Itron

Pipe Asset Management

Use AI and Machine Learning to Find Your Next Pipe Failure Before It Happens

Overview Brochure

AN AGING SYSTEM

The United States' drinking water infrastructure system is made up of 2.2 million miles of underground pipes that deliver safe, reliable water to millions of people. Much of this infrastructure is nearing the end of its useable life and needs to be replaced.

6 billion
Gallons Lost Daily

Every two minutes, a water main breaks in the U.S. losing an estimated 6 billion gallons (enough to fill 9,000 swimming pools) of clean water a day.

$1 billion
Over next 25 years**

Investment needed for replacing buried drinking water infrastructure is estimated to be more than $1 trillion in the US over the next 25 years. Over the next 40 years these needs exceed $1.7trillion. Replacement needs account for 54% of the total, while 46% is attributed to population growth and migration.

€45 billion
Annually*

In the EU, much of the 7 million kilometers of pipes have been in operation for over 100 years. It would require a doubling of the annual investment of €45 billion in order to modernize infrastructure and protect health, the environment and reduce costs.

The Challenge for Water Utilities

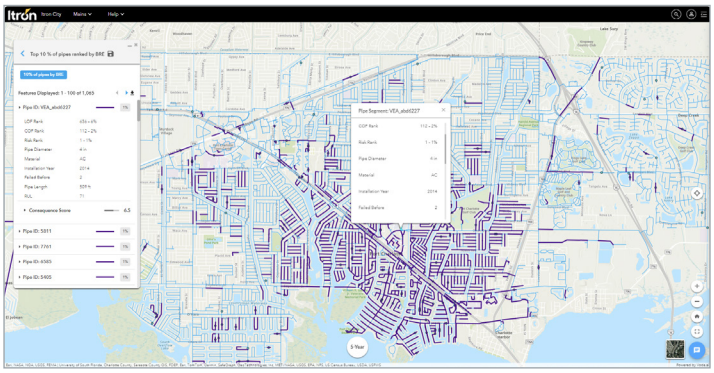
When pipe failures happen, they are often unpredicted and, in the case of non-surfacing leaks, undetected. Main breaks can cost the utility upwards of $6 million, for pipe repairs and damages caused by water. It results in negative media attention and unhappy customers. Undetected pipe failures are also costly, with millions of gallons of water lost every day.

Decades old drinking water infrastructure systems, declining utility revenues, costs of regulatory compliance, and stagnant federal funding have resulted in many water utilities struggling to fund the cost of operations and maintenance of these systems.

Water utilities are aware of the cost and challenges for infrastructure improvements but are left guessing on the best way to prioritize leak detection, pipe replacements, or rehabilitation.

Plan Better With Artificial Intelligence (AI)

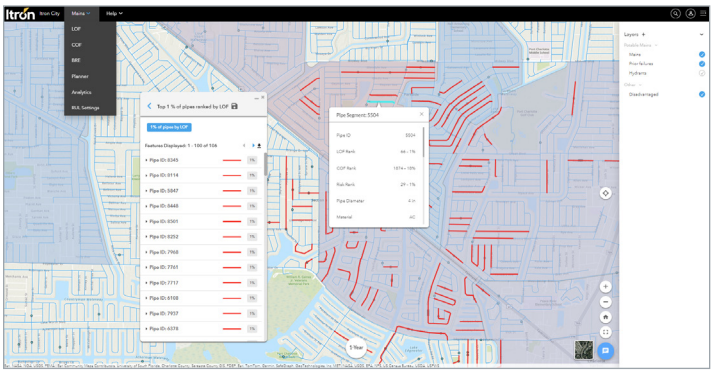
Itron's Pipe Asset Management solution uses AI to provide a powerful tool for identifying and accurately predicting which pipe assets need to be prioritized for action. This intelligent, interactive tool uses existing data provided by the utility to create a highly accurate model to assist with making decisions:



AI-driven analysis and interactive tools for management of pipe assets and capital planning.

- Helps identify which pipes have the highest risk of failure and should be replaced, and which should be monitored for leaks
- Helps utilities manage their lead service line inventory and identify which services are most likely to be made of lead and need to be replaced – and utilities can comply with regulatory mandates for replacement of lead pipes
- Helps with the capital planning process by identifying what to replace/rehabilitate – and make decisions based on risk and financial metrics

*Source: Water Infrastructure | ASCE's 2021 Infrastructure Report Card
**Source: Buried No Longer (awwa.org)
*Source: Time to invest in Europe's water infrastructure – Euractiv



Accurately pinpoint high risk pipe assets to avoid catastrophic failures and optimize planning.

The tool uses existing data the utility is already collecting (GIS and historic pipe failure data) as well as data collected by Itron solutions (such as water consumption, pressure, and other data). The tool also has access to publicly available records for additional data (soil, terrain, roads, railroads, etc.) This data feeds into the AI model and results are presented to the utility in an intuitive, interactive software tool.

COST SAVINGS

Pipe Asset Management helps utilities avoid those very costly unexpected failures and inefficient capital investments when they mistakenly replace healthy pipes with remaining useful life.

This helps utilities free up their capital improvement budgets to invest in technologies to further improve their water systems, such as smart metering solutions , Advanced Metering Infrastructure (AMI) , and water loss management tools all of which will increase water revenues, reduce operational costs, free up human resources and improve conservation efforts.

By making infrastructure decision and asset management planning based on scientific data, customers have experienced:

SAVINGS FROM EARLY DETECTION:

- A utility with 700 miles of pipe
- Average failure rate of 19/100 miles of pipe
- Average savings of $2,000 by catching leaks early and scheduling repairs
- Early detection could have shifted 20% from emergency repairs to planned repairs

$53,200 SAVED

SAVINGS FROM IMPROVED PLANNING:

- A utility with 700 miles of pipe
- 36,960 feet/year in rehab and replacement
- Break rate in the worst 1% is 10x higher than average
- Assume average repair cost $3,000

$39,900 SAVED

SAVINGS FROM REDUCED HIGH- RISK FAILURES:

- The cost of a high risk failure is $25,000
- A utility with 700 miles of pipe can avoid 2 of these through early detection and improved replacement planning

$50,000 SAVED

SAVINGS FROM EARLY DETECTION:

- Operations
- Planning
- High Risk Pipes

$143,100 SAVED

Non-Revenue Water Management Solutions

Pipe Asset Management is part of Itron's broader solutions for Smart Metering and Non-Revenue Water Management.

- Smart metering
- Acoustic leak detection
- Pressure management
- Analytic tools for managing real and apparent losses

MODULAR TOOLBOX FOR NON-REVENUE WATER MANAGEMENT

TEMETRA ANALYSIS
OPERATIONAL VISIBILITY

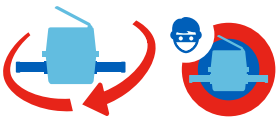
Automated Water Balance

DMA and Mains Water Loss Monitoring

Pressure, Flow, and Consumption Correlation

Consumption Event Analytics

Hydraulic Simulation and Visualization



TEMETRA ANALYSIS
WATER REVENUE ASSURANCE

Meter Performance Analysis

Prioritized Replacement List

NPV POI Analysis

Meter Gain Assessment

MLOGONLINE
WATER LEAK MANAGEMENT

Leak Localization using pressure data and hydraulic models

Acoustic Leak Sensing (NAM only)

PIPE ASSSET MANAGEMENT
RISK MODELING & CAPITAL PLANNER

Automated, Predictive Tools

AI-driven Pipe-failure Predictions

AI-driven Remaining Useful Life

Capital Improvement Planning

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