

Utah State University

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The Untapped Potential of Water Conservation

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The Untapped Potential of Water Conservation

by Joanna Endter-Wada

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Utah's central water challenge is how to accommodate a growing population and economy while maintaining a healthy natural environment in an era of resource constraints. The state confronts both limited water supplies and increasingly scarce public sector financing for water infrastructure. Simultaneously promoting both water and financial efficiencies can help deal with these resource constraints. Accounting for and justifying how water is used and money is spent are critical components of addressing Utah's water-related growth challenges.

Water management in Utah has traditionally focused on building engineered infrastructure to capture, store, treat and distribute water supplies. This approach depended on large public subsidies that made water readily accessible for a wide variety of human uses. However, new paleoclimate data and climate modeling reveal the potential for longer, more severe droughts and higher variability and uncertainty in future water supplies. At the same time, ecological research is documenting the impacts that growing human use of freshwater supplies has on other species that need water for survival. Increased scientific under-



standing of our region's water realities emphasizes the need to live within its water budget and achieve savings necessary for longer-term water security.

Today, Utah has one of the highest per capita water use rates in the nation. Water conservation has important untapped potential to help manage water demand and yield significant future water supplies. Many cities in the western United States have dramatically reduced total water consumption even in the face of rapid population growth. Propelled to action by water shortages, their conservation successes are based on strategically investing in and implementing water conservation programs and policies that include concerted public education and outreach efforts, innovative pricing structures, new technologies, low water landscaping, and various mandates. These successes have often reduced, delayed or eliminated many cities' need for expensive new water projects.

Utah is at a critical crossroads heading into its water future. Societal changes present opportunities to find greater water and financial efficiencies as water is reallocated among different uses and aging water infrastructure

is replaced. Realizing these efficiencies, however, will depend on water policies and management strategies that carefully sequence, prioritize and create synergies between water conservation, optimization, redesign of existing infrastructure and new water projects.

Even though agriculture uses approximately 75 percent of Utah's developed water supplies, water is being reallocated from agricultural to municipal use as the state's economy changes. Municipal water conservation is a vital component of Utah's water future for several reasons. Urban water use is a rapidly growing percentage of total water use in Utah. Geographic concentration of the state's highly urbanized population, primarily in the Wasatch Range Metropolitan Area and Washington County, requires large transfers of water that can negatively impact outlying rural areas and natural ecosystems. Urban water use is generally less flexible during droughts than agricultural water use where fields can be fallowed, potentially increasing the state's future water vulnerability. Water use expectations and behaviors become established in the urbanization process, so how water is physically converted from agricultural to urban use has long-term implications for future water demand. Thus, planning for Utah's water future requires urban water conservation programs that can identify existing capacities to conserve as well as promote future water use efficiencies.

The largest untapped potential for urban water conservation exists in landscape watering, which comprises about 60-70 percent of municipal water use. Interdisciplinary science conducted at Utah State University is developing new tools and insights that address needs in this area. USU Extension and the Center for

Water-Efficient Landscaping (CWEL) bring together unique research and outreach capabilities to analyze the plants, irrigation technologies, human behaviors, yard designs and site features that shape urban landscape water use. Better understanding of intersections among social, ecological and engineered aspects of the urban environment is being used to promote landscape water conservation without reducing the quality of life important to Utah's citizens.

One example of this interdisciplinary science is Water Management Analysis and Planning Software, or WaterMAPS™ (water-maps.usu.edu), a unique analytic software application to aid water suppliers and citizens in managing water demand. WaterMAPS™ analyzes and monitors capacity to conserve water applied to urban landscapes by comparing actual water use to estimated landscape water need (calculated over time using real-time weather data). The software enables water managers to direct and tailor conservation programs, produce individual customer water use reports, quantify and evaluate conservation program outcomes and encourage appropriate landscape watering habits.

Efficiently utilizing current urban water supplies is a cost-effective prerequisite and essential component of Utah's future water strategy. But water conservation science requires investments to realize its full potential to help Utah achieve both water and financial efficiencies. The path we choose and the investments we make today will have long-lasting legacies. Utah should bank on the ability of its citizens to exercise good resource stewardship through water conservation as it debates and defines its water future.



Photo: Gary Neuenswander

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4 Help Non-Thirsty Natives Feel at Home

Cultivating native plants that have evolved to thrive in dry conditions could reduce the amount of water landscapes require. But natives can't simply be uprooted from the foothills and deserts and plopped in the suburbs. Scientists are exploring which native plants have potential and working to bring them to a nursery near you (provided that "near you" means in the arid West).

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Managing water supplies well begins with knowing how much water you have. That's more complex than measuring precipitation and runoff. It means considering water through many phases, from the atmosphere to deep underground.

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Generally, people overwater home and commercial landscapes, but it doesn't have to be that way. The Water Check program shows people how much water they use and waste and gives them irrigation schedules that make more sense. Check out their success.

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