

CITY OF ROSEVILLE
DEPARTMENT OF ENVIRONMENTAL UTILITIES

Water Meter Retrofit Program

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Prepared By

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I. METER RETROFIT PROGRAM SUMMARY

INTRODUCTION

The City of Roseville obtains most of its water under a contract with the U.S. Bureau of Reclamation (USBR) through the Central Valley Project (CVP). In 1992, the U.S. Congress passed the Central Valley Project Improvement Act (CVPIA), which added a number of provisions for new, renewed, or amended contracts for CVP water. Some of the new requirements pertain to water conservation including requirements that contractors (1) meter all customers, (2) bill all customers based on water use, and (3) impose a conservation-oriented water rate structure.

In August 1999, the City agreed to install water meters on all unmetered service connections within a 13-year period¹. Conservation-oriented metered water rates must be implemented as sections of the City are metered once rate analyses are performed and system changes implemented to allow a smooth transition to metered billing.

Failure by the City to implement conservation measures, including the meter retrofit program and metered billing, could place the City's water supply contract at risk at a time when it is negotiating a renewal contract.

The City of Roseville is not alone in its commitment to meter customers. Many

other water utilities in the Sacramento region have committed to installing water meters and implementing metered billing either as a result of the USBR mandate or as a condition of the Water Forum Agreement. Commitments to meter all unmetered service connections have already been made by the City.

The purpose of the meter retrofit program study has been to (1) develop a plan and strategy for installing retrofit meters, (2) recommend an approach for paying for the metering program, (3) recommend an appropriate metered water rate structure, and (4) develop a public outreach and education plan for the metering program.

The City retained Reed Consulting Group in 1999 to assist Department of Environmental Utilities staff with the development of the meter retrofit program, and to perform the water rate study. Lucy & Company conducted focus group research, coordinated the community outreach activities throughout the program's development, and prepared the public outreach plan.

COMMUNITY INVOLVEMENT

A Citizens Advisory Committee (CAC) has been actively involved in discussing and providing input about all issues related to the meter retrofit program. The CAC consisted of ten residents and business representatives, and two members of the Roseville Public Utilities Commission (RPUC). CAC formation and participation

¹ The City's conservation plan calls for 3 years of meter retrofit planning and up to 10 years for meter installations.

was approved by the Roseville City Council.

The first CAC meeting was conducted in a focus group format, and provided an opportunity to gauge feelings, perceptions, and concerns related to metering before participants learned about the program. The CAC then met on four other occasions to discuss in detail various aspects of the retrofit program.

The recommendations in this report reflect the comments and input provided by CAC participants. On many issues, the committee reached agreement. On others, consensus was not reached. In particular, the manner in which the cost of the meter retrofit program should be shared among customers was not agreed upon (see Section IV for discussion of the two primary alternatives).

In addition to the five CAC meetings, the study included a focus group session with randomly-recruited homeowners to gauge public perceptions about metering and metered water rates. Also, three community workshops were held in various locations throughout the City. Sixty-two residents attended the workshops and were provided an opportunity to comment on the metering program. Metering program recommendations will also be presented to the RPUC before being submitted to the City Council for action.

RESIDENTIAL WATER METERING

There are nearly 24,700 residential water service customers within the City of Roseville. About 45 percent of residential services require a full meter retrofit. Since 1992, a state law has required all new construction to include water meters. As a result, about 40 percent of the City's resi-

dential customers are metered (have a water meter installed on their service line). From 1988 to 1992, the City required new water services to include a meter setter and meter box, although meters were not required². Homes constructed prior to 1988 are mostly unmetered. Finally, since 1994 often when the City has replaced water mains, repaired service lines, or resurfaced streets meter setters and meter boxes have been installed on service lines in anticipation of universal metering. About 15 percent of residential connections are equipped with a meter setter/box, but not a meter.

When installed as part of new construction, adding a water meter to a new service line entails additional materials costs (for the meter, meter setter, and meter box), and minimal additional labor. In a retrofit situation, the service line must be located, excavated, and the meter assembly installed. At times, older service lines may also need to be replaced. In addition, the retrofit installation may occur in existing landscapes or within driveways or other difficult to access locations. As a result, meter retrofit costs are substantially higher than meter installation done as part of new construction.

Residential water metering has been occurring in Roseville for more than a dozen years. Using estimated unit costs of meter installation, the total cost to meter all residential customers has been estimated at \$14.3 million (including costs that have already been incurred by both the City and customers). Remaining retrofit costs are estimated at about \$9.23 million (in current dollars).

² A meter setter is a fitting that supports the water meter at the proper elevation within the meter box.

Once the meter retrofit program is underway, metering costs will range from \$1.0 to \$1.2 million annually (future costs will be higher than current costs due to inflation). Using two dedicated metering crews, the City should be able to complete the metering program by 2011, a year ahead of the deadline to meet commitments to the federal government.

The City plans to implement the meter retrofit program on a neighborhood-by-neighborhood basis. Several RCONA³ neighborhoods are already fully metered (having been built since 1992). Other neighborhoods are partially metered, partially meter-ready (having meter setters and boxes, but still needing meters), and partially unmetered.

Because the City is required by the USBR to implement metered rates as individual areas become metered, it is recommended that the City randomly select the order in which each RCONA neighborhood is metered and subsequently transitioned to a metered rate.

The most complex issue associated with the meter retrofit program is how to pay for the program. While several alternatives were evaluated by the CAC, two surfaced as being the most equitable, though they are quite different. Both alternatives are described in Section IV.

Although CAC participants were about evenly split between two cost sharing alternatives, Reed Consulting Group recommends the parity/equity cost sharing approach since it recognizes that all customers will benefit from universal metering. The City's interest in securing its water supply is an interest shared by all custom-

ers, not just those that must be retrofitted. Likewise, the City's interest in cooperating regionally to address water supply and environmental issues is a shared interest. So it is reasonable to assign a portion of meter retrofit costs to all customers.

It is important to highlight, however, that the recommended cost sharing strategy recognizes that many customers have already directly borne significant metering costs. As a result the cost responsibility varies by customer. All cost sharing alternatives that failed to recognize the costs already directly borne by many customers were soundly rejected.

The recommended parity/equity cost-sharing alternative has two elements. First, customers receiving a retrofit meter should be directly responsible for meter costs *to the same degree as new customers since 1992 have been required to pay for meters*. Therefore, customers requiring a full meter retrofit would be responsible for metering costs on par with the cost incurred during new construction. Customers that paid for a meter setter/box aspect of new construction would be responsible for the cost of adding a meter. With this assignment of costs, parity is reached between all existing residential customers. This assessment would not, however, cover all costs of the program.

The balance of meter retrofit costs would be assigned to all water service customers (both residential and non-residential). This reflects that all customers will benefit from the improved water conservation, water management, and water supply reliability that universal metering will provide.

Exhibit I-1 summarizes the recommended cost-sharing approach for the meter retrofit program. Cost estimates are shown as both a single lump sum amount (in current

³ Roseville Coalition of Neighborhood Associations.

dollars) and as a monthly surcharge on the water bill. Under this cost sharing alternative, non-residential customers, as well as all new customers, would bear some cost associated with the meter retrofit program.

**Exhibit I-1
Proposed Approach for Meter Retrofit
Program Cost Sharing**

Customer Group (1)	Lump Sum Cost (2)	Monthly Surcharge (3)
Group A	\$110	\$1.04
Group B	\$235	\$2.17
Group C	\$485	\$4.42
Group D	\$485	\$4.42
Non-Resid.(4)	\$110	\$1.04
New Cust.(4)	\$110	\$1.04

(1) Group A = Customers that paid for meters as part of new construction
 Group B = Customers that paid for a meter setter/box as part of home construction
 Group C = Customers with City-installed meter setter/box, but still requiring a water meter
 Group D = Customers requiring a complete retrofit meter installation

(2) Expressed in current (2000) dollars.

(3) Monthly surcharges calculated using the financial planning model assuming a start date of January 2001 and a termination date of December 2010.

(4) Amount shown for a ¾" meter. Customers with larger meters would be subject to higher surcharges based on the capacity of each meter size.

WATER RATES AND METERED BILLING

As part of the development of the meter retrofit program, it was necessary to develop a metered water rate structure for residential customers. This provided an opportunity to also consider rate structure issues for non-residential customer classes.

The evaluation of metered water rate structures began with the identification and prioritization of rate setting objectives. Members of the CAC participated in this

process and determined that water rates should, in order of priority:

- ◆ Generate sufficient revenues
- ◆ Be affordable for basic service
- ◆ Be based on cost of service
- ◆ Be fair and equitable
- ◆ Encourage water conservation
- ◆ Be easy to explain and understand
- ◆ Not be punitive for reasonable use
- ◆ Be easy to administer.

CAC participants felt strongly that a tiered water rate structure is appropriate for the City of Roseville’s residential customers because it (1) encourages customers to use water wisely, and (2) can help maintain the affordability of basic water service.

After considering several rate structure alternatives, a three-tier commodity rate is proposed for residential customers.

Exhibit I-2 summarizes the proposed residential water rates. The rates have been calculated to be revenue neutral overall to the water utility with the current water rates, and do not include the recommended meter retrofit surcharge. It is recommended that any retrofit surcharge be included on the utility bill as a separate line item.

**Exhibit I-2
Proposed Residential Water Rate Structure
for FY 99-00**

Service Charges (\$/month)		
¾" meter (1)		\$8.40
1" meter		\$13.50
Commodity Rates (\$/CCF)		
Basic Use	0 to 10 CCF	\$0.18
Standard Use	11 to 50 CCF	\$0.36
Conservation	51+ CCF	\$0.54

(1) About 99 percent of residential customers have (or will have) a ¾" water meter.

