

# State of the Water Industry 2023

Executive Summary



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“AWWA members always amaze me. It seems like the harder the challenges get, the more confident and optimistic our members become. It’s clear there are some significant hurdles in front of us—from infrastructure replacement to resource challenges to new contaminants to cybersecurity concerns—but water professionals never blink, they simply find ways to solve the problems in front of them and keep providing the world’s most vital resource to their communities.”

**David LaFrance**  
AWWA CEO



# Optimism

Water sector optimism is on the rise. Even in the face of climate-change-related challenges, aging infrastructure, threats to water supply, and other obstacles, the water community is feeling more optimistic year over year about the sector’s ability to overcome major issues and support and improve water systems and service.

This year marks the 20th edition of the State of the Water Industry survey, and responses continue a six-year trend of increasing optimism (5.0 on a scale of 1 to 7)—with the exception of 2021—about the water industry, now and in the future.

As stewards of public health and the environment, water professionals understand the importance of protecting water supplies, securing physical and cyber systems, and planning for routine and extreme events. By incorporating resilience into a risk management framework, utilities can improve their response and recovery strategies, thereby mitigating the potential for loss of service.

Optimism of survey respondents on a scale of 1 to 7



State of the Water Industry 2004–2023



The most recent SOTWI survey asked utility respondents if their utility has considered and/or implemented plans to assess risk and resilience and emergency preparedness. Overall, 88% of all utility respondents have fully implemented or are in the process of preparing emergency response plans, and 72% of all utility respondents have fully implemented or are in the process of implementing a risk and resilience assessment.

Utility respondents have fully implemented or are in the process of preparing:



- 88% emergency response plans
- 72% risk and resilience assessments



# Water 2050

Water 2050 is a collaborative initiative led by AWWA to envision the future of water and chart a course for success and sustainability. Through the initiative, AWWA has identified five critical drivers that will influence progress toward a sustainable and resilient water future:



**Sustainability**



**Technology**



**Economics**



**Governance**



**Social/Demographics**

Look for these icons throughout this Executive Summary to see how the survey data ties into those critical drivers. And dive into AWWA's Water 2050 initiative at [www.awwa.org/water2050](http://www.awwa.org/water2050).



“In the face of water supply issues, accelerated climate change and other challenges, it is incumbent upon the water community to develop a bold, creative and long-range strategic plan that ensures a robust water future; such is the premise of Water 2050. I am confident that through this effort and those of all our water community members, we will create a future water landscape that is both sustainable and resilient.”

**Joe Jacangelo**  
AWWA President

# Sustainability:

## Water Resource Management

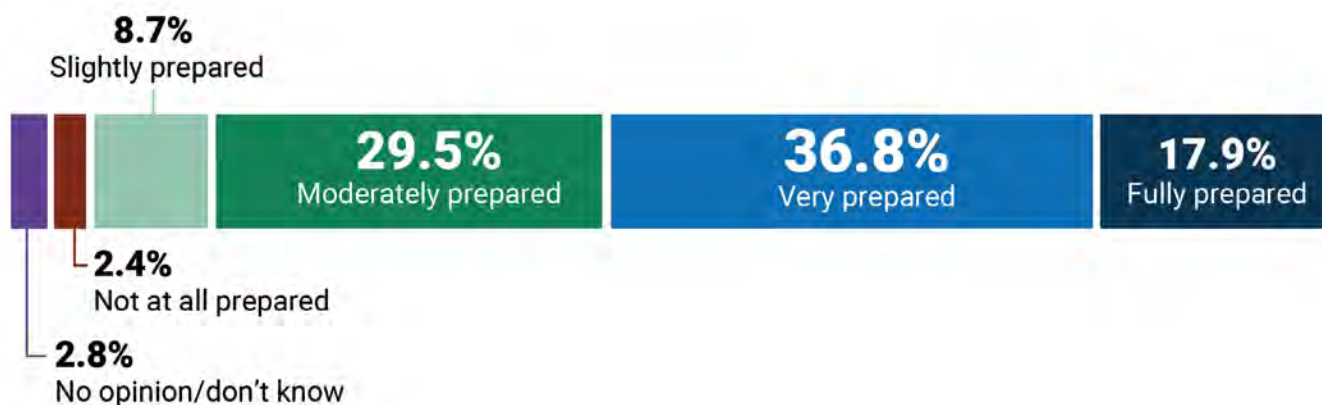


Of the top 20 water sector challenges in the 2023 SOTWI report, respondents identified long-term drinking water supply availability, watershed/source water protection, and groundwater management and overuse as the second, fifth and ninth top issues, respectively. However, as utilities work toward more future-proof systems and operations, utility personnel are feeling more prepared about their ability to meet long-term water supply needs.

