

Conservation Pricing and Santa Rosa's Water Rates

SUMMARY AND CONCLUSIONS

In January 2001 the City of Santa Rosa entered into a Memorandum of Understanding (MOU) between the Sonoma County Water Agency (SCWA) and ten other agencies receiving water through SCWA's facilities (MOU signatory agencies). The SCWA MOU committed the City to evaluate its water rate structure with respect to providing incentives for water conservation. In February 2001 the City retained The Reed Group, Inc. to assist in this evaluation. This report summarizes our evaluation of the City's current rate structure from a conservation perspective, and places it in context with other rate setting objectives, with the rate structures used by other MOU signatory agencies, and with other conservation measures.

The City's current rates clearly meet the definition of "conservation pricing" as defined by the best management practices (BMPs) of the California Urban Water Conservation Council (CUWCC). This is the minimum standard required under the SCWA MOU. The City's rates meet this requirement because:

- ❖ Water rates include a uniform commodity rate applicable to all units of water usage,
- ❖ The uniform rate is relatively high (accounting for about 85 percent of rate revenues), while the monthly service charges are relatively low, and
- ❖ The City's charges for sewer service are also based on water usage, with a relatively high commodity charge compared to the fixed service charge.

The City's current water rate structure appears effective at encouraging water conservation. The marginal cost to customers of additional water usage is high, relative to rate structures used by most other MOU signatory agencies. Many MOU signatory agencies have rate structures that are less conservation-oriented than Santa Rosa's, and rate structure of two agencies might even be considered nonconserving by CUWCC standards. Average single family water use in Santa Rosa is low relative to other local agencies suggesting that changes to the current conservation-oriented rate structure may not be necessary at this time¹.

¹ Water use characteristics are a result of many factors, including pricing. No attempt was made to assess the relative impact of pricing relative to other factors.

Periodically the City reviews its water rates to ensure that the rates produce sufficient revenue to meet the water utility's needs and obligations, as well as to achieve specified rate setting objectives. The current rate structure is intended to meet a variety of rate-setting objectives, including encouraging water conservation. The City's current rate structure reflects a balance between encouraging water conservation and achieving other rate setting objectives. Changing the rate structure to further encourage conservation may upset the present balance between objectives.

Certainly other rate approaches are available to the City that would also encourage water conservation. The SCWA MOU specifically identifies peak period water use as a target for conservation measures. Alternative rate structures, such as seasonal or tiered rates, could be designed to target peak period water use. The current uniform rate structure targets both peak and non-peak usage. Seasonal or tiered rates that target peak water use could have negative implications for revenue stability and annual cash flow that may offset the added conservation benefits.

In our opinion, changing the City's current water rate structure is not required under the provisions of either the SCWA MOU or CUWCC MOU, nor is changing the rate structure necessary for the City to meet its conservation objectives. Nevertheless, the issue is as much a policy issue as an analytical one. If the City decides to consider a more aggressive water conservation rate structure we recommend considering the following approaches:

- ❖ A water budget-based tier structure for irrigation services. This would be possible once the City completes efforts to determine water budgets for all irrigation services, which is expected within the next couple of years.
- ❖ Development of a residential tier structure suitable for periods of water shortage as defined by the City's Water Shortage Contingency Plan. For non-residential customers, we would recommend that water shortage surcharges be applied to uniform rates during various stages of water shortage, as described in the 1998 water and wastewater rate study.
- ❖ A seasonal rate structure if the City determines that it needs to place still more emphasis on reducing peak period water use.

The remainder of this report describes the requirements for conservation pricing and rate structure issues, as well as our findings and conclusions, in greater detail.

BEST MANAGEMENT PRACTICE #11 – CONSERVATION PRICING

Water conservation is and has been an important issue within Sonoma County. Water conservation efforts are being implemented at both the local and regional level. While water conservation can be effectively implemented at the local level, benefits of conservation savings are regional since many agencies rely on the same water resources and transmission system.

In January 2001 the City of Santa Rosa and nine other public agencies entered into a Memorandum of Understanding with the Sonoma County Water Agency regarding water transmission system capacity and related issues². Section 6 – Water Demand Reduction Measures of the MOU included, in part, the following provisions:

“Each party hereto, except the Agency, agrees to:

- (a) Within six months of signing this MOU, join the California Urban Water Conservation Council by becoming a signatory to the “Memorandum of Understanding Regarding Urban Water Conservation in California” and thereby commit to implement Best Management Practices (BMPs) of water conservation promulgated by said Council as they currently exist or as they may from time to time be revised, subject to and to no extent greater than required by the terms of said memorandum. The Agency has already signed said document and agrees to pay annual membership dues for water contractors.
- (b) Within two years of signing this MOU, evaluate and present to its governing board for consideration of adoption, water conservation pricing for retail customers as described in BMP 11. Said evaluation shall include rates and/or charges that target reduction of peak month use.”

With this agreement all signatories of the SCWA MOU are committed to becoming signatories of the CUWCC MOU. The CUWCC is a statewide organization that includes urban water agencies, environmental groups, and public policy interests dedicated to developing and promulgating effective water conservation programs and improving the management of urban water resources. The City of Santa Rosa has been proactive in its conservation efforts, and has been a signatory agency of the CUWCC MOU since 1998. SCWA, the Town of Windsor, and Marin Municipal Water District (MMWD) are also CUWCC MOU signatory agencies.

The California Urban Water Conservation Council has developed fourteen best management practices (BMPs) for water conservation. BMP #11 specifies requirements for water conservation pricing and states³ :

“Implementation methods shall be at least as effective as eliminating nonconserving pricing and adopting conserving pricing. For signatories supplying both water and sewer service, this BMP applies to pricing of both water and sewer service. Signatories that supply water but not sewer service shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.

