water workforce including:

- State of the Water Industry Report: AWWA has published an annual State of the Water Industry Report since 2004. The report provides insight into challenges, opportunities, and trends impacting the water sector, via information collected through surveys and interviews. The most recent report highlighted workforce shortages as a key issue and the need to expand the workforce pipeline (Flancher, 2022).
- Operator Licensing Requirements Across the United States Report: AWWA conducts research and prepares information regarding standardization and reciprocity in water operator certification/license. This report describes four types of operators (water treatment, distribution system, wastewater treatment, and collection system) and details certification criteria across all 50 states as of its publication in 2018.
- Transformative Water Leadership Academy: Founded in 2022 as a grantee of EPA's Innovative Water Infrastructure Workforce Development Program, this 10-month program involves experiential learning, mentorship, and a locally relevant capstone project for early-career water utility workers. The program is conducted annually, and each cohort consists of approximately 50 participants. According to an AWWA representative, women make up more than 60 percent of those who have participated to date and about half of the participants identify as non-white.

Section 4b: Workforce Development Approaches Identified by Drinking Water and Wastewater Utilities

The Working Group also consulted with representatives from individual water utilities for their perspectives on addressing water workforce challenges around recruitment, training, and retention. These representatives reiterated many of the major challenges from [Section 2b](#) and described the following approaches to address these challenges:



- 💧 **Making changes to recruitment strategies.** Water utilities discussed revising recruitment efforts to reduce potential barriers for prospective candidates, such as revising nondescript job postings and lengthy interview processes. Additionally, utilities discussed modernizing recruitment techniques to advertise positions, especially to reach historically underrepresented applicants. Based on the collective experience of the Working Group, workers tend to learn about available positions through word of mouth, which can result in insufficient outreach to youth and diverse audiences.
- 💧 **Holistic support for workers.** Many people face food or housing insecurity and lack the transportation, proper clothing, and equipment needed to stay employed. Water utilities are implementing a variety of approaches, or wrap-around services, to retain at-risk workers. Some utilities, who are financially capable of doing so, offer subsidies for day care facilities or childcare services. Debt and student loans also burden applicants, so tuition reimbursement programs have been implemented as a strategy to help attract and retain workers long-term.
 - 💧 Hampton Roads Sanitation District (HRSD) installed washers and dryers at treatment plants for worker use along with a closet of free clothes and additional work uniform allotments as needed. HRSD also offers remote workers \$500 to buy a desk and chair for the home office, as well as a monthly internet allowance.
- 💧 **Conducting apprenticeship programs.** Several water utilities have established in-house apprenticeship programs to help the participant network and learn the skills needed to join the utility with which they conduct their training.
 - 💧 HRSD created a DOL-approved wastewater industry apprenticeship program. Their 4-year program offers paid, on-the-job training; reimbursement for mileage to attend the program; free course materials; and veteran's benefits when applicable.
- 💧 **Incentivizing employment at water utilities.** These techniques can include increasing the pay for off-hour shifts, bonuses to gain new certification levels, longevity bonuses for long-term workers, and sign-on bonuses.
- 💧 **Making changes to the working environment.** Water utilities are implementing flexible, hybrid, or remote working opportunities when possible. However, some positions such as operators and mechanics do not have the ability to be fully remote.
- 💧 **Partnering and outreach with educational institutions.** Several utilities discussed outreach efforts with younger demographics ranging from grades K-12 and college students to increase awareness of the water workforce. Specifically, water utilities have created education programs and hands-on learning activities related to the necessary skills for careers in the water workforce.
 - 💧 In the past 20 years, Lancaster Area Sewer Authority (LASA) in Pennsylvania has doubled in size with the support of a recruitment partnership with Thaddeus Stevens College of Technology in Lancaster County. More than 30 graduates from the college's 2-year degree program in Water and Environment Technology now work for LASA.

SECTION 5: FINDINGS OF FEDERAL INTERAGENCY WATER WORKFORCE WORKING GROUP

The findings of this report describe the current workforce development approaches of various agencies and stakeholders convened via the Working Group, which can be leveraged as opportunities to address challenges facing the water workforce. Federal efforts supporting the water workforce are instrumental in developing a stronger workforce for today and tomorrow. For example, in 2018 EPA hosted a national water workforce convening with over 70 recognized experts, including staff from other Federal agencies, to discuss various challenges facing the water workforce and potential actions to address these challenges. Representatives from those Federal agencies continued these discussions as part of this new Working Group. The Federal representatives in the Working Group identified each of their agencies' existing and upcoming efforts that directly relate to the water workforce ([Section 3a](#)), and those that have potential synergy with or applications to the water workforce ([Section 3b](#)). These efforts include providing financing and grants to improve water infrastructure and water utility technical, managerial, and financial capacity; technical assistance, training, and apprenticeship programs; and a service members and veterans work experience program. The table in [Appendix 3](#) provides a comprehensive list of Federal efforts to develop the water workforce.



