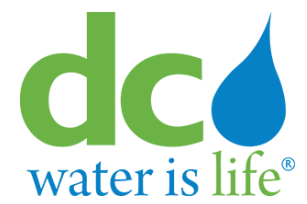


DC Water

Cost of Service Study

Final Report / March 5, 2020





March 5, 2020

Syed Khalil
Director of Rates and Revenue
DC Water
1385 Canal St., SE
Washington, DC 20003

Subject: FY 2021 Cost of Service Study Report

Dear Mr. Khalil,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Cost of Service Study (COS Study) Report for DC Water. Over the past several months, we have worked closely with DC Water completing this engagement. We would like to take this opportunity to thank you and your staff for the efforts and participation you put forth during the Study.

The major tasks of this COS Study included the following:

- Revenue Sufficiency Model (Model) – Raftelis conducted a revenue sufficiency analysis to independently forecast operating and capital costs along with units of service for FY 2021; this served as the test year. We compared our forecasted revenue to the Financial Planning Model developed by DC Water staff to identify any revenue shortfalls for the test year.
- Cost of Service / Rate Equity Analysis – Raftelis reviewed and updated the cost of service allocation factors to ensure that proposed rates are equitable and that no cross subsidies exist between the various water and wastewater customer classes.

The Report summarizes the key findings and recommendations related to the financial plan and the proposed cost of service-based rates for fiscal years (FY) 2021-2022.

It has been a pleasure working with you, and we thank you and DC Water staff for the support provided during the course of this study.

Sincerely,

Jon Davis
Executive Vice President

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1. Executive Summary

1.1. Background of the Study

DC Water engaged Raftelis to perform a Cost of Service Study (COS Study). To meet the needs of DC Water's Task Order objectives, Raftelis prepared the following deliverables:

- Revenue Sufficiency Model (Model) – Raftelis conducted a revenue sufficiency analysis to independently forecast operating and capital costs along with units of service for FY 2021; this served as the test year. We compared our forecasted revenue to the Financial Planning Model developed by DC Water staff to identify any revenue shortfalls for the test year.
- Cost of Service / Rate Equity Analysis – Raftelis reviewed and updated the cost of service allocation factors to ensure that proposed rates are equitable and that no cross subsidies exist between the various water and wastewater customer classes.

A summary of the methodology and findings from the Revenue Sufficiency and COS Study is included in this Executive Summary.

1.2. Revenue Sufficiency Model

There are three important forecasts in the revenue sufficiency analysis: operating expenditures, capital expenditures, and units of service. These three schedules project how much revenue DC Water will generate.

Units of service include number of customer accounts, billed water consumption, and equivalent residential units (ERUs). To forecast units of service in the most accurate manner, Raftelis reviewed billed water, customer accounts, and consumption data from FY 2018 through FY 2019.

Since FY 2014, billable water flows have decreased by an average annual rate of approximately 1.5%. This has occurred even though DC Water's customer base has increased slightly over the same period. The trend in declining consumption is likely related to a combination of the expanded use of low-flow fixtures and a broader awareness of resource conservation. This is consistent with per capita reduction in consumption Raftelis has seen in other utilities with similar demographics and service area characteristics. In terms of Equivalent Residential Units (ERUs), which are used to calculate revenue from the Clean River's Impervious Area Charge (CRIAC), we have assumed a revised count consistent with DC Water's most recent update to its impervious area database.

Based on projected consumption, accounts, and ERUs in FY 2019, Raftelis' calculated revenue from operations was consistent with DC Water's Financial Plan. In the aggregate, the variance in revenue when compared to the Financial Plan was less than 0.3%.

Our analysis found that DC Water has consistently been able to control operating expenditures at or below budgeted levels. Therefore, it was determined that budgeted operating expenditures provided a prudently conservative forecast for our sufficiency analysis. Capital expenditures consisted mainly of debt service and coverage requirements.

The revenue sufficiency forecasts for FY 2021 and FY 2022 showed revenue lower than DC Water's Financial Plan by \$1,583,770 and \$1,983,557, respectively. A discrepancy in user revenue data is expected, as Raftelis calculates revenue using raw consumption data, which usually diverges from the Financial Plan estimate. Furthermore, Raftelis

used slightly different calculation methods for estimating future debt issuances in FY 2022, which accounts for the small delta for total debt service in FY 2022. For both test years, Raftelis' totals diverge less than 0.3% from the Financial Plan totals. A comparison of total revenues and expenses is provided in Table E- 1.

