CITY OF
WASILLA
• ALASKA •

Date Presented to Council: 12/9/13	
~~Approved~~ Presented ☐	Denied ☐
By: KSmith	

CITY COUNCIL INFORMATIONAL MEMORANDUM

IM No. 13-16: Fiscal impacts to the Sewer and Water Funds should the Sewer and Water Rates be changed - Report to Council.

Originator: Troy Tankersley, Finance Director
Date: November 22, 2013 Agenda of: December 9, 2013

Route to:	Department Head	Signature	Date
X	Public Works Director		12/2/13
X	Finance Director		12-2-13
X	Deputy Administrator		12/2/13
X	City Clerk	KSmith	12/3/13

Reviewed by Mayor Verne E. Rupright:

Attachments: Sewer and Water Utility – 2,000 gallon minimum (2 pages)
Sewer Fund – Graphs – Figures 1- 4 (2 pages)
Water Fund – Graphs – Figures 5- 8 (2 pages)
HDR Water and Sewer Rate Structure Review – March 2, 2012 (16 pages)
HDR Water and Sewer Rate Structure Review – August 12, 2013 (15 pages)

Summary Statement: The purpose of this memorandum is to provide fiscal impact associated with options presented to Council regarding the adjustment of sewer and water rates or their rate structure.

The options presented are as follows:

Option 1: Create a second minimum charge based on 2,000 gallons per month usage and allow planned rate increase (7.5%) to go into effect January 1, 2014.
Option 2: Adopt Ordinance 13-36 and Ordinance 13-37 causing no rate increase for the current fiscal year 2014.
Option 3: Allow planned rate increase (7.5%) to go into effect January 1, 2014.

The Sewer Fund and Water Fund are separate enterprise funds with characteristics that do not react the same. For example: growth of customers of the Sewer Fund (1.9% average) does not match that of the Water Fund (7.8% average); revenues typically follow that of the customer base in the Sewer Fund but not that of the Water Fund (i.e., irrigation in the summer months); the sewer system is more expensive to operate than that of the water system (i.e., operating cost in FY2013 per customer is $599.65 for water and $1,659.94 for sewer) where operating costs in total for FY2013 was $756,156 for the Water Fund and $957,784 for the Sewer Fund.

In the adopted FY2014 Council Goals and Initiatives, one goal was to "Continue progress in making the enterprise funds self-sufficient while ensuring the systems meet environment and development needs of the citizens and the businesses". Further, initiative #24 of that goal states; "Review utility rate structure to ensure water and sewer funds have suitable reserves while providing a fair rate structure to the customer".

While both the goal and the initiative was being addressed in a 5-year fiscal plan adopted by Council in 2009, the reserves to sustain replacement of future failing infrastructure has not been established to a level that could sustain modest replacement of the infrastructure over time in either the Sewer Fund or Water Fund.

Discussion and fiscal impacts to options noted above:

Option 1: Create a second minimum charge based on 2,000 gallons per month usage and allow planned rate increase (7.5%) to go into effect January 1, 2014.

When reducing or reallocating rates, this option has the least fiscal impact and the greatest benefit to those customers that are fixed income and low consumption. This option looks at creating a second minimum rate at 2,000 gallons per month. The fiscal impact proposed is a 30% rate reduction for customers using less than 2,000 gallons per month. As expressed on **EXHIBIT I** and **EXHIBIT II**, this represents a $22,627 and $48,223 loss in revenue annually to the Sewer Fund and Water Fund, respectfully.

Option 2: Adopt Ordinance 13-36 and Ordinance 13-37 causing no rate increase for the current fiscal year 2014.

In FY2010 a 5-year fiscal plan was adopted by Ordinances 09-52 and 09-53. This plan called for a 7.5% increase in year 5 (FY2014). Through the adoption of Ordinance 13-15(AM) and 13-16(AM), the rates have been kept to that of FY2013 (i.e., $47.98 per month for sewer and $42.39 per month for water). The revenue loss for the first six months is estimated at approximately $44,000 in the Sewer Fund and $55,000 in the Water Fund.

Adoption of Ordinance 13-36 and 13-37 creates an annual revenue reduction of approximately $87,000 in the Sewer Fund and $110,000 in the Water Fund. The revenue loss over a 5-year period is estimated in excess of $436,000 in the Sewer Fund and $549,000 in the Water Fund.

The information below provides the trend of actual, budget and projected outcomes. The chart shows the Sewer Fund with expenses catching up to its revenues by FY2018, with the fund being in the same condition as it began in 2009 prior to the rate increases.

SEWER FUND Fiscal Year	No Of Cust.	Operating Revenue	Operating Expense	Operating Income(loss) before Depreciation	Operating Income(loss) after Depreciation	Non-spendable and Restricted Net Assets (000)	Unrestricted Net Assets
2006	462	$656,759	$605,049	$51,710.	($324,207)	14,944,560	915,332
2007	503	673,985	695,539	(21,554)	(395,239)	14,656,731	983,629
2008	538	678,897	676,962	1,935	(359,620)	14,419,983	981,165
2009	568	694,702	1,026,131	(331,429)	(699,974)	14,051,564	709,909
2010	584	1,024,400	827,815	196,585	(220,571)	13,654,042	900,279
2011	562	1,159,179	858,594	300,585	(92,377)	13,606,114	1,044,960
2012	563	1,235,814	1,023,707	212,107	(185,839)	13,229,820	1,301,145

2013	577	1,308,737	957,784	350,953	(115,895)	14,882,904	1,800,742
2014	588	1,318,116	1,160,398	157,718	(320,568)	18,244,462	1,583,281
2015	599	1,342,765	1,185,307	157,458	(332,546)	17,781,971	1,694,365
2016	610	1,367,472	1,241,015	126,457	(375,552)	17,342,143	1,740,335
2017	621	1,392,086	1,310,756	81,330	(432,978)	16,877,532	1,753,887
2018	633	1,418,053	1,394,648	24,305	(502,604)	16,407,398	1,703,562
2019	645	1,445,913	1,477,483	(31,570	(571,388)	15,923,825	1,598,118
2020	657	1,472,807	1,579,010	(106,203)	(659,247)	15,436,371	1,408,922

* FY2014 – 2020 revenues are based on average customer base growth.

** FY2014 increase in operating expense caused from approximately $100,000 CIP to be repairs and maintenance.

*** 2014 = Amended Budget, 2015 – 2020 are projections based on user growth, CPI and trends from year-to-year.

**** Refer to graphs attached: **Figure 1, Figure 2, Figure 3, and Figure 4**

The Water Fund is less impacted by adoption of Ordinance 13-36, with a loss of $110,000 per year projected. The chart below shows the growth in reserves is flat and as such, saving for future infrastructure replacement is stagnant.

WATER FUND Fiscal Year	No Of Cust.	Operating Revenue	Operating Expense	Operating Income(loss) before Depreciation	Operating Income(loss) after Depreciation	Non-spendable and Restricted Net Assets (000)	Unrestricted Net Assets
2006	938	$764,216	$477,780	$286,436	($86,741)	$13,910,797	$1,353,643
2007	972	769,376	612,548	156,828	(226,479)	15,693,247	1,303,178
2008	1,032	793,491	676,027	117,464	(234,326)	16,061,703	1,354,967
2009	1,057	818,318	767,807	50,511	(296,776)	19,204,153	858,642
2010	1,110	1,148,297	812,602	335,695	(159,584)	20,619,667	439,974
2011	1,148	1,312,070	726,520	585,550	5,340	20,318,172	1,021,782
2012	1,183	1,476,682	756,339	720,343	152,844	19,952,289	1,536,950
2013	1,261	1,537,994	756,156	781,838	9,107	26,124,196	2,099,899
2014	1,359	1,528,604	1,067,703	460,901	(330,762)	26,172,203	2,165,067
2015	1,465	1,599,531	877,241	722,290	(88,769)	25,638,071	2,565,133
2016	1,579	1,674,069	932,291	741,778	(89,152)	25,450,439	2,622,041
2017	1,702	1,751,913	989,430	762,483	(88,805)	25,239,704	2,705,701
2018	1,835	1,833,027	1,046,605	786,422	(85,723)	24,996,648	2,827,805
2019	1,978	1,918,263	1,103,710	814,553	(78,960)	24,736,195	2,977,110
2020	2,132	2,007462	1,154,812	852,650	(62,754)	24,454,899	3,166,506

* FY2014 – 2020 revenues are based on average customer base growth.

** FY2014 increase in operating expense caused from approximately $100k CIP to be repairs and maintenance.

*** 2014 = Amended Budget, 2015 – 2020 are projections based on user growth, CPI and trends from year-to-year.

**** Refer to graphs attached: **Figure 5, Figure 6, Figure 7, and Figure 8**

Option 3: Allow for the 7.5% increase to take effect January 1, 2014, allowing for 6-months of the planned revenue growth in FY2014.

Allowing the rates to increase on January 1, 2014 provides for the following:

1) The Sewer Funds revenue and expenses would equal at approximately FY2020, but the unrestricted net assets would still maintain a balance of approximately $1.7 million, a $300,000 increase over that of option 2 in FY2020, thereby still preserving the investment in infrastructure replacement.

2) The Water Funds revenue and expenses would continue to be profitable. The investment in infrastructure replacement would continue to be strong with a projected $3.6 million balance by FY2020.

