



City of Tempe

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# Water and Wastewater Rates

## Executive Summary Report

July 20, 2012

Report Prepared By:



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# 1. Executive Summary

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## 1.1. Introduction

The City of Tempe, Arizona (City) provides water and wastewater service to approximately 43,400 customer accounts. The City's water and wastewater utilities are funded primarily from water and wastewater rate revenue.

The City authorized Red Oak Consulting to review the utilities' financial status and to recommend rate adjustments, as necessary, to assure their continuing financial viability. This study includes:

- Development of water and wastewater financial plans for the 10-year study period, 2011-12 through 2020-21;
- Analysis of customer class cost of service for 2012-13; and
- Design of water and wastewater rates for 2012-13.

## 1.2. Definitions

References made to a year or fiscal year mean the year ending June 30. Existing rates mean water and wastewater rates in effect November 2011.

## 1.3. Study Assumptions

This rate study is based on numerous assumptions. Changes in these assumptions could have a material effect on study findings. Red Oak incorporated the following key assumptions into the study:

- The number of accounts will increase 0.2% annually.
- Single family residential usage per account will decrease 2.0% annually.
- Multifamily residential and landscaping usage per account will decrease 1.0% annually
- Costs will change as follows:
  - Capital costs will increase 3% annually.
  - Consistent with the City's long-range forecast, salaries and wages will increase 4.5% in 2012-13 and 4% annually thereafter.
  - All other operating expenses increase in accordance with the inflation factors used in the City's long-range forecast.

- Utilities will maintain minimum reserve (fund balance) equal to:
  - 90 days O&M PLUS
  - 2% of fixed asset value
- Utilities will strive to achieve target levels equal to twelve months of revenue to be consistent with City policy although this level is not achieved during the study period.
- Costs associated with Other Post-Employment Benefits (OPEB) are fully included in utility revenue requirements.
- Costs associated with supporting certain non-utility services are included in utility revenue requirements. Non-utility services represent \$1.82 million or 2.4% of total revenue requirements.
- Net costs associated with irrigation services total \$361,340 in 2012-13 and represent 0.8% of water revenue requirements

#### 1.4. Usage Trends

Table 1-1 shows water sales amounts for the past five fiscal years. Monthly water usage per account has decreased from 35,100 in 2006-07 to 28,400 gallons in 2010-11, an average annual reduction of 5.2%. This trend is due to several factors including abnormal rainfall amounts, economic slowdown, conservation and price increases. Recognizing this trend, Red Oak assumes that annual use per account will decrease 2.0% for single family residential customers and 1% for multifamily and landscaping customers.

**Table 1-1:  
Historical Water Usage Trends**

<b>Fiscal Year</b>	<b>Water Sales</b>	<b>No. of Monthly Bills</b>	<b>Sales per Monthly Bill</b>	<b>Annual Change</b>
	<i>(Kgals)</i>		<i>(Kgals)</i>	
2006-07	18,153,239	516,716	35.1	
2007-08	16,523,527	517,729	31.9	(9.1%)
2008-09	15,260,431	519,618	29.4	(7.8%)
2009-10	14,718,914	519,928	28.3	(3.7%)
2010-11	14,745,646	519,559	28.4	0.4%

## 1.5. Water Rates

Principal findings of the water rate study are:

- Utility staff has developed a \$142.5 million water capital improvement program for the study period. The program includes \$62.0 million for rehabilitation and replacement of system infrastructure, \$34.2 million for regulatory improvements at the treatment plants, \$16.3 million for a new production well, and \$30.0 million for system upgrades.
- The water utility has approximately 850 miles of water mains. Staff estimates the current cost to replace these water mains is approximately \$2.0 million per mile. Replacing 1% of these mains each year would cost \$17 million per year at current cost levels. Red Oak recommends gradually transitioning to this amount over a multi-year period. The water main replacements included in the capital improvement program average about \$5.0 million annually and gradually increase to \$8.9 million by 2020-21.
- Water sales revenue under existing rates is inadequate to meet projected revenue requirements and maintain minimum reserve levels during the study period. Red Oak recommends adjusting rates in 2012-13 to increase annual water sales revenue by 9.5%. Similar rate adjustments are indicated to increase revenues in each of the subsequent five fiscal years. More moderate rate adjustments are projected thereafter.
- Red Oak recommends annually updating the water utility's long-term financial plan to reflect changes in number of accounts and water use characteristics, and current estimates of revenue, operating expenses, capital improvement needs, and capital financing requirements.
- Red Oak conducted a comprehensive water utility cost of service analysis in accordance with standard methods supported by the American Water Works Association. We performed our analysis for the 2012-13 test year and determined the cost of providing water service to customer classes. Table 1-2 summarizes the findings of the cost of service analysis.

