

Implementation of Reclaimed Water Rates and Metering

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In recent years, the increasing demand for reclaimed water, as an alternative to using potable water or groundwater for irrigation and other purposes, has made reclaimed water a valuable commodity. The use of reclaimed water promotes water conservation and reduces reliance on, and demand for, potable and groundwater supplies.

This increasing demand, encouraged by Orange County government and the regulatory agencies, has made it necessary to establish user charges to equitably generate funding for the expansion, operation, and maintenance of the county's reclaimed water system. A rate study conducted by the county's consultant, Burton and Associates, and Orange County Utilities (OCU) staff calculated and recommended rates for reclaimed water service in the county. The study's recommended customer categorizations and rate structure provided the framework for the resolution that adopted the county's reclaimed water rate and meter charge schedules after the completion of required public noticing and discussion.

This article focuses on the events leading up to the need for the reclaimed water rate study, the methodology used in the study and its recommendations, the adoption of the county's reclaimed water rates, and the accompanying need to meter the county's existing and future customers.

During the past three decades, Orange County's treated wastewater disposal system has evolved from one relying primarily on effluent disposal to one that reuses 100 percent of the reclaimed water produced for beneficial purposes. The approximately 40 mgd of reclaimed water produced today is reused for agricultural, commercial, and residential irrigation, as well as for groundwater recharge, cooling water for power generation, and wetland enhancement. The county provides reclaimed water to the renowned CONSERV II project in partnership with the city of Orlando and to its own reclaimed water customers, primarily in its South Reuse Service Area.

In order to effect this change, it was necessary to supply free, or very inexpensive, reclaimed water to encourage a reuse

customer base. Since 1985, the county has invested over \$314 million to develop its reclaimed water system and has budgeted over \$40 million during the next five years for system expansion. Up to now, the county's wastewater customers have borne the entire expense of the reclaimed water system, whether or not they use it.

The county is responsible for operating in a manner that is fair to all its customers, and therefore could not continue to require its wastewater customers to fully fund the operation, maintenance, and expansion of its reclaimed water system. This fact, coupled with the continuing increase in demand for reclaimed water by consumers, required the county to equitably shift the responsibility for funding the system to its existing and future reclaimed water customers. The county's wastewater customers will continue to fund the costs associated with wastewater collection, pumping, treatment, and storage.

The firm of Burton and Associates was retained by Orange County to conduct a study, in conjunction with OCU staff, to develop and recommend reclaimed water user charges (or rates) in order for its customers to use this valuable resource.

Reclaimed Water Rate Study

Objective of the Study - The objective of the reclaimed water rate study was to develop reclaimed water rates, consistent with the market for reclaimed water, that could be implemented on a county-wide basis for identified classes of reclaimed water service.

Customer Classes - Reclaimed water customers were categorized into two major classes: retail and wholesale or bulk service. The wholesale class was further subdivided into three subclasses, based upon their demand characteristics: 1) interruptible with on-site storage (the first customers to be interrupted in times of low supply and high demand), 2) interruptible with no on-site storage (the next customers to be interrupted in times of low supply and high demand), and 3) priority (the last customers to be interrupted in times of low supply and high demand).

Rate Structures - Rate structures were

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developed for each customer class, consisting of a fixed monthly charge which included a monthly usage allowance based upon the meter size of the connection, and a usage charge per 1,000 gallons of metered reclaimed water used above the monthly usage allowance. The monthly usage allowance was based on an analysis of the historical billings of the county's high-usage potable water customers to determine the estimated amount of irrigation usage per equivalent residential connection (ERC).

This analysis determined that a typical residential customer that irrigated could be expected to use approximately 12,000 gallons of water per month for irrigation; therefore, this amount was established as the usage per ERC for reclaimed water and was the basis for calculating the monthly allowance by meter size, based upon meter ERC equivalency factors.