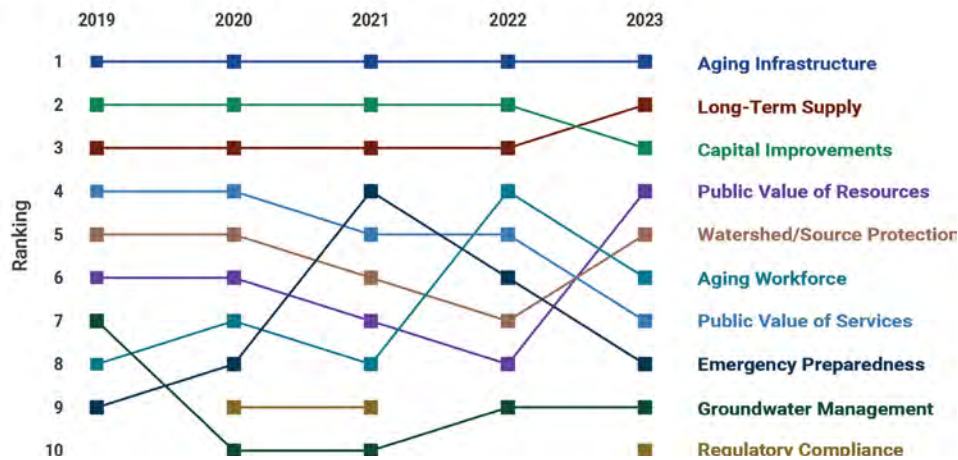
### Top-ranked issues facing the water sector in 2023

1	Rehabilitation & replacement (R&R) of aging water infrastructure	8	Emergency preparedness	15	Compliance with future regulations
2	Long-term drinking water supply availability	9	Groundwater management and overuse	16	Cost recovery (pricing water to accurately reflect the cost of service)
3	Financing for capital improvements	10	Compliance with current regulations	17	Water loss control
4	Public understanding of the value of water resources	11	Water conservation/efficiency	18	Energy use/efficiency and cost
5	Watershed/source water protection	12	Talent attraction and retention	19	Improving customer, constituent, and community relationships
6	Aging workforce/anticipated retirements	13	Cybersecurity issues	20	Asset management
7	Public understanding of the value of water systems and services	14	Drought or periodic water shortages		

### Are utilities prepared to meet long-term supply needs?

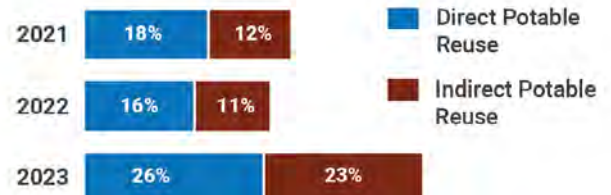


## Top 10 recurring issues in the past five years by ranking



Water resources planning is among the most important functions of any community and is the cornerstone of a water utility's operational resilience. To chart a course for future success and sustainability in the water sector, utilities are focused on long-term improvements in water use efficiency while maintaining quality-of-life standards. This includes conservation programs, water-shortage-planning programs and protecting water at the source. Many utilities are also looking into augmenting their existing supply with either direct or indirect potable reuse. Interest in potable reuse has increased significantly over the past few years.

Of respondents who answered the survey question about augmenting their existing supplies, the following said yes to potable reuse:



“Planning for clean, reliable and affordable water supplies has become increasingly complex, and the future threatens to be even more uncertain. Our approaches to planning and management must continue to evolve to face modern-day challenges. Fortunately, the industry is ripe with the brilliance, passion and dedication needed to drive meaningful change. We have unprecedented opportunity to shape the future of our communities through sustainable and resilient solutions that place value on the entire water cycle and balance ecosystem and human needs.”