3) Total property, plant and equipment is a benchmark used to calculate an estimated "emergency" reserve. Typically expressed as a percentage of this amount, such as 10%. The below table expresses this reserve shortfall if this calculation is used:

Sewer Fund

Total PP&E FY2013	**10% Emergency Amount**	**Unrestricted Amount FY2013**	**Amount Over (short)**
$25,755,820	$2,575,582	$1,800,742	($774,840)

Water Fund

Total PP&E FY2013	**10% Emergency Amount**	**Unrestricted Amount FY2013**	**Amount Over (short)**
$38,597,799	$3,859,780	$2,099,899	($1,759,881)

Sewer Utility Current Minimum Rate 47.98		Customers	Consumption Range gal/month	Total Consumption gal/month	30% discount revenue reduction to the utility per year
Residential Single Family		59	0-2,000	na	$ 10,190.95
		111	2,000-5,000	na	
		50	5,000+	na	
	Total	220		899,103	
Residential Multi-Family		1	0-2,000	na	$ 172.73
		9	2,000-5,000	na	
		71	5,000+	na	
	Total	81		1,657,770	
Commercial		69	0-2,000	na	$ 11,918.23
		49	2,000-5,000	na	
		132	5,000+	na	
	Total	250		6,358,090	
Institutional		0	0-2,000	0	0
		0	2,000-5,000	0	
		3	5,000+	122,770	
	Total	3		122,770	
Municipal		2	0-2,000	na	$ 345.46
		0	2,000-5,000	na	
		7	5,000+	na	
	Total	9		502,617	$ 22,627.37
		563			
			$ 1,192,416.00 Current Projected Annual Revenue FY13		

Based on May metered times 12

Water Utility		Customers	Consumption Range	Total Consumption	30% discount
Current Minimum Rate 42.39			gal/month	gal/month	revenue reduction to the utility per year
Residential Single Family		215	0-2,000	230,807	$ 32,809.86
		491	2,000-5,000	1,719,318	
		279	5,000+	2,306,775	
	Total	985		4,256,900	
Residential Multi-Family		14	0-2,000	13,459	$ 2,136.46
		20	2,000-5,000	67,477	
		88	5,000+	1,614,910	
	Total	122		1,695,846	
Commercial		86	0-2,000	69,152	$ 13,123.94
		56	2,000-5,000	179,849	
		153	5,000+	5,679,860	
	Total	295		5,928,861	
Institutional		0	0-2,000	0	0
		0	2,000-5,000	0	
		3	5,000+	91,394	
	Total	3		91,394	
Municipal		1	0-2,000	360	$ 152.60
		0	2,000-5,000	0	
		9	5,000+	433,230	
	Total	10		433,590	$ 48,222.86
Total customers 1415					
Total Revenue	Min. Customers	883	$ 449,164.44		
	5,000+ Consumption	10,126,169	$ 1,030,438.96		
			$ 1,479,603.40	Current Projected Annual Revenue	FY13

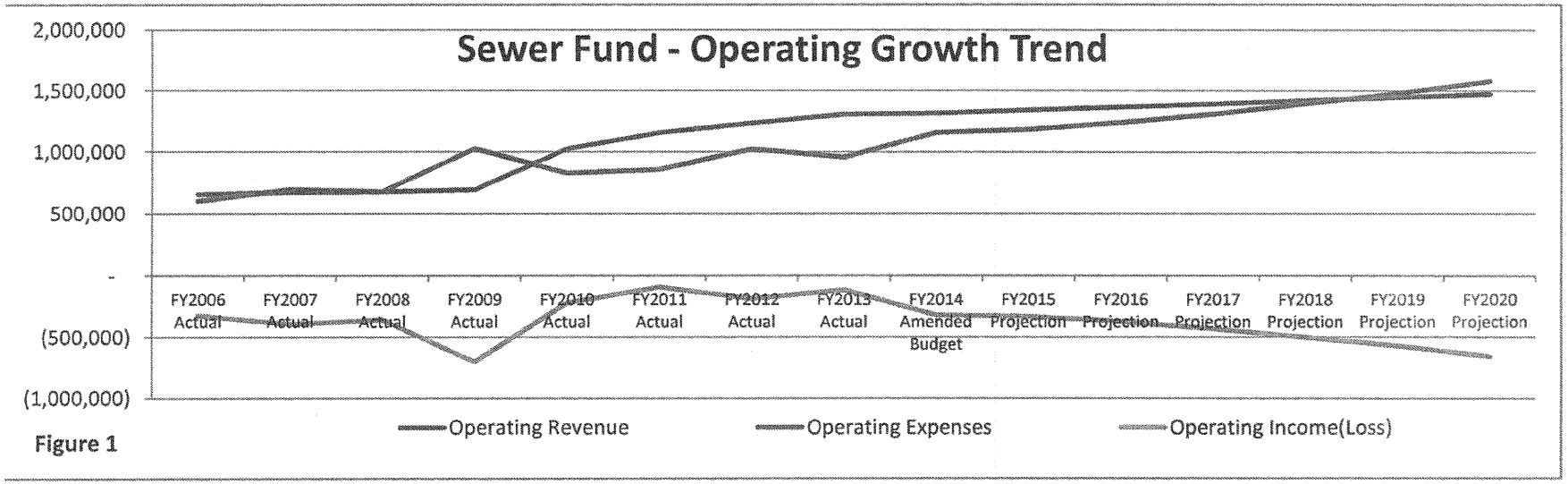


Figure 1

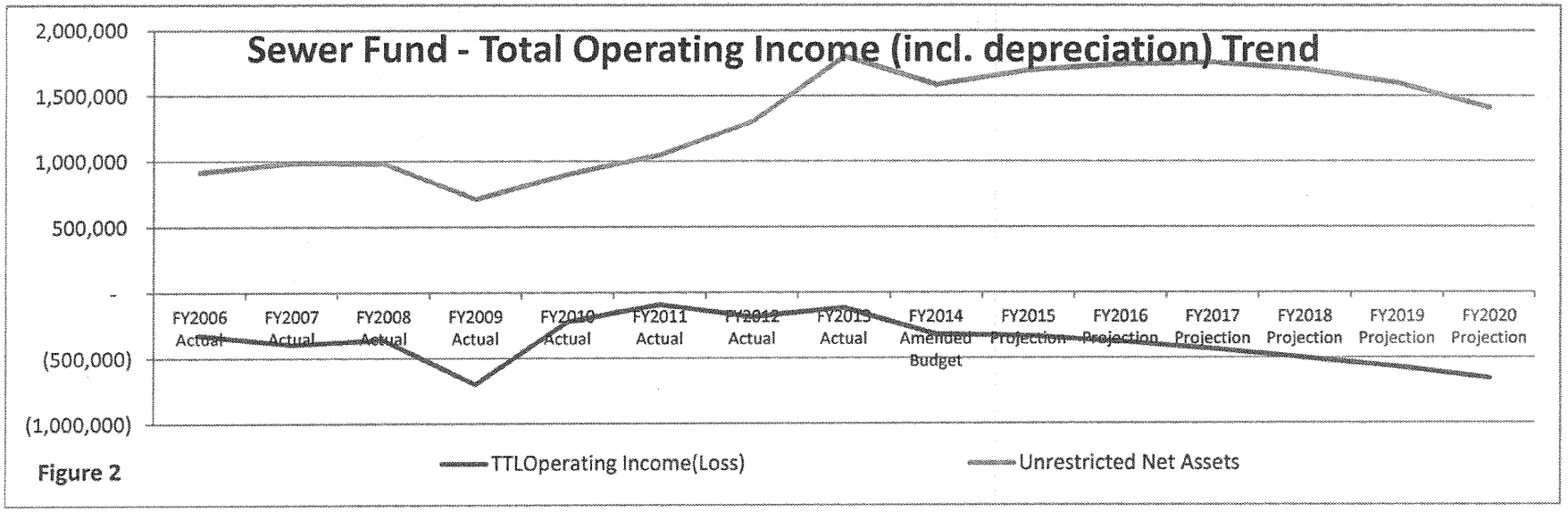
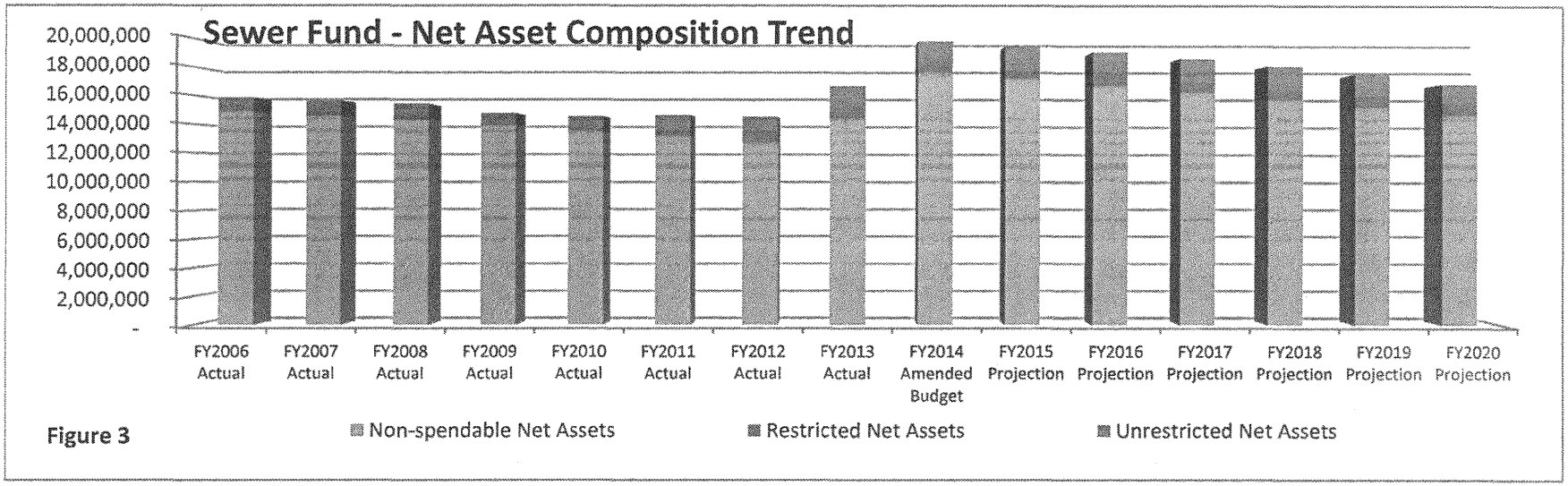


