

Southwest

Perhaps no other natural resource is as important to us in the Southwestern United States as water where drought and over-allocation of water sources for agricultural, environmental, urban, and hydropower needs put enormous stress on these resources.

With so many competing yet equally important needs, it is more important than ever to manage our available water resources properly. Currently, agriculture accounts for 76% of surface water usage in the Western U.S., 8% for our everyday urban use, 2% for industrial purposes, and 13% for thermoelectric power. And it goes both ways. In the state of California alone, nearly 20% of all energy consumption goes toward moving, cleaning and heating water.

As it has become increasingly clear, the value of water conservation has enormous benefits to local economies, the environment, and even our global climate. In heavily populated drought plagued states the benefits of conservation are incalculable; in water abundant states the energy savings and the environmental benefits are enormous. The bottom line is: water conservation not only benefits every state in the nation — it benefits the entire planet.

To learn more about water issues and resources in the Southwestern region, visit:

Arizona Department of Water Resources

<http://www.azwater.gov/AzDWR/StatewidePlanning/Conservation2/default.htm>

California Department of Water Resources

<http://www.water.ca.gov/>

Los Angeles Department of Water & Power

https://www.ladwp.com/ladwp/faces/ladwp/residential/r-gogreen;jsessionid=rvpnRs1cXKTTHTc4vrCsBxN6HI0zSjkXD75dxIR2KDJc5QBWGdV6!-985027128?_adf.ctrl-state=jkkkfwzuj_4&_afLoop=934024760685000&_afWindowMode=0&_afWindowId=null#%40%3F_afWindowId%3Dnull%26_afLoop%3D934024760685000%26_afWindowMode%3D0%26_adf.ctrl-state%3D9szbhar88_4

So Cal Smart Water

<http://socalwatersmart.com/index.php>

Bureau of Reclamation Water Conservation Program

<http://www.usbr.gov/waterconservation/>

Water Conservation Information & News

<http://www.waterconserve.info/>

American Waterworks Association's DrinkTap.org

<http://www.drinktap.org/>

US Drought Monitor

<http://droughtmonitor.unl.edu>

United States Global Change Research Program

<http://www.globalchange.gov/>

Energy Star

<http://www.energystar.gov/>

EPA's Learn the Issues

<http://www2.epa.gov/learn-issues/>

EPA's MyEnvironment

<http://www.epa.gov/myenvironment/>

EPA's WaterSense

<http://www.epa.gov/watersense/>

Why your pledge matters... A simple commitment can leave a lasting impact.

1. Saving Costs for Consumers

It's not just the dry western areas of the country that need to be concerned with water efficiency. As our population continues to grow, demands on precious water resources increase. Across the country, consumers are facing ever-increasing water rates to cover the costs of new treatment systems and infrastructure and rehabilitating old infrastructure. There are many opportunities to use household water more efficiently without reducing services. Homes with high-efficiency plumbing fixtures and appliances save about 30 percent of indoor water use and yield substantial savings on water, sewer, and energy bills. Behavioral changes, such as those included in the Pledges, can also save water and costs for consumers. Local coverage of water rate news can be found on <http://www.waterwebster.org/WaterRates.htm>.

2. Saving Infrastructure and Operating Costs for Cities

USA Today's study of residential water rates over the past 12 years for 100 large and small water agencies nationwide found that monthly costs doubled for more in 29 localities. They surveyed costs for a diverse mix of water suppliers representing every state and Washington, D.C., and found that a resource long taken for granted will continue to become more costly for millions of Americans. Rates haven't crested yet because huge costs to upgrade or repair pipes, reservoirs and treatment plants loom nationwide.

<http://usatoday30.usatoday.com/money/economy/story/2012-09-27/water-rates-rising/57849626/1/>

Cities and municipalities are facing increasing costs in water supply and wastewater treatment due to a number of factors:

- **New facility costs:** treatment, piping, metering and reservoirs.
- **Higher operating costs:** prices are increasing because operational inputs such as chemicals, energy, labor, and water itself are getting more expensive.
- **Rehabilitation costs:** decrepit infrastructure is forcing cities to invest in costly capital-replacement projects. In older cities, many pipes were laid more than 100 years ago and are reaching the end of their designed life.
- **More stringent water quality regulations**—such as tighter controls on arsenic in drinking water—also come with added costs. New stormwater regulations could be very costly to implement and operate.