- a) Nonconserving pricing provides no incentives to customers to reduce use. Such pricing is characterized by one or more of the following components: rates in which

2 *Memorandum of Understanding Regarding Water Transmission System Capacity Allocation During Temporary Impairment*, January 2001.

3 *Final Exhibit 1 Attachment to the Memorandum of Understanding*, California Urban Water Conservation Council, Revised September 21, 2000.

the unit price decreases as the quantity used increases (declining block rates); rates that involve charging customers a fixed amount per billing cycle regardless of the quantity of water used; pricing in which the typical bill is determined by high fixed charges and low commodity charges.

- b) Conservation pricing provides incentives to customers to reduce average or peak use, or both. Such pricing includes: rates designed to recover the cost of providing service; and billing for water and sewer service based on metered water use. Conservation pricing is also characterized by one or more of the following components: rates in which the unit rate is constant regardless of the quantity used (uniform rates) or increases as the quantity used increases (increasing block rates); seasonal rates or excess-use surcharges to reduce peak demands during summer months; rates based upon the long-run marginal cost or the cost of adding the next unit of capacity to the system.
- c) Adoption of lifeline rates for low income customers will neither qualify nor disqualify a rate structure as meeting the requirements of this BMP.”

Based on the definitions of nonconserving and conservation pricing the City has determined that current rates meet the requirements of conservation pricing. A specific description of the City’s water rates is provided in the next section. The City also provides sewer service. The determination that the City’s rates meet the requirements of BMP #11 is based on the following facts:

- ❖ Water rates include a uniform commodity rate applicable to all units of water usage,
- ❖ The uniform rate is relatively high (accounting for about 85 percent of rate revenues), while the monthly service charges are relatively low, and
- ❖ The City’s charges for sewer service are also based on water usage, with a relatively high commodity charge relative to the fixed service charge.

While the definitions of nonconserving and conservation pricing used in BMP #11 are fairly explicit there is a degree of variation in the degree in which conservation pricing may actually encourage water conservation. One of the goals of this report is to place the City’s water rate structure into context with other conservation-oriented rate structures, and to assess whether the current rate structure is appropriate for the City’s situation. We have not attempted to quantitatively evaluate the effectiveness of the City’s current rate structure, but to explore a variety of issues to qualitatively place the City’s water rates into context with other rate structures and related issues.

CURRENT WATER RATES

The City's water rates were last adjusted in January 2001 although the basic rate structure has been in place for a number of years⁴. Exhibit 1, on the following page, summarizes the current water rates and rate structure applicable to all customers⁵.

The City's water rates include two separate components. A fixed monthly service charge is imposed on each service based on the size of the water meter. Higher charges for larger meter sizes reflect the fact that larger services can place a larger demand on the water system. Service charges, therefore, reflect cost to the City of meeting the potential demand that a customer could place on the water system (and the City needs to be prepared to serve). The water rates also include a uniform commodity rate that applies to each 1,000-gallon (tg) unit of water use. Customers are billed monthly for water service.

Exhibit 1

City of Santa Rosa

Current Water Rates

<i>Monthly Service Charges</i>		<i>Uniform Commodity Rate</i>	
5/8" meter	\$4.07	All water use	\$2.31/tg
1" meter	\$7.40		
1 1/2" meter	\$14.15		
2" meter	\$23.79		
3" meter	\$55.63		
4" meter	\$94.65		
6" meter	\$207.20		

tg = 1,000 gallons

The uniform commodity rate generates about 85 percent of the City's water rate revenue, with the service charges generating about 15 percent of revenue. As a result of this balance, the City's rate revenue varies significantly with variation in water use patterns (seasonal and annual). Many utilities attempt to recover the fixed costs of providing service through the fixed component of the rates, and recover variable costs (those costs that vary with the volume of water sales) through commodity rates. The City's water conservation objective contributed to the decision to place a greater emphasis on the commodity rate component of the rate structure, even though this results in increased revenue volatility relative to costs.

4 Ordinance 3452 adopted in December 1999 revised rates for water service for a two-year period with changes effective January 6, 2000 and January 6, 2001.

5 Some agencies have different rate structures for different customer classes. However, having the same rate structure apply to all customers has been an important rate structure feature for the City.

Average single family water use in Santa Rosa is about 8,700 gallons per month or about 290 gallons per day. Most single family customers have 5/8" water meters.

RATE SETTING OBJECTIVES

In November 1998 the City completed a comprehensive water and wastewater rate study⁶. During that study the City developed a list of rate setting objectives to assist in addressing rate structure issues and determining what type of rate structure best meets the City's needs. Rate setting objectives identified during the study included:

- ❖ Rates should reflect the cost of providing service to customers
- ❖ The rate structures should be fair and equitable
- ❖ Rates should encourage water conservation
- ❖ The rate structures should be simplified where possible to streamline administrative requirements
- ❖ Rates should generate sufficient revenues to cover each enterprise's operating and capital program needs, and maintain adequate reserves consistent with sound financial management.

In 1999, when the City performed an internal review of water and sewer rates, staff, the Board of Public Utilities, and the City Council reaffirmed the rate setting objectives listed above.

The City's rate setting process has involved consideration of each of the stated objectives. The task of developing an appropriate rate structure for the City entails finding a structure that best achieves each of the objectives, even though in some instances objectives may conflict with one another. For example, water rates could be developed to more precisely reflect the cost of providing service if they took into account maximum hour or maximum day demand characteristics, in addition to total water use and meter size. However, such a rate approach would add significantly to the complexity of the rates, conflicting with the objective of simplicity and limiting administrative requirements. The current water rate structure addresses each rate setting objectives as follows:

- ❖ Water rates reflect the cost of providing service by assigning costs to each customer based largely on the amount of water usage. In addition, a portion of costs is assigned based on each customer's capacity requirements (or potential demand) as reflected by meter size. Customer costs (fixed costs such as meter reading and billing) that do not vary with meter size are allocated equally to each customer and included in the service charge.

