

A National Perspective on Water Issues

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Water has emerged as a topic of constant discussion, but what is actually happening with water? Are we really in a water crisis? What are the issues facing local communities and by extension, golf course managers? This article will explore a few myths about water and make recommendations for positive action in the future.

In the midst of a looming water crisis, it is amazing the consumer perceptions that still persist. First, many consumers continue to believe that we have plenty of water (after all, isn't that what the water utility always says? That they provide reliable service?). Second, many consumers mistakenly believe that tap water does not meet safe drinking water standards, and as a result bottled water sales have skyrocketed over the last decade. (The reverse is actually true – tap water meets more safe drinking water standards than bottled water does.) Third, consumers often complain about their water rates increasing, because they have little understanding of the true costs of providing them reliable water and sewer service. Finally, consumers do not want to be asked to conserve when they believe the golf course down the street is using so much water. These same consumers have no idea how much water they are actually applying on their own landscapes, and instead look at the golf course as the culprit. This is the political reality that water utilities – and golf course managers – have to deal with in the United States. Here are these water myths in more detail.

Myth #1: What water shortage?

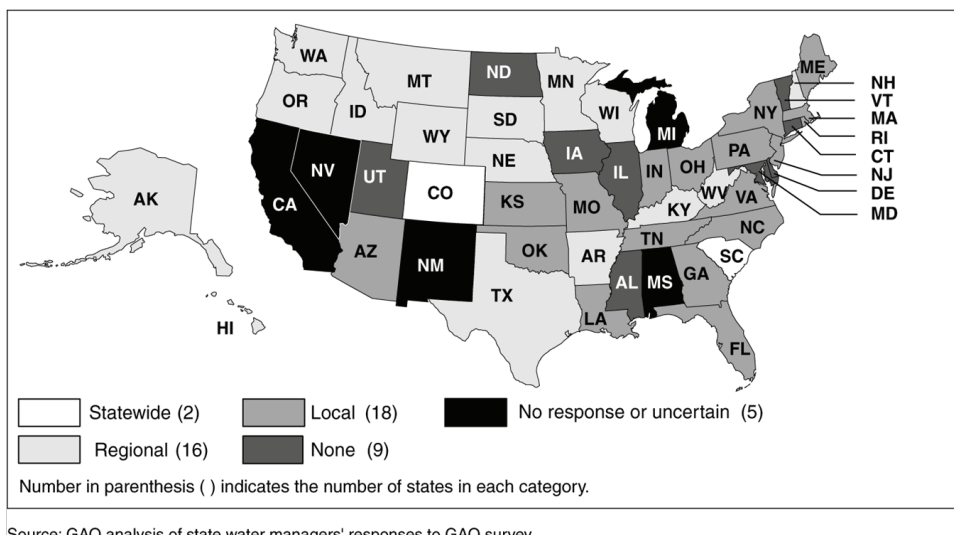
At least 40 out of 50 states will have water shortages in the coming years. Most consumers do not perceive that this is the case, and every time it rains they relax about conserving water and become complacent. When not in a drought,

water utilities across the country complain about not selling enough water as their sales revenue decreases. Conversely, consumers expect the water bill to go down – not up – when supplies are available, largely because consumers do not perceive water delivery as a service. From the utility perspective, conservation programs often get cut if there isn't a drought crisis. The costs avoided by the utility because of conservation get forgotten in the drive to sell excess capacity.

Myth #2: Government will fund our water infrastructure!

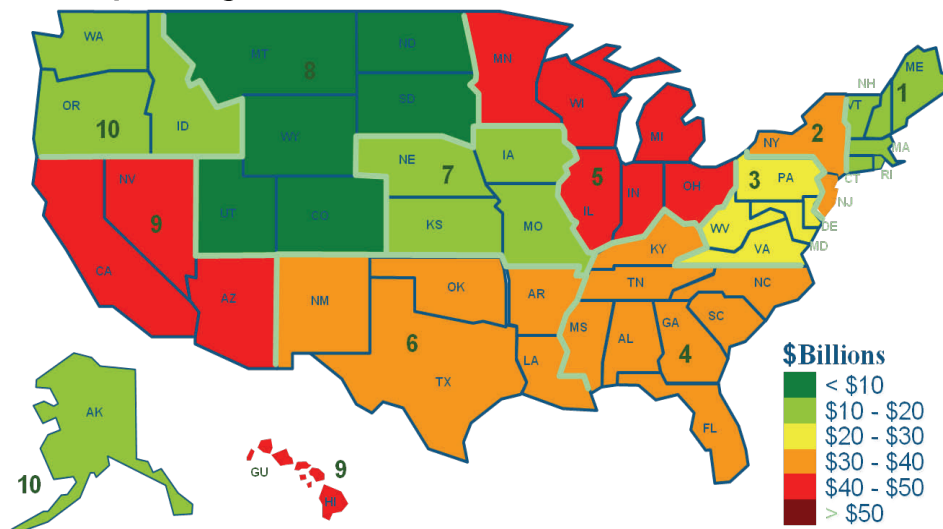
In past decades, communities always received federal and state funding to develop water facilities. The

Figure 1. At least 40 out of 50 States will have water shortages in the coming years.



