City of Tempe

Water and Wastewater Rates

Executive Summary Report

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1. Executive Summary

1.1. Introduction

The City of Tempe, Arizona (City) provides water and wastewater service to approximately 43,000 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, 2012-13 through 2021-22;
- Analysis of customer class cost of service for 2013-14; and
- Design of water and wastewater rates for 2013-14.

In addition to the Red Oak analysis, staff engaged a Citizens Task Force to solicit feedback from citizens regarding the water and wastewater rates. The Citizens Task Force provided good comments, some of which are addressed in the rate study.

1.2. Definitions

References made to a year or fiscal year mean the year ending June 30. Existing rates mean water rates in effect January 2013 and wastewater rates in effect November 2011.

1.3. Study Assumptions

This rate study uses numerous assumptions, which are based on an evaluation of the City's system trends over the last several years. 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, consistent with recent trends.
- Single family residential usage per account will decrease 1.0% 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% annually starting in 2013-14.
- All other operating expenses increase in accordance with the inflation factors used in the City's long-range forecast.

- Utilities will strive to maintain reserves that are a maximum of 50% of operating revenues and a minimum of 25% of annual operating revenues plus 2% of fixed asset value.
- Staff made significant permanent reductions to the Operations and Maintenance (O&M) budget, which reduced 2013-14 O&M by $1.6 million.
- 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. For 2013-14, non-utility services represent $1.65 million or 1.75% of total revenue requirements. These costs are predominantly associated with positions spread throughout the City of Tempe organization that historically provided some measure of support to the Water Utility. Over time, it has become difficult to associate and measure the work product of these positions as they have become both diluted in their work plans and simultaneously supported by the work product of other staff, not funded by the utility. It took many years to create this situation and City of Tempe's strategy going forward is to use vacancies as the opportunity to consider realigning cost centers to create more transparency in this regard.
- Net costs associated with irrigation services total $589,623 in 2013-14 and represent 1.11% of water revenue requirements. The net costs include $662,783 in O&M expenses, $257,500 in capital costs and $330,660 in projected revenue from irrigation billings.

1.4. Usage Trends

Table 1-1 shows water sales amounts for the past five fiscal years. Monthly water usage per account for the total system has decreased from 31,900 gallons in 2007-08 to 31,500 gallons in 2011-12, an average annual reduction of 0.3%, although some years experienced a much higher usage reduction. This trend is due to several factors including abnormal rainfall amounts, economic slowdown, conservation, price increases and meter replacements. Recognizing this trend, Red Oak conservatively assumes that annual use per account will decrease 1.0% for single family residential, multifamily, commercial, industrial and landscaping customers during the study period. Annual use per account for other customer classes is projected to remain flat.

Table 1-1:
Historical Water Usage Trends

Fiscal Year	Water Sales	No. of Monthly Bills	Sales per Monthly Bill	Annual Change in Monthly Sales
	(1,000 gallons)		*(1,000 gallons)*	
2007-08	16,523,527	517,729	31.9	
2008-09	15,260,431	519,618	29.4	(8.0%)
2009-10	15,041,233	519,928	28.9	(1.5%)
2010-11	15,749,480	519,559	30.3	4.8%
2011-12	16,247,969	515,948	31.5	3.9%

1.5. Water Rates

Principal findings of the water rate study are:

- Utility staff has developed a $119.7 million water capital improvement program for the study period. The program includes $60.3 million for rehabilitation and replacement of system infrastructure, $14.3 million for regulatory improvements at the treatment plants, $13.9 million for new production wells, and $31.3 million for system upgrades which includes WMAT Quantification Settlement Agreement CAP Water Lease ($5.1M), Environmental Laboratory Facility Project ($3.5M) and Ken McDonald Golf Course Recharge Project ($3.5M).
- The water utility has approximately 850 miles of water mains. Staff estimates the current cost to replace these water mains is approximately $750,000 to $1.5 million per mile, depending on conflicts encountered during construction. Replacing 1% of these mains each year would cost $6.4 million to $12.8 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 $5.2 million annually and gradually increase to $6.6 million by 2020-21.
- Revenue from irrigation billings does not fully recover the cost to provide raw water to irrigation customers. Consistent with City Council direction, Red Oak recommends gradually increasing irrigation rates to 100% recovery of irrigation-related O&M expenses over five years. Once irrigation rates are fully recovering O&M expenses, Red Oak recommends consideration of full capital cost recovery.
- 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 2013-14 to increase annual water sales revenue by 5.0%. A similar rate adjustment is indicated to increase revenues in 2014-15. 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 2013-14 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 2013-14