Table E- 1: Comparison of Projected Revenue and Expenses

| | DC Water Financial Plan (2021) | Raftelis Model (2021) | Delta |
|--|-----------------------------------|-----------------------|---------------|
| Revenue | | | |
| Operating | \$689,092,199 | \$687,508,429 | \$(1,583,770) |
| Non-Operating | \$44,235,752 | \$44,235,752 | \$ - |
| Total: Revenue | \$733,327,951 | \$731,744,181 | \$(1,583,770) |
| Expenses | | | |
| Operating | \$365,658,415 | \$365,658,415 | \$ - |
| Debt Service | \$222,267,822 | \$222,267,822 | \$ - |
| Cash Financed Capital Improvements | \$30,355,334 | \$30,355,334 | \$ - |
| Total: Expenses | \$618,281,571 | \$618,281,571 | \$ - |
| Net Cash Available for PAYGO Capital & Other Cash Needs | \$115,046,380 | \$113,462,610 | \$(1,583,770) |

| | DC Water Financial Plan (2022) | Raftelis Model (2022) | Delta |
|--|-----------------------------------|-----------------------|---------------|
| Revenue | | | |
| Operating | \$714,940,216 | \$712,542,456 | \$(2,397,760) |
| Non-Operating | \$50,927,455 | \$50,927,455 | \$ - |
| Total: Revenue | \$765,867,671 | \$763,469,911 | \$(2,397,760) |
| Expenses | | | |
| Operating | \$376,303,303 | \$376,303,303 | \$ - |
| Debt Service | \$240,497,131 | \$240,082,928 | \$(414,203) |
| Cash Financed Capital Improvements | \$37,829,708 | \$37,829,708 | \$ - |
| Total: Expenses | \$654,630,142 | \$654,215,939 | \$(414,203) |
| Net Cash Available for PAYGO Capital & Other Cash Needs | \$111,237,529 | \$109,253,972 | \$(1,983,557) |

Raftelis' model results are predicated on several assumptions. A more thorough discussion of these assumptions can be found in Section 3.3 of this report. At this time, Raftelis does not see a need to alter the timing of rate increases proposed in DC Water's Financial Plan.

1.3. Cost of Service and Rate Equity

Raftelis was asked if the proposed rates represented the true cost of service. In order to assure that there was no subsidization within the retail customer base, we developed test year revenue requirements and allocated them to existing rate structure components using reasonable allocation factors. Dividing the allocated revenue requirement by the units of service yields the COS-based rates for all categories but water. Raftelis used a more detailed cost of

service analysis, discussed in detail in the body of the report, to calculate DC Water’s two-tiered water rates. Table E- 2 presents the allocation of test year revenue requirements to the water volume charge, metering fee, wastewater volume charge, and the CRIAC charge.

Table E- 2: Cost of Service Calculation and Proposed Rates

| | FY 2021 | Water | Meter | Wastewater | CRIAC |
|---|---------------|---------------|---------------|---------------|--------------|
| Retail Revenue Requirements | \$548,966,190 | \$137,086,212 | \$15,404,519 | \$298,517,944 | \$97,957,515 |
| Percent of Retail Revenue Requirements | 100% | 25.0% | 2.8% | 54.4% | 17.8% |
| Units of Service | | 31,825,135 | 258,970 | 30,575,132 | 418,364 |
| Units | | Ccf | Equiv. Meters | Ccf | ERUs |
| Calculated Unit Cost | | \$4.3075 | \$59.4838 | \$9.7634 | \$234.1445 |

| | FY 2022 | Water | Meter | Wastewater | CRIAC |
|---|---------------|---------------|---------------|---------------|--------------|
| Retail Revenue Requirements | \$581,062,535 | \$142,805,804 | \$24,082,852 | \$321,804,229 | \$92,369,650 |
| Percent of Retail Revenue Requirements | 100% | 24.6% | 4.1% | 55.4% | 15.9% |
| Units of Service | | 31,504,004 | 258,970 | 30,249,425 | 418,364 |
| Units | | Ccf | Equiv. Meters | Ccf | ERUs |
| Calculated Unit Cost | | \$4.5329 | \$92.9948 | \$10.6384 | \$220.7880 |

| | FY 2020 (Existing) | FY 2021 (Proposed) | FY 2022 (Proposed) | FY 2021 | | FY 2022 | |
|---------------------------------------|--------------------|--------------------|--------------------|---------------|--------------|---------------|--------------|
| | | | | \$ Difference | % Difference | \$ Difference | % Difference |
| Water Volumetric Residential – Tier 1 | \$3.06 | \$3.49 | \$3.63 | \$0.43 | 14.1% | \$0.14 | 4.0% |
| Water Volumetric Residential – Tier 2 | \$4.10 | \$4.50 | \$4.74 | \$0.40 | 9.8% | \$0.24 | 5.3% |
| Water Volumetric – Multi-family | \$3.54 | \$3.96 | \$4.15 | \$0.42 | 11.9% | \$0.19 | 4.8% |
| Water Volumetric – Non-Residential | \$4.25 | \$4.65 | \$4.91 | \$0.40 | 9.4% | \$0.26 | 5.6% |
| Sewer Volumetric | \$8.89 | \$9.77 | \$10.64 | \$0.88 | 9.9% | \$0.87 | 8.9% |
| Metering Fee | \$3.86 | \$4.96 | \$7.75 | \$1.10 | 28.5% | \$2.79 | 56.3% |
| Clean Rivers IAC | \$20.94 | \$19.52 | \$18.40 | \$(1.42) | -6.8% | \$(1.12) | -5.7% |
| WSRF | \$6.30 | \$6.30 | \$6.30 | \$ - | 0% | \$ - | 0% |
| | | | | | | | |

2. Introduction

DC Water engaged Raftelis to provide consulting services for a Revenue Sufficiency and COS Study. The main purpose of the Study was to review DC Water's existing Financial Planning Model (Financial Plan) and to calculate cost of service-based rates for DC Water's upcoming rate adoption period of FY 2021-FY 2022. The Study was designed to ensure that there were no cross-subsidies among the various water and wastewater retail customer classes.