Non-federal stakeholders, such as water workforce associations, educational and research programs, state-level agencies, and water utilities are critical partners in the efforts to create a sustainable water workforce. National water professional associations provide important platforms and services that assist the water workforce to recruit, train, and retain workers in communities throughout the country. Examples include “earn and learn” apprenticeship programs, a Utility Management Certification program for operators ([Section 4a](#)), programs designed to attract students from minority academic institutions, and on-site and virtual trainings and technical assistance. National associations are also instrumental in collaborating with their members and other stakeholders to develop standards and technical and education materials, advocate for safe, clean water, and share effective practices through efforts such as conferences, publications, and training events.

Water utilities need the support of a strong workforce to protect public health and support the vitality of our communities, natural environment, and economy. Leveraging opportunities to develop and scale the existing approaches to address water workforce challenges can help water utilities continue to perform now and in the future.



Water Sector Workforce Approaches and Opportunities

The Working Group noted the following opportunities to improve workforce development through each of the major utility workforce pillars:

- 1) Improve recruitment by promoting the value of water utility services, the importance of the water workforce, and water workforce career opportunities;
- 2) Sustain and expand training efforts by identifying funding and other resources for continued workforce development;
- 3) Improve the retention of water workforce members over time by meeting the water workforce's needs; and
- 4) Create and maintain strong water workforce partnerships.

Each of these opportunities is described briefly below.

Improve recruitment by promoting the value of water utility services, the importance of the water workforce, and water workforce career opportunities


Many people are not aware of how the water workforce protects public health and the environment. Jobs in the water workforce provide stable employment, meaningful careers, technical training (including using innovative technologies), and a chance to make a real difference in communities across the nation. Increasing public awareness about the value of the services the water workforce provides, the importance of the water workforce, and the opportunities and benefits of careers in the water workforce helps with recruiting workers into this sector. Many current and potential future workers are motivated by a desire to make a difference in their communities through mission-driven work, and the water workforce provides that opportunity. Promoting the value of water utility services and the importance of the water workforce to the public can also increase customer support for increasing water utility budgets, which can help the sector offer more attractive compensation packages to workers and also contribute to better retention. A variety of campaigns at the national, regional, and local levels are used to promote public awareness about the value of water utility services, the importance of the water workforce, and water workforce career opportunities.


- One example is the Value of Water Campaign, which is led by leaders in the water sector and supported by the U.S. Water Alliance. The campaign provides tools, resources, and information to educate the public about the value of water and infrastructure investments, including a Workforce Diversity Toolkit.
- During a Working Group call, a VA representative suggested that short descriptions of registered water workforce apprenticeship programs, which could be developed by Federal partners, water associations, or the apprentice program coordinators, would be beneficial to inform counselors who work with veterans on job placements about these opportunities.
- The water sector can also expand its target outreach and work with educational, youth, and other community-based organizations to promote the value of water services and pathways to water sector

careers. An example is the San Francisco Public Utilities Commission's (SFPUC) Kindergarten-to-Career strategy, which is an outreach effort with students that is scaled by age group and ranges from animated videos on water topics, to lesson plans, tours, hands-on environmental activities, and internships. This broad set of engagements provides models that could be replicated in other areas (see [Section 2a](#)).

Sustain and expand training efforts by identifying funding and other resources for continued workforce development

The Working Group identified that efforts to train workers and develop their competencies over time are essential to upkeep and expand the water workforce. Collaborations between Federal agencies and water sector organizations, such as NRW's apprenticeship program (see [Section 4a](#)), creates opportunities to scale training efforts nationally. From the challenges described, there are also opportunities to improve and expand trainings through the development of offerings at a range of experience levels. These opportunities include training for more experienced workers to advance their certifications/licenses or learn more complex treatments and technologies, and training in a variety of topic areas that can advance overall workforce performance, like community engagement, communicating with customers, management, leadership, and business operations.