Basis for Establishing the Retail Rate - The retail reclaimed water rates were established by evaluating the cost to provide retail reclaimed water service on an ERC basis and comparing that cost per ERC to an assumed market rate per ERC, with the market rate per ERC being the limiting factor. The reclaimed water market rate for Orange County was assumed to be an equivalent rate per 1,000 gallons that is no more than 70 percent of the base potable water rate per 1,000 gallons (\$1.19) in the range of water usage from 4,000–15,000 gallons per month, which is the expected range of irrigation usage of a potable water user after allowing for essential domestic usage requirements. This cost differential between reclaimed water and potable water is considered necessary to provide a price incentive for customers to use reclaimed water instead of potable water for irrigation.

Distribution system capital costs were not included in the cost-of-service analysis because the distribution system will be

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either constructed by the developer and contributed to the county for new construction or funded by the customer to retrofit existing water and sewer customers. However, the operation and maintenance cost of the distribution system was included in the cost of service.

Basis for Establishing the Wholesale Rates—The wholesale rate for interruptible service with no on-site storage was determined to be the “benchmark” wholesale rate class. The cost to provide service to this class was determined in terms of the cost per 1,000 gallons of reclaimed water usage. This cost was less than the retail cost because certain costs are included in the retail cost to serve that are not included in the wholesale cost to serve, primarily distribution system maintenance costs. The rates for the other two classes of wholesale service were then established as multiples of this benchmark wholesale rate, based upon 1) additional costs for pumping and storage for priority users and 2) lower costs for pumping and storage for interruptible customers with on-site storage.

Recommended Rates – Based on the above methodology, Table 1 presents the reclaimed water rates recommended in the study.

The fixed monthly charge component of the rate structure represents fixed costs associated with meter reading, preparation and rendering of the billings, and similar factors.

Adoption of Reclaimed Water Rates and Implementation

Preceding Events - A discussion and consideration for adoption of the recommended reclaimed water rate and meter charge schedules was placed on the agenda of the October 16, 2001, Orange County Board of County Commissioners (BCC) meeting. In order to meet public notification requirements, OCU notified all its wastewater customers, through the September 2001 monthly billings, of the date and purpose of this BCC meeting.

In addition, an effort was made by OCU staff to inform its existing reclaimed water customers of the proposed recommended rates through scheduled meetings. Feedback from the customers was solicited during these meetings, but unfortunately, the meetings were lightly attended.

During the October 16 BCC meeting, the light attendance by existing customers at the meetings was discussed. Concerns were raised that the majority of the customers, especially the residential customers, may not have been adequately aware of the proposed rates and the possible subsequent financial impacts on them. At the conclusion of the meeting, the BCC and OCU staff agreed to delay further discussion of the proposed rates for 90 days. This period allowed staff to redouble its efforts to notice and hold additional customer meetings, especially at the residential communities currently served with reclaimed water. Further discussion and

consideration of adoption of the proposed recommended reclaimed water rates was scheduled on the agenda of the January 15, 2002, BCC meeting.

Policy Considerations - The unique circumstances under which many of the county’s customers connected to the system and received reclaimed water service had to be considered by the BCC and OCU staff prior to adoption of the rates to ensure fairness and to avoid undue financial impacts on them. The fact that the vast majority of these customers had been receiving service at no cost for some time made it even more crucial for the county to acknowledge their input and concerns expressed during the meetings. It also recognized that many of them had committed to use the untried product at a time when the county was striving to enroll customers during initial system development.

Other issues the county also needed to consider prior to adoption were the written customer contractual obligations, if any, which could affect implementation of the adopted rates and the use of reclaimed water by several homeowner associations to irrigate public rights-of-way. All these circumstances, customer input, and issues were thoroughly considered by the BCC and OCU staff, and policy was formulated to address and include them in the proposed rate adoption resolution.

On January 15, after discussion and additional public comments were heard, the BCC passed the Resolution (No. 2002-M-03) Adopting Orange County Reclaimed Water Rates And Reclaimed Water Meter Charge Schedule. The meter charge schedule is discussed in a separate section.

