

# **SWIC-Recommended Guidance for North Carolina Utilities Attempting to Support Water Conservation in the Long-Term through Rate Structure Design and Billing Practices**

**November 2010**

This document provides guidance on rate structure design and billing practices to water utilities that are attempting to decrease water usage among, primarily, their residential customers. There may be additional rate structure design and billing practices that the utilities can implement to encourage water conservation among non-residential customers which are not addressed in this document.

While all utilities are encouraged to promote efficient use of water resources, there are varying degrees to which utilities in North Carolina need to actively promote conservation in order to ensure adequate supply to meet their demands. One rate structure does not fit all utilities in North Carolina. Hence, these guidelines are *not* mandatory for water utilities. While these guidelines represent good practice in many circumstances, they are not necessarily all suitable for all water utilities in North Carolina or even the same water utility at different points in time. There is one mandatory legal requirement pertaining to water rate structures for water systems expanding service using state funds, further cited in Option #2 on the following page.

These guidelines have been prepared in accordance with S.L. 2008-143, Section 17, by the North Carolina State Water Infrastructure Commission (SWIC)<sup>1</sup> through consultation with the Environmental Finance Center at the University of North Carolina's School of Government (EFC).

## ***NC SESSION LAW 2008-143. SECTION 17.***

The State Water Infrastructure Commission, in consultation with the Department of Environment and Natural Resources, the School of Government at the University of North Carolina at Chapel Hill, the North Carolina Utilities Commission, the Public Staff of the North Carolina Utilities Commission, and the Local Government Commission, shall develop guidelines for water rate structures that are adequate to pay the cost of maintaining, repairing, and operating the system, including payment of principal and interest on indebtedness incurred for maintenance or improvement of the water system. The guidelines shall also consider the effect of water rates on water conservation and **recommend rate structures that support water conservation**. Copies of the guidelines shall be made available to the Department of Environment and Natural Resources, the North Carolina Utilities Commission, and to all local government water systems and large community water systems, as defined in G.S. 143-350. The Commission shall report to the Environmental Review Commission on its progress in developing the guidelines no later than January 1, 2009.

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<sup>1</sup> The 2005 General Assembly created the State Water Infrastructure Commission in GS 159G-65 (SL 2005-454). Representatives of the Department of Commerce, Department of Environment & Natural Resources, Rural Economic Development Center, Clean Water Management Trust Fund, Local Government Commission, NC League of Municipalities, NC Association of County Commissioners, NC State University, American Council of Engineering Companies, Water Resources Research Institute, Governor, Senate, and House of Representatives serve on the SWIC.

## RECOMMENDATIONS

All utilities should determine the cost to deliver service in the short and long term, and establish a baseline revenue requirement prior to engaging in additional rate deliberations. In 2009, SWIC adopted criteria which are used by North Carolina funding agencies in determining the adequacy of rate structures to pay the cost of maintaining, repairing, and operating the system, including payment of principal and interest on indebtedness. This document can be found at <http://www.ncwater.org/drought/section9.php>. Utilities should also consider the cost of future system rehabilitation, improvements and expansion when considering rate structures. In order to appropriately evaluate rates and rate structures, utilities should develop and analyze data on costs and water consumption at the customer level.

Once the utility has determined the baseline cost to deliver services, utilities attempting to encourage conservation may consider implementing as many of the following options as desired, realizing that there may be tradeoffs with other utility policies and priorities. Utilities should only embark on implementing conservation-oriented rate structures if they are judged to also be financially and economically sound.

## RATE STRUCTURE AND BILLING OPTIONS

Utilities attempting to encourage conservation may consider implementing as many of the following options as desired, realizing that there may be tradeoffs with other utility policies and priorities. A guiding principle in setting rates is that customers respond to rates by adjusting their discretionary water use.

- 1. Set prices that encourage water conservation at the average as well as high levels of residential customer consumption.**

Average residential consumption varies from utility to utility, but is close to 4,000-5,000 gallons/month across the state. Information about the range of prices being charged in NC can be obtained from rates surveys, such as the NC League of Municipalities/Environmental Finance Center annual statewide rate survey.

- 2. Do not charge residential customers (or usage below 20,000 gallons/month) using a decreasing block rate structure.**

A “decreasing block rate structure” is one where the volumetric price for water (\$/1,000 gallons or \$/ccf) decreases for higher levels of consumption. This is an *option* for all utilities, but is *mandatory* for local governments and large community water systems

applying for state funds for extending water lines or expanding water treatment capacity, based on S.L. 2008-143. It can be accomplished in one of two ways<sup>2</sup>:

- a) Avoid using a decreasing block rate structure for any rate structure designed specifically for residential customers only, or
  - b) For utilities that use the same decreasing block rate structure for all of their customers, not differentiating between residential and non-residential customers, the first block must contain at least the first 20,000 gallons/month in order to ensure that all residential usage is charged at a uniform rate.
- 3. Design a rate structure that significantly reduces total bills for customers that reduce water consumption.**

This is accomplished by using lower base charges, not including consumption allowances with the base charge, and setting higher volumetric prices wherever possible. *However, encouraging conservation is only one objective of rates, and should not be used at the expense of recovering the costs of service and providing revenue stability to the utility.* Many utilities, particularly small ones, may find it more suitable to charge high base charges to ensure financial sustainability.