Figure 2



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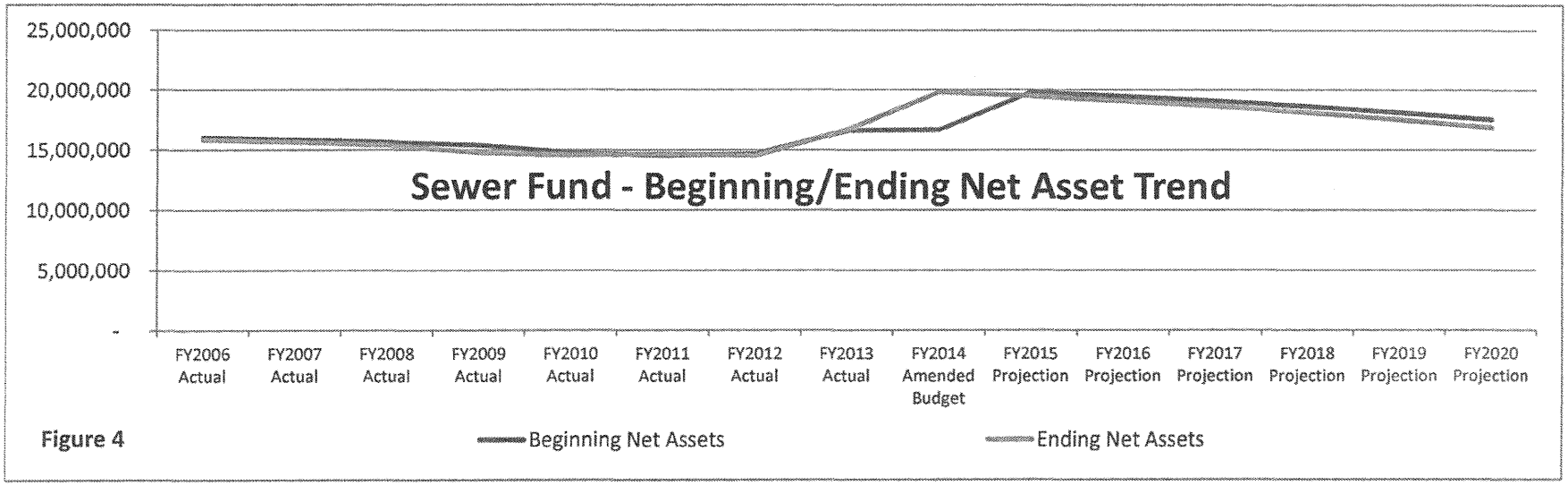

