

Failure to pay now for the maintenance and repair of drinking water infrastructure threatens public health, safety, and the economy.

May 2007

Volume 3, Number 1

**Drinking Water
Facts and
Terminology:**

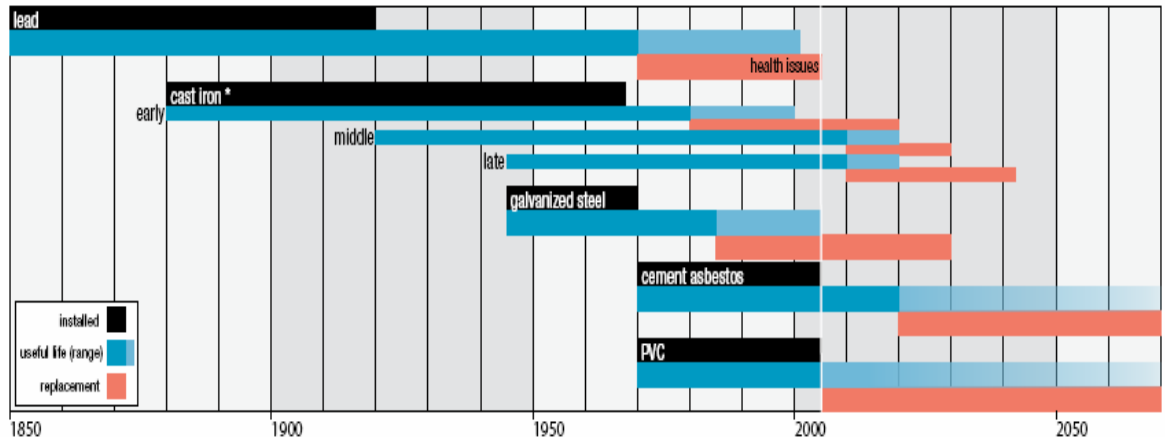
- ✓ EPA estimates that \$8.554 billion is needed to rehabilitate the aging drinking water infrastructure in Mass.
- ✓ There are 3,708 public drinking water wells in Massachusetts.
- ✓ There are 255 surface water supplies in Massachusetts.
- ✓ There are approximately 21,000 miles of water mains in Massachusetts. The EPA estimates that \$6.6 Billion is needed during the next 20 years to replace aging water mains.
- ✓ Water mains are made of ductile iron, cast iron, PVC plastic, HPDE plastic, and still in some places asbestos cement.
- ✓ About 660 miles of vinyl-lined asbestos-cement pipes, which are reaching their life span, were installed in Massachusetts between 1960 and 1980.
- ✓ Approximately 10 percent of water loss is from deteriorating water mains.

Public health, safety, and the economy in Massachusetts are threatened by the serious shortfall in funds to repair, maintain, and upgrade our deteriorating drinking water infrastructure.

The “out of sight, out of mind” mentality regarding our underground infrastructure can no longer be followed. It is time for all at the federal, state, and local levels to start addressing the critical needs of the commonwealth’s drinking water infrastructure before major problems begin to manifest.

The American Water Works Association, North America’s largest association of water works professionals with approximately 60,000 members, has labeled the next few decades as the “Dawn of the Replacement Era,” because the time has come to start replacing aging water infrastructure before it deteriorates and poses a threat to public health, safety, and economic growth.

Most of the 21,000 miles of water mains in Massachusetts, as across the United States, were installed during the late 1800s, World War I, 1920s, and after World War II. Many pipes installed 100 years ago are still in the ground and are reaching the end of their useful lives. Many pipes installed more recently will be reaching the end of their useful life during the next 20 years.



**The oldest cast iron pipes, dating to the late 1800s, have an average life expectancy of 100 to 120 years. Because of changing materials and manufacturing techniques, pipes laid in the 1920s have an average life expectancy of nearly 100 years, while those laid in the post-World War II era are expected to last only about 75 years.
Source: Gary Woodard, SAHRA*

The U. S. Environmental Protection Agency (EPA) estimates that a total of **\$8.554 billion** is needed in Massachusetts for the 20-year period **2003-2022** to make necessary improvements to the state’s drinking water infrastructure:

- **\$6.6 billion** to replace aging water mains,
- **\$877 million** for treatment plants,
- **\$622 million** for water storage facilities, and
- **\$318.2 million** to develop new sources for public drinking water supplies.

