

SULTAN CITY COUNCIL AGENDA ITEM COVER SHEET

ITEM NO: D-2

DATE: February 12, 2009

SUBJECT: Water Rate Structures

CONTACT PERSON: Deborah Knight, City Administrator

ISSUE:

The issue before the City Council is an introduction to alternative water rate structures.

The Council will have a presentation from Angie Sanchez from FCS Group at the Council Retreat on February 28, 2009. The presentation at the retreat will be the City Council's first touch on the water rate study that has been underway since 2008.

Attachment A provides an outline of a number of water conservation rate structures along with the pros and cons of conservation rates. The focus of the staff recommendation is on increasing block rates (also known as pure water rates).

STAFF RECOMMENDATION:

This discussion provides Council with some background information to consider prior to the Council retreat. It is also an opportunity for Council to give feedback and direction to staff for preparing retreat materials.

SUMMARY:

The City has been gathering data and statistics to evaluate water rates since 2008. City staff and consultants are ready to bring some alternatives to the City Council for discussion and direction.

One alternative to the existing rate structure is to charge residential customers for actual water used rather than provide for a base rate (currently 600 cubic feet per month). The benefit of a rate structure for residential users based on use ("pure water" or "increasing block rates") is to benefit those residential customers who use little water or who conserve water. Under the existing rate structure low water users are charged for water in the base rate that they never actually use. Low users are in effect underwriting high water users.

An increasing block rate does not necessarily result in increased rates for an average household. The City Council can set the block rates to match the existing average household cost or to match the current base rate. Where increasing block rates differ from the current rate structure is that anything below the average use will cost the resident less. Water use above the block rate will cost more.

Under the existing system, the majority of the City's water revenues come from the base rate rather than from the volume of water used. Over time, the City and its residential customers will be best served by changing this formula so the majority of revenues are based on residential use rather than the base rate. Currently 80% of the City's water revenues come from residential users. Residential use changes from season to season. During the dry summer months, water use increases as a result of residential use from an average of 15 million gallons per day to 18.5 million gallons per day a 15% increase (Attachment C).

Multi-family and commercial/industrial customers do not change their water use from season to season. This is the reason increasing block rates are focused on residential users who have some discretion over the amount of water consumed.

Under Washington State's 2003 Municipal Water Law, the City was required to adopt a Water Use Efficiency Program in 2008 to reduce average household or business water use in the City in order to prolong the availability of water resources.

Conservation pricing is one of the goals included in the City program. The City is required to notify the State Department of Health and the general public of its progress towards meeting its goal. If the goal is not being met, the City needs to adjust its program. Changing the City's residential users to increasing block rates will help the City meet its Water Use Efficiency Program Goals

FISCAL IMPACT:

The staff recommendation is to develop an increasing block rate structure for residential users based on average household use. There may be a rate increase to cover the cost of operating and maintaining the existing plant, but the rate structure itself will be designed to encourage conservation and discourage waste.

A secondary benefit of the increasing block rate structure is to reduce the need to construct new water plant facilities, since the existing facilities can be used to serve more residential customers.

One downside of conservation pricing is unstable revenues. Conservation can reduce use and cause revenue shortfalls. External factors such as wet years or mandatory reduction during drought events can cause revenue shortfalls. These problems are addressed by increasing the level of operating reserves.

RECOMMENDED ACTION:

This discussion provides Council with some background information to consider prior to the Council retreat. It is also an opportunity for Council to give feedback and direction to staff for preparing retreat materials.

ATTACHMENT

A – Working Solutions, Water Conservation Through Rate Planning

B – Water Rates, Conserving Water and Protecting Revenues

C – 2008 Yearly Totals for Water Treatment Plant

Working Solutions

Water Conservation Through Rate Planning

by Edward Cebron

From recycling to energy efficiency to water savings, conservation is recognized as a fundamental technique available to meet our growing resource needs. Increasingly, water rights and regulation laws are requiring more efficient and conservative water use as an essential part of resource and utility planning.