Source: GAO analysis of state water managers' responses to GAO survey.

Figure 2. Twenty year drinking water and clean water infrastructure needs by EPA region.



outdoors. Progress is being made through voluntary specifications like U.S. EPA WaterSense New Homes and LEED programs. Voluntary green codes (IAPMO and ICC) have been adopted in some areas of the U.S., while some local green codes have been implemented in New York, San Francisco, Los Angeles and Chicago. Recent studies on new homes indicate improved water efficiency, and new residential end use studies are being conducted to document if outdoor landscape irrigation is growing. Unlike the golf course industry, residential and business owners do not adequately understand how much water they are using on their own landscapes.

U.S. EPA estimates that funding for drinking water and clean water infrastructure will have a \$533 billion shortfall by 2020. The \$787 billion stimulus bill (the American Resource and Recovery Act of 2009) only provided \$6 billion for drinking water infrastructure, and there is very little other federal or state funding left for projects. Water rate-payers will have to pay for upgrading old infrastructure and increasing system capacity to provide safe drinking water. Private water companies have always dealt with having to pay for infrastructure improvements and maintenance; however, public water suppliers are now facing this true cost of doing business without subsidy, some for the first time.

Myth #4: Automatic irrigation doesn't need to be managed; it's automatic!

An American Water Works Research Foundation study conducted in 1999 estimated that 30% to 60% of urban water consumption is for outdoor irrigation across North America. As much as 80% of residential water consumption goes for irrigation in arid areas of the country. The aggregated amount of water used on all residential properties is much greater than what golf courses use. However, the average residential consumer does not perceive that the water used on their

Myth #3: New growth is all efficient – isn't it?

Half of the homes that will exist in 2030 have not yet been built, and the bad news is that we are not necessarily building efficiently. Studies have shown that new homes built from 1994 through 2004 used 12% to 60% MORE water than their pre-existing counterparts. The primary reason for this, even in "wet" states, was the increase in unmanaged landscape irrigation systems installed at the new home sites. Even worse, most of the population growth has been in arid states, thus providing more pressure on limited water supplies. The good news is that there is an opportunity to build homes and businesses that use water more efficiently indoors and

Figure 3. Population growth often occurs in states with scarce water resources.

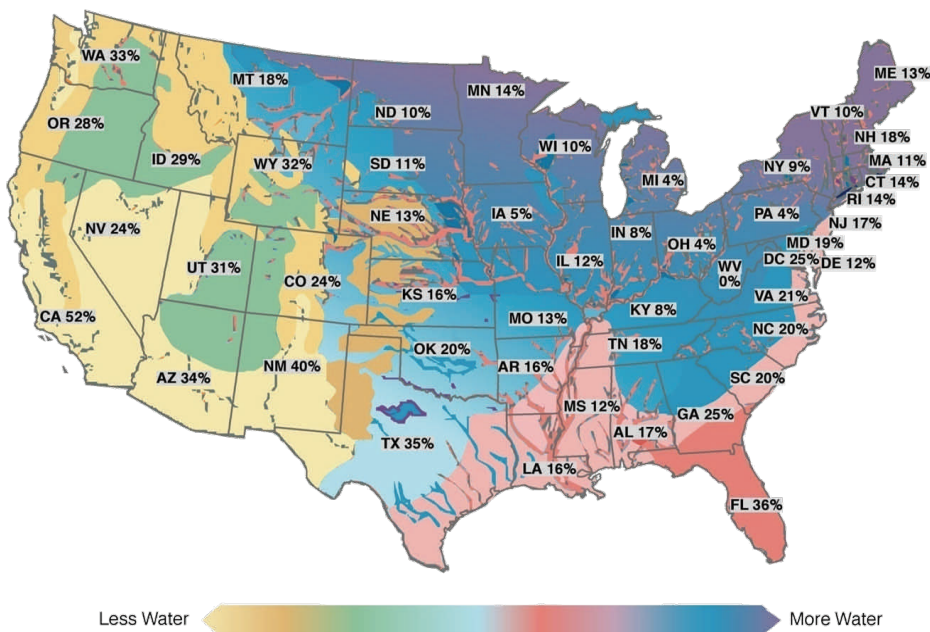
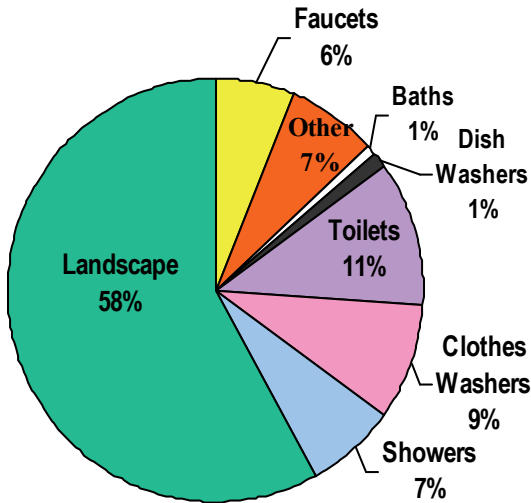