3. Promotion of Drought Resiliency

Drought is a lack of precipitation over an extended period. All climate zones can experience drought and the duration may vary widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades.

Human factors, such as water demand and water management, can exacerbate the impact that drought has on a region. Individuals can prepare in advance and better survive current droughts through a range of actions including installation of water efficient appliances, low-water landscaping and adopting water conservation behaviors. Communities and industries can also prepare in advance and better survive current droughts through a range of actions, including leak detection and correction, installation of low-water technologies and use of recycled municipal wastewater.

Droughts are among the most costly weather related events.

According to the National Climatic Data Center (NCDC), the United States has sustained 114 weather/climate disasters over the past 31+ years (up to 2011) in which overall damages/costs reached or exceeded \$1 billion. The total standardized losses for the 114 events exceed \$800 billion. During this period, there have been 16 billion-dollar droughts, totaling \$195 billion in losses, which amounts to approximately \$12 billion for each billion-dollar drought event that has occurred. Find out what is happening in your area at US Drought Monitor <http://droughtmonitor.unl.edu>.

News from around the country:

Midwest: The U.S. Corn Belt - the world's top grain region - is seeing another dry winter after the worst summer drought in half a century, reducing prospects for a bumper summer harvest that would help ease global food prices, crop and climate experts said. (Read more: NBC News 1/3/2013): http://usnews.nbcnews.com/_news/2013/01/04/16355471-drought-still-grips-corn-belt-dry-winter-adds-to-farmers-fears?lite.

Midwest: This year's drought delivered a pricey punch to US aquaculture, the business of raising fish like bass and catfish for food. The lack of water and high temperatures in 2012 hurt many U.S. fish farmers who were already struggling to compete on a global scale. (Read more: NPR News 1/3/2013): <http://www.npr.org/blogs/thesalt/2013/01/03/168203740/drought-puts-the-squeeze-on-already-struggling-fish-farms>.

Midwest and South: Low water, due to the worst U.S. drought since 1956, has already impeded the flow of billions of dollars worth of grain, coal, fertilizer and other commodities between the central United States and shipping terminals at the Gulf of Mexico (Read more: Reuters 1/2/2013): <http://www.reuters.com/article/2013/01/02/us-usa-barges-mississippi-idUSBRE9010N620130102>.

Hot Topic: Climate Resiliency

As extreme weather events, such as Hurricane Sandy and the prolonged drought in the US Midwest impact individuals, communities and the national economy, there is a growing understanding of the need to become resilient to these climate changes. After a year of unpredictable weather in which some areas saw extreme flooding and others extreme temperatures, the value of early assessment and proactive action in advance of the next event is increasingly evident. Adapting to new weather patterns is a challenge because it requires innovative thinking and action at every level of society, from individuals to government.

- **Individuals:** Individuals can increase their ability to survive, recover from, and even thrive in changing climatic conditions. The first step is to understand potential impacts so that they can then take appropriate action before, during, and after a particular event, such as a hurricane, major flooding or prolonged drought, to minimize negative effects and maintain the ability to respond to changing conditions, even unpredictable conditions. Climate conditions and resiliency actions depend on location. Energy and water conservation measures are generally beneficial everywhere as they reduce a household's dependency on what may become very limited resources during heat waves and droughts.
- **Cities:**
 - The USE EPA has developed [CREAT](http://water.epa.gov/infrastructure/watersecurity/climate/creat.cfm) (<http://water.epa.gov/infrastructure/watersecurity/climate/creat.cfm>), a software tool to assist drinking water and wastewater utility owners and operators in understanding potential climate change threats and in assessing the related risks at their individual utilities.
 - ICLEI has developed the [Climate Resilient Communities™ \(CRC\) Program](http://www.iclei.org/climate-and-energy/Climate-Adaptation-Guidance/Climate-Resilient-Communities-Program) ([http://www.iclei.org/climate and energy/Climate Adaptation Guidance/climate-resilient-communities-program](http://www.iclei.org/climate-and-energy/Climate-Adaptation-Guidance/Climate-Resilient-Communities-Program)). Through CRC, cities, towns, and counties can increase their resilience to climate change impacts, and in the process save money and create safer, healthier communities.
- **Nationwide:** The U.S. Global Change Research Program ([USGCRP](http://www.usgcrp.gov)) coordinates and integrates federal research on changes in the global environment and their implications for society. The [National Climate Assessment](http://www.globalchange.gov/what-we-do/assessment/nca-overview) (<http://www.globalchange.gov/what-we-do/assessment/nca-overview>) analyzes the effects of global change on the natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity; and analyzes current trends in global change, both human-induced and natural, and projects major trends for the subsequent 25 to 100 years.