Raftelis conducted a revenue sufficiency analysis to independently forecast operating and capital costs along with units of service for FY 2021 and FY 2022; these two years served as test years. Raftelis compared their independent financial forecast to the forecast in DC Water's Financial Plan, identifying any revenue discrepancies for the test years. Raftelis reviewed and updated the cost of service allocation to ensure that proposed rates are equitable and that no cross subsidies exist between the various water and wastewater customer classes.

2.1. Deliverables

Raftelis proposed to prepare three deliverables for this Study:

1. A revenue sufficiency/cost of service model;
2. A report to document our study processes, results, and recommendations; and
3. A presentation to summarize the results of the study for the Retail Rates Committee of the DC Water Board.

Deliverables were presented in draft form to Staff for review and comment.

3. Revenue Sufficiency Analysis

Raftelis' revenue sufficiency analysis was intended to provide an independent forecast of revenues and expenditures for comparison with DC Water's Financial Plan.

3.1. Revenue Sufficiency Model

Raftelis updated a Revenue Sufficiency Model (Model), which assesses the existing rates and charges against the revenue requirements. The Model includes an independent forecast of operating and capital costs along with an analysis of the billable units of service. The resulting revenues and expenses for the test year are compared against DC Water's Financial Plan. The analysis assumes test years of FY 2021 and FY 2022.

3.1.1. OPERATING EXPENSES

DC Water's actual and projected operating expenses were incorporated into the Model based on information taken from DC Water's Proposed FY 2021 and Projected FY 2022 Budgets. Raftelis has assumed that expenses for all budget categories will increase 4% in FY 2022. Although inflation (as measured by the Consumer Price Index) has been less than 4% over the past several years, the potential for future inflation in excess of 4% is plausible. Due to the commodity-intensive nature of the water and sewer industry, which demands significant amounts of treatment chemicals and electricity, DC Water should re-visit budget escalation estimates annually as part of its financial planning process.

Based on these escalation criteria, Raftelis is projecting overall O&M costs of \$343,286,641 and \$353,585,241, respectively, for test years FY 2021 and FY 2022. These figures do not include expenses related to the payment in lieu of taxes (PILOT) or the right of way (ROW) fee. The forecast of O&M expenses for FY 2021 represents a 5.35% increase compared to FY 2020. Table 1 shows the increase in operating expenses from FY 2020 to FY 2021 and FY 2022.

Table 1: Projected O&M Expenses

| | 2020 | 2021 | 2022 | '20 – '21 Increase |
|--|----------------------|----------------------|----------------------|--------------------|
| Operations | | | | |
| Wastewater Treatment - Operations | \$74,055,430 | \$79,752,999 | \$82,145,589 | 7.7% |
| Wastewater Treatment – Process Engineering | \$6,202,807 | \$7,231,748 | \$7,448,700 | 16.6% |
| Maintenance Services | \$17,405,865 | \$20,075,315 | \$20,677,575 | 15.3% |
| Water Services | \$60,605,029 | \$67,557,015 | \$69,583,726 | 11.5% |
| Pumping/Sewer Services | \$13,612,208 | \$37,970,294 | \$39,109,403 | 178.9% |
| Customer Service | \$18,586,309 | \$20,360,362 | \$20,971,173 | 9.5% |
| Distribution & Conveyance Systems | \$16,761,534 | \$ - | \$ - | -100% |
| Engineering & Technical Services | \$21,137,338 | \$4,495,876 | \$4,630,752 | -78.7% |
| Wastewater Engineering | \$3,416,885 | \$3,355,128 | \$3,455,781 | -1.8% |
| DC Clean Rivers | \$2,339,952 | \$1,000,126 | \$1,030,129 | -57.3% |
| Permit Operations | \$3,172,643 | \$4,165,499 | \$4,290,464 | 31.3% |
| Administration | | | | |
| General Manager | \$4,325,000 | \$4,587,931 | \$4,725,569 | 6.1% |
| Office of the Secretary | \$612,000 | \$631,562 | \$650,509 | 3.2% |
| Internal Audit | \$885,000 | \$742,000 | \$764,260 | -16.2% |
| General Counsel | \$6,222,000 | \$6,643,689 | \$6,843,000 | 6.8% |
| External Affairs | \$2,613,000 | \$2,866,865 | \$2,952,871 | 9.7% |
| Human Capital Management | \$10,029,000 | \$9,769,745 | \$10,062,837 | -2.6% |
| Information Technology | \$10,914,000 | \$10,384,372 | \$10,695,903 | -4.9% |
| Procurement | \$5,809,000 | \$6,327,327 | \$6,517,147 | 8.9% |
| Finance and Budget | \$20,906,000 | \$27,387,717 | \$28,209,348 | 31.0% |
| Administrative Office – Support Services | \$586,000 | \$634,099 | \$653,122 | 8.2% |
| Office of Emergency Management | \$1,407,000 | \$1,497,802 | \$1,542,736 | 6.5% |
| Facilities & Security Management | \$8,930,000 | \$8,661,144 | \$8,920,978 | -3.0% |
| Security | \$7,007,000 | \$7,887,850 | \$8,124,486 | 12.6% |
| Occupational Safety & Health | \$2,182,000 | \$2,335,155 | \$2,405,209 | 7.0% |
| Fleet Management | \$6,130,000 | \$6,965,021 | \$7,173,972 | 13.6% |
| Total | \$325,853,000 | \$343,286,641 | \$353,585,241 | 5.4% |

