September 2016

America's Aging Water Infrastructure

America has a water problem. Our nation's treatment works and water systems are failing and impacting our communities. All across America, we are faced with massive challenges to replace critical water and wastewater infrastructure. The American Society of Civil Engineers estimates $3.6 trillion would need to be invested into U.S. infrastructure by 2020 just to raise the country's support systems to acceptable levels. Capital investment needs for the nation's wastewater and stormwater systems are estimated to total $298 billion over the next twenty years. In parts of the country, unmanaged stormwater threatens the vitality of rivers and streams, while jeopardizing population health and local economies. And much of our drinking water infrastructure is nearing the end of its useful life. There are an estimated 240,000 water main breaks per year in the United States. Assuming every pipe would need to be replaced, the cost over the coming decades could reach more than $1 trillion, according to the American Water Works Association (AWWA). Our nation's water problem is varied and is growing worse. We must act before the next failure in water infrastructure endangers consumers and consumes another American community.

Background

In 1972, Congress amended the Federal Water Pollution Control Act, thereafter commonly referred to as the "Clean Water Act" (CWA). In addition to establishing a system by which state and local governments would be responsible for implementing federal standards, the act updated the construction grants programs through which municipalities received funds to upgrade their publicly-owned treatment works (POTWs), or sewer systems, to comply with the new federal law.

In 1986, Congress and President Ronald Reagan, concerned about the cost of the grant program, replaced this funding mechanism with the State Revolving Loan Fund (SRF). Under the SRF, the federal government provides a capitalization grant to each state and territory based on a statutory formula. The state then loans the funds to municipalities for upgrades and repairs of POTWs, or sewer systems and their adjoining infrastructure.

Congress passed the Safe Drinking Water Act amendments in 1996 to create the drinking water SRF, which is similarly capitalized with federal grants to states who subsequently loan the money to community water systems for necessary improvements. The drinking

BIPARTISAN POLICY CENTER

water SRF specifically funds improvements to systems that distribute water to users and that must meet federal requirements regarding contaminants, like lead.

According to the Environmental Protection Agency's (EPA) 2002 Gap Analysis, from 1982-2002 communities spent $1 trillion on drinking water and wastewater treatment and disposal.[1] However, this has proven insufficient to keep up with the public health and safety concerns that arise as these facilities age.

The nation has 14,478 POTWs that serve over 238 million Americans, or 76 percent of the U.S. population. POTWs have a 20 to 50-year life cycle; pipes can range from 15 to 100 years old depending on conditions, although some older northeastern cities operate with pipes that are 200 years old.[2] The EPA also notes that population shifts from the Northeast to the South and West have left some areas with a declining population to pay for upgrades and other areas with an immediate need to expand service. Notably, costs associated with the expansion of plants due to population growth are not eligible for the SRFs.

Despite the higher standards mandated since 1972, 4.1 million Americans still do not have access to the most basic level of sewage treatment[3] in which wastewater (or sewage) is treated. In fact, the American Society of Civil Engineers estimates that aging pipes and inadequate capacity resulted in the discharge of 900 billion gallons of untreated sewage and wastewater into U.S. waterways each year.[4]

In addition to the miles of sewer pipes, the U.S. has 1.2 million miles of water supply mains—26 miles of water mains for every mile of interstate highway.[5] There are approximately 52,000 community water systems (CWSs) and 21,000 not-for-profit community water systems (including schools and churches). There are 611 systems serving over 100,000 people. These large systems account for just 1.2 percent of systems but 39 percent of the need. In contrast, there are 41,000 systems serving less than 3,300 people that account for 83 percent of systems and 17 percent of the need.[6] This diversity in system size complicates efforts to create a comprehensive financing system that can adequately address the needs of various systems.

The Need

Each state maintains a priority list for its SRFs, which includes every project in the state that is in need of a loan from the fund. However, it is by no means a comprehensive list of all needed projects, as many systems defer upgrades in the belief that Congress will one day bring back the construction grants program. Raising water or sewer rates is rarely a viable option for these systems because of the impact rate increases would have on low-income customers. Additionally, large systems are often not reflected on a state's priority list due to their ability to secure low interest rates on the bond market.

While the state lists are informative, they are incomplete. We therefore must rely on quadrennial state surveys conducted by the EPA to determine the level of need nationwide. According to the EPA's most recent needs survey, over the next 20 years the U.S. must invest $271 billion for wastewater/stormwater upgrades and $384 billion for drinking water upgrades.

In fact, stormwater is one of the largest expenses now facing many local communities. The EPA's survey only accounts for 21 percent of stormwater needs.[7] There have been long-standing issues between the states and the EPA regarding the types of documentation needed to justify costs for the survey. States have struggled to adequately explain both the water quality benefits and costs of a stormwater project. According to the American Water Works Association (AWWA), the U.S. needs to invest over $1 trillion over 25 years to replace all of its aging *drinking water* pipes alone—to say nothing of sewer lines, stormwater or the plants themselves.[8] AWWA includes pipes needed for growth, a need not reflected in the EPA's needs surveys.

In addition to the lack of a clear national picture, the public is woefully uninformed about the state of the nation's water infrastructure. For example, water main breaks are largely reported for the effect they have on traffic and not for the amount of water lost or the cost to recoup that water. The public takes for granted that when they turn on their tap, clean, safe water will

come out. It is viewed more as a certainty rather than as a commodity that must be monitored, conserved, and properly valued.

Current Federal Programs

In addition to state and local funds, the latter of which is derived largely from fees on wastewater and water services, the federal government has a variety of funding mechanisms. The following chart provides a synopsis of the federal programs.

