INTEGRATED PLANNING'S CONSERVATION COMPONENT: WHAT WATER MANAGERS NEED TO KNOW

Amy L. Vickers
President, Amy Vickers, and Associates, Inc.

INTRODUCTION

The future of water conservation has brightened in recent years by the introduction of integrated resource planning (IRP) concepts to the U.S. water industry. With endorsements such as the American Water Works Association's White Paper on IRP (AWWA, 1991) and AWWA's Total Water Management approach, the mainstream water industry seems to be finally acknowledging that opportunities for enhanced water capacity achieved through conservation programs ought to be considered on par with traditional supply-side strategies, particularly when utilities are striving for least-cost approaches to meeting future water needs.

While the practical analytical and planning elements of what constitutes a water IRP have been well developed by Beecher (1995) more than a few water utility managers suffer from entrenched biases against conservation that may impede their ability to adhere to the IRP process and develop a fully informed water plan. The reasons for this are many. Historically, conservation planning activities have often been crisis-oriented, haphazard, and lacking the comprehensiveness and rigor typically applied to comparable water supply planning activities. To some extent, the water industry's bias against conservation is also rooted in outdated information and ignorance about current water efficiency technology and practices.

Whatever its origins, this bias creates doubt about the extent to which the water industry is currently equipped to benefit from the IRP process and equally evaluate its supply and demand options so as to select cost-effective and sound water management strategies for the future. The old adage, "You can lead a horse to water but you can't make it drink" may characterize the typical water manager who can be led through the IRP process but is nevertheless unwilling or unable to evaluate conservation opportunities. As a result, even with an IRP framework, it should not be automatically assumed that the water management strategies selected are the most financially and environmentally cost-effective options available.

Recognizing the current limitations of the water industry to fully assess the conservation potential of its water supply systems, the challenge now is to better equip utility planners and engineers with the knowledge and tools that they need to conduct the conservation component of the IRP process just as comprehensively and rigorously as will the supply-side aspect of the plan. In other words, what do most water managers need to know to "get up to speed" on conservation, lest they shortchange their IRP efforts and pass along faulty and costly water supply decisions to the ratepaying public?

Some of the basic information and experience that water managers unfamiliar with conservation need to become apprised with includes:

More than a Drought Response

Conservation is more than a drought response and has resulted in permanent systemwide water savings up to 25 percent. Dozens of major U.S. water suppliers, big and small, have invested in large-scale conservation programs since the late 1980s in order to realize permanent (non-drought) demand reductions. There is a growing body of case study literature which documents the water savings and related cost benefits for such cities as Boston, New York, Tampa, Austin, Albuquerque, Denver, Los Angeles, and Seattle, to name a few. While no supplier has yet to "max out" on their conservation potential (implement all feasible efficiency options), the literature documents permanent *systemwide* water savings achieved thus far to range from 10 to 25 percent.

Technological Advances

Today's conservation technologies offer markedly

better savings compared to past practices. Up until the late 1980s, conservation measures promoted by utilities were typically geared toward behavior changes that were implemented during periods of drought, such as outdoor sprinkling restrictions and inexpensive showerhead restrictors (which most people removed). The water reductions from these measures were usually temporary because once the crisis was over, restrictions were lifted and the public resumed past practices. Today, there is a wide array of "hardware" and behavior-oriented measures that are designed to achieve permanent demand reductions, such as 1.6 gallon per flush (gpf) toilets, 1.0 gpf and waterless urinals, low-volume showerheads and faucets, low water-using dishwashers and clothes washers, high-efficiency irrigation systems and improved landscape design and management (Xeriscape).

A Clear Understanding

A clear understanding of what constitutes a conservation measure is essential to identifying options. Many conservation plans and programs are disadvantaged at the start by a poor understanding on the part of water and conservation managers (and sometimes their consultants) as to what exactly constitutes a conservation *measure* (Vickers, 1995). Typically, a utility's conservation program is composed of conservation incentives and measures - as it should be - but unfortunately there is often an overemphasis on incentives. The result is that customers get frequent prodding about the importance of conservation (either through regulatory, pricing, or educational mechanisms) but little follow-up support to do anything of practical value that will lower water use.

The classic example of this situation is the utility that spends much of its conservation budget on brochures, radio advertisements, and public outreach campaigns to "get the word out," with little or no investment in programs which will transfer conservation devices and methods to customers (e.g., low-volume toilets and improved landscape irrigation practices). Thus, a water manager's understanding of the distinction between conservation *measures* and *incentives* is more than a matter of semantics and can affect the outcome of a utility's conservation program.

The Great Untapped Water Supply

Unaccounted-for losses and leakage constitute a great untapped water supply. Whether it should be classified as a supply or demand management option is often debated but really irrelevant, as the fact of the matter is that nearly every water supply system has an untapped reserve of water that is literally wasted due to leaks and improper accounting of usage. Most U.S. suppliers record UFW levels in the 15 to 20 percent range, although there is not consistency in how this is measured within the water industry and UFW figures can be easily manipulated depending on the desired outcome.

Though not widely publicized, a significant conservation milestone was set in July 1996 by the publication in *Journal AWWA* of a recommended goal for utilities' unaccounted-for water (UFW). In that document, AWWA's Leak Detection and Water Accountability Committee stated that "because of increasing demand and higher operational costs, the goal for lost or nonrevenue-producing water should be less than 10 percent" (AWWA, 1996). If followed or enforced, this new 10 percent industry standard could serve as a powerful inducement for water suppliers to meet an acceptable leakage standard and reduce their water demands and need for new suppliers.

Institutional Structure

The institutional structure of most water utilities requires revamping to accommodate the development of conservation projects. For water IRPs to be properly developed and implemented so that supply and demand programs are emphasized along least-cost criteria, many suppliers will require a reorganization of their existing organizational structures. At present, most utilities have a strong bias toward supply development and management, devoting most if not all staff and budgetary resources to those departments. Using an IRP and least-cost planning approach would typically redistribute emphasis toward more cost-effective demand management strategies. As a result, personnel needs and assignments could change significantly and may necessitate new staff who are skilled in water conservation.

Privatization

Privatization requires a reconciliation of the unprofitability of conservation. One snag that water IRPs may run into increasingly in the future is the role that privatization plays in the planning goals and investments of investor-owned water utilities. There is an inherent bias against conservation by most private water companies as corporate profits are measured by how much water is sold, not saved. To overcome this problem, public utility commissions will likely need to do for the water industry what it has sometimes been done for the electric industry to attempt to address this problem: decouple sales and profits. In essence, PUCs need to establish profit incentives for water efficiency and penalties for poor utilization of existing facilities and/or creation of excess capacity.

Consumer Involvement

Consumer involvement in utility decisionmaking may be on the rise. With the planning requirements for water IRPs encouraging public involvement in the decisionmaking process and the increasing privatization of the water industry, a new generation of consumer activism may be spawned in the future. While utilities may seek to limit the public's role (Mohl, 1996), the increasing number of private water utilities will necessitate expansion of regulatory agencies in order to respond to customer concerns and interests.

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THE AUTHOR

Amy L. Vickers is President of Amy Vickers & Associates, Inc., Amherst, Mass., a firm specializing in water conservation. Ms. Vickers is an engineer who works with water utility and private industry clients in the United States, Canada, and Europe. She has published numerous articles on water conservation issues, technology, and practices. She is an active member of AWWA.