Most single family customers fall into the group with lots ranging from 4,901 to 8,900 sq. ft. These customers currently pay a flat rate of \$11.65 per month. The next largest group is customers with parcels ranging from 8,901 to 12,000 sq. ft. These customers currently pay a flat rate of \$14.25 per month. Under the proposed rate structure, customer water bills would start with the service charge of \$8.40 per month (for a ¾" meter) and increase with each unit of water use in accordance with the tiered rate structure. Customers currently paying the \$11.65 flat rate would have a lower water bill under the tier structure if their water use were 14 CCF or less per month. Customers paying the \$14.45 flat rate would have a lower water bill under metered rates if they use 21 CCF or less per month.

Typical single family water use is estimated to be about 20 CCF per month. A customer with a ¾" meter using 20 CCF would have a water bill of \$13.80.

Under the proposed metered water rate structure, most customers would find that their water bills are lower in winter months when irrigation water use is minimal, and somewhat higher in summer months when demands are typically higher.

An alternative to a tiered rate structure is recommended for non-residential customers. The City should adopt a simple uniform rate structure for non-residential customers. Under a uniform rate structure, all water usage would be charged at the same amount. Service charges would continue to be part of the rate structure. Section V describes the proposed non-residential rate structure and reasons for this recommendation.

The rate structure recommendations contained herein are conservation-oriented, as required by water conservation best man-

agement practices agreed to in both USBR contracts and the Water Forum Agreement.

Through its agreements with the USBR, the City has committed to begin metered billing of all customers as soon as practical. The metered billing of residential customers will begin as individual RCONA neighborhoods are metered, and as the systems are put in place to accommodate a smooth transition to metered billing. This means that customers must be informed of the transition and provided information about how metered billing will affect their own water bills. The implementation plan includes providing all customers with 12 months of water use data, as well as flat rate verses metered rate bill comparisons, before transition to the metered rate structure. This will provide customers with information to assess any financial impact and/or to implement water conservation measures to reduce water service costs.

Exhibit V-6 in Section V provides a timeline for the meter retrofit program and the transition to metered rates.

PUBLIC OUTREACH PLAN

The City of Roseville has taken a proactive stance to public outreach in the metering process by gauging public opinion and perceptions about metering through focus group research, active participation by the Citizens Advisory Committee, and community workshops on the metering program.

Although it will likely be at least 2 to 3 years before metered rates begin to become mandatory, the effects of the impending change to metered rates is beginning to be felt in the Roseville community and talked about by the media. Metering is a topic about which customers feel they are lacking adequate information. Also, there are

moderate levels of concern about water meter-related issues among Roseville water service customers. It is critical to pay attention to customers' concerns and to clearly and effectively reiterate water meter-related information on an ongoing basis.

It is also important to sustain a positive image about metering as the potentially controversial program begins to unfold. We recommend a proactive, straightforward and community-oriented approach to educate the community about metering activities. Important key messages should

include (1) metering is a federal mandate, (2) how and when metered rates will go into effect, and (3) how all customers will benefit from universal metering.

The City is actively working to prepare and deliver a proactive communications program that meets the needs of its customers. Section VI of this report outlines a multi-faceted public outreach program to help guide the City's efforts. The recommended activities are intended to help the City make a seamless transition as it moves forward with residential water metering.

II. THE NEED FOR WATER METERS

FEDERAL MANDATE FOR WATER METERS

The City of Roseville obtains water through contracts with the U.S. Bureau of Reclamation (USBR) and the Placer County Water Agency (PCWA). Folsom Reservoir is part of the USBR's Central Valley Project (CVP), and the City's water under the USBR contract is pumped from the reservoir. The City is currently in the process of renegotiating its contract with the USBR. In addition, the City is pursuing an agreement with the USBR to allow use of Folsom Reservoir to deliver PCWA water to the City's water treatment plant.

In 1992, the U.S. Congress passed the Central Valley Project Improvement Act (CVPIA), which added a number of provisions for new, renewed, or amended contracts for CVP water. Some of the new requirements pertain to water conservation, including requirements that contractors (1) meter all customers, (2) bill all customers based on water use, and (3) impose a conservation-oriented water rate structure.

As a CVP contractor, the City has prepared and submitted a comprehensive water conservation plan describing a broad range of water conservation measures that are now being implemented. Water conservation measures included in the plan are:

- ◆ Residential water audits
- ◆ Large landscape water audits
- ◆ Non-residential water audits
- ◆ Plumbing retrofit program

- ◆ Residential ultra-low flush toilet program
- ◆ High-efficiency washing machine rebate
- ◆ Public information
- ◆ School education
- ◆ Metering of all customers
- ◆ Conservation pricing
- ◆ Water waste prohibition
- ◆ Distribution system leak detection
- ◆ Water conservation coordinator.

With respect to water metering and metered water rates, the City is required to install water meters on all unmetered service connections within a 13-year period that began in August 1999⁴. Conservation-oriented metered water rates must be implemented as sections of the City are metered, once rate analyses are performed and system changes implemented to allow a smooth transition to metered billing.

Failure by the City to implement conservation measures, including the meter retrofit program and metered billing, could place the City's water supply contract at risk at a time when it is negotiating a renewal contract.

WATER FORUM AGREEMENT

For the past six years, the City of Roseville has participated in the Water Forum proc-

⁴ The City's conservation plan calls for three years of meter retrofit planning and up to 10 years for meter installations and billing conversion.

ess. The Water Forum represents a diverse group of business and agricultural leaders, citizens groups, environmentalists, water managers, and local governments in the greater Sacramento region. Water Forum negotiations have been an effort to regionally address long-standing water issues focusing on: (1) providing a reliable water supply for the future, and (2) maintaining the environmental values of the lower American River.

In 1999, consensus was reached on the Water Forum Agreement, and in March 2000 the Roseville City Council endorsed the agreement. The Water Forum Agreement provides a number of benefits and assurances to improve the City's long-term water supply outlook. It also requires the City to take a variety of actions including implementing water conservation measures. These water conservation measures are similar to those required under the City's USBR contract and include metering and metered billing of customers.

The City of Roseville is not alone in its commitment to meter customers. Many other water utilities in the Sacramento region have committed to installing water meters and implementing metered billing either as a result of the USBR mandate or as a condition in the Water Forum Agreement.

WATER TREATMENT PLANT EIR

In August 1999, the City approved an environmental impact report (EIR) for the expansion of the City's water treatment plant. The EIR included a number of measures to mitigate environmental impacts including a commitment to implement the water conservation measures contained in the Water Forum Agreement and the water conservation plan submitted to the USBR.

Approving the EIR effectively began the thirteen-year time frame to plan and implement the meter retrofit program (three years for planning, ten years for implementing).

Commitments to meter all unmetered service connections have already been made by the City. The purpose of the meter retrofit study has been to develop a plan and strategy for installing retrofit meters, as well as recommend an approach for paying for the metering program.

While the decision to meter has been made, CAC members and community workshop participants expressed an interest in understanding the reasons for metering.

THE BENEFITS OF WATER METERS

Most water utilities throughout the United States are fully metered and have been for years. The benefits to all customers of metering are widely recognized and include:

- ◆ Customers will only pay for the water they actually use
 - Customers can control the amount of their water bills
- ◆ Meters aid in detecting leaks within a customer's plumbing system
- ◆ Meters improve the City's ability to manage its water resources
 - Improves effectiveness of water conservation measures
 - Helps detect water system leaks
 - Demonstrates responsible stewardship of water resources
- ◆ City compliance with federal mandate and is better able to meet its long term water supply needs
 - Improves water supply reliability.

III. COST OF METERING

NUMBER OF WATER METERS TO BE INSTALLED

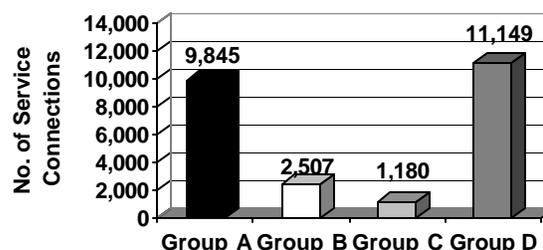
There are nearly 24,700 residential water service customers within the City of Roseville. Since 1992, state law has required all new construction to include water meters. As a result, about 40 percent of the City's residential customers are already metered. From 1988 to 1992, the City required new water services to include a meter setter and meter box, although meters were not required⁵. Homes constructed prior to 1988 are unmetered. Since 1994, when the City has replaced water mains, repaired service lines, or resurfaced streets it has often installed meter setters and meter boxes in service lines in anticipation of universal metering.

Exhibit III-1 summarizes the number and type of residential water service connections in the water system. Each residential service connection has been categorized into one of four groups as defined below:

- ◆ **Group A** – Fully metered. These are homes built since 1992. Future residential connections will be added to this group.
- ◆ **Group B** – No meter, but a meter setter and meter box were installed at time of construction. These are homes built from 1988 to 1992.

- ◆ **Group C** – No meter, but a meter setter and meter box were installed by City crews as part of a main replacement, service line repair, or street overlay projects.
- ◆ **Group D** – No meter or meter setter. These are homes built prior to 1988.

