

2009

INFRASTRUCTURE FACT SHEET

America's drinking water systems face an annual shortfall of at least \$11 billion to replace aging facilities that are near the end of their useful lives and to comply with existing and future federal water regulations. This does not account for growth in the demand for drinking water over the next 20 years. Leaking pipes lose an estimated 7 billion gallons of clean drinking water a day.

WATER AND ENVIRONMENT

FACTS
ABOUT

DRINKING WATER

**RAISING THE
 GRADES**
SOLUTIONS
 THAT WILL WORK **NOW**

- A** = Exceptional
- B** = Good
- C** = Mediocre
- D** = Poor
- F** = Failing

AMERICA'S
 INFRASTRUCTURE
 G.P.A. **D**

ESTIMATED 5-YEAR FUNDING
 REQUIREMENTS FOR
**DRINKING WATER AND
 WASTEWATER**

Total investment needs
\$255 BILLION

Estimated spending
\$146.4 BILLION
 Projected shortfall
\$108.6 BILLION



- ★ **INCREASE** funding for water infrastructure system improvements and associated operations through a comprehensive federal program;
- ★ **CREATE** a Water Infrastructure Trust Fund to finance the national shortfall in funding of infrastructure systems under the Clean Water Act and the Safe Drinking Water Act, including storm-water management and other projects designed to improve the nation's water quality;
- ★ **EMPLOY** a range of financing mechanisms, such as appropriations from general treasury funds, issuance of revenue bonds and tax exempt financing at state and local levels, public-private partnerships, state infrastructure banks, and user fees on certain consumer products as well as innovative financing mechanisms, including broad-based environmental restoration taxes to address problems associated with water pollution, wastewater management and treatment, and storm-water management.

CONDITIONS

The nation's drinking-water systems face staggering public investment needs over the next 20 years. Although America spends billions on infrastructure each year, drinking water systems face an annual shortfall of at least \$11 billion in funding needed to replace aging facilities that are near the end of their useful life and to comply with existing and future federal water regulations. The shortfall does not account for any growth in the demand for drinking water over the next 20 years.²

Of the nearly 53,000 community water systems, approximately 83% serve 3,300 or fewer people. These systems provide water to just 9% of the total U.S. population served by all community systems. In contrast, 8% of community water systems serve more than 10,000 people and provide water to 81% of the population served. Eighty-five percent (16,348) of nontransient, noncommunity water systems and 97% (83,351) of transient noncommunity water systems serve 500 or fewer people. These smaller systems face huge financial, technological, and managerial challenges in meeting a growing number of federal drinking-water regulations.

In 2002, the U.S. Environmental Protection Agency (EPA) issued The Clean Water and Drinking Water Infrastructure Gap Analysis, which identified potential funding gaps between projected needs and spending from 2000 through 2019. This analysis estimated a potential 20-year funding gap for drinking water capital expenditures as well as operations and

maintenance, ranging from \$45 billion to \$263 billion, depending on spending levels. Capital needs alone were pegged at \$161 billion.²

The Congressional Budget Office (CBO) concluded in 2003 that "current funding from all levels of government and current revenues generated from ratepayers will not be sufficient to meet the nation's future demand for water infrastructure." The CBO estimated the nation's needs for drinking water investments at between \$10 billion and \$20 billion over the next 20 years.³

In 1996, Congress enacted the drinking-water state revolving loan fund (SRF) program. The program authorizes the EPA to award annual capitalization grants to states. States then use their grants (plus a 20% state match) to provide loans and other assistance to public water systems. Communities repay loans into the fund, thus replenishing the fund and making resources available for projects in other communities. Eligible projects include installation and replacement of treatment facilities, distribution systems, and some storage facilities. Projects to replace aging infrastructure are eligible if they are needed to maintain compliance or to further public health protection goals.

Federal assistance has not kept pace with demand, however. Between FY 1997 and FY 2008, Congress appropriated approximately \$9.5 billion for the SRF. This 11-year total is only slightly more than the annual capital investment gap for each of those years as calculated by the EPA in 2002.