The drinking water infrastructure—which includes reservoirs, well fields, treatment plants, water mains, and water storage tanks—is essential to provide clean drinking water, protect public health and safety, and support the economy. Without a new financial commitment from the

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- ✓ There are approximately 2,400 miles of unlined, cast-iron pipe in the Metropolitan Boston area.
- ✓ The typical cost to rehabilitate 1 mile of old cast-iron pipe is \$500,000.
- ✓ Tuberculation is the process of water mains getting clogged with sediments and iron oxides that can degrade water quality.
- ✓ MassDEP requires water systems to adhere to strict water-quality testing requirements, including performing tests for bacteria, lead, heavy metal, and industrial solvents.
- ✓ Aging water mains can threaten public health by degrading water quality.
- ✓ Water distribution mains can range in size from 2 inches to more than 50 inches in diameter.
- ✓ Older water mains can threaten public safety by reducing fire flows.

Commonwealth of Massachusetts to share this cost with cities and towns, local water ratepayers will be confronted with drastically increased water bills and/or face increased threats to drinking water quality, as well as their health and safety.

Essential to Protecting Public Health

Protecting public health is a drinking water supplier's first priority. Without adequate funding to maintain, rehabilitate, and construct drinking water infrastructure, public health is at risk.

Continual maintenance and rehabilitation of the entire drinking water infrastructure—from source to tap—is needed to protect the public from waterborne disease. Failure to maintain the quality of water source areas, properly treat drinking water, maintain water storage tanks and facilities, and properly maintain distribution and transmission water mains can cause illness, disease, and even death to the unsuspecting and most vulnerable drinking water consumers.

In a world where an estimated 3 million people die every year from preventable waterborne disease, water systems in North America allow us to drink from virtually any public tap with a high assurance of safety. To maintain this level of safety, it is essential that drinking water suppliers have access to the funds necessary to do so.

Essential to Public Safety

Drinking water supply infrastructure performs a critical public safety function by providing the means to fight fires. A water system that provides reliable water at a high pressure and volume can be the difference between a manageable fire and an urban inferno. Fire protection is supplied by many miles of water mains, which must be of sufficient size and condition to handle peak flows needed in fire incidents. In addition to water mains, water storage tanks need to be of sufficient size and condition to provide needed fire reserves, and water supplies need to be able to provide the needed capacity to fight fires.

Continual maintenance (i.e., valve exercising, flow testing, general repairs, etc.) and replacement of fire hydrants is essential for effective fire protection and to avoid problems caused by frozen or buried fire hydrants during the winter months. Fire hydrant maintenance and repair is an essential part of annual operating budgets for all water suppliers as well as their capital improvement plans. While firefighters are the primary operators of fire hydrants, water utilities are typically responsible for their maintenance—maintenance that is supported through water bills. Operational budgets need to be maintained while infrastructure replacement budgets are funded.



Severely tuberculated pipe can harbor bacteria and put public health at risk.



Broken or buried hydrants pose a significant public safety risk.

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- ✓ Local governments and their ratepayers cover 90 percent of the costs to build, operate, and maintain public water systems. But, as older systems deteriorate and water quality rules tighten, local budgets simply cannot keep pace.
- ✓ Changes in the federal Safe Drinking Water Act will require most water systems to make major improvements to their water treatment plants in the next 10 years.
- ✓ Funding to replace aging pipes, facilities, and other parts of our water infrastructure systems is a critical issue.
- ✓ Between FY2007 and FY2018, approximately \$871 million is needed for reinvestment in the Metropolitan Boston drinking water infrastructure.
- ✓ It is estimated that 57,400 jobs are created for every \$1 billion spent on the drinking water infrastructure. This figure includes all jobs created directly and indirectly from drinking water infrastructure-related construction projects.

Failure to properly maintain this portion of the water infrastructure can also have additional financial costs to Massachusetts homeowners and businesses. A deficient water supply infrastructure in any community could increase fire insurance rates for residents and businesses.

