

CITY OF TUCSON



System Equity Fee Update

November 10, 2006

Contents

Tucson Water – Update of System Equity Fee	Pages 1 - 4
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Tables:

1. System Equity Fee Cost Basis	Page 5
2. System Capacity Estimates	Page 6
3. Unit Costs of Capacity	Page 7
4. System Equity Fee Calculation, 5/8" Meter	Page 8
5. Current and Proposed System Equity Fee Schedules	Page 9
6. Projected System Equity Fee Revenues	Page 10

Letter from Galardi Consulting	Page 11
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Appendices:

A:	Fixed Asset Listing
A-1:	Debt Principal Credit and Historical Interest Adjustment
B:	System Capacity Detail

Background

The system equity fee is a one-time charge assessed new connections to the central potable water system to recover costs associated with previous investments in capacity currently available to meet the needs of growth.

In addition to the central water system, Tucson Water operates several water systems which are not interconnected with the central system; the system equity fee is not applicable to these isolated systems¹ as well as to two other areas (Peppertree/Continental Ranch and Dove Mountain) within the central system in which earlier development agreements preclude the application of the system equity fee.

The system equity fee, based on infrastructure expected to be operational by June 30, 2003, was originally adopted by Tucson's Mayor and Council in 2003 and became effective on August 11, 2003. The last update of the cost and system capacity elements underlying the fee occurred during Fiscal Year (FY) 2005. In reviewing that update, Tucson Water's rate consultant, Galardi Consulting, LLC, recommended that an update of the fee itself not be pursued since the revised amount of the fee would be within one percent of the existing fee (for a 5/8-inch meter, \$1,412 versus the existing \$1,416).

Overview of System Equity Fee Methodology

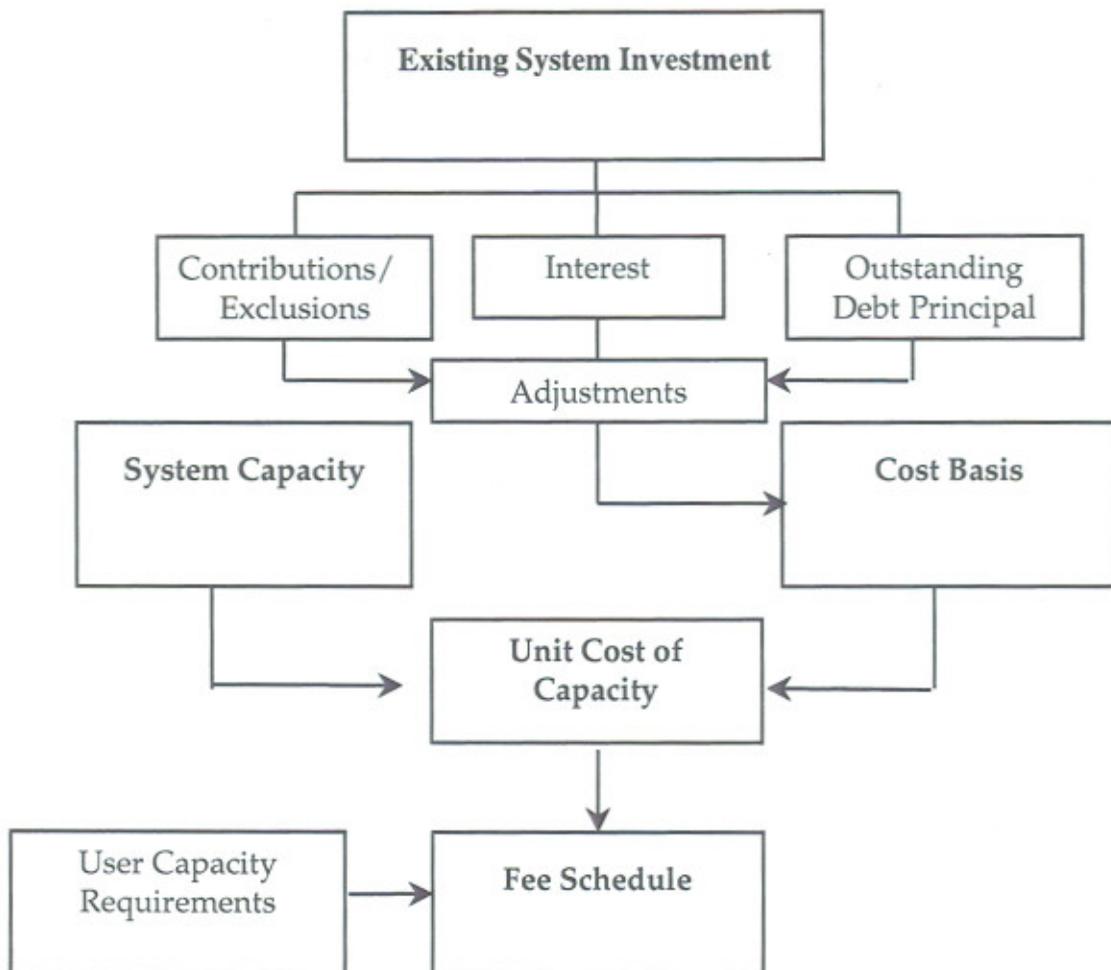
The system equity fee is designed to be consistent with:

- The City's financial and growth management policies
- The requirements of Arizona fee statutes (ARS Section 9-463.05)
- Industry standard methods established by the American Water Works Association (AWWA)

The system equity fee methodology, often referred to as a "capacity buy-in" fee approach, is based on existing facilities and costs. Under this approach, new customers are required to "buy in" to existing system facilities at a rate that reflects the prior investment per unit of existing capacity. The current methodology includes the following steps, illustrated in the diagram on the following page, and discussed briefly following the diagram:

1. Develop the cost basis
2. Define system capacity
3. Calculate the unit costs of capacity
4. Develop the fee schedule

¹ Two isolated systems, Santa Rita Bel Air and Diamond Bell, have development fees for connections within those systems. Those fees were developed under separate studies.



Develop Cost Basis (Table 1 and Appendices A and A-1)

Calculation of the system equity fee begins with a tabulation and valuation of utility fixed assets based on historical cost. Under this approach, new customers are required to buy into the system at the same nominal cost as existing users.

The cost basis is limited to potable central system assets funded by existing customers, with outstanding debt principal removed. The cost basis therefore represents the "equity" in the system. Historical interest costs on debt-financed equity fee components are added to reflect the carrying costs of capacity which has been borne by existing customers.

Assets that were and will continue to be funded through another fee schedule are excluded from the cost basis as are assets that:

1. do not provide system capacity (vehicular type equipment; land on which water facilities have yet to be constructed; and administrative office buildings);
2. have been contributed to Tucson Water as part of other long-standing development policies of the utility (such assets are mostly pipelines distributing water to specific subdivisions);
3. are treatment facilities currently not used to provide water service or which are not the property of Tucson Water (i.e., Tucson Airport TCE Remediation Plant);
4. are pipelines less than 6-inch in diameter since small pipelines provide localized, not system-wide, capacity;
5. are located in Tucson Water's small isolated water systems where the system equity fee will not be applied to new connections; or
6. are reclaimed water assets since the fee calculation is related solely to potable system capacity and its related cost of assets.

Define System Capacity (Table 2 and Appendix B)

System design criteria determine the amount of capacity present in the system and, in addition, drive the cost to construct the system. As a result, system design criteria play an important role in the calculation of the system equity fee. Water system capacity has been measured in terms of peak water volumes, since providing sufficient capacity for peaking is a major determinant of asset cost, with capacity measures differing among system components.

Calculate Unit Cost(s) of Capacity (Table 3)

The system-wide unit cost of capacity is simply the cost basis divided by the estimated capacity. Separate unit costs are calculated for each major component of the system: supply, transmission and distribution, and storage and pumping.

Develop Fee Schedule (Tables 4 and 5)

Once the unit costs of capacity have been determined, the fee for a typical new residential 5/8-inch metered connection can be determined based on its estimated claim on system capacity. The 5/8-inch meter fee must then be extrapolated for larger meter sizes to fully develop the fee schedule. This extrapolation is based on rated hydraulic capacities of various meter sizes.