- 4. Use an increasing block rate structure with 3 or 4 blocks within the first 20,000 gallons/month. Utilities with residential increasing block rate structures that use substantial rate differentials between blocks should realize a conservation response.**

An “increasing block rate structure” is one where the volumetric price (\$/1,000 gallons or \$/ccf) increases for higher levels of consumption. Having an increasing block rate structure alone is not sufficient to encourage conservation without setting substantial rate differentials between blocks (see NC League of Municipalities and the Environmental Finance Center’s “2006 How Much Does Clean Water Cost: The Story Behind the Revenue”). The first block beyond the base charge should be set near the wintertime average residential water use at the utility, or less than 5,000 gallons/month by default.

- 5. As an alternative to an increasing block rate structure, use a uniform rate structure with a higher volumetric price or a seasonal rate structure that permanently charges higher rates in the summertime than in the wintertime.**
- 6. Charge higher impact fees (system development charges) for irrigation water meters than for standard household water meters and/or create a residential irrigation meter rate structure and charge a higher volumetric price for irrigation water than for standard household water.**

Utilities often have to size their treatment, storage and distribution capacity to meet the peak summertime demand, which is partially driven by residential irrigation demands.

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<sup>2</sup> This requirement only applies to the rates assessed on metered usage past the initial base (“minimum”) charge and consumption allowance.

This increases the costs for the utility even though that extra capacity is only used during a few months in the summer to serve the customers that use water for irrigation. The utility could recover the costs of extra capacity by charging higher impact fees for irrigation meters and/or by charging higher rates for water sold through irrigation meters. For utilities with increasing block rate structures, irrigation rates should at least be as high as the most expensive block price for the standard residential household use. Water use through irrigation meters are not usually charged sewer rates.

**7. Use a monthly billing period.**

The more frequently a customer receives utility bills, the more aware they are of their consumption and the more price-responsive they are in their conservation efforts. Utilities are encouraged to use monthly billing when fiscally feasible.

**8. Provide price and use information on customers' bills.**

Use the bill itself as a document to share information with the customer. Customers that can view their current and/or historic water use along with their utility's rates on the bill itself often adjust their consumption behavior and use less water.

**9. Encourage sub-metering in apartment complexes and other master-metered multi-family residential housing areas.**

Customers that receive their own utility bill directly have a greater financial incentive to repair leaks and conserve on water usage.

**10. Review rates each year and adjust rates as needed to meet both operating and long-term costs.**

Rates should be reviewed at least once a year to ensure that rates meet system costs. Increases also may be used to encourage conservation actions that respond to rate structure. Each year in North Carolina, about half of the utilities raise their rates.

**11. In concert with the Water Shortage Responses Plans, consider a role for temporary rate adjustments (e.g.: "drought surcharges") that are tied to drought conditions and water storage levels.**

These rate adjustments must be temporary and their implementation period should be clearly tied to water storage triggers identified in the water shortage response plan. Utilities should develop and adopt their temporary rate adjustment policies and communicate them with their customers before the next drought or water shortage period. This strategy can compensate for lost revenue due to the imposition of other water conservation measures.

## **RESOURCES**

Guidance on how NC state funding agencies evaluate whether a water rate structure is adequate to pay the cost of maintaining, repairing and operating the system, including

reserves for payment of principal and interest on indebtedness, can be viewed at <http://www.ncwater.org/drought/section9.php>

Guidelines for NC water utilities in designing rate structures that support the utility's objectives (including but not limited to encouraging conservation) can be downloaded at <http://www.efc.unc.edu/publications/2009/GuidelinesDesigningRateStructures.pdf>

The U.S. Environmental Protection Agency has published several easy-to-use documents and manuals on setting rates, conservation and utility management, available at <http://yosemite.epa.gov/water/owrccatalog.nsf/>. The USEPA's *Setting Small Drinking Water System Rates for a Sustainable Future* can be downloaded for free at [http://www.epa.gov/waterinfrastructure/pdfs/final\\_ratesetting\\_guide.pdf](http://www.epa.gov/waterinfrastructure/pdfs/final_ratesetting_guide.pdf).

The American Water Works Association's *M1: Principles of Water Rates, Fees and Charges*, as well as other manuals on rates, rate structures, and conservations, can be purchased at <http://www.awwa.org/Publications/>

Several technical assistance providers conduct trainings in North Carolina and provide information on designing rate structures, including but not limited to: the Environmental Finance Center at the University of North Carolina's School of Government ([www.efc.unc.edu](http://www.efc.unc.edu)), the North Carolina American Water Works Association-Water Environment Association ([www.ncsafewater.org](http://www.ncsafewater.org)) and the North Carolina Rural Water Association ([www.ncrwa.com](http://www.ncrwa.com)).

*Adopted by the State Water Infrastructure Commission at its November 19, 2010 meeting in Raleigh.*