Information Related to Utility Rate Increase

BACKGROUND

Delivery of the City's utility services (water / wastewater) is solely funded by revenues derived by rates charged to customers. Rate structures have been established with primary objective to provide sufficient revenues to operate system, within scope of achieving fairness - also with secondary consideration of conservation. Rates are adjusted periodically as needed. In 2007, the rate structure was changed to provide for a wholesale pass-through charge to be reviewed annually to address costs associated with the Upper Trinity Regional Water District (UTRWD). These represent roughly one half of the operational costs. The rate structure associated with City operations has not been changed since 2007.

UTILITY COST STRUCTURE

There are two major cost components associated with the Utility System:

1) Purchase of wholesale water and wholesale wastewater treatment
   - This is provided by the Upper Trinity Regional Water District (UTRWD)
     - o Contracted water purchases of 3 Million Gal of water per day
     - o Contracted sewer treatment of 1.65 Million Gal of wastewater per day
2) Maintenance of the water and wastewater distribution system. In addition to the miles of water and sewer lines, this includes:
   - Five water wells with capacity of 4.2M gallons per day
   - Ten lift stations – needed to pump wastewater through City system to the Lift Station at Doubletree Ranch Park, and across Lewisville Lake to the UTRWD for treatment.

The Wholesale component is nearly one half of the total Utility cost:

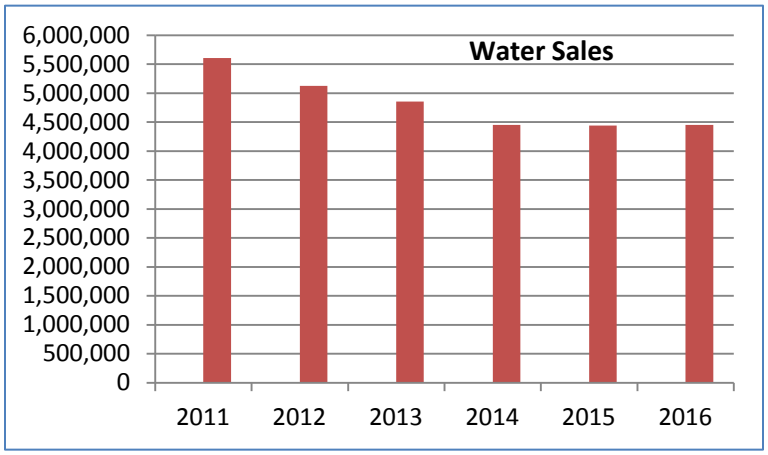
Current Year Budget		
Operations	$4,678,767	52%
UTRWD	$4,270,819	48%
Total	$8,949,586	

The Wholesale Charges consist of a demand charge and volume rate for both water and wastewater. These charges are in turn, passed on to residents with no markup as a base rate and volume charge. These are shown on the utility bills accordingly.

REVENUE PICTURE

The current rate structure, implemented in 2007, was developed in consideration of prevailing usage patterns, with a graduated rate structure that provided a higher percentage of revenues associated with higher usage tiers. This effectively provided sufficient revenues – particularly in 2011 and 2012 due to exceptionally dry summers, providing increased revenues that resulted in a healthy level of reserves. As weather patterns change from year to year, increased reserves resulting from dry summers are utilized in the years experiencing more

rainfall with corresponding reduced revenues. However, in years subsequent to 2012, usage patterns have decreased considerably – likely for dual factors of increased rainfall and general awareness of conservation by residents. This new persistent pattern with reduced revenues has resulted in annual deficits, depleting working capital balances to less than desired levels. This prompts an immediate need to update the rate schedule to ensure sufficient revenues for continued utility operations.