Figure 4. Urban water use in the United States.
 Source: AWWRF Residential End Uses of Water, 1999.



cooling. Although this water is not entirely consumed since much of cooling water is returned to rivers or lakes, this large quantity of water has to be available to begin with for withdrawal purposes. It is also returned back to the environment altered and with thermal impacts. Furthermore, electricity is needed to pump, treat, move, and heat water used by consumers. In California, a range of 2,000 to 20,000 kilowatt hours per million gallons of water has been estimated; the wide range depends on pumping and treatment methods. In fact, 19% of the electric energy load in California is for the pumping, treatment, and heating of water. A total of 32% of the natural gas energy load is related to the heating of water by natural gas. National studies indicate about 13% of the total electric energy in the U.S. is related to water and wastewater services. Thus, saving water helps to save energy, and to reduce greenhouse gas emissions. Water and energy are definitely connected.

own landscapes is significant and thus contributing to local water shortages. This also is true to some degree for commercial properties that typically do not manage their outdoor irrigation. And that is the bad news here. Automatic irrigation does not mean automatic efficiency. Most automatic irrigation systems are programmed poorly, are zoned poorly, have more run times and longer run times than needed, and therefore waste a lot of water. Smart irrigation and other new technology options are becoming available to resident and commercial consumers to help make outdoor irrigation more efficient. Golf courses are the exception, where water is often managed properly for financial reasons or recycled water is applied. However, there is always room for improvement for anyone using an automatic irrigation system on their landscape.

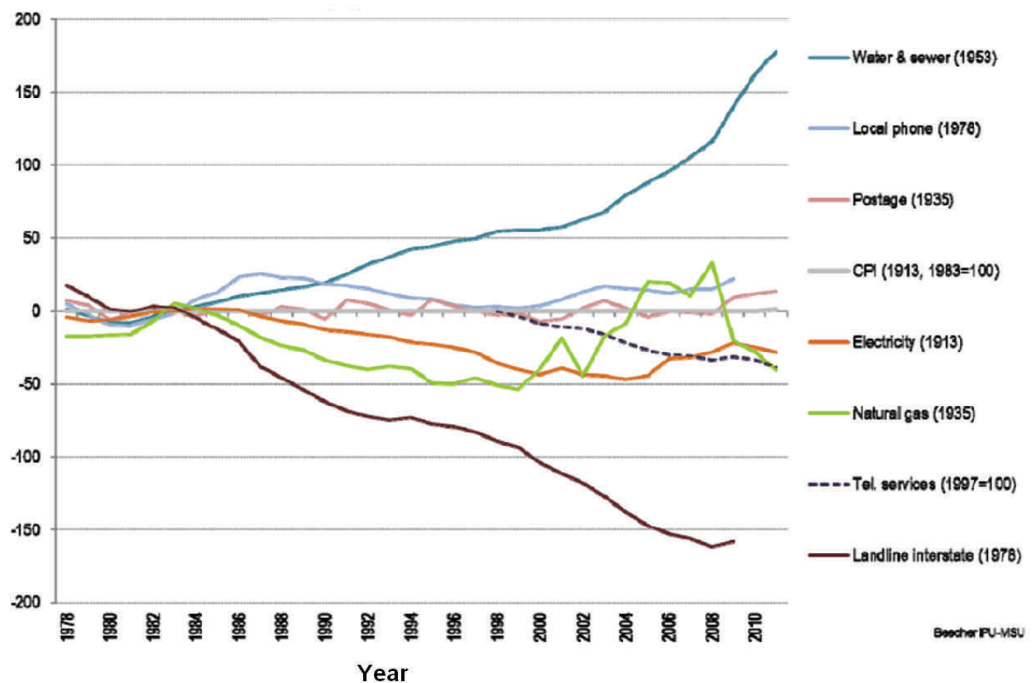
Myth #5: Water and energy are separate problems.