3.1.2. UNITS OF SERVICE

To project DC Water’s future water revenues, Raftelis analyzed historic billing system data. Raftelis had previously incorporated billing data provided by DC Water Staff from FY 2011 through FY 2017, and Raftelis updated the

forecast with FY 2019 data. The data consisted of billed water usage by customer class and category, the number of water meters by meter size per customer class and category, and impervious area as measured by equivalent residential units (ERUs).

Future water consumption projections in the Model are based on actual FY 2019 usage with adjustments in subsequent years to reflect projected declines in consumption of 1.5% annually in FY 2020-2021 and 1% annually thereafter. These declines in consumption are based on an analysis of historical flow data. Raftelis believes that these reductions are appropriate due to expanded use of low-flow plumbing fixtures and a growing culture of resource conservation. This trend is consistent with the per capita reduction seen in other utilities with similar demographics and service area characteristics.

Based on a projection for eligible Customer Assistance Program (CAP) accounts, Raftelis included a reduction of 288,000 Ccf each year beginning in FY 2021. Raftelis' estimation of CAP accounts in FY 2021-FY 2022 is consistent with the Financial Plan, which incorporates 5,000 eligible CAP accounts and an approximate consumption of 48 Ccf per account, per year.

Projected wastewater flow is populated from actual water billings. However, the commercial wastewater category estimated consumption includes units of service for the water exempt category, which includes the Soldiers Home. Based on input from DC Water Staff, it was determined that the water exempt category is still required to pay for sewer services. The exemption from water service billings is a result of an existing agreement where DC Water maintains water facilities at these locations free of charge. Historical and projected consumption is displayed in Table 2.

Table 2: Historical and Projected Consumption per Class and Category

| | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|--------------------------------|-------------------|-------------------|-------------------|------------------------|------------------------|------------------------|
| Water Consumption | | | | | | |
| Residential Adjusted | 7,023,831 | 6,888,339 | 6,719,213 | 6,346,266 | 6,303,488 | 6,237,573 |
| Residential | 7,108,543 | 6,961,844 | 6,793,773 | 6,691,866 | 6,591,488 | 6,525,573 |
| Tier 1 | 3,722,630 | 3,650,820 | 3,762,759 | 3,534,870 | 3,511,043 | 3,474,328 |
| Tier 2 | 3,301,201 | 3,237,519 | 2,956,454 | 2,811,396 | 2,792,445 | 2,763,245 |
| CAP Accounts | (84,712) | (73,505) | (74,560) | (345,600) ¹ | (288,000) ² | (288,000) ² |
| Commercial | 12,019,443 | 12,248,008 | 11,978,813 | 11,799,131 | 11,622,144 | 11,505,922 |
| Multi-family | 9,013,474 | 8,574,676 | 8,461,956 | 8,335,027 | 8,210,001 | 8,127,901 |
| Municipal | 788,862 | 728,818 | 765,411 | 753,930 | 742,621 | 735,195 |
| Federal | 4,335,937 | 4,339,051 | 4,287,024 | 4,222,719 | 4,159,378 | 4,117,784 |
| D.C. Housing Authority | 765,900 | 800,225 | 811,671 | 799,496 | 787,503 | 779,628 |
| Total Water Consumption | 33,947,447 | 33,579,117 | 33,024,088 | 32,256,568 | 31,825,135 | 31,504,004 |
| <i>% Change</i> | | -1.1% | -1.7% | -2.3% | -1.3% | -1.0% |

1. *Estimated*

2. *Projected*

Customer data from FY 2019 was provided by DC Water Staff and served as the basis for projecting customer growth or decline. Because of low historical growth in accounts, user accounts were projected to remain constant each year. Historical actual and future projected customers are presented in Table 3.

Table 3: Historical and Projected Customer Meters per Class and Category

| Customer Meters | FY 2017 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|--------------------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Commercial | 8,980 | 9,028 | 8,994 | 9,095 | 9,095 | 9,095 |
| Federal | 461 | 459 | 459 | 462 | 462 | 462 |
| DC Housing | 1,128 | 1,130 | 1,124 | 1,127 | 1,127 | 1,127 |
| Municipal | 501 | 517 | 523 | 524 | 524 | 524 |
| Multi-Family | 8,264 | 8,332 | 8,372 | 8,446 | 8,446 | 8,446 |
| Residential | 104,370 | 105,430 | 106,097 | 107,006 | 107,006 | 107,006 |
| Soldier's Home | 3 | 3 | 3 | 3 | 3 | 3 |
| DC Water/Aqueduct | 29 | 32 | 31 | 32 | 32 | 32 |
| Total | 123,736 | 124,931 | 125,603 | 126,695 | 126,695 | 126,695 |

Raftelis also projected ERUs for use in the analysis of the Clean River's Impervious Area Charge (CRIAC). Using a revised ERU count from DC Water's most recent CRIAC Model, Raftelis assumed 420,000 CRIAC units in FY 2021 and in FY 2022, and then reduced this estimate to 418,364 to reflect the fact that Customer Assistance Program (CAP) customers receive a discount on their CRIAC payments.

