STAN FORMAN PHOTO COURTESY WCVB/WCVB.COM

A Boston Public Works truck gets stuck in a sinkhole on Washington Street due to a water main break in January.

Our Aging Water Infrastructure Is Buried, But Must Not Be Forgotten

By Jamie Eldridge and Carolyn Dykema

With shrinking resources at the federal level, it's clear that state and local governments need to become more innovative and collaborative to protect and improve the quality of life for the people we serve. As we engage in important conversations about how to allocate and prioritize resources, it's crucial that water infrastructure, both investments and reforms, be at the top of the list.

With the establishment of the Water Infrastructure Finance Commission in 2010, Massachusetts joined the national conversation about how to sustain water infrastructure that provides safe, affordable water to residents, protects the environment, and allows for economic growth. The commission, which we chaired, built consensus on proposals that address longstanding and significant concerns about the condition of our water infrastructure and its ability to meet our current needs and the needs of future generations. The commission's recommendations were clear and strong: We need to take action and make real progress. It's crucial that state and municipal leaders from across Massachusetts be ready to act on legislative proposals and local initiatives that begin to address this "hidden" infrastructure that is so often taken for granted.

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A Tipping Point

The Water Infrastructure Finance Commission conservatively estimates that an

additional $200 million per year over the next twenty years—combined with local rate increases—is needed to repair the aging water systems in Massachusetts. This is consistent with a recent U.S. Environmental Protection Agency finding that water systems across the nation need about $384 billion in capital investments through 2030. The largest portion of that—$247.5 billion—should go to replacing aging pipes.

What does this mean for residents and municipalities? In some cases, the results of neglected infrastructure are immediate and urgent, such as burst water mains. Pick up a local newspaper and you're sure to see the disruption these main breaks cause to homes and businesses. The price tag for these urgent repairs far surpasses the cost of regular maintenance, and if the age of our water infrastructure is any indication, burst pipes will be occurring with greater and greater frequency, placing immediate and disruptive demands on municipal budgets and staff. Long-term planning and investment is the most prudent and cost-effective solution.

In other cases, the need for investment is about addressing a longer-term environmental issue, such as wastewater contaminants degrading oceans and surface waters, as is the case on Cape Cod. In yet other situations, it's about turning away jobs because existing water infrastructure cannot support new development.

Also on the horizon are new challenges that will require investments. Increasingly severe storm events will require that we better manage stormwater to prevent flooding. And as a coastal state, we need to build more "resilient" infrastructure that can mitigate potentially devastating effects of severe storms like Hurricane Sandy.

As local and state leaders, we need to do a better job educating our constituencies about this issue. Many people take water for granted, but polls also show that if concerns about access to or quality of water are brought to their attention, they will respond. One of the best stories we've heard is of a public works chief who brought a corroded water main to town meeting. Once the community saw its condition, they then stood behind his request for additional investment.

The state and federal governments also need to be better partners with our communities, providing more funds for water infrastructure to those communities that are committed to investing in infrastructure locally.

Smart Investment

Solid planning and preparation go a long way toward getting the biggest value for the dollar, yet surveys of water districts across the state have shown a wide variation in efforts to manage, plan for, and pay for water infrastructure. Pending water infrastructure legislation would require the state to provide information to cities and towns about best practices along with funding for long-term capital planning, which is especially challenging for smaller communities, which don't benefit from financial economies of scale and often lack planning resources. Establishing an enterprise or similar set-aside fund should be the standard for communities to save for water investments over the long term. The set-asides should be increased gradually for future investments while minimizing "rate shock"—large rate jumps that are burdensome and alarming to taxpayers.

There is also room for improvement in coordinating investments. Legislators and local officials alike hear frustration from constituents about newly paved roads that are dug up to repair underlying infrastructure. "Why isn't there better coordination?" they ask. There should be. Providing municipalities with additional financial resources that will allow for coordinated projects, combined with resources for better long-term planning, will go a long way toward maximizing the value of our investments.

New technologies and new approaches to water management also hold the potential for more cost-effective water infrastructure. Pending legislation provides financial incentives for towns to take a second look at these alternative infrastructure approaches, which could allow us to reap the benefits that innovative and environmentally friendly new water technologies can have on our pocketbooks as well as our planet.