Exhibit III-1
Meter Status of Resid. Services



The City needs to install an estimated 14,836 water meters (groups B, C, and D). However, 3,687 of these meters (groups B and C) simply need to be inserted into existing meter setters and meter boxes, requiring minimal effort. About 11,149 meters (group D) will require full retrofit installations, which includes excavation, cutting into the existing service line, a complete meter assembly, and site restoration.

UNIT COST OF METERING

The cost of installing a water meter varies depending on how and when the meter installation occurs (i.e., new installation versus retrofit). Because meters have been installed over time under a variety of circumstances, it is important to understand

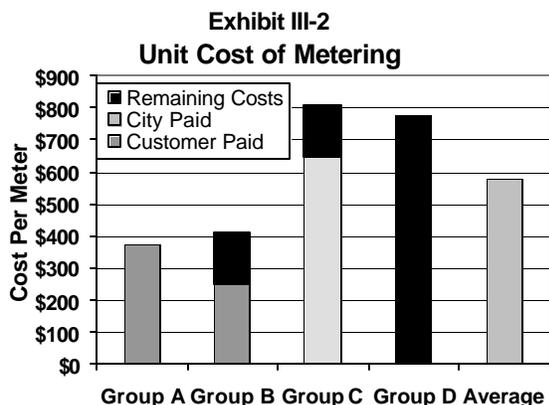
⁵ A meter setter is a fitting that supports the water meter at the proper elevation within the meter box.

and take into consideration these differences.

When installed as part of new construction, adding a water meter into a new service line entails additional materials costs (for the meter, meter setter, and meter box), and minimal additional labor. In a retrofit situation, the service line must be located, excavated, and the meter assembly installed. At times, older service lines may need to be replaced. In addition, the retrofit installation may occur in existing landscapes or within driveways or other difficult to access locations. As a result, meter retrofit costs are substantially higher than meter installation done as part of new construction.

The cost analysis must consider the situations where meter setters and meter boxes are installed at a different time than the water meter (Groups B and C). Finally, it is important to consider that the customer (or developer) has directly incurred some costs and the City has incurred other costs.

Exhibit III-2 summarizes the estimated unit cost of meter installation (in current dollars). Costs to date have either been incurred directly by customers or by the City. The City will incur future retrofit costs, which ultimately will be passed on to customers.



The incremental cost of installing a water meter during new construction has been estimated to be about \$375 for a standard 3/4” meter (in current dollars). Nearly all of this cost is for materials. A complete retrofit installation is estimated to average about \$775, although the actual cost will vary depending on site conditions. The higher cost is due to additional labor associated with retrofit conditions.

Similar to complete meter installations, the cost of installing a meter setter and meter box (for subsequent meter installation) depends on whether the installation occurs as part of new construction or retrofit conditions. When installed during construction, the cost of a meter setter and box assembly is estimated to average \$250. When installed as part of a retrofit, the cost is estimated to average \$650. The cost to add a meter to an existing meter setter is about \$160, including materials and labor.

The weighted average cost of all residential meters is estimated to be about \$580 (in current dollars).

TOTAL COST OF METERING

Installation of residential water meters has been occurring within Roseville for more than a dozen years. To date, more than one-third of the total cost to meter all residential customers has been incurred, mostly by new customers that have been required to either install a meter setter and meter box, or full meter installation during construction of their homes. The City has also incurred the costs of installing meter setters and meter boxes in retrofit situations as part of main replacement, service line repair efforts, or street overlay projects.

Using estimated unit costs of meter installation, the total cost to meter all residential

customers is projected to be about \$14.3 million (including costs that have already been incurred by both the City and customers). Remaining retrofit costs are estimated at about \$9.23 million (in current dollars) as summarized below.

Add meter to existing setters⁶:

$$3,687 \times \$160/\text{meter} = \mathbf{\$590,000}$$

Full meter retrofit⁷:

$$11,149 \times \$775/\text{meter} = \mathbf{\$8,640,000}$$

Remaining retrofit costs: **\$9,230,000**

These costs will be incurred through 2012 (the period during which the City has committed itself to meter all customers by 2012).

ANNUAL COST OF THE METER RETROFIT PROGRAM

In order to assess the financial impact of the meter retrofit program over the next 12 years, a multi-year financial planning model was developed for the water utility. The financial planning model includes estimates of operating, capital improvement program, and debt service obligations, as well as the meter retrofit program.

Once the meter retrofit program is underway, annual metering costs will range from \$1.0 to \$1.2 million per year (future costs will be higher than current costs due to inflation). Using two dedicated metering crews, the City should be able to complete the metering program by 2011, a year ahead of the deadline to meet commitments to the federal government.

Exhibit III-3 on the following page summarizes estimated annual meter retrofit costs

⁶ Includes customers in Groups B and C.

⁷ Includes customers in Group D.

and the number of meters to be installed each year. Actual annual metering costs will depend on the number and types (meter-only or full meter installation) of installations, which will vary depending on sequencing of various neighborhoods for meter installations (see Section IV).

To finance the meter retrofit program, both pay-as-you-go and debt financing options were evaluated. Pay-as-you-go financing requires the water utility to generate sufficient revenues each year to cover annual meter retrofit costs. Debt financing would enable the City to obtain funds in advance (and possibly accelerate the installation process) and pay for the meters through debt service payments over a 20-year period. Financial analyses indicate, however, that annual debt service payments would be about \$1.1 million for 20 years or almost double the cost of a pay-as-you-go program⁸.

The City is exploring possible alternative financing sources that might provide either grant funds or low-interest loans for the metering program. The USBR has no plans to provide financial assistance for meter retrofit programs. Because alternative funding for the meter retrofit program is speculative at this time, recommendations assume no external funding will be available. If such funding becomes available in the future, meter retrofit costs to customers would be reduced accordingly.

Options and recommendations for paying for the meter retrofit program are presented in the next section.

⁸ Annual debt service costs would be about the same as annual pay-as-you-go metering costs. Debt service payments, however, would continue for 20 years.

**Exhibit III-3
City of Roseville -- Water Utility
Residential Meter Retrofit Program Cost Estimate (1)**

	<--- Planning Period --->			<---- Implementation Period ---->								
	FY 99-00	FY 00-01	FY 01-02	FY 02-03	FY 03-04	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09	FY 09-10	FY 10-11
Unit Cost of Meter Installation (2)												
Meter-Only Installation	\$ 160	\$ 165	\$ 170	\$ 175	\$ 180	\$ 185	\$ 191	\$ 197	\$ 203	\$ 209	\$ 215	\$ 221
Full Meter Retrofit	\$ 775	\$ 798	\$ 822	\$ 847	\$ 872	\$ 898	\$ 925	\$ 953	\$ 982	\$ 1,011	\$ 1,042	\$ 1,073
No. of Meters Installed (3)												
Meter-Only Installation	-	502	1,403	967	476	170	78	26	15	21	18	12
Full Meter Retrofit	-	216	1,003	1,039	1,080	1,106	1,114	1,118	1,119	1,118	1,118	1,117
Total Meter Retrofits	-	718	2,406	2,007	1,556	1,276	1,191	1,144	1,133	1,139	1,137	1,129
Cost of Meter Retrofits												
Meter-Only Installation	\$ -	\$ 83,000	\$ 238,000	\$ 169,000	\$ 86,000	\$ 32,000	\$ 15,000	\$ 5,000	\$ 3,000	\$ 4,000	\$ 4,000	\$ 3,000
Full Meter Retrofit	\$ -	\$ 172,000	\$ 825,000	\$ 880,000	\$ 942,000	\$ 994,000	\$ 1,030,000	\$ 1,065,000	\$ 1,098,000	\$ 1,131,000	\$ 1,165,000	\$ 1,199,000
Total Cost	\$ -	\$ 255,000	\$ 1,063,000	\$ 1,049,000	\$ 1,028,000	\$ 1,026,000	\$ 1,045,000	\$ 1,070,000	\$ 1,101,000	\$ 1,135,000	\$ 1,169,000	\$ 1,202,000

Notes:

- (1) Assumes two city work crews from FY 00-01 through FY 10-11 to complete retrofit program within 10-year implementation schedule.
- (2) Assumes an annual inflation rate of: 3.0%
- (3) The number of meter-only or full meter retrofit installations will depend on the sequencing of neighborhood, which has not yet been determined.

IV. PAYING FOR THE METER RETROFIT PROGRAM

PHASING OF THE METER INSTALLATIONS

The City of Roseville is divided into more than thirty sub-areas, each representing a neighborhood association. These neighborhood associations have formed a coalition – the Roseville Coalition of Neighborhood Associations (RCONA). The City works closely with RCONA neighborhoods and its governing body to plan and coordinate a variety of municipal activities and services. Individual RCONA neighborhoods also provide convenient sub-areas for planning purposes.

The City plans to implement the meter retrofit program on a neighborhood-by-neighborhood basis⁹. Several RCONA neighborhoods are already fully metered (built since 1992). Other neighborhoods are partially metered, partially meter-ready (having meter setters and boxes, but still needing meters), and partially unmetered.

By focusing on a single RCONA neighborhood one-at-a-time, the City can more efficiently install retrofit meters. In addition, it will be able to coordinate educational and notification procedures through each RCONA neighborhood, thereby minimizing disruption and confusion related to metering activities.

Individual RCONA neighborhoods have from as few as 16 residences to more than 3,000. Each neighborhood will require a different amount of time to meter. The City will be able to meter two or three RCONA neighborhoods in some years, while other neighborhoods may require more than one year to complete.