3.1.3. CAPITAL PLAN FINANCING

Financing for the Capital Plan is consistent with data from the Financial Plan and is displayed in summary in Table 4.

Table 4: Capital Plan Financing

| | 2020 | 2021 | 2022 |
|--|-----------------------|----------------------|------------------------|
| Beginning Balance | \$72,281,343 | \$158,584,153 | \$214,655,413 |
| Sources of Funds | | | |
| Proceeds from Revenue Bonds | \$300,000,000 | \$300,000,000 | \$251,776,000 |
| Environmental Impact Bond Proceeds | \$ | \$ | \$ |
| Proceeds from CP/EMCP/Treasury Notes/Digester Financing Option | \$ | \$ | \$ |
| Proceeds from CP/EMCP/Treasury Notes Pay-Off | \$ | \$ | \$ |
| Capital Equipment Financing | \$ | \$ | \$ |
| System Availability Fee | \$5,775,000 | \$7,700,000 | \$7,700,000 |
| Transfer from Operations - CRIAC | \$29,346,807 | \$49,158,486 | \$52,095,411 |
| Transfer from Operations | \$95,231,149 | \$76,768,823 | \$75,211,997 |
| EPA Grants / DC Reimbursement | \$32,699,670 | \$28,464,170 | \$16,655,170 |
| CSO Grants | \$ - | \$ - | \$ - |
| Wholesale Customer Capital Contributions | \$71,640,000 | \$95,205,000 | \$99,550,000 |
| Interest Income | \$3,831,185 | \$6,364,781 | \$5,381,591 |
| Subtotal: Sources | \$538,523,810 | \$563,661,260 | \$508,370,169 |
| Uses of Funds | | | |
| Water Projects | \$62,163,000 | \$88,677,000 | \$108,878,000 |
| Blue Plains Projects | \$77,536,000 | \$102,976,000 | \$113,378,000 |
| Sanitary Sewer Projects | \$44,933,000 | \$63,926,000 | \$115,541,000 |
| Combined Sewer | \$9,239,000 | \$9,493,000 | \$12,816,000 |
| Combined Sewer Long Term Control Plan | \$162,197,000 | \$147,565,000 | \$179,833,000 |
| Stormwater Projects | \$6,869,000 | \$9,631,000 | \$7,535,000 |
| Non-Process Facilities | \$42,066,000 | \$31,849,000 | \$20,665,000 |
| Washington Aqueduct Division Projects | \$15,515,000 | \$16,266,000 | \$18,572,000 |
| Capital Equipment | \$17,105,000 | \$27,327,000 | \$30,485,000 |
| Meter Replacement / AMR | \$14,598,000 | \$9,880,000 | \$3,305,000 |
| Reimbursement for Prior Capital Expenditures | \$ - | \$ - | \$ - |
| Subtotal: Uses | \$ 452,221,000 | \$507,590,000 | \$611,008,000 |
| Sources Minus Uses | \$86,302,810 | \$56,071,260 | \$(102,637,831) |
| Ending Balance | \$158,584,153 | \$214,655,413 | \$112,017,582 |

DC Water is faced with a significant capital program over the forecast period to address water and wastewater infrastructure needs and system improvements. For the water utility, the primary drivers of the capital program include repair, replacement, and rehabilitation of water distribution system infrastructure; water pumping facility repairs and improvements; continued implementation of the water lead abatement program; water storage facilities repairs and improvements; and capital contributions to the Washington Aqueduct related to water source of supply. For the wastewater utility, the primary drivers of the capital program include improvements at the Blue Plains WWTP, including enhanced nitrogen removal facilities; repair, replacement, and rehabilitation of the collection and conveyance systems; and Environmental Protection Agency (“EPA”) consent decree requirements associated with DC Water’s Long-term Combined Sewer Overflow Control Plan (“CSO LTCP”).

DC Water anticipates that the capital plan will be financed through a mix of proceeds from revenue bonds and commercial paper, federal grants, District of Columbia reimbursements, capital contributions from wholesale wastewater customers, revenues generated internally from rates, and cash reserves. Based on our evaluation, it appears that the Financial Plan provides for sufficient funding of the capital program. Raftelis also evaluated the proposed capital financing structure, with particular attention paid to assumptions related to the cost of financing for long-term revenue bonds. DC Water’s current underlying bond rating from Standard and Poor’s of AAA is an investment grade rating that indicates a strong capability to meet financial obligations. Moody’s carries a rating of Aa1 for DC Water. Based on current market conditions, and assuming DC Water would either insure or fund a debt service reserve for future revenue bonds, the current estimated range of interest rates assumed in the Financial Plan is reasonable and provides a level of conservatism in the forecast. Regardless, DC Water should revise these assumptions, as appropriate, during its annual financial planning process. It is possible that alternative long-term financing options could be utilized which would require an update to the projected debt service repayment assumptions.