Use of System Equity Fee Revenues

Revenues from the system equity fee are designated to assist in funding Tucson Water's annual debt service requirement, since, to a major extent, the assets related to the fee were originally funded by debt. In FY 2006, system equity fee revenues of \$7.8 million funded approximately 25% of that year's total actual debt service requirement. Thus, these revenues have a favorable effect on all rate payers by reducing the amount of water sales (water rate) revenues which would otherwise be necessary to fund 100% of the annual debt service requirement.

Based on the proposed system equity fee schedule, revenues are expected to be between \$8.9 million and \$9.8 million annually during the FY 2008 through FY 2012 planning period. Based on the existing fee schedule, annual revenues for the same period would be between \$650,000 and \$719,000 less. Table 6 illustrates the revenue stream based on the proposed fee and existing fee schedules.

Table 1
System Equity Fee Cost Basis

Existing Facilities	Historical Cost	Contributions and Exclusions	Adjusted Historical Cost	Bond Debt Principal Credit	Historical Debt Interest Cost	TOTAL COST BASIS
Supply	\$ 267,220,433	\$ (107,397,042)	\$ 159,823,391	\$ (61,756,902)	\$ 53,271,954	\$ 151,338,443
Transmission/Distribution	\$ 626,868,212	\$ (284,096,188)	\$ 342,772,024	\$ (133,806,622)	\$ 115,422,567	\$ 324,387,969
Storage/Pumping	\$ 172,676,651	\$ (16,855,635)	\$ 155,821,016	\$ (61,756,902)	\$ 53,271,954	\$ 147,336,068
All Other Assets	\$ 191,838,103	\$ (191,838,103)	\$ -	\$ -	\$ -	\$ -
	\$ 1,258,603,399	\$ (600,186,968)	\$ 658,416,431	\$ (257,320,426)	\$ 221,966,475	\$ 623,062,480

Table 2
System Capacity Estimates

	Facilities	Peak Day Capacity (mgd)	Peak Day + Fire Capacity (mgd)
Supply (groundwater wells & Clearwater Facility Wells)	185	192.4	N/A
Transmission/Distribution Mains	Approx. 4,449 miles	219.0	N/A
Storage and Pumping	39	N/A	291.4

Note: Storage (reservoirs) and their related pumping (booster) facilities are designed to meet fire flow in addition to peak day requirements.

Table 3
Unit Costs of Capacity

Facility Type	Peak Day	Peak Day + Fire	Total
Allocated Investments			
Supply	\$ 151,338,443		\$ 151,338,443
Transmission/Distribution	\$ 324,387,969		\$ 324,387,969
Storage/Pumping		\$ 147,336,068	\$ 147,336,068
Total	\$ 475,726,412	\$ 147,336,068	\$ 623,062,480
Capacity (mgd)			
Supply	192.4		N/A
Transmission/Distribution	219.0		N/A
Storage/Pumping		291.4	N/A
Unit Cost of Capacity (\$/mgd)			
Supply	\$ 786,582		N/A
Transmission/Distribution	\$ 1,481,224		N/A
Storage/Pumping		\$ 505,615	N/A
Unit Cost of Capacity (\$/gpd)			
Supply	\$ 0.7866		N/A
Transmission/Distribution	\$ 1.4812		N/A
Storage/Pumping		\$ 0.5056	N/A

Table 4
System Equity Fee Calculation:
Single-Family Residential Customer 5/8" Meter

	Peak Day	Peak Day + Fire	Total
Capacity Requirements (gpd/meter)			
Single-Family 5/8-Inch Meter *	540	600	N/A
Unit Cost of Capacity (\$/gpd)			
Supply	\$ 0.7866		N/A
Transmission/Distribution	\$ 1.4812		N/A
Storage/Pumping		\$ 0.5056	N/A
System Equity Fee			
Supply	\$ 424.76		\$ 424.76
Transmission/Distribution	\$ 799.85		\$ 799.85
Storage/Pumping		\$ 303.36	\$ 303.36
TOTAL	\$ 1,224.61	\$ 303.36	\$ 1,527.97
	TOTAL FEE ROUNDED		\$ 1,528.00

* Capacity requirements are based on the following design criteria:

Average day use of 110 gallons per capita per day X 2.7 average household members = approx. 300 gallons per day. Peak day use is approx 1.8 times the average day, resulting in 540 gallons per day. Peak day + fire flow is approx. 2 times the average day, resulting in 600 gallons per day.