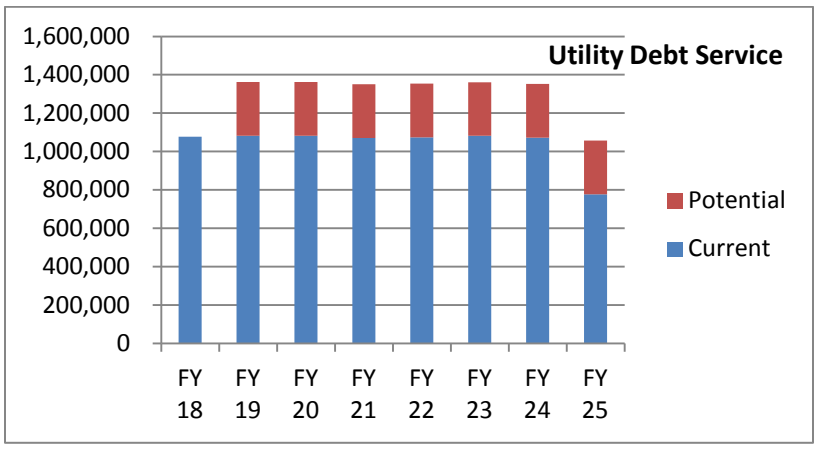


COST PICTURE

Over the past three years, the City has experienced flooding. Apart from the reduced water sales, the flooding resulted in a significant increase (roughly $1M) in costs related to treatment of wastewater. Infiltration and inflow (I&I) – storm-water finding its way into the sewer system from open cleanouts, manholes, etc., increased effluent treatment cost from the increased wastewater volume. In addition, the City experienced increased capital project cost to find and repair the breeches. This is an ongoing challenge to a utility system, especially when many of the manholes are located along the lakeshore.

Capital Projects / Debt Service

Included in the City operations side of the cost structure are ongoing capital projects. Debt is issued periodically to fund big projects such as the recent water storage tank upgrade, lift station rehab, ongoing water line and sewer line replacement. State-mandated painting of the eight water storage tanks every 7 – 10 years represent a cost of $500,000 – $700,000 each. An amount of $300,000 annually from Operations revenue has been slated to mitigate the amount of ongoing debt to fund these projects. But the reduced revenues over the past several years have prevented this transfer. With the periodic debt issues, we try to match these with retiring debt to mitigate the effect on utility rates. However, we have need to issue debt in FY 2018 for identified projects (largely water and sewer line replacement), however with no decrease in existing debt service until 2025.



What operations costs have increased over the past ten years?

Numerous unfunded mandates have occurred over the last 10 years:

- Backflow program
- Valve maintenance program
- Sanitary sewer overflow (SSOI) program or I&I programs.
- No lead mandate – This increased the cost of repairs significantly (cost of fittings).
- Chemical analysis mandates – UCMR2, UCMR3, UCMR4
- Creation of the NTGCD (North Texas Groundwater Conservation District)
- Nitrification Action plan – additional sampling.

Other factors:

- Inflow and Infiltration (I&I) Flooding in City last few years resulted in significantly increased sewage treatment cost from the UTRWD, due to storm-water entering the sewer system. (The sewer system is a closed system, but infiltration via manhole covers, uncovered sewer clean-outs, etc. allows storm-water to penetrate, especially with flooding). Associated capital project to locate and correct inflows into system added to this cost.
- Automated Meter Read program (AMR) projects in 2012 and 2014.
- Water meter cost increases from approx. $50/each to approx. $200/each for a ¾" water meter
- License fee increases

What is the City doing to be more efficient?

- The primary objective of a Utility System is to secure sufficient supply of water. Regional water providers require a specified subscription from the jurisdictions in the area they serve in order to determine needed capacity for the water treatment plant. These jurisdictions in turn, determine their peak demand to set their particular subscription, to ensure they have adequate water supply. And a significant annual subscription cost is incurred annually, irrespective of the amount actually used. This is in essence a charge for the availability of the subscribed capacity. Typically the subscription is significantly more than what is actually taken, as peak demand is only during a portion of the summer months. Highland Village has been able to achieve model efficiency by subscribing to a lower capacity and drawing the full subscription throughout the year - using water wells to supply the peak demand in summer months. This reduces cost significantly over time.
- On the sewer side, the topography of the City presents a challenge to move wastewater through the City and across Lewisville Lake for treatment. Lift stations are utilized to move the flow uphill, and are very costly to maintain. A large capital project

was completed years ago, to install a gravity flow line through much of the City, which eliminated a large number of lift stations.

- A significant advance was implementation of the Automated Meter Read program (AMR). This project entailed installation of new water meters throughout the City that have greater accuracy, also with cellular capability to provide hourly readings to the City. This provides the City a valuable tool to manage the utility system, (also provided to residents), in particular with timely leak notification. Also, residents can utilize the information for self management of their usage and conservation efforts.
- An equipment replacement schedule, as well as diligence in preventive maintenance, is utilized to ensure equipment is used as long as possible.
- A work-order system is used in conjunction with a Geographical Information System (GIS), to provide efficiency of scheduled maintenance as well as ability to quickly address system failures.