3.1.4. DEBT SERVICE

Debt service within the Model is based, in part, on information provided by DC Water’s Financial Advisor and reflected in the Financial Plan. Raftelis calculated FY 2021 debt service based on projected funding needs in the CIP. Specifically, we assumed an additional \$300 million in debt would be issued in FY 2021 with a half-year debt service payment. Full debt service on this projected issuance was assumed to occur in FY 2022. It was assumed another \$251.8 million would be issued in the middle of FY 2022 with a half year debt service payment. Full debt service on this projected issuance was assumed to occur in FY 2023. These assumptions are consistent with the Financial Plan. A summary of the projected debt from is displayed below in Table 5.

Table 5: Projected Debt Service

| | 2021 | 2022 |
|--|----------------------|----------------------|
| <u>Existing Debt</u> | | |
| Senior Debt | | |
| 1998 Revenue Bonds | \$23,364,975 | \$23,364,850 |
| Series 2014A Revenue Bond | \$16,849,000 | \$16,849,000 |
| Series 2017A Revenue Bond | \$4,591,000 | \$4,591,000 |
| Series 2017B Revenue Bond | \$13,257,000 | \$13,255,000 |
| Series 2018A Revenue Bond | \$5,000,000 | \$5,000,000 |
| Series 2018B Revenue Bond | \$13,324,250 | \$13,326,000 |
| Subtotal: Senior Debt | \$76,386,225 | \$76,385,850 |
| Subordinated Debt | | |
| Jennings Randolph | \$805,192 | \$805,191 |
| Commercial Paper | \$1,500,000 | \$1,500,000 |
| EMCP | \$1,500,000 | \$1,500,000 |
| Series 2010A Subordinate Bond | \$15,564,107 | \$15,510,750 |
| Series 2012A, B-1, B-2, C Subordinate Bond | \$20,086,700 | \$20,087,200 |
| Series 2014B Subordinate Bond | \$2,497,698 | \$3,250,000 |
| Series 2014C Subordinate Bond | \$30,348,200 | \$30,392,700 |
| Series 2015A Subordinate Bond | \$11,926,900 | \$11,922,900 |
| Series 2015B Subordinate Bond | \$12,806,363 | \$12,806,363 |
| Series 2016A Subordinate Bond | \$17,039,013 | \$17,039,013 |
| Series 2016B Subordinate Bond | \$835,000 | \$812,500 |
| Series 2019A Revenue Bond | \$4,708,700 | \$4,708,700 |
| Series 2019B Revenue Bond | \$2,916,000 | \$2,916,000 |
| Series 2019C Revenue Bond | \$1,741,338 | \$1,741,338 |
| Series 2019D Revenue Bond | \$12,308,220 | \$12,304,572 |
| Subtotal: Subordinate Debt | \$136,583,430 | \$137,297,225 |
| Total: Existing Debt | \$212,969,655 | \$213,683,075 |
| <u>Planned Debt</u> | | |
| WASA Bonds – Planned | \$9,298,167 | \$26,399,853 |
| Total: Planned Debt | \$9,298,167 | \$26,399,853 |
| Total Debt | \$222,267,823 | \$240,082,928 |
| % Change | | 8.0% |

3.2. Comparison to Forecast

DC Water's Financial Plan projects surplus revenues of \$115,046,380 in FY 2021 and \$111,237,529 in FY 2022. The variances of \$(1,583,770) in FY 2021 and \$(2,397,760) in FY 2022 when compared to Raftelis' forecast of a surplus of \$113,462,610 and \$109,253,972, respectively, is a result of several factors which are discussed below. While individual variances are highlighted in the following sections, a complete comparison schedule vs. the Financial Plan is also found in the Appendix.

3.2.1. OPERATING REVENUE

As discussed previously in Section 3.1.2, Raftelis has estimated billable water and sewer flows based on FY 2018 and FY 2019 data with adjustments in subsequent years to reflect an anticipated decline in consumption. As a result, Raftelis is projecting operating revenues of \$687,508,429 in FY 2021, which includes \$605,522,907 in retail customer billing revenues and \$81,985,522 in wholesale revenues. Raftelis is projecting operating revenues of \$712,542,456 in FY 2022, which includes \$628,097,369 in retail customer billing revenues and \$84,445,087 in wholesale revenues. A summary of the operating revenue comparison of the Model and the Financial Plan is provided below.

Table 6: Operating Revenue Comparison

| Operating Revenue | FY 2021 DC Water Financial Plan | FY 2021 Raftelis Model | Delta |
|--------------------------------|---------------------------------|------------------------|----------------------|
| Volumetric Charges | \$434,917,741 | \$433,294,020 | \$(1,623,721) |
| Metering Fee | \$15,404,519 | \$15,404,519 | \$ - |
| WSRF | \$39,717,000 | \$39,717,000 | \$ - |
| Right of Way/PILOT | \$22,463,034 | \$22,463,034 | \$ - |
| CRIAC CSO Revenue | \$94,604,383 | \$94,644,335 | \$39,952 |
| Wholesale Revenue | \$81,985,522 | \$81,985,522 | \$ - |
| Total Operating Revenue | \$689,092,199 | \$687,508,429 | \$(1,583,770) |