**Jessica Fritsche**  
Carollo Engineers Senior Water Resource Planner



# Sustainability: Climate Change



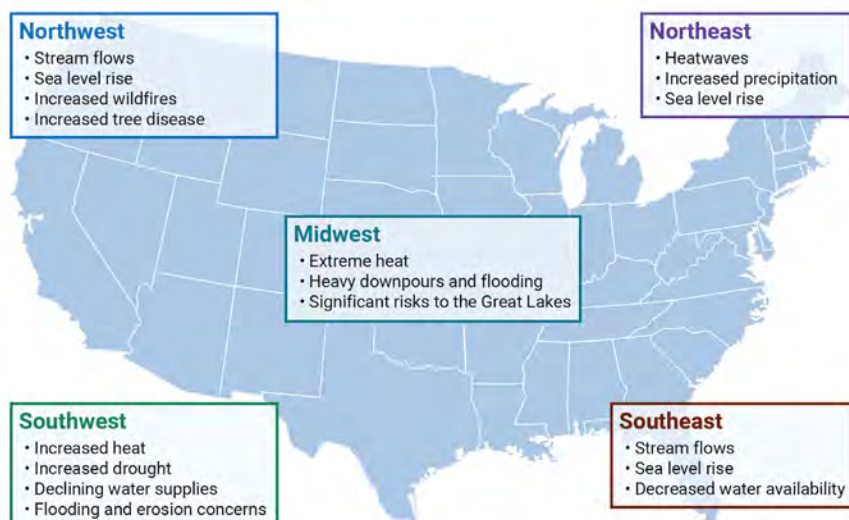
Near-term water supplies can be dramatically affected by climate variability, drought and extreme weather events. Of the top 10 issues reported in the SOTWI survey, emergency preparedness was ranked eighth most important.

The National Centers for Environmental Information (NCEI) tracks and evaluates climate events, in the United States and globally, that have great economic and societal impacts. NCEI reports that during calendar year 2022, “there were 18 weather/climate disaster events with losses exceeding \$1 billion each to affect the United States.” This is down from the peak of 22 events in 2020 but substantially higher than the 1980–2022 annual average of 7.9 events.

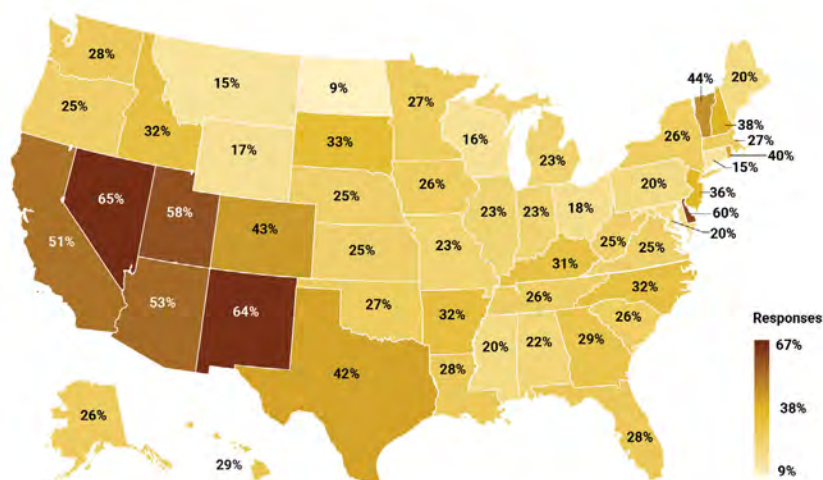
When asked about the impact of large-scale phenomena on the water sector, climate change remains one of the top 10. Climate-change-related issues affecting the water sector include accelerated sea level rise, more intense heat waves, more frequent and intense droughts, and changes in precipitation patterns, among others. Related concerns for the water sector include impacts on water quality, water availability and infrastructure.

The good news: utilities signaled that they are prepared, with 60% of respondents indicating they have implemented or are in the process of implementing a climate action plan.

## Climate impacts on regions in the United States



## Percent of respondents rating drought or periodic water shortages as a critical challenge



**60%** of utility respondents have implemented or are considering implementing a **climate action plan**.



### Additional Resources

#### Publications:

- [Tucson Water Turnaround](#)
- [Total Water Management: Practices for a Sustainable Future](#)
- [Forecasting Urban Water Demand, 2nd Edition](#)
- [A Better Planet: 40 Big Ideas for a Sustainable Future](#)
- [The Green Utility: A Practical Guide to Sustainability](#)
- [The End of Abundance: Economic Solutions to Water Scarcity](#)
- [Chasing Water: A Guide to Moving from Scarcity to Sustainability](#)

#### Technical Reports:

- [Designing and Evaluating Effective and Ongoing Drought Communications](#)
- [Increasing Consumer Benefits & Engagement in AMI-Based Conservation Programs](#)
- [Source Water Protection Justification Toolkit](#)

#### Programs:

- [AWWA Utility Benchmarking](#)
- [Partnership for Safe and Clean Water](#)



“Climate change is not just a threat to our water future, it’s a present risk to water utilities. All water utility business functions are impacted, including, of course, reliability and quality of sources. The American Water Works Association and its volunteers are promoting sustainable and equitable water management practices, practical planning strategies that include formal assessment of climate risks and innovative solutions critical in safeguarding our most precious natural resource for generations to come.”

