

City of Glendale, Water Services
Water System Five-year Cash Flow Projection at Proposed Rates
For the Fiscal Year 2017-18

DRAFT

	FY2017-18	FY2018-19	FY2019-20	FY2020-21	FY2021-22
Cash In-flow					
Water Operating Revenue	47,309,356	50,584,553	54,224,167	58,127,604	62,315,850
Other Revenue	544,827	545,107	545,981	546,342	546,682
Other Financing Sources	6,151,129	12,252,176	42,138,267	29,325,640	1,866,800
Total Cash In-flow	54,005,313	63,381,836	96,908,416	87,999,585	64,729,332
Cash Out-flow					
Operating Expenses					
Administration	(8,078,388)	(8,385,088)	(8,618,602)	(8,859,131)	(9,106,900)
Plant Operations	(11,985,253)	(12,494,539)	(12,898,086)	(13,314,999)	(13,745,727)
System Operations	(4,037,126)	(4,205,234)	(4,337,616)	(4,474,387)	(4,615,700)
Environmental Resources	(5,361,239)	(5,619,481)	(5,832,543)	(6,053,814)	(6,283,614)
Total Operating Expenses	(29,462,006)	(30,704,342)	(31,686,847)	(32,702,331)	(33,751,941)
Non-Operating Income (Expense)					
Capital Outlay	(22,901,847)	(36,571,384)	(56,410,798)	(31,372,840)	(7,380,000)
Debt Service	(14,716,151)	(16,541,059)	(17,274,854)	(17,972,846)	(17,758,834)
Transfer (Out) In	269,415	289,143	293,531	295,574	299,804
Total Non-Operating	(37,348,583)	(52,823,300)	(73,392,121)	(49,050,113)	(24,839,030)
Total Cash Out-flow	(66,810,589)	(83,527,642)	(105,078,968)	(81,752,444)	(58,590,971)
Net Cash Flow Surplus (Deficit)	(12,805,276)	(20,145,806)	(8,170,553)	6,247,141	6,138,361
Beginning Fund Balance	58,827,422	46,022,145	25,876,340	17,705,787	23,952,928
Restricted Reserve for Debt Service	8,841,841	9,897,549	9,035,500	8,673,368	8,662,576
Unrestricted Reserve Balance	37,180,304	15,978,790	8,670,287	15,279,560	21,428,713
Ending Fund Balance	46,022,145	25,876,340	17,705,787	23,952,928	30,091,289
All Debt Serv Coverage (target >1.7)	1.51	1.31	1.41	1.51	1.71
Days Cash on Hand (target >250)	461	190	100	171	232
Unrestricted Reserve (target >50% of O&M)	126%	52%	27%	47%	63%
Outstanding Debt (in 1,000)	129,828	131,515	134,606	123,013	111,055
Rate Revenue Increase %	6.5%	6.5%	6.5%	6.5%	6.5%
Month of Increase	1/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022

City of Glendale, Water Services
Wastewater System Five-year Cash Flow Projection at Proposed Rates
For the Fiscal Year 2017-18

