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Pricing water to encourage conservation

In the last decade, severe drought revealed a number of deficiencies in the ability of Georgia municipalities to supply residents with water. The recurring droughts, impeding shortages, particularly in the northern portion of the state, salt water contamination of underground aquifers in the southeast and a 20-year battle among Georgia, Alabama and Florida sparked an interest in users — commercial, residential and agricultural — to conserve water.

One demand-management strategy relevant to residential users is conservation pricing — roughly, charging consumers a higher rate as the volume of consumption increases. Conservation pricing has its appeal. Households that use more water pay a higher rate for additional consumption, and higher-volume users have higher waters bills and therefore higher expenditures. Conservation pricing should therefore encourage water conservation by penalizing high-volume users. It is also more efficient than other demand-management strategies, such as restrictions on outdoor watering, because of the relatively low cost of implementation.

Households select the conservation method that best suits their needs rather than a method prescribed by the government. For conservation pricing to be a successful demand-management strategy, households must be willing and able to modify water usage in response to higher prices. If households are unable to modify consumption, which would be the case if they use water exclusively for non-modifiable uses such as cleaning and sanitation, they could face larger water bills, with little or no conservation taking place. This is most likely to be the case for poor households. For example, while the average household spends 1 to 2 percent of their monthly budget on water, poor households could spend as much as 5 percent. Therefore, changes in prices that increase household expenditure on water are likely to have a more significant impact on poor households.

Poor households are less able to lower water consumption for two main reasons. First, they tend to have more individuals in the household, which increases the need for cleaning and sanitary use of water. Second, poor households tend to use water more for necessary functions and less for luxury consumption such as lawn maintenance.

This point is amplified when we look at how water consumption of Savannah residents changes from winter to summer. Using data from the City of Savannah, I find that households that have annual income under $20,000 are responsible for 60 percent of the increase in water usage from winter to summer. In fact, my research shows 38 percent of households are responsible for 60 percent of the increase in water consumption from winter to summer.

I would like to suggest that while conservation pricing should be an ongoing demand-management strategy, not just a response to adverse supply situations, the implementation should take into account the need to not create a financial burden on poor residents.

Even if one does not care about the impact on poor people, keep in mind that the ultimate goal of conservation pricing is water conservation. If the price of water is raised on households that are not able to adjust their consumption, they will simply have higher bills and no conservation will take place.

A City of Savannah household that uses 14,000 gallons a month will have a combined water and sewer bill only 2.7 times higher than a household that uses four gallons per month. The reason is both households have to pay a base rate, whether they use water or not, and the price of water for the high-volume user is only a tiny bit higher than the price of water for low-volume users.

Such a pricing structure encourages excessive consumption by high-volume users and imposes a relatively high cost on low-volume users. A reduction of the base charge, accompanied by more aggressive tier rates for high-volume users, could realize more conservation while reducing the water costs of households at the lower end of the consumption distribution.

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