6 *City of Santa Rosa Water and Wastewater Rate Study – Final Report*, Hilton, Farnkopf & Hobson, et al., November 5, 1998.

- ❖ Water rates are fair and equitable because all customers are subject to the same rate schedule. The commodity rate does not vary by customer class or change with the amount of water usage. One of the frequent criticisms regarding tiered water rates is that often different commodity rates are *perceived* as inequitable, even when a cost justification exists. While the City's service charges vary by meter size, this variation is based on differences in capacity available through different meter size.
- ❖ Water rates encourage water conservation because every unit of consumption is subject to the relatively high commodity rate. The conservation incentive exists year-round under both peak and non-peak periods suggesting that efficient water usage is important all the time.
- ❖ The service charge with uniform commodity rate is one of the simplest forms of water rate structures. In recent years the City eliminated a high-level surcharge that applied to some customers located at higher elevations. The surcharges had generated minimal additional revenue relative to the cost of maintaining and administering the charges.
- ❖ Water rates are adjusted annually, when necessary, based on a biennial rate review process. Water rates are adjusted to cover annual operating and maintenance costs and capital program needs. The City has also established reserve policies and target levels to help protect the financial integrity of the water system. In particular, the revenue volatility associated with the high commodity rate (relative to service charges) is offset by maintaining operating and catastrophic reserves.

The objective of encouraging water conservation through conservation pricing is achieved in conjunction with consideration of other objectives. Any change to the rate structure (e.g., to provide a stronger conservation incentive) would entail considering the implications for other rate setting objectives. For example, a tiered rate structure might further the conservation objective, but would create an additional administrative burden both in terms of establishing and administering the rates.

ALTERNATIVE WATER RATE STRUCTURES

There are a number of water rate structures currently in use by water utilities. In order to consider the relative merits of alternative rate structures it is helpful to have a basic understanding of the universe of potential structures. Both non-conserving and conservation-oriented rate structures are described below. Emphasis is placed on the conservation-oriented rate structure alternatives, since some could be viable options for the City.

As part of this study, the water rate schedules for each of the signatories of the SCWA MOU were obtained and reviewed. These rate structures are more specifically discussed in the next section. However, to the extent that any of the agencies have rate structures that fit the definitions below they are identified.

Non-Conserving Rates

❖ *Flat Rates (unmetered service)* – Flat rates are required when water service connections are not metered, and the amount of water used by each customer is unknown. Flat rates are based on estimates of water usage for various customer classes. Some utilities have established 30 to 40 separate rate classes in an effort to sufficiently characterize the variations in water use patterns within their service area. The City of Rohnert Park’s residential customers are unmetered and subject to a flat rate of \$15.00 per month. Flat rates are reasonable when the cost of providing service is low and when variations in usage can be adequately captured through the range of available rate classes. Many water utilities (e.g., in the Sacramento region) are installing meters to not only encourage water conservation, but also to enable a more equitable means of billing (based on actual usage) as water service costs increase. Stated another way, equity issues become more significant as the cost of service increases.

❖ *Declining Block Rates* – Declining block rates are characterized by a reduction in the commodity rate as total water usage increases. This type of rate structure is becoming increasingly rare in California due to the perception that it does not promote water conservation, even though declining block rates are consistent with cost of service principles. In many parts of the country, declining block rates are quite prevalent, particularly for industrial customers. This type of structure is appropriate when the marginal cost of providing an additional unit of water is less than the average cost. This is generally not the case in situations where water supply constraints result in utilities seeking increasingly expensive water supplies to meet additional increments of demand.

❖ *Minimum Charges* – Sometimes water rates will include an initial volume of water with the fixed service charge. This structure is commonly referred to as a minimum charge with its minimum quantity of water. The minimum block of water can be viewed from two perspectives. First, it can be viewed as a *free* block of water. Customers whose use stays within the minimum quantity have no incentive for conservation (using less does not lower their water bill). Hence, rate structures with minimum charges are often considered nonconserving. Alternatively, the minimum charge can be viewed as including the cost of the minimum quantity of water. Customers using less than the minimum may feel they are paying for water not used. Some rate analysts view minimum charges problematic from a pure cost of service standpoint. The Forestville Water District includes the first 5 tg of water in its minimum charge of \$10.75 for a 5/8” meter. Minimum charges for larger meter sizes include more water in the minimum quantity.

❖ *High Fixed Component* – Water rates characterized by high fixed service charges and low commodity rates are considered nonconserving because customers have limited ability to reduce their water bill by using less water. Some water utilities, for example in the Sacramento region, have high fixed costs of water service because they are near ample water supply, have minimal treatment requirements, and utilize gravity for water distribution. Commercial customers of the Carmichael Water District (in Sacramento) pay a monthly service charge of \$25.38 per month for a 1” meter and \$0.51/tg for water usage. That District adopted its rate structure as metering enabled the use of metered rates. The rate structure reflects the high fixed nature of the District’s costs and provides revenue stability needed as the transition from flat rates to metered billing

occurs. Customers, however, have already expressed an interest in rates with a lower service charge and higher commodity rate as a means of providing greater ability to control their water bills. Locally, the City of Rohnert Park's metered rates (applicable to non-single family customers) includes a \$15.00 per month service charge for meters up to 1", and might be characterized as having a high fixed component. Rohnert Park's uniform commodity rate is \$1.40/tg.