DRAFT

	FY2017-18	FY2018-19	FY2019-20	FY2020-21	FY2021-22
Cash In-flow					
Wastewater Operating Revenue	33,171,140	35,147,879	37,336,036	39,661,156	42,132,468
Other Revenue	269,183	269,336	270,005	270,184	270,346
Other Financing Sources	3,121,200	521,200	14,521,200	4,521,200	521,200
Total Cash In-flow	36,561,523	35,938,415	52,127,241	44,452,540	42,924,014
Cash Out-flow					
Operating Expenses					
Administration	(5,504,185)	(5,706,986)	(5,859,573)	(6,016,576)	(6,178,132)
Plant Operations	(10,336,381)	(10,804,514)	(11,183,477)	(11,576,095)	(11,982,870)
System Operations	(3,823,320)	(3,985,459)	(4,113,865)	(4,246,535)	(4,383,611)
Environmental Resources	(1,071,557)	(1,119,660)	(1,158,478)	(1,198,668)	(1,240,279)
Total Operating Expenses	(20,735,444)	(21,616,619)	(22,315,394)	(23,037,874)	(23,784,893)
Non-Operating Income (Expense)					
Capital Outlay	(15,697,991)	(18,369,600)	(20,150,409)	(16,180,000)	(2,995,000)
Debt Service	(7,924,081)	(8,906,724)	(9,912,799)	(10,001,867)	(9,886,629)
Transfer (Out) In	179,610	192,762	195,687	197,049	199,869
Total Non-Operating	(23,442,463)	(27,083,562)	(29,867,521)	(25,984,818)	(12,681,760)
Total Cash Out-flow	(44,177,907)	(48,700,181)	(52,182,915)	(49,022,692)	(36,466,653)
Net Cash Flow Surplus (Deficit)	(7,616,384)	(12,761,766)	(55,674)	(4,570,152)	6,457,360
Beginning Fund Balance	33,670,706	26,054,322	13,292,556	13,236,882	8,666,730
Restricted Reserve for Debt Service	4,760,991	5,902,451	5,121,000	4,929,464	4,940,256
Unrestricted Reserve Balance	21,293,331	7,390,105	8,115,882	3,737,266	10,183,835
Ending Fund Balance	26,054,322	13,292,556	13,236,882	8,666,730	15,124,091
All Debt Serv Coverage (target >1.7)	2.02	1.63	1.61	1.76	1.96
Days Cash on Hand (target >250)	375	125	133	59	156
Unrestricted Reserve (target >50% of O&M)	103%	34%	36%	16%	43%
Outstanding Debt (in 1,000)	69,907	78,430	76,290	69,914	63,334
Rate Revenue Increase %	5.5%	5.5%	5.5%	5.5%	5.5%
Month of Increase	1/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022

**City of Glendale, AZ
Proposed Water Rates**

		Current	Proposed effective	
			1/1/2018	1/1/2019
Base Charge				
	Meter Size			
	5/8" x 3/4"	\$ 9.70	10.20	10.80
	3/4"	12.30	13.00	13.70
	1"	17.40	18.30	19.40
	1 1/2"	35.30	37.20	39.30
	2"	62.90	66.30	69.90
	3"	106.00	112.00	118.00
	4"	189.00	199.00	210.00
	6"	376.00	396.00	418.00
	8"	557.00	587.00	619.00
	10"	896.00	944.00	996.00
	12"	1,326.00	1,397.00	1,474.00
Volume Rate (\$ per 1,000 Gal)				
Single Family Residential				
	<i>First 6,000 Gal</i>	\$ 2.14	2.26	2.39
	<i>Next 9,000 Gal</i>	2.68	2.83	2.99
	<i>Next 15,000 Gal</i>	3.76	3.97	4.19
	<i>Over 30,000</i>	5.27	5.59	5.92
Multi-Family Residential				
	<i>First 6,000 Gal</i>	\$ 2.14	2.25	2.36
	<i>Next 9,000 Gal</i>	2.68	2.82	2.96
	<i>Next 15,000 Gal</i>	3.76	3.95	4.14
	<i>Over 30,000</i>	5.27	5.55	5.85
Commercial				
	<i>Winter</i>	\$ 2.28	2.43	2.58
	<i>Summer</i>	2.85	3.04	3.23
Sprinkler				
	<i>Winter</i>	\$ 2.58	2.89	3.22
	<i>Summer</i>	3.23	3.62	4.03

Customers outside the city limits are charged at 130% of the above rates.
 Base charge is pro-rated for partial billing cycle for new and end of service.
 Winter rate is effective for bills issued in November through April.
 Summer rate is effective for bills issued in May through October.

City of Glendale, AZ
Proposed Sewer Rates

	Current	Proposed effective	
		1/1/2018	1/1/2019
Base Charge			
Inside City	\$ 9.20	9.70	10.20
Outside City	11.96	12.61	13.26
Volume Rate (\$ per 1,000 Gal)			
Inside City			
Residential-Single and Multi-family	\$ 3.56	3.75	3.95
Commercial:			
Group 2-Car Wash	2.39	2.64	2.91
Group 3-Office, Church, School, Govnmt	2.82	3.07	3.33
Group 4-Medical	3.00	3.28	3.58
Group 5-Retail, Conv Market, Warehouse	2.92	3.17	3.42
Group 6-Service Business	3.26	3.50	3.75
Group 7-Bar without food	3.59	3.85	4.11
Group 8-Hotel with food	6.46	6.96	7.47
Group 9-Auto repair, Full serv station	3.55	3.75	3.95
Group 10-Food Market, Mortuaries	6.98	7.34	7.72
Group 11-Restaurant, Food Man, Shop Ctr	7.03	7.41	7.81
Outside City			
Residential-Single and Multi-family	\$ 4.63	4.88	5.13
Commercial:			
Group 51-Office	3.67	4.00	4.33
Group 52-Restaurant	9.14	9.64	10.16

