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February 10, 2017

Mr. Fred Castles III
Chester Metropolitan District
155 Wylie Street
Chester, SC 29706

Dear Mr. Castles:

Raftelis Financial Consultants, Inc. ("RFC") has completed its assignment to develop cost justified Water Capital Recovery Fees ("CRF") for consideration by the Chester Metropolitan District ("District"). Our analysis focused on reviewing the fixed asset information to determine the cost of capacity for the District. This letter documents the results of the various analyses completed by RFC and our recommendations for implementing CRF's to be charged to new customers connecting to the water system.

Background

CRF's (also known as System Development Charges, Capacity Fees, Facility Investment Fees, or Impact Fees) are defined as one-time charges assessed against new development as a way to recover a proportional share of the costs of capital facilities constructed to provide service capacity for new customers connecting to the water and wastewater utility systems. Typically, the cost basis for setting CRF's is based on the major system components, or core system assets, that are necessary to serve, and that provide benefit to all customers. These components typically include reservoirs, water treatment plants, storage tanks, and major water transmission lines.

In general, RFC recommends that CRF's should be developed to be consistent with the Rational Nexus test established in courts at a national level. The Rational Nexus test requires that: 1) the need for development fees is a result of new growth; 2) the amount of the fee does not exceed the reasonable cost to provide capacity to accommodate growth; and 3) the funds collected must be adequately earmarked for the sufficient benefit of new customers required to pay the fee.

There are two approaches for calculating water development fees that are recognized in the industry as cost-justified[1] and meet the requirement of the Rational Nexus standard applied by the courts. The two approaches are the System Buy-In Approach and the Marginal Incremental Approach.

[1] See the AWWA manual M26 – Water Rates and Related Charges, Chapter 3: System Development Charges, pp.19-33.

The System Buy-In Approach is most appropriate in cases where the existing system assets provide extra capacity to provide service to new customers (which is consistent with the situation at the District). This approach calculates a fee based upon the proportional cost of each user's share of existing plant capacity. The cost of the facilities is based on fixed assets records and usually includes escalation of the depreciated value of those assets to current dollars. As previously noted, core system assets that provide benefit to all customers are included, such as water treatment plants, water reservoirs (storage tanks), major water transmission mains, and pump stations. Excluded from the calculation are costs associated with distribution lines or local service lines that are dedicated to serving existing customers.

Calculation of Capacity Fees

For the current CRF calculation, it was determined that adequate capacity exists in the water treatment plant facility and in major trunk water transmission lines to address expected demand from new customers over the short-term (at least 5-year) planning horizon. As a result, the System Buy-In approach is the more appropriate methodology to use for the water CRF.

To perform the CRF calculation, RFC requested and was provided with the following data from District staff:

- Water fixed asset data, as of July 31, 2016;
- Outstanding utility debt and associated debt service;
- Proposed capital projects and construction work in progress ("CWIP") that are necessary to maintain existing and/or expand capacity;
- Contributed capital and grant-funded capital;
- Quantity of lines / mains by size (pipe diameter);
- System peaking factor for water; and
- System water loss factor.

Summary of Results

Using the System Buy-In approach, RFC calculated the estimated cost, or investment in, the current capacity available to provide water utility services to existing and new customers. This analysis was based on a review of fixed asset records and other information as of June 30, 2016, the end of the most recent fiscal year. The depreciated value of the assets is first adjusted, or escalated, to reflect an estimated replacement cost to determine the "replacement cost new less depreciation" (RCNLD) value for the assets. The asset values were adjusted using the Handy-Whitman Index, an index that measures cost changes in various infrastructure assets relevant to water and wastewater utilities. The analysis included core assets already under construction but not yet booked to fixed assets. The RCNLD value was further adjusted to address other considerations. All assets contributed by or paid for by developers, or assets that were grant funded, were excluded from the calculation since these costs were not "paid" by the existing customers.