Line No.	Customer Class	Cost of Service	Revenue From Existing Rates	Indicated Revenue Adjustment
	Inside City			
1	Single Family Residential	$ 17,756,618	$ 16,799,053	5.7%
2	Multifamily Residential	8,150,862	7,770,685	4.9%
3	Commercial	11,560,068	11,041,253	4.7%
4	Construction	206,823	188,078	10.0%
5	Industrial	2,923,928	2,854,833	2.4%
6	Landscaping	7,642,960	7,332,373	4.2%
7	Private Fire Protection	129,156	102,106	26.5%
8	*Total Inside City*	*$ 48,370,415*	*$ 46,088,381*	*5.0%*
9	Outside City	$ 54,942	$ 31,006	77.2%
10	**Total System**	**$ 48,425,357**	**$ 46,119,387**	**5.0%**

- Existing water rates have been in effect since January 2013 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 proposes rates for 2013-14 that increase annual water sales revenue by 5.0%, equitably recovers class cost of service, and provide incentives for conservation. The proposed rates use the existing structure.

- 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

Meter Size	Existing	Proposed 2013-14 Rates
(inches)	*(per month)*	*(per month)*
5/8	$ 10.80	$ 11.50
3/4	15.10	15.70
1	22.60	23.50
1 1/2	39.40	41.60
2	64.80	67.90
3	146.00	154.00
4	287.00	302.00
6	568.00	599.00
8	1,330.00	1,400.00
10	2,110.00	2,220.00

- 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

Monthly Usage	Usage in Block	Existing Rates	Proposed 2013-14 Rates
(gallons)		*(per 1,000 gallons)*	*(per 1,000 gallons)*
Single Family			
First 8,000	48.6%	$ 1.90	$ 2.00
Next 7,000	22.4%	2.38	2.50
Next 10,000	14.9%	2.98	3.13
Over 25,000	14.1%	3.73	3.92
Multifamily			
All Usage	100.0%	2.04	2.14
Commercial			
All Usage	100.0%	2.32	2.43
Construction			
All Usage	100.0%	2.60	2.73
Industrial			
All Usage	100.0%	2.08	2.18
Landscaping			
All Usage	100.0%	2.60	2.73

- Table 1-5 compares monthly single family water bills under existing and proposed 2013-14 inside city rates. The monthly bill for the median single family bill (9,000 gallons) increases $1.62 from $28.38 under existing rates to $30.00 under proposed 2013-14 rates.

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

Monthly Usage	Cumulative Percent of Bills	Existing Rates	Proposed 2013-14 Rates	
			Amount	Change
(gallons)				
0	1.3%	$ 10.80	$ 11.50	$ 0.70
1,000	3.3%	12.70	13.50	0.80
2,000	6.9%	14.60	15.50	0.90
3,000	11.8%	16.50	17.50	1.00
4,000	17.6%	18.40	19.50	1.10
5,000	23.9%	20.30	21.50	1.20
6,000	30.1%	22.20	23.50	1.30
7,000	36.1%	24.10	25.50	1.40
8,000	41.7%	26.00	27.50	1.50
9,000	**46.9%**	**28.38**	**30.00**	**1.62**
10,000	51.7%	30.76	32.50	1.74
11,000	56.1%	33.14	35.00	1.86
12,000	60.0%	35.52	37.50	1.98
13,000	63.6%	37.90	40.00	2.10
14,000	66.8%	40.28	42.50	2.22
15,000	69.8%	42.66	45.00	2.34
16,000	72.4%	45.64	48.13	2.49
17,000	74.8%	48.62	51.26	2.64
18,000	77.0%	51.60	54.39	2.79
25,000	87.6%	72.46	76.30	3.84
50,000	97.8%	165.71	174.30	8.59