 For example, Grand Rapids Community College in Michigan offers Water and Wastewater Treatment certification programs. Some of the learning tracks include non-operator career paths such as chemist and supply chain apprenticeships.

 In another example, Charlotte Water created a Customer Care Program, in which staff are trained in community engagement strategies. The goal of the program is to train the water utility staff in improved techniques for managing at-risk customer accounts and has resulted in staff matching thousands of customers, whose accounts were in danger of service disconnection, with financial aid assistance.

Many of the effective training and outreach approaches identified by the Working Group and its partners rely on funding for implementation. The water workforce could also benefit from identifying potential new sources of funding to help expand training efforts. The Working Group and its partners recognize the importance of Federal leadership in helping to coordinate efforts to ensure that the United States has a strong water workforce for generations to come. Continued Federal support is also critical to ensure that adequate resources are available to advance water workforce development.

Improve the retention of water workforce members over time by meeting the water workforce's needs

The Working Group identified challenges and approaches related to changing workforce trends and the needs of workers. Certain positions within the water workforce have demanding hours, or require physical labor, responsiveness during emergencies, and a high level of responsibility to the public. There are many opportunities to improve working environments and to increase the competitiveness of compensation and benefits toward better retention of water workforce members.

Approaches identified by the Working Group included expanding remote or hybrid work policies (where possible as a retention tool for certain types of positions), developing clear career paths to foster worker upward movement, offering more competitive salaries when feasible, and providing holistic supports for workers such as transportation allotments, clothing allocations, and childcare subsidies. Additionally, benefits like paid parental leave, adequate and flexible sick leave policies, resources for longer non-pregnancy leave, programs to ensure light duty or similar modifications for pregnant/nursing women may attract more women to the water workforce.

- For example, as part of their holistic support services, HRSD in Virginia provides washers and dryers at treatment plants, a closet of free clothes, and additional work uniform allotments for their workers (see [Section 4b](#)).

Water utilities can improve retention through fostering safe working environments free from harassment and retaliation and in line with Federally recognized [job quality principles](#). Efforts to enhance job quality and promote equitable workforce development are proven strategies to address labor shortages that can benefit the water workforce.

- For example, DOL-WB runs the WANTO grant program, which provides hands-on technical assistance to employers and labor unions to successfully recruit, mentor, train, and retain women in the full range of industries in which they are historically underrepresented or disproportionately concentrated in the lower-wage occupations in these industries (see [Section 3b](#)). Key best practices that DOL-WB identified for retaining women in these programs include ensuring women have opportunities for structured mentorship and working with role models; union membership and union committees focused on women; supportive services including but not limited to childcare, transportation, internet access, accessible technology, tuition assistance, and funds for work related gear/equipment in women's sizes; and intentional efforts to combat discrimination and harassment of women and women of color in the workplace.

Create and maintain strong water workforce partnerships

EPA and its partners need to continue to collaborate to identify emerging challenges and advance water workforce development. Many water utilities are also engaging in innovative work to build community connections to attract new, talented people to the water workforce. Sharing effective practices and lessons learned from this work can help other utilities advance their workforce programs.

A key barrier to scaling effective approaches throughout the water workforce is the large number of organizations that compose the workforce. There are more than 148,000 public drinking water systems and 16,000 publicly owned wastewater treatment systems in the United States. These 164,000+ systems each have unique infrastructure, organization, and needs. As a result, some non-federal stakeholders pointed to ongoing communication barriers between water sector organizations and water workforce-related programs that often are siloed from each other. One approach to address this issue is strong partnerships. The water sector uses a variety of platforms to share information and scale effective workforce practices such as national and regional programs, conferences, and websites.






- For example, EPA's partnership with state drinking water agencies, mainly around [operator certification](#), is especially critical for the water workforce. EPA partnered with the states, water utilities, and the public to provide guidelines on minimum standards for certification and recertification of drinking water operators. EPA also continues to assist states with operator certification program implementation (see [Section 3a](#)).

Other approaches discussed during consultations were related to developing strong and consistent curriculums for training programs, sharing insights from research with water utility operators, and partnering with water sector organizations to assist in their efforts. These approaches provide opportunities to address workforce challenges more strategically and extensively through leveraging partnerships.

