

When Expertise Retires, What Happens to Your Capital Program?

The water sector's workforce is retiring at the same time as its largest-ever capital cycle.

63% of utility staff are 45 or older. 42% have 20+ years of experience. And the sector is entering \$2.1 trillion in infrastructure investment through 2050. Here is what utility leaders need to understand — and do — before institutional knowledge walks out the door.

42%

UTILITY STAFF WITH 20+ YEARS OF EXPERIENCE

63%

UTILITY STAFF AGE 45 OR OLDER

\$2.1T+

INFRASTRUCTURE NEEDS THROUGH 2050

54.4%

UTILITIES WITH WORKFORCE PLANNING IN PROGRESS

Sources: AWWA 2025 State of the Water Industry Report (3,575 respondents) · Beyond the Replacement Era (AWWA/Raftelis/One Water Econ, March 2026) · Flyvbjerg & Gardner, How Big Things Get Done (2023) · AWWA does not sponsor, endorse, or affiliate with third-party companies, products, or services.

Guy Barlow, President

April 2026

SECTION 1 OF 3

The Collision.

The water sector is navigating two simultaneous forces that, separately, each present a serious management challenge. Together, they create something genuinely difficult – and the window to act before both forces converge is closing.

The first is demographic. According to the AWWA 2025 State of the Water Industry survey – 3,575 water professionals – 42% of respondents have 20 or more years of experience. Looking at utility staff specifically, 63% are age 45 or older. This is not a distant workforce transition. It is underway now, and it will accelerate.

The second is structural. The water sector is entering the largest capital investment cycle in its history. AWWA's *Beyond the Replacement Era* (March 2026) projects total infrastructure needs of \$2.1 to \$2.4 trillion through 2050 – driven by asset replacement, PFAS compliance, lead service line replacement, and climate resilience investment, all simultaneously. The annual funding gap is \$56.6 billion.

THE WORKFORCE MATH

Utility staff age 45+ 63.0%

AWWA 2025 SOTWI, 3,575 respondents

20+ years of experience 42.0%

Sector-wide; retirement wave is underway, not distant

Workforce planning in progress 54.4%

Nearly half of utilities have no workforce transition plan in place

Annual investment needed

\$90.2B

Sector-wide capital required per year to close the gap across asset replacement, PFAS, lead service lines, and resilience.

Current annual investment

\$33.6B

Today's run-rate is barely one-third of what the sector needs. The delta compounds every year it isn't closed.

Annual funding shortfall

\$56.6B

The gap that must be closed through rates, federal funding, and efficiency – precisely when the most experienced staff are retiring.

The collision of these two forces – sustained retirements at the same time as maximum capital program complexity – is a defining operational risk for the next decade. Most utilities are not treating it as one.

The Difference Between Capacity and Knowledge

The SOTWI data is striking. Workforce issues rank seventh overall as a sector challenge — and service providers and consultants, who work across dozens of utilities, ranked “shortage of skilled workers and loss of institutional knowledge through retirements” as one of the three defining trends shaping the industry over the next several years. They placed it alongside infrastructure aging and regulatory pressure.

What workforce transition planning often underestimates is the distinction between capacity and knowledge. A utility can hire for capacity. It cannot easily hire for institutional knowledge. That takes years to accumulate — and in a water utility, it rarely gets written down.

“Service providers ranked loss of institutional knowledge through retirements as one of the three defining trends shaping the water industry.”

— AWWA 2025 State of the Water Industry Report

SECTION 2 OF 3

What Retirements Actually Cost Programs.

When a senior project manager with 25 years of experience retires, the organization does not lose a set of job functions. It can hire for job functions. What it loses is something more granular and far harder to replace: the accumulated working knowledge of a career.

This includes **cost precedents** — what it actually cost to build a pump station in this county in 2019, and which site conditions drove that cost above estimate. It includes **vendor judgment** — which contractors deliver what they promise and which don't. It includes **regulatory relationships** — how the state primacy agency operates, what questions they ask, and how they prefer to receive supporting data. And it includes **project history** — why a project was deferred in 2017, and whether those conditions have changed.

None of this is written down anywhere accessible. It lives in people. When those people leave, it leaves with them.