Of the 410 billion gallons of daily water withdrawals in the U.S., the U.S. Geological Survey estimated in 2005 that 49% of the water was withdrawn for power plant

Myth #6: Water conservation: it doesn't work and it costs too much.

It is remarkable that the average water utility manager continues to have this perception. For the last 30 years, there has been a steady reduction in annual water consumption per capita in many parts of the U.S., due to many water conservation initiatives. In Seattle, both passive and active conservation methods helped consumers reduce water use 1% per year – every year –

Figure 5. The trends in the difference between the overall CPI and the CPI for utilities (1978–2011). (Source: Jan Beecher, CPU, Michigan State University)



from 1980 through 2010. Passive measures include passing laws that reduce consumption at no cost to the water supplier, while active measures include funded programs to help educate consumers and pay rebates to retrofit their homes. Federal standards to develop efficient vs. inefficient homes have alone saved 23 gallons per day in the average residential home. New products in tandem with stricter state legislation, regulations, and ordinances will continue to reduce per capita water use. By conserving and reducing demand, water utilities can extend the life of their existing capacity by ten years or more, and avoid needing to build expensive new reservoirs, wells, and treatment plants.

Myth #7: I can't conserve because my water bill will go up!

Yes, conservation can reduce water sales, and therefore conservation can influence the need for water rate increases. However, there are several other factors affecting the amount of water sold and the level of costs to provide water service. The economic recession has resulted in industrial layoffs and home foreclosures, thus reducing water sales. Aging infrastructure has to be repaired and replaced, thus increasing water costs. Costs to provide regular service are also increasing simply through inflation alone. Additional capacity to serve new customers may have to be built, and new supplies may have to be found. All of these issues determine the level of water charges to the consumer, and these charges are rising faster than in the electric and natural gas industries because so much of the water system maintenance and repair has been deferred for so long. Yet while efficient water fixtures and conservation programs also reduce water sales, this reduction is beneficial to the growing system as it helps offset the need for new supply and treatment facilities. Lastly, we need to remember that water is still a bargain in the U.S. A 30% rise in rates often is no more than a \$5 per month increase in the average consumer water bill. Many water rates remain very low at 1/10 cent per gallon, while customers buy a 16 ounce bottle of water for \$1.25 – which is equivalent to \$10 per gallon.

What about the future?

There are several fronts on which the Alliance for Water Use Efficiency, or AWE, continues to focus. Efficiency in codes and standards will continue to drive new product installation. When cost effective, water utilities need to fund conservation programs to incentivize consumer behavior and change. For example, when water utilities provide access to recycled water, many golf courses have willingly converted to

this alternative source of water. Efficiency and conservation always should be the first option to consider in the “loading order” of water supply planning. Demand is lowering all across the U.S. on a per capita basis, but overall demand will increase as population continues to grow. As population grows and changes in climate occur, stable water supply and rates will provide economic benefits to communities. Last, and most important, consumers need to be educated.

Founded in 2007, AWE is the national voice for water efficiency in the U.S. and Canada. There is a wealth of information on the AWE website, which receives extraordinary use with more than eight million hits, 606,000 visitors, and more than 500,000 documents downloaded. AWE provides a comprehensive watch on federal policy bills proposed in the House and Senate. There also is a consumer website called “Home Water Works” that has a water calculator to help people estimate their water use. AWE provides information on water pricing and water efficiency jobs. A Blueprint for Action on water and energy provides 50 recommendations focused on state and national policies and programs. In another AWE project, states have been rated and given letter grade ranking with regard to the level of their water conservation requirements.

AWE has developed a water conservation tracking tool that provides a method for water suppliers to analyze the economic benefits from various conservation programs. There are graphs and charts that depict customer classes across the years, how service area and demands can be lowered, as well as cost benefit analyses with projected return on investment. Most importantly it helps water suppliers analyze how their revenue requirement changes with conservation programs. There is also an energy component that estimates the reduction from conservation in the amount of electricity used and greenhouse gas emissions. Lastly, in March 2013 the AWE will launch the “Never Waste” campaign print ads, billboards, bill inserts. A 20 oz. water bottle will also provide several “Never Waste” messages. For example, one ad shows that the water a running toilet wastes can fill 800 of these bottles in one day. Another ad shows that a broken sprinkler head can waste 384 of these bottles in ten minutes. Hopefully, with this kind of messaging, the consumer will realize how much water is being wasted and that they have a long term stake in water conservation for their community.

References

AWE website (<http://www.allianceforwaterefficiency.org>)