1.6. Wastewater Rates

Principal findings of the wastewater rate study are as follows:

- Utility staff has developed an $87.4 million wastewater capital improvement program for the 10-year study period. The program includes $51.3 million for the City's share of the improvements at the 91st Avenue treatment plant, $30.6 million for infrastructure replacement, and $5.4 million for system improvements. System improvements include Environmental Laboratory Facility ($3.5 million) and Metering Station Improvements ($1.2 million).
- The wastewater utility has approximately 550 miles of sewer mains. Staff estimates the annual cost to replace or rehabilitate aging sewer infrastructure is approximately $3.6 million. 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 $3.6 million by 2020-21.
- Wastewater service 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 to increase annual sewer service revenue by 2.0% in each year of the study period.
- 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 2013-14 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.
- Based on feedback from the Citizens Task Force, existing Single Family Residential Return Flow Factor of 90% is too high and does not recognize the true amount of water sales to Single Family Residential customers that is not returned to the sewer system. Red Oak recommends adjusting the Single Family Residential Return Flow Factor to 70%.

Table 1-6:
Comparison of Wastewater Cost of Service
With Revenue From Existing Rates
Test Year 2013-14

Line No.	Customer Class	Cost of Service	Revenue under Existing Rates	Indicated Revenue Adjustment
1	Residential	$ 14,515,755	$ 12,716,874	14.1%
2	Residential with separate sprinkler meters	1,075,130	1,118,940	(3.9%)
3	Commercial – Low Strength	8,432,258	9,330,668	(9.6%)
4	Commercial – Medium Strength	646,370	707,219	(8.6%)
5	Commercial – High Strength	1,383,422	1,620,865	(14.6%)
6	Industrial	3,447,839	3,427,761	0.6%
7	**Total**	**$ 29,500,774**	**$ 28,922,327**	**2.0%**

- 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 proposes rates for 2013-14 that increase annual sewer service revenue by 2.0% and equitably recover class cost of service. The proposed rates use the existing structure.
- 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:
Existing Monthly Wastewater Base Charges

Meter Size	Existing	Proposed 2013-14 Charges
(inches)	*(per month)*	*(per month)*
5/8	$ 9.50	$ 10.30
3/4	13.00	14.00
1	24.70	25.10
1 1/2	46.30	46.70
2	72.20	72.60
3	176.00	176.00
4	349.00	349.00
6	695.00	695.00
8	1,650.00	1,650.00
10	2,600.00	2,600.00

- 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:
Existing Wastewater Volume Charges

Line No.	Customer Class	Existing	Proposed 2013-14 Rates
		(per 1,000 gallons)	(per 1,000 gallons)
1	Residential	$ 1.76	$ 1.75
2	Residential with separate sprinkler meters	2.63	2.73
3	Commercial – Low Strength	2.94	2.95
4	Commercial – Medium Strength	4.33	4.40
5	Commercial – High Strength	7.46	7.55
6	Industrial	Varies	Varies

- Table 1-9 shows monthly single family wastewater bills under existing inside City rates.

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

Billable Monthly Usage	Existing Rates	Proposed 2013-14 Rates
(gallons)		
0	$ 9.50	$ 10.30
1,000	11.26	12.05
2,000	13.02	13.80
3,000	14.78	15.55
4,000	16.54	17.30
5,000	18.30	19.05
6,000	20.06	20.80
7,000	**21.82**	**22.55**
8,000	23.58	24.30
9,000	25.34	26.05
10,000	27.10	27.80
11,000	28.86	29.55
12,000	30.62	31.30
13,000	32.38	33.05
14,000	34.14	34.80
15,000	35.90	36.55