The resolution contains the following provisions addressing implementation phasing of the adopted rates and one exemption. These provisions and exemption were the result of the policy formulations described above that resulted from the county’s commitment to be responsive to its customers’

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**Table 1
Orange County
Reclaimed Water System
Recommended Rates**

Retail Rates:			<u>Usage Charge</u> per 1,000	
			<u>Allowed</u>	<u>Gallons for all</u>
	<u>Ratio to 5/8 x</u>	<u>Fixed</u>	<u>Monthly</u>	<u>Usage above</u>
	<u>3/4 inch</u>	<u>Monthly</u>	<u>Usage in</u>	<u>the Allowed</u>
<u>Meter Size</u>	<u>meter</u>	<u>Charge</u>	<u>Gallons</u>	<u>Monthly Usage</u>
5/8 x 3/4	1.00	\$9.43	12,000	\$0.84
3/4	1.00	\$9.43	12,000	\$0.84
1	2.50	\$23.58	29,000	\$0.84
1.5	5.00	\$47.15	57,000	\$0.84
2	8.00	\$75.44	91,000	\$0.84
3	15.00	\$141.45	169,000	\$0.84

Wholesale Rates:			<u>Usage Charge per 1,000 Gallons for all</u> <u>Usage above the Allowed Monthly Usage</u>					
		<u>Fixed Monthly Charge</u>	<u>Interruptible</u>	<u>Interruptible</u>	<u>Allowed</u>			
	<u>Ratio to 5/8 x</u>		<u>User - Nc</u>	<u>User - On Site</u>	<u>Monthly</u>	<u>Interruptible</u>		
	<u>3/4 inch</u>		<u>Storage</u>	<u>Storage</u>	<u>Usage in</u>	<u>User - Nc</u>		
<u>Meter Size</u>	<u>meter</u>	<u>Priority User</u>			<u>Gallons</u>	<u>Priority User</u>		
						<u>Storage</u>		
						<u>Storage</u>		
4	58.25	\$457.26	\$274.36	\$182.91	654,000	\$0.70	\$0.42	\$0.28
6	133.25	\$1,046.01	\$627.61	\$418.41	1,496,000	\$0.70	\$0.42	\$0.28
8	208.25	\$1,634.76	\$980.86	\$653.91	2,338,000	\$0.70	\$0.42	\$0.28
10	316.75	\$2,486.49	\$1,491.89	\$994.60	3,555,000	\$0.70	\$0.42	\$0.28
12	483.25	\$3,793.51	\$2,276.11	\$1,517.41	5,423,000	\$0.70	\$0.42	\$0.28
16	958.25	\$7,522.26	\$4,513.36	\$3,008.91	10,753,000	\$0.70	\$0.42	\$0.28

Table 2
Orange County
Reclaimed Water System
Adjusted Recommended Rates

Retail Rates:				
Meter Size	Ratio to 5/8 x 3/4 inch meter	Fixed Monthly Charge	Usage Charge per 1,000 Gallons for all Usage above the Allowed Monthly Usage	
			Allowed Monthly Usage in Gallons	Usage Charge
5/8 x 3/4	1.00	\$3.14	4,000	\$0.84
3/4	1.00	\$3.14	4,000	\$0.84
1	2.50	\$7.86	10,000	\$0.84
1.5	5.00	\$15.72	19,000	\$0.84
2	8.00	\$25.14	31,000	\$0.84
3	15.00	\$47.15	57,000	\$0.84