| Operating Revenue | FY 2022 DC Water Financial Plan | FY 2022 Raftelis Model | Delta |
|--------------------------------|---------------------------------|------------------------|----------------------|
| Volumetric Charges | \$454,672,355 | \$452,269,585 | \$(2,402,770) |
| Metering Fee | \$24,082,852 | \$24,082,852 | \$ - |
| WSRF | \$39,717,000 | \$39,717,000 | \$ - |
| Right of Way/PILOT | \$22,843,650 | \$22,843,650 | \$ - |
| CRIAC CSO Revenue | \$89,179,272 | \$89,184,238 | \$5,011 |
| Wholesale Revenue | \$84,445,087 | \$84,445,087 | \$ - |
| Total Operating Revenue | \$714,940,216 | \$712,542,456 | \$(2,397,760) |

3.2.1.1. Volumetric Charges

Revenues from the volumetric charges are calculated primarily based on the projected rates from Raftelis' COS results multiplied by projected consumption. Slightly different calculation methods resulted in differences between Raftelis' projections and DC Water's Financial Plan, but Raftelis' projections were slightly lower, and thus did not overstate anticipated revenues. In FY 2021, Residential and Commercial revenues were 0.4% lower than those in the Financial Plan, D.C. Government revenues were 0.2% lower, and D.C. Housing Authority revenues were 1.0% lower.

Similarly, in FY 2022, Residential and Commercial revenues were 0.5% lower than those in the Financial Plan, D.C. Government revenues were 0.2% lower, Federal Government revenues were 0.4% lower, and D.C. Housing Authority revenues were 1.0% lower. These slight discrepancies are expected, and do not represent a material difference between Raftelis' forecast and DC Water's Financial Plan.

3.2.1.2. Metering Fee

Revenues from the metering fee are calculated based on the projected rates in the Financial Plan multiplied by the projected customers per meter size. Raftelis' projection of revenue from the metering fee are consistent with the revenue in DC Water's Financial Plan. DC Water is projected to recover \$15,404,519 in FY 2021 and \$24,082,852 in FY 2022. Metering Fee revenues represent the recovery of some additional Customer Service costs related to metering and billing as described in Section 4.6.

3.2.1.3. Water System Replacement Fee (WSRF)

The WSRF was originally set to recover approximately \$40 million per year for ten years to fund water system renewal and replacement. Revenues from the WSRF are calculated based on the projected rates in the Financial Plan multiplied by the projected customers per meter size. Raftelis' projection of revenue from the WSRF are consistent with the revenue in DC Water's Financial Plan. DC Water is projected to recover \$39,717,000 in both FY 2021 and FY 2022.

3.2.1.4. Impervious Area Charge

Raftelis' projections for CRIAC revenues were 0.04% higher than the Financial Plan in FY 2021, and 0.01% higher than the Financial Plan in FY 2022. These discrepancies do not represent a material difference between Raftelis' forecast and DC Water's Financial Plan. CRIAC revenues represent the allocation of some Clean Rivers capital costs to the sewer volumetric rate as described in Section 4.6.

3.2.2. NON-OPERATING REVENUE

Raftelis' projection of non-operating revenues reflects the same amount as DC Water's Financial Plan. A comparison of total revenues is shown below.

Table 7: Total Revenue Comparison

| | FY 2021 DC Water Financial Plan | FY 2021 Raftelis Model | Delta |
|--|---------------------------------|------------------------|----------------------|
| Operating Revenue | | | |
| Volumetric Charges | \$434,917,741 | \$433,294,020 | \$(1,623,721) |
| Metering Fee | \$15,404,519 | \$15,404,519 | \$ - |
| Infrastructure Surcharge | \$39,717,000 | \$39,717,000 | \$ - |
| Right of Way Fee/PILOT | \$22,463,034 | \$22,463,034 | \$ - |
| CRIAC CSO Revenue | \$94,604,383 | \$94,644,335 | \$39,952 |
| Wholesale Revenue | \$81,985,522 | \$81,985,522 | \$ - |
| Subtotal: Operating Revenue | \$689,092,199 | \$687,508,429 | \$(1,583,770) |
| Non-Operating Revenues | | | |
| Interest Earnings | \$3,018,506 | \$3,018,506 | \$ - |
| Other Revenue | \$38,524,000 | \$38,524,000 | \$ - |
| Transfer from Rate Stabilization Fund | \$2,500,000 | \$2,500,000 | \$ - |
| Northern Virginia Debt Service | \$193,246 | \$193,246 | \$ - |
| Subtotal: Non-Operating Revenue | \$44,235,752 | \$44,235,752 | \$ - |
| Total Revenue | \$733,327,951 | \$731,744,181 | \$(1,583,770) |