Figure 4

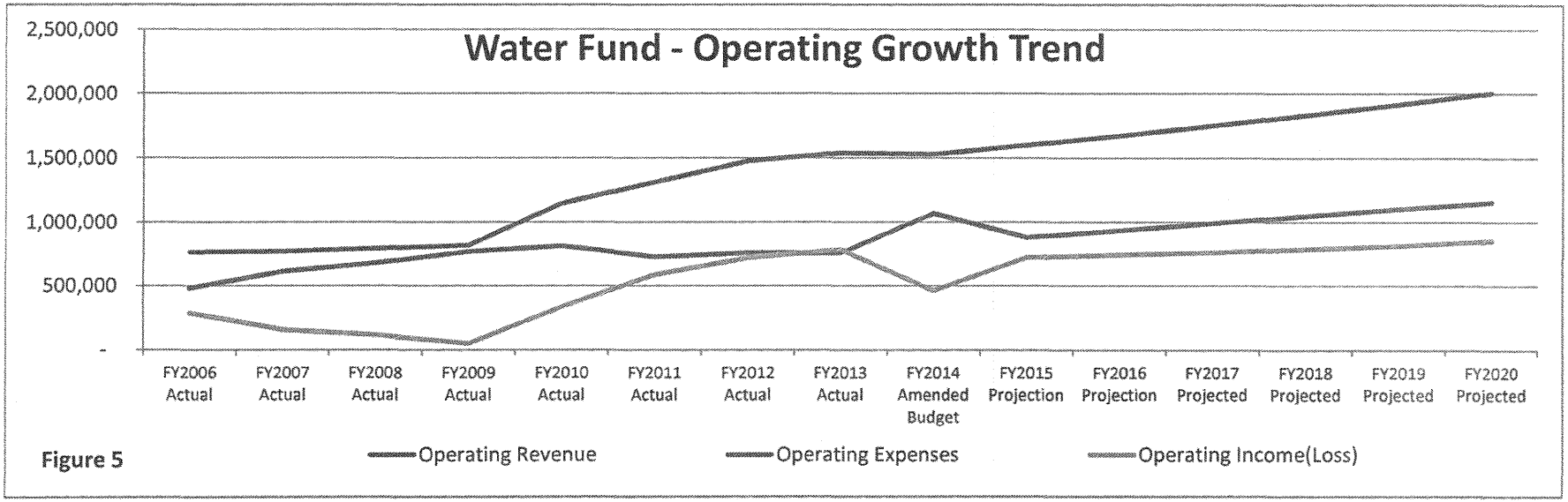

Figure 5

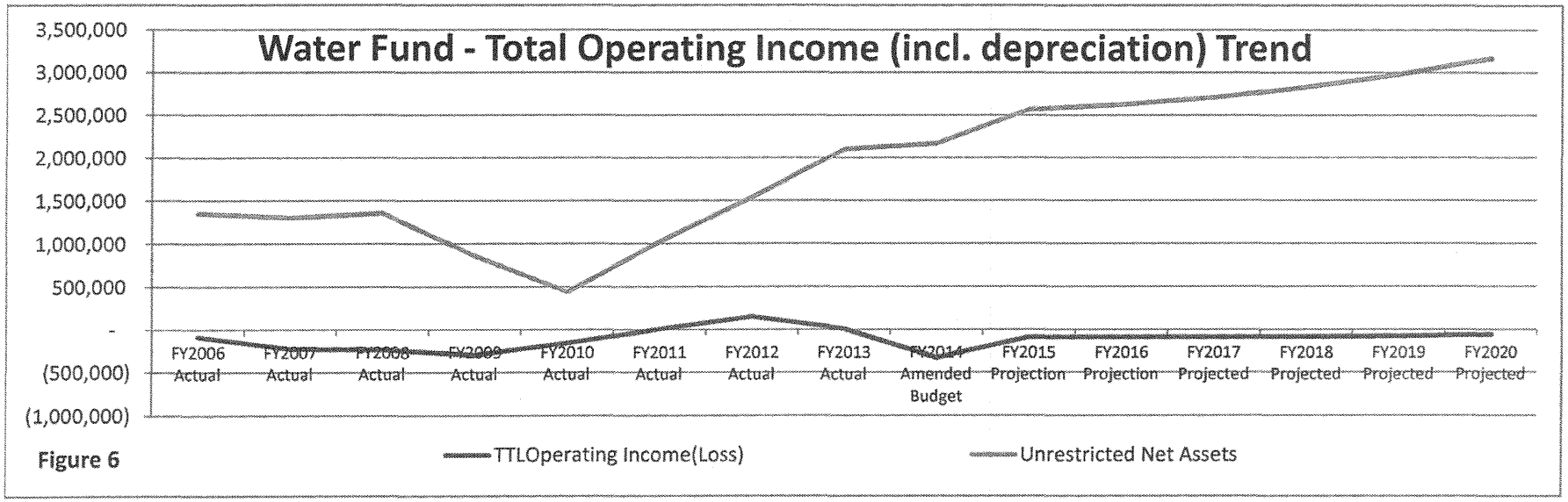

Figure 6

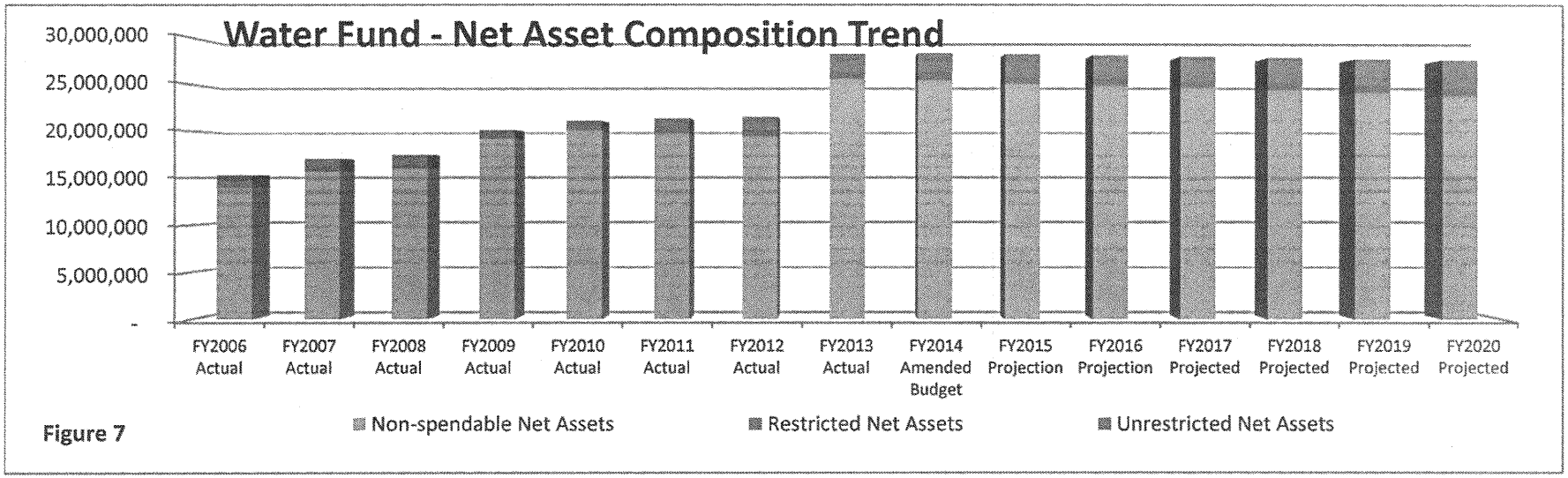

Figure 7

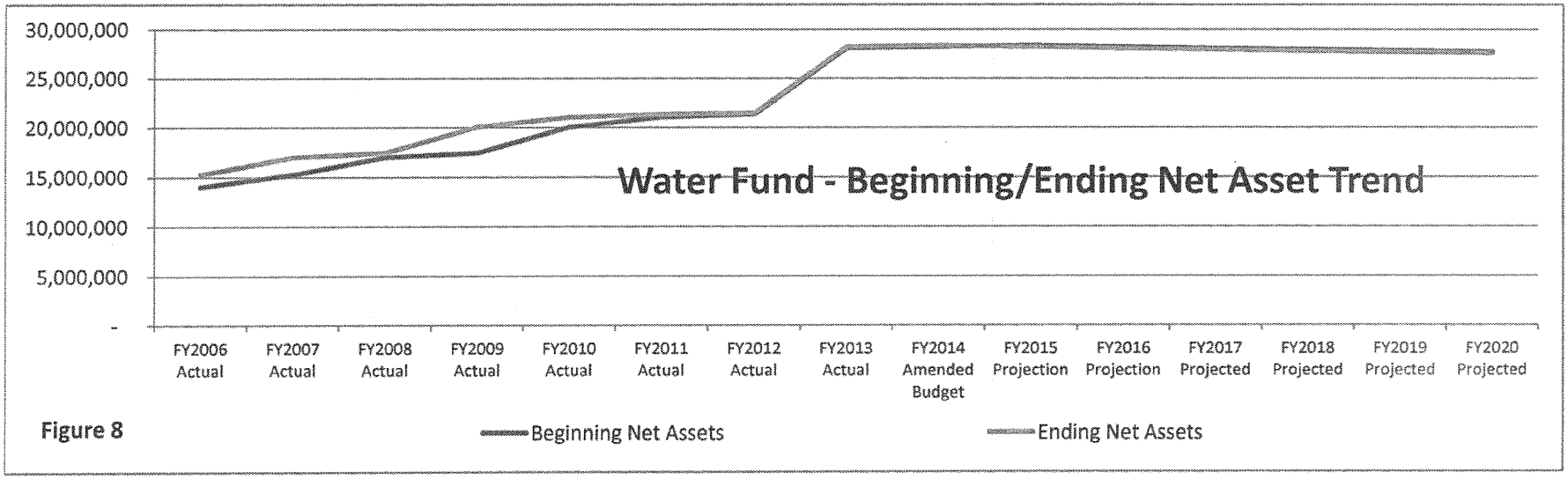

Figure 8

Technical Memorandum #1– Water and Sewer Rate Structure Review

HDR

To: Archie Giddings, Public Works Director, City of Wasilla, Alaska

From: Shawn Koorn, HDR

Date: March 2, 2012

Subject: Current Water and Sewer Rate Structure Review

Introduction

HDR Alaska, Inc. (HDR) was retained by the City of Wasilla (City) to provide technical assistance in reviewing the City's current water and sewer rates and potentially proposing alternative water and sewer rate structures to better meet the City's current rate design goals and objectives.

This technical memorandum will provide an overview of typical rate design goals and objectives, a review of basic rate design terminology and concepts, and a comparison of the current water and sewer rate structures to other local utilities and utilities of similar size. From this basic understanding of the rate design process, and a comparison of other utility rate structures, the City will be able to begin to focus on rate structures which best fit their overall rate design goals and objectives.

Overview of the City of Wasilla

The City provides both water and sewer service to an approximate population of 7,028.

The City provides drinking water through its water utility that consists of three primary groundwater wells and four 1-million gallon above-ground steel reservoirs. Water service is provided to approximately 1,100 service connections to residents, schools and businesses meeting peak flows up to 1-million gallons per day.

The City's wastewater service is provided through a Septic Tank Effluent Pump (STEP) system. Each service uses a septic tank and pump vault that are connected to a force-main system. The septic tank and pump vault are maintained by the City and used by approximately 800 service connections. The City pumps these septic tanks with a pumper truck on a regular basis and hauls the septage to the Wastewater Treatment plant. The Wastewater Treatment plant consists of two aerated lagoons that receive wastewater from the force-main system, and an aerated digester to treat septage from each septic tank. Pre-treatment equipment is provided that removes grit and debris from the septage prior to treatment in the aerated digester. The City maintains 9-acres of drainfield area to discharge of up to 400,000 gallons per day of treatment wastewater.

The City currently charges all customers a monthly variable rate per thousand gallons based on water usage for both water and sewer service. The water and sewer rates also include a monthly minimum charge.

Rate Design Goals and Objectives

The key to any successful rate design is to understand the goals and objectives and how different rate structures can help achieve those goals and objectives. Typical rate design goals and objectives include items such as rates being easy to understand and administer and that are set at a level that produce sufficient revenues.

James C. Bonbright's book on utility rates *Principles of Public Utility Rates*[1] is often cited as the principle text of rate design. In Bonbright's book he develops a list of attributes (goals and objectives) that may be used to establish a utility's rates. Provided below is a paraphrased list of Bonbright's attributes.

Revenue-Related Attributes:

- Rates should be designed to **meet the total revenue requirement needs** under the "cash needs approach".[2]
- Rates should provide **revenue stability and predictability**; with a minimum of unexpected changes seriously adverse to the utility (e.g., annual swings in planned revenue should, for example, be no greater than +10% or –10%).
- From the customer's perspective, the rates should result in customer bills that are **stable and predictable.** The implementation of new rate structures should be consistent with past rate setting philosophy and minimize customer bill impacts during any change in rate structure.

Cost-Related Attributes:

- The rate structure should **promote efficient use of water** services and discourage or penalize inefficient uses.
- The rate structure should **reflect all traditional internal costs** (direct and indirect) incurred, **and under appropriate situations and conditions** (e.g., severe drought) may also **include present and future costs and benefits** (i.e., marginal cost and/or value of water).
- **Fairness of the rates** in the allocation of total costs of service among the different ratepayers so as to **avoid arbitrariness, capriciousness and to attain equity**. The rates and the rate structure shall be based upon a fair allocation of total cost of service among the customer classes of service by use of a "generally accepted" cost of service methodology such as defined in the AWWA- M1 manual or WEF MOP #27.
- The rates should be, as practically possible, **non-discriminatory**, between customer groups, and within each customer group. The rate structures should avoid interclass subsidies whenever possible to ensure each class pays its full cost of service.
- The **responsiveness of the rate to respond to changes** in demand and supply patterns. The rate structure should be developed such that it either responds appropriately or

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[1] James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.

[2] The AWWA M-1 Manual, Principles of Water Rates, Fees and Charges, discusses two "generally-accepted" methodologies for establishing revenue requirements; the cash basis and utility/accrual basis. Most municipal utilities use the "cash-basis" methodology. Under this approach, the City sums its O&M, debt service and capital improvements funded from rate revenues to equal its revenue requirements.

alternatively, contains the flexibility to allow the utility to respond to the changing needs as a result of supply, demand, and/or environmental concerns (e.g., drought conditions).

Practical-Related Attributes:

- From the customer's perspective, the rate structure should be **simple to understand**, such that the customer can easily understand the bill. From the utility's perspective, the rate structure should be **easy to administer and collect**. Finally, the rate structure should have acceptance by the majority of the customers that the rate structure and resulting bills are "fair and equitable."
- **Freedom from controversies** as to the application of the rate schedule to the customer and calculation of the customer's bill. It should be simple to explain and understand by the average customer to minimize any misinterpretation regarding the customer's bill and the overall goals that the rate structure has been developed to meet.

When developing rate designs, all the above listed criteria should be taken into consideration. However, it should be noted that it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration the customer's ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between the goals and objectives. As part of the rate structure review the City will need to determine what goals and objectives best meet their needs.

Rate Structure Terminology

In designing rates, two technical aspects are taken into account – level and structure. *Level* refers to the amount of revenue to be collected from a specific rate design (i.e., the rate design is intended to collect $1.0 million over a 12 month period). In contrast, *structure* refers to the way in which the $1.0 million is collected from the customers.

For the City's analysis the rate level is not being reviewed. Any proposed rate alternatives will be revenue neutral, that is, it will target the same level of revenues as the current adopted rates. Only the rate structure is being reviewed for the water and sewer rate structure review.

Another key concept is the unit of measurement for water and sewer variable charges. When reviewing utility rates the unit of measurement may vary (e.g., gallons, thousands of gallons, cubic feet, hundreds of cubic feet, acre feet), this is not a critical element in the development of rates. This is because the charge per unit is simply adjusted to reflect the units of measurement being used. For example, if you are charging $2.00 per 1,000 gallons, and wanted to charge on a per gallon basis, the rate would be $0.002/gallon. It is the structure of the variable charges where numerous options exist.

Fixed and Variable Charges

The initial starting point in reviewing, or developing, a rate structure is the relationship between fixed costs and variable costs. Generally speaking, most rate structures contain a monthly fixed or minimum charge and a volumetric (commodity) charge. The proportion of

revenue collected through the fixed costs versus variable costs is a key area to review when developing rates to meet the City's current rate design goals and objectives.

Utilities usually have two kinds of expenses, fixed and variable. Fixed expenses are expenses that remain the same regardless of how much of a commodity is produced; while variable expenses have a corollary relationship with the amount of the commodity is produced. An example of a fixed cost is annual salaries and wages or annual debt service payments. Regardless of the amount of water sold, or wastewater treated, the utility will have to pay its employees and the annual debt payments. An example of a variable cost is water, or wastewater, treatment chemicals or power. Depending on the system, with every gallon treated of water or wastewater treated there is a corresponding proportion of chemicals and power used in that process. The financial impact of this relationship means that if water treated and sold doubles from one month to another the chemical costs will have doubled as well. While revenue stability can be a prime objective, it is also important to keep in mind the rest of Bonbright's attributes when designing rates.

The development of rate structures that take into consideration the fixed and variable costs of the utility is critical. This does not mean that all fixed costs are collected through the monthly fixed charge, or conversely that all variable charges are collected through the variable charge, rather the rate structure should be developed to meet the City's goals and objectives and reflect how the utility incurs costs.