Wholesale Rates:								
Meter Size	Ratio to 5/8 x 3/4 inch meter	Priority User	Interruptible User - No Storage		Usage Charge per 1,000 Gallons for all Usage above the Allowed Monthly Usage			
			Interruptible User - No Storage	Interruptible User - On Site Storage	Allowed Monthly Usage in Gallons	Interruptible User - No Storage	Interruptible User - On Site Storage	
4	58.25	\$152.40	\$91.44	\$60.96	218,000	\$0.70	\$0.42	\$0.28
6	133.25	\$348.64	\$209.18	\$139.46	499,000	\$0.70	\$0.42	\$0.28
8	208.25	\$544.87	\$326.92	\$217.95	780,000	\$0.70	\$0.42	\$0.28
10	316.75	\$828.75	\$497.25	\$331.50	1,185,000	\$0.70	\$0.42	\$0.28
12	483.25	\$1,264.38	\$758.63	\$505.75	1,808,000	\$0.70	\$0.42	\$0.28
16	958.25	\$2,507.17	\$1,504.30	\$1,002.87	3,584,000	\$0.70	\$0.42	\$0.28

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concerns and input.

Adjusted Rates – As a result of the input obtained during the residential customer meetings, a schedule of adjusted recommended rates was developed at the request of the BCC and OCU staff and adopted in the resolution. The adjusted rates included a lower fixed monthly charge and a corresponding lower monthly allowed usage amount. This adjustment was made to accommodate the fact that many residential users have or will have small lots, are low-volume irrigation users, and would have to pay for more usage in the fixed charge than was fair under the originally proposed rates. This adjustment in effect further promotes conservation of the reclaimed water. No changes were made to the usage rates.

In order to be fair to all customer classes, an adjustment was made to reduce the monthly fixed charge of all classes to one-third of the originally proposed amount and to adjust the allowed reclaimed water usage to one-third of the original allowance. This rate structure would be fairer for low-volume users, and high-volume users would pay for their usage in the usage rate per 1,000 gallons, which becomes effective for all usage over the monthly allowance. The adjusted schedule of recommended reclaimed water rates that was adopted by the BCC is presented in Table 2.

The adopted adjusted rates are marketable to the customer. A residential customer in the county requiring 12,000 gallons per month for irrigation would pay

\$14.28 monthly to use potable water versus \$9.86 for reclaimed water. Also, pursuant to a survey conducted by OCU staff, the \$9.86 compares favorably with the average amount 20 other public utilities in Florida would charge residential customers for use of 12,000 gallons of reclaimed water, which is approximately \$9.02.

Customers Under Written Contract - The resolution essentially defines an existing customer as one that was receiving reclaimed water prior to January 1, 2002. For existing customers, implementation of the rates will depend on their contractual status with the county. For existing customers under written contract, the contract will prevail if there are any inconsistencies between the provisions of the resolution and the terms of the contract; therefore, if the contract allows for a longer period than the resolution for implementation of the rates, the customer will not have to begin payment of the rates until the specified contractual period.

Customers Without Written Contracts - The resolution requires implementation of the rates to commence for all new customers and existing nonresidential customers without written contracts upon installation of the applicable meter.

The resolution acknowledges the unique circumstances under which the county's existing residential customers (1,100 residences) were connected to its system and the financial impacts the rates may have on many of them. These residential customers were brought online without written contracts, individually or with the homeowners associations, and as time has

passed, previous written or verbal understandings as to when any future adopted rates may apply to them became unclear or unknown to the present residents.

As such, the resolution provides that the reclaimed water rates will not be implemented for the county's existing residential customers until June 1, 2006. The date was chosen to coincide with the time period in which the first of the existing contracts between the CONSERV II customers and the county and city of Orlando begin to expire. Also, this additional time allows the residential communities to plan and budget for the rates and

improve or replace antiquated on-site irrigation systems. It allows the county time to coordinate development of specific service protocols (possible on-site system breakdown credits, etc.) to serve these customers.

Exemption for Rights-of-Way Landscaping - There are several homeowners associations in Orange County that own and maintain irrigation systems using reclaimed water for landscaping along public road rights-of-way. In order to continue to encourage investment in the beautification of public streets in the county, the resolution provides for an exemption from the reclaimed water rates for incorporated homeowners associations that use reclaimed water in irrigation systems installed, connected, owned, and operated by them to irrigate public road rights-of-way.