**Enrique Lopezcalva**

*Jacobs Global Practitioner for  
Water Resources and Resilience*

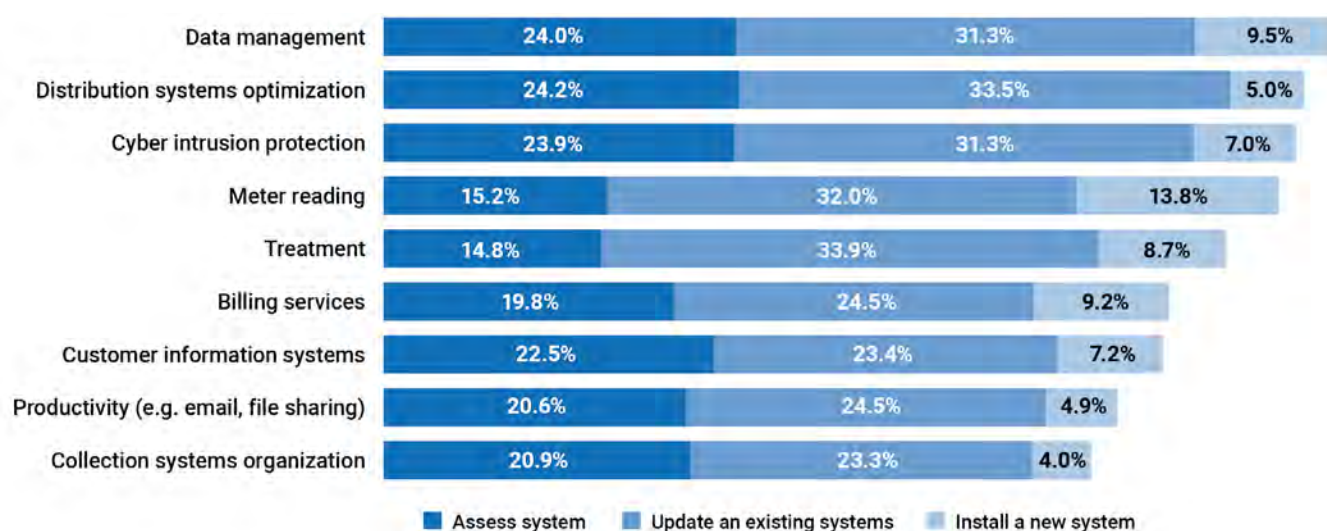


# Technology



Looking ahead to the year 2050, the future of water requires an innovative, collaborative culture that embraces new technologies across the full water cycle. Currently, digital technology in the water sector provides both an opportunity and a challenge for utilities. While innovations offer new tools for data-driven decision-making, smarter cybersecurity and systems optimization, utilities are in different stages when it comes to assessing, updating and installing technologies.

## Utilities planning, revising and assessing IT needs



As part of a new National Cybersecurity Strategy, on March 3, 2023, the Environmental Protection Agency (EPA) issued a memorandum clarifying that states must evaluate the adequacy of cybersecurity during sanitary surveys at all public water systems using “operational technology” to produce and distribute safe drinking water (EPA, 2023). AWWA urges water systems to leverage resources to address cybersecurity resilience needs and engage with their primacy agencies to understand how they plan to implement the sanitary survey requirement.



