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Author(s): Steve H. Hanke

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VIEWPoint

Water Conservation: A Policy on Stilts

Steve H. Hanke

Steve H. Hanke is professor of applied economics in the department of geography and environmental engineering at The Johns Hopkins University, Baltimore, Md.

We have accepted and promoted water conservation policies in an unquestioning way. This is uncharacteristic of the water industry, which has traditionally examined with care new technologies and policies before embracing them. Perhaps it is the catchword, conservation, and the mythology which surrounds it, which have generated the unfounded enthusiasm. After all, who can be against conservation?

The facts are that conservation policies, as they have been formulated, can be characterized as policies on stilts. Much the same as a youngster on his first set of stilts, water conservation policies have not been well grounded.

Before accepting a policy we must (1) determine the consequences of the policy and (2) determine whether these consequences are favorable or unfavorable. In the rush to be fashionable, we have not adequately dealt with the first point. How many studies have measured, in the field, water use with and without various conservation policies? Even more disturbing is the fact that we have not developed a criterion for judging whether the alleged impacts of conservation are desirable. It is this second point that we must turn our attention to, prior to making measurements.

In order to make statements concerning the desirability of any water conservation method, we must first state our objective. One objective, which has been widely held in the water industry, is to maximize the net benefits from the adoption of a technology or policy. With this objective in the water conservation field, we wish to maximize the difference between the total benefits and total costs of water conservation policies. This is accomplished by pursuing a conservation policy as long as its incremental benefits exceed its incremental costs. A policy that promises incremental benefits greater than its incremental costs is, therefore, a desirable policy and should be adopted. With this objective and this criterion for choice, water conservation for the sake of reducing water use is not necessarily a good policy.

To operationalize the concepts mentioned above, we must define the change in total benefits (B) and the change in total costs (C) anticipated to be derived from water conservation policies. First, we define the change in benefits. It is the savings in resources which are expected to result from the introduction of a water conservation policy. The incremental benefits are calculated by taking the product of the reduction in water use resulting from the policy (Q) and the marginal cost of water (MC):

$$B = Q \cdot MC \tag{1}$$

Second, we define the change in costs, which is the sum of (1) the resource costs to the water utility of adopting the policy (U)—e.g., water meters, conservation devices, educational programs; (2) the resource costs to the consumers (E)—e.g., expenditures for purchase and installation of conservation devices, the time and effort to repair leaks; and (3) the value of "useful" consumption foregone (F)—i.e., consumption that has a positive value in use. Hence, incremental costs are represented by

$$C = U + E + F \tag{2}$$

With these definitions and our objective of maximizing net benefits from any conservation policy, we can state that any conservation policy is desirable only if

$$Q \cdot MC \geq U + E + F \tag{3}$$

Only by specifying an objective, deriving a criterion for choice—a decision rule such as the one contained in Eq (3)—and measuring the relevant variables, can we hope to rescue current "conservation policies" from the stilts on which they stand.

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