


A construction worker wearing a white hard hat and an orange safety vest is working on a large pipe in a trench. The worker is focused on the task, and the background shows the earthen walls of the trench and some construction equipment.

Renewing the Water Workforce

Improving Water Infrastructure and Creating a Pipeline to Opportunity

BROOKINGS

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[#WaterWorkforce](#)

Washington, DC
June 21, 2018

A background image showing several construction workers wearing hard hats and high-visibility vests, standing on a metal walkway or bridge structure. They are looking out over a landscape with trees and a body of water. The image is dimmed to allow text to be overlaid.

Overview

Background

Findings

Recommendations

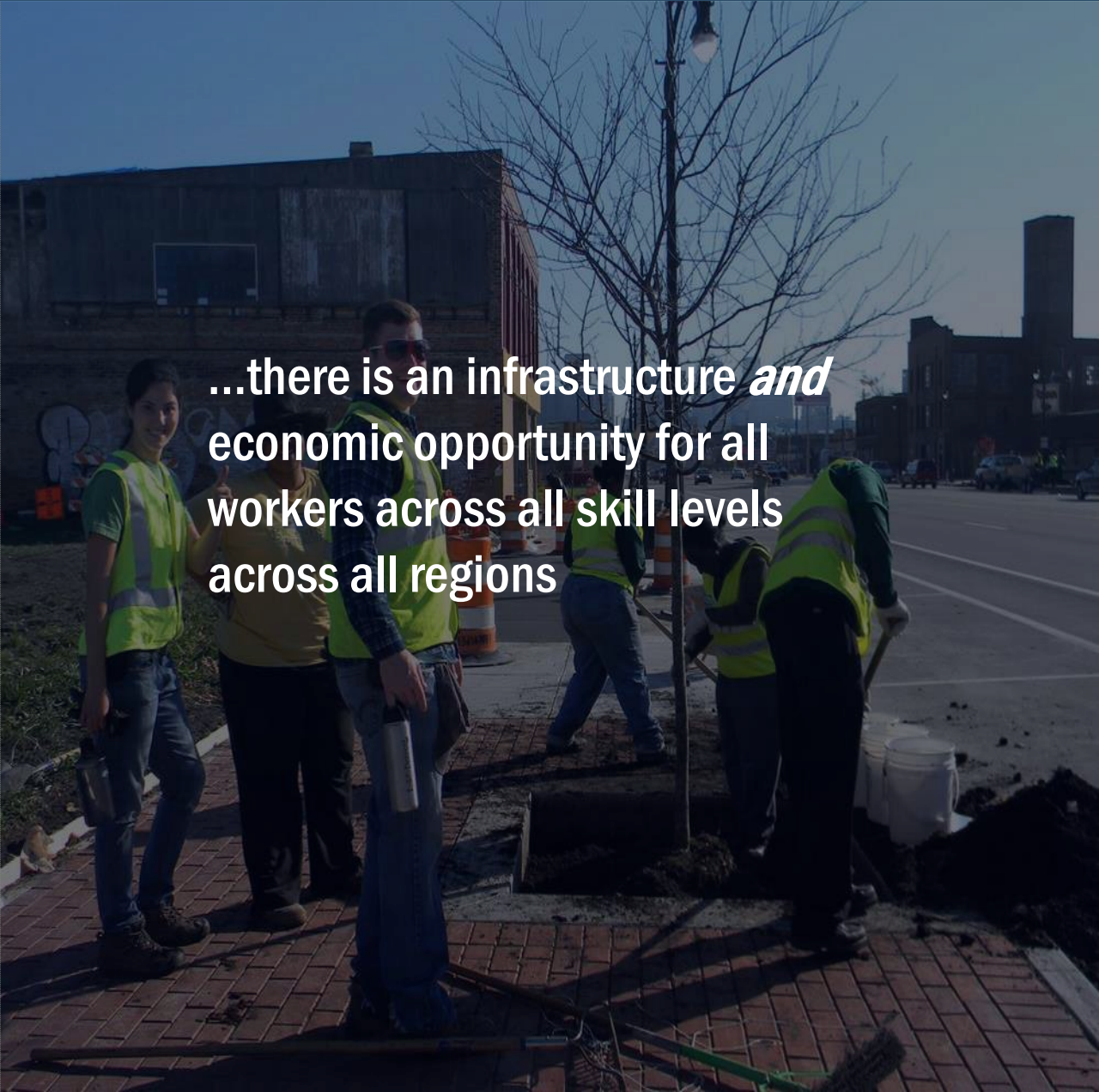
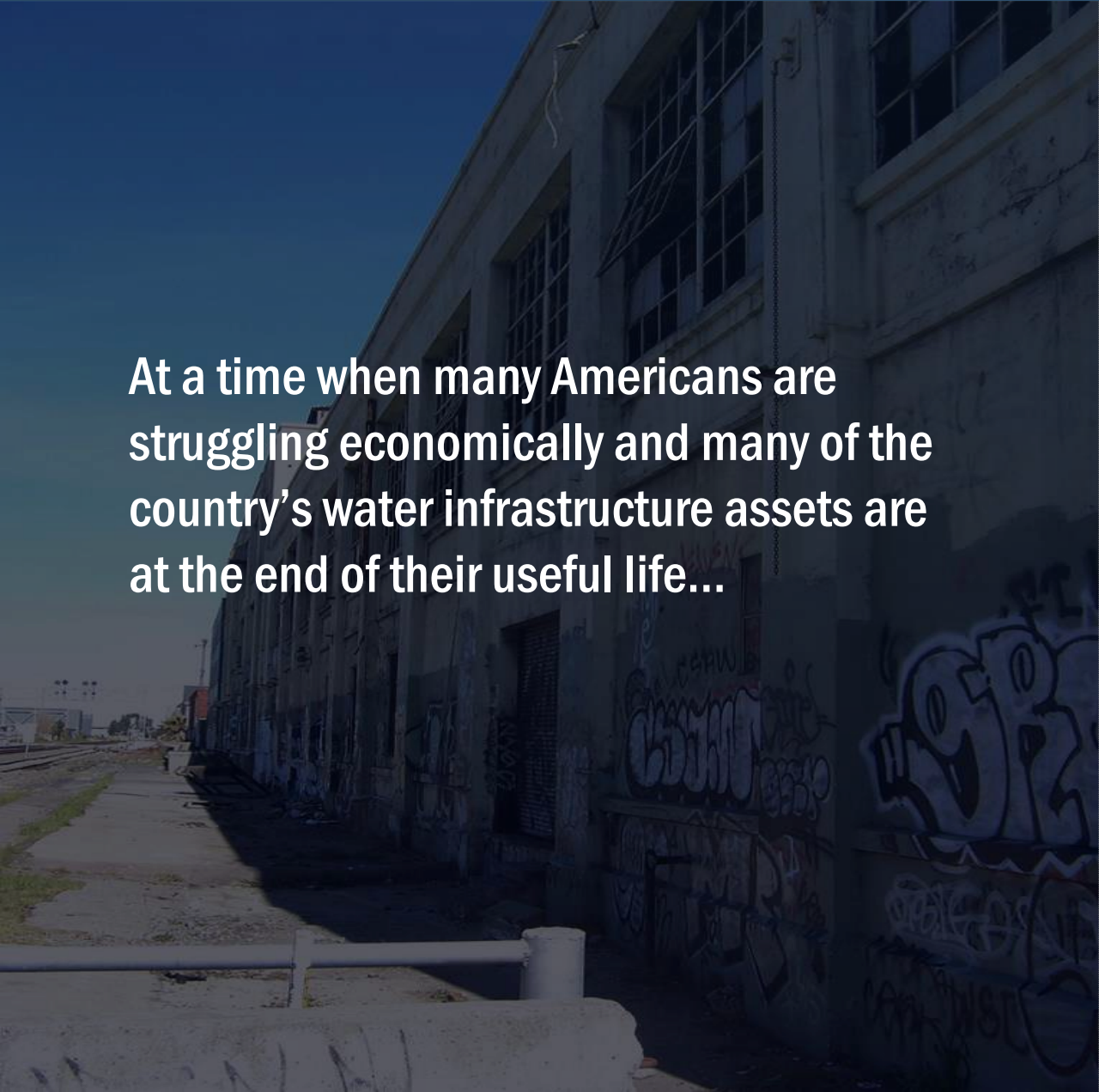
Background



The water workforce opportunity

At a time when many Americans are struggling economically and many of the country's water infrastructure assets are at the end of their useful life...