Fixed Charges

There are fixed capacity, or readiness to serve, costs incurred by the City that are collected on a monthly basis regardless of whether a customer utilizes the water or sewer services provided by the City. Fixed costs are generally collected as a fixed charge on a monthly basis (e.g., $5.00 per month/per connection). Fixed charges are known by many names (e.g., customer charge, meter charge, readiness to serve charge), regardless of the name used the fixed charge in intended to collect the fixed costs that the utility incurs, independent of the volume of water consumed or wastewater treated. Water customers often are charged a meter charge that is based on the size of the customer's water meter. Meter equivalencies are determined by the meter size and the by the meter capacity weighting factors. Provided below in Table 1 is the "generally accepted" approach used to establish fixed meter charges based on safe operating capacity of meter for 5/8" x 3/4" meter through a 6" meter. In the example it assumes a $5.00/Month charge for a 5/8" x 3/4" meter.

Table 1 Example of Development of Fixed Meter Charges Based Upon Meter Capacity			
Meter Size	Safe Maximum Oper. Capacity GPM [1]	Equivalent Meter Ratio	Meter Charges at Equivalent Ratios
5/8" X 3/4"	20	1.0	$5.00/month
3/4"	30	1.5	7.50
1"	50	2.5	12.50
1-1/2"	100	5.0	25.00
2"	160	8.0	40.00
3"	300	15.0	75.00
4"	500	25.0	125.00
6"	1,000	50.0	250.00

[1] AWWA C-700-77 Cold Water Meters – Displacement Types

As Table 1 indicates, the fixed meter charge increases in relationship to the safe operating capacity of the various meter sizes. Meter capacity is an important concept in that a customer that has a 2" meter is regarded, from a capacity perspective, as the equivalent of eight (8) – 5/8" x 3/4" customers. Another way of saying this is the customer with a 2" meter is, from a capacity perspective, the equivalent of eight (8) customers with 5/8" x 3/4" meters. Knowing that a large portion of a utility's costs are typically related to meeting capacity requirements, one can see the importance of taking into account capacity in establishing rates for customers.

Wastewater customers may pay a different fixed charge based on the type of customer such as residential, commercial, or industrial customers. Unlike water, wastewater does not have a well established method for determining the fixed charges for different customers. Under this scenario each customer class pays a monthly fixed charge developed during the process of conducting a comprehensive rate study. Many utilities use the same meter equivalency factors for sewer as used for water to establish the monthly fixed charge.

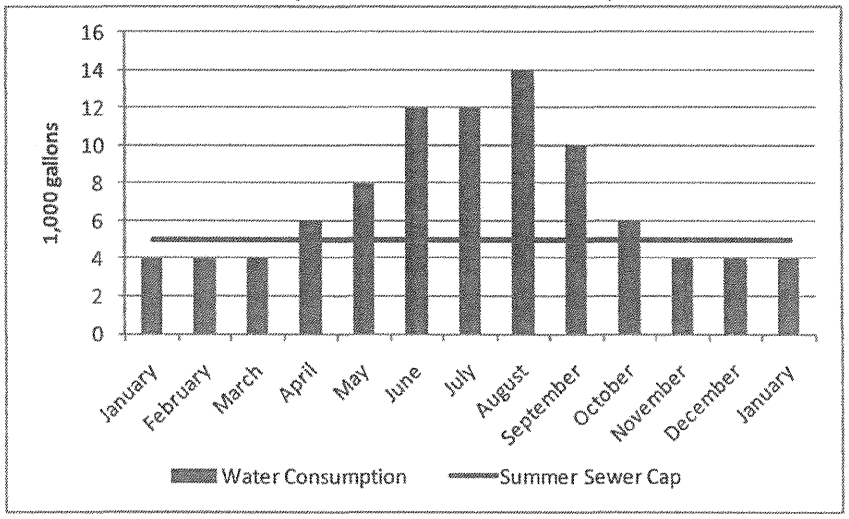
HDR generally recommends the adoption and use of these meter capacities to establish monthly fixed charges. HDR makes this recommendation for two reasons. First, the use of these capacity ratios are "generally accepted" within the utility industry. More importantly, they can easily be documented as to their source and derivation should questions arise concerning their appropriateness. For the City's study the use of meter equivalencies may not be necessary as most customers are served through a meter that is two inches or less. In this case a monthly fixed rate may be more appropriate.

Variable Charges

As discussed above, there are a variety of methods available to collect the fix charges of the utility. Consumption/volumetric charges also have a variety of methods available to recover variable costs. However, a utility must have a way to quantify the consumption/volume a customer uses in order to charge volumetric charge. For water, consumption is measured with a water meter on a regular basis, typically monthly or bi-monthly, and a bill sent to the customer reflecting the consumption. Wastewater, however, presents a practical obstacle due to the lack of meters measuring wastewater flow. When

a wastewater volumetric charge is used utilities typically assume there is a correlation between water consumption and wastewater used. Some utilities simply assume that there is a one to one relationship between water and wastewater volumes. Another way utilities confront the relationship between water and wastewater is to use winter water usage as a maximum for summer billing purposes. A summer sewer cap assumes that winter water volumes represent typical indoor water use and calculate a cap for summer time wastewater with the supposition that any water consumed above this cap is outdoor use and does not flow into the wastewater system. Chart 1 provides an example of a summer sewer cap.

Chart 1
Example of Summer Sewer Cap



It should be noted that occasionally with commercial and industrial customers, more typically industrial, flow meters are installed. Additionally commercial and industrial customers usually have less irrigation or water outdoor use thus there is often a closer relationship between water and wastewater volumes. It is less prevalent for utilities to use a summer sewer cap for commercial and industrial customers. Another method for dealing with the inequity of water and wastewater volumes is to install outdoor/irrigation meters. When outdoor/irrigation meters are used it can be assumed that water consumption is equal to wastewater flow.

Regardless of the method used to determine wastewater volumes, there are four basic rate structures for water and wastewater variable charges; uniform, declining block, inverted (increasing) block, and seasonal. Table 2 provides an overview of each of these variable charge rate structures.

Table 2
Overview of the Various Variable Charge Rate Structures

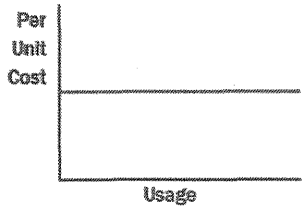
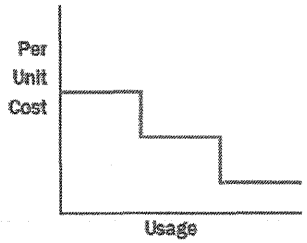
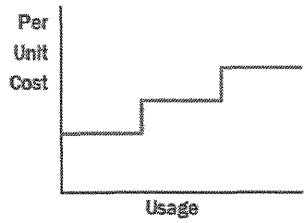
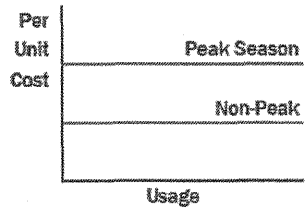
	UNIFORM RATE STRUCTURE *The cost per unit of consumption under a uniform rate structure does not increase or decrease with additional units of consumption*
	DECLINING BLOCK RATE STRUCTURE *The cost per unit of consumption under a declining block rate structure decreases with additional units of consumption*
	INVERTED BLOCK RATE STRUCTURE *The cost per unit of consumption under an inverted block rate structure increases with additional units of consumption*
	SEASONAL RATE STRUCTURE *The cost per unit of consumption under a seasonal rate structure changes with time periods. The peak season is the most expensive time period.*

Table 2 illustrates that the basic philosophy of each of these variable charge rate structures varies significantly. Under a uniform rate structure, the cost per unit does not change with consumption. The uniform structure is a simple and straightforward approach from the perspective of customer understanding and rate administration/billing. In contrast, the declining block rate structure is a bit more complex. The number of blocks (e.g., 3 stepped blocks) and size of the blocks (e.g., 0 – 10,000 gallons) may vary. However, the number of *blocks*[3] should be reasonable (i.e., 2 – 5 blocks) for reasons of simplicity and administration. Declining block rates may imply that there are certain economies of scale with additional consumption, or improved capacity use, and not

[3] "Blocks" or "Consumption Blocks" is used in a declining block or inverted block rate structure and refers to the amount of consumption allowed before the price changes to a succeeding price block. The initial block refers to the first price block (e.g. 0 to 5,000 gallons). The tail block refers to the last price block (e.g. all usage over 5,000 gallons).

necessarily a "volume discount." Depending upon the utility, this may or may not be a true statement. An inverted (increasing or tiered) block rate structure attempts to send a price signal to consumers that their consumption costs more, as more water is consumed. Again, this may or may not be the proper price signal regarding the utility's water resource costs. As with the declining block rate structure, the number and size of each block may vary, but should be reasonable for purposes of customer understanding and rate administration. Finally, a seasonal rate structure is a form of a time-differentiated rate structure. That is, the price varies based upon the time of use. Under a seasonal rate structure, water consumed in the summer is priced at a higher level than winter water consumption. This rate structure attempts to reflect the difference in costs associated with consumption during a peak period when water supply resources may be constrained.

The rate structure concepts noted above may be combined and used to form various different rate structures. As an example, a seasonal inverted block rate structure is developed by combining the seasonal rate structure with the concept of an inverted block rate structure.

From the above discussion, consideration can be given to reviewing the City's current water and wastewater rate structures. As discussed above, a typical rate design contains both a fixed and variable charge. Again, the focus of the review is on the *structure* of the rates and not on the *level* of the rates.

City's Current Rates

The water and wastewater rates are based entirely on a customer's water consumption for both the water and sewer rate. However, a minimum charge is also included which equates to approximately 5,000 gallons of water usage. There is no class of service distinction based on type of customer, as all customers are billed under the same water or sewer rate structure.

Water Rate Overview

The water rate structure includes a monthly minimum charge regardless of use or customer size, along with a uniform commodity charge based on all metered water consumption. Provided below in Table 3 is a summary of the current water rate.

Table 3
City of Wasilla Current Water Rates

Minimum Bill: $/Month	$39.44
Metered $/1,000 gal	$7.89

Note: 5,000 gallons included in minimum bill

Wastewater Rate Overview

The wastewater rate includes a monthly minimum charge and a uniform volume charge based on water consumption or a flat monthly rate for those customers without a water meter. Table 4 provided below illustrates the current wastewater rate.