CONCLUSION

Every day in communities across our nation, the dedicated workers who operate and maintain over 164,000 public drinking water and wastewater utilities ensure that our water is clean and safe for hundreds of millions of Americans. These “water protection specialists” are at the front line of providing clean and safe water for communities across the nation and serve as the foundation for virtually all aspects of our society. This report represents a coordinated effort between EPA and various Federal agencies to describe both the challenges and the opportunities for ensuring a trained, motivated, and diverse water workforce that is ready to provide these essential services.

Major challenges were identified through a workforce literature review and various engagements with water stakeholders. These challenges are highlighted below and discussed in Section 2b. They correspond with one or more of the workforce development approaches for each of the key pillars for an effective workforce.


-  *An aging workforce.* Estimates indicate one-third of the United States water utility operators will be eligible for retirement within the next 10 years (Kane, 2022). With an insufficient influx of new, trained talent, extensive job vacancies in the water workforce are a concerning issue that is already taking form. Not having enough water workers, and the loss of staff overlap, where potential mentors can pass on system-specific knowledge, is a risk to both the maintenance of critical infrastructure and public health.
-  *A lack of public visibility.* The water workforce is vital to protecting public health by ensuring high-quality drinking water and safe sanitation; however, many do not understand the critical importance of the work and the types of careers and opportunities available (e.g., treatment operator, billing clerk, superintendent, construction worker). Increasing public awareness is vital to attracting and recruiting new hires and retention.
-  *Wide variability in utilities’ capacity for recruitment and retention.* The highly localized nature of water operations can make it challenging to recruit for job openings because of the wide variation in the capacities of water utilities across the United States. Geographic location can also play a role; for instance, small utilities in rural areas may have a limited pool of candidates for vacant operator positions and may offer less compensation compared to a larger utility, making worker retention difficult due to limited resources.
-  *Recruitment barriers from non-standardized operator requirements.* Exam, education, and training requirements for operator licenses for drinking water systems vary by state. The lack of standardization between states poses challenges in classifying which duties an out-of-state operator is qualified to perform. Often, the qualifications are integrated into state statute and are therefore difficult to change. Facilitating inter-state reciprocity of water operator certifications can help water utilities employ from out-of-state by allowing operators’ qualifications to transfer more easily when they relocate.
-  *Inadequate resources to support skill development and training.* Water workforce members and potential recruits need technical training; however, a skillset gap is growing, especially as the current water workforce retires or technology advances. Approximately 78 percent of the overall positions related to the water workforce require at least one year of relevant work experience (Kane & Tomer, 2018), and many positions require knowledge of STEM concepts.

- 💧 *The nation's aging infrastructure places a high demand on the already limited water workforce.* The water workforce is in great demand for the repair and maintenance of infrastructure; however, only about 53 percent of water utilities indicate their organizations are fully prepared for meeting long-term water needs (Flancher, 2022).
- 💧 *Challenging working conditions and workloads.* Water workforce recruits may be deterred by difficult working conditions and routinely working weekends, nights, and holidays. Some of these positions also require field work and emergency response duties, further hindering recruitment and retention.
- 💧 *A lack of diversity.* The water workforce struggles with recruiting and retaining candidates of diverse backgrounds. There are severe demographic disparities in race and gender, with nearly 85 percent of the workers in the water sector identifying as male and two-thirds as Caucasian (Kane & Tomer, 2018). Additionally, infrastructure employment sectors (e.g., construction, water, and energy industries and their unions) lack awareness on disability issues in the workforce and the types of reasonable accommodations that can be offered. Strict hiring practices also may limit those with minor criminal histories from pursuing these careers.

These challenges facing the water workforce are not new nor will they be fully addressed overnight. They will require ongoing collaboration among local, state, and federal agencies as well as many other stakeholders. Federal collaboration with water organizations, as well as those in other sectors such as education, also will continue to be a critical element. This collaboration will not only help educate and encourage innovation, but also will offer national scale-up opportunities that will promote greater community access to workforce development resources, accelerated career pipelines, and, ultimately, workforce sustainability.

Consistent with the legislative direction provided by Congress, this report seeks to inform decision makers about the opportunities to address the workforce challenges, using the key pillars of an effective workforce: recruitment, training, retention, and partnerships. These key pillars provide an essential workforce development framework that can help utilities and communities identify the approaches that best address their specific needs and circumstances. The Working Group noted the following workforce development approaches associated with each of the key pillars. These approaches are discussed more specifically in Section 5.