A number of options were discussed with the Citizens Advisory Committee (CAC) regarding how RCONA neighborhoods should be selected, sequenced, and scheduled for metering. For a variety of reasons, including concern about following an objective (unbiased) approach, we recommend that RCONA neighborhoods be randomly selected for meter installations.

This recommendation is made largely due to the fact that the City will need to implement metered water rates neighborhood-by-neighborhood as they become metered, with time provided to ensure a smooth transition. Section V of this report describes metered rate structures and rate transition issues in greater detail.

The random selection of RCONA neighborhoods has not yet occurred, but will be done after approval of the program.

Section VI of this report describes public outreach steps to be implemented to minimize disruption and keep customers informed during the metering program.

RETROFIT PROGRAM COST SHARING

The most complex issue associated with the meter retrofit program is how to pay for the

⁹ A number of RCONA neighborhoods are already fully metered. Also, one RCONA is entirely within the San Juan Water District and will be metered by the District, not the City.

program. City staff, consultants, and the CAC studied various options extensively, exploring a half-dozen cost-sharing alternatives.

Two alternatives surfaced as being perceived as most equitable, though the two are quite different. Both alternatives were presented in community workshops and are described below.

Focus group and CAC participants indicated that paying for a water meter in a single payment would be burdensome and unreasonable for most customers. CAC participants suggested that the metering program be paid for over the duration of the metering program.

For comparative purposes, however, cost sharing alternatives were examined based on a lump sum cost (in current dollars). The multi-year financial plan and water rate model (see Section III for description) was then used to estimate the monthly cost to customers over the life of the retrofit program, under each cost-sharing alternative.

Participants were skeptical that a charge for the metering program would end. CAC participants strongly agreed that meter retrofit costs should be included on the utility bill as a separate line item (distinct from other water service charges). The charges should be a fixed dollar amount and have a defined life when adopted.

Some CAC participants also suggested that customers be given the option to pay for their share of meter retrofit costs in a single lump sum payment. Some customers may prefer this option rather than paying meter retrofit costs over time.

As described in Section III, the City has already incurred an estimated \$767,000 to install meter setters and boxes on some

services. The water utility has borne these costs just as its bears capital replacement or upgrade costs, through water rates and replacement reserves. CAC participants did not believe historic costs should be recovered differently, but customers should have surcharges established at amounts comparable to original construction costs (i.e., no credit given for work done by the City).

Retrofit Customers Pay Retrofit Costs

One approach supported by about half of the CAC members is to assign all meter retrofit costs solely to those customers receiving a retrofit meter. The amount to be paid by each customer would depend on whether they receive a complete retrofit installation, or a meter-only installation¹⁰. About 50 percent of the City's residential customers would be responsible for a proportionate share of remaining meter retrofit costs based on the cost of a full meter retrofit installation (Group C and D customers). About five percent of customers would pay meter retrofit costs based on the cost of installing a meter in an existing meter setter and box (Group B). About 40 percent of customers, with homes built since 1992 that had water meters installed at time of construction, would not incur any costs associated with the meter retrofit program (Group A plus all new customers).

Exhibit IV-1 summarizes the costs that would be assigned to each group of customers. Cost estimates are shown as both a

¹⁰ Customers in Group B (see Section III) would only pay for installing a meter in an existing meter setter/box that was installed as part of new construction. Customers in Group C would pay for a full meter retrofit since the existing setter/box was installed by the City. Group D customers would also pay for a full meter retrofit.

single lump sum amount (in current dollars) and as a monthly surcharge on the water bill. Under this cost sharing alternative, neither non-residential customers or customers new to the water system would bear any cost associated with the meter retrofit program.

**Exhibit IV-1
Meter Retrofit Program Cost Sharing Option:
Retrofit Customers Pay Retrofit Costs**

Customer Group	Lump Sum Cost (1)	Monthly Surcharge (2)
Group A	\$0	\$0.00
Group B	\$160	\$1.58
Group C	\$716	\$7.20
Group D	\$716	\$7.20
Non-Resid.	\$0	\$0.00
New Cust.	\$0	\$0.00

(1) Expressed in current (2000) dollars.
(2) Monthly surcharges were calculated using the financial planning model and assume a start date of January 2001 and a termination date of December 2010.

Parity/Equity Cost Sharing

Customers with homes constructed since about 1988 have directly borne a portion, if not all, of metering costs for their service installation. CAC participants felt strongly that any cost-sharing alternative should reflect this fact. While many CAC participants believe that customers requiring a retrofit meter should bear the entire cost of the retrofit program (as reflected in the previous alternative), others recognize that all customers will benefit from universal metering. Hence, it may not be unreasonable for all customers to bear some portion of retrofit costs. CAC participants also recognized that the high cost of retrofitting existing service lines could create a significant financial burden for those customers.

This cost-sharing alternative was developed following a two-step process:

- ◆ **Parity** – First, customers receiving a retrofit meter would be directly responsible for water meter costs *to the same degree as new customers since 1992 have been required to pay for meters*. Therefore, customers requiring a full meter retrofit (Groups C and D) are effectively responsible for \$375 in metering costs, and customers that paid for a meter setter and meter box with new construction (Group B) are responsible for an additional \$125 in metering costs¹¹. With this assignment of costs, parity is reached between all existing residential customers. Because retrofit meter installations cost more than new installations, this allocation of costs is insufficient to cover the entire cost of the retrofit program. A second step is needed.
- ◆ **Equity** – In this second step, the balance of remaining meter retrofit costs is assigned to all current and new water utility customers (both residential and non-residential). This assignment of remaining costs is intended to reflect the fact that all customers benefit from the improved water conservation, water management, and water supply reliability that universal metering provides. This equity portion of retrofit costs is estimated to be \$110 for customers with a ¾” meter, and would apply to all existing and future connections to the system.

¹¹ The cost of installing a water meter on a service line during home construction is estimated to be \$375. Therefore, retrofit customers would be required to *invest* in a water meter on par with customers that paid for the meter at time of construction.

Exhibit IV-2 summarizes the costs that would be assigned to each group of customers. Cost estimates are shown as both a single lump sum amount (in current dollars) and as a monthly surcharge on the water bill. Under this cost sharing alternative non-residential customers, as well as all new customers to the water system, bear some cost associated with the meter retrofit program.

Exhibit IV-2
Meter Retrofit Program Cost Sharing Option:
Parity/Equity Cost Sharing

Customer Group	Lump Sum Cost (1)	Monthly Surcharge (2)
Group A	\$110	\$1.04
Group B	\$235	\$2.17
Group C	\$485	\$4.42
Group D	\$485	\$4.42
Non-Resid.(3)	\$110	\$1.04
New Cust.(3)	\$110	\$1.04
(1) Expressed in current (2000) dollars. (2) Monthly surcharges were calculated using the financial planning model and assume a start date of January 2001 and a termination date of December 2010. (3) Amount shown is for a ¾" meter. Customers with larger meters would be subject to higher surcharges based on the capacity of each meter size.		

Other Alternatives

City staff, consultants, and CAC participants also considered four other cost sharing alternatives. None of these alternatives received significant support, although each could be considered reasonable from various perspectives.

Recommended Cost Sharing Approach

Although CAC participants were about evenly split between the two cost sharing alternatives presented above, we recommend the parity/equity cost sharing ap-

proach because it recognizes the fact that all customers will benefit from universal metering. The City's interest in securing its CVP water supply for another 25 years is an interest shared by all customers, not just those that must be retrofitted. Likewise, the City's interest in cooperating regionally to address long-term water supply and environmental issues is a shared interest. It is therefore reasonable to assign a portion of meter retrofit costs to all customers.

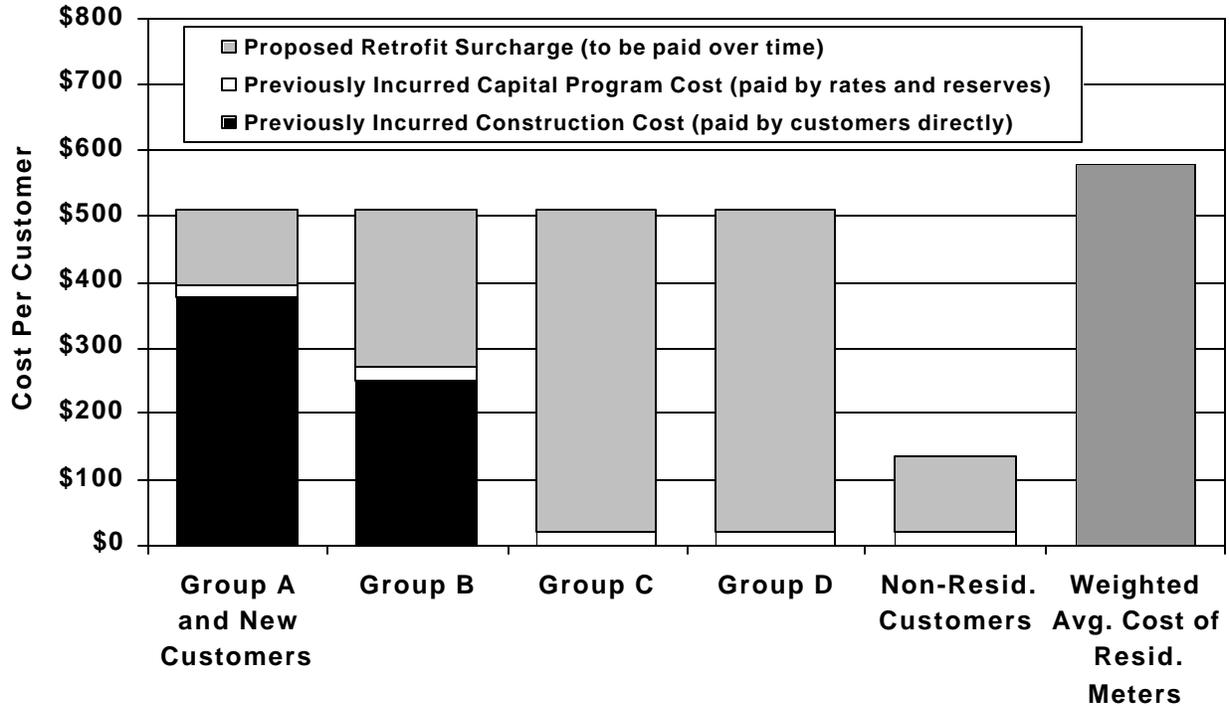
It is important to highlight, however, that the recommended cost sharing strategy recognizes that many customers have already directly borne significant metering costs. As a result of recognizing this fact, cost responsibility must vary by customer. All cost sharing alternatives that failed to recognize the costs already directly borne by many customers were soundly rejected.