CONSERV II Customers - The adopted resolution does not immediately affect the citrus growers and most of the other customers located in west Orange County and served by the CONSERV II reclaimed water program. Most of these customers, particularly the growers, along with the city of Orlando, have been valued partners in pioneering the beneficial use of reclaimed water over the past 15 years.

These customers have long-term agreements with the county and city providing free reclaimed water for 20 years. These agreements will begin to expire in 2005. Since CONSERV II is a joint program between Orange County and the Orlando, the county and city must approve any new

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Table 3
Orange County
Adopted Reclaimed Water Meter Charge Schedule

Reclaimed Water Meter & Meter Service (Footnote 1)	Meter & Meter Service Installation Cost (Footnote 2)
5/8" x 3/4" Meter Set	\$86.00
1" Meter Set	\$161.00
1 1/2" Meter Set	\$299.00
2" Meter Set	\$344.00
1" Service (short)	\$187.00
1" Service (long)	\$824.00
2" Service (short)	\$285.00
2" Service (long)	\$912.00
4" RW Master Meter Assembly	\$4,500.00
6" RW Master Meter Assembly	\$5,925.00
8" RW Master Meter Assembly	\$8,165.00
10" RW Master Meter Assembly	\$11,135.00

(1) OCU shall determine the appropriate meter size for use by all its customers.
(2) Does not include any cost associated with the construction of a reclaimed water lateral from the meter to the reclaimed water main providing service; in the majority of cases, the developer constructs the lateral. In situations where the OCU would be responsible for the lateral, the cost of the lateral would be charged to the customer on a time, materials and pro rata overhead cost basis.

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agreement with these customers. It is the intent of the county to maintain the valued partnership with these customers and negotiate new agreements with mutually beneficial terms, including reclaimed water rates, before the current agreements expire.

Metering

To implement reclaimed water rates, all county customers must have meters installed. Metering for reclaimed water service has been increasingly stressed by the regulatory agencies, especially as a conservation measure. Research conducted by the state has shown that customers who are not metered use up to four times the amount of reclaimed water as

those who are metered. Metering also ensures an equitable cost recovery from users of the reclaimed water system.

Reclaimed Water Meter Charge Schedule - OCU staff developed a reclaimed water meter charge schedule in order to provide metered service to the customers. This schedule was adopted as an exhibit in the county's resolution and is presented in Table 3. To minimize the financial impact on the customer and for consistency, the reclaimed meter charge schedule is identical to the meter charge schedule used by the county for potable water and irrigation meters.

For master meter assemblies greater than 10" in size, OCU staff will determine the

meter and meter service installation costs on a case-by-case basis.

The meter and meter service installation costs in the adopted meter charge schedule do not include additional costs associated with equipping the master meter assemblies for wholesale interruptible customers with SCADA capability. SCADA will be used to remotely monitor system and customer on-site operating conditions. The county will not charge those costs to these customers in order to lessen their initial financial obligation and thus keep reclaimed water an attractive service.

Meter Installations - As part of its policy considerations, the county made a decision to install the required meters at no

cost to the existing customers. This decision was made pursuant to feedback received at the customer meetings in order to further minimize the financial impacts on these customers.

All existing customers in the county's South Service Area will be metered, regardless of when implementation of the reclaimed water rates will apply to them; however, first priority will be given to installing meters to serve the 30 existing commercial customers in the service area who will be affected by the rate implementation provisions first.

Customer feedback is being solicited prior to installation of the selected meter. This affords the customers an opportunity to provide information not available in county records about their on-site irrigation system and practices which may demonstrate the need for a different meter size or reclaimed water rate categorization.

OCU personnel from several divisional sections are involved in setting up customer accounts, researching customer irrigation needs, meter selection, logistical support, and meter installation. The county was able to reach its goal to have all these commercial customers metered by July 2002.

Summary

Orange County has adopted a reclaimed water rate schedule that is marketable and fair to all its customers, while ensuring a reliable revenue source for funding its existing and expanding system. Recognizing its existing customers' historical usage and service expectations, as well as securing their input, were critical to the county's successful adoption and implementation process.