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Excerpts From *Massachusetts's Water Infrastructure: Toward Financial Sustainability*

2012 REPORT OF THE
WATER INFRASTRUCTURE
FINANCE COMMISSION

"Clean water is perhaps our most precious commodity and assuredly our most recycled resource. Our water supply, wastewater treatment, and stormwater management protect our health, keeping us safe from deadly waterborne diseases. The availability of high quality water is an important consideration for many businesses, including life sciences and manufacturing. A high-pressure water system allows us to put out fires, and healthy rivers, lakes and wetlands free from pollution are critical for a thriving natural environment. …

"Our aging water infrastructure system suffers from a lack of investment, delayed maintenance and insufficient resources. Hundreds of miles of pipes are kept in service far past their useful life, leading to lost water and sewage through underground leaks and, in the worst case, water main breaks. … Many municipal treatment plants are in need of updating to meet current public health and environmental guidelines. …

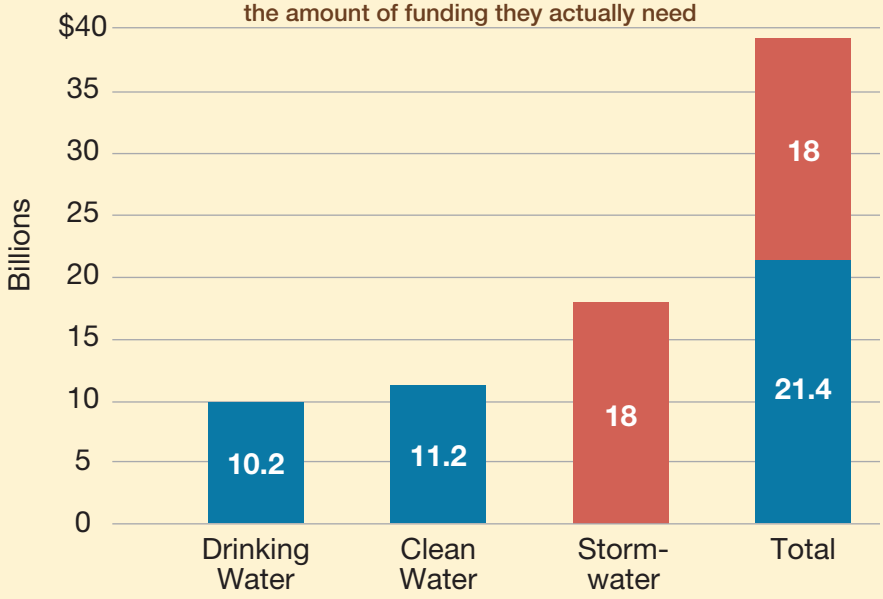
"A significant increase in spending above current levels will be necessary to maintain current levels of service and sustain necessary infrastructure growth. …

"The public is often unaware of the true costs of fully supporting, operating, maintaining and investing in our water infrastructure. At the same time, consumers generally underestimate the value of water in protecting public health and safety, promoting economic vitality, creating jobs, and preserving our environment. …

"The public and policymakers at all levels often misunderstand the consequences of failing to invest, from the high costs of deferred maintenance and emergency repairs to the missed opportunity to grow our economy by strengthening our infrastructure."

Water Infrastructure Funding Gap

Difference between current funding for the state's water, wastewater and stormwater infrastructure and the amount of funding they actually need



Source: Water Infrastructure Finance Commission, 2012

Note: Estimates include capital investment, repair and replacement, operations, maintenance and debt service, but they do not include the cost of evolving regulatory requirements or investments to accommodate economic growth. The estimates, therefore, are more likely to understate the gap than to overstate it.

OUR AGING WATER INFRASTRUCTURE

Link to the Economy

Tourism is a $16.5 billion industry in Massachusetts, providing 123,000 jobs and generating $1.1 billion in tax revenue. But many of our waterfront areas that attract tourists, from Cape Ann to Cape Cod, are at risk of being degraded because of insufficient wastewater disposal infrastructure. The same is true for many lakes and ponds from Metrowest to the Berkshires.

The state's biotech industry, which attracts businesses and talent from all over the world, is heavily reliant on clean water and the infrastructure that brings it to and from their facilities. Investments in maintaining and expanding this infrastructure are not only critical to retaining the biotechnology companies that are currently here, but can be a competitive advantage in attracting new firms that need water and see Massachusetts as a water-rich state compared with the growing number of states in the South and West that face increasing water restrictions.