...there is an infrastructure *and* economic opportunity for all workers across all skill levels across all regions



Who are water workers?

The water workforce captures the wide range of workers who are directly involved in the **construction, operation, design, and governance** of the country's various water infrastructure systems



Who is responsible for hiring, training, and retaining water workers?



Water utilities



Other water employers



Community partners



National and state actors

Findings



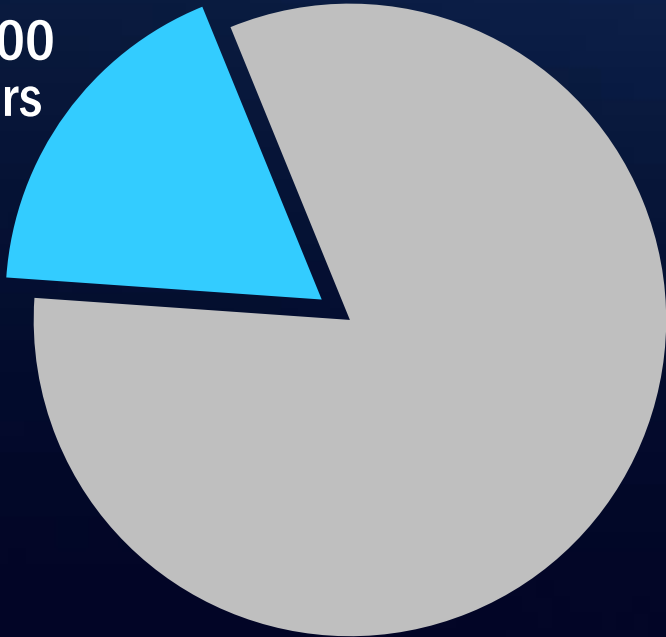
Finding 1

In 2016, nearly **1.7 million workers** in **212 different occupations** were directly involved in designing, constructing, operating, and governing U.S. water infrastructure, spanning a variety of industries and regions.

Water utilities represent one of many employers in the water sector

17.7%

298,000
workers



Source: Brookings analysis of BLS OES data



Major water occupations include **skilled trades** and **administrative and management** positions