Table 4 City of Wasilla Current Wastewater Rates	
Minimum Bill: $/Month	$44.64
Without Water Meter: $/Month	$56.77
Metered $/1,000 gal	$8.93

Note: 5,000 gallons included in minimum bill

Comparison of Water and Sewer Utility Rate Structures

The City's current rates have met the past goals and objectives of the City. However, the City is interested in evaluating possible water and sewer rate structures. A starting point in the review of possible alternative rate structures is to review what rate structures other local and similar sized utilities have implemented. HDR completed a brief review of several local Alaska utilities and similar sized Washington utilities. Tables 5 and 6 provide a summary of rate structures for the water and wastewater utilities respectively.

Table 5
Comparison of Water Rate Structures

Utility	Monthly Minimum Charge	Un-Metered Flat Rate	Metered			
			Customer/Base Charge	Meter Charge	Usage Charge	Tiered
ALASKA						
Wasilla, City of	X				X	
Anchorage Water Utility		X	X	X	X	
Kenai, City of		X		X	X	
Palmer, City of	X			X	X	
Soldotna, City of		X		X	X	
Utility Services of Alaska		X	X	X	X	
Wrangell, City of		X	X [1]		X	
WASHINGTON						
Cashmere, City of				X	X	X [2]
Sultan, City of			X		X	
Sequim, City of			X		X	X [3]

[1] The base charge for the City of Wrangell includes the first 4,000 gallons of consumption.

[2] 3 tiers, 0-10,000/10,001-35,000/over 35,000 gallons for residential customers only.

[3] 2 tiers 0-800/over 800 cubic ft.

As can be seen in the table above Wasilla and Palmer are the only two utilities that list a minimum charge for the utilities reviewed. The City of Palmer's minimum charge is also based on 5,000 gallons at the current consumption rate. All other utilities rate structures

are either an un-metered rate or a metered rate including a base charge and consumption charge, or a combination of metered and un-metered rates. In some cases, such as AWWU and USA, utilities include both a customer and meter charge in their rates. The usage, or consumption charge, varies from a uniform rate for the utilities in Alaska to some Washington utilities that implement a rate structure with multiple tiers.

Table 6 below illustrates rate design comparisons for a sewer utility. As is illustrated in the table, Wasilla is the only City to designate a monthly minimum charge. However, other Cities include a customer or meter charge. Most Cities have a metered, or volumetric, rate and some include a charge based on the wastewater strength for commercial customers.

Table 6
Comparison of Sewer Rate Structures

Utility	Monthly Minimum Charge	Un-Metered Flat Rate	Metered		
			Customer/ Base Charge	Meter Charge	Volume Charge
ALASKA					
Wasilla, City of	X				X
Anchorage Sewer Utility		X	X		X
Kenai, City of		X		X	X
Palmer, City of	X				X
Soldotna, City of		X	X		X
Utility Services of Alaska		X	X		X
Wrangell, City of		X			
WASHINGTON					
Cashmere, City of		X	X		X
Sultan, City of		X		X	X
Sequim, City of		X	X		X

As noted in the water rate structure review, the City of Palmer also includes a monthly minimum charge based on 5,000 gallons and the current sewer volume charge. As shown in Table 6, the majority of the metered sewer rates include a monthly fixed charge, either a meter charge or customer charge, in addition to the volumetric charge. Many of the utilities have metered and un-metered customers, or simply charge a flat rate to residential customers. As a result a flat rate is a prevalent for residential customers while a metered rate is prevalent for commercial customers. However, the industry trend is moving towards a volumetric billing structure for residential customers. It is also interesting to note that the metered and un-metered commercial rates for a majority of the utilities varies by customer type such as hotel, restaurant, grocery store, etc., and in many cases the metered sewer customer charge is also separated between low, medium, and high strength customers.

Customer Classes of Service

As noted above, many utilities develop rate structures by customer class of service. Generally speaking this is done to provide an accurate price signal to the utility's customers. In other words, there may be cost differences associated with providing service to one customer group compared to another. For example, residential water use increases significantly during the summer outdoor irrigation season. As a result, the water utility must size the system to meet these peak use needs. In this case, the rates for the residential customers would reflect these additional capacity costs. Similarly, for a sewer utility the strength of the wastewater for commercial customers is generally greater than a typical domestic (residential) wastewater. As a result, the commercial sewer rate would include the additional costs associated with treating the higher strength wastewater. It is important to remember that the rate designs should reflect the specific system and customer characteristics of the utility. What may be appropriate for one utility may not be appropriate for another.

The development of customer classes of service is to group customers together based on similar usage characteristics such as average use or peak use, facility requirements, location, or special service requirements. At the most basic level, the customer classes of service served by a water or sewer utility can be broken down into two basic classes, residential and commercial. However, within each of these customer groups there may be many different sub-groups. For residential this may include single-family residences to duplex, triplex or fourplex customers each serviced with separate meters or master metered. Similarly for the commercial class of service this may include master metered multi-family complexes, businesses ranging from small offices to large manufacturing or food processing complexes. In addition, there are those utilities that further split out specific large use customers such as universities, hospitals, or large manufacturing or industrial customers.

There is no single or correct definition in defining customer classes of service for a utility (i.e. all utilities should have a residential, commercial and industrial customer class of service). Rather, as the American Water Works Association Principles of Water Rates, Fees and Charges notes this process is utility specific and "Rate making attempts to assign costs to classes of customers in such a manner that rates can be designed that are nondiscriminatory and closely meet the cost of providing service to such customer classes."[4] Given that each utility is unique in its service area and customers, a utility should have broad latitude in defining customer classes of service, while balancing the desire for cost-based rates and administratively feasible classes of service.

At the current time, the City does not have a rate structure that is differentiated by class of service. At all times, utilities must find a reasonable balance between the administrative and rate issues associated with defining customer classes of service and establishing cost based rates. Listed below in Table 7 is a summary of other local and similarly sized utility classes of service used for rate setting purposes.

[4] American Water Works Association, Principles of Water Rates, Fees and Charges, Manual of Water Supply Practices M1, Fifth Edition, Denver, Colorado, p. 63.

Table 7 Survey of Water Classes of Service									
Utility	Single Rate	Residential	Duplex	Multi-Family	Trailer Courts	Commercial	Hotel/Motel	Indus-trial	Irrigation
ALASKA									
Wasilla, City of	X								
Anchorage Water Utility	X	X		X		X			
Kenai, City of	X								
Palmer, City of	X								
Soldotna, City of		X	X	X	X	X			X
Utility Services of Alaska		X	X	X		X		X	
Wrangell, City of		X				X			
WASHINGTON									
Cashmere, City of		X		X		X			
Sultan, City of		X		X	X	X			
Sequim, City of		X		X		X	X		

Table 7 shows most of the Cities have at least three class distinctions for water. They are residential, multi-family (duplex, multi, trailer court), and commercial. However, as an example, the Cities of Kenai and Wrangell have multiple commercial un-metered water rates. The use of two to three customer classes for rate design purposes is typical in the water utility industry. These structures are then developed based on the cost differences associated with providing service to the various customers within in each customer class of service.

Listed below in Table 8 is a summary of the wastewater rate structure classes of service for the same utilities.

Table 8 Survey of Wastewater Classes of Service						
Utility	Single Rate	Residential	Duplex	Multi-Family	Trailer Courts	Commercial
ALASKA						
Wasilla, City of	X					
Anchorage Sewer Utility		X		X		X
Kenai, City of	X	X				X
Palmer, City of	X					
Soldotna, City of		X				X
Utility Services of Alaska		X	X	X		X
Wrangell, City of		X				X
WASHINGTON						
Cashmere, City of		X	X	X		X
Sultan, City of		X				X
Sequim, City of		X		X		X

Similar to the water classes of service, Table 8 shows that in general utilities have the same three classes of service of residential, multi-family, and commercial. However, similar to the un-metered water classes of service AWWU and Wrangell have multiple rate schedules for their un-metered sewer customers, while Kenai has both un-metered residential and multiple commercial rate structures. Many utilities also differentiate the commercial sewer rates between low, medium, and high strength customers. The residential class of service may also include duplex, triplex and mult-family complexes as well. Again, each utility needs to determine the classes of service that most equitably represent the customer groups that meet the rate structure goals and objectives.

Comparison of Water and Sewer Utility Bills

As part of the rate structure review, HDR has developed a summary of the typical bills for residential customers. Provided below is a summary of the water and sewer at various consumption levels of 3,000, 5,000 and 10,000 gallons. Table 9 provides the water bill comparisons of the utilities surveyed.

Table 9
Residential Water Bill Comparisons (3/4" meter)

	Gallons		
Utility	**3,000**	**5,000**	**10,000**
ALASKA			
Wasilla, City of	$39.44	$39.44	$78.90
Anchorage Water Utility	45.85	45.85	45.85
Kenai, City of [1]	17.97	20.63	27.28
Palmer, City of	29.55	29.55	43.55
Soldotna, City of	19.35	19.35	19.35
Utility Services of Alaska	38.11	49.75	78.85
Wrangell, City of [2]	22.47	24.58	35.13
WASHINGTON			
Cashmere, City of [3]	20.67	25.65	37.60
Sultan, City of	38.28	45.06	62.05
Sequim, City of [4]	20.98	21.00	21.13

[1] Kenai does not list ¾" residential. This is for a 1" meter.

[2] The base charge for the City of Wrangell includes the first 4,000 gallons of consumption.

[3] 3 tiers, 0-10,000/10,001-35,000/over 35,000 gallons for residential customers only.

[4] 2 tiers 0-800/over 800 cubic ft.

Table 9 shows Wasilla at $39.44 for both 3,000 and 5,000 gallons which is on the higher end of the customer bills for this level of consumption. For 10,000 gallons, Wasilla is the highest at $78.90 with Utility Services of Alaska $0.05 below Wasilla at $78.85.

Table 10 provides the residential sewer bill comparisons assuming the same consumption levels.