Exhibit IV-3, on the next page, summarizes the cost per meter assigned to each customer under the recommended cost sharing strategy.

OTHER FUNDING POSSIBILITIES

The cost-sharing alternatives discussed above assume that the City's water service customers would ultimately be responsible for all remaining costs of the meter retrofit program. As the metering program was developed, other possible funding and financing options were considered. Long-term debt financing of the meter retrofit program was found to be unfeasible because (1) the long implementation period does not easily accommodate debt financing, and (2) interest and debt issuance costs would dramatically increase the cost of the overall program such that annual cost savings. Other funding opportunities were also identified, as discussed below.

**Exhibit IV-3
Recommended Cost Sharing Strategy**



Estimated Monthly Surcharge (1)

\$1.04 \$2.17 \$4.42 \$4.42 \$1.04

(1) Monthly surcharges shown assume a ¾" meter. Non-residential customers with larger meters would be subject to the following surcharges:

1" meter	\$1.73/month	4" meter	\$17.34/month
1 ½" meter	\$3.47/month	6" meter	\$34.66/month
2" meter	\$5.55/month	8" meter	\$55.46/month
3" meter	\$10.40/month	10" meter	\$79.94/month

Recently, the U.S. Congress passed legislation for water resource projects throughout the country. The Water Resources Development Act of 1999 (WRDA) included authorization of \$25,000,000 for regional water conservation and recycling projects in Placer and El Dorado Counties and San Juan Water District. The City could benefit

from this authorization through obtaining funding for a portion of the meter retrofit program. However, a separate appropriation bill is needed to make funds available. City staff members are working with other local agencies to devise plans for sharing any WRDA funds that may become available. At this time, however, it is not pru-

dent to count on these funds becoming available.

Many CAC participants felt that since the USBR is mandating water meters it should provide funding for the effort. In FY 99-00 the City did receive a \$15,000 grant from the USBR for water conservation programs. However, the USBR views metering as a local issue, and because nearly all water utilities throughout the country are (and have been) metered financial assistance for meter retrofit programs is not likely.

Other external funding opportunities may become available, and City staff plan to pursue these opportunities if and when they arise.

The City could decide to use other internal funding sources to help pay for the meter retrofit program. Possible internal sources of funds include:

- ◆ Water utility reserves in excess of established economic reserves

- ◆ Utility tax revenues
- ◆ The City's General Fund.

It is valuable to place the benefit of other funding into perspective from a customer's viewpoint. For example, if \$1 million is obtained from either internal or external funding sources for the retrofit program, the meter retrofit surcharges recommended for all customers could be reduced by \$0.24 per month for the 10-year duration of the surcharge. If funding became available at some point in the future, then the surcharge could be reduced (at that time) by a larger amount, but for a shorter period of time.

A decision to utilize other funds that may be available within the City is a policy decision, and no recommendation is made herein. CAC participants felt strongly, however, that the City Council should consider the issue. A few participants in community workshops also made this suggestion.

V. METERED WATER RATES

CURRENT WATER RATE STRUCTURES

The City's current water rates consist of both flat and metered rate schedules. In general, the metered water rates apply to non-residential customers, and the flat rates apply to residential customers. Residential customers with lots larger than 15,000 sq. ft. that were created since 1977 are metered and on the metered water rate schedule. A relatively small portion of commercial customers is unmetered and pay flat rates for water service.

The City's current metered and flat water rate schedules are summarized in **Exhibits V-1 and V-2**, respectively. The metered rates include a tiered commodity rate in which the cost per unit of water used

increases as consumption increases. The rate structure also includes a fixed service charge based on the size of the water meter.

Flat water rates vary depending on type of property, size of the lot, and number of dwelling units served.

RATE SETTING OBJECTIVES

As part of the development of the meter retrofit program, it was necessary to develop a metered water rate structure for residential customers. This provided an opportunity to consider rate structure issues for both residential and non-residential customer classes. The water rate structures have not been reviewed by the City for a number of years. Because water use charac-

**Exhibit V-1
City of Roseville – Water Utility
FY 99-00 Metered Water Rates¹**

Commodity Rates (\$/CCF)	Meter Size 2" or Less	Meter Size Over 2"
0 to 10 CCF per month	No charge	\$0.39
11 to 50 CCF per month	\$0.36	\$0.39
51 to 150 CCF per month	\$0.39	\$0.39
151 to 250 CCF per month	\$0.42	\$0.42
Over 250 CCF per month	\$0.45	\$0.45
Service Charge (\$/Month)		
5/8" and 3/4" meters	\$8.90	4" meters
1" meters	\$11.65	6" meters
1-1/2" meters	\$19.65	8" meters
2" meters	\$27.00	10" meters
3" meters	\$57.80	12" meters
		\$163.45
		\$223.65
		\$387.15
		\$614.50
		\$884.85

Exhibit V-2
City of Roseville – Water Utility
FY 99-00 Flat Water Rates¹

Water Service Charge (\$/Month)	
Single family lots up to 4,900 sq. ft.	\$8.90
Single family lots 4,901 to 8,900 sq. ft.	\$11.65
Single family lots 8,901 to 12,000 sq. ft.	\$14.45
Single family lots 12,001 to 15,000 sq. ft.	\$17.25
Single family lots over 15,000 sq. ft. (exist prior to 7/77)	\$17.00
Each additional 1,000 sq. ft. over 15,000 sq. ft.	\$0.92
Mobile homes in park with internal distribution system	\$8.30 per DU
Mobile homes not in park with internal distrib. system	\$8.90 per DU
Duplexes, triplexes, fourplexes, and apartments	\$8.90 per DU
Additional detached dwelling units	\$8.90 per DU
Offices and stores using less than 250 gpd	\$8.90 per unit

teristics vary between customer classes, it is common to have different rate structures for each class.

The evaluation of metered water rate structures began with the identification and prioritization of rate setting objectives. Members of the CAC participated in this process and helped to identify a number of rate-setting objectives. Through this process consultants developed a tool for assessing the relative merits of alternative rate structures. In order of importance, the CAC determined that water rates should:

- ◆ Generate sufficient revenues
- ◆ Be affordable for basic service
- ◆ Be based on cost of service
- ◆ Be fair and equitable
- ◆ Encourage water conservation
- ◆ Be easy to explain and understand
- ◆ Not be punitive for reasonable use
- ◆ Be easy to administer.

Historically rate setting has been an internal exercise intended to develop charges that

ensure sufficient revenue is generated from customers to cover utility costs commensurate with the cost of providing water service. However, in recent years limited water supply availability, environmental concerns, the rising cost of water service, and other factors have resulted in increased public interest in the rate-setting process. Developing water rate structure recommendations with CAC involvement helped to ensure that a variety of community and customer concerns were addressed.

Fixed and Variable Rate Components

It is common for metered water rate structures to include a fixed service charge as part of the rates. Fixed service charges, which normally vary with meter size, provide stable revenues for the water utility and are intended to cover some or all of the fixed costs associated with providing water service. Nearly all CAC participants agreed that the current practice of charging customers a fixed service charge as part of the

metered rate structure is appropriate and should be continued.

As residential customers move to metered water rates, an increasing percentage of water rate revenue will be derived from commodity charges¹². Therefore, the current balance between fixed and variable revenues will shift unless other changes are made. It was therefore important to reassess the fixed and variable nature of water system costs, and consider adjusting the relative balance between fixed and variable rate components to maintain stable revenues relative to varying water demands.

Maintaining revenue stability is, however, at odds with some of Roseville's rate setting objectives. CAC participants ranked maintaining the affordability of basic water service as an important objective. This objective can be achieved by limiting the amount of the fixed service charge (and recovering more costs through the commodity rates). In addition, the combination of lower service charges and higher commodity rates (rather than the other way around) provides a greater conservation incentive, which is another important objective.

The water rate structure recommendations presented below reflect a rate design intended to balance the multiple objectives identified through the development of the program.

RESIDENTIAL WATER RATE STRUCTURE

CAC participants felt strongly that a tiered water rate structure is appropriate for the City of Roseville because it (1) encourages customers to use water wisely, (2) can help maintain the affordability of basic water service, and (3) results in customers paying for what they use.