The volume charge is calculated by multiplying either 90% for residential or 95% for all other users times the January, February and March average water usage times the rate for the customer group.



City of Glendale, AZ

Financial Plan and Rate Study for Water Services

DRAFT Report / September 5, 2017



1. City of Mesa, AZ
2. City of North Las Vegas, NV
3. City of Peoria, AZ
4. City of Phoenix
5. Pima County, AZ (Wastewater Only)
6. City of Scottsdale, AZ
7. City of Tucson, AZ (Water Only)
8. City of Waco, TX

A table summarizing the survey results is presented under each financial metric.

2.1.1 Liquidity

The existing City Financial Policies dictate that “...working capital will be maintained at a minimum of 50% of operating revenues²”. Raftelis also reviewed industry benchmarking standards that measure liquidity. These include:

- » Fund reserves
- » Days cash on hand
- » Debt to capitalization

2.1.1.1 Fund Reserves

Reserves are the core measure of a utility’s aversion to risk; they provide protection from uncertainty and unforeseen financial events.

Raftelis recommends the City replace the current liquidity measure of 50% of operating revenues and move to a measure that based on or relating to annual cash operation and maintenance (O&M) expenses. Consistent with rating agency criteria for local government utilities, liquidity should be measured by comparing available cash (excluding debt service reserve amounts) to annual cash O&M expenses.

Table 2-1 shows the water and wastewater enterprise fund survey results comparing each entity’s revenue as a percentage of operating expenses at FY Year End 2016.

Table 2-1: Survey of Reserve as % of Operating Expenses

Entity	Reserve as % of Operating Expense
City of Glendale, AZ	214%
City of Scottsdale, AZ	205%
City of Peoria, AZ	189%
City of North Las Vegas, NV	170%
City of Waco, TX	160%
Pima County Wastewater, AZ	135%
City of Phoenix, AZ	130%
City of Mesa, AZ	43%

² FY 2016-2017 Annual Budget Financial Guidelines – page 54; Financial Policies - Fund Reserves and Structure, section 2.

2.1.1.2 Days Cash on Hand

Days cash on hand (DCOH) is another metric used to measure a fund’s liquidity. The formula to calculate DCOH is as follows:

$$\text{Days Cash on Hand} = \frac{(\text{Unrestricted Cash} \times 365 \text{ Days})}{(\text{Total Operating Expenses} - \text{Annual Depreciation})}$$

Table 2-2 and Table 2-3 summarize S&P and Moody’s rating scorecard for DCOH.

Table 2-2: S&P DCOH Scorecard

S&P Rating	Days Cash on Hand
1 – Extremely Strong	Above 150 days
2 – Very Strong	90 to 150 days
3 – Strong	60 to 90 days
4 – Adequate	30 to 60 days
5 – Vulnerable	15 to 30 days
6 – Highly Vulnerable	Below 15 days

Table 2-3: Moody’s Liquidity Scorecard

Moody’s Rating	Days Cash on Hand
Aaa	Above 250 days
Aa	150 to 250 days
A	35 to 150 days
Baa	15 to 35 days
Ba	7 to 15 days
B and Below	Below 7 days

Consistent with the applicable rating agency criteria, the “all-in” cash or liquidity of each utility operation should be the range of 150 to 250 days. There may be an opportunity to set the target for the wastewater operations at a lower level since wastewater revenues tend to be more stable than for water operations. However, the overall target or goal of 150 to 250 days would remain in place for the total Fund. Given the upcoming significant capital needs, it is expected that the current level of cash/liquidity will be “drawn down” to the 150 to 250-day level, but on a long-term basis the recommended range is reasonable to maintain the current rating and position the Fund for a potential rating increase.

