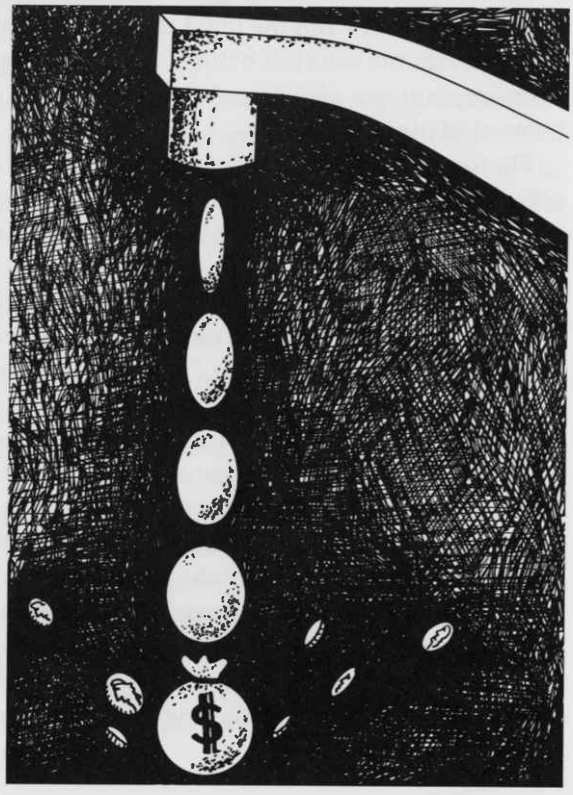

Prices Lower Water Use

Price increases, not just preachments, lowered per capita water use in Tucson during the 1970s, and could do it again if prices reflected the real cost of water, says a new book by University of Arizona authors.

In cities across the Southwest, "the public may believe that water is scarce and should be conserved, but those beliefs have not yet been translated into public policy or private practice," says **Saving Water in a Desert City**, published this summer by Johns Hopkins University Press.

The book's four authors are Dr. William E. Martin, an agricultural economist, Dr. Helen M. Ingram, a political scientist specializing in natural resource issues, Nancy K. Laney, a law student, and Adrian H. Griffin, a UA graduate in water resource administration.

From an analysis of water management in Tucson since 1974, they wring lessons for this and other cities. They say that policies of trying to keep water costs low merely encourage urban growth and water use, which make water more scarce and expensive in the long run.

They prescribe water rates based on what the expense would be of adding to the present water supply, rather than on just recovering the costs of the existing system. For Tucson today, that would mean raising water rates by at least half.

"If this rule is followed, consumers will receive a correct signal about the relative scarcity of water and react accordingly," says the book. "To preach water scarcity while hiding the real cost of water sends conflicting signals."

From fiscal year 1974 to fiscal 1979, Tucsonans decreased their

Dr. William Martin

average water use from 205 gallons per day per person to 148 gallons.

The drop has been widely cited as evidence for the success of the city's annual "Beat the Peak" public education campaign. To the contrary, Martin and his co-authors point out that the decrease began before the "Beat the Peak" program, but after a water-rate increase of 30 to 40 percent in 1974. Rates were increased further in 1976 and in 1977 when the educational campaign began.

Per-capita water use figures began climbing again after fiscal 1979, reaching 166 gallons per day by fiscal 1982. During that period, "Beat the Peak" was still in place, but water rates actually declined in terms adjusted for inflation.

Peak flow determines the size of water system needed for a city. In Tucson and other Southwestern cities, the peak demand comes in late afternoons or early evenings in June or July, when the flow for outdoor watering and evaporative cooling is heaviest.

The "Beat the Peak" campaign, as proposed by the new Citizen's Water Advisory Committee in 1977, aimed to delay the need for expanding the city's water system by cutting peak usage. The new book quotes from that committee's proposal that the campaign be "solely in the interest of controlling capital costs and customer charges. The committee specifically disavows any intent to sound an alarm as to the adequacy of the water supply."

The book's authors point out that Tucsonans' tap-tightening in the 1970s came as a reduced year-round average, not as a reduced ratio of peak use to year-round use.

They construct demand curves for water use in Tucson, showing the relationship between price and quantity used. The curves are based on water-use records from 2,159 residences from 1974 to 1979.

"Many of the changes in per capita water use—both decreases and increases—can be attributed directly to price itself," they say. Also, though, "price is not the only variable affecting behavior. The demand for water tends to shift (toward lower usage) when an increasing price signal is accompanied by preachment and politics that reinforce that price signal."

The authors examine the political problems associated with raising water rates. They review the furor of Tucson city politics in the mid-1970s. A newly elected majority on the city council in 1976 agreed to most of a rate increase and restructuring package proposed by the Tucson Water Department staff and a consulting firm. The increase was a key issue of a successful recall election in January 1977, but the replacement council members who had pledged to roll back the increase failed to do so.

The authors suggest that implementing the popular "Beat the Peak" program or forming the Citizens' Water Advisory Committee before raising water rates might have reduced the political damage. They also note that the new water policy endured despite the turmoil around it.

Water rates in Tucson and other Southwestern cities are still well below the real costs of making additions to the water supply, say the authors. They maintain that a combination of pricing, politics and preaching can drastically reduce water use, mostly through changes to less green landscaping.

They conclude, "The most profound lessons of the events in Tucson are that the policy system is more flexible than it appears, policy leadership can become available, and change is possible."