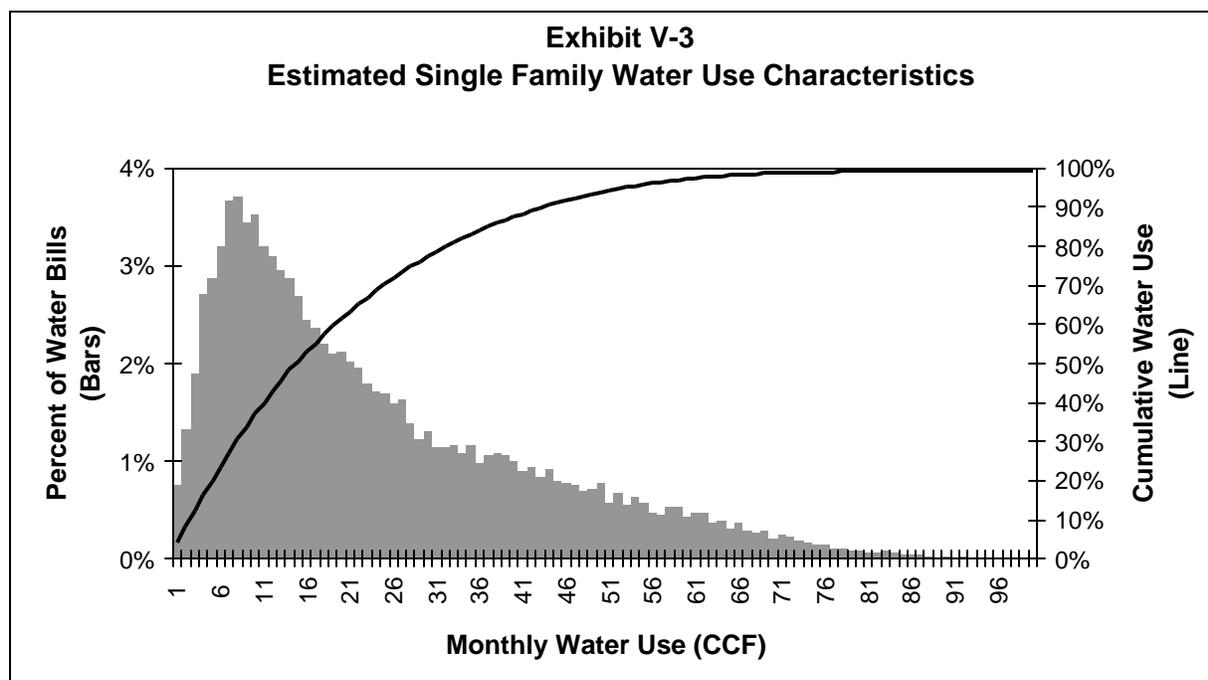
The City's current tiered rate structure primarily applies to the City's non-residential customers¹³. Effective tiered rate structures must take into account the specific water use characteristics of each customer class. Single family residential customers represent a homogeneous customer class with respect to water use patterns. While water use by individual customers varies widely, there is a relatively well defined range of use typical of single family customers. **Exhibit V-3** on the following page graphically illustrates typical single family water use characteristics.

At this time, the City has not actively tracked water use among metered single family customers that are not on a metered rate. As a result, there are not complete data on actual water characteristics. The analyses performed to date have relied on water use data from a small sample of customers, as well as the consultant's familiarity with water use patterns in surrounding communities¹⁴. The City plans to begin routine meter reading of all metered customers in the summer of 2000. Within a year, reliable water use data will be available and more definitive rate

¹² Flat rates provide 100 percent fixed revenues (no revenue variation with variation in demand). The current metered rate structure generates about 25 percent of total rate revenue from fixed service charges and 75 percent from commodity rates based on usage.

¹³ Only a relative few residential customers (those with lots larger than 15,000 sq. ft.) are on metered rates.

¹⁴ Water use patterns vary from one community to the next due to land use, demographic, climatic, and other factors.



calculations can be made. In the meantime, estimated water use characteristics have been used for residential rate structure development purposes.

Average monthly single family water use is estimated to be about 20 CCF¹⁵. In winter months, water use will generally be between five and 15 CCF, with minimal irrigation demands. During summer months, irrigation drives demand up significantly. A wide variation in summertime water use is typical.

After considering several rate structure alternatives, a three-tier commodity rate structure is proposed for the City's residential customers. The tier structure is a simplification from the City's current 5-tier structure, and is based on single family water use characteristics, which differ

significantly from non-residential use characteristics.

The three-tier commodity rate structure would include a basic use rate for the first 10 CCF of monthly water use, a standard commodity rate for the next 40 CCF of monthly water use, and a conservation rate for monthly use in excess of 50 CCF per month. The basic use block approximates the amount of water typically used for indoor purposes and is considered non-discretionary usage. Many, if not most, single family customers are likely to be in this first rate block during winter months. Most water use, including summertime irrigation usage, should be accommodated within the standard use block. However, the conservation block is proposed to provide customers using more than 50 CCF with an incentive to reduce water use to within the *typical* range of other single family customers. It is estimated that only five to 10 percent of single family water use will be within the conservation tier.

¹⁵ 1 CCF = 100 cubic feet = 748 gallons. Twenty CCF per month is about 500 gallons per day.

In addition to the three-tier commodity rates, the residential water rate structure should include a fixed monthly service charge. The service charge would vary by meter size. More than 99 percent of single family customers have (or will have) a ¾” water meter.

Exhibit V-4 summarizes the proposed residential water rates. These rates have been calculated to be revenue neutral overall to the water utility with the current (FY 99-00) water rates, and do not include the meter retrofit surcharge recommended in the previous section. It is recommended that any meter retrofit surcharge be included on the utility bill as a separate line item.

**Exhibit V-4
Proposed Residential Water Rate Structure
for FY 99-00**

Service Charges (\$/month)		
¾” meter		\$8.40
1” meter		\$13.50
Commodity Rates (\$/CCF)		
Basic Use	0 to 10 CCF	\$0.18
Standard Use	11 to 50 CCF	\$0.36
Conservation	51+ CCF	\$0.54

The largest group consists of single family customers with lots ranging from 4,901 to 8,900 sq. ft. These customers currently pay a flat rate of \$11.65 per month. The next largest group is customers with parcels ranging from 8,901 sq. ft. to 12,000 sq. ft. These customers currently pay a flat rate of \$14.25 per month. Under the proposed rate structure, customer water bills would start with the service charge of \$8.40 per month with no water usage and increase with each unit of water use in accordance with the tier structure. Customers currently paying the

\$11.65 flat rate would have a lower water bill under the tier structure if their water use were 14 CCF or less per month. Customers paying the \$14.45 flat rate would have a lower water bill under metered rates if their use is less than 21 CCF per month.

Under metered water rates, most customers would find that their water bills are lower in winter months when irrigation water use is minimal, and somewhat higher in summer months when demands are typically higher. The difference in annual water service costs will vary for each customer depending on their current flat rate and their actual water use characteristics.

Residential customers with a ¾” meter and typical water use of 20 CCF would pay \$13.80 per month for water use under the proposed metered rates.

NON-RESIDENTIAL WATER RATE STRUCTURE

Currently, the City’s non-residential customers are subject to the tiered water rate structure previously presented in Exhibit V-1. Review of the rate structure relative to the water use characteristics of various non-residential customers indicates some inequities in the structure. While one structure applies to customers with meters 2” and smaller, and another to customers with meters larger than 2”, the tier structure does not reflect the diverse range of water use by customers of various meter size, or even the diversity that exists within each meter size.

Tiered rate structures can provide an effective conservation incentive when properly designed around water usage characteristics of each customer class. As the previous section indicated, a tier structure can be effectively designed around

single family customers because, as a group, single family residences exhibit relatively homogeneous use patterns. Tier rate design for non-residential customers¹⁶ is inherently more complex due to the non-homogeneous water use patterns that exist.

Under the current rates, a large water-using customer (with a large water meter) pays a service charge based on meter size plus a commodity charge based on water usage. However, a large water user very quickly passes through the initial tiers and finds most water use charged at the highest tier rate. Even if water usage is very efficient, the fact that a large water user uses a large quantity means they pay the highest rates. On the other hand, a small water user may not need much water, but may be inefficient in their water usage. Such customers may only pay the lowest tier rate (or no commodity charge at all). The conservation incentive is lost on the smaller customers, and most non-residential customers do not use a great deal of water.

As an alternative to a tier rate structure for non-residential customers, it is recommended that the City adopt a simple uniform rate structure. Under a uniform rate structure all water usage is charged at the same amount. Service charges continue to be part of the rate structure. **Exhibit V-5** summarizes the proposed non-residential rate structure based on the City's current budget, and is revenue neutral overall with the City's current water rates.

The uniform rate structure provides several advantages to the current tier structure for non-residential customers, including:

¹⁶ Non-residential includes commercial, industrial, irrigation, institutional, and many multi-family accounts.

**Exhibit V-5
Proposed Non-Residential Water Rate
Structure for FY 99-00**

Service Charges (\$/month)		
¾" meter		\$8.40
1" meter		\$13.50
1 ½" meter		\$26.10
2" meter		\$41.30
3" meter		\$76.90
4" meter		\$158.00
6" meter		\$255.00
8" meter		\$408.00
10" meter		\$586.00
12" meter		\$1,095.00
Commodity Rate (\$/CCF)		
Uniform Rate	All Use	\$0.36

- ◆ Greater equity within non-homogeneous customer classes
- ◆ Reflects the cost of providing water service to each customer
- ◆ Simpler, easier to explain and administer
- ◆ Maintains conservation incentive since all customers pay for all water used

It is possible to design effective tier structures for non-residential customers with non-homogeneous water use characteristics. To obtain an effective pricing signal, the tier structure needs to be designed around the water use characteristics of each customer. For non-residential customers this can be accomplished by developing a *water budget* for each customer. A water budget is a determination of an appropriate amount of water necessary for a given use. Obviously determining a water budget for each customer can be time consuming, costly, and difficult to monitor and maintain.