Plumbers

324,500 workers



Operating Engineers

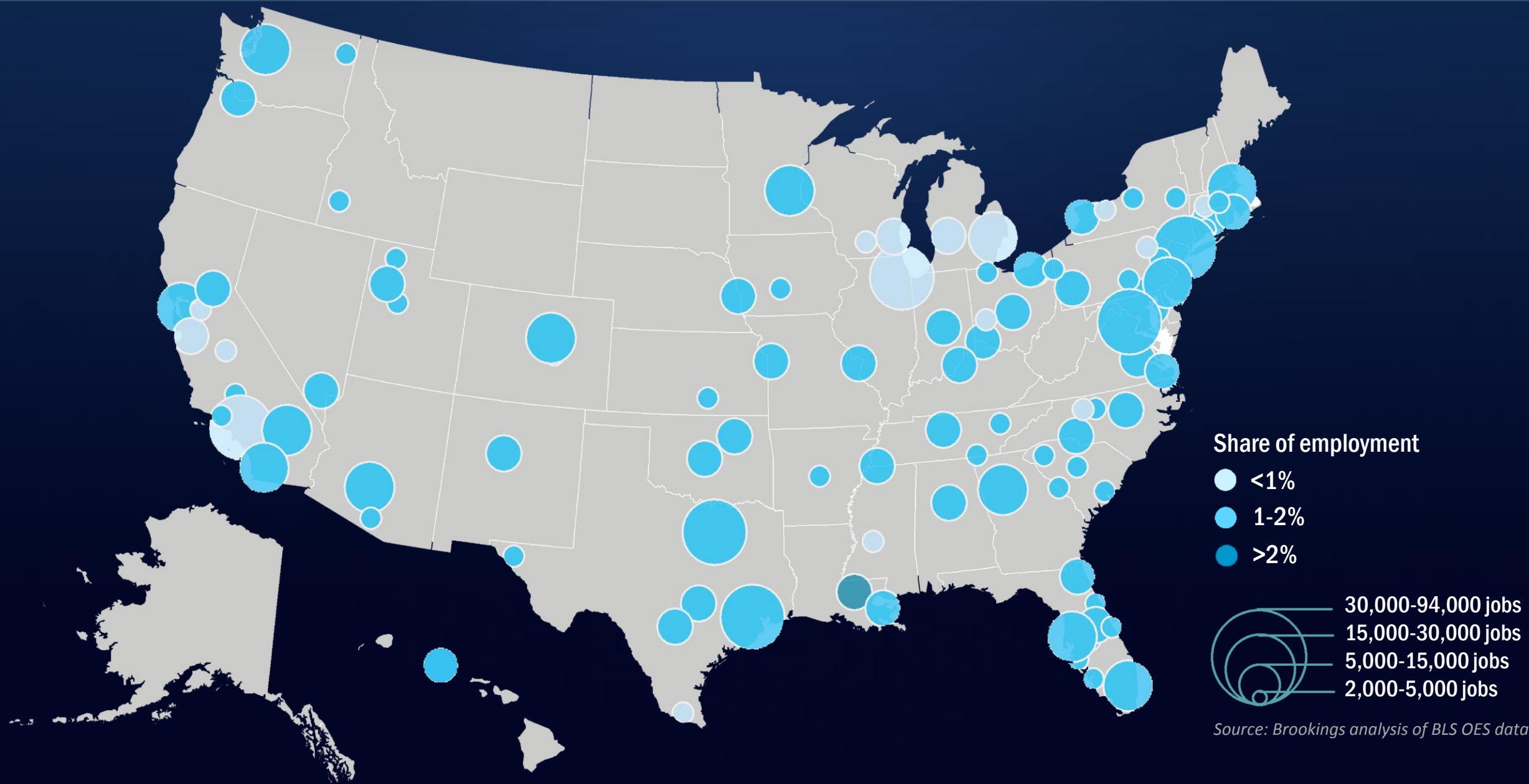
79,900 workers



Office Clerks