Conservation-Oriented Rates

❖ *Uniform Commodity Rates (with low service charge)* – Uniform commodity rates are considered to be conservation-oriented because water users are charged for every unit of water consumed. Rate structures that include a relatively high commodity rate and low service charge provide customers with greater ability to control their water bill. Therefore, the higher the commodity rate the greater the conservation incentive. It is not uncommon for water utilities to have rate structures that generate 65 percent or more of the rate revenue through commodity charges and the balance through service charges. As noted previously, the City's current uniform rate structure generates about 85 percent of rate revenue through commodity charges. The definition of conservation pricing does not specify a minimum percentage of rate revenue to be recovered from commodity charges.

The fixed and variable nature of water utility costs can vary dramatically. A utility with a very high percentage of fixed costs may be concerned about financial stability issues associated with a relatively high variable rate component, and therefore justify a lower percentage than other utilities. In addition to Santa Rosa, the City of Cotati, North Marin Water District (NMWD), City of Rohnert Park (non-residential), City of Petaluma, and Valley of the Moon Water District (VMWD) all have uniform rate structures. Santa Rosa, Petaluma, and VMWD could be considered to have more conservation-oriented rate structures than Cotati, NMWD, and Rohnert Park due to the amount of the commodity rates relative to the amount of their service charges.

❖ *Tiered Commodity Rates* – Tiered (or inclining block) rate structures are characterized by higher commodity rates as total water usage increases. Tiered rate structures are gaining prominence in California. Two- or three-tier rate structure are the most common, although more tiers are possible. Tiered rate structures are more difficult to design, and when improperly designed can be ineffective in encouraging conservation and/or viewed as punitive by customers. Tier structures should be designed around water use patterns of a relatively homogeneous customer class. Single family customers tend to be a homogeneous class exhibiting a reasonably well-defined range of *normal* water use⁷. Multi-family customers (when examined on a per-dwelling-unit basis) are also a homogeneous class, although usually with different use characteristics than single family. Non-residential customers typically do not exhibit homogeneous water use patterns, and the design of tier structures is more problematic.

7 Some utilities have divided their single family customer class into several classes based on lot size in an effort to provide greater homogeneity within a single class.

Many utilities have developed tier structures for residential customers and use a uniform or seasonal rate for non-residential customers. The City of Sonoma has a 3-tier residential rate structure, but uniform rates for non-residential customer classes. The Town of Windsor has a 4-tier residential rate structure and a 2-tier irrigation rate structure, but uniform rates for other customer classes. MMWD has gotten around the problem of non-homogeneous water use patterns of non-residential customers by developing a structure based on water budgets. Use of individual water budgets effectively results in a customized rate structure for each non-residential customer. MMWD's tier structure includes 85 percent of the customer's water budget at the first tier rate, up to 150 percent at the second tier, and any use above 150 percent at the third tier rate. Tiered rates for MMWD's residential customers are applied on a per-dwelling-unit basis.

Establishing and maintaining water budgets for commercial businesses and industry can be very time consuming. However, water budgets for irrigation customers can be developed relatively quickly using evapotranspiration data and information on the area being irrigated by each service connection as the basis for determining water requirements. Santa Rosa is currently developing water budgets for each of its irrigation services. This approach could be used to develop a water budget-based tier structure for irrigation services at some point in the future. By targeting irrigation usage the City could effectively target the peak demand period.

The design of tier structures requires consideration of both tier break points (transition point between tiers) and tier rates. Frequently an initial tier (with the lowest rate) is set based on an amount of water determined appropriate for basic human consumption and sanitary needs. A low tier rate for this non-discretionary amount of water is often viewed from a lifeline perspective. High tiers are often established at the bounds of *reasonable* water use for the customer class with excess usage subject to the highest rates. While it is possible to base tier rates on cost analyses (see marginal cost-based rates below), it is not uncommon for tier rates to be based simply on multiples (e.g., a 25 percent differential between tier rates) with limited economic rationale.

With tiered rates the water usage that is most likely to be curtailed is discretionary usage that tends to occur at higher tier rates, contributing to revenue volatility. Tier structures should be carefully designed with financial stability issues in mind.

❖ *Seasonal Rates* – Seasonal rates are characterized by higher commodity rates during the period of peak demand and lower rates during non-peak periods. Seasonal rates may include uniform rates, tiered rates, or a combination (e.g., uniform in winter and tiered in summer). Frequently tiered rate structures may have higher tier break points during the summer season to allow for some increased usage during the peak season. While this type of structure has seasonal characteristics, it is not necessarily intended to target conservation during the peak season. MMWD's tiered rate structure allows for increased usage at the lower tiers during the summer, but does not include higher tier rates during the summer. None of the SCWA MOU signatory agencies currently have a seasonal rate structure. This is an interesting observation given the capacity constraints of the SCWA transmission system and need to target peak season water demands. Design considerations for developing seasonal rates include determining an

appropriate peak season, identifying seasonal costs, and addressing issues related to billing during the transition from one season to the next.

Two characteristics of seasonal structures should be evaluated if seasonal rates are to be considered. First, a seasonal structure will tend to exacerbate revenue volatility because a higher peak-period commodity rate will occur at a time when water usage is most variable. Furthermore, seasonal rates will further concentrate revenue collections around the peak water use period, which may have cash flow implications during non-peak periods.

