

Coping with water scarcity: Researchers evaluate effectiveness of water policies aimed at reducing consumption

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A School of Public Policy report finds that some incentive programs aimed at reducing water use have been very effective in Southern California.

(Phys.org) —As California enters its fourth year of severe drought, Southern California water agencies have turned to new pricing structures, expanded rebate programs and implemented other means to encourage their customers to reduce consumption.

Some of those policies have greatly reduced per capita consumption, while others have produced mixed results, according to a report

published in the UC Riverside School of Public Policy journal *Policy Matters*. The journal is published quarterly by the School of Public Policy, and provides timely research and guidance on issues that are of concern to policymakers at the local, state, and national levels.

Water policy experts Kurt Schwabe, Ken Baerenklau and Ariel Dinar reviewed some of their recent research that was presented at a UCR workshop on urban [water](#) management in June 2014. Schwabe and Baerenklau are associate professors and Dinar is professor of environmental economics and policy. The workshop highlighted efforts by Southern California water agencies to promote water conservation, relevant research findings by UC faculty, and challenges that remain to further reduce water demand.

"California is a water-scarce state and needs to have policy tools to deal with scarcity whether in drought years or otherwise," Dinar said. Water policy research in the School of Public Policy focuses on strategies that agencies and California can take to help reduce vulnerability to drought.

Water utilities throughout California are working to satisfy a 2010 state mandate to reduce per capita urban water demand 20 percent by 2020. Reducing residential water demand is an appealing response to [water scarcity](#) as approaches such as building more storage and conveyance systems have become increasingly expensive, the authors wrote in "Coping with Water Scarcity: The Effectiveness of Allocation-Based Pricing and Conservation Rebate Programs in California's Urban Sector."

"Reducing residential water demand is also attractive given it is a local solution to relieving water stress with seemingly much recent success," they wrote.

Efforts to reduce water demand by changing behavior fall into two

categories: price and non-price, the researchers said. Price-based approaches focus on adjusting the price of water while non-price approaches include other demand-management strategies such as the use of water-conserving technologies and conversion of lawns to drought-tolerant landscape, often promoted with rebates, and mandatory restrictions.

"Price-based instruments for water management ... have proven to be very effective when compared to non-price instruments," the researchers found.

One such instrument is the "water budget," which has been adopted by more than 25 Southern California water agencies in recent years. Water budgets typically are defined as an indoor allocation based on the number of people in the house and an outdoor allocation based on the amount of irrigable land, special needs, and local weather conditions, according to the report. The sum of the indoor and outdoor allocations is a household's water budget. Staying within that budget is deemed efficient use. Water use that exceeds a household's budget is considered inefficient, and is priced at a higher rate to encourage conservation.

"Recent empirical evidence within southern California suggests that this sort of pricing structure can be very effective for reducing residential [water demand](#) while securing the financial cash-flow of the water utility," the researchers reported.

Non-price efforts to reduce water consumption have not been as effective, however. For example, the researchers refer to a study of 13 groundwater-dependent California cities in which modest water price increases were more effective and more cost-effective than promoting technology standards to curb water consumption.

Some studies have found that rebate programs, in particular, have shown

smaller-than-expected water savings, the researchers said in the report. For example, studies show that low-flow showerheads tend to result in longer showers and frontloading washing machines result in more cycles.

"This does not mean that such measures should be abandoned, but rather suggests that achieving real water savings in a cost-effective manner requires more research and partnerships between agencies and the research community to find an optimal mix between these two approaches," the researchers said.

Provided by University of California - Riverside

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