47,602 workers

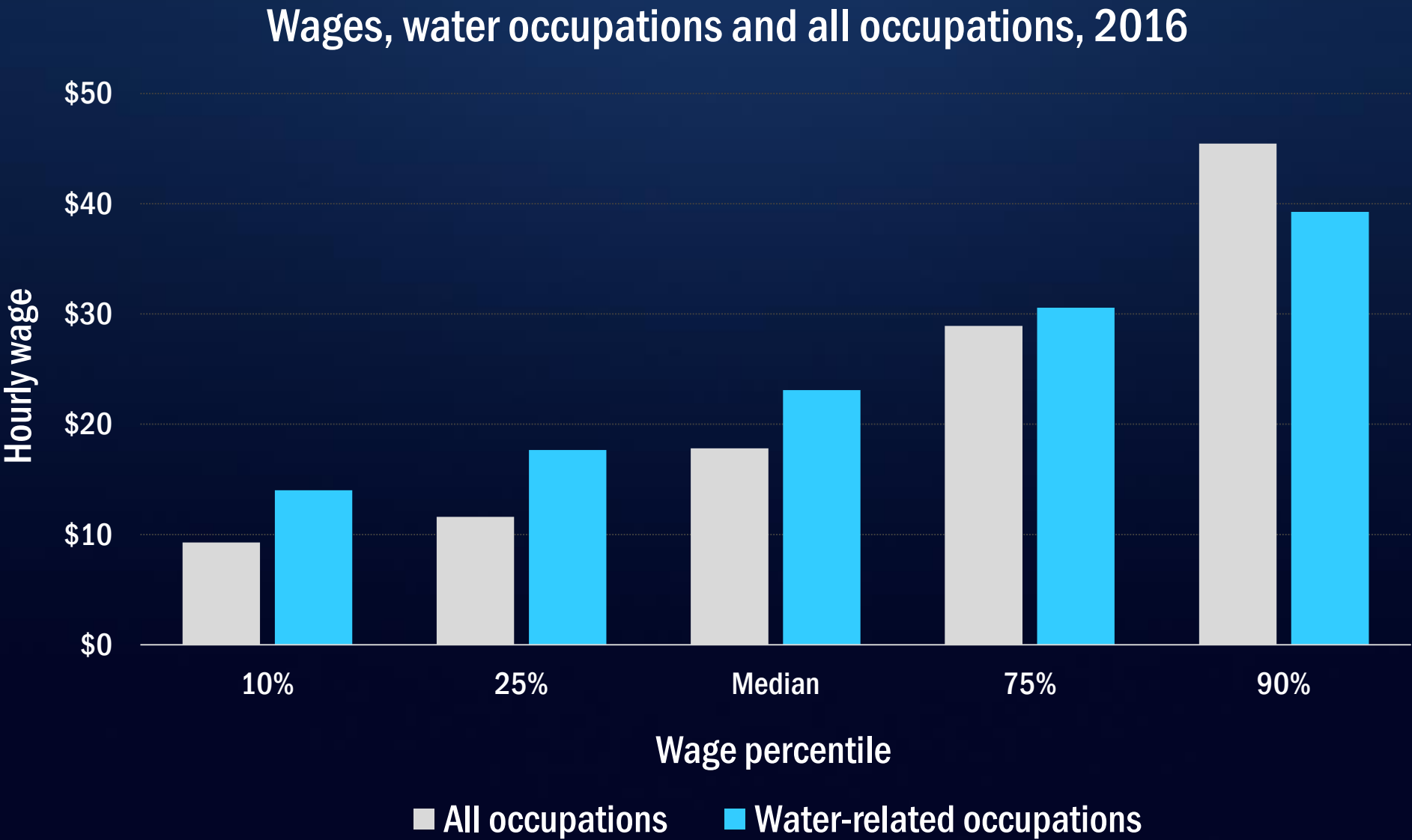
Water workers are found in **every market** across the country