Table 2-4 shows the water and wastewater enterprise fund survey results comparing each entity’s DCOH at FY Year End 2016.

Table 2-4: Survey of Days Cash on Hand

City	Days Cash on Hand
City of Glendale, AZ	781
City of Scottsdale, AZ	749

City of Peoria, AZ	688
City of North Las Vegas, NV	622
City of Waco, TX	586
Pima County Wastewater, AZ	493
City of Phoenix, AZ	473
City of Mesa, AZ	157
City of Tucson Water, AZ	149

2.1.1.3 Debt to Capitalization

Another measure of liquidity is the ratio of total outstanding debt to the total capitalization of the utility. The formula for this metric is the following:

$$\text{Debt to Capitalization} = \frac{\text{Outstanding Debt Principal}}{\text{Net Plant Assets}}$$

“Debt” in the Debt to Capitalization calculation is the total outstanding debt (principal) at year end. This is a metric identified by S&P that measures a utility’s debt burden. Table 2-5 below summarizes S&P’s rating scorecard for debt to capitalization.

Table 2-5: S&P Debt to Capitalization Scorecard

S&P Rating	Debt to Capitalization
1 – Extremely Strong	Up to 20%
2 – Very Strong	20% to 35%
3 – Strong	35% to 50%
4 – Adequate	50% to 65%
5 – Vulnerable	65% to 80%
6 – Highly Vulnerable	Greater than 80%

The City’s current total Fund ratio is 44.4%; in the “Strong” range per S&P. Over the next five years the City’s current financial plan reflects debt funding of 21% and 27% for water and wastewater respectively. This is driven by the capital plan over these same five years. However, given the overall capitalization of the Fund, this level of debt funding for the next five years is not expected to move the Fund out of the “Strong” S&P range.

Table 2-6 shows the water and wastewater enterprise fund survey results comparing each entity’s debt to capitalization at FY Year End 2016.

Table 2-6: Survey of Debt to Capitalization

City	Debt to Capitalization
City of Peoria, AZ	15%
City of Scottsdale, AZ	23%
City of Glendale, AZ	44%
Pima County Wastewater, AZ	45%
City of Tucson Water, AZ	47%
City of North Las Vegas, NV	57%

City of Phoenix, AZ	60%
City of Mesa, AZ	70%
City of Waco, TX	85%

2.1.2 Debt Service Coverage

Debt service coverage (DSC) is another key financial planning metric that measures the utility’s cushion in terms of meeting annual debt service payments. The DSC calculation is as follows:

$$DSC = \frac{(Operating\ Revenues - Operating\ Expenses\ (less\ depreciation))}{Annual\ Debt\ Service\ Payment}$$

Table 2-7 and Table 2-8 summarize S&P and Moody’s rating scorecard for DSC.

Table 2-7: S&P DSC Scorecard

S&P Rating	DSC
1 – Extremely Strong	Above 1.60 times
2 – Very Strong	1.40 to 1.60 times
3 – Strong	1.20 to 1.40 times
4 – Adequate	1.10 to 1.20 times
5 – Vulnerable	1.00 to 1.10 times
6 – Highly Vulnerable	Below 1.00 times

Table 2-8: Moody’s DSC Scorecard

Moody’s Rating	DSC
Aaa	Above 2.00 times
Aa	1.70 to 2.00 times
A	1.25 to 1.70 times
Baa	1.00 to 1.25 times
Ba	0.70 to 1.00 times
B and Below	Below 0.70 times

The City’s current financial policies dictate that the following DSC legal requirements be met on an annual basis:

- i. Legal/covenant requirement: 1.20 times(x) annual debt service payment
- ii. 1.20x additional bonds test
- iii. 1.75x Senior Lien requirement

Raftelis recommends that the financial plan and associated projected increases in user charge revenues, should be based on achieving a DSC ratio on the annual debt service payment in the range of 1.70x to 2.00x. In any given year, the actual DSC ratio should fall within this range or exceed 2.00x. This target range is characterized as “1 – Extremely Strong” by S&P and at the Aa rating by Moody’s.