Also, the outstanding principal on funds borrowed to construct the core assets is deducted in order to ensure that new customers are not being double charged for these costs. These adjustments for debt service were necessary to ensure that customers would not potentially be paying for the same assets twice, once through the CRF and then again through the debt service costs recovered from user rates and charges. These adjustments are also necessary to ensure compliance with the Rational Nexus test.

At the end of the analysis, the cost basis, or investment, in core system assets is divided by the capacity provided by those assets to determine a basic unit measure of cost per gallon per day (GPD) for water capacity, as shown in Exhibit 1. Additional details on how this value was calculated are provided in the Schedules from the CRF Model in the Appendix.

Exhibit 1 – Cost per GPD of Core Utility Assets

	Year End FY2016
Adjusted RCNLD Cost Basis	$ 10,965,460
Total Effective Capacity (gallons)	5,500,000
Cost per gallon per day	$ 1.994

This measure becomes the basic building block or starting point for determining the maximum cost-justified level of the water CRF's. Fees for different types of customers are based on this cost of capacity multiplied by the amount of capacity needed to serve each type or class of customer. Since the vast majority of customers are single-family residential customers, connected using the smallest meter size (5/8 or ¾ inch), this customer class becomes the starting point for calculating the CRF's. The next step is to define the level of demand associated with a typical, or average, residential customer, often referred to as an Equivalent Residential Unit, or ERU. The level of demand associated with a typical residential customer is built up based on a number of factors and assumptions, as shown in Exhibit 2.

Exhibit 2: Water Demand per ERU

Water Usage per ERU	
GPD per ERU	300.00
Water Loss Factor	1.25
System Peaking Factor	1.40
GDP per ERU	525.00

Note that demand for water service includes a peak demand factor, since water infrastructure must be sized to meet that level of demand. Additional information in support of each of this demand factor and other assumptions is provided below:

- **GPD per ERU** – For planning purposes, and for calculating committed capacity at treatment plants, state guidelines specify expected average usage of 240 GPD for a 2-bedroom single family home and 360 GPD for a 3-bedroom home. For calculating the CRF for a typical residential customer or ERU, an average of 300 GPD was assumed for the District.
- **System Peaking Factor** – The system peaking factor is measured as the ratio between maximum day production and average day production at the water treatment plants. Based on plant production data for a 12-month period (November 2015 through October 2016), the system peaking factors was calculated to be 1.40. Compared to other regional utility systems, this peaking factor is fairly low.
- **Water Loss Factor** – The water loss factor includes unaccounted for water losses (e.g. leaks, slow meters, theft, etc.), and water losses that are accounted for but not billed (e.g. line flushing, fire protection, etc.). Based on input from District staff, this factor was determined to be 25% of produced water. Given the age and maintenance history of the District's system, this level of lost water is not unusual or alarming.

Assessment Methodology

The analysis provides a calculation of the maximum cost justified level of the fees that could be charged for each meter size and/or customer type. For single-family residential customers, the calculation of the CRF is based on the cost per gallon per day multiplied times the number of gallons per day required to serve each ERU, as shown below in Exhibit 3. For multi-family residential customers (e.g. apartment buildings or condos), the CRF can be based on meter size (as discussed below), or by using an adjustment factor to account for the difference in the level of average usage between single-family homes and individual apartments or condos.

Exhibit 3 – Calculated Maximum Residential CRF's

Water Fee per ERU		
Cost per GPD	$	1.99
GPD per ERU		525
Total Water Fee per ERU	$	1,046.70

For customers with larger meters, the fees for the smallest residential meter are scaled up by the ratio of meter capacities. This provides a straight forward approach for assessing customers with larger meters that is easy to administer and provides reasonable equity for most new customers. However, the level of flows assigned to a 5/8" or 3/4" meter, based on the ERU concept, is well below the actual capacity of that meter size. As a result, since larger meters are scaled up from

this starting point, there is a potential to understate the flows for customers with larger meters. To address this issue, RFC recommends that the District adopt a policy that provides greater flexibility in how customers with larger meters are assessed a CRF. Specifically, for customers requesting a meter three inches in diameter or greater, the District should retain the option of requesting an engineering analysis of expected water usage. This engineering analysis should provide an estimate of expected peak day and average day water usage. Peak day demand (GPD) would be adjusted by the lost water factor to determine total demand and then multiplied by the cost of water capacity ($1.99 per GPD) to determine the water CRF.