Table 5
Current and Proposed System Equity Fee Schedules

Meter Size	Meter Capacity	Meter Equivalency	Current Fee	Proposed Fee	Amount of Change	Percent of Change
5/8"	20	1.0	\$ 1,416	\$ 1,528	\$ 112	7.9%
1"	50	2.5	\$ 3,540	\$ 3,820	\$ 280	7.9%
1 1/2"	100	5.0	\$ 7,080	\$ 7,640	\$ 560	7.9%
2"	160	8.0	\$ 11,328	\$ 12,224	\$ 896	7.9%
3"	320	16.0	\$ 22,656	\$ 24,448	\$ 1,792	7.9%
4"	550	27.5	\$ 38,940	\$ 42,020	\$ 3,080	7.9%
6"	1,125	56.3	\$ 79,650	\$ 86,026	\$ 6,376	7.9%
8"	1,700	85.0	\$ 120,360	\$ 129,880	\$ 9,520	7.9%
10"	2,600	130.0	\$ 184,080	\$ 198,640	\$ 14,560	7.9%
12"	4,300	215.0	\$ 304,440	\$ 328,520	\$ 24,080	7.9%

Table 6
Projected System Equity Fee Revenues: Proposed Fee and Existing Fee

<i>FY:</i>	2008	2009	2010	2011	2012
Estimated Equivalent Additional 5/8" Meters	5,833	5,973	6,130	6,269	6,421
<i>Proposed 5/8" Fee</i>	<i>\$1,528</i>				
<i>Existing 5/8" Fee</i>	<i>\$1,416</i>				
Estimated Revenues Under Proposed Fee	\$8,912,824	\$9,126,744	\$9,366,640	\$9,579,032	\$9,811,288
Estimated Revenues Under Existing Fee	\$8,259,528	\$8,457,768	\$8,680,080	\$8,876,904	\$9,092,136
<i>Proposed Minus Existing</i>	<i>\$653,296</i>	<i>\$668,976</i>	<i>\$686,560</i>	<i>\$702,128</i>	<i>\$719,152</i>



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November 13, 2006

Ms. Barbara Buus
Tucson Water
P.O. Box 27210
Tucson, AZ 85726-7210

Dear Barbara,

Galardi Consulting has reviewed Tucson Water's System Equity Fee (SEF) report, dated November 10, 2006 and calculations prepared by staff. The updated fee calculations follow the same methodology as the original SEFs adopted by the City Council in 2003. Based on the data developed by Tucson Water staff, the revised calculations support an increase in the SEF of about eight percent, reflecting an increase in the cost basis due to recent system investment and additional financing costs incurred. While Galardi Consulting has not independently verified the data and information used in the updated SEF calculations, we have no reason to believe that the data employed by utility staff are unreasonable. It is therefore, our opinion that the updated SEFs are both equitable and defensible within the context of Arizona State Statute 9-463.05 and current industry standards.

Please call me at (503) 236-0002 if you have any questions or require further assistance.

Sincerely,

Deborah Galardi
Principal

APPENDIX A

Fixed Asset Listing

(Asset Listing is too lengthy to post on web site: contact Tucson Water if you desire a copy. Thank you.)

APPENDIX A-1

**Debt Principal Credit and Historical
Interest Adjustment**

APPENDIX A-1

**Tucson Water
Assets Included in Fee Calculation Funded with Debt
as Percent of Total Assets Funded with Debt**

	Per June 30, 2006 Property Register	Bond Funded WIP (June 30,2006) Plus Proj. FY 2007 Spending	Bond Funded SEF Projects to be Capitalized/ In Service by June 30, 2007	Adjusted Total
Total Assets Funded with Debt	\$ 607,617,609 (1)	\$ 46,922,772 (2)	NA (2)	\$ 654,540,381
Assets Included in SE Fee Calc. Funded with Debt	\$ 437,255,361 (1)	NA	\$ 14,967,278 (3)	\$ 452,222,639
Debt Funded Assets Included in SE Fee Calc. as % of Total assets Funded with Debt				69.1%

Sources: (1) COT Fixed Asset Register.