**Table 1-2:  
Comparison of Water Cost of Service  
with Revenue from Existing Rates  
Test Year 2012-13**

Line No.	Customer Class	Cost of Service	Revenue From Existing Rates	Indicated Revenue Adjustment
	<b>Inside City</b>			
1	Single Family Residential	\$16,681,524	15,208,427	9.7%
2	Multifamily Residential	6,952,499	6,390,102	8.8%
3	Commercial	9,642,033	8,843,114	9.0%
4	Construction	205,759	192,264	7.0%
5	Industrial	2,072,918	1,882,782	10.1%
6	Landscaping	7,062,048	6,421,446	10.0%
7	Private Fire Protection	<u>113,255</u>	<u>102,106</u>	10.9%
8	Total Inside City	\$42,730,036	\$39,040,241	9.5%
9	Outside City	<u>49,392</u>	<u>27,730</u>	78.1%
10	<b>Total</b>	<b>\$42,779,428</b>	<b>\$39,067,971</b>	<b>9.5%</b>

- Existing water rates have been in effect since November 2011 and have the following structure:
  - Monthly base charges that vary by meter size.
  - Volume charges for single family residential customers that use a 4-block increasing rate structure.
  - Volume charges for all other customer classes that use a uniform rate structure.
- Red Oak developed proposed 2012-13 rates using the existing structure. These rates will increase annual water sales revenue by 9.5%. Red Oak proposes these rates be adopted.

- Table 1-3 compares existing and proposed monthly water base charges for inside city customers. Outside city rates are 30% greater than inside city rates, in accordance with City policy.

**Table 1-3:  
Comparison of Existing and Proposed  
Inside City Monthly Water Base Charges**

<b>Meter Size</b>	<b>Existing</b>	<b>Proposed 2012-13 Rates</b>
<i>(inches)</i>	<i>(per month)</i>	<i>(per month)</i>
5/8	\$ 10.24	\$ 10.80
3/4	14.63	15.10
1	22.01	22.60
1 1/2	37.70	39.40
2	62.50	64.80
3	140.10	146.00
4	275.20	287.00
6	545.80	568.00
8	1,276.00	1,330.00
10	2,023.70	2,110.00

- Table 1-4 compares existing and proposed water volume charges for inside City customers. Outside city rates are 30% greater than inside city rates, in accordance with City policy.

**Table 1-4:  
Comparison of Existing and Proposed  
Inside City Water Volume Charges**

<b>Monthly Usage</b>	<b>Percent Usage in Block</b>	<b>Existing Rates</b>	<b>Proposed 2012-13 Rates</b>
(Kgal)		(per Kgal)	(per Kgal)
<b>Single Family</b>			
First 8	49.0%	\$ 1.70	\$ 1.90
Next 7	22.0%	2.13	2.38
Next 10	14.7%	2.66	2.98
Over 25	14.3%	3.33	3.73
<b>Multifamily</b>			
All Usage	100.0%	1.84	2.04
<b>Commercial</b>			
All Usage	100.0%	2.09	2.32
<b>Construction</b>			
All Usage	100.0%	2.34	2.60
<b>Industrial</b>			
All Usage	100.0%	1.87	2.08
<b>Landscaping</b>			
All Usage	100.0%	2.34	2.60

- Table 1-5 compares monthly single family water bills under existing and proposed 2012-13 inside city rates. The monthly bill for the median single family bill (9,000 gallons) increases \$2.41 from \$25.97 under existing rates to \$28.38 under proposed 2012-13 rates.

**Table 1-5:  
Monthly Single Family Water  
Bills 5/8-inch Meter**

Monthly Usage (gallons)	Cumulative Percent of Bills	Existing Rates	Proposed 2012-13 Rates	
			Amount	Change
0	1.9%	\$ 10.24	\$ 10.80	\$ 0.56
1,000	4.1%	11.94	12.70	0.76
2,000	7.7%	13.64	14.60	0.96
3,000	12.8%	15.34	16.50	1.16
4,000	19.0%	17.04	18.40	1.36
5,000	25.5%	18.74	20.30	1.56
6,000	31.9%	20.44	22.20	1.76
7,000	38.0%	22.14	24.10	1.96
8,000	43.7%	23.84	26.00	2.16
<b>9,000</b>	<b>48.9%</b>	<b>25.97</b>	<b>28.38</b>	<b>2.41</b>
10,000	53.6%	28.10	30.76	2.66
11,000	57.9%	30.23	33.14	2.91
12,000	61.8%	32.36	35.52	3.16
13,000	65.2%	34.49	37.90	3.41
14,000	68.4%	36.62	40.28	3.66
15,000	71.1%	38.75	42.66	3.91
16,000	73.6%	41.41	45.64	4.23
17,000	75.9%	44.07	48.62	4.55
18,000	77.9%	46.73	51.60	4.87
25,000	88.0%	65.35	72.46	7.11
50,000	97.9%	148.60	165.71	17.11

## 1.6. Wastewater Rates

Principal findings of the wastewater rate study are as follows:

- Utility staff has developed a \$116.4 million wastewater capital improvement program for the 10-year study period. The program includes \$75.0 million for the City's share of the improvements at the 91st Avenue treatment plant, \$28.6 million for infrastructure replacement, and \$12.8 million for system improvements.