❖ *Marginal Cost Based Rates* – Marginal cost refers to the approach for evaluating cost of service. It differs from traditional approaches that are based on embedded historical and average costs. Marginal cost-based rates have found a place in water utility rate structures, even though they require more detailed analyses to be developed. MMWD developed a marginal cost-based tier structure in the early 1990s. The tier structure is intended to reflect the marginal cost of local, imported (SCWA), and recycled water supply sources. Marginal cost-based rates can provide a sound cost-based rationale for tier rates.

❖ *Surcharges, Discounts and Credits, and Penalties* – Surcharges, discounts and credits, and penalties are rate overlays that provide additional tools that can be incorporated into rate structures to provide further conservation incentives.

▪ Surcharges – Surcharges are additional charges intended to reflect a specific cost or to encourage specific behavior. Elevation surcharges are occasionally included in water rates to reflect the cost of additional pumping required to serve customers at higher elevations. Some utilities include debt service or capital program surcharges on water bills to reflect the cost of specific obligations. If the surcharge is placed on the commodity rate, then it can provide an additional incentive for conservation. Excess use (or water shortage) surcharges are frequently used to encourage additional conservation during water shortage situations. Santa Rosa's 1998 water and wastewater rate study included an evaluation of water shortage surcharges that may be appropriate during various stages under the City's Water Shortage Contingency Plan. In addition to providing an added incentive for conservation during critical supply situations, the surcharge was designed to generate needed revenue for the water utility during a period of significantly reduced water sales.

▪ Discounts and Credits – Base water rates can also be supplemented with discounts or credits tied to conservation activities to provide customers with a financial incentive to conserve. This *carrot* approach may be useful in encouraging customers to change water using fixtures or practices. During the statewide water shortage in the late 1980s and early 1990s, the City of San Francisco adopted a program whereby customers that installed low flow showerheads, faucet aerators, and low flow toilets could receive a reduced water rate⁸. The program was optional to customers, but the discount provided a financial incentive to retrofit homes to save water.

8 *City of San Francisco Ordinance 185-91, March 6, 1991.*

▪ Penalties – Base water rates can also be supplemented with penalties against customers for undesirable behavior. Penalties for late- or non-payment of bills are fairly common and are intended to encourage timely payment of bills. Using penalties to encourage water conservation, however, implies that customer’s water use is restricted when water utilities are normally expected to meet the reasonable demands of customers. This *stick* approach should be used with caution and only when necessary due to the significant negative public perception. One example of a punitive charge is provided by the City of Santa Monica⁹. In 1990, the City adopted a conservation incentive fee of \$2.00 per month for single family homes. The fee was imposed to encourage customers to participate in the City’s plumbing fixture (toilets and showerheads) rebate program. Customers that did not participate in the program were penalized with the \$2.00 fee. Participants in the plumbing fixture rebate program were exempted from the fee. Revenues generated by the fee were used to fund a portion of the rebate program.

Discounts and penalties may be opposite sides of the same coin. Nevertheless, public perception of each approach can be dramatically different. All types of rate overlays should be designed and implemented with consideration of the overall objectives as well as public perception and acceptance.

WATER RATE STRUCTURES OF OTHER SCWA MEMBER AGENCIES

The preceding section described a number of possible water rate structures. References were made to other local water agencies that use some of the rate structures described. Appendix A, at the end of this report, provides a brief description of residential and non-residential rate structures used by each of the SCWA MOU signatory agencies. Most agencies employ the same rate structure for both residential and non-residential customers, but several have different structure for various classes. Exhibit 2, on the following page, summarizes each agency’s residential water rates and includes calculations of monthly residential water bills for low, medium, and high water usage.

General observations regarding rate structures used by the ten agencies surveyed (including Santa Rosa) include:

❖ Three Agencies Have Tier Structures – The City of Sonoma has a 3-tier residential rate structure. The Town of Windsor has a four-tier residential and a two-tier irrigation rate structure. MMWD has a three-tier rate structure for all customer classes with tier break points varying for each class of customer.

❖ Eight Agencies Have Uniform Rate Structures – The City of Santa Rosa, City of Petaluma, City of Sonoma (non-residential), VMWD, and Town of Windsor (non-residential) have uniform rate structures that are generally characterized as having a high commodity charge and low service charge. The City of Cotati, NMWD, and City of Rohnert Park (non-residential) also

9 *City of Santa Monica Resolution 8012, April 24, 1990.*

have uniform rate structures though they are characterized with generally lower commodity rates and higher service charges¹⁰.

❖ One Agency Has a Minimum Charge Rate Structure – The Forestville Water District’s rate structure includes a minimum charge (based on meter size) that includes a minimum quantity of water at no additional charge. The minimum quantity varies with meter size. Water usage in excess of the minimum quantity is charged at relatively high uniform water rate. Minimum charge rate structures tend to be viewed as nonconserving.

❖ One Agency Has Unmetered Residential Customers on Flat Rates – The City of Rohnert Park’s single family customers are unmetered and pay for water service based on a flat rate, regardless of water usage. Flat rates are nonconserving because the amount charged has no relation to actual water use.

❖ None of the Agencies Have Seasonal Water Rates – This is an interesting observation given the region’s transmission capacity constraints and desire to focus conservation efforts on periods of peak use. It would not be surprising to see one or more agencies shift to a seasonal rate structure in the future. If capacity in SCWA’s water transmission system is critically limited the SCWA might encourage peak period conservation by implementing a seasonal rate structure. A wholesale seasonal rate structure could provide a sound cost basis for local agencies to adopt seasonal water rates.

❖ Two Agencies Bill Monthly – The City of Santa Rosa and Forestville Water District bill for water service on a monthly basis. Other surveyed agencies bill bi-monthly. More frequent billing is believed to be more relevant to consumers by providing a more direct link between their water bill and recent water usage. In addition, use information on the water bill can help customers to identify leaks (on the customer side of the meter) more quickly.