All conservation rate or user fee concepts work on the assumption that high utility bills can influence behavior. The basic approach to conservation ratemaking is to discourage waste and to provide price incentives for conservative behavior. Increased water rates can stimulate conservation by sending clear signals to customers concerning their usage patterns, particularly since the water bill is often the sole communication between the utility and the customer. Sewer rates can provide similar incentives.

High usage periods are generally targeted since these offer the most opportunity for reduction. A structure resulting in extremely high summer water bills may stimulate reduced or more efficient water use for lawn watering or car washing. To remain revenue neutral, such a structure would also result in lower winter bills, when usage is usually limited to ordinary indoor uses.

Conservation rates also help maximize economic efficiency. This is related to the concept of "marginal cost pricing," where water is priced so that incremental use is charged at the replacement cost of capacity. This results in charging the full economic cost for an additional unit of use, while providing a savings equal to the full economic cost for a reduction in use.

Types of Conservation Rates

How do we achieve conservation pricing in a rate structure? There are several standard approaches, which differ in complexity and effectiveness:

1. Seasonal Rates – Seasonal water rates charge more in summer than in winter. This is based on the premise that summertime outdoor use is a key factor in overall system planning and on the observation that this use is discretionary and often wasteful. The advantages of seasonal rates are that they can be easily implemented and are practical, even on unmetered systems. For some billing systems, season rates mean seasonal system changes, increasing the chance for error.

2. Increasing Block Rates – Increasing or inverted block rates link blocks of usage with progressively higher volume charges. A single year-round rate structure is used. This can influence usage year-round, but has its greatest effect on peak season use. The increasing block structure rewards customers whose consumption does not increase in the summer, while a seasonal rate penalizes all summertime use.
3. Marginal Cost Rates – This rate structure prices water at the estimated cost of new capacity. To be revenue-neutral, this structure often has minimal fixed charges. The effect is similar to an increasing block structure, except that all water usage is valued equally within each block rate. This structure can result in highly irregular revenues as consumption changes.
4. Volume-Based Sewer Rates – Sewer rates can be based on volumes for all customers. The effect is to increase the sensitivity of the utility bill as a whole to water usage. This can be accomplished in several ways. Most commonly, residential customers are billed based on their average winter use, which most closely reflects sewer volumes. This results in a flat charge during the year, based on individual usage habits. Another approach is a truly variable sewer bill. In this approach a ceiling is placed on summer billings. Any water usage above the ceiling is usually for irrigation and other outdoor uses.
5. Pattern-Based Rates – A field of growing interest focuses on costs related to patterns of usage and rates structured to address those patterns. The intent is to focus rate incentives on altering the nature of use as well as the total amount of water used. Examples would be customized block rates or surcharge/refund mechanisms based on annual patterns.

Advantages of Conservation Rates

The implementation of conservation rates can achieve a number of utility objectives:

- Capital Requirements – By reducing usage, the construction of new supply facilities might be delayed. By reducing peaking factors, demands on the existing systems are often reduced.
- Efficient Water Use – By discouraging wasteful use, greater efficiency is attained. This is becoming an increasingly important factor in the planning of new supply facilities.
- Perception of Sensitivity – By charging more for high usage, rates for low usage levels can be reduced. This allows a lower “lifeline” rate for senior citizen households, smaller family units and conscientious water users in general.
- Appearance of Fairness – Conservation rates are often perceived as rewarding conservative water users and punishing the wasteful user in appropriate ways. They also put greater cost control in the hands of the consumer. This often results in favorable public reaction to the concept of conservation rates.

The Disadvantages of Conservation Rates

Conservation rate structures also have some significant disadvantages:

- Unstable Revenues – A high level of community awareness can lead to extensive conservation. This reduced use can cause revenue shortfalls. External factors, such as wet years or mandatory reductions can also cause severe revenue problems. Higher levels of operating reserves are appropriate.
- Adverse Public Response – Since seasonal rates target high use periods, they result in increased customer bills during the summer months when bills are already higher. While this is an intended outcome, it results in an increase in complaints and in customer ill will.
- Impact on Large Families – Larger households naturally use more water. Conservation rates must be carefully structured to avoid penalizing such customers.
- Timing – In many systems, residences are billed bimonthly. Thus, the first price signal may arrive after the heavy irrigation season is over, resulting in a greater effect only in the second year of a conservation rate. This occurs because the signal was too late to affect usage in the first year. The phased public relations (PR) program should be implemented before this peak period occurs.