Essential To Economic Growth

Clean and sufficient drinking water is critical to the day-to-day operations of existing businesses and to the viability of new commercial enterprises or residential developments. Businesses must take into consideration the availability and quality of water when determining where to locate their offices or manufacturing facilities. The availability of water resources and service, via an adequate infrastructure, has a profound effect on job creation.

A scarcity of water resources and inadequate infrastructure can hold up multi-million dollar developments—commercial or residential—placing a severe strain on local economies.

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Recommendations

The Congressional Budget Office (CBO) estimates that if needed drinking water infrastructure improvements were made solely from revenue raised from water rates, those water rates would have to increase 1.62 - 3.48 percent per year from 1999 to 2019. This is an increase of 35 to 90 percent! Therefore, more state and federal assistance such as:

- Increasing the Massachusetts Drinking Water SRF and/or forming a new Drinking Water Trust Fund,
- Making financing mechanisms more attractive by committing to grants and very low or negative-interest loans,
- Making engineering, in addition to the planning and construction of water systems, eligible for all loans, grants, and additional funding mechanisms,
- Providing clear eligibility of projects to repair, replace, or rehabilitate drinking water infrastructure,
- Providing funds for water conservation programs,
- Allowing universal eligibility of all water systems, both public and investor-owned, regardless of size,
- Having the ability to make grants or loans in any combination and to use other financing tools to leverage public and private capital,
- Establishing reasonable terms and conditions such as demonstration of system viability and ability to repay a loan,
- Establishing streamlined procedures for those accessing the funds, and
- Streamlining programs for delivery of assistance and allowing alternative procurement procedures that save money.

...are all needed to give drinking water suppliers across the commonwealth the resources necessary to maintain, rehabilitate, and construct adequate water supply systems to help maintain the viability of our economy, and ensure public health and safety are protected well into the future.

Protection and preservation of our drinking water sources and infrastructure is an investment in the future of Massachusetts that deserves to be given high priority.

Massachusetts Infrastructure Investment Coalition – Infrastructure Status Report

Massachusetts Drinking Water:

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The **Massachusetts Infrastructure Investment Coalition** is identifying the long-term needs for infrastructure investments to support economic development and improve the quality of life for the citizens of Massachusetts. The Infrastructure Status Report for **Massachusetts Drinking Water** was prepared to provide information about the investment requirements for Massachusetts drinking water infrastructure. The coalition is currently preparing status reports for other infrastructure elements including: **Aviation, Bridges, Dams, Energy, Government Facilities, Hazardous Waste, Homeland Security, Housing, Navigable Waterways, Ports and Harbors, Railroads (Freight), Roadways, Schools, Transit (Rapid/Bus/Commuter Rail), Telecommunications, and Wastewater**. These reports are available at www.engineers.org.

Massachusetts Infrastructure Investment Coalition

c/o The Engineering Center
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Boston, MA 02108-3616
www.engineers.org

**Aviation – Bridges – Dams – Drinking Water – Energy – Government Buildings - Hazardous Waste – Homeland Security –
Housing - Navigable Waterways – Ports and Harbors – Railroads (Freight) – Roads and Highways - Schools –
Transit (Rapid/Bus/Commuter Rail) – Telecommunications - Wastewater**

The Massachusetts Infrastructure Investment Coalition is supported by:

- A Better City
- American Planning Association/Massachusetts Chapter
- American Council of Engineering Companies of Massachusetts
- American Public Works Association of New England
- Associated Builders and Contractors of Massachusetts
- Associated General Contractors of Massachusetts
- Associated Subcontractors of Massachusetts
- Boston Society of Civil Engineers Section/ASCE
- Construction Industries of Massachusetts
- Environmental Business Council of New England
- LSP Association
- Massachusetts Association of Land Surveyors & Civil Engineers
- Massachusetts Highway Association
- Massachusetts Municipal Association
- MassInsight Corporation
- Massachusetts Water Pollution Control Association
- National Association of Industrial and Office Properties - Massachusetts Chapter
- New England Water Environment Association
- New England Water Works Association
- North Central Massachusetts Chamber of Commerce
- Rasky Baerlein Strategic Communications Inc.
- The Engineering Center
- Utility Contractors Association of New England
- Women's Transportation Seminar - Boston Chapter
- 495/MetroWest Corridor Partnership