## Additional Resources

### Publications:

- [Energy Management for Water Utilities](#)
- [Water & Wastewater Infrastructure: Energy Efficiency and Sustainability](#)
- [M32 Computer Modeling of Water Distribution Systems, 4th Edition](#)

### Technical Reports & Resources:

- [AWWA Cybersecurity Assessment Tool and Guidance](#)

# Economics



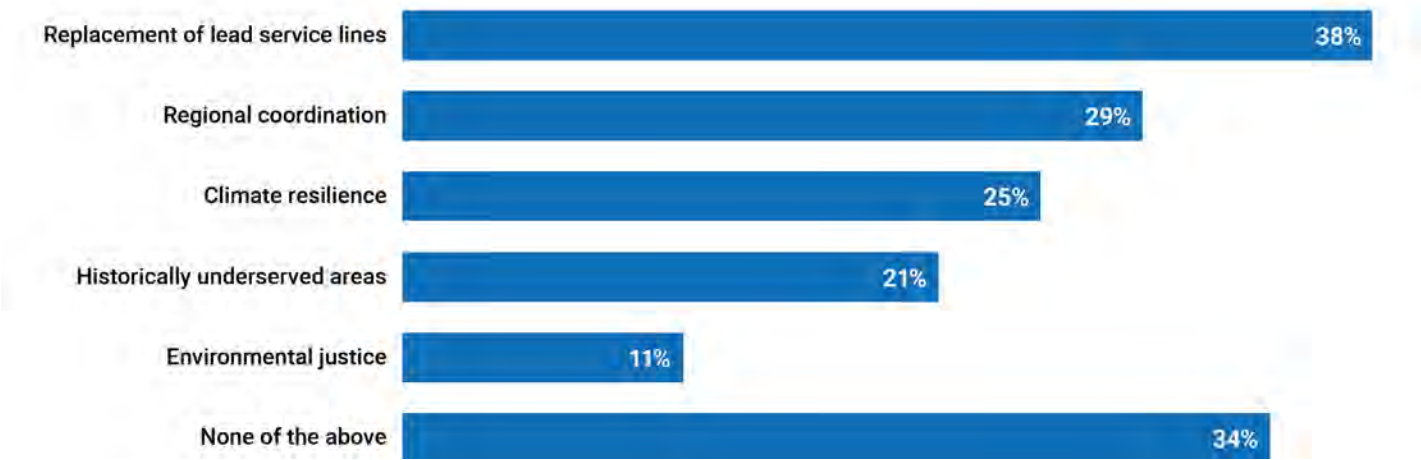
Repairing and replacing aging infrastructure, financing capital improvements and ensuring cost recovery are regularly identified as key issues through the SOTWI surveys. These issues continue to be important due to the fact that water and wastewater infrastructure—most of which was built and financed by previous generations—are approaching or have exceeded their useful lives and are now facing a critical need for renewal and replacement.

Utility access to capital now compared with the past 5 years



Two of the top three water sector challenges from the 2023 SOTWI survey included rehabilitation and replacement of aging water infrastructure (ranked first) and financing for capital improvements (ranked third). While advancements in infrastructure financing—including the U.S. Infrastructure Investment & Jobs Act (IIJA) and the Water Infrastructure Finance and Innovation Act (WIFIA)—bring more potential for significant federal funding to capital projects, organizations are evaluating their funding strategies and project timelines.

Percent of utilities addressing issues in planned capital improvement projects





### Additional Resources

#### Publications:

- [AWWA Rate Survey](#)
- [M1 Principles of Water Rates, Fees, and Charges](#)
- [M29 Water Utility Capital Financing](#)
- [M47 Capital Project Delivery](#)
- [M54 Developing Rates for Small Systems](#)
- [Water Conservation-Oriented Rates: Strategies to Extend Supply, Promote Equity, and Meet Minimum Flow Levels](#)
- [Water Accounting: International Approaches to Policy and Decision-Making](#)
- [Economic Incentives for Stormwater Control](#)

#### Technical Reports:

- [Water Reuse Cost Allocations and Pricing Survey](#)



“These are exciting times for the world of infrastructure funding. Not since the 1970s have we seen such levels of low-cost capital funding available for water, sewer and stormwater projects in areas supporting resiliency and sustainability. Monies are specifically allocated for disadvantaged systems, energy incentives for sustainable solutions, and addressing lead/copper lines and ‘forever chemicals.’ When federal funding has been insufficient or unavailable, we see more community-based partnerships stepping in to support local needs. We are seeing progress, but as wonderful as this may be, it is still not enough for us to close the funding gap.”