Finding 2

Water occupations not only tend to pay **more on average** compared to all occupations nationally, but also pay **up to 50 percent more** to workers at lower ends of the income scale.

Water occupations pay higher wages, particularly at the 10th and 25th percentile



Water jobs offer a more livable wage in most places

Minneapolis-St. Paul-Bloomington, MN-WI

\$18.53

Water
Workers

\$9.81

All
Workers

10th Percentile Wage

San Jose-Sunnyvale-Santa Clara, CA

\$19.81

Water
Workers

\$11.46

All
Workers

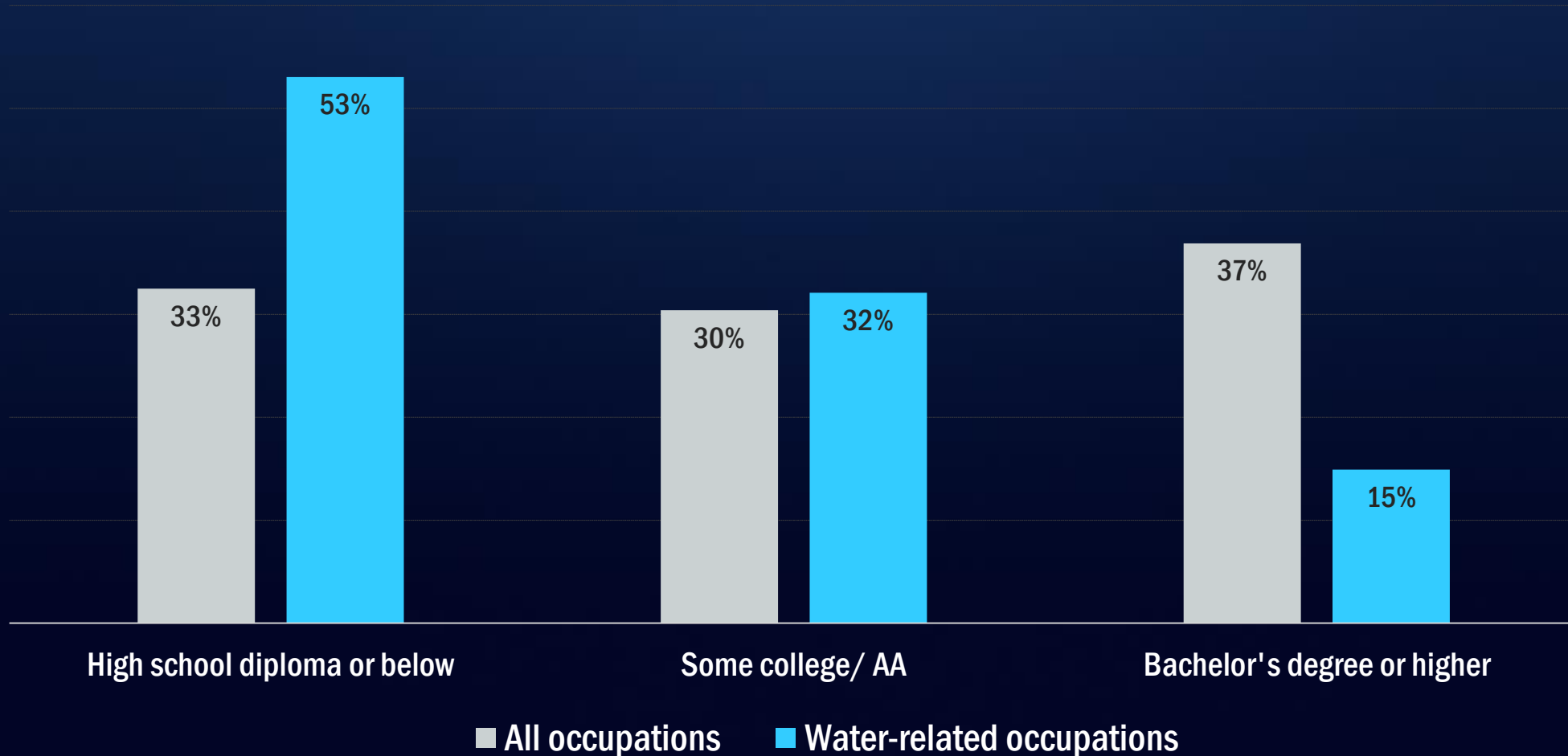
10th Percentile Wage

Finding 3

Most water workers need less formal education, including 53 percent having a high school diploma or less.

Water workers tend to need less **formal education** than all workers nationally

Levels of educational attainment for workers ages 25+, 2016



Instead, water workers often need more **work experience** and **on-the-job training**

78%

Share of water workers needing
1+ years of related experience
2016

45%

Share of water workers needing
1+ years of on-the-job training
2016

*Source: Brookings analysis of BLS OES and O*NET data*



Water workers
often possess high
levels of knowledge
in **11 different
content areas**



Law & Government



Telecommunications



Physics



Mechanical



Engineering



Building & Construction



Design



Geography



Chemistry



Public Safety & Security



Transportation

Finding 4

Water workers tend to be **older** and lack gender and racial **diversity** in certain occupations.

The water sector lacks younger talent to replace an aging workforce

Median Age

46
years

Water Treatment
Operators

42
years

All Workers
Nationally

Share of younger workers (≤ 24 years of age)