Table 2-9 shows the water and wastewater enterprise fund survey results comparing each entity’s debt to capitalization at FY Year End 2016.

Table 2-9: Survey of Debt Service Coverage

City	Debt Service Coverage
City of Scottsdale, AZ	3.17
City of North Las Vegas, NV	2.46
City of Peoria, AZ	2.16
City of Phoenix, AZ	1.82
City of Glendale, AZ	1.80
City of Tucson Water, AZ	1.52
City of Mesa, AZ	1.49
City of Waco, TX	1.28
Pima County Wastewater, AZ	1.01

2.2 FINANCIAL PLAN ASSUMPTIONS

The financial plan study period is for FY 2017-18 to FY 2026-27. Various types of assumptions and inputs were incorporated into the financial plans such as account and water use growth rates for different customer classes, inflation factors, and other assumptions. Raftelis reviewed these assumptions based on historical analysis, discussions with city staff, and applicable industry standards. The final assumptions incorporated into the financial plans are summarized in this section.

2.2.1 Water & Wastewater Fund Allocations

As previously stated, the City’s budget and financial reporting are completed as a combined enterprise fund. The City has broken out the combined enterprise fund into separate water and wastewater funds for analysis on a stand-alone basis. The following tables summarize the water – wastewater allocation percentages used to separate operating expense, debt service, capital outlay, revenue, and fund balance.

Table 2-10: Operating Expense System Allocation

Operating Expenses - by Division	Allocation	
	Water	Wastewater
Environmental Resources	70%	30%
Utilities Administration	55%	45%
Operating Administration	60%	40%
Information Management	60%	40%
Public Service Representative	100%	0%
System Security	70%	30%
Property Management	100%	0%
Arrowhead Reclamation Plant	0%	100%
West Area Plant	0%	100%
Materials Control Warehouse	60%	40%
Customer Service - Field	80%	20%
Irrigation	0%	100%
Raw Water Usage	100%	0%

Central System Control	100%	0%
Pyramid Peak Plant	100%	0%
Cholla Treatment Plant	100%	0%
Central System Maintenance	80%	20%
Water Distribution	100%	0%
Meter Maintenance	90%	10%
Oasis Surface Water Treatment Plant (WTP)	100%	0%
Oasis Groundwater WTP	100%	0%
Water Conservation	100%	0%
Water Quality	70%	30%
Pretreatment Program	0%	100%
SROG (91st Ave) Wastewater Treatment Plant (WWTP)	0%	100%
99th Avenue Interceptor	0%	100%
Wastewater Collection	0%	100%
Storm Water	0%	100%
Finance	70%	30%
Cross Connection Control	100%	0%

Table 2-11: Outstanding Debt System Allocation

Debt	Allocation	
	Water	Wastewater
2003 Revenue	100%	0%
2003 G.O.	70%	30%
2006 Revenue	65%	35%
2007 Revenue	65%	35%
2008 Revenue	65%	35%
2010A BAB	65%	35%
2012 Refunding	65%	35%
2015 Refunding	65%	35%

Table 2-12: Shared Capital Projects System Allocation

Shared Capital Projects	Allocation	
	Water	Wastewater
Arrowhead Water Reclamation Facility (WRF) Improvements	5%	95%
West Area WRF - Phase IV	5%	95%
Laboratory Data Management System	50%	50%
SCADA Study & Replacement	60%	40%
Asset Management Program	60%	40%
West Area WRF Improvements	5%	95%
Integrated Water Master Plan	50%	50%

Table 2-13: Other Revenue System Allocation

Other Revenue	Allocation	
	Water	Wastewater
Rental Income - Lazy J	100%	0%
Rental Income	100%	0%
Water Sales - Bad Debt	60%	40%
Bad Debt Receivable & Cash Short	60%	40%
Collection Fees-Water	60%	40%
Late Fees - Water	100%	0%
Late Fees - Wastewater	0%	100%
Interest Earned	60%	40%
City Auction	100%	0%
Miscellaneous Revenues	80%	20%
Staff & Admin Chargebacks	100%	0%
Investment Income	50%	50%
Build America Bonds Subsidy	60%	40%
Bond Proceeds	55%	45%
Sanitary Wastewater Development Impact Fees	0%	100%
Water Development Impact Fees	100%	0%