❖ Examination of Rate Structures Does Not Lead to Conclusions Regarding Variations in Cost of Service – It is tempting to judge the relative overall cost of providing service to customers across the various agencies based on water rate structures. Drawing such conclusions is problematic due to the significant difference in rate structures, as well as differences in customer bases and water usage patterns. The one exception to this is MMWD. It appears that the cost of service in the MMWD service area is significantly higher than for any agency within Sonoma County because each element of the rate structure is higher (or at the high end of the range) relative to other agencies.

❖ Santa Rosa Ranks 4th in Marginal Cost to Customers – As shown in Exhibit 2, Santa Rosa’s marginal cost of the next unit of consumption for residential customers ranks fourth out of the ten agencies surveyed. One way to consider the effectiveness of the conservation incentive embodied in the water rates is to examine the marginal cost to the customer for the next unit of water use. At low, medium, and high single family usage values the marginal cost of another

10 These might be considered less conservation-oriented than the previously listed uniform rate structures, though not necessarily nonconserving.

unit of usage (applicable commodity rate at the margin) under Santa Rosa's rates present customers with a relatively high marginal cost. This means, relative to other rate structures reviewed, customers using one additional unit more (or less) of water would pay more (or save more) under Santa Rosa's rates than under the rates of most of the other agencies surveyed.

This study did not include the analysis of water use characteristics within Santa Rosa or other agencies in Sonoma County. However, an analysis of residential water bills prepared recently by another consultant indicates that average single family water use in Santa Rosa is at the low end of the range relative to other local agencies¹¹. Estimated typical average monthly single family water use within each agency from this analysis is summarized below:

City of Santa Rosa	8.7 tg/month
City of Cotati	10.4 tg/month
Forestville Water District	10.4 tg/month
North Marin Water District	10.5 tg/month
City of Petaluma	10.3 tg/month
City of Rohnert Park	11.0 tg/month
City of Sonoma	9.6 tg/month
Valley of the Moon Water District	8.8 tg/month
Town of Windsor	11.7 tg/month
Marin Municipal Water District	8.3 tg/month

While water use characteristics are a function of many factors, including lot size, family size, demographics, economic status, and other factors, Santa Rosa's low single family water usage is likely to be partially the result of past and current conservation programs, including the conservation-oriented rate structure. In spite of the variety of factors affecting water use characteristics, it is interesting to note that the four agencies with the highest marginal cost of water (from the customer perspective) are the same four agencies that have the lowest estimated average monthly single family water use.

In conclusion, the City's current water rate structure clearly meets the minimum requirements for conservation pricing required by BMP #11. In addition, relative to the water rate structures currently used by other SCWA MOU signatory agencies, Santa Rosa's water rate appears to be

11 *Annual Cost of Retail Water Service to Typical Single Family Detached Home Customer*, prepared by John Olaf Nelson Water Resource Management, August 16, 2000.

more aggressive with respect to encouraging water conservation than most of the agencies. Is it possible to have a more conservation-oriented rate structure? Yes. However, changing the rate structure is not required by either the SCWA MOU or the CUWCC MOU, or is it necessary to achieve water conservation objectives.

While not required to meet BMP requirements, should the City choose to consider a more aggressive water conservation rate structure, we would recommend that the City consider the following:

- ❖ A water budget-based tier structure for irrigation services. This would be possible once the City completes efforts to determine water budgets for all irrigation services, which is expected within the next couple of years. This approach could effectively target water usage during the period of peak seasonal usage.
- ❖ Development of a residential tier structure suitable for periods of water shortage as defined by the City's Water Shortage Contingency Plan. A tier structure could provide a more aggressive conservation incentive at critical periods, when customers might be more willing to support more aggressive measures. The tier structure should include sufficient water for basic human consumptive and sanitary needs and possibly a reasonable allowance¹² for discretionary (e.g., irrigation) usage before high tier rates are applied. For non-residential customers, we would recommend that water shortage surcharges be applied to uniform rates during various stages of water shorts, as described in the 1998 water and wastewater rate study.
- ❖ A seasonal rate structure if the City determines that it needs to place additional emphasis on reducing peak period water use.

The City might also encourage SCWA to consider a seasonal rate structure at the wholesale level.

CONSERVATION PRICING AND OTHER WATER CONSERVATION MEASURES

The CUWCC MOU regarding water conservation best management practices includes 14 BMPs, including BMP #11 concerning conservation pricing. Even prior to signing the MOU in 1998 the City of Santa Rosa had a comprehensive conservation program. At present, the City of Santa Rosa has met or is working toward achieving all applicable BMPs. Appendix B, at the end of this report, summarizes the City's current efforts to meet the best management practices contained in the CUWCC MOU.

Conservation pricing is only a single measure in the City's arsenal of water conservation measures. An assessment of the status and effectiveness of other conservation measures should

12 This "reasonable allowance" may decrease with each stage of water shortage.

precede any consideration of changing the rate structure. While not studying the City's conservation program in detail, we make the following general observations:

- ❖ Many of the City's conservation efforts have focused on permanent water savings by retrofitting plumbing fixtures (e.g., "Go Low Flow" program). These activities have helped to harden customer demand on a year-round basis.
- ❖ Conservation measures include multiple approaches to educate and inform customers about water conservation thereby raising awareness and increasing a conservation ethic.
- ❖ Only BMP #5 directly and specifically targets water use during the summer peak period. Under BMP#5 the City is working to establish water budgets for all irrigation services. In addition, a cash rebate is available for irrigation services that use less than a calculated "irrigation goal".