(2) WIP @ June 30, 2006 plus projected FY 2007 bond funded spending.

(3) Bond funded portion of projects to be capitalized by June 30, 2007 and included in SE Fee calculation.

Calculation of Debt Service Principal Credit

Total Water Revenue Bonds Outstanding - June 30, 2007	\$ 331,115,000
Assets Included in Fee Calc. as % of Total	69.1%
Revenue Bond Debt Credit	228,800,465 (a)
Outstanding Principal on WIFA Funded Projects Included in Asset Base	\$ 28,519,961 (b)
Debt Service Principal Credit	\$ 257,320,426

Calculation of credit: Outstanding Debt resulting from assets included in fee calculation:

(a) The credit is calculated by allocating Total Water Revenue Bonds to eligible assets based on the ratio of bond funded eligible assets to total bond-funded assets.

(b) WIFA Loans - Since WIFA loans are made for specific projects, it is possible to determine the loan proceeds used to fund SEF assets and the remaining outstanding debt.

Tucson Water Calculation of Interest Adjustment

Fiscal Year	Total Debt Service Interest	Assets Included in Calculation as % of Total Assets	Interest Expense Assigned to Assets Included in Calculation
1983	\$ 6,432,000	0.691	\$ 4,444,512
1984	\$ 7,089,000	0.691	\$ 4,898,499
1985	\$ 8,955,000	0.691	\$ 6,187,905
1986	\$ 8,764,000	0.691	\$ 6,055,924
1987	\$ 9,793,000	0.691	\$ 6,766,963
1988	\$ 9,147,000	0.691	\$ 6,320,577
1989	\$ 10,938,000	0.691	\$ 7,558,158
1990	\$ 12,559,000	0.691	\$ 8,678,269
1991	\$ 12,427,000	0.691	\$ 8,587,057
1992	\$ 12,780,000	0.691	\$ 8,830,980
1993	\$ 11,452,000	0.691	\$ 7,913,332
1994	\$ 12,430,000	0.691	\$ 8,589,130
1995	\$ 12,331,000	0.691	\$ 8,520,721
1996	\$ 11,973,000	0.691	\$ 8,273,343
1997	\$ 13,257,000	0.691	\$ 9,160,587
1998	\$ 13,120,000	0.691	\$ 9,065,920
1999	\$ 13,003,000	0.691	\$ 8,985,073
2000	\$ 14,271,000	0.691	\$ 9,861,261
2001	\$ 15,096,000	0.691	\$ 10,431,336
2002	\$ 15,786,000	0.691	\$ 10,908,126
2003	\$ 16,822,000	0.691	\$ 11,624,002
2004	\$ 17,401,000	0.691	\$ 12,024,091
2005	\$ 17,817,000	0.691	\$ 12,311,547
2006	\$ 18,679,000	0.691	\$ 12,907,189
2007	\$ 18,903,000	0.691	\$ 13,061,973
Total Interest	321,225,000		\$ 221,966,475

Source: City of Tucson Comprehensive Annual Financial Report
Calculation of interest: Debt Service interest expense was allocated to eligible assets based on the ratio of bond funded eligible assets to total bond-funded assets.

Source: Interest Expense from COT CAFR - 1990 and after; prior years: from Income Statement.
Interest Expense for 2007: DS schedules as of October 2006 with planned 2007 refunding

