



DC Water AI Strategy and Data Roadmap

Water utilities face rising pressure from climate variability, aging infrastructure, higher energy costs, workforce constraints, and increasing regulatory and customer expectations. While utilities generate operational, environmental, and customer data, it's often fragmented across siloed systems, inconsistently governed, and underused, limiting the ability to optimize efficiency, reduce waste, recover resources, and measure regenerative outcomes across the water cycle. This project tackles these challenges by advancing a circular water economy through the creation of an enterprise AI Strategy and Data Roadmap. It establishes the data governance, integration, and analytics foundation needed to turn raw data into actionable insights—supporting smarter decisions on water reuse, energy, nutrient recovery, asset performance, and environmental protection.

Rather than deploying isolated technology solutions, the project takes a systems-level approach that aligns people, processes, and technology. This helps circular practices to scale from pilots to repeatable, measurable operations that strengthen resilience, sustainability, and public trust.



REDUCE



RECOVER



REGENERATE



DISTRICT OF COLUMBIA, USA



WASTEWATER



DRINKING WATER



CHALLENGES FACED

- Moving from departmental data silos to shared accountability required sustained cross-functional engagement and leadership support.
- Advanced analytics, decision-support tools, and generative AI needed rollout to frame them as augmenting professional judgment—not replacing it.
- Successful AI adoption depends less on the tools and more on aligning people, processes, governance, and leadership around a shared vision.

TECHNOLOGIES & SOLUTIONS USED

Key elements of the AI Strategy and Data Roadmap:

- an enterprise data governance framework that defines data ownership;
- stewardship, access, and ethical use, ensuring trusted and reusable data across operational, environmental, and customer systems; and
- modern data architecture that integrates operational technology, enterprise platforms, and external data sources to support analytics and AI at scale.

IMPACT & INSIGHTS



Reduce: Integrated data improved visibility into non-revenue water, energy intensity, and process efficiency, while reducing manual reporting effort and enabling faster identification of inefficiencies.

Recover: Improved data quality and integration support more consistent tracking of energy and nutrient recovery performance and better prioritization of recovery investments.

Regenerate: Enhanced monitoring of effluent quality and system trends supports stronger alignment between operations and environmental outcomes.

LESSONS LEARNED



- Start with people, not tools. Invest early in data literacy, change management, and clear communication.
- Establish governance first. Define data ownership, stewardship, access, and ethical use before deploying analytics or AI.
- Engage leadership early and often. Visible executive sponsorship is critical to align priorities, manage risk, and sustain momentum.
- Design for equity and affordability. Use data to better target investments and operational improvements where they deliver the greatest community benefit.

“Establishing a clear AI Strategy and Data Roadmap shifted perceptions of data and technology from back-office tools to shared enablers of operational excellence and sustainability. This encouraged collaboration across traditionally siloed teams and promoted system-level thinking aligned with circular economy principles.”