

Investment in Infrastructure to Support Climate Change Resilience: The Sooner We Act, The Lower The Cost And Risk

No other resource is likely to be more affected by climate change than water, as precipitation patterns change, sea levels rise, and water quality degrades. The nation's drinking water and wastewater infrastructure is already in need of significant investment to maintain current levels of service over the coming decades. Climate change will stress the system further.

Adaptation approaches will in many cases require additional resources. Federal, state and local funding must continue to be directed to the Water Sector to adapt infrastructure and water supplies to climate change.¹ Two principal goals for water and wastewater utilities regarding impacts due to climate change are: to assess risk and uncertainty due to climate change; and to develop and take actions to improve resiliency and sustainability in utility facilities and overall utility management.²

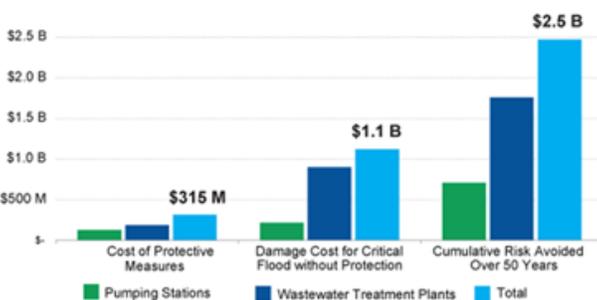
Because any delay in action will lead to higher future costs, AWWA and WEF recommend:

- Continued Federal funding for sound science to ensure stewardship of our planet and economic growth for future generations, including the development of more refined climate models and tools to address the impacts of climate changes on water quality, quantity, and demand at scales that are relevant to water and wastewater utilities
- Robust Federal funding for USEPA's State Revolving Loan Program and Water Infrastructure Financing and Innovation Act Loan Program
- Federal funding for resilient water infrastructure for collection, treatment, distribution of drinking water and wastewater, including addressing major contributions to climate change by making the Water Sector more energy efficient and minimizing greenhouse gas emissions
- Eliminate barriers to alternative financing and funding of water and wastewater infrastructure
- Encourage Integrated watershed management to facilitate holistic, cross disciplinary approaches to water management
- Encourage water reuse to assist communities dealing with decreased water supplies
- Promote green infrastructure to reduce capacity needs by keeping stormwater out of collection and treatment systems

Case Studies

Federal funding for water infrastructure, as well as policies that encourage investment in water infrastructure, will help enable the sector to adapt to climate change as efficiently as possible. The following examples demonstrate adaptation measures and cost savings through proactive investment.

New York City: Resiliency Plan: Summary of Costs



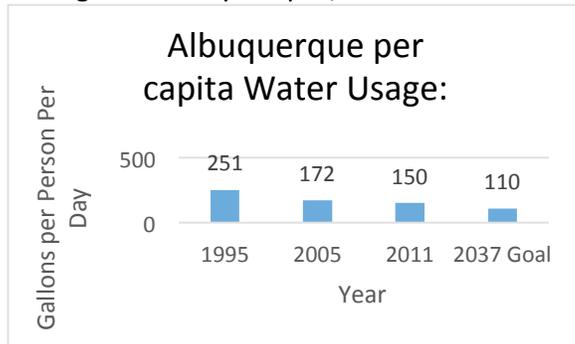
In New York City, for example, over \$1.1 Billion of vital infrastructure is at risk. The City is investing in ambitious protective measures, including pumping stations, wastewater treatment, and green stormwater infrastructure, to minimize the risk due to critical floods. **By investing \$315 Million** in the construction of strategic fortification of their system, **the City can save \$2.5 Billion** in emergency response costs over the next 50 years.³

¹ Excerpted from WEF Position Statement on Climate Change, Adopted by WEF Board of Trustees: February 5, 2010

² Excerpted from AWWA Position Statement on Climate Change, Approved by the Board of Directors Jan. 17, 2010. Revised Jan. 19, 2014

³ WEFTEC Workshop W13: Vulnerability & Risk Response to Climate Change (2015)

Drought - Albuquerque, New Mexico



Albuquerque, Bernalillo County, and ABCWUA have demonstrated that adapting to drought need not incur high costs. Several policies, programs, and ordinances encourage water-conserving landscaping and water-efficient appliances in new development. For example: Requiring low-flow toilets in all new residential construction and public buildings, and offering a rebate program for homeowners who buy high-efficiency toilets. Restricting the type of landscaping that can be used on new development and public properties. Encouraging compact development, which uses water more efficiently.⁴

Flooding And Extreme Precipitation - Kansas City, Missouri



Parts of Kansas City, Missouri are at a high risk of flooding from rivers and streams. The city's 100-year flood plain contains more than 2,000 buildings, and some businesses experience flooding of up to 10 feet every five years. The Wet Weather Solutions Program seeks to upgrade street and sewer infrastructure, improve water quality, and prevent flood damage. The program's Overflow Control Plan focuses on quick fixes from 2010 - 2020 and major structural and infrastructure changes from 2020 - 2035. The city completed a pilot project that included green infrastructure solutions like rain gardens, porous pavements, pavers, curb extensions, and bioretention basins. By the end of the Overflow Control Program, the city estimates that the current 6.4 billion gallons of citywide sewer overflow will be reduced to 1.4 billion gallons, saving substantial operating funds in cleanup/damage/grey infrastructure costs.^{4,5}

Sea Level Rise - San Francisco, California



San Francisco's innovative and aggressive climate change policies boosted the local economy while building resiliency in water sector. An early risk of sea level rise (SLR) to San Francisco is the potential for seawater to overtop into low-elevation fixed weirs in Combined Sewer Discharge (CSD) outfall structures ultimately entering wastewater treatment facilities and posing a risk of upsetting the wastewater treatment process due to increased salinity. In 2014, SFPUC installed its first backflow prevention device at the Baker Street CSD outfall structure. Additional installations are anticipated for other at-risk CSDs.⁶

Observed and Projected Climate Change in the United States: Some of the key findings from the 2014 National Climate Assessment⁷

Average annual precipitation has increased ~ 5% since 1900. Extreme precipitation events are projected to become more frequent and intense. Hurricane-associated storm intensity and rainfall rates are projected to increase. Global sea is projected to rise another one to four feet by 2100. Average temperature has increased by 1.3°F to 1.9°F since 1895; Temperatures are expected to continue to rise. Heat waves are projected to become more frequent and intense, especially in the West; Droughts in the Southwest are projected to become more intense. Cold waves have become less frequent and less intense, a trend that is projected to continue.

⁴ Smart Growth Fixes For Climate Adaptation And Resilience, EPA 231-R-17-001 January 2017 www.epa.gov/smartgrowth

⁵ <https://www.kcwaterservices.org/wp-content/uploads/2013/09/Roadshow-Website-Version.pdf>

⁶ Sea Level Rise Action Plan: Working Together To Build San Francisco's Resilience To Sea Level Rise, Mar. 2016 City And County Of San Francisco

⁷ Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds. Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program. 2014