An additional consideration the applicability of conservation rates to commercial customers. Commercial and industrial usage patterns are far different from residential, and warrant separate consideration. The goal is to encourage efficient water usage, and this is not necessarily achieved by charging larger users a higher rate based, for example, on residential usage patterns.

Public Awareness

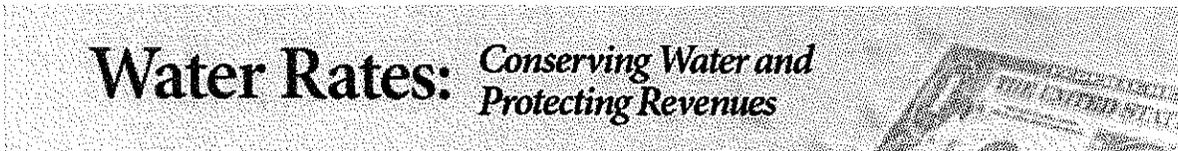
It is essential that customers understand the relationship between higher utility bills and water conservation and that they obtain this information in a timely fashion. Since the billing cycle may not be an adequate information source, the Utility should plan a public information program to highlight the need for conservation in general and to spotlight the opportunities that customers have to realize dramatic savings in their utility bills. This type of program can result in a positive attitude toward conservation. In order to be fair to customers, capture a reasonable revenue stream and conserve resources, Water Utilities need to be innovative in their approach to rate planning.

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Attachment B

Water Conservation



Water utilities can reduce per capita water use and maintain revenues by using water-conserving rate structures. Your water management district can provide information and tools to help utilities accomplish these goals.

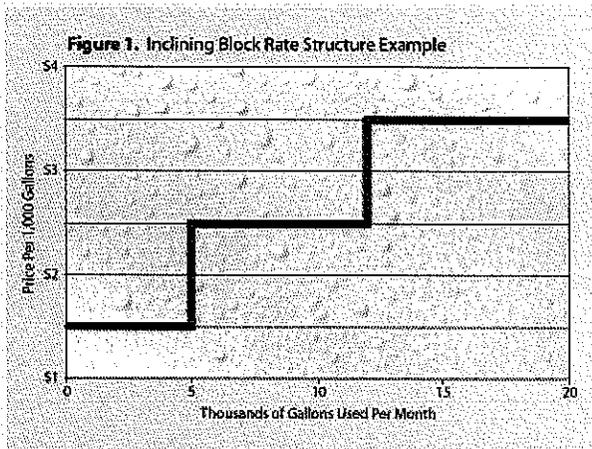
Study evaluates water rates

Four Florida water management districts recently funded the largest study ever conducted of how water rates affect single-family residential water use. Participating utilities included:

- Cities: Lakeland, Melbourne, Ocoee, Palm Coast, St. Petersburg, Tallahassee and Tampa;
- Counties: Escambia, Hernando, Hillsborough, Indian River, Palm Beach, Sarasota and Seminole;
- Miami-Dade Water and Sewer Department;
- Toho Water Authority.

Study findings

- Water use decreases with increases in water price. The decreases are predictable and statistically valid.
- Price-induced changes in water use vary with property value and the availability of substitute water sources such as irrigation wells, ponds and canals.
- Without decreasing revenues, utilities can lower water use by using inclining block rates, that is, water price increases with increasing blocks of



Why use rates to conserve?

In many areas of Florida, water supplies are stressed as growth fuels new demand for water. To ensure a sustainable water supply, utilities are tapping alternative sources including conservation. The pricing of water is one way to motivate customers to conserve. Appropriately designed water pricing can:

- Reduce water consumption without negative impacts on utility revenues;
- Reward customers for making cost-effective changes in water appliances and behavior through greater savings;
- Target inefficiency in discretionary water uses such as landscape irrigation;
- Delay costly water supply expansion projects; and
- Avoid financial hardships on low-income customers.