- The wastewater utility has approximately 550 miles of sewer mains. Staff estimates the current cost to replace these mains is approximately \$2.0 million per mile. Replacing 1% of these mains each year would cost \$11 million per year at current cost levels. Red Oak recommends gradually transitioning to this amount over a multi-year period. The main replacements included in the capital improvement program average about \$2.9 million annually and gradually increase to \$5.3 million by 2020-21.
- Wastewater service revenue under existing rates is inadequate to meet projected O&M and debt service and maintain minimum reserve levels during the study period. Red Oak recommends adjusting rates in 2012-13 to increase annual wastewater service revenue by 4%. Similar rate adjustments are indicated to increase revenues in each of the subsequent four fiscal years. Higher increases are indicated through the remainder of the study period to fund increasing infrastructure replacements.
- Red Oak recommends the wastewater utility's ten-year financial plan be updated annually to reflect changes in number of accounts and wastewater service characteristics and current estimates of revenue, operating expenses, capital improvement needs, and capital financing requirements.
- Red Oak analyzed the wastewater utility cost of service in accordance with standard methods supported by the Water Environment Federation. We performed our analysis for the 2012-13 test year and determined the cost of providing wastewater service to customer classes. Table 1-6 summarizes the findings of the cost of service analysis.

**Table 1-6:**  
**Comparison of Wastewater Cost of Service**  
**With Revenue From Existing Rates**  
*Test Year 2012-13*

Line No.	Customer Class	Cost of Service	Revenue under Existing Rates	Indicated Revenue Adjustment
1	Residential	\$ 13,176,173	\$ 13,092,956	0.6%
2	Residential with separate sprinkler meters	1,166,639	1,085,274	7.5%
3	Commercial – Low Strength	9,425,113	9,136,955	3.2%
4	Commercial – Medium Strength	667,044	612,725	8.9%
5	Commercial – High Strength	1,829,844	1,645,818	11.2%
6	Industrial	5,279,675	4,757,510	11.0%
7	<b>Total</b>	<b>\$ 31,544,488</b>	<b>\$ 30,331,238</b>	<b>4.0%</b>

- Existing wastewater rates have been in effect since November 2011 and have the following structure:
  - Monthly base charge that varies by meter size
  - Volume charge that varies by customer class and is based on billable water usage
- Red Oak developed 2012-13 proposed rates using the existing structure. These rates will increase annual wastewater service revenue by 4%. Red Oak proposes that these rates be adopted.
- Table 1-7 compares existing and proposed monthly wastewater base charges for inside City customers. Outside city rates are 30% greater than inside city rates, in accordance with City policy.

**Table 1-7:  
Comparison of Existing and Proposed  
Monthly Wastewater Base Charges**

<b>Meter Size</b> <i>(inches)</i>	<b>Existing</b> <i>(per month)</i>	<b>Proposed 2012-13 Rates</b> <i>(per month)</i>
5/8	\$ 9.50	\$ 10.30
3/4	13.00	14.00
1	24.70	25.20
1 1/2	46.30	46.90
2	72.20	72.90
3	176.00	177.00
4	349.00	351.00
6	695.00	699.00
8	1,650.00	1,660.00
10	2,600.00	2,610.00

- Table 1-8 compares existing and proposed wastewater volume charges for inside City customers. Outside city rates are 30% greater than inside city rates, in accordance with City policy.

**Table 1-8:  
Comparison of Existing and Proposed  
Wastewater Volume Charges**

Line No.	Customer Class	Existing <i>(per Kgal)</i>	Proposed 2012-13 Rates <i>(per Kgal)</i>
1	Residential	\$ 1.76	\$ 1.77
2	Residential with separate sprinkler meters	2.63	2.76
3	Commercial – Low Strength	2.94	3.08
4	Commercial – Medium Strength	4.33	4.58
5	Commercial – High Strength	7.46	7.92
7	Industrial	varies	varies

- Table 1-9 compares monthly single family wastewater bills under existing and proposed 2012-13 inside city rates. The monthly bill for the median single family bill (5,000 gallons) increases \$0.85 from \$18.30 under existing rates to \$19.15 under proposed 2012-13 rates.

**Table 1-9:  
Monthly Single Family Wastewater Bills  
5/8-inch Meter**

Billable Monthly Usage <i>(gallons)</i>	Existing Rates	Proposed 2012-13 Rates	
		Amount	Change
0	\$ 9.50	\$ 10.30	\$ 0.80
1,000	11.26	12.07	0.81
2,000	13.02	13.84	0.82
3,000	14.78	15.61	0.83
4,000	16.54	17.38	0.84
<b>5,000</b>	<b>18.30</b>	<b>19.15</b>	<b>0.85</b>
6,000	20.06	20.92	0.86
7,000	21.82	22.69	0.87
8,000	23.58	24.46	0.88
9,000	25.34	26.23	0.89
10,000	27.10	28.00	0.90