- 💧 *Improve **recruitment** by promoting the value of water utility services, the importance of the water workforce, and water workforce career opportunities.* Increasing public awareness of these elements can help with sector recruiting, and many potential workers are motivated by a desire to make a difference in their communities through mission-driven work like that of the water workforce.
- 💧 *Sustain and expand **training** efforts by identifying funding and other resources for continued workforce development.* Training workers and developing their competencies over time are essential to upkeeping and expanding the water workforce. Effective training approaches rely on funding for implementation; thus, the water workforce could benefit from efforts to identify new potential resources. Federal leadership is also key to helping to coordinate such efforts.
- 💧 *Improve the **retention** of water workforce members over time by meeting the water workforce's needs.* Certain positions have demanding hours or require physical labor, responsiveness during emergencies, and a high level of responsibility to the public. Retention could be improved through approaches that expand remote or hybrid work policies where possible, develop clear career paths to foster worker upward movement, offer more competitive salaries when feasible, and provide holistic supports for workers (e.g., transportation allotments, clothing allocations, funds for accessible technology, and childcare subsidies).

 *Create and maintain strong water workforce **partnerships**, in particular **sectoral partnerships**.* EPA and its partners need to continue to collaborate to advance development of the nation's water workforce. Many water utilities are engaging in innovative work to build community connections to attract new, talented people to the water workforce. Collaboratively sharing effective practices and lessons learned from this innovative work can help utilities advance their workforce programs. Sectoral partnerships are a particularly promising, sustainable approach to workforce development partnership.

The Federal government is in a strong position to work with a variety of stakeholders to deliver resources that help address the challenges at a national scale and in a coordinated manner. Particularly for the drinking water workforce, the Federal government can promote greater national coordination between states' operator classifications, reducing the inter-state reciprocity challenges several states identified during development of this report. Continued leadership and support by the Federal government in close collaboration with various stakeholders will be critical to ensure the United States has a strong water workforce for generations to come. It also will be critical to ensure communities, including those who historically have been disadvantaged or underserved, have access to resources that will enable them to develop workforce programs that are effective in providing clean and safe water through sustainable water infrastructure.

APPENDICES

Appendix 1. Rosters

Table A-1: Members of Interagency Water Workforce Working Group

Name	Affiliation
Teresa Acuna	Department of Labor, Good Jobs Initiative
Alberto Avina	Department of Veterans Affairs, Veterans Benefits Administration, Office of Outreach, Transition, and Economic Development
Sequoia Bua-lam	EPA Office of Ground Water & Drinking Water
Lorrie Davis	Department of Agriculture
Eleanor Delamater	Department of Labor, The Women's Bureau
Gayle Goldin	Department of Labor, The Women's Bureau
Jim Horne (Co-Chair)	EPA Office of Wastewater Management
Matt Reed	EPA Office of Ground Water & Drinking Water
Robin Utz	Department of Education, Division of Academic and Technical Education, Office of Career, Technical, and Adult Education
Edward Viveiros (Co-Chair)	EPA Office of Ground Water & Drinking Water

Table A-2: Water Industry Representatives

Name	Affiliation
Barbara Martin	American Water Works Association
Cindy Goodburn	Cindy Goodburn Consulting, LLC
Diane Taniguchi-Dennis	Clean Water Services
Dorissa Pitts-Paige	Hampton Roads Sanitation District
Julie Parks	Grand Rapids Community College
Steve Harrison	Water Environment Federation
Mike Kyle	Lancaster Area Sewer Authority
Brandon Tyler	Oklahoma Resources Board
Pam Moss	American Water Works Association
Bud Mason	Great Lakes Community Action Partnership
Steve Wilson	Illinois State Water Survey
Shannon Walton	National Rural Water Association
Andrew Barienbrock	Ohio Environmental Protection Agency
Darlene Helmig	Missouri Department of Natural Resources
Mike Wentink	Nebraska Operator Certification Program Supervisor
William Sullivan	Connecticut Operator Certification Program Supervisor
Deirdre White	Association of State Drinking Water Administrators

Appendix 2. Agendas of Meetings of the Interagency Water Workforce Working Group

Federal Interagency Water Workforce Working Group Kick-Off Meeting Agenda November 21, 2022 (9 AM ET)

20 min Welcomes and Introductions

- Ashley Arayas, Facilitator, The Cadmus Group
- Welcome from EPA management (Yu-Ting Guilaran and Wynne Miller)
- Overview of Agenda
- Introductions (Name, Job Title, Agency, Dept)

55 min Working Group Charge, Workplan, and Milestones

- Charge to the Working Group
- Congressional Request Review
- Operating Procedures
- Non-Federal Partner Engagement – Operator Certification Programs and Engagement with Other Potential Partners
- Workplan Review
- Discuss Milestones/Approach

30 min Round Robin Discussion

- Federal Workforce Programs Addressing Recruitment, Training, and Retention Challenges
What are the relevant water workforce development programs within your agency that aim to address these challenges?
- Consultation with State Operator Certification Programs
Are there other partners, outside of the federal family, that could be included in the consultation process for the Working Group's report to Congress?