Downloads

[Download this trifold brochure for printing](#)

[Evaluation of Florida](#)

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water use
(see Figure 1).

- Fixed charges do not encourage conservation. Utilities can lower water use by lowering fixed charges and increasing charges based on how much is used.
- Customers need more pricing and water use information included on the bill, such as how their use compares to the utility's average residential use.

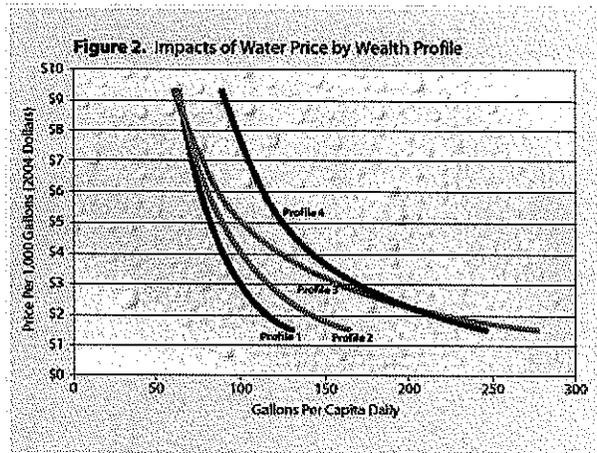
Single Family Residential Water Rates



Per capita usage for all property value profiles reduced

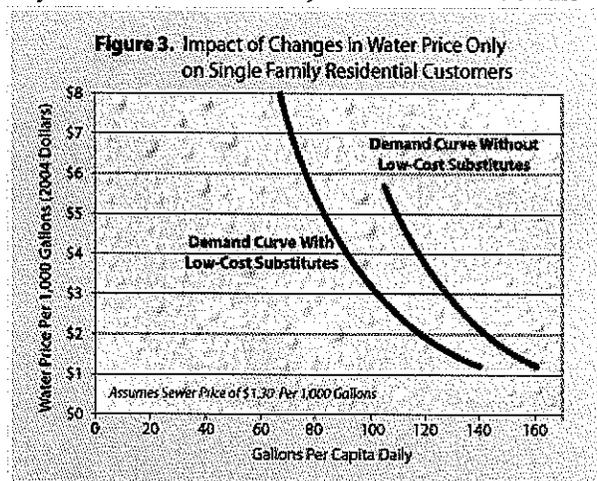
The study divided single-family residential water customers into four profiles based on assessed property values of homes, with Profile 1 being the homes with the lowest assessed value and Profile 4 the highest.

Figure 2 shows that as water price increases, per capita water use decreases for all profiles. It is clear that people in more expensive homes use more water. However, price increases tend to reduce their water use at a greater rate than other profiles because they use more water for discretionary purposes, such as landscape irrigation.



How much can be saved?

Based on the study sample, Figure 3 provides an example of how changes in water price impact total single-family residential per capita water use. (Actual reductions vary by utility and can be easily modeled as noted below.) The demand curve on the left illustrates that when homes have access to substitute water sources like irrigation wells, increasing the price from \$1.20 to \$2 per thousand gallons reduced single-family residential per capita water use from 140 to 116 gallons (17%). The decrease is the result of both conservation and the movement of some customers to a substitute source.



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The demand curve on the right illustrates the results of the same price increase on customers without access to low-cost substitute sources. In that case, the per capita use dropped from 161 to 140 gallons (13)%. Customers without access to substitute water sources tend to be less price sensitive than those with access.

Is your rate structure all that it can be?

Although most Floridians face increasing block rates, these rates can often be redesigned to further maximize conservation and still maintain revenues. For many utilities, prices in lower volume blocks can be reduced and the prices in higher volume blocks increased. Utilities can also decrease fixed charges and increase charges based on the amount of water actually used.

