Columbia Water and Light

Addendum to Comprehensive Water Cost of Service Study

Draft Report / November 2, 2018

RAFTELIS

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INTRODUCTION

Based on input by the Columbia Water and Light (CWL) Advisory Board and City of Columbia City Council, CWL staff and Raftelis developed an alternative volumetric rate structure that would apply an individualized block structure to all customers.

CWL's current two-tier rate structure charges a higher rate in the summer months (June – September) once a customer crosses a certain level of base usage. Currently, the cutoff is 2 Ccf for residential customers and 70% of average winter consumption (AWC) for the commercial, large commercial, and master meter classes. Usage below this cutoff, as well as all usage in months outside the summer period, is charged at a lower rate. Irrigation customers pay the higher rate on all usage during the summer months.

The first alternative rate design, discussed in detail in the Comprehensive Water Cost of Service Study Report dated August 27, 2018, would introduce a third tier for consumption above 8 Ccf for residential customers and above 170% of average winter consumption for all other customer classes.

INDIVIDUALIZED BLOCK RATE DESIGN

The new individualized block structure would apply the 70% and 170% tier cutoffs to residential customers as well. AWC would be determined by taking the average of a customer's consumption in January, February, and March. However, customers would be assigned a minimum AWC of 4 Ccf per month. Figure 1 presents an example of the development of a hypothetical customer's AWC and corresponding individual tiers. As with the current rate structure, the individual block structure would only apply during the summer months. All off season consumption would be considered Tier 1.

Figure 1: Example of AWC Development

Month	Ccf	AWC	Tier 1 Cutoff	Tier 2 Cutoff	Tier 1 Usage	Tier 2 Usage	Tier 3 Usage
January	**6.0**				6.0		
February	**4.0**	**AWC = (6+4+5) / 3 = 5**			4.0		
March	**5.0**				5.0		
April	2.0				2.0		
May	3.0				3.0		
June	3.0	5.0	3.5	8.5	3.0		
July	8.0	5.0	3.5	8.5	3.5	4.5	
August	10.0	5.0	3.5	8.5	3.5	5.0	1.5
September	5.0	5.0	3.5	8.5	3.5	1.5	
October	5.0				5.0		
November	4.0				4.0		
December	2.0				2.0		

Figure 2 shows the average Tier 1 and 2 cutoffs for each customer class, though it is important to remember that all customers will have unique tier cutoffs.

Figure 2: Average Tier Cutoffs by Customer Class

	Average AWC (Ccf)	Average Tier 1 Cutoff (70% of AWC)	Average Tier 2 Cutoff (170% of AWC)
Residential	5.48	3.83	9.31
Commercial	21.61	15.13	36.74
Large Commercial	2032.48	1422.73	3455.21
Master Meter	28.32	19.83	48.15

Figure 3 shows the percentage amount of consumption that would fall in each tier for each customer class.

Figure 3: Consumption per Tier

	Residential	Commercial	Large Commercial	Master Meter
Tier 1	80.05%	81.84%	83.03%	88.36%
Tier 2	11.04%	11.66%	15.65%	9.97%
Tier 3	8.91%	6.50%	1.32%	1.67%

Given this distribution of consumption, Raftelis recommends retaining existing Tier 1 and Tier 2 rates and setting the new third tier rate at double the second tier rate. Figure 3 shows a forecast of proposed rates.

Figure 4: Proposed Rate Forecast

Inside City	**2018**	**2019**	**2020**	**2021**	**2022**
Residential					
Tier 1 (0 to 70% AWC)	$ 2.79	$ 2.79	$ 2.93	$ 3.08	$ 3.24
Tier 2 (71 to 170% AWC)	3.91	3.91	4.11	4.32	4.54
Tier 3 (Above 170% AWC)	-	7.82	8.22	8.64	9.08
Commercial					
Tier 1 (0 to 70% AWC)	2.63	2.63	2.77	2.91	3.06
Tier 2 (71 to 170% AWC)	3.91	3.91	4.11	4.32	4.54
Tier 3 (Above 170% AWC)	-	7.82	8.22	8.64	9.08
Large Commercial					
Tier 1 (0 to 70% AWC)	2.45	2.63	2.77	2.91	3.06
Tier 2 (71 to 170% AWC)	3.91	3.91	4.11	4.32	4.54
Tier 3 (Above 170% AWC)	-	7.82	8.22	8.64	9.08
Master Meter					
Tier 1 (0 to 70% AWC)	2.79	2.79	2.93	3.08	3.24
Tier 2 (71 to 170% AWC)	3.91	3.91	4.11	4.32	4.54
Tier 3 (Above 170% AWC)	-	7.82	8.22	8.64	9.08

Per City ordinance, outside city rates and water district rates would be set at 133% and 115% of inside city rates.

CUSTOMER IMPACTS

The following Figures show the impact of the new rate structure and revenue increases on the typical water bill of an inside city residential customer with a 5/8" meter with varying levels of usage during the summer period, assuming the average tier cutoffs shown in Figure 2.