Federal Programs that Fund State and Local Water/Wastewater Infrastructure[9]

EPA, Clean Water State Revolving Fund	Grants funds to states that provide loans to communities of all sizes for wastewater treatment infrastructure, nonpoint pollution management, and estuary programs.
EPA, Drinking Water State Revolving Fund	Grants funds to states that provide loans to communities of all sizes for drinking water infrastructure.
Department of Agriculture, Rural Utilities Service, Water and Waste Disposal Program	Provides funding for water and wastewater infrastructure projects in communities with populations of less than 10,000.
Department of Housing and Urban Development, Community Development Block Grant	Provides block grant funds to states for distribution to communities, and to certain metropolitan areas; communities use funds for a broad range of activities including water and wastewater infrastructure. According to department officials, about 10 percent of funding is used for this purpose.
Department of Commerce, Economic Development Administration, Public Works and Economic Development Program	Provides grants to small and disadvantaged communities to construct public facilities, including drinking water and wastewater facilities, to alleviate unemployment.
U.S. Army Corps of Engineers	Provides assistance for water and wastewater infrastructure projects, typically for specific locations as authorized by Congress.
Department of the Treasury, Internal Revenue Service	Administers provisions for tax-exempt bonds issued by local governments to finance qualified projects.
Bureau of Reclamation	Provides assistance for water supply projects through individual projects and under its rural water supply program.
Indian Health Service	Provides funding for water and wastewater infrastructure on tribal lands.

Public-Private Partnerships

A public-private partnership (P3) is an alternative model for delivery and financing of infrastructure projects. In a P3, a public agency enters into an agreement with a private consortium (typically including one or more equity investors along with design, engineering, construction, and operating companies) for the construction or rehabilitation and long-term operations and maintenance of an infrastructure facility, such as a treatment plant, a bridge, or a rail line. Certain project risks, such as cost overruns or schedule delays, can be transferred to the private partner; in some cases, the entire system is transferred to the private partner in a full privatization. In a P3, the private consortium often finances the upfront costs of the project with a promise of repayment with interest over an extended period of time.

In the water sector, repayment is typically derived from fees paid by consumers for water and sewer services. While a P3 can in some cases deliver more value than a traditional procurement, municipalities tend to consider them for water infrastructure only when their system has failed or they are unable to raise additional revenues on their own through bonding. In some cases, they may lack the upfront funding to tackle an immediate problem, be it a sewer overflow or, as in Flint, Michigan, a violation of federal drinking water standards.

The P3 model can effectively finance both the plants themselves and underground infrastructure, although pipes are accompanied by unique challenges including the need for rights of way, avoidance of gas and cable lines, and the obstruction of roads or public transit. While replacing pipes is the most expensive aspect of water infrastructure projects, it is not always readily apparent to a municipality what role private investors could play. In addition, P3s in the water sector are often met with concern among the general public about having such a vital service controlled by a private entity. As a result, P3s have been underutilized in the water sector.

Conclusion

Given the severity of the challenge and the wide variety of systems at risk, we need a national, strategic conversation about how to address the health and environmental threats that are looming in communities across the country.

Earlier this year, BPC's Executive Council on Infrastructure issued several recommendations to help attract additional private capital to modernize the nation's infrastructure, including water systems and POTWs. Following the release of the recommendations, BPC has embarked on an effort to dive further into the water infrastructure funding gap which has been authenticated by both the EPA and the Government Accountability Office. In addition to identifying the best ways for the sector to attract private capital, the project will explore whether current federal programs are the most efficient and effective way to assist communities with meeting this critical—but expensive—public need.

Endnotes

1. "The Clean Water and Drinking Water Infrastructure Gap Analysis," Environmental Protection Agency. 2002. Page 8. (EPA-86-R-02-020).
2. Ibid.
3. "Clean Watersheds Needs Survey Report to Congress," Environmental Protection Agency. 2012. Page 25. (EPA-830-R-15005).
4. "Failure to Act: The Economic Impact of Current Investment Trends in Water and Wastewater Treatment Infrastructure," American Society of Civil Engineers. 2011. Page 4.
5. "The Age of U.S. Drinking Water Pipes From Civil War Era to Today," Infographic. Circle of Blue. 2016. http://www.circleofblue.org/2016/world/infographic-the-age-of-u-s-drinking-water-pipes-from-civil-war-era-to-today.
6. "Drinking Water Infrastructure Needs Survey and Assessment Fifth Report to Congress," Environmental Protection Agency. 2013. Page 9. (EPA-816-R-13-006).
7. Clean Watersheds Needs Survey Report to Congress, page 19.
8. "Buried No Longer: Confronting America's Water Infrastructure Challenge," American Water Works Association. 2011. Page 10.
9. "Water Infrastructure: Approaches and Issues for Financing Drinking Water and Wastewater Infrastructure," Testimony of J. Alfredo Gomez before the House Committee on Appropriations' Subcommittee on Interior, Environment, and Related Agencies. March 13, 2013. http://www.gao.gov/assets/660/652976.pdf.

Notes

BIPARTISAN POLICY CENTER

The Bipartisan Policy Center is a non-profit organization that combines the best ideas from both parties to promote health, security, and opportunity for all Americans. BPC drives principled and politically viable policy solutions through the power of rigorous analysis, painstaking negotiation, and aggressive advocacy.

bipartisanpolicy.org | 202-204-2400
1225 Eye Street NW, Suite 1000 | Washington, DC 20005

@BPC_Bipartisan
facebook.com/BipartisanPolicyCenter
instagram.com/BPC_Bipartisan
flickr.com/BPC_Bipartisan

BPC Policy Areas

Economy

Energy

Finance

Governance

Health

Housing

Immigration

National Security

BIPARTISAN POLICY CENTER

1225 Eye Street NW, Suite 1000
Washington, DC 20005

202-204-2400
bipartisanpolicy.org