However, as shown in Exhibit 4, the CRF for most customers would be scaled by meter size for meters ranging from 5/8 inches to 10 inches (although currently the smallest meter size being installed is ¾ inch). For these calculations, the CRF's have been rounded to the nearest five dollars. See the schedules in the Appendix for additional information.

Exhibit 4 – Calculated Maximum Capacity Fees by Meter Size

Meter Size	Capacity Ratio	Water CRF*
3/4" & 5/8"	1.0	$ 1,045
1	1.7	1,740
2	5.3	5,575
4	16.7	17,415
6	33.3	34,835
8	53.3	55,735
10	80.0	83,600
12	176.7	184,615

* Rounded to nearest $5 and cost per GPD of $1.994

It is important to point out that the results shown above in Exhibit 4 are based on the maximum cost-justified amount for the District's Capacity Fees, as presented in this report. There is no requirement that this maximum amount has to be charged, and the calculation only sets an upper limit on the amount that can be justified. The District must make a determination of the amount to be charged based on considerations such as potential revenues to be generated, possible negative impacts on development, maintaining a competitive pricing structure with other regional utilities, and others. However, if the District decides to charge a lesser amount, it is important that all customers be assessed a comparable fee to avoid criticism that the fees may be arbitrary or discriminatory. This goal can be achieved by determining a proportional amount of the calculated cost per gallon per day from Exhibit 1 to be charged, and then scaling all the charges by the same proportional amount. In other words, if the District decides to discount the fees by 10%, all customers, regardless of whether they are assessed by meter size or based on an engineering estimate, should receive the same level of discount applied to the cost per gallon per day of

capacity. Also, in some cases it may make sense to start with a discounted cost per gallon be day, and then decrease the amount of the discount over several years to increase the level of the Capacity Fees over time. Otherwise, RFC generally recommends updating the fee calculations every three to five years, or whenever significant investments have been made in new water assets, to ensure that the fees remain defensible or to determine if appropriate justification exists for increasing the level of the Capacity Fees.

Since many communities like to compare their Capacity Fees to other regional utilities, some information is provided below in Exhibit 5. It should be noted that since different communities or utilities may use different assessment approaches and/or may charge more than one type of fee, making direct comparisons may be difficult and should be done with care.

Exhibit 5 – Capacity Fee Comparison with Other Regional Utilities

Utility/Community	Water - for 5/8" meter or 1 REU			Method of Assessment
	Tap Fees	Capacity Fees	Total	
City of Rock Hill	$ 170	$ 1,150	$ 1,320	Meter Size
Lancaster County Water and Sewer		$ 1,000	$ 1,000	Meter Size
Columbia	$ 1,450	$ 1,062	$ 2,512	Meter Size
Spartanburg Water	$ 765	$ 300	$ 1,065	Meter Size
City of Cayce		$ 465	$ 465	REU
Lexington - Joint Municipal Water and Sewer Commission	$ 387	$ 2,250	$ 2,637	Meter Size
Benchmark Average	**$ 758**	**$ 1,234**	**$ 1,945**	

We appreciate the opportunity to have provided assistance to the Chester Metropolitan District. Please contact me at your convenience if you have any questions regarding this report. We look forward to continuing our relationship with the Chester Metropolitan District.

Very truly yours,

RAFTELIS FINANCIAL CONSULTANTS, INC.