**Ann Bui**

*Black & Veatch Senior Managing Director,  
Global Advisory – Rates & Regulatory Business Area Lead*



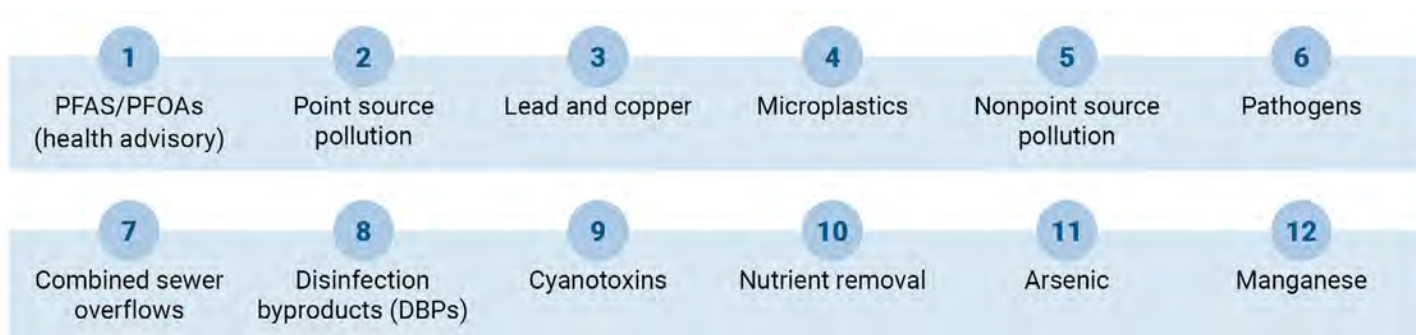
# Governance



This year, SOTWI survey respondents ranked compliance with current regulations in the top 10 issues facing the industry, two spots up from the previous year. Respondents from very large utilities rated current and future regulations as fifth and sixth most concerning.

Among the current regulations and health advisories, the water sector is most concerned about rules related to per- and polyfluoroalkyl substances (PFAS)—it's noteworthy that the SOTWI survey preceded EPA's spring 2023 proposed PFAS regulations. Respondents were also concerned about regulations around point source pollution, lead and copper, and microplastics.

## Ranked concerns about contaminant compliance



PFAS—per and polyfluoroalkyl substances, PFOA—perfluorooctanoic acid

“Achieving compliance with the existing and ever-evolving regulations requires water utilities to adapt a multi-faceted, collaborative approach to address the complex interconnected challenges and to further protect public health. AWWA and its members are instrumental in developing industry guidance and informing policies to enhance the safety, reliability, and affordability of water services. Continuing to leverage the water community's collective knowledge and experience to shape the regulatory landscape is crucial for developing sustainable and equitable solutions for the future.”

**Lauren Wasserstrom**

*Jacobs National Practice Leader for Lead and Copper Rule Compliance*



When asked about their operations and maintenance plans and programs contributing to infrastructure reliability, 68% of utility respondents reported having a lead service line replacement program in place or fully implemented. In a separate question, 38% of utility executive or financial officers reported that lead line service replacement programs were in their planned capital improvement projects.

#### Utility respondents are actively planning or working on lead service line replacements:



**38%** indicated their planned capital improvement projects include lead service line replacements.

**68%** indicated they are implementing lead line replacement programs.



#### Additional Resources

##### Publications:

- [Environmental Compliance Guidebook: Beyond U.S. Water Quality Regulations](#)
- [Drinking Water Treatment for PFAS Selection Guide](#)

##### Technical Reports & Resources:

- [Lead Communications Guide and Toolkit](#)
- [PFAS Resource Page](#)
- [PFAS Cycle Infographic](#)

## Social/Demographics



Of the top 10 issues facing the water sector, public understanding of the value of water resources and public understanding of the value of water systems and services were ranked fourth and seventh, respectively. Respondents also pointed out that the public's value and respect for water professionals is critical for attracting qualified staff.

The water sector's view of system stewardship is expanding beyond its traditional focus on asset and financial management to encompass social, environmental and governance related criteria. Through this wider lens, organizations are valuing projects and programs that address issues like historically underserved areas and other environmental justice concerns.

To help households with lower incomes pay their water and/or wastewater bill, 54% of executive/management and financial officers surveyed said their utilities had an affordability program in place or that assistance was offered elsewhere.

Workforce challenges were also prominent in this year's survey. Aging workforce/anticipated retirements was ranked as the sixth most challenging issue, and talent attraction/retention was ranked twelfth.