Figure 5: 5 Ccf Monthly Usage

	2018	2019	2020	2021	2022	2023
Fixed Charge	$ 9.75	$ 9.75	$ 10.24	$ 10.76	$ 11.30	$ 11.87
Volume Charge						
Tier 1 (0 to 70% AWC)	5.58	10.70	11.24	11.81	12.43	13.08
Tier 2 (71 to 170% AWC)	11.73	4.56	4.79	5.03	5.29	5.56
Tier 3 (Above 170% AWC)		-	-	-	-	-
Total	$ 27.06	$ 25.00	$ 26.26	$ 27.60	$ 29.01	$ 30.50
		-7.59%	*5.04%*	*5.10%*	*5.11%*	*5.14%*

Figure 6: 10 Ccf Monthly Usage

	2018	2019	2020	2021	2022	2023
Fixed Charge	$ 9.75	$ 9.75	$ 10.24	$ 10.76	$ 11.30	$ 11.87
Volume Charge						
Tier 1 (0 to 70% AWC)	5.58	10.70	11.24	11.81	12.43	13.08
Tier 2 (71 to 170% AWC)	31.28	21.42	22.52	23.67	24.87	26.13
Tier 3 (Above 170% AWC)		5.37	5.64	5.93	6.23	6.55
Total	$ 46.61	$ 47.24	$ 49.64	$ 52.17	$ 54.83	$ 57.63
		1.35%	*5.07%*	*5.11%*	*5.10%*	*5.10%*

Figure 7: 15 Ccf Monthly Usage

	2018	2019	2020	2021	2022	2023
Fixed Charge	$ 9.75	$ 9.75	$ 10.24	$ 10.76	$ 11.30	$ 11.87
Volume Charge						
Tier 1 (0 to 70% AWC)	5.58	10.70	11.24	11.81	12.43	13.08
Tier 2 (71 to 170% AWC)	50.83	21.42	22.52	23.67	24.87	26.13
Tier 3 (Above 170% AWC)		44.47	46.74	49.13	51.63	54.25
Total	$ 66.16	$ 86.34	$ 90.74	$ 95.37	$ 100.23	$ 105.33
		30.50%	*5.09%*	*5.11%*	*5.10%*	*5.09%*

COMPARISON TO SIMILAR COMMUNITIES

Figures 8 through 10 compare bills for 5 Ccf, 10 Ccf, and 15 Ccf of water consumption in similarly sized communities in the region and major cities in Missouri at current 2018 rates with a typical bill of an inside city residential customer with a 5/8" meter during the summer period under the proposed individualized block structure and average tier cutoffs.

Figure 8: 5 Ccf Bill in Similar Communities

Figure 9: 10 Ccf Bill in Similar Communities

Figure 10: 15 Ccf Bill in Similar Communities

COST OF SERVICE RECOVERY

Figure 11 presents a comparison of the cost of service of each customer class and service area, the amount of revenue recovered from each class under existing rates, and the amount of revenue to be recovered under the proposed individual block rate structure. Determination of the cost of service is discussed in more detail in the Comprehensive Water Cost of Service Study Report dated August 27, 2018.

Figure 11: Cost of Service Comparison

	Cost of Service	Revenue at Current Rates	COS Recovery	Revenue at Individual Block Rates	COS Recovery
Inside City					
Residential	$ 12,120,265	$ 13,004,709	107.30%	13,250,329	109.32%
Commercial	3,889,758	3,698,195	95.08%	3,850,873	99.00%
Large Commercial	2,646,500	2,056,001	77.69%	2,205,890	83.35%
Master Meter	1,117,125	1,027,332	91.96%	1,044,388	93.49%
Residential Irrigation	369,663	214,130	57.93%	283,102	76.58%
Commercial Irrigation	2,000,074	1,038,213	51.91%	1,340,786	67.04%
Airport	14,198	14,942	105.24%	14,942	105.24%
Total	$ 22,157,583	$ 21,053,522	95.02%	$ 21,990,311	99.25%
Outside City					
Residential	$ 323,528	$ 510,085	157.66%	519,597	160.60%
Commercial	21,831	40,142	183.88%	41,563	190.39%
Large Commercial	-	-		-	-
Master Meter	25,410	26,755	105.30%	27,367	107.70%
Residential Irrigation	697	674	96.79%	719	103.16%
Commercial Irrigation	1,129	3,761	333.23%	3,800	336.71%
Total	$ 372,594	$ 581,417	156.05%	$ 593,045	159.17%
Water District					
Residential	$ 557,323	$ 579,838	104.04%	597,205	107.16%
Commercial	36,160	39,804	110.08%	41,870	115.79%
Large Commercial	-	-		-	-
Master Meter	117,752	95,800	81.36%	98,848	83.95%
Residential Irrigation	6,733	1,418	21.07%	2,431	36.10%
Commercial Irrigation	10,638	4,815	45.27%	6,194	58.23%
Total	$ 728,606	$ 721,676	99.05%	$ 746,549	102.46%
Public Fire Protection	$ 958,444	$ 929,181	96.95%	$ 929,181	96.95%
Total System	$ 24,217,228	$ 23,285,796	96.15%	$ 24,259,086	100.17%