ORANGE COUNTY, CA ★ Groundwater Replenishment System

The California Department of Water Resources predicts that by 2020, the entire state will experience water shortages equal to the needs of 4 to 12 million families of four for one year. To meet growing demand and reduce reliance on water imported from northern California and the Colorado River, the Orange County Water District developed the Groundwater Replenishment (GWR) System that takes highly treated sewer water and purifies it to levels that meet state and federal drinking water standards. GWR System water will be between 35% to 75% cheaper than water produced by seawater desalination and the purification process will consume about half the energy. *Photos courtesy of Orange County Water District.*



TABLE 2.1 ★ Design Life of Drinking Water Systems

COMPONENTS	YEARS OF DESIGN LIFE
Reservoirs and Dams	50–80
Treatment Plants—Concrete Structures	60–70
Treatment Plants—Mechanical and Electrical	15–25
Trunk Mains	65–95
Pumping Stations—Concrete Structures	60–70
Pumping Stations—Mechanical and Electrical	25
Distribution	60–95

SOURCE US EPA Clean Water and Drinking Water Infrastructure Gap Analysis Report, September 2002

TABLE 2.2 ★ Water Usage: 1950 and 2000

	1950	2000	PERCENT CHANGE
Population (Millions)	93.4	242	159%
Usage (Billions of Gallons per Day)	14	43	207%
Per Capita Usage (Gallons per Person per Day)	149	179	20%

SOURCE US EPA Clean Water and Drinking Water Infrastructure Gap Analysis Report, September 2002

RESILIENCE

Drinking water systems provide a critical public health function and are essential to life, economic development, and growth. Disruptions in service can hinder disaster response and recovery efforts, expose the public to water-borne contaminants, and cause damage to roadways, structures, and other infrastructure, endangering lives and resulting in billions of dollars in losses.

The nation's drinking-water systems are not highly resilient; present capabilities to prevent failure and properly maintain or reconstitute services are inadequate. Additionally, the lack of investment and the interdependence on the energy sector contribute to the lack of overall system resilience. These shortcomings are currently being addressed through the construction of dedicated emergency power generation at key drinking water utility facilities, increased connections with adjacent utilities for emergency supply, and the development of security and criticality criteria. Investment prioritization must take into consideration system vulnerabilities, interdependencies, improved efficiencies in water usage via market incentives, system robustness, redundancy, failure consequences, and ease and cost of recovery.

The question is not whether the federal government should take more responsibility for drinking water improvements but how it should take more responsibility.

LOUISVILLE, KY ★ American Recovery and Reinvestment Act Funding

The Louisville Water Company has proposed \$11 million in projects that could be funded as part of the 2009 American Recovery and Reinvestment Act (P.L. 111-005). The projects would rehabilitate 75 miles of water main to extend the useful life of the system and reduce water main breaks. In addition, 9.5 miles of water main would be replaced to improve water quality, fire hydrant flow and reduce maintenance. Together, the projects would support 101 jobs.

PORT ANGELES, WA ★ Downtown Water Main Project

In 2008, the City of Port Angeles completed a project to replace the water mains and sidewalks in the downtown area. The replacement water mains bring the city's downtown area to a service level that meets current fire flow standards, reduces seismic risks and helps prevent water main failures due to age. The original water mains were installed in 1914. In conjunction with the water main replacement, many sidewalks were replaced with pavers that enhance the downtown appearance. Also, new conduit and wiring was installed for street and pedestrian lighting. *Photos courtesy of the City of Port Angeles.*



CONCLUSION

New solutions are needed for what amounts to nearly \$1 trillion in critical drinking water and wastewater investments over the next two decades. Not meeting the investment needs of the next 20 years risks reversing public health, environmental, and economic gains of the past three decades.

Without a significantly enhanced federal role in providing assistance to drinking water infrastructure, critical investments will not occur. Possible solutions include grants, trust funds, loans and incentives for private investment. The question is not whether the federal government should take more responsibility for drinking water improvements but how it should take more responsibility.

The case for federal investment is compelling. Needs are large and unprecedented; in many locations, local sources cannot be expected to meet this challenge alone, and because waters are shared across local and state boundaries, the benefits of federal help will accrue to the entire nation. Clean and safe water is no less a national priority than are national defense, an adequate system of interstate highways, and a safe and efficient aviation system. These latter infrastructure programs enjoy sustainable, long-term federal grant programs; under current policy, water and wastewater infrastructure do not. ★

SOURCES

- 1 Congressional Research Service, *Safe Drinking Water Act: Selected Regulatory and Legislative Issues*, April 2008.
- 2 U.S. Environmental Protection Agency, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, September 2002.
- 3 U.S. Congressional Budget Office, *Future Investment in Drinking Water and Wastewater Infrastructure*, May 2002.
- 4 G. Tracy Mehan, Testimony before the Subcommittee on Water Resources and Environment, U.S. House Transportation and Infrastructure Committee, February 2009. <http://transportation.house.gov/hearings/hearing.aspx>.