Table 2-14: Fund Balance System Allocation

Description	Allocation	
	Water	Wastewater
Interfund Loan	60%	40%
Beginning Fund Balance	60%	40%

2.2.2 Inflation

2.2.2.1 Operating Expenses

As the water and wastewater systems are expanded and improved, costs naturally increase. The financial plan assumes two forms of cost increases related to operating expenses. The first, a system enhancement increase, applies an increase to overall operating costs each year of the financial plan equal to 3.0% in FY 2017-18, 2.0% in FY 2018-19, and 1.0% in FY 2019-20 and beyond. The system enhancement increase recognizes the need for operating improvements to improve service levels to acceptable standards. The operating budget has remained stagnant since the revenue increase was adopted in July, 2010. Secondly, annual inflation factors are applied to each operating expense line item on an annual basis. Over time, operating expenses naturally increase with inflation. Table 2-15 summarizes the annual inflation assumptions applied to operating expenses in the financial plan. These values were reviewed and deemed reasonable by Raftelis.

Table 2-15: O&M Annual Inflation Factors

Expense Category	Inflation Factor
Wages and related components	2.5%

Benefits	3.0%
Contracted Services	2.0%
Raw Water	3.0%
Supplies	1.0%
Chemicals & GAC	2.0%
SROG (91st Ave WWTP)	3.0%
Electricity and other Utilities	2.0%
Maintenance	2.0%
Indirect Staff and Administrative Services	1.0%

2.2.2.2 Capital Expenses

The City develops and regularly updates a 10-year capital improvement plan. The estimated costs from the capital plan flow into each utility’s financial plan. Currently, the projected capital costs do not apply annual inflation factors to projects, instead, city staff attempt to estimate project by project the actual cash outflows for capital projects throughout the duration of the study period.

In developing a multi-year financial plan, current year capital project costs should be inflated to the year of expenditure. This provides a more accurate-reasonable basis for estimating debt issues and ultimately determining the need for revenue increases. Raftelis reviewed the 10-year history of the Engineering News Record (ENR) 20-city national average Construction Cost Index (CCI) to estimate the annual capital inflation percentages to be used in the financial plan. Table 2-16 summarizes the historical indices.

Table 2-16: Historical ENR 20-City National Average Construction Cost Index (CCI)

Year	ENR CCI Index	Annual Inflation Increase
2016	10,338	3.0%
2015	10,035	2.3%
2014	9,806	2.7%
2013	9,547	2.6%
2012	9,308	2.6%
2011	9,070	3.1%
2010	8,799	2.7%
2009	8,570	3.1%
2008	8,310	4.3%
2007	7,966	
Average Annual Increase		2.6%

Raftelis recommends use of a 3% capital project inflation factor. However, the City feels that use of such a factor is not needed given the manner in which the current year capital costs have been developed. Thus, the financial plans reviewed as part of the Study do reflect use of an inflation factor to the City’s CIP forecast; the CIP forecast is stated in 2017 dollars. Raftelis recommends monitoring and updating the CIP forecast regularly to recognize any changes in projected future costs.

2.2.3 Projected Demand and Growth

Projecting water demand relies on two key variables — the number of accounts and demand per account. Since the City is nearly built out, it is anticipated that there will be minimal account growth over the study

period. The growth rate is based on staff estimates using historic trends, development currently in process, and available parcels for development. The projected annual growth rates are 0.50% in FY 2017-18 and FY 2018-19, and 0.75% annually thereafter for the balance of the study period.

2.2.4 Capital Funding

The City has projected capital improvement costs through the end of the study period in FY 2026-27. The proposed capital improvement plan is expected to be funded through a combination of rate revenue (Pay-As-You-Go or PAYGO), reserves and new money or debt issues. These debt issuances are detailed in each financial plan scenario discussed later in the report. Future debt issuances are based on the following assumptions: a 20-year term, a 5.0% annual interest rate, 1.0% issuance costs, and no debt service reserve requirement.

2.2.5 Conclusions

The financial metrics and assumptions described in this section were incorporated into the City's financial plans. The subsequent sections detail the water and wastewater Study findings, including financial plan results, cost of service analyses, and rate design alternatives.