APPENDIX B

System Capacity Detail

Tucson Water Supply Facilities: Maximum Capacity

Water Service Area	Number of Wells	Maximum Capacity (million gallons/day)	Isolated Systems / TARP ¹		Wells Within Peppertree/Dove Mtn	
			Number of Wells	Capacity	Number of Wells	Capacity
A1	19	13.7				
B1	20	16.4				
BW	8	8.9				
C1	32	22.9				
C6	1	1.0				
D1	18	13.8				
DH	1	1.5				
E1	11	6.4				
E2	3	2.0				
F1	1	0.6				
F2	1	0.3				
G2	6	7.1				
G5	2	0.7	2	0.7		
GF	2	0.1	2	0.1		
GW	3	0.2	3	0.2		
I2	3	3.1	3	3.1		
I6	2	0.4	2	0.4		
PF	1	0.5	1	0.5		
SC	15	12.5				
SS	3	1.9				
TA	9	6.7	9	6.7		
W1	2	1.0	2	1.0		
WC	1	0.1	1	0.1		
Y1	2	1.3			2	1.3
Y5	27	57.9				
Z5	15	22.0				
ZA	4	3.5				
Total	212	206.7	25	13.0	2	1.3
Less:						
Isolated Systems	16	6.3				
TARP ¹	9	6.7				
Peppertree/Dove Mtn	2	1.3				
Final Adjusted Total	185	192.4				

¹ TARP: Tucson Airport trichloroethylene (TCE) Remediation Plant

Transmission/Distribution Capacity

Water Source	Transmission Main Diameter (inches)	Capacity (mgd)
Clearwater Renewable Resource Facility/Hayden Udall Treatment Plant	96	162
Avra Valley	42	31
Santa Cruz	30	16
Southside	24	10
Total		219

Note: There are currently four major water sources serving the central potable system. These sources were designed to meet both current and future demands and each has a corresponding transmission main designed to deliver the volume planned for each source. It is this volume or capacity that is used in these calculations for the capacity of the potable transmission system.

Likewise, a distribution system cannot deliver more water than what is provided by its source, which is the transmission mains. For this reason, the capacity of the distribution system is assumed to equal the capacity of the transmission system.

Tucson Water Storage Facilities: Maximum Capacity

Storage Facility	Capacity (million gallons)	Isolated System Capacity	Facilities Within Peppertree/Dove Mtn	Adjusted System Capacity	Major Facilities
22ND ST BOOSTER	20.02				20.02
CAMBELL F RESER	1.91				
CLEARWELL D RES #1	29.93				29.93
CLEARWELL D RES #2	28.10				28.10
CRAYCROFT D RES	0.67				
DANFORTH D-E	9.94				
DEVINE BOOSTER	20.47				20.47
DIAMONDBELL 2	0.15	0.15			
E-024	0.10				
E-025	0.34				
ESCALANTE	10.08				
F-001	0.03				
F-003	0.01				
HERMANS D	5.00				
HILLTOP	0.19	0.19			
I-002 B	0.14	0.14			
KOLB C-D	22.42				22.42
KOLB E	0.30				
LOS-REALES RES E	5.33				
MANZANITA D-F B	2.38				
MARTIN B-C BOOS	20.25				20.25
MURPHY C-D BOOS	16.18				16.18
NARANJA C-E BOO	4.05				
OAKMONT BOOSTER	0.17				
OASIS A-C BOOST	15.22				15.22
OLD VAIL	0.20				
PASEO TAMAYO #1	2.08				
PASEO TAMAYO #2	2.08				
PEPPERTREE Y BO	0.29		0.29		
PLANT 9 Z-B	0.46				
RAUSHER	20.34				20.34
REDHAWK	2.23		2.23		
S HOUGHTON OOS	0.97	0.97			
SABINO ESTATES E	5.00				
SANTA CRUZ LANE	2.21				
SC-006	0.30				
SC-0356	0.40				
SHPS FOREBAY	5.00				
SIERRITA FOOTHILLS	0.02	0.02			
SKYLINE BELAIR	0.19	0.19			
SYCAMORE CANYON	2.23				
THORNYDALE RESE	2.24				
THUNDERHEAD G	0.04	0.04			
TRAILS END F RS	2.01				
VALENCIA STANDP	0.62				
VALLEY VIEW	15.13				15.13
W-001	0.01	0.01			
W-004	0.14	0.14			
WENTWORTH	7.49				
WILMOT BOOSTER	2.01				
CLEARWATER RENEWABLE RESOURCE FACILITY	8.70				
Total Maximum Capacity	295.77				
Less: Isolated Systems' Capacity		1.85	2.52		
Adjusted Storage Facilities Total Maximum Capacity				291.41	208.06