Estimate your savings — it's easy and free

The effectiveness of a water-conserving rate structure depends on how well it's designed. Each utility has a unique mix of single-family residential profiles and other customers and circumstances to consider.

We've made it easy by creating a water rate simulation model that a utility can use to input its own mix of property value profiles, availability of substitute sources, current and proposed water and sewer rates and revenue requirements. The model produces projected water use and revenue tailored specifically for your utility. The model also allows utilities to model the impacts of price changes on multi-family and commercial customer classes. Best of all, it's free to any utility within the four sponsoring water management districts.

More information

For more information on the "Florida Water Rates Evaluation of Single Family Homes" study or the "Waterate" rate simulation model, please contact:

Southwest Florida Water Management District

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Northwest Florida Water Management District

Paul Thorpe (850) 539-5999

St. Johns River Water Management District

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South Florida Water Management District

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2008 Yearly Totals For Water Treatment Plant											
Date	Run Time	Flow	Flush	Backwash	Total to	Chlorine	Filter Aid	Coagulant	Caustic	Fluoride	Gals per Day
	Hrs.				Town	Lbs	Lbs	Lbs	Lbs	Lbs	Per meter
Jan	376.5	15,958,000	532,000	1,469,000	13,957,000	111	2.2	1,903	2,504	160.5	319
Feb	350.9	16,725,000	560,000	1,452,000	14,713,000	102	2.1	1,941	2,330	158.5	358
March	403	17,490,000	567,000	1,930,000	14,993,000	108	2.1	1,867	2,687	178.5	350
April	378	17,550,000	570,000	1,244,000	15,736,000	131	2.3	2,245	2,607	178	363
May	387.5	18,668,000	624,000	1,335,000	16,709,000	98	2	2,822	3,302	178	374
June	364	17,502,000	584,000	1,156,000	15,762,000	100	2	1,522	2,875	174	362
July	451.5	21,686,000	720,000	1,369,000	19,597,000	88	2	973	3,593	217	434
August	426.1	20,285,000	680,000	1,407,000	18,198,000	114	2.2	1,159	3,444	193	406
Sept	376.9	16,968,000	562,500	1,548,000	14,857,500	134.8	1.9	1,070	2,818	193	351
Oct	351.2	15,094,000	490,000	1,396,700	13,207,300	156.4	1.7	1,608	2,487	146	302
Nov	292.8	12,354,000	413,000	1,272,200	10,668,800	140.2	1.2	1,373	2,279	114	255
Dec	405.3	17,095,000	567,000	1,521,000	15,007,000	184.2	1.5	1,738	2,779	154	342
Everett Water					2,763,860						
TOTALS	4563.7	207,375,000	1,470,000	17,099,900	186,169,460	1467.6	23.2	20,221	33,705	2,042	
Average Per Day	12.5 Hrs	567,000				4.0 lbs	.06 lbs	55.4 lbs	92.3 lbs	5.5 lbs	351.3
Average per day per person	112 gallons										

Water Plant Production Past 3 Years					
	2006	2007		2008	
JAN	13,423,000	14,666,000	8%	13,957,000	-4.80%
FEB	12,688,000	12,611,000	-0.60%	14,713,000	14.20%
MARCH	13,642,000	14,102,000	3.20%	14,993,000	5.90%
APRIL	14,041,000	13,632,000	-2.90%	15,736,000	13.30%
MAY	13,375,000	14,885,000	10.10%	16,709,000	10.90%
JUNE	16,326,000	14,822,000	-9.20%	15,762,000	5.90%
JUL	23,012,000	19,842,000	-13.70%	19,597,000	-1.20%
AUG	22,191,000	17,886,000	-19.30%	18,198,000	1.70%
SEPT	16,157,000	15,398,000	-4.60%	14,857,500	-3.50%
OCT	14,546,000	14,553,000	0.04%	13,207,300	-9.20%
NOV	13,354,000	12,264,000	-8.10%	10,668,800	-13.00%
DEC	12,825,000	13,399,000	4.20%	15,007,000	10.70%
AVG			-3%		2.58%
TOTAL	185,580,000	178,060,000		183,405,600	

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