Recommendations of the Water Infrastructure Finance Commission

1. Increase funds available for water-related infrastructure at all levels.

- Sustain current programs and investments at the state and federal level, including in particular state and federal contributions to the Water and Sewer State Revolving Funds.
- Establish a new trust fund, to be funded annually at $200 million and used for a mixed program of direct payments to cities and towns, low-interest loans, and grants.
- Create incentives for all communities, authorities and districts to use rate structures that reflect the full cost of water supply and wastewater treatment.

2. Reduce costs and find efficiencies.

- Provide strong incentives for municipalities, districts and authorities to use best management practices.
- Encourage enterprise funds for stormwater mitigation.
- Encourage appropriate regional solutions, starting with management and technical assistance and followed where appropriate with system integration.
- Encourage sustainable infrastructure.
- Use a watershed approach when making funding decisions.
- Encourage efficient water and energy use.
- Encourage strategic public-private partnerships.
- Require adoption of best management practices in applications for state revolving funds and other state grant loans.
- Assist towns in the adoption of best management practices through changes in law, technical assistance and other incentives.

3. Assist municipalities, districts and authorities in retiring their existing debt

- Commit to newly structured debt assistance program funded at $50 million to $60 million annually through the General Fund.

State funding to support local infrastructure projects creates jobs and helps to prime the pump for expansion in an economy that seems to be emerging from recession. These jobs are across a broad spectrum, including construction, engineering, manufacturing and planning. As state revenues make a slow climb, what better way to invest these dollars than in job-creating projects that will serve as the foundation for even more robust future economic growth?

A new initiative to build a water innovation cluster also holds promise for the expansion of the Massachusetts economy. A market survey of the global need for water infrastructure shows a growing demand for water technology, doubling the market potential of this industry to more than $960 billion over the next twenty years. With its remarkable scientific, innovation, academic and capital assets, Massachusetts is poised to meet the global need for new water infrastructure solutions, while serving as a pilot location to solve many of our water challenges here at home.

The challenges are many, but we know that Massachusetts is characteristically ready to meet them. Legislation that recently passed the Senate and is now in the House would be a big step forward. Working together, federal, state and municipal leaders can and must take continued action on our crucial water infrastructure. The benefits are many, not the least of which is the clean water legacy we will leave to our children.

The Water Infrastructure Finance Commission report can be found at www.senatoreldridge.com/wp-content/uploads/2010/11/WIFC_Report.pdf.

PHOTO COURTESY MWRA ADVISORY BOARD

Some pipes still in use in Massachusetts resemble this heavily corroded, four-inch cast iron water main, which was installed in 1894 and was recently removed from the Massachusetts Water Resources Authority system.

Cost challenges

1. Aging systems
2. Environmental and public health concerns
3. Lack of state control over Clean Water permits
4. Security and redundancy needs
5. Rising costs of energy, chemicals and labor
6. Inadequate water system efficiency
7. Cost of debt service

Revenue challenges

1. Declining state and federal aid
2. Rates that don't cover full cost of service
3. Conservation reduces revenue
4. Affordability must be considered in setting rates

Source: Massachusetts's Water Infrastructure: Toward Financial Sustainability

4. Address the issue of affordability.

- Identify creative ways to address affordability for municipalities and individual ratepayers. Measure their local contribution and commitment using a ratio of average household annual utility cost to the community's median household income.
- Consider making State Revolving Funds loan decisions more need-based by considering the median household income ratio in the selection criteria for loans, grants, interest rates and principal forgiveness.
- Seek new federal and state support to address affordability concerns.

5. Promote environmental sustainability.

- Encourage investments and regulations that are aligned with environmentally sustainable principles.
- Increase regulatory flexibility to better direct funding to projects that deliver the highest public benefit.

6. Promote innovation.

- Allocate resources for programs that mitigate the inherent risks in innovation by supporting pilot projects, proof-of-concept projects and new technology.
- Provide technical assistance to communities interested in innovative approaches.
- Reduce regulatory barriers to innovation.
- Implement alternative analyses that put innovative solutions on an equal footing with traditional approaches.
- Consider ways to facilitate regulatory compliance and reduce third-party litigation to address the economic risk of pilot innovative projects.
- Invest in Massachusetts as a hub of innovation in the field of water, wastewater and stormwater management and technology.
- Harness the state's educational strengths to train engineers, scientists, researchers and workers to be at the forefront of innovative water management.

7. Continue the work of the Water Infrastructure Finance Commission.

- Fund an asset-based analysis of the gap between projected needs and revenues in order to provide a baseline of information on costs and investments in Massachusetts.
- Invest in consumer education about the true costs and value of our water infrastructure.