



Critical Importance of Infrastructure Investment in the Water Industry

Iowa League of Cities
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National Water & Wastewater Infrastructure Challenges



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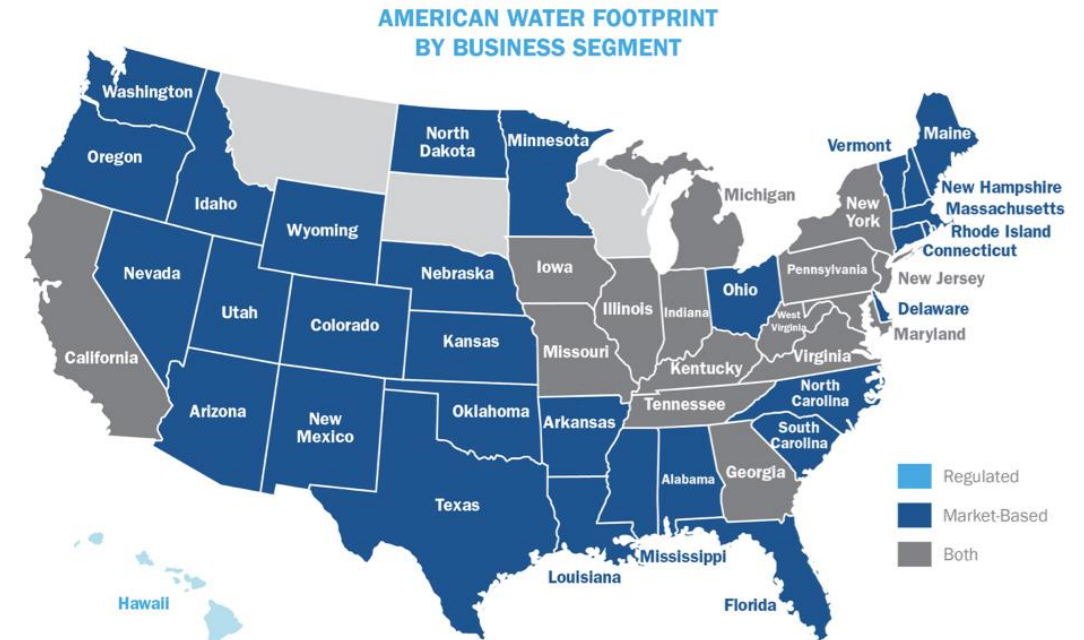
About Us

American Water

Who We Are

We are the largest and most geographically diverse publicly traded water and wastewater service provider in the United States.

- We serve a broad national footprint and a strong local presence.
- We provide services to approximately 15 million people in 46 states.
- We employ 7,000 dedicated employees and support ongoing community efforts and corporate responsibility.
- We treat and deliver more than one billion gallons of water daily.



