

AWE Clearinghouse Web Site

Water Rates and Charges

IMPLEMENTING A CONSERVATION ORIENTED RATE STRUCTURE

Moving to a rate structure that promotes efficient use requires a thorough analysis of various conservation rate structures and benefits they can provide to the utility and its customers. Many social and economic issues must be addressed when changing from a rate structure that encourages water use to one that promotes conservation (Wang 2005).

As efficient use of water becomes the long-term goal of many utilities, planning becomes an essential part of reaching that goal. Questions of how much water must be saved, how to achieve those savings, how to measure the success of conservation programs, and how to maintain a healthy revenue base may require strategies significantly different from more traditional customer service programs. Water utilities considering a water conservation program have a variety of tools that will help to ensure their water conservation program is a success and revenue impacts are mitigated. Water budget rate structures are listed as one of these tools (AWWA 2006).

A 1995 Washington State Department of Health report explored the potential of conservation oriented rate structures in promoting water efficiency within the state (Washington State DOH 1995). The authors examined a variety of rate structures from the more typical uniform, declining and inverted rates to those that are less common such as time of use, excess use, and individualized goal billing rates which are often akin to water budget rate structures. The authors concluded that conservation rate structures are an effective way to promote water efficiency and can also provide stable utility revenue generation, even if demand is reduced. In the Washington study, goal billing rates had been implemented in 25 of percent water agencies surveyed. While goal billing differs from the water budget rate structures examined in this study in that the goals are seldom customized to the individual customer level, the similarities are notable and this research suggests that a wide number of agencies in the Washington area have actively pursued this approach.

The interplay of aging infrastructure, population growth, and drought are also factors utilities must consider when moving to a conservation oriented rate structure (Barta 2004). Examining the experiences of water providers and the green industry (i.e. landscape workers and professionals) during and after the Colorado drought of 2002-03, Barta explored the impact of outreach and education, policy and regulation, and conservation-oriented pricing structures for promoting water conservation. Barta concluded that there is a lack of peer reviewed studies on non-price conservation programs and that the failure to adequately account for the impacts of non-price programs could result in over-estimates of savings from price programs.

Conservation and Rate Structure Forms

Considerable attention has been given to evaluating various rate structures for their ability to provide adequate utility revenues while maintaining reasonable rates and promoting water

conservation (Western Resource Advocates 2005), (Whitcomb 2005). The four most common rate structures are: uniform, decreasing block rate, seasonal, and increasing block rate (NC League of Municipalities 2005), (Western Resource Advocates 2005). Using a 2002 survey of more than 150 cities the following breakdown of rate structures was calculated (Raftelis 2002):

Table 2.1: Prevalence of rate structures in United States

| Rate Structure | Residential | Non-Residential |
|-----------------------|--------------------|------------------------|
| Uniform | 37.2% | 45.9% |
| Increasing block | 29.1% | 17.6% |
| Decreasing block | 30.4% | 33.1% |
| Other | 3.4% | 3.4% |

Adapted from Raftelis 2002.

Some form of block rate structure (increasing or decreasing) are the most commonly used, but the uniform rate structure remains the single most popular approach. In general utilities appear more willing to apply a block rate structure to residential customers, preferring a uniform rate structure for non-residential customers. In practice, the use of uniform rate structures for non-residential classes may be less a matter of utility preference but rather recognition that the diversity of land uses within traditional customer classes may frustrate the efficacy and equity of block designs.

There is general agreement that a decreasing block rate structure encourages more use while uniform rates, seasonal rates, and increasing block rates offer potential for promoting water use efficiency. The efficacy of seasonal rates in promoting water conservation depends in large part on seasonal variations in water use and/or population fluctuations. Seasonal uses, such as irrigation, are typically discretionary.¹

Increasing block rates have considerable potential for encouraging conservation; however the extent to which this rate structure has been adopted may be a reflection of the degree to which municipalities value conservation and the extent to which they have experienced drought or other stresses on the available water supply. In the North Carolina Water and Sewer Rates and Rate Structures report (2005) of 276 utilities, only 49, or 18% of the utilities, used an increasing rate structure and more than half of those were utilities with populations of less than 2,500 residents. A similar study by Western Resource Advocates (2004) found that of the 14 utilities studied on Colorado's Western Slope, six utilities (43%) used an increasing rate structure. Among the 12 utilities studied along the drier, more populous Front Range 67% used an increasing block rate structure.

A study in Florida by Whitcomb (2005) found that 10 out of 16 utilities used an increasing block rate structure. This study concluded that pricing can be an effective tool for managing water resources even though customers are often ignorant of both the prices paid for water and the amount of water consumed for different end uses. The author concluded that in spite of this

¹ Some researchers dispute the conservation impact of a uniform seasonal rate structure, arguing that there is an insufficient price signal for promoting conservation (Western Resource Advocates 2005).

contradiction, customers are aware and concerned about the total dollar amount of the bill and adapt their water use behavior accordingly.