15 min Next Steps

- Next Meeting – Scheduling and Agenda

Adjourn

Federal Interagency Water Workforce Working Group
Meeting Agenda
December 13, 2022 (9 AM ET)

5 min Welcome

- Overview of Agenda

30 min Working Group Report Outline

- Review Report Sections
- Provide a brief overview of the proposed outline for the report to Congress
- Identify which sections of the draft outline will be updated based on input from the Working Group's agencies

40 min Federal Efforts to Develop Water Workforce Round Table (See Outline Section 3)

- **Water Focused Federal Agency Efforts (See Outline Section 3a)**
Identify and discuss current activities by Working Group agencies that address water workforce recruitment, training, and retention challenges

Identify and discuss updates to existing programs and any new undertakings by Working Group agencies since the 2020 America's Water Sector Workforce Initiative report ([link to report](#); see action items listed by Department in Appendix 1, pp. 30–35)
- **Broader Federal Efforts Applicable to Water Sector (See Outline Section 3b)**
Discuss any other assistance grant, apprenticeship, or other Federal programs that could also provide opportunities to address water workforce recruitment, training, and retention challenges

15 min Next Steps

- Briefly discuss the anticipated agenda for the January meeting
- Identify any interim action items from this meeting and establish timeframes for completion

Adjourn

Federal Interagency Water Workforce Working Group

Meeting 3 Agenda

January 17, 2023 (9 AM ET)

5 min Welcome

- Overview of Agenda

30 min Recap and Follow Up

- Discuss last round table on report Section 3 topics, including:
- Water Focused Federal Agency Efforts
- Broader Federal Efforts Applicable to Water Sector

40 min Partner Organization Water Workforce Efforts Round Table (See Outline Section 4)

- Discuss actions partner organizations are taking that encourage and facilitate innovative water workforce efforts to address recruitment, training, and retention

15 min Next Steps

- Briefly discuss the anticipated agenda for the next week's meeting
- Identify any interim action items from this meeting and establish timeframes for completion

Adjourn

Federal Interagency Water Workforce Working Group

Meeting 4 Agenda

February 14, 2023 (9 AM ET)

5 min Welcome

- Overview of Agenda

15 min Overall Status

- Project milestones and progress

15 min Consultation with State Operator Certification Programs Approach

- Discuss anticipated procedures and format for upcoming meetings with non-federal stakeholders.
- Does the working group have any additional non-federal stakeholders to recommend for the consultation?

20 min Questions from Working Group Members

5 min Scheduling One-on-One Discussions

- Provide Cadmus with names of additional colleagues to include

Adjourn

Appendix 3. Summary of Federal Efforts to Develop the Water Workforce

The following table provides a comprehensive list of the Federal programs detailed in Section 3. These are programs that focus on water workforce challenges directly, or represent cross-sector workforce development efforts with the potential for future applications to the water workforce.