Overall Parameter of Rate Consideration

In general, the lion's share of operational costs to maintain City utility infrastructure are fixed in nature. Annual swings in water usage have little overall effect on overall costs – within parameter of existing capacity subscribed by the City. Cost related to mandated testing, water and sewer line repair / replacement, pump repair / replacement are ongoing and experience inflationary cost increases over time.

And this would support a general view that all customers equally share in providing the availability of service. In practice, this translates to a higher percentage of charges to be included with the base charge. The primary objective is to find the appropriate balance between the base charge and volume rate to distribute charges fairly while providing for sufficient revenues to support the system. In contrast to the current rate structure of progressively higher rates with increased usage, a determination was made after discussions with Council to provide for increased percentage of costs covered by the base charge. The primary advantage of this approach is to provide more consistency in monthly revenue generation and thereby reduce volatility – a view shared by a growing number of utilities that are in the same process of re-evaluating their respective rate structures.

Specific Considerations of Rate Design

Water

- The current rate structure relies on a disproportional share of revenues derived from higher usage in the summer months (that has largely diminished in recent years). The rate structure update aims to change the current progressive rate structure – with objective to still discourage excessive usage, but not however discourage "responsible" irrigation so that residents can properly maintain their landscape. The City has a well system, in addition to surface water obtained from the UTRWD, which is utilized to address peak summer usage resulting from irrigation. Accordingly, there is sufficient water delivery capacity to provide for usage within these general parameters.
    - Based on average lot sizes in the City, roughly 30,000 gal monthly usage (inclusive of interior water usage) should be sufficient for landscape irrigation (Based on general assumption of 1" of water per week on yards).
    - Larger sized lots in the City – using an average of the top 20%, could require up to roughly 50,000 gal monthly using the same criteria.
    - With 4,000 gal usage included in the base charge, a flat volume rate is proposed for usage over 4,000 gal and up to 50,000 gallons. Usage above the 50,000 gal threshold will be subject to a substantially higher rate.

  This allows residents to maintain their yards responsibly without excessive costs.

Sewer

- Sewer usage is not directly metered, instead based on water usage. Using water usage as the basis for sewer charges is appropriate given the high correlation with related sewer volume – however with need to factor out any irrigation usage. Accordingly, residential water use utilized for sewer volume determination is capped at 15,000 gal. And a winter average program is used to determine a specific maximum usage for each residence – with the intent of capturing typical household usage that excludes irrigation.
    - The volume rate for Commercial will be the same as Residential, as there is no difference in treatment cost. Currently, the Commercial volume rate exceeding 8,000 gal is charged at a lower rate. However, given larger volumes and demand on the system for Commercial, the base charge will reflect a higher amount.

In FY 2017, the current rate structure is projected to have a shortfall of $869,000 to address operational costs. And looking ahead, expected increase in debt service, as well as scheduled equipment replacement will increase the deficit. The proposed changes will provide sufficient revenues to address associated expenditures for both water and sewer costs, while also addressing the considerations listed previously.

The proposed rate changes will provide for roughly a 20% increase in total. However, with change to the rate structure, the percentage increase will vary with usage level. In general, the increase for both water and sewer is impacted at the lower usage levels. While the numbers of accounts at minimum levels is relatively small (roughly 6%), there is a small component of seniors, likely on fixed income. Total accounts with Over-65 designation are currently 425. To help mitigate the effect of this, an Over-65 Discount is to be added ($5.00 / month) for residents meeting that qualification.

RATE CHANGES

Wholesale rates were updated with the May 2017 billing. Each year, the projected sales from the Wholesale Pass-Through rates are compared to the expected cost from the UTRWD, resulting in an adjustment if needed – last changed in 2015. This change reflected the following: Water - $1.50 increase in Base Charge and $.10 in the volume rate; Sewer - $1.00 increase in base charge with no change to volume rate.