A number of water utilities in California are adopting a water budget approach for large irrigation customers such as parks, golf courses, school grounds, green belts, etc. because of the potential for significant water savings. Irrigation water budgets are typically developed based on the area being irrigated and standard evapotranspiration (ET) rate data available from local weather stations.

City staff has expressed interest in developing water budget-based tier rates for irrigation customers. We recommend that the City develop such rates through a pilot project that would involve City-owned parks and irrigated areas. The development and use of ET-based water budgets can be an effective irrigation management tool, even if the water budgets are not incorporated into the water rate structure.

METERED RATE IMPLEMENTATION

The purpose of this section of the report is to propose water rate structures for both residential and non-residential customers of the City's water utility. The rate structures contained herein are conservation-oriented, as required by water conservation best management practices agreed to in both USBR contracts and the Water Forum Agreement.

Specific rates, and the adoption of those rates, are not recommended herein. The rate schedules presented herein are for information and comparative purposes.

Specific rates should be calculated at the time they are to be considered for adoption, and would reflect revenue needs at that time. The rate schedules shown herein are revenue neutral to the water utility with respect to the current rate structures. In addition, final calculation of the residential tier rate structure should reflect actual water use data that will become available once routine meter reading is implemented.

Exhibit V-6 presents a timeline for the implementation of the meter retrofit program and, in particular, metered water rates for all customers. This timeline is based on commitments to the USBR for both the meter retrofit program, as well as implementation of metered water rates.

Through its agreements with the USBR, the City has committed itself to implementing metered billing of residential customers as individual RCONA neighborhoods are metered, and as the systems are put in place to accommodate a smooth transition to metered billing. This means, among other things, that customers must be informed of the transition and provided information on how metered billing will affect their own water bills. The implementation plan includes providing all customers with 12 months of water use data, as well as flat rate verses metered rate bill comparisons before being required to move to the metered rate structure. This will provide customers with information to assess any financial impact, or to implement water conservation measures to reduce water service costs.

**Exhibit V-6
City of Roseville -- Water Utility
Meter Retrofit Program and Metered Rate Implementation Schedule**

Activity	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Meter Retrofit Program Planning and Rate Adoption													
Meter Retrofit Plan Development	█	█											
Adopt Meter Retrofit Program Plan		█											
Adopt Water Rate Increase for FY 00-01		█											
Adopt Meter Retrofit Surcharges			█										
Adopt New Non-Residential Rate Structure			█										
Adopt New Residential Rate Structure				█									
End Meter Retrofit Surcharges												█	
Metered Rate Implementation													
Begin Reading All Existing Residential Meters		█											
Make Water Use Data Available on Request			█										
Offer Residential Metered Rates on Voluntary Basis				█									
Require Metered Rates on All New Service Connections				█									
Provide Flat vs. Metered Bill Comparisons on Water Bills				█									
Begin Metered Billing of Customers (1):													
When Comparative Bills were Available by Jan. 2002					█								
When Comparative Bills were Available by Jan. 2003						█							
When Comparative Bills were Available by Jan. 2004							█						
When Comparative Bills were Available by Jan. 2005								█					
When Comparative Bills were Available by Jan. 2006									█				
When Comparative Bills were Available by Jan. 2007										█			
When Comparative Bills were Available by Jan. 2008											█		
When Comparative Bills were Available by Jan. 2009												█	
When Comparative Bills were Available by Jan. 2010													█
Retrofit Meter Installations													
Residential Retrofit Meter Installations		█	█	█	█	█	█	█	█	█	█	█	█

Notes:

(1) Metered billing would begin one year after water use and comparative bill information is available to customers within each RCONA.

PUBLIC OUTREACH AND EDUCATION

PUBLIC OUTREACH OVERVIEW

The City of Roseville took a proactive stance to public outreach early in the metering process by gauging public opinion and perceptions about metering through focus group research. The community research was designed to help implementation of the controversial program run smoothly and effectively for Roseville residents. In addition to focus groups, the City held four Citizens Advisory Committee meetings to assess in detail issues about cost and rate impacts, installation details and public outreach mediums and messages. Also, three public workshops were held to share information and obtain feedback about the metering program. Participants were presented with cost sharing options for financing the program in addition to general information about the metering program.

Although it will likely be two and one-half years before metered rates begin to become mandatory, the effects of the impending change to metered rates is beginning to be felt in the Roseville community and talked about by the media. The focus group results showed that metering is a topic about which customers feel they are lacking adequate information. Also, there are moderate levels of concern about water meter-related issues among Roseville water service customers. Whether or not this perception is valid, it is critical to pay attention to customers' viewpoints and establish ongoing methods to clearly and effectively communicate water meter related information to them.

It is also important to sustain a positive image about metering as the potentially controversial program begins to unfold. Lucy & Company, the public outreach firm

developing the community outreach process, recommends a proactive, straight-forward and community-oriented approach to educate the community about metering activities. Important key messages should include (1) metering is a federal mandate, (2) how and when metered rates will go into effect, and (3) how all customers will benefit from universal metering.

The City is actively working to prepare and deliver a proactive communication program that meets the needs of its customers. This section outlines a multi-faceted public relations program to help guide the City's public outreach efforts. The recommended activities are intended to help the City make a seamless transition as it moves forward with residential water metering. As with all long-range public outreach programs, it should be updated and modified as necessary.

RESEARCH FINDINGS

To obtain feedback from affected interest groups regarding the implementation of water metering in the City of Roseville, two focus groups were conducted on November 15 and 16, 1999. One focus group was composed of Citizen Advisory Committee (CAC) members; the other of randomly recruited homeowners. The objectives of the research were to:

- ◆ Collect general reactions to water meter-related issues;
- ◆ Identify concerns about water meter installation;
- ◆ Assess opinions about metered rates; and
- ◆ Establish preferred means of public outreach about metering issues.

The following synthesizes the focus group findings about the City's forthcoming water

metering program. A complete focus group report was prepared for the City.

General Feedback about Metering

Knowledge/Reactions

- ◆ Familiarity with the onset of metering was fairly high in both focus groups.
- ◆ Recruited participants' initial reactions ranged from positive to negative, with many of the less-positive reactions tied to a suspicion of a profit motivation on the part of the City.
- ◆ CAC participants were on the whole somewhat less concerned about metering, having more experience with both water-related issues and with living in previous homes that had water meters.

Advantages/Disadvantages

- ◆ Two advantages identified of a metered system were (1) equity from paying for service based on actual usage, and (2) an increased incentive to conserve water.
- ◆ Two main disadvantages were (1) meter installation costs – and uncertainty about who would be picking up that cost, and (2) fear about paying more for water service with usage-based rates.

Decision to Meter/Timeline

- ◆ Only a few of the recruited participants knew that the meter retrofit program is mandated by the federal government, rather than the City of Roseville.
- ◆ Learning that the metering mandate is not a local decision improved the attitudes of some participants toward both metering and the City's role in it.
- ◆ Participants were mostly unaware of the mandatory metering implementation timeline.

Meter Installation

Financial Concerns

- ◆ Participants in both groups were very dismayed to learn that a meter and the cost of installation will average approximately \$750¹⁷.
- ◆ They considered the expense far too exorbitant to pay off in one payment, and advocated long-term payment plans, if it were determined that homeowners would pay for the meters.
- ◆ Several mentioned the increased financial burden on those with low or fixed incomes.
- ◆ Having to pay for something they do not want in the first place upset many.
- ◆ Some questioned the equity of only those with homes built prior to 1992 having to pay.
- ◆ Most insisted that the City of Roseville should pay the meter retrofit cost.
- ◆ However, others pointed out that ultimately the ratepayers would absorb the installation costs, even if the City picked up the tab at the time; those who already had meters (and paid for them when their homes were built) considered this to be an unfair, multiple-billing for them.

Installation Concerns

- ◆ Participants would like advance notification of meter installation, clarifying the date and whether they need to be present.
- ◆ They expressed concerns about disruption to their landscaping.

¹⁷ After the focus groups were conducted, more detailed cost analysis indicated that average meter retrofit costs will be about \$775 for a complete retrofit, as discussed in Section III of this report.

Metered Rates

- ◆ Many CAC participants advocated a tiered residential water rate structure, with increasing cost-per-gallon at higher usage levels.
- ◆ Some recommended inclusion of a low base rate to cover those homeowners with minimal water usage, while others were opposed to this suggestion.
- ◆ Many in both groups wanted assurance that their water cost under a metered rate would approximate that of what they are paying on the flat rate – assuming *average* water use. They also would expect to see savings for those who are conscientious water users.
- ◆ To facilitate the transition, participants would like as much advance information as possible about their water usage; how they compare to the *average* user; and the water consumption of a number of water-related activities around the home.

Public Outreach

- ◆ Almost all participants stated that the more education, the better, through as many means as possible.
- ◆ Most recruited participants and almost all CAC participants were aware of the City's publication *Roseville Reflections* and claimed that they at least scanned it.
- ◆ Few watch Roseville's Channel 11.
- ◆ Those in the recruited group were unaware of the City's web site.
- ◆ Recruited participants suggested bill inserts as a means of communicating water-related issues; CAC participants were opposed to them.
- ◆ Those in both groups advised education in the schools.

- ◆ CAC members also supported public meetings as an effective venue to obtain information.