BMP #5 is directed only at irrigation services. The other BMPs do not specifically target peak period water use. Before considering any modifications to the existing rate structure that target peak period use, the City might explore the potential of other incentives or educational efforts that specifically target peak period water use.

The City provides a valuable service to customers as well as enhances the conservation effectiveness of the rate structure by including detailed water use information on the utility bill. Recently, the City began providing each customer with a 2-year history of monthly water use on every other utility bill. This data provides customers with information to assess their water use. Customers are able to compare water use from one month to the next and current use with the same period from last year. In addition, the utility bill shows how changes in water usage impact the amount of the bill. Studies have shown that the type of information and the manner that it is presented on the utility bill impacts how customers will respond to pricing signals. In short, customers need to understand the pricing signal for it to impact their actions. Appendix C contains a sample Santa Rosa utility bill.

Appendices

CITY OF SANTA ROSA

Conservation Pricing and
Santa Rosa's Water Rates

April 17, 2001

Appendix A			
City of Santa Rosa			
Summary of Water Rate Structures for SCWA MOU Signatory Agencies (1) (2)			
Agency	Residential Rate Structure	Non-Residential Rate Structure(s)	Comments
City of Santa Rosa	Uniform commodity rate of \$2.31/tg and fixed service charge that varies depending on meter size. Standard residential meter size is 5/8" with service charge of \$4.07 per month.	Same rate structure as residential.	Characterized by a relatively low service charge and a relatively high commodity rate for all water use.
City of Cotati	Uniform commodity rate of \$1.17/tg and fixed service charge that varies depending on meter size. Residential meter sizes of 5/8" and 3/4" pay a service charge of \$6.95 per month.	Same rate structure as residential.	Lowest commodity rate (marginal cost to customer) of the agencies surveyed.
Forestville Water District	Uniform commodity rate of \$2.15/tg applicable to usage over minimum quantity, plus a minimum charge that varies depending on meter size and includes minimum quantity of water. Standard 5/8" residential meter pays a minimum charge of \$10.75 per month, which includes 5 tg of water.	Same rate structure as residential. Minimum quantity varies with each meter size.	Minimum charge with a "free" block of water suggests that this rate structure may not meet the requirements of BMP #11.

North Marin Water District (Novato service area)	Uniform commodity rate of \$1.30/tg and a fixed service charge that varies depending on meter size. Residential 5/8" meters pay a service charge of \$9.00 per month. Higher uniform rates apply in higher pressure zones.	Same rate structure as residential.	High service charge and relatively low uniform commodity rate suggest a less conservation-oriented structure than other structures.
City of Petaluma	Uniform commodity rate of \$1.79/tg and fixed service charge that varies depending on meter size. Residential meter sizes 3/4" or less pay a service charge of \$3.00 per month.	Same rate structure as residential.	Similar to Santa Rosa's rate structure.
City of Rohnert Park	Monthly flat rate of \$15.00 for single family residences and \$6.50 for mobile home units. Unmetered residential services pay the same amount regardless of water usage.	Uniform commodity rate of \$1.40/tg and fixed service charge that varies depending on meter size. Meters up to 1" pay a monthly service charge of \$15.00.	Unmetered residential services with flat rates provide no conservation incentive. Flat rates do not meet the requirement of BMP #11. High service charge and relatively low uniform commodity rate for non-residential services is less conservation-oriented structure than other structures.
City of Sonoma	Three-tier rate structure with tiers of \$1.72/tg (0 to 3 tg), \$2.59/tg (4 to 18 tg), and \$3.23/tg (over 18 tg), plus service charge that varies depending on meter size. Standard 5/8" residential meter pays a service charge of \$6.92 per month. A uniform commodity rate of \$2.63/tg applies to multi-family residential customers.	Service charges based on meter size apply to all non-residential customers (same schedule as residential). Uniform commodity rates apply to all units of consumption. Commercial and industrial customers pay \$2.51/tg. Municipal and institutional customers pay \$1.94/tg. Irrigation customers pay \$2.74/tg.	Tier structure for single family customers only. Uniform rate for other customer classes. Single family customers exhibit more homogeneous water use characteristics (necessary for effective rate design) than other customer classes.
Valley of the Moon Water	Uniform commodity rate of \$2.61/tg and fixed service charge that varies	Same rate structure as residential.	Similar to Santa Rosa's rate structure.

District	depending on meter size. Residential 5/8" meters pay a service charge of \$3.00 per month.		
Town of Windsor	Four-tier rate structure with tiers of \$1.19/tg (0 to 5 tg), \$1.42/tg (6 to 10 tg), \$1.76/tg (11 to 20 tg), and \$2.08/tg (over 20 tg), plus service charge that varies depending on meter size. Standard 3/4" residential meter pays a service charge of \$5.00 per month. Smaller tier allocations apply to mobile homes and apartment units. Elevation surcharges apply to higher pressure zones.	Uniform commodity rate of \$2.01/tg applies to most non-residential customers. Two-tier commodity rates apply to irrigation services with rates of \$1.68/tg (0 to 50 tg) and \$2.23/tg (over 50 tg). Rates also include a fixed monthly service charge that varies depending on meter size.	Tier structure for residential customers only. Uniform rate for other customer classes. Tier structures for mobile homes and apartments require data on number of dwelling units served by each account.
Marin Municipal Water District	Three-tier rate structure with tiers of \$2.95/tg (0 to 14 tg in winter and 0 to 23 tg in summer), \$5.45/tg (15 to 32 tg in winter and 24 to 59 tg in summer), and \$10.47/tg (over 33 tg winter and over 59 tg in summer), plus service charge that varies with meter size. Standard 5/8" residential meter pays a service charge of \$8.11 per month. Smaller tier allocations apply to duplexes and multi-family units.	Three-tier commodity rate structure with tiers of \$2.95/tg (0 to 85% of water budget), \$5.45/tg (86 to 150% of water budget), and \$10.47/tg (over 150% of water budget), plus service charge that varies depending on meter size.	Tier rates based on marginal cost of local, imported (SCWA), and recycled water supplies. Water budgets provide an equitable basis for non-residential tiers, but require high administrative effort. Tier structures for duplexes and multi-family require data on number of dwelling units served by each account.
Notes:			
(1) All rates are expressed on a monthly basis with water use expressed in thousands of gallons (tg) for ease of comparison. Some agencies bill on a bi-monthly basis,			
and some measure and bill based on units of 100 cubic feet (CCF). One CCF = 748 gallons.			
(2) This table is intended to illustrate rate structure characteristics from the water conservation perspective, and may not include all			