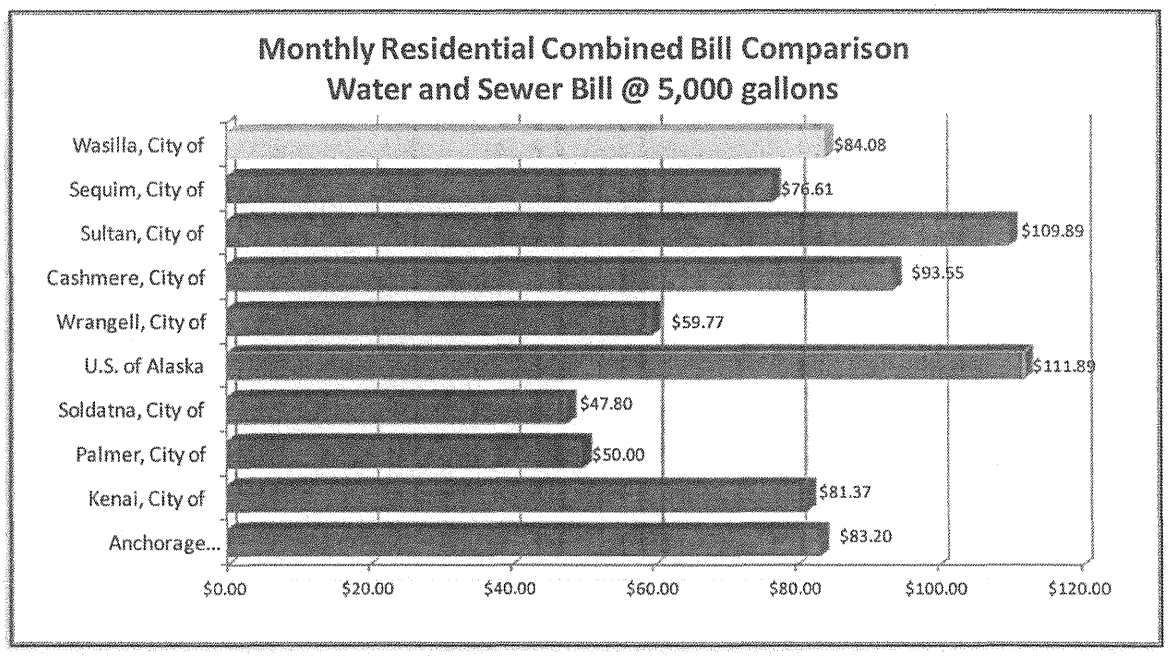
Table 10
Residential Sewer Bill Comparisons

	Gallons		
Utility	**3,000**	**5,000**	**10,000**
ALASKA			
Wasilla, City of	$44.64	$44.64	$89.30
Anchorage Water Utility	37.35	37.35	37.35
Kenai, City of	52.74	60.74	80.74
Palmer, City of	20.45	20.45	38.95
Soldotna, City of	22.85	28.45	42.45
Utility Services of Alaska	43.66	62.14	95.59
Wrangell, City of [1]	35.19	35.19	35.19
WASHINGTON			
Cashmere, City of [2]	67.90	67.90	67.90
Sultan, City of	64.83	64.83	64.83
Sequim, City of [3]	55.61	55.61	55.61

Table 10 shows Wasilla's monthly sewer bill for 3,000 and 5,000 gallons at $44.64 is approximately the average for the utilities reviewed. At 10,000 gallons, Wasilla, Kenai, and Utility Services of Alaska are the three highest at $89.30, $80.74 and $95.59 respectively.

When comparing the water and sewer rates to the other utilities it is interesting to note that the City's minimum charge is the key difference for lower water and sewer use customers. Similarly, the higher use customer bill is higher as a result of no customer or fixed charge and a 100% consumption/volume rate. Those utilities that have a monthly fixed charge have a lower per unit cost for the consumption or volume rate.

The graph below illustrates a combined utility bill (both water and sewer) at 5,000 gallons, where Wasilla is just slightly higher than the average of the utilities surveyed. Utility Services of Alaska, City of Sultan, and City of Cashmere are the highest at $111.89, 109.89 and $93.55 respectively. Wasilla at $84.08 falls with the next group of higher bills with in dollars of Kenai at $81.37 and Anchorage at $83.20.



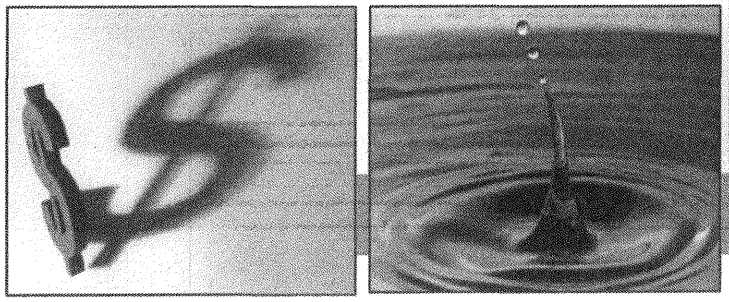
Summary

This Technical Memorandum has discussed the goals and objectives of developing water and sewer rate structures. When reviewing proposed rate structures the City will need to determine how the proposed rate structures meet the current goals and objectives. In addition the key components included in rate structures were reviewed. When reviewing other similar and local utilities it was determined that most utilities include both a fixed and variable charge in their rates. In addition, a majority of the utilities have rate structures by class of service. Based on this information and comparison of other utility rates, the City can begin to review the alternative rate structures to determine if changes are necessary to the City's current water and sewer rate structures. Again, the focus of the review at this point is on the *structure* of the rates, and not on the *level* of the rates, or the proportion of revenue to be collected from the fixed versus variable charges.

City of Wasilla

Water and Sewer Rate Structure Review

August 12, 2013



Presented by:

Shawn Koorn

Associate Vice President

HDR

Overview of the Analyses

- Objective: determine if there are enhancements or changes that can be made to the existing rate structures that better meet the City's rate setting goals and objectives
- Many different rate structure options available
- Any changes in the rate structure results in trade-offs between goals and customer bill impacts
  - Revenue stability vs. price signal
- Changes to the rate structure should reflect the City's rate setting goals and objectives

Overview of the Current Rate Structure

Monthly Rates	Water Rates	Sewer Rates
Metered - /1,000 gallons	$8.48	$9.60
Minimum Charge - < 5,000	$42.39	$47.98
Non-Metered Sewer Service	N/A	$61.03

Approach to the Review

- Rate comparison to utilities of similar size
- Review the equity of the current rate structure
  - Cost of service analysis
- Develop alternative rate structures for review and discussion
- Review the impacts to customers for any alternative rate structures
- Review the relationship of fixed and variable costs and the alternative rate structures

Water Rate Structure Comparison

Utility	Monthly Minimum Charge	Un-Metered Flat Rate	Customer/Base Charge	Meter Charge	Usage Charge	Tiered
ALASKA						
Wasilla, City of	X				X	
Anchorage Water Utility		X	X	X	X	
Kenai, City of		X		X	X	
Palmer, City of	X			X	X	
Soldotna, City of		X		X	X	
Utility Services of Alaska		X	X	X	X	
Wrangell, City of		X	X [1]		X	
WASHINGTON						
Cashmere, City of				X	X	X [2]
Sultan, City of			X		X	
Sequim, City of			X		X	X [3]

[1] The base charge for the City of Wrangell includes the first 4,000 gallons of consumption.
[2] 3 tiers, 0-10,000/10,001-35,000/over 35,000 gallons for residential customers only.
[3] 2 tiers 0-800/over 800 cubic ft.

Sewer Rate Structure Comparison

Utility	Monthly Minimum Charge	Un-Metered Flat Rate	Metered		
			Customer/ Base Charge	Meter Charge	Volume Charge
ALASKA					
Wasilla, City of	X				X
Anchorage Sewer Utility		X	X		X
Kenai, City of		X		X	X
Palmer, City of	X				X
Soldotna, City of		X	X		X
Utility Services of Alaska		X	X		X
Wrangell, City of		X			
WASHINGTON					
Cashmere, City of		X	X		X
Sultan, City of		X		X	X
Sequim, City of		X	X		X

Rate Structure Comparison

- No right or wrong answer/approach
- Structure may vary by customer class (e.g., residential, commercial)
- Pricing may vary by customer class
  - Must be cost-based
- Most rate structures include a fixed and variable component
  - Fixed charge reflects a range of "fixed" costs
  - May still include a minimum bill
- AWWA rate survey has an average monthly fixed charge of approximately $9.00