10.2
percent

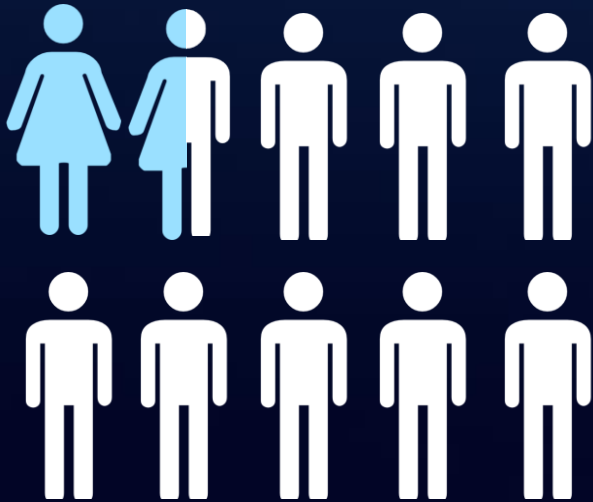
All Water
Workers

12.5
percent

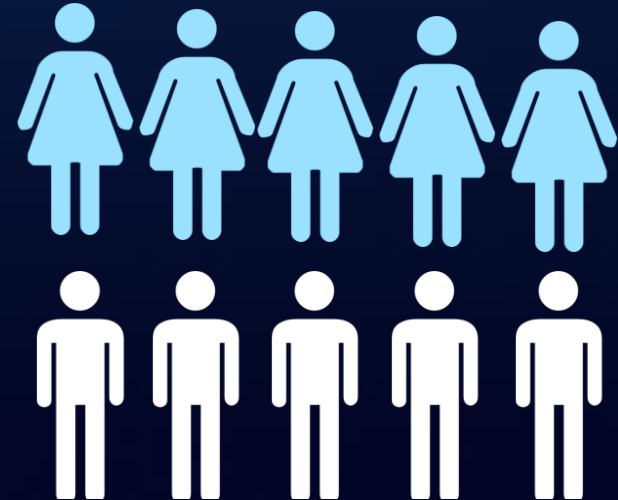
All Workers
Nationally

Women are largely absent from the water workforce

15% female
All Water Workers

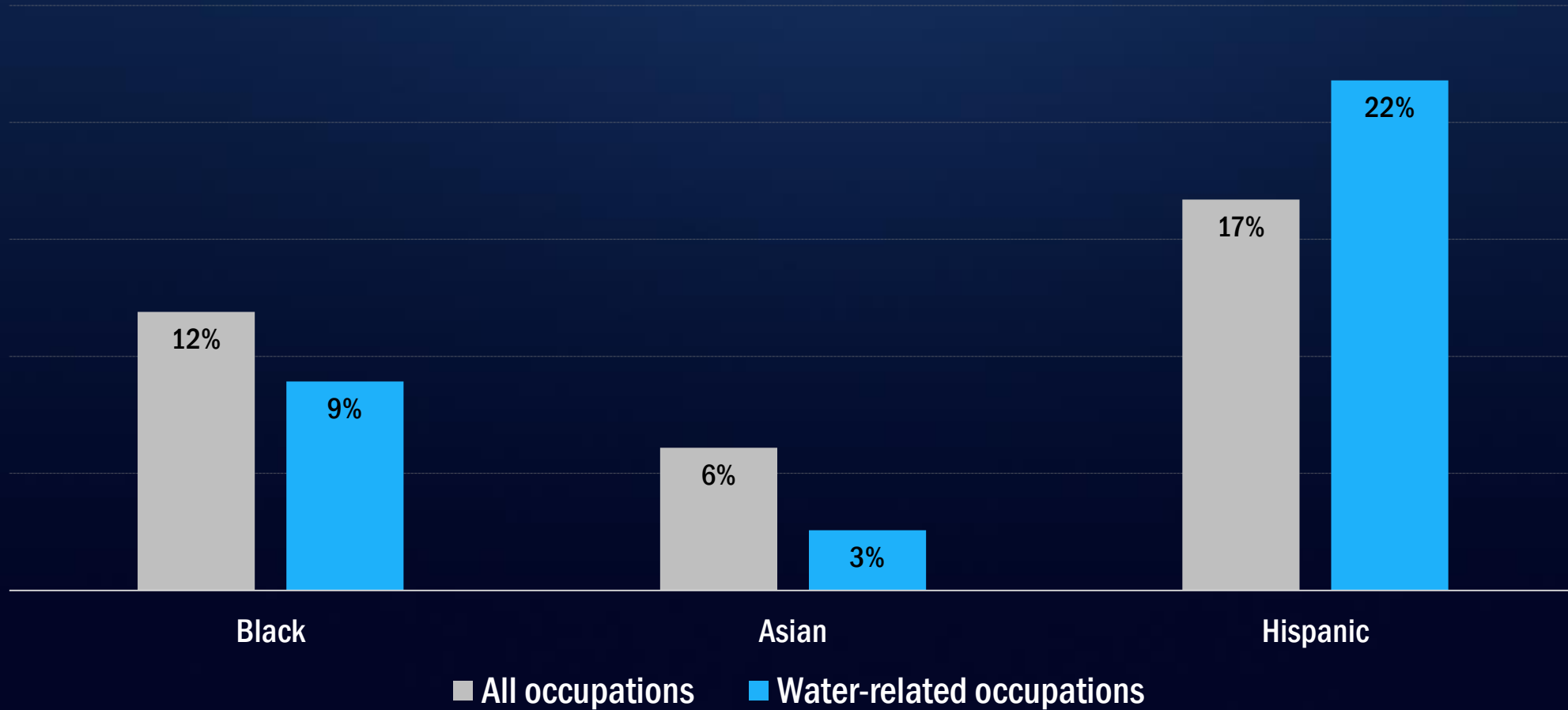


47% female
All Workers Nationally



Diversity is inconsistent across the water sector and in specific occupations

Racial diversity in water occupations compared to all occupations, 2016





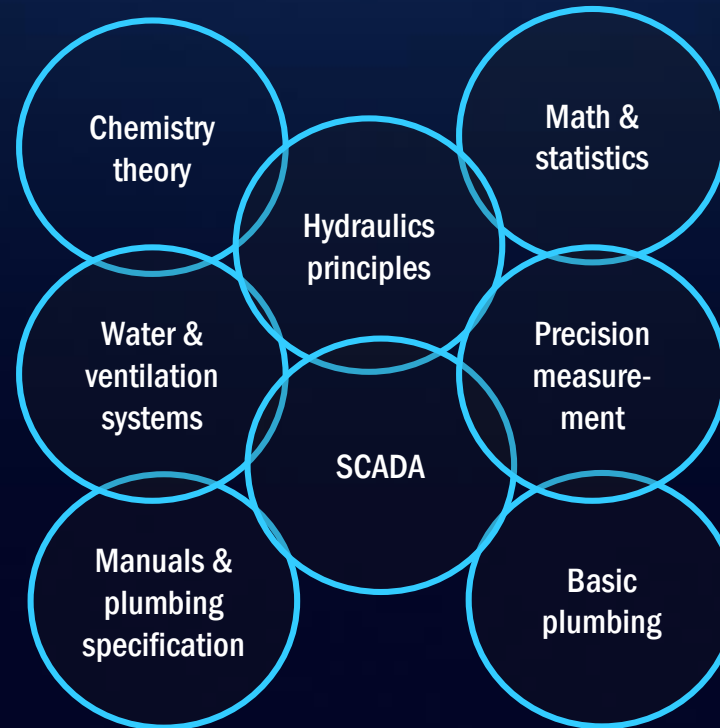
Implications & Recommendations

Recognizing barriers to hiring, training, and retaining water workers

An aging sector that lacks diversity and struggles to attract workers



Difficulties defining needed skills and creating portable, versatile credentials



Challenges onboarding prospective workers and developing talent



A background image of a water utility worker wearing a white hard hat, safety glasses, and a blue long-sleeved shirt with suspenders. He is working on a large pipe, possibly a water main, in an outdoor setting. The image is overlaid with a semi-transparent dark blue layer to make the text legible.

There needs to be a **new water workforce playbook** to accelerate thinking and action

1. Utility- and employer-driven actions, developed and executed internally
2. Regional actions, driven in concert with other community partners
3. National- and state-level actions, designed to build additional financial and technical capacity locally

Recommendation 1: Water employers need to empower staff, adjust existing procedures, and pilot new efforts in support of the water workforce



Train dedicated staff



Branding strategy



Workforce budget needs



New job categories



Continued learning



New bridge programs



Mentorship programs

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Mentorship programs

Recommendation 2: A broad range of employers and community partners need to hold consistent dialogues, pool resources, and develop platforms focused on water workers



Regional “point person”



Annual water summit



Water workforce plan



Durable funding flow



Strengthen local hiring



New web platform



New regional “academy”

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Recommendation 3: National and state leaders need to provide clearer technical guidance, more robust programmatic support, and targeted investments in water workforce development



Common federal
points of contact



Dialogues and
learning sessions



Regional best practices



Streamlined water
certifications



Continued learning



Expand existing workforce
development programs



Newly targeted
competitive programs

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*Images courtesy Unsplash and Pexels
Icons courtesy Flaticons*

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