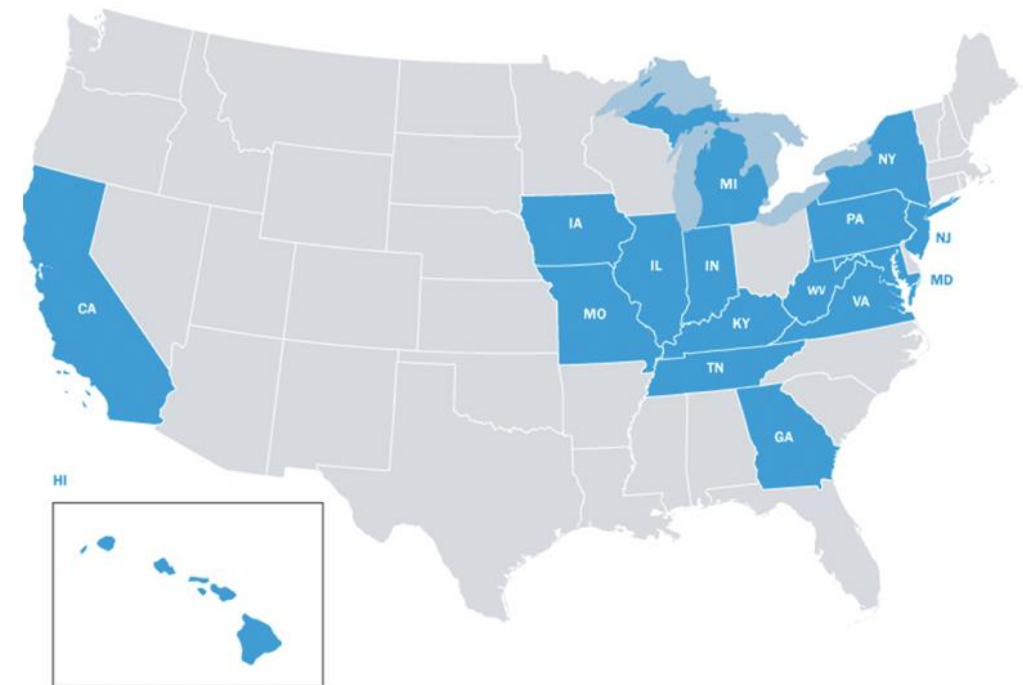
Our Regulated Business

We manage more than 500 individual water and wastewater systems across the country.

Every day, we operate and manage:

- **53,200** miles of transmission, distribution and collection mains and pipes
- **79** surface water treatment plants
- **530** groundwater treatment plants
- **1,100** groundwater wells
- **150** wastewater treatment plants

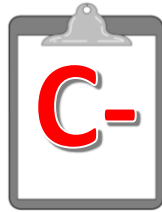
American Water's Regulated Presence



Water & Wastewater Infrastructure Challenges

Challenges for Water & Wastewater

Water Infrastructure



- More than 148,000 Active Drinking Water Systems Across the Nation
- Our nation's drinking water infrastructure is composed of 2.2 million miles of pipe
- There is a water main break every two minutes, and an estimated 6 billion gallons of treated water lost each day in the U.S.
- By 2019, utilities were replacing between 1% and 4.8% of their pipelines per year on average.

Wastewater Infrastructure



- The nation's wastewater footprint includes over 800,000 miles of public sewers and 500,000 miles of private lateral sewers.
- The nation's more than 16,000 wastewater treatment plants are functioning, on average, at 81% of their design capacities, while 15% have reached or exceeded it.
- Most wastewater treatment plants are designed with an average lifespan of 40 to 50 years.

Challenges for Water & Wastewater

Climate Change
and Resource
Scarcity

- High Energy Cost
- Droughts and Floods
- Water Scarcity

Demographic and
Social Changes

- Capital Constraints
- Aging Workforce

Rapid Urbanization

- Water Contaminants
- Aging Infrastructure

Environmental
Protection

- Regulatory Compliance

Water & Wastewater Infrastructure

- Deferred Maintenance and Delayed Pipe Replacement are catching up to us...



1980 – 10% of all pipes
were in poor shape



2000 – 23% of all pipes
were in poor shape



2010 – 45% of all pipes
were in poor shape

Meeting Challenges

Treatment

- Treatment Process Optimization
- Advanced Treatment
- Treatment Quality Monitoring
- Droughts and Floods

Network Management

- Non-Revenue Water
- System Visibility
- Infrastructure Management
- Maximizing Equipment Efficiency

Predictive and Preventative

- Comprehensive Plans
- Resiliency Reviews

American Water Approach



The Cost of Not Meeting the Challenge



Safe drinking water is important to the health and economic welfare of a community.

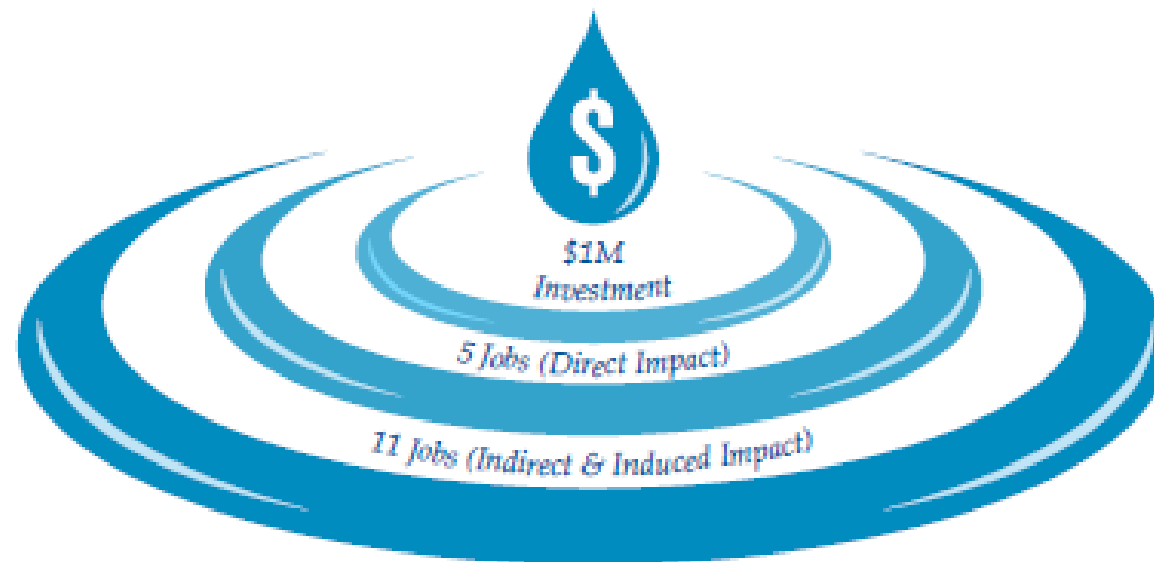
Failures start to occur as infrastructure reaches its useful life.