The Compounding Effect

The loss of institutional knowledge does not manifest as a sudden, visible crisis. It compounds slowly, in ways that are difficult to attribute. New staff take longer to develop sound estimation judgment. Past mistakes get repeated because nobody remembers what happened the last time.

Flyvbjerg's analysis of capital project performance across hundreds of large programs identifies organizational learning from past projects as one of the strongest predictors of future performance. Utilities that improve their capture and use of historical project data improve their outcomes. Those that don't repeat the same patterns.

For a utility managing a \$100M annual capital program, a 5% improvement in estimation accuracy across 50 active projects is worth several million dollars annually. The inverse is equally true — and it compounds with every new hire who starts from zero.

Why the Timing Amplifies the Risk

A utility executing PFAS compliance, lead service line replacement, and general asset renewal simultaneously — while competing for a closing federal funding window — is doing something it has never done at this scale. The institutional knowledge that exists about analogous programs from the past 20 years is exactly what is needed to navigate it well. And it is leaving.

WHAT WALKS OUT THE DOOR

Cost Precedents

Actual project costs by region, type, and site condition

Vendor Judgment

Contractor performance history across project types

Regulatory Insight

Agency expectations, preferences, and decision patterns

Project History

Rationale for past deferrals and sequencing decisions

SECTION 3 OF 3

What Forward-Thinking Utilities Are Doing.

The utilities ahead of this challenge have reframed the question. They are not asking “how do we replace the people who are leaving?” They are asking “how do we make the knowledge those people carry independent of whether they stay?” That is a different question, and it leads to different actions.

The most consequential of those actions is moving capital program management out of personal spreadsheets and disconnected files and into a structured, institutional platform. Not because technology is the point — it isn’t — but because a platform that captures project history, cost data, decision rationale, and performance benchmarks converts personal knowledge into organizational knowledge. A new Capital Planning Director hired in 2028 can see not just what projects are in the CIP, but why they were prioritized that way, what they cost versus estimate, what assumptions proved wrong, and what was learned. That continuity doesn’t just accelerate onboarding. It makes the capital program more accurate and defensible over time.

This is a different level of ambition than traditional workforce planning — succession charts, mentorship programs, hiring pipelines. Those matter, and they address the capacity problem. The knowledge problem requires the deliberate capture of institutional memory in a form that survives the people who created it.

What This Looks Like in Practice

Water utilities successfully managing this transition share common practices. They maintain a single source of truth for capital program data accessible organization-wide — not siloed in individual analysts’ files. They document decision rationale alongside project data so that the reasoning behind prioritization is retrievable years later. And they treat project performance data — actuals versus estimates, change order patterns, contractor results — as an organizational asset that compounds in value.

FOUR ACTIONS THAT CHANGE THE OUTCOME

- 01** Move from personal spreadsheets to a shared, institutional capital platform
- 02** Capture decision rationale alongside project data — not just what, but why
- 03** Treat cost actuals and contractor performance as compounding organizational assets
- 04** Design onboarding so new staff inherit the program’s history, not just its structure

The water sector’s workforce transition is not a future risk. It is underway now. The question for utility leadership is whether it happens by default — expertise draining away with consequences that compound invisibly — or by design, with knowledge systematically preserved and programs built to outlast the people who built them.

About Invizion

Guy Barlow is President of Invizion, a purpose-built capital lifecycle management platform for water utilities. Invizion converts personal expertise — cost precedents, vendor judgment, regulatory insight, project history — into organizational assets that outlast workforce transitions and compound in value over time.



Guy Barlow

President, Invizion

[getinvizion.com](https://www.getinvizion.com)

See how Invizion performs with real world data, challenging constraints, and tough trade-offs. We'll walk you through a live environment.

[Schedule a Walkthrough →](#)

Sources: AWWA 2025 State of the Water Industry Report (3,575 respondents) · Beyond the Replacement Era (AWWA/Raftelis/One Water Econ, March 2026) · Flyvbjerg & Gardner, How Big Things Get Done (2023) · AWWA does not sponsor, endorse, or affiliate with third-party companies, products, or services.

© 2026 Invizion, Inc.