

Pipe-Smart Checklist

Tell-tale signs that a community piping infrastructure system is failing

In the next couple of years, 50% of U.S. apartment and condominium communities will need to replace at least one major plumbing and mechanical system. Why? Age, followed by manufacturer and construction defects, and environmental factors such as poor water quality or exposure to corrosive environments. What signs of piping system failure are you experiencing?

Piping System Under Review

- Domestic Water
- DWV
- Hydronic Heat & A/C
- Fire Sprinkler

Signs of Failure

- Frequent leaks (more than four per year)
- Progressively severe leaks (creating greater damages to repair)
- Sudden changes in water pressure
- Discolored water
- Water has a metallic taste
- Sewage odors
- Mold in areas where pipes are located
- Severe oxidization and corrosion of metal pipes
- Warped or cracked plastic pipe
- Rotting/damaged pipe insulation
- Higher operations and maintenance costs due to piping problems:
 - Higher water bills that can't be explained
 - Higher cost of materials and contractor/vendor services to repair damages
 - More emergency rate service fees
 - Increasing personal property claims by unit residents/owners
 - Higher insurance costs due to frequent claims
 - More deferred maintenance because staff are focused on pipe problems
- Poor reputation/social media reviews about plumbing are making it difficult to:
 - Maintain high occupancy and charge market-rate rents
 - Maintain property/unit values and buy or sell



How to Interpret Your Checklist Results

The checklist includes many of the most prevalent direct and indirect operational cost drivers. We advise clients:

When the annual cost of the status quo exceeds the annual cost of pipe replacement, it's past the time to repipe or convert to a more efficient system.



Pro Tip

Use an incident tracking tool to record plumbing issues and inform annual budget and capital expense planning. Download the SageWater Leak Log at [sagewater.com/plumbing-leak-log](https://www.sagewater.com/plumbing-leak-log).

Does Your Piping Really Need To Be Replaced?

Roofs leak. Cement facades spall. And, yes, piping fails. Every component of your community structure will reach the end of its useful life, even under the most rigorous maintenance programs. But when? And what will you do about it?

Tools You Can Use

EUL Tables. One way to plan for when to repipe: Reference the Fannie Mae and HUD Estimated Useful Life Tables.

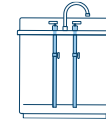
After analyzing 10 years of repipe projects in the SageWater database, we find the estimates to be largely accurate.² Of course, you may need a pipe replacement even sooner due to a manufacturer or construction defect, or environmental factors like poor water quality.

Pipe Forensic Studies. Periodic piping assessments by certified experts are another way to help plan. Basic reports will detail the condition of your piping system, which can help you know where and why it's failing.

Comprehensive reports like you get with a SageWater Pipe TEST™ (Technical Evaluation of System Threats) will include guidance and recommendations for an appropriate course of action. To the extent that findings indicate the piping must be replaced, we'll also provide a rough estimate of the potential project cost and timeline.

Local regulations may mandate building inspections that include plumbing. If not, perform your first assessment 20 years after construction and as soon as you detect signs that your piping is failing. Repeat inspections every 5 - 10 years depending on results.

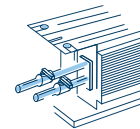
Useful Life of Your Pipes¹



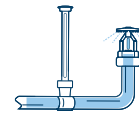
Domestic Water
~30-50 Years



Drain, Waste & Vent
50+ Years



HVAC & Mechanical
~30-50 Years



Fire Sprinkler
~30-50 Years

EXAMPLES OF SAGEWATER PIPE TEST™ FORENSIC TECHNIQUES

Camera-Based Assessments for Drain, Waste & Vent Systems. Feed a camera through pipes for visual inspection and provide an industry-standard defect score.

Ultrasonic Assessments. Attach an ultrasonic meter to the pipe's exterior and send a pulse through the material to determine pipe thickness and detect deterioration of inner pipe walls.

Pipe Sampling/Fitting Extractions. Remove small sections of pipe and send them to a lab for testing.

¹Estimated Useful Life Tables: <https://multifamily.fanniemae.com/media/35621/display> and https://www.hud.gov/sites/documents/EUL_FOR_CNA_E_TOOL.PDF

²Analysis covers SageWater client needs identified and closed June 2011 - March 2022. Represents 400 communities with more than 80,000 units (garden style, mid-rise, and high-rise buildings). Average building age when need was identified: 34.5 years for 275 domestic lines, 47.5 years for 79 DWV systems, and 54.4 years for 65 Hydronic systems. Does not include fire sprinkler systems.

Be Prepared!

Contact Us About Including Pipes in Your Capital Improvement Planning.

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