Table 1: Federal Efforts to Develop the Water Workforce and Related Efforts			
Federal Agency	Program	Summary of Program	Website Link
Water-Focused Federal Agency Efforts (See Section 3a)			
EPA	Water Sector Workforce website	Website provides resources and information relating to the water workforce.	https://www.epa.gov/sustainable-water-in-frastructure/water-sector-workforce
EPA	Building the Capacity of Drinking Water Systems website	Website provides resources and information relating to drinking water systems building capacity.	https://www.epa.gov/dwcapacity
EPA	Water Sector Workforce Webinars and Case Studies	Webinars and case studies highlight programs implemented by utilities and associations to support the water workforce.	https://www.epa.gov/sustainable-water-in-frastructure/water-sector-workforce-webinars
EPA	Knowledge Retention Tool Spreadsheet for Small Water Systems	Tool is designed to assist in the event of staffing changes at a water utility or to pass knowledge to new or inexperienced staff.	https://www.epa.gov/dwcapacity/interactive-tools-owners-and-operators
EPA	Water Operator Hiring and Contracting Guide	Resource guide helps water utilities with hiring or contracting operators and outlines the role of operators to support compliance with regulations.	https://www.epa.gov/dwcapacity/water-operator-hiring-and-contracting-guide
EPA	Innovative Water Infrastructure Workforce Development Program	Program to increase public awareness around drinking and wastewater career opportunities and recruit water workforce talent. This program is ongoing.	https://www.epa.gov/sustainable-water-in-frastructure/innovative-water-in-frastructure-workforce-development-program
EPA	Training and Technical Assistance to Improve Water Quality and Enable Small PWSs to Provide Safe Drinking Water grant program	Program supports small drinking water utilities with building their technical, managerial, and financial capacity to provide safe drinking water. This program is ongoing.	https://www.epa.gov/dwcapacity/training-and-technical-assistance-improve-water-quality-and-enable-small-public-water-0
EPA	Memorandum: Implementation of the Clean Water and Drinking Water State Revolving Fund Provisions of the BIL	Outlines a strategy for collaborative implementation, with states, local communities, and Tribes, of \$43 billion in water infrastructure funding through the BIL. EPA listed supporting American workers and renewing the water workforce as one of the key priorities.	https://www.epa.gov/system/files/documents/2022-03/combined_srf-implementation-memo_final_03.2022.pdf

Federal Agency	Program	Summary of Program	Website Link
EPA	Lead Service Line Replacement Accelerators program	Program will support workforce development through engagement with community members during lead service line identification and replacement projects.	https://www.epa.gov/water-infrastructure/lead-service-line-replacement-accelerators
EPA	Water Technical Assistance (WaterTA)	Program works with individual communities to understand their needs and to develop tailored solutions. This program is ongoing.	https://www.epa.gov/water-infrastructure/water-technical-assistance-waterta
EPA	Tribal Infrastructure Task Force Workforce Workgroup	Working group including tribal utility personnel, tribal consortia representatives, and technical assistance providers identified approaches to address recruitment, training, and retention challenges for the infrastructure sector.	https://www.epa.gov/tribaldrinkingwater/tribal-water-workforce-workgroup-findings
EPA	WaterSense Program	Voluntary program that focuses on advancing water-efficient products and services and labels programs that certify irrigation professionals who are trained on water efficiency.	https://www.epa.gov/watersense/professional-certification-0
DOL	Office of Apprenticeship	Ensures equitable access to Registered Apprenticeship programs, provides training to employers and training programs, and helps establish guidelines around apprenticeable occupations.	https://www.dol.gov/general/topic/training/apprenticeship
DOL	Apprenticeship.gov	One-stop portal for jobseekers and employers. Currently, the apprenticeships job finder has more than 300 open positions across the United States related to the keyword “water.”	https://www.apprenticeship.gov/apprenticeship-job-finder
DOL	Water and Wastewater Competency Model	On-line tool identifies the specific skill sets and competencies required for workers in the water and wastewater industry.	https://www.careeronestop.org/CompetencyModel/competency-models/water-sector.aspx
VA	VA Non-Paid Work Experience program	Program provides eligible service members and veterans, who actively participate in the VA’s VR&E Program, technical training, and practical job experience in Federal, state, or local government agencies, including certain water-related positions. This program is ongoing.	https://www.vaforvets.va.gov/vaforvets/veteran-resources/docs/Non-paidWorkExperience.pdf and https://www.va.gov/careers-employment/vocational-rehabilitation/eligibility/
USDA	Technical Assistance & Training Grants	Grant program that provides technical assistance and training toward water and wastewater challenges. This program is ongoing.	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-technical-assistance-training-grants