details of rate schedules.	
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Appendix B

California Urban Water Conservation Council - Best Management Practices for Urban Water Conservation

and Status in Santa Rosa's Conservation Program – April, 2001

Best Management Practice		Description	Status in Santa Rosa
1.	Water survey programs for single-family residential and multi-family residential customers	Offer water use surveys to single family residential and multi-family residences. Achieve 15% participation in ten years.	<i>Completed.</i> Over 11,000 indoor surveys completed by residential customers through "Go Low Flow"; outdoor savings achieved by community workshops, public market booths, demonstration gardens and other outreach.
2.	Residential plumbing retrofit	Distribute showerheads, faucet aerators and toilet retrofit devices to residential customers. Achieve 75% retrofit in ten years.	<i>Completed.</i> Showerhead and aerator retrofit is included in "Go Low Flow", we have had showerhead and aerator distribution since 1991.
3.	System water audits, leak detection and repair	Perform leak detection on the water distribution system annually; maintain unaccounted for water at less than 10%.	<i>Completed.</i> Unaccounted for water has been less than 6% over the past five years.
4.	Metering with commodity rates for all new connections and retrofit of existing connections	Meter all connections and bill by volume of use; retrofit all unmetered connections within ten years.	<i>Completed.</i> All connections are metered and a comprehensive meter maintenance program is in place.
5.	Large landscape conservation programs and incentives	Provide evapotranspiration-based water budgets to 90% of dedicated irrigation meters; offer "water audits" or water budgets to mixed-use meters; provide incentives for irrigation efficiency.	<i>In progress.</i> By the end of 2001, 70% of all irrigation accounts will have water budgets; currently 50% are completed; 90% or more will be completed by the end of 2002. "Water audits" are available on request to all irrigation customers. A cash rebate is available for irrigation only accounts for watering less than a calculated "irrigation goal". A rebate is available to offset the cost of retrofitting mixed-use meters.
6.	High efficiency washing machine rebate programs	Support legislation to improve efficiency standards for clothes washers; support incentive	<i>Completed.</i> Our Mayor has written to the U. S. Department of Energy supporting legislation for washing

		programs of energy providers.	machine efficiency standards. SCWA provides a \$75 rebate with PG&E matching with a \$75 rebate; Santa Rosa has 1,582 participants. Santa Rosa funds a \$450 rebate for upgrade of coin-op washers to high-efficiency washers.
7.	Public information programs	Have an active program to inform customers about water conservation.	<i>Completed.</i> We maintain three distribution centers in city facilities; participate in Downtown Market every summer; provide speakers to special interest organizations; support the statewide Water Awareness Month campaign each May.
8.	School education programs	Distribute appropriate educational materials and provide classroom presentations for K-high school students.	<i>Complete.</i> SCWA has a comprehensive program that covers our service area. We also provide school speakers and demonstrations as well as information materials specific to our water system.
9.	Conservation programs for all commercial, industrial and institutional accounts	Provide site surveys and incentives for replacement of toilets and other water use fixtures and processes. Achieve 10% participation or 10% savings within ten years.	<i>Completed.</i> The toilet replacement portion of this BMP is met with 2,661 toilets replaced, and the site surveys/incentive portion with 100 surveys completed with incentives offered for upgrades to fixtures and processes. Also see BPM 6 for washer rebate.
10.	Wholesale agency assistance program	Provide financial assistance and technical support for cost-effective BMP's.	<i>Not applicable.</i>
11.	Conservation pricing	Have in place pricing that recovers the cost of providing water service and sewer service, bill uniformly for each unit of water sold or increases as use increases (inclining blocks).	<i>Completed.</i> Our rates are heavily weighted to the commodity portion of the charge (fixed charges recover only about 15% of total revenue), sewer charges are based on estimated water use and our unit fee is uniform for both water and sewer.
12.	Conservation coordinator	Have a designated staff position whose duties include oversight of BMP implementation and conservation program management.	<i>Completed.</i> We have had full time management position since 1991 and now have 4 full time staff supporting conservation.
13.	Water waste prohibition	Adopt regulations prohibiting "gutter flooding" for all customers and certain wasteful water use systems in new connections. Provide	<i>Completed.</i> Our Water Waste Ordinance was adopted in May 1999. Any reported water waste incident receives immediate response with follow-up field support and technical

		customers with information about efficient water softeners.	assistance. Information to public about water softeners distributed in January 2001.
14.	Residential ultra-low flow toilet (ULFT) replacement programs	Implement a ULFT replacement program that is at least as effective as requiring replacement of high-flow toilets at resale of property.	<i>Completed.</i> 26240 toilets in the residential sector have been replaced to date in the “Go Low Flow” rebate, free fixture or direct install measures. Rebates have been available since 1995, free fixtures were available from 1996-2000, and direct install available since 2001

Updated April 2001