ASCE estimates it could cost American business \$734 billion and the loss of 700,000 jobs.

Failing systems limit the ability for the economy to grow.

The Cost of Not Meeting the Challenge

$$\begin{array}{cccc} \$1\text{M} & = & 5 \text{ Jobs} & + & 11 \text{ Jobs} & = & 16 \text{ Jobs} \\ \text{Investment} & & \text{Direct Impact} & & \text{Indirect \& Induced Impact} & & \text{Total} \end{array}$$



According to the U.S. Conference of Mayors, every dollar invested in water infrastructure adds \$6.35 to the national economy.

Iowa Water & Wastewater Infrastructure Challenges

Iowa Water & Wastewater Infrastructure Challenges



Brad Nielsen

Iowa American Water

Vice President of Operations

Importance of Infrastructure Investment



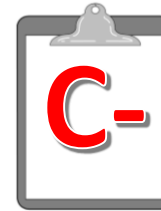
Challenges

Iowa Water Infrastructure



- 1,848 Active Drinking Water Systems Across Iowa
- In some municipal water systems, more than 50% of the distribution systems are 50 years or older, and some systems have pipes in excess of 100 years old.
- Rural water systems are relatively new in Iowa and generally have distribution systems that are less than 50 years old.
- Surface and ground water sources are seeing excessive nutrient concentrations.

Iowa Wastewater Infrastructure



- U.S. Environmental Protection Agency determined in 2012 that a total of \$2.4 billion is necessary for wastewater related infrastructure improvement in Iowa over the next 20 years.
- Iowa's aging wastewater infrastructure poses a threat to Iowa's water resources.
- Most wastewater treatment plants are designed with an average lifespan of 40 to 50 years.

Iowa American Water Footprint

Above Ground Assets

- 3 water treatment facilities – 41 MGD capacity
 - 1 surface water facility
 - 2 ground water facilities from 7 wells
- 14 storage tanks
 - 11 elevated tanks
 - 3 ground storage tanks
- 11 booster pumping stations



Below Ground Assets

- Over 900 miles of water main
- Over 19,000 valves
- Over 8,000 fire hydrants



Local Approach to Infrastructure Investment

- **Be as proactive as possible**
 - Replacement in an emergency is costly & causes unplanned customer impact
- **Plan ahead**
 - Comprehensive Planning Study
 - Risk & Resilience Analysis
- **Evaluate the information and collaborate on the right approach**
 - Multi-functional discussions
 - 5-year Strategic Capital Expenditure Plan (SCEP)
 - Investments broken out into two groups:
 - ✓ Large projects for strategic infrastructure (new treatment processes, storage tanks, etc.)
 - ✓ Recurring projects for improvements in reliability, redundancy, or replacements ahead of failure



Local Approach to Infrastructure Investment - Continued

- **Target your needs**
 - Required investment due to regulatory or environmental compliance
 - Targeted investment to address an emerging threat
 - General system improvements
- **Evaluation on reliability, average asset life, and targeted redundancy**
 - Water main
 - Hydrants
 - Valves
- **Set goals, measure success, and evaluate opportunities as they emerge**
 - Are we improving the average life of our assets in the system?
 - Are there opportunities to partner with municipalities' projects (paving projects)?
 - Can we implement looping redundancy where we have opportunities?



Case Study – Blue Grass, Iowa

Opportunities & Needs

- **Fire Flow**
 - Replace & upsize smaller water mains
- **Reduce Risk**
 - Remove the existing chlorine gas treatment process by replacing with a sodium hypochlorite system of treatment
 - This eliminated the potential of a release of a poisonous gas within city limits
- **Improve Water Quality**
 - Construct an interconnection between systems
- **On-going Opportunities**
 - Standardize material with investments
 - Improve storage



Questions?

Thank you