Federal Agency	Program	Summary of Program	Website Link
Broader Federal Efforts Applicable to the Water Sector (Section 3b)			
EPA	Innovative Water Infrastructure Workforce Development Program	Working group identified approaches to address recruitment, training, and retention challenges for the infrastructure sector.	https://www.epa.gov/sustainable-water-infrastructure/innovative-water-infrastructure-workforce-development-program
DOL	Women in Apprenticeship and Nontraditional Occupations grant program	Grant program that provides technical assistance to employers and labor unions to encourage the recruitment, training, and retention of women in apprenticeable and nontraditional occupations. This program is ongoing.	https://www.dol.gov/agencies/wb/grants/wanto
DOL	Job Corps	Program helps eligible young people from the ages of 16 through 24 complete their high school education, train them for meaningful careers, and assist them with obtaining employment. This program is ongoing.	https://www.jobcorps.gov
DOL	Good Jobs Initiative	Provides critical information to workers, employers, and government agencies as they work to improve job quality and ensure harassment-free working environments. This program is ongoing.	https://www.dol.gov/general/good-jobs
DOL	Apprenticeship Building America Grant program	Program aims to strengthen and increase enrollment in Registered Apprenticeship programs. This program is ongoing.	https://www.apprenticeship.gov/investments-tax-credits-and-tuition-support/apprenticeship-building-america-aba-grant-program
DOL	Job Accommodation Network	Program provides free, expert, and confidential guidance on job accommodations and disability employment issues. This program is ongoing.	https://www.dol.gov/agencies/odep/resources/jan
DOL, ED, VA, and Homeland Security	Transition Assistance Program	Program provides resources to service members to help prepare the move from military to civilian life. This program is ongoing.	https://www.benefits.va.gov/transition/tap.asp
DOL	YouthBuild	Program provides job training and educational opportunities for youth with barriers to employment. Program provides training in construction and other in-demand industries. This program is ongoing.	https://www.dol.gov/agencies/eta/youth/youthbuild
VA	Veteran Readiness & Employment	Program provides skills and benefits for veterans looking to find a new career path. Support provided under this program includes educational counseling and benefits. This program is ongoing.	https://www.va.gov/careers-employment/vocational-rehabilitation/
VA	Integrated Disability Evaluation System	Program is an evaluation process to assess a Service member's eligibility for disability compensation benefits and can serve as a resource to increase awareness of water workforce careers. This program is ongoing.	https://benefits.va.gov/PREDISCHARGE/ides.asp

Federal Agency	Program	Summary of Program	Website Link
VA	Economic Development Initiatives	Program provides training and investment in activities related to new job creation and workforce training. This program is ongoing.	https://benefits.va.gov/transition/economic-investment-initiatives.asp
VA	Personalized Career Planning and Guidance	Program supports service members who have specialized goals with job preparedness. Program benefits include job counseling, resume writing, and interview preparation. This program is ongoing.	https://benefits.va.gov/TRANSITION/PCPG.asp
VA and DOL	SkillBridge	Program provides service members the opportunity to gain civilian work experience through specific industry training by matching civilian opportunities to a service member's job training and work experience. This program is ongoing.	https://skillbridge.osd.mil
USDA	Resource Guide for Rural Workforce Development	Guide provides a consolidated summary of job creation, technical assistance, and training opportunities for individuals living and working in rural areas.	https://www.rd.usda.gov/sites/default/files/usdard_ruralworkforce-guide508.pdf
USDA	Rural Economic Development Loan and Grant program	Program funds projects to create jobs and retain workers in rural areas, including obtaining facilities and equipment for education and training purposes. This program is ongoing.	https://www.rd.usda.gov/programs-services/business-programs/rural-economic-development-loan-grant-program
USDA	Rural Business Development Grant program	Program supports projects that encourage economic development of a rural area and can support activities such as training, leadership development, and providing technical assistance to existing or prospective rural entrepreneurs and managers. This program is ongoing.	https://www.rd.usda.gov/programs-services/business-programs/rural-business-development-grants
USDA	Water & Waste Disposal Loan & Grant Program	Program provides funding and grants to drinking and wastewater utilities in small, rural communities. This program is ongoing.	https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-grant-program
ED	The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins V) grant program	Grant provides support to states, local education agencies, and community and technical colleges to improve the quality of CTE programs. This program is ongoing.	https://cte.ed.gov
ED	Raise the Bar: Unlocking Career Success Initiative	Program aims to increase and expand access to high-quality CTE programs to help young Americans pursue jobs in today's in-demand fields and be prepared for careers of the future. This program is ongoing.	https://cte.ed.gov/unlocking-career-success/home
ED	Career Connected High Schools Initiative-- Perkins Innovation and Modernization Grant Program, cohort 2023	Program promotes partnerships between local education agencies, institutions of higher education (including community colleges), and employers to support early enrollment in postsecondary and career-connected coursework, work-based learning opportunities, and academic and career-connected instruction. The 2023 cohort is ongoing.	https://cte.ed.gov/grants/innovation-and-modernization-grant-program

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