4. Protection of Local Watersheds and Ecosystems

The health of our local watersheds and ecosystems is vital because they provide valuable services including provision of clean drinking water, coastal protection, carbon sequestration, crop pollination and wildlife habitats. However, the majority of the Earth's ecosystems are under stress. The [Millennium Ecosystem Assessment](http://www.unep.org/maweb/en/index.aspx) (<http://www.unep.org/maweb/en/index.aspx>), an international report written by over a thousand experts released in 2005, found that 60 percent of the world's ecosystem services assessed have been degraded or are being used unsustainably. More recently, The [Economics of Ecosystems and Biodiversity \(TEEB\) Report](http://www.teebweb.org/) (<http://www.teebweb.org/>) found that 11% of the natural areas remaining in 2000 could be lost, chiefly as a result of conversion for agriculture, the expansion of infrastructure, and climate change.

Humans can have negative impacts on ecosystems in a number of ways, including:

- Urban Runoff
- Agricultural Runoff
- Dredging and stream channelization
- Waste disposal
- Tilling for crop production
- Logging
- Mining
- Construction
- Air and water pollution
- Release of toxic chemicals
- Introduction of invasive alien species
- Grazing by domestic animals

How to find out what is happening in your area:

- [Global Map of Human Impacts to Marine Ecosystems](http://www.nceas.ucsb.edu/globalmarine)
<http://www.nceas.ucsb.edu/globalmarine>

Hot Topic: Stormwater Management

Runoff from rain comes from paved and unpaved surfaces and contains a range of contaminants from thousands of different places: bacteria from pet waste, copper from auto brake pads, oil and antifreeze leaked from autos, pesticides and fertilizer from lawns.

Stormwater management is a growing concern to communities, cities, and states across the entire country. Any changes that citizens can make to reduce discharge of contaminants to runoff areas will improve the health of their watersheds and ultimately minimize the cost of stormwater management by their cities.

Key drivers for change:

- **Health and economic impacts of polluted beaches, lakes and waterways:**
Pollution in our beaches, lakes and waterways causes sickness in people and wildlife and economic loss from lost work days. Beaches, lakes and waterway closures cause economic harm through loss of tourism and recreational revenue. According to the [NRDC](#), every coastal state has a beach with pollution problems. In 2011, beach pollution prompted 23,481 closing and swimming advisory days at ocean, bay and Great Lakes beaches. One study estimated that the annual health costs associated with gastroenteritis, also known as the stomach flu, come to between \$21 million and \$51 million for Los Angeles and Orange county

beaches alone. The most frequently identified pollution source is stormwater, which led to 10,954 closing and health advisory days in 2011.

- **New EPA Regulations:** the U.S. Environmental Protection Agency (EPA) has announced its intention to tackle this issue through new national stormwater regulations slated for proposal in June 2013 and finalized by December 2014. The areas that EPA has identified to address include:
 - Expanding the area subject to federal stormwater regulations;
 - Establishing specific requirements to control stormwater discharges from new development and redevelopment;
 - Developing a single set of consistent stormwater requirements for all municipal separate stormwater systems (MS4s);
 - Requiring MS4s to address stormwater discharges in areas of existing development through retrofitting the storm system or drainage area with improved stormwater control measures.

Supporters of the new regulations, including [American Rivers](http://www.americanrivers.org/initiatives/pollution/projects/national-stormwater-rulemaking.html) (<http://www.americanrivers.org/initiatives/pollution/projects/national-stormwater-rulemaking.html>), believe that the new regulations have the potential to curtail and prevent this major and growing source of water pollution and presents a major opportunity to advance green infrastructure approaches.

- **Increase in heavy precipitation events as the climate changes:** "Heavy precipitation" refers to instances during which the amount of precipitation experienced in a location substantially exceeds what is normal. What constitutes a period of heavy precipitation varies according to location and season. Climate change can affect the intensity and frequency of precipitation. Warmer oceans increase the amount of water that evaporates into the air. When more moisture-laden air moves over land or converges into a storm system, it can produce more intense precipitation—for example, heavier rain and snow storms. The potential impacts of heavy precipitation include crop damage, soil erosion, and an increase in flood risk due to heavy rains. In addition, runoff from precipitation can impair water quality as pollutants deposited on land wash into water bodies.