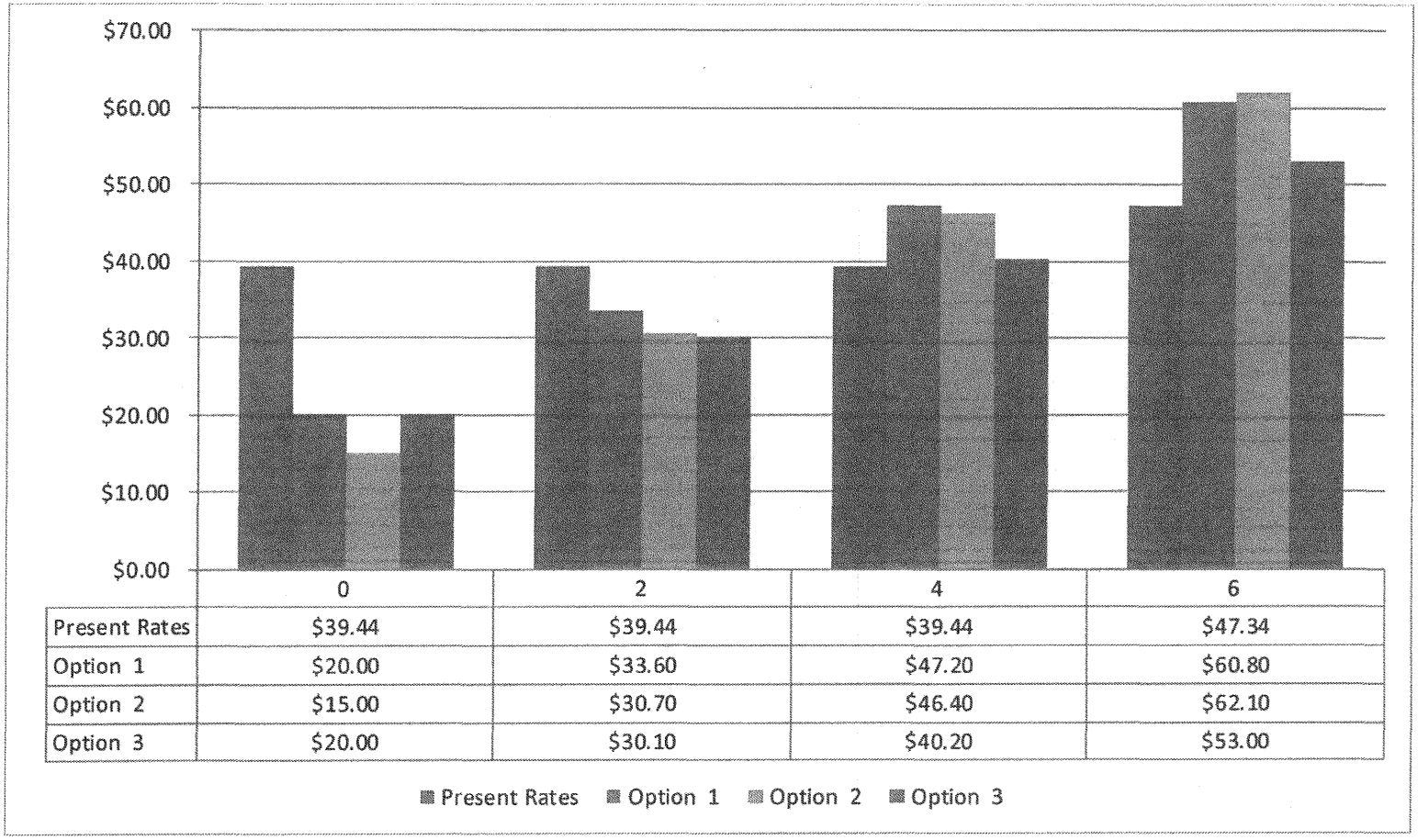
Alternative Rate Designs

- Provide a starting point to review impacts to customers
- Focus on the minimum charge and impact of changes
- Monthly fixed charge depends on the City's desire for revenue stability
  - To minimize bill impacts a transition towards a lower fixed charge (i.e., <$10.00) would be prudent
- Developed various rate options

Example Water Rate Structures and Trade-Offs

	Present Rates	Option 1	Option 2	Option 3
RESIDENTIAL				
Fixed Monthly Charge (per customer)	$0.00	$20.00	$15.00	$20.00
Minimum Bill (5,000 gallons or less)	$39.44	N/A	N/A	N/A
Consumption (per 1,000 gallons)				
Uniform Rate	$7.89	$6.80	$7.85	N/A
Block 1: 0 - 5,000 gallons		N/A	N/A	$5.05
Block 2: Above 5,000 gallons		N/A	N/A	7.75
COMMERCIAL (Includes Multi-Family, Institutional, and Municipal)				
Fixed Monthly Charge (per customer)		$30.00	$20.00	$25.00
Minimum Bill (5,000 gallons or less)	$39.44			
Consumption (per 1,000 gallons)				
Uniform Rate	$7.89	$6.80	$7.25	$6.95
IRRIGATION				
Fixed Monthly Charge (per customer)		$30.00	$15.00	$25.00
Minimum Bill (5,000 gallons or less)	$39.44			
Consumption (per 1,000 gallons)				
Uniform Rate	$7.89	$6.80	$7.85	$7.75

Residential Water Bill Comparison /1,000 gallons

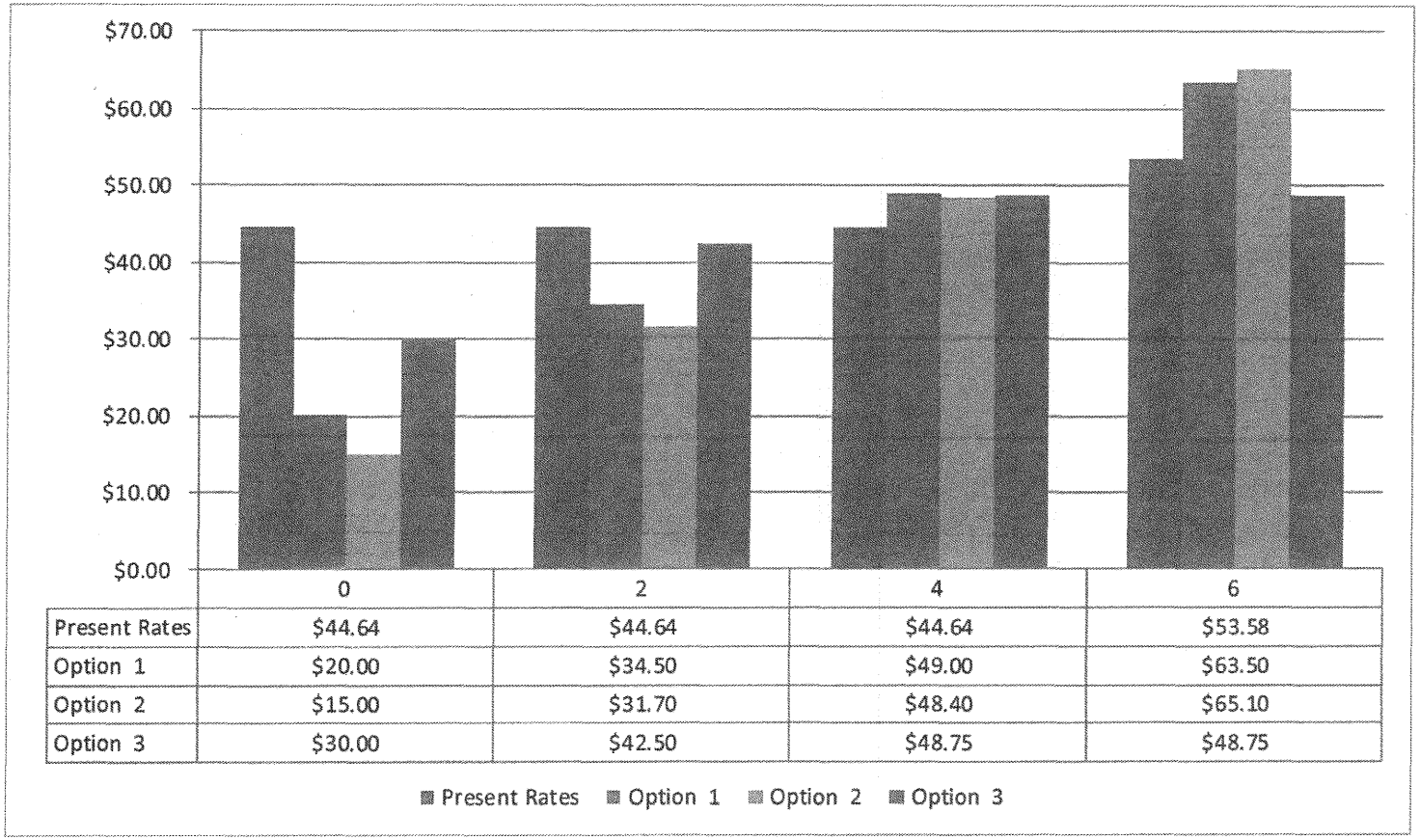


	0	2	4	6
Present Rates	$39.44	$39.44	$39.44	$47.34
Option 1	$20.00	$33.60	$47.20	$60.80
Option 2	$15.00	$30.70	$46.40	$62.10
Option 3	$20.00	$30.10	$40.20	$53.00

Example Sewer Rate Structures and Trade-Offs

	Present Rates	Option 1	Option 2	Option 3
RESIDENTIAL				
Flat Rate Customers	$56.77	$56.25	$56.75	$55.00
Minimum Bill (5,000 gallons or less)	$44.64	N/A	N/A	N/A
Fixed Monthly Charge (per customer)		$20.00	$15.00	$30.00
Consumption (per 1,000 gallons)				
Uniform Rate	$8.93	$7.25	$8.35	N/A
Block 1: WWA		N/A	N/A	$6.25
Block 2: Above WWA		N/A	N/A	0.00
COMMERCIAL (Includes Multi-Family, Institutional, and Municipal)				
Flat Rate Customers	$56.77	$56.25	$56.75	$55.00
Minimum Bill (5,000 gallons or less)	$44.64	N/A	N/A	N/A
Fixed Monthly Charge (per customer)		$30.00	$20.00	$40.00
Consumption (per 1,000 gallons)				
Uniform Rate	$8.93	$8.60	$9.00	N/A
Block 1: WWA		N/A	N/A	$9.75
Block 2: Above WWA		N/A	N/A	0.00

Residential Sewer Bill Comparison /1,000 gallons



	0	2	4	6
Present Rates	$44.64	$44.64	$44.64	$53.58
Option 1	$20.00	$34.50	$49.00	$63.50
Option 2	$15.00	$31.70	$48.40	$65.10
Option 3	$30.00	$42.50	$48.75	$48.75

Summary of the Rate Structure Review

- The current rate structure is a viable rate structure
  - May not reflect the City's current goals and objectives
- Alternative designs provide options for the City
- Alternatives can be revised to reflect policy direction
- Commercial rates would also be adjusted to reflect preferred rate alternative
- Current industry trends
  - Declining/flat consumption
  - Additional revenue stability

Meeting Revenue Stability Needs Through Minimum Reserve Levels

- Several different reserve funds
  - Operating, capital, emergency, rate stabilization, etc.
- Utilities generally have one or more of these funds
  - Operating Reserve Minimum
    - Typically 30-60 days of O&M
    - Varies based on billing cycle, level of O&M
  - Capital Reserve
    - Typically based on annual capital needs/renewal replacement requirements
  - Emergency
    - Cost of major infrastructure (pump station, etc.) failure
  - Rate Stabilization
    - 10% - 25% of annual revenues
- Rating agencies (Moody's, Fitch, etc.) like 180 days of O&M in total

HDR

Example Total Reserves per Policy