

Addressing Water Scarcity: Future Plans for U.S. Water Reuse

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Although snow-capped mountains are visible from much of Denver where I live, [Colorado](#) is one of 40 states that anticipate water scarcity challenges in the next decade. The Water Quality & Health Council has written dozens of articles on drinking water quality and the public health imperatives of safe treatment, disinfection, storage, and distribution. Yet water quality goes hand in hand with water availability, use, [conservation](#), and increasingly—water *reuse*. A newly launched report and national effort led by the U.S. Environmental Protection Agency (EPA), the [Draft National Water Reuse Action Plan](#), is [making the news](#).



The plan succinctly puts these needs and connections into perspective: “Safe and reliable water supplies for human consumption, agriculture, business, industry, recreation, and healthy ecosystems are critical to our nation’s communities and economy.”¹ [Water scarcity](#) challenges are also global; two of the United Nations’ [Sustainable Development Goals](#) emphasize water reuse.

Despite being a relatively short document, the scope, research, and resource needs to act on even a portion of EPA’s draft Action Plan are daunting and would span years if not decades. It represents a U.S. *water sector* initiative and a host of stakeholders, including federal agencies like the U.S. Army Corps of Engineers, state and tribal partners, water utilities, and the water research community.

What Is Water Reuse?

Water reuse, also called water recycling or reclamation, has direct and indirect applications, depending on site-specific conditions and water quality needs. Common uses of reclaimed water include: agriculture and irrigation, potable water supplies, groundwater replenishment, and environmental restoration. In 2017, the Council toured the state of the art, Orange County (California) [Groundwater Replenishment System](#), which takes wastewater through successive layers of advanced treatment to recover water; applying these multiple barriers allows both replenishment of upstream groundwater supplies (indirect potable reuse) and a means to counter saltwater intrusion in coastal areas. But the reality is that we already practice indirect potable reuse on a daily basis because thousands of U.S. community drinking water systems are drawing water from rivers and streams that are receiving upstream treated (permitted) wastewater discharges.

Water Reuse Drivers, Sources, and Scalability

In certain places and situations across the United States, water conservation and efficiency efforts may not be enough to meet projected increases in water demand. In such cases, water management, agriculture, and industrial communities have already demonstrated the value of reusing water to help extend and sustain their supplies—especially when

¹ P. iii. EPA, 2019. *Draft National Water Reuse Action Plan*.

coordinated across larger scales like watersheds to regions. Specific drivers for water reuse include creating alternative water sources in response to droughts, reducing reliance on imported (purchased) water, accommodating population growth and urbanization, and substituting non-potable water for applications like landscaping. Current major sources of water for potential reuse include municipal wastewater, stormwater, agriculture runoff, and industry process water and cooling water.

Highlights from the Draft Water Reuse Action Plan

The draft Action Plan constitutes a tremendous online compendium of issues, ideas, challenges, and opportunities for the entire U.S. water sector. One common theme is developing an improved understanding of the nature and quality of water sources for potential reuse; another is meeting end user needs that achieve public, environmental health, and “fit-for-purpose” specifications. That is, the level of treatment needed to protect a given water reuse application, recognizing that it is not possible to eliminate all risks and that not all reclaimed water need be of drinking water quality.

The draft Action Plan also recognizes that different uses of reclaimed water will require a tailored public outreach and communications approach. Common concerns related to water reuse, specifically potable reuse, include: (1) outreach to address public health concerns and ensure the water is safe for its intended use (i.e., fit for purpose); (2) early engagement and education of consumers and communities; (3) trust in water authorities to provide reliable treatment; and (4) emotional responses based on visceral reactions rather than on facts (i.e., “toilet to tap” versus “judging water by its quality, not by its history”). Water reuse technologies can and often do produce consistently higher quality water than can be provided by conventionally sourced and treated drinking water systems, so communicating water quality and reliability of treatment are critical.

Taking Action on Water Scarcity and Reuse

EPA is taking public comments to help finalize the Action Plan, including identifying high-priority actions, developing implementation steps, and seeking leaders, partners, and collaborators. In addition to discussing the potential role of federal water-related programs like the Clean Water Act State Revolving Fund and the newer Water Infrastructure Finance and Innovation Act, the Action Plan states, “Assembling adequate project funding is crucial to the success of water reuse projects, and many reuse proponents have found access to funding to be a significant challenge...In addition to public funding options, water trading, market-based financing, and public-private partnership approaches can support reuse...Clarifying how these innovative financing approaches can be applied to water reuse projects will help build capacity to finance reuse and capture projects.”²

EPA aims to replace the traditional, fragmented, and “siloed” (i.e., organizationally isolated) approaches often applied to U.S. water resources management with broader, more comprehensive solutions and strategies to meet diverse water quality and quantity needs. A comprehensive approach that includes consideration of enhanced watershed management, conservation, and reuse is critical, as is adequate financing to ensure a safe, secure, and efficient water infrastructure. The Water Quality & Health Council applauds the vision and development of *Draft National Water Reuse Action Plan*, because the simple truth is that reuse will be an increasingly important part of both our water future and heritage.

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² P. 30. EPA, 2019. *Draft National Water Reuse Action Plan*.