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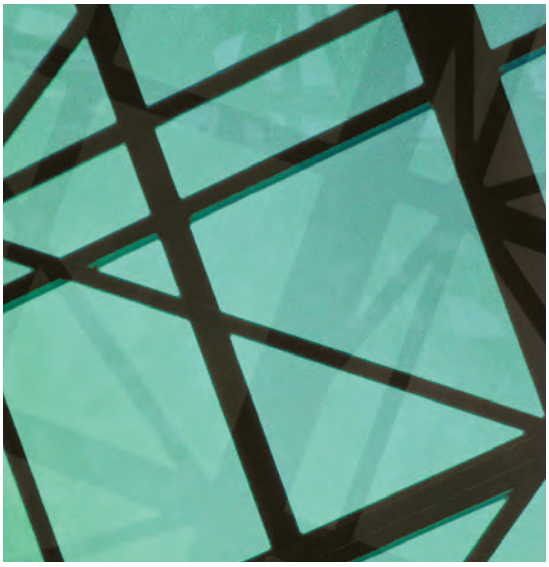
Consultative Council on: Efficient Use of Water



Fresh water is a finite, essential resource. The Environmental Protection Agency reports that 36 states expect to experience local, regional or statewide water shortages by 2013[1]. As the population grows and moves, especially to areas of water scarcity and declining water quality, the nation needs to understand the importance of using this most precious resource as efficiently as possible. To ensure our citizens can continue to access safe, clean water in buildings all across the country, the United States must establish a national water strategy—of which the most cost-effective component should be to reduce the amount of water being consumed.

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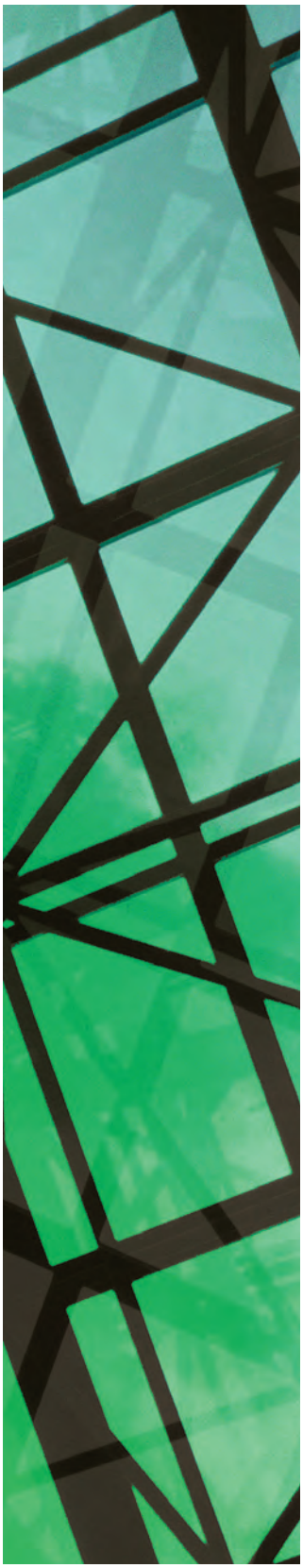

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The Need for Metering and Comprehensive Water Use Data

Managing water usage across the country requires that people understand how much water they are using and for what purpose. Currently, no system exists to provide clear benchmark data about the comprehensive water use by building for each distinct building type (residential, commercial, industrial, etc.). To get a clear picture requires more data on comprehensive water usage by building. As a first step, state and local governments immediately must require individual metering of water use for all buildings. Utilities have recently measured a clear relationship when implementing metering: water consumption has decreased 15 to 30% because customers are able to understand their commodity rates based on use.[2]

In addition, advanced metering and sub-metering technologies can provide even greater and much needed insight into *how* various building types utilize water. The industry requires such data in order to update plumbing codes to address such issues as pipe sizing and hot water system design. These adjustments in turn will result in significant water and energy savings throughout the entire life of a building.

Careful Consideration of Efficiency Methods Needed

Implementing water efficiency strategies without fully understanding the systemic implications, such as reducing flow in water supply pipes and sanitary waste systems, can result in unintended consequences. For example, intuitively reducing the diameter and length of the hot water pipes between the water heater or boiler and the point of use can improve water and energy efficiencies in buildings. However, reducing the diameter of water pipes in a building without understanding how water will be used in that building can have dangerous implications, including the potential for increased risk of hot water scalding users, excessively high flow velocities in water pipes, inadequate pressure, water hammer, unacceptable noise and premature leakage.

Water Infrastructure - Needs and Opportunities

The vast majority of the country's water and wastewater systems urgently need repair and replacement. According to Congressional Budget Office estimates from 2002, it will take $335 billion over the next 20 years to repair and update water distribution systems and an additional $300 billion to do the same for sewer systems. Every year that this problem continues unaddressed, the cost and impact of delay likely increases. However, this challenge brings with it significant opportunities to improve the economy.

Repairing the nation's crumbling water infrastructure will create tens of thousands of long-term American jobs for construction workers; civil engineers; manufacturers and operators of heavy construction equipment; and pipe and fitting manufacturers. For the most part, these jobs must remain in the United States and cannot be outsourced. The United States Conference of Mayors estimates that every job created through rebuilding water systems creates over 3.6 jobs elsewhere and every dollar invested in water infrastructure adds $6.35 to the national economy.

The Water / Energy Nexus

The connection between water and energy needs to be better understood and addressed on a national level. Electricity generation requires massive amounts of water; pumping and treating water requires electricity; and water heating in the nation's buildings uses natural gas, oil and electricity. The California Energy Commission found that 19% of the State's electric energy load comes from the pumping and treatment of drinking water and wastewater and 32% of its natural gas load is related to the heating of water by consumers. However, few other states have done this analysis and there has been no national research into this important area. America must develop a national policy on the interrelationship between energy and water. Having a consistent approach, and an appreciation of value and mandates, is crucial to ensuring that the water-energy nexus is better understood so that future decisions can be made with an appreciation for the balance between energy and local and national water considerations.

Non-Potable Water Criteria

One way of reducing the need for potable water is by reusing and recycling non-potable water for non-drinking purposes. Treatment of water for non-potable use requires less energy than meeting potable water standards. Numerous potential applications of non-potable water exist, including water closet and urinal flushing, cooling tower makeup, automatic fire suppression systems, landscape irrigation and fountains. Non-potable water sources may include rainwater, graywater, reclaimed water and many other alternative sources. Currently, however, no federal regulations exist that govern water quality or permissible utilizations for non-potable water. The lack of uniform regulations represents the greatest impediment to more wide-spread use of non-potable water in buildings and on building sites; different states have widely diverging requirements. The federal government must facilitate the establishment of national non-potable water quality standards as well as identify associated permissible uses.

[1]U.S. Environmental Protection Agency (EPA), Water Supply and Use in the United States (2008).
[2]The Alliance for Water Efficiency - 2011

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