Water Wholesale	
Base Charge	$ 20.00
Rate / 1,000 gal	$ 1.00

Sewer Wholesale	
Base Charge	$ 26.00
Rate / 1,000 gal	$ 1.50
Max (15,000 gal)	$ 48.50

Water (City portion) Rate Changes (Effective with October billing)

Current

Residential	
Min (4,000 gal)	$ 9.55
Rate / 1,000 gal	
4,000-10,000	$ 0.85
10,000-20,000	2.85
20,000-30,000	4.00
30,000-40,000	5.10
40,000-	6.55

Commercial (Non-irrigation)	
Min (4,000 gal)	$ 11.85
Rate / 1,000 gal	
4,000-	$ 2.55

Commercial Irrigation	
Min (4,000 gal)	$ 11.85
Rate / 1,000 gal	
4,000-10,000	$ 0.85
10,000-20,000	2.85
20,000-30,000	4.00
30,000-40,000	5.10
40,000-	6.55

Proposed

Residential	
Min (4,000 gal)	$ 11.00
Rate / 1,000 gal	
4,000-50,000	$ 3.00
50,000-	15.00

Commercial (Non-irrigation)	
Min (4,000 gal)	$ 33.00
Rate / 1,000 gal	
4,000-	$ 3.00

Commercial Irrigation	
Min (4,000 gal)	$ 33.00
Rate / 1,000 gal	
4,000-50,000	$ 3.00
50,000 -	8.00

Sewer (City portion) Rate Changes (Effective with October billing)

Current

Residential	
Base Chg (2,000 gal)	$ 1.25
Rate / 1,000 gal	$ 5.60
Max (15,000 gal)	$74.05

Commercial	
Base Chg (2,000 gal)	$ 1.25
Rate / 1,000 gal	
2,000-6,000 gal	$ 8.05
6,000 gal -	$ 2.85

Proposed

Residential	
Base Chg (2,000 gal)	$17.00
Rate / 1,000 gal	$ 3.70
Max (15,000 gal)	$65.10

Commercial	
Base Chg (2,000 gal)	$34.00
Rate / 1,000 gal	$ 3.70

Change in Billed Amounts with new Rates

The new water rates reflect an overall increase. But due to the change in rate structure, the increases vary in accordance to usage. In particular, water usage in the 40,000 – 50,000 gal range actually reflects a slight decrease, resulting from the objective to accommodate reasonable landscape watering.

The new sewer rates also reflect an overall increase. But as with the water rates, the change in rate structure results in the extent of increase varying with usage. In reality, there is a relatively narrow range of household wastewater usage by residents. The variance of actual cost incurred by the City is limited over this range of usage. Accordingly, the new rate structure effectively narrows the span of sewer charges, with primary emphasis on the base.

Following are amounts associated with various water usage levels. (Current amounts are reflected inclusive of the May pass-through adjustment).

Residential Water				
	Current	Proposed	Change	%
4,000 gal	$ 33.55	$ 35.00	$ 1.45	4%
8,000 gal	40.95	51.00	10.05	25%
20,000 gal	83.15	99.00	15.85	19%
40,000 gal	194.15	179.00	(15.15)	-8%
70,000 gal	420.65	539.00	118.35	28%

Commercial Water				
	Current	Proposed	Change	%
8,000 gal	$ 50.05	$ 73.00	$ 22.95	46%
30,000 gal	128.15	161.00	32.85	26%
70,000 gal	270.15	321.00	50.85	19%
100,000 gal	376.65	441.00	64.35	17%

Commercial Irrigation				
	Current	Proposed	Change	%
8,000 gal	$ 43.25	$ 73.00	$ 29.75	69%
30,000 gal	135.45	161.00	25.55	19%
100,000 gal	649.45	691.00	41.55	6%
200,000 gal	1,404.45	1,591.00	186.55	13%

Following are amounts associated with various sewer usage levels. (Current amounts are reflected inclusive of the May pass-through adjustment).

Residential Sewer				
	Current	Proposed	Change	%
5,500 gal	$ 55.10	$ 64.20	$ 9.10	17%
8,000 gal	72.85	77.20	4.35	6%
12,000 gal	101.25	98.00	(3.25)	-3%
Commercial Sewer				
	Current	Proposed	Change	%
8,000 gal	$ 77.15	$ 94.20	$ 17.05	22%
30,000 gal	172.85	208.60	35.75	21%
70,000 gal	346.85	416.60	69.75	20%

Representative Bill Amounts

To illustrate the average residential bill (citywide), two benchmarks can be utilized: average usage in months with and without irrigation.