Water Conservation

- ◆ Most in both groups claimed to take steps to conserve water inside or outside their homes.
- ◆ Participants suggested that the City be as vigilant in conservation measures as it expects its residents to be.
- ◆ Random participants would wait to establish additional conservation measures until the metered rates had been determined, thinking this would affect the water rate amount.

Recommendations from Focus Group Research

Gather as much additional customer feedback as possible prior to determining how meter installation costs will be paid for. This has been a part of the Citizens Advisory Committee process. This decision is potentially fraught with negative repercussions, from either those yet to be metered (if asked to pay a substantial installation cost) or those with meters, who may feel they would ultimately be charged for others' installations through higher rates.

If the homeowner pays directly, it is imperative that a long-term payment plan be made readily available. Seven hundred fifty dollars, or an amount approaching it, is just too much for most to consider paying off at one time.

Repeatedly remind customers that the federal government, not the City, is responsible for the mandate. This will minimize potential backlash against the City and possibly increase customers' levels of cooperation.

Notify homeowners in advance of the date of meter installation. Inform customers whether it is necessary to be home at the time, and assure that any landscape disturbances will be entirely repaired by the City.

Provide frequent, early and clear information – prior to mandatory metering – on metered vs. flat-rate bill comparisons. This would ideally appear on customers' bills at least six months prior to mandatory metered rate implementation. Other desirable elements would include a comparison to other residential water users, to provide a benchmark for individual water usage; and the average water consumption of activities such as running the dishwasher and washing the car.

Use *Reflections*, information on the bill itself, mailers, and in-school education as means of disseminating metering information. Begin aggressive promotion of the City's web site to increase awareness and visits, but do not rely on it as an information-providing source until its usage has been established.

Practice what you preach. Assure customers that the City will take steps to manage its own water use, in parks and other public areas, just as many customers inferred that the establishment of metered rates is asking them to do at home.

PUBLIC WORKSHOPS RECAP AND RECOMMENDATIONS

Three public workshops were held to share information, answer questions and obtain input from the community about the water metering program. Sixty-two residents attended the workshops. Cost sharing options for financing the meter retrofit/installation program and general information about the water metering program

were provided. Questions and comments from meeting participants indicate interest in staying informed about the city's water metering program. Specific questions that were addressed at the workshop information tables and during question and answer sessions turned up again on comment cards. This suggests that because of the complexity and detail of the water metering program, community members need frequent and consistent information to understand the program and its impacts. The option whereby retrofit customers pay the cost of the retrofit program was the most favored option in the three public workshops. However, the finding is skewed based on the fact that one workshop (in an already metered area) drew significantly more participants than the other two. In addition, participants at the most well attended workshop represented a relatively homogeneous group.

Recommendations Based on Workshops

- ◆ Update the question and answer guide and key messages document to reflect questions asked at public workshops.
- ◆ Provide frequent and ongoing communication to the community at large through *Roseville Reflections*, the city web site, Channel 11 and presentations by city staff at various meeting groups including the RCONAs.
- ◆ Clearly indicate how the preferred financing option will be chosen. Communicate to the public as early as possible the preferred financing option.

METERING OUTREACH PLAN

Goal, Objectives and Target Audiences

The goal of the metering outreach plan is to position the City as a responsible and conscientious utility provider that provides straightforward, timely and accurate information to its customers throughout the entire metering transition process.

Public outreach objectives include:

- ◆ Be proactive in all communications tactics
- ◆ Increase customers' knowledge and understanding about the City's meter retrofit program, why it is needed and how it will affect them
- ◆ Repeatedly provide new and timely information about metering
- ◆ Address potential issues of concern in a straightforward manner, both in written communications and prepared statements
- ◆ Provide training to City staff members so they can effectively and uniformly communicate with the community.

The public outreach program should target both primary and secondary audiences. These include:

Primary Target Audience

- ◆ Residential water customers

Secondary Target Audiences/Stakeholders

- ◆ City of Roseville employees
- ◆ Public officials
- ◆ Community/civic leaders
- ◆ Parks, lighting & landscape districts, City golf courses, schools, and other public agencies
- ◆ Commercial and other non-residential customers

- ◆ Media representatives.

Metering Outreach Activities

The recommendations provided in this plan are based on focus group research findings, four meetings with the Citizen Advisory Committee, three community workshops and discussions with key City staff members. Based on these findings, it is clear that Roseville residents are interested in clear, accurate and timely information throughout every step of the metering process. Residents clearly stated that *the more information the better* and frequent reminders about metering are critical.

During the research phase, a series of questions about metering included details about the *why, when, and how* of residential water metering, the costs, benefits, rate changes, etc. Using research and experience with other similar programs as a basis for the plan, a public outreach program was created. We recommend multi-faceted communications materials to educate the Roseville residents about water metering and to position the City as a responsible, customer service-oriented water provider. The following activities are recommended:

Pre-Metering Phase

Key Message Development and Staff Training – Identify all applicable topic areas for key messages and develop the information to be consistently conveyed. The messages should be provided to management, customer service and maintenance staff for their reference in responding to issues. The messages should also be incorporated, where appropriate, in communications materials. Examples of areas needing key messages include when, why and how metering will be implemented in the City of Roseville.

Standardized Graphical Standards –

Develop a standard graphical appearance for metering materials. A recognizable look will enable customers to immediately recognize and remember City of Roseville pieces, as well as pique their interest in reading the materials. The standards should address body text, font types/sizes, graphic style, headline and logo placement, colors, size relationships between type and image, etc. The graphics template should serve as a guideline for developing brochures, flyers, fact sheets, etc.

Channel 11 Programming – Focus group research, CAC meetings and community workshops clearly identified the need for frequent information and updates about water metering. Although not viewed as a primary communications vehicle by focus group and CAC members, use of Channel 11 in addition to other outreach efforts will increase the exposure of water metering messages to the Roseville community. Channel 11 will reach those community members who are most interested in city programs and policies.

Installation Phase

Metering Brochure – A metering brochure should serve as a public outreach foundation for *everything anyone wants to know* about water metering in Roseville. It should be designed to be consistent with key messages and the graphical style that is easily identified with the Roseville water metering program. It should contain information about why and when metering is taking place, who is responsible for the program, commonly asked questions about the metering process, how to read a meter and understand a water bill, and information about water issues (conservation, general water user characteristics, etc.)

Introductory Letter – The City should prepare an introductory letter that alerts residents to the onset of the installation phase. In the letter, residents would be informed about how the metering installation process will proceed and where they can obtain more information. The letter should include a City contact person and phone number for residents to call if they have questions. **Reminder Letter** – A reminder letter should also be distributed to water customers as water meter retrofit/installation time approaches. It would also include a city contact person and phone number for any questions.

Door Hanger – A door hanger should be produced to notify residents about their installation time/day. It would include blank space for filling in specific information for each residence and their metering schedule as well as a checklist. A contact name/number should be included.

Water Conservation Education – The city should implement a water conservation education program in local schools using the information created by the Sacramento Area Water Works Association (SAWWA). In addition, utility bill inserts, *Roseville Reflections* and the city's web site should be used to communicate water conservation messages to residents and businesses.

Ongoing Public Outreach Activities**Speakers Bureau/Community Relations** –

The City should identify appropriate spokespeople to communicate metering-related information to community and stakeholder groups (City Council, chambers of commerce, RCONAs, etc.). The City should provide training and develop presentation materials to prepare the selected spokespeople to answer questions, correct misconceptions and relay Roseville metering key messages and information to

constituents and interest groups. A list of key organizations and scheduled meeting times should be identified to coordinate the dissemination of metering information through qualified spokespeople.

Utility Bill Inserts – Utility bill inserts were identified by research participants as one primary method of communicating information to residents. The City should design and produce two utility bill inserts to communicate metering implementation information including a key message and other metering resources.

Reflections Articles – Based on the research findings from the focus groups and the CAC, the *Roseville Reflections* newsletter appears to be a well-recognized and well-read publication. The City should write articles for *Reflections* at key milestones during the metering implementation process. Articles may include general background information about the metering process, commonly asked questions, the need for metering, costs of metering and metered water rates. The newsletter will include information about upcoming events or meetings where metering will be discussed.

Media Relations – The City should take a proactive approach by developing and distributing news releases or pitch letters to educate reporters early about important/controversial issues such as why metering is taking place and the importance of using water efficiently, among others. In addition, the City should develop media materials that will aid in reaching mass audiences with its key messages and information.

Media kits serve as the cornerstone to all effective communications programs. We

recommend developing a media kit for use in educating key reporters about metering, water-related issues, conservation programs, etc. Contents should include:

- ◆ News releases
- ◆ Fact sheets about water conservation and metering
- ◆ Metering brochure
- ◆ Service area map
- ◆ *Roseville Reflections* articles

Crisis Communications Management – the City should develop a proactive crisis communication plan to be prepared should a crisis or negative campaign against metering arise. The plan would proactively respond to the situation by implementing a strategy that:

- ◆ Controls rumors through the timely release of information to those affected;
- ◆ Ensures the City responds honestly to internal and external audiences;
- ◆ Preserves the integrity and direction of the City's programs; and
- ◆ Applies key messages consistently to a variety of audiences.

The following tasks should be completed to develop the crisis communications plan:

- ◆ Confirm crisis spokespersons and develop contact list
- ◆ Identify key audience
- ◆ Develop standby statement
- ◆ Create and distribute key messages to spokespersons
- ◆ Draft media outreach materials/ determine distribution channels