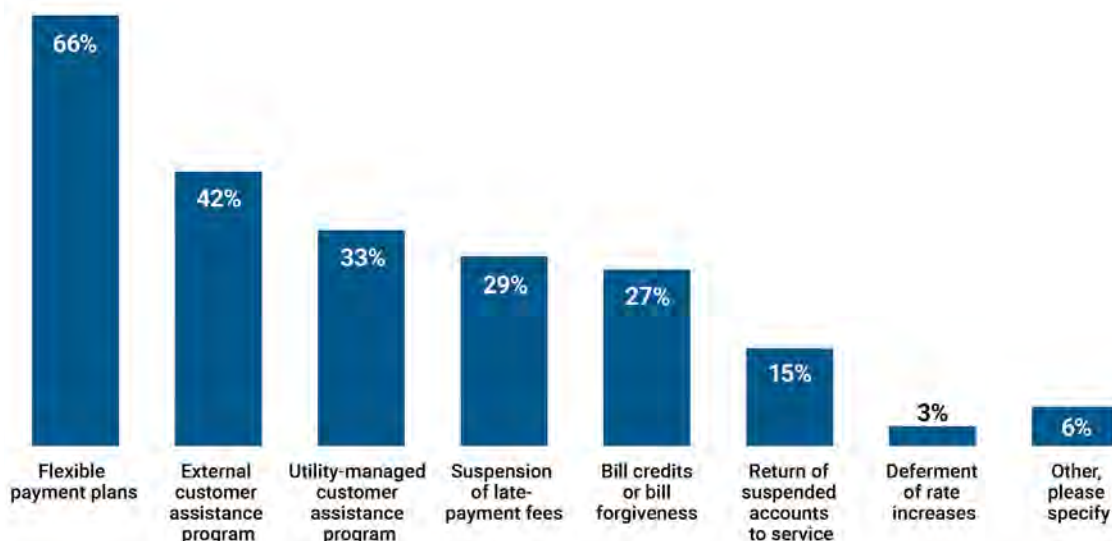


"Partnerships and collaborations are fast becoming viable answers to workforce challenges and keys to developing a 'Workforce of the Future Pipeline' and successful 'Grow Your Own' programs. Partnerships include colleges, trade schools for apprenticeship programs, high schools for internships, regional collaborations such as Baywork, veterans' groups, and other utilities. AWWA is an excellent resource for accessing research, programs, conferences and other tools to help fill the workforce toolbox."

**Cindy Goodburn**  
*Cindy Goodburn Consulting*



## Utilities' customer assistance measures



The 2023 SOTWI survey asked all respondents about the status of any organizational diversity program at their organization, with more than half indicating that they are in the process of developing a program or offering limited-term training. Of the respondents with a diversity program, 25% said their organization has a leadership position dedicated to diversity, equity and inclusion.



## Additional Resources

### Publications:

- [The Water Workforce: Strategies for Recruiting and Retaining High-Performance Employees](#)
- [M1 Principles of Water Rates, Fees, and Charges](#)
- [M54 Developing Rates for Small Systems](#)

### Technical Reports & Resources:

- [Demonstrating Affordability Metrics in Relation to Rulemaking](#)
- [Diversity & Member Inclusion: How to Guide for AWWA Sections](#)

### Programs:

- [Transformative Water Leadership Academy](#)
- [AWWA Career Center](#)



American Water Works  
Association  
Dedicated to the World's Most Vital Resource

# Highlights from the 2023 State of the Water Industry Report

AWWA's annual State of the Water Industry (SOTWI) survey provides an industry-wide self-assessment. The survey is designed to identify water sector challenges and investigates possible underlying causes and drivers. This year marks the 20th edition of the SOTWI survey, and responses continue the general six-year trend of increasing optimism (5.0 on a scale of 1 to 7) about the water industry, now and in the future. The top 10 issues facing the water sector remain similar to past surveys, with infrastructure rehabilitation and replacement topping the list of issues.