- Non-irrigation month average: 8,000 gal water usage, 5,500 gal sewer usage (sewer usage based on average winter average quantity).
- Average Irrigation month average: 20,000 gal water usage, 5,500 gal sewer usage
- High irrigation month average: 40,000 gal water usage, 5,500 gal sewer usage

Non-Irrigation Representative Bill (Winter months) (**8,000** gal Water)				
	Current	***Proposed***	***Change***	***%***
Water				
Wholesale	$ 28.00	$ 28.00	$ -	0%
City	12.95	23.00	10.05	78%
Total Water	$ 40.95	$ 51.00	$ 10.05	25%
Average Sewer Bill (5,500 gal)				
	Current	***Proposed***	***Change***	***%***
Sewer				
Wholesale	34.25	34.25	-	0%
City	20.85	29.95	9.10	44%
Total Sewer	55.10	64.20	9.10	17%
Total	**$ 96.05**	**$ 115.20**	**$ 19.15**	**20%**

Summer Representative Bill (**20,000** gal Water)				
	Current	***Proposed***	***Change***	***%***
Water				
Wholesale	$ 40.00	$ 40.00	$ -	0%
City	43.15	59.00	15.85	37%
Total Water	$ 83.15	$ 99.00	$ 15.85	19%
Average Sewer Bill (5,500 gal)				
	Current	***Proposed***	***Change***	***%***
Sewer				
Wholesale	34.25	34.25	-	0%
City	20.85	29.95	9.10	44%
Total Sewer	55.10	64.20	9.10	17%
Total	**$ 138.25**	**$ 163.20**	**$ 24.95**	**18%**

Summer - Higher Usage Bill (**40,000** gal Water)				
	Current	***Proposed***	***Change***	***%***
Water				
Wholesale	$ 60.00	$ 60.00	$ -	0%
City	134.15	119.00	(15.15)	-11%
Total Water	$ 194.15	$ 179.00	$ (15.15)	-8%
Average Sewer Bill (5,500 gal)				
	Current	***Proposed***	***Change***	***%***
Sewer				
Wholesale	34.25	34.25	-	0%
City	20.85	29.95	9.10	44%
Total Sewer	55.10	64.20	9.10	17%
Total	**$ 249.25**	**$ 243.20**	**$ (6.05)**	**-2%**

Comparison of Rates to Other Cities

A comparison of utility rates to surrounding cities shows Highland Village generally consistent with the other cities for water, however on the higher end in regard to sewage rates. Cost for sewage in Highland Village presents a difficult reality. We have the high costs of a relatively new treatment plant, coupled with a small number of homes to distribute these costs. Of the listed cities, for water, Corinth and Lake Cities are the most comparable – as these cities are also serviced by the Upper Trinity Regional Water District. For sewer, Lake Cities is the only directly comparable city to Highland Village - having all sewage treated by the UTRWD.

Water (Residential)

Usage(gal)	HV	FM	Corinth	Lake Cities	Frisco	Southlake
4,000	35.00	39.60	43.33	50.00	24.63	46.12
8,000	51.00	54.60	43.33	70.00	39.55	54.54
20,000	99.00	115.52	91.03	148.00	87.36	103.24
50,000	219.00	283.80	300.75	412.50	232.46	283.17
70,000	539.00	409.60	476.15	630.50	340.06	404.57

Water (Commercial)

Usage(gal)	HV	FM	Corinth	Lake Cities	Frisco	Southlake
8,000	73.00	55.32	61.69	70.00	41.83	79.30
50,000	241.00	283.82	308.50	412.50	203.53	299.47
70,000	321.00	409.62	442.10	630.50	280.53	420.87
100,000	441.00	598.32	642.50	957.50	396.03	602.97

Water (Commercial Irrigation)

8,000	73.00	55.32	61.69	70.00	41.83	79.30
30,000	161.00	171.62	173.10	232.00	126.53	186.77
50,000	241.00	283.82	308.50	412.50	218.83	299.47
70,000	421.00	409.62	442.10	630.50	326.43	420.87
100,000	691.00	598.32	642.50	957.50	487.83	602.97

Sewer (Residential)

Usage(gal)	HV	Corinth	Lake Cities	FM	Frisco	Southlake
2,000	46.00	32.59	41.20	19.44	33.18	27.47
5,500	64.20	52.19	60.80	33.27	50.40	38.50
8,000	77.20	66.19	74.80	43.14	62.70	46.37
12,000	98.00	88.59	97.20	58.94	82.38	58.97

Sewer (Commercial)

Usage(gal)	HV	Corinth	Lake Cities	FM	Frisco	Southlake
8,000	94.20	66.19	77.80	43.14	80.36	46.37
50,000	312.60	301.39	313.00	209.04	287.00	178.67
70,000	416.60	413.39	425.00	288.04	385.40	241.67