Alexis F. Warmath
Vice President

Appendix

Supporting Schedules
From the
Capital Recover Fee Model

Chester Metropolitan District
Utility Capacity Fee Analysis
Water Capacity Fee Calculation
Schedule 1

Asset Description	Net Book Value	RCNLD
Unknown	$ 105,298	$ 209,389
2016 Increases	555,501	555,501
Assets Under Construction	161,928	350,023
CIP - Columbia St	3,900	4,436
CIP - Day Tank Project	182,481	306,503
CIP - Discharge Pipe at Filter Plant	10,730	13,190
CIP - FMHA - Great Falls Water	1,831,819	3,450,988
CIP - FP Chemical Tank	15,500	15,859
CIP - Gayle Mill water line rerouting	2,988	3,798
CIP - GF Patching Project	26,000	26,602
CIP - Hilltop Trailer Park	2,261	2,384
CIP - Meter Building	500	512
CIP - Route 9 West Line replacement	29	33
Computer Software	3,617	3,700
Depot Building	156,504	266,647
Equipment	117,271	131,142
Filter Plant	2,103,477	3,350,435
Filter Plant Equipment	274,383	360,180
GIS Project	71,418	84,109
Land and Land Rights	184,252	184,252
Richburg Water Tank Project	487,028	924,348
Sludge Operation Capital	349,453	910,489
Structures and Distribution Lines	2,278,160	6,227,760
Total	$ 8,924,498	$ 17,382,281

Less Adjusted Contributed Assets (1)	$	(5,330,721)
Less NPV of Outstanding Principal Debt (2)		(2,086,099)
Plus Uncommitted Fund Balances		1,000,000
Adjusted RCNDL	$	10,965,460
Total Capacity (MGD) (3)		5.50
Net Cost per Gallon per Day	$	1.99

1) Contributed capital was adjusted for depreciation and replacement costs
2) Principal balances were discounted at a rate of 4% to calculate present value
3) Although the District's rated capacity is 7.0 MGD, a portion of the capacity is non-functional for a significant portion of the year, limiting the functional capacity to 5.50 MGD.

Chester Metropolitan District
Capital Recovery Fee Analysis
Water Capacity Fee Calculation
Schedule 1 (Continued)

		FY 2017
Water Capacity Fee Calculation (Continued)		System Buy-In
Average Residential Daily Usage (gal/day) (4)		300.00
System Peaking Factor Adjustment (5)		1.40
System Water Loss Adjustment (6)		1.25
Adjusted Average Residential Usage		525.00
Calculated Capacity Fee per ERU		**$ 1,046.70**
Fees by Meter Size	Ratio (7)	
3/4" & 5/8"	1.0	$ 1,046.70
1"	1.7	1,744.51
2"	5.3	5,582.42
4"	16.7	17,445.05
6"	33.3	34,890.10
8"	53.3	55,824.16
10"	80.0	83,736.24
12"	176.7	184,917.54

4) For planning purposes and for calculating committed capacity at treatment plants, state guidelines specify expected average usage of 240 GPD for a 2-bedroom single family home and 360 GPD for a 3-bedroom home. For calculating the CRF for a typical residential customer or ERU, an average of 300 GPD was assumed for the District.

5) The system peaking factor is measured as the ratio between maximum day production and average day production at the water treatment plants. Over the last two years, system peaking factors have averaged 1.40.

6) The water loss factor includes unaccounted for water losses (e.g. leaks, slow meters, theft, etc.), and water losses that are accounted for but not billed (e.g. line flushing, fire protection, etc.). Based on input by District staff, this factor was determined to be 25% of produced water.

7) These capacity ratios are developed from meter flow capacity information provided in the AWWA M-6 Meter Manual. The smallest meter installed for new customers by the District is a ¾" meter. New customers with larger meters, including commercial and industrial customers, will be assessed a higher fee based on the ratio of capacity for different meter sizes.