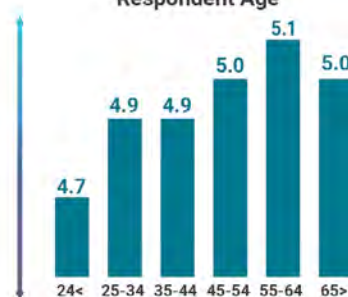
## Optimism



State of the Water Industry 2004–2023

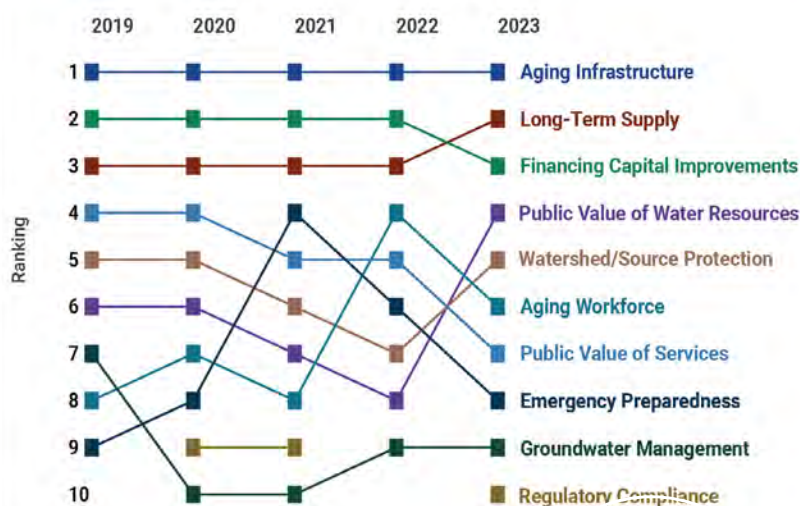


2023 Optimism Breakdown by Respondent Age



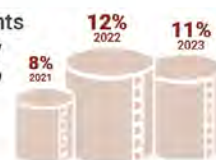
## Challenges

Top Ten Challenges 2019–2023



**Aging Infrastructure, Long-Term Supply, and Financing Capital Improvements** have consistently been top challenges.

**11%** of respondents indicated their utility will be challenged to meet anticipated **Long-Term Water Supply Needs**.




**40%** of respondents ranked **Public Understanding of the Value of Water Resources** as critical.





Regulations

**20%**   
of respondents are extremely concerned about their ability to comply with regulations related to **PFAS**.

**15%**   
of respondents are extremely concerned about their ability to comply with regulations related to **Lead and Copper**.

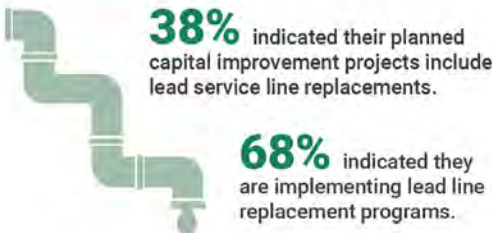
Water Rates

Percent of utility management respondents who expect to increase water rates in the coming year:

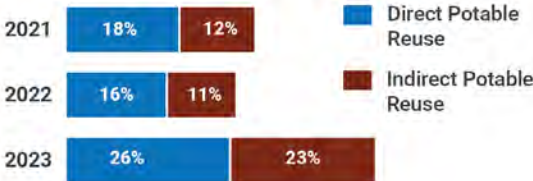


Actions

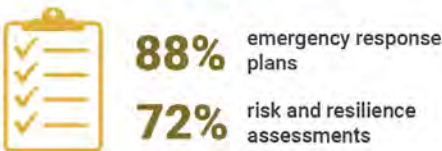
Utility respondents are actively planning or working on lead service line replacements:



Of respondents who answered the survey question about augmenting their existing supplies, the following **said yes to potable reuse**:



Utility respondents have fully implemented or are in the process of preparing:



**60%** of utility respondents have implemented or are considering implementing a **climate action plan**.

Water 2050

The SOTWI survey has asked the water community to identify current and future challenges and concerns for two decades. Looking ahead to the year 2050, the future of water requires an innovative, collaborative community culture that embraces and adopts new technologies across the full water cycle. AWWA's Water 2050 initiative has identified five critical drivers that will influence progress toward a sustainable and resilient water future: Sustainability, Technology, Economics, Governance, and Social/Demographics. Learn more about AWWA's Water 2050 initiative at [www.awwa.org/water2050](http://www.awwa.org/water2050).







## Calling All Emerging **Water Utility Leaders!**

Do you see yourself playing a **leadership role** at a water utility, guided by principles of community, sustainability, and diversity—while delivering equitable access to essential water and wastewater services?

If you are an **emerging water utility leader** with 3–10 years of experience and a passion for community-driven water management, then the Transformative Water Leadership Academy (TWLA) may be a **great opportunity for you!**

Application for the 2024 cohort **opens in June 2023.**

**Don't miss this** unforgettable growth opportunity.



American Water Works  
Association



Learn more and apply now for TWLA24:  
[www.awwa.org/TWLA](http://www.awwa.org/TWLA)