In recent years, a larger percentage of precipitation has come in the form of intense single-day events. Eight of the top 10 years for extreme one-day precipitation events have occurred since 1990. The percentage of land area experiencing much greater than normal yearly precipitation totals increased between 1895 and 2011.

News from around the country:

Los Angeles: LA County officials are pushing for a ballot measure that would impose a new parcel fee on property owners to raise about \$290 million/year for initiatives to reduce storm and urban runoff pollution. The fee would range from \$54 a year for most single-family homes to thousands of dollars for large commercial properties. (Read more: LA Times (1/3/2012): [County seeks parcel fee to pay for projects to combat urban runoff -](http://www.latimes.com/news/local/la-me-adv-stormwater-20130103,0,190905.story) <http://www.latimes.com/news/local/la-me-adv-stormwater-20130103,0,190905.story>)

How to find out what is happening in your area:

- Local media sources regularly cover stormwater events and beach closures in coastal areas
- Coastal pollution reports:

- National: Natural Resource Defense Council – [A Guide to Water Quality at Vacation Beaches](http://www.nrdc.org/water/oceans/ttw/) (http://www.nrdc.org/water/oceans/ttw/)
- West Coast: [Heal the Bay – Beach Report Card](http://brc.healthebay.org/) (http://brc.healthebay.org/)

Hot Topic: Reuse of Municipal Wastewater

Municipal wastewater may be used by industries and agriculture for beneficial purposes after it has been treated to remove solids and certain contaminants. This “water reuse” allows communities to become less dependent on groundwater and surface water sources and can decrease the diversion of water from sensitive ecosystems.

Water reuse is a proven, effective way to conserve limited water resources with numerous win-win-win benefits to communities, companies and the environment:

For the environment, when industrial and agricultural freshwater use is reduced, freshwater available for ecosystems is increased. Additionally, water reuse may reduce the nutrient loads from wastewater discharges into waterways, thereby reducing and preventing pollution.

For communities, in addition to the increased availability of freshwater, there are economic benefits. When industries use municipal effluent, they are typically willing to provide funding for advanced treatment and for the water itself. Reuse promotes the sustainability of cities and health of communities – particularly in developing countries.

And for industries and agriculture, municipal effluent offers a secure source of relatively good quality water. Even in the middle of a drought, people will get water and municipal effluent will flow. It is also good for a company’s reputation and social license to operate since it satisfies stakeholder pressure to reduce freshwater use.

Fresh water is a scarce resource and population and industrial growth are placing greater strain on our finite water resources. Water reuse will be a necessity in the future. According to *Global Water Intelligence*, “It is only by setting the target of reusing half of the world’s domestic water supply that the world can meet its water challenge over the next two decades without imperiling the environment.” Yet water reuse rates around the world are low. Municipal effluent reuse rates are: U.S. 14%, China 14%, Mexico 4%, Spain 11

CH2M HILL created [WaterMatch](http://www.ch2m.com/watermatch/home/Default.aspx?AspxAutoDetectCookieSupport=1) (http://www.ch2m.com/watermatch/home/Default.aspx?AspxAutoDetectCookieSupport=1) to promote water reuse by providing industry and agriculture with a way to connect with municipalities to use effluent in their operations, thus linking to secure water resources so they’re not relying on fresh water supplies.

WaterMatch employs the most powerful force in the world: the power of people connecting. The website uses social networking and geospatial mapping to connect water generators with water users. Once online, water users use the WaterMatch Map to find wastewater treatment plants close to their current and potential future operations and then use the social networking function to connect with the utilities operating those plants. The website is designed to help communities and companies meet and then take action on water. When action is taken, progress is made.

The global Matching Map currently has the names and locations of over 21,000 WWTPs in 42 countries including the US, China, India, Mexico, Chile, Brazil, Australia, Spain and Italy. But the map and Facility Profiles aren’t complete, so we’re asking US Mayors to help provide information for their cities. That way, water users can find the city’s wastewater and create a win-win-win water reuse project. .

WaterMatch has the support of more than 200 global businesses through the [World Business Council for Sustainable Development](#), [IPIECA](#) and numerous individual companies and municipalities.