| | FY 2022 DC Water Financial Plan | FY 2022 Raftelis Model | Delta |
|--|---------------------------------|------------------------|----------------------|
| Operating Revenue | | | |
| Volumetric Charges | \$454,672,355 | \$452,269,585 | \$(2,402,770) |
| Metering Fee | \$24,082,852 | \$24,082,852 | \$ - |
| Infrastructure Surcharge | \$39,717,000 | \$39,717,000 | \$ - |
| Right of Way Fee/PILOT | \$22,843,650 | \$22,843,650 | \$ - |
| CRIAC CSO Revenue | \$89,179,272 | \$89,184,283 | \$5,011 |
| Wholesale Revenue | \$84,445,087 | \$84,445,087 | \$ - |
| Subtotal: Operating Revenue | \$714,940,216 | \$712,542,456 | \$(2,397,760) |
| Non-Operating Revenues | | | |
| Interest Earnings | \$3,296,209 | \$3,296,209 | \$ - |
| Other Revenue | \$36,938,000 | \$36,938,000 | \$ - |
| Transfer from Rate Stabilization Fund | \$10,500,000 | \$10,500,000 | \$ - |
| Northern Virginia Debt Service | \$193,246 | \$193,246 | \$ - |
| Subtotal: Non-Operating Revenue | \$50,927,455 | \$50,927,455 | \$ - |
| Total Revenue | \$765,867,671 | \$763,469,911 | \$(2,397,760) |

The Model forecasts total revenues in the test years (FY 2021 and FY 2022) that diverge from DC Water’s projections by less than \$2.4 million for each test year. In aggregate, this de minimis revenue discrepancy is less than 0.5% for each year of the analysis.

3.2.3. OPERATING EXPENSES

Operating expenses in the Model are input from DC Water’s Proposed FY 2021 and Projected FY 2022 Budgets. When compared to the Financial Plan, FY 2021-FY 2022 operating expenses are identical given that escalation rates used to project expenses are identical.

Table 8: Operating Expense Comparison

| | FY 2021 DC Water Financial Plan | FY 2021 Raftelis Model | Delta |
|---------------------------------|---------------------------------|------------------------|-------------|
| Personnel Services | \$153,482,000 | \$153,482,000 | \$ - |
| Contractual Services | \$88,532,000 | \$88,532,000 | \$ - |
| Water Purchases | \$36,250,000 | \$36,250,000 | \$ - |
| Chemicals & Supplies | \$36,081,000 | \$36,081,000 | \$ - |
| Utilities & Rent | \$27,911,000 | \$27,911,000 | \$ - |
| Small Equipment | \$1,030,000 | \$1,030,000 | \$ - |
| PILOT/ROW Fee | \$22,372,415 | \$22,372,415 | \$ - |
| Total Operating Expenses | \$365,658,415 | \$365,658,415 | \$ - |

| | FY 2022 DC Water Financial Plan | FY 2022 Raftelis Model | Delta |
|---------------------------------|---------------------------------|------------------------|-------------|
| Personnel Services | \$159,621,280 | \$159,621,280 | \$ - |
| Contractual Services | \$88,641,280 | \$88,641,280 | \$ - |
| Water Purchases | \$37,700,000 | \$37,700,000 | \$ - |
| Chemicals & Supplies | \$37,524,240 | \$37,524,240 | \$ - |
| Utilities & Rent | \$29,027,440 | \$29,027,440 | \$ - |
| Small Equipment | \$1,071,200 | \$1,071,200 | \$ - |
| PILOT/ROW Fee | \$22,717,863 | \$22,717,863 | \$ - |
| Total Operating Expenses | \$376,303,303 | \$376,303,303 | \$ - |

3.2.4. DEBT SERVICE

Because Raftelis updated the Model’s existing debt service based on actual principal and interest schedules provided in the official statement to investors, and because the same assumptions were used to forecast planned debt issuance, there is no difference between the Model and DC Water’s Financial Plan debt service for FY 2019. A summary of the debt service comparison is displayed in Table 9.

Table 9: Debt Service Comparison

| Debt Service | DC Water Financial Plan 2021 | Raftelis Model 2021 | Delta |
|--|---|--------------------------------|--------------|
| 1998 Revenue Bonds | \$23,364,975 | \$23,364,975 | \$ - |
| Series 2014A Revenue Bond | \$16,849,000 | \$16,849,000 | \$ - |
| Series 2017A Revenue Bond | \$4,591,000 | \$4,591,000 | \$ - |
| Series 2017B Revenue Bond | \$13,257,000 | \$13,257,000 | \$ - |
| Series 2018A Revenue Bond | \$5,000,000 | \$5,000,000 | \$ - |
| Series 2018B Revenue Bond | \$13,324,250 | \$13,324,250 | \$ - |
| Jennings Randolph | \$805,192 | \$805,192 | \$ - |
| Commercial Paper | \$1,500,000 | \$1,500,000 | \$ - |
| EMCP | \$1,500,000 | \$1,500,000 | \$ - |
| Series 2010A Subordinate Bond | \$15,564,107 | \$15,564,107 | \$ - |
| Series 2012A, B-1, B-2, C Subordinate Bond | \$20,086,700 | \$20,086,700 | \$ - |
| Series 2014B Subordinate Bond | \$2,497,698 | \$2,497,698 | \$ - |
| Series 2014C Subordinate Bond | \$30,348,200 | \$30,348,200 | \$ - |
| Series 2015A Subordinate Bond | \$11,926,900 | \$11,926,900 | \$ - |
| Series 2015B Subordinate Bond | \$12,806,363 | \$12,806,363 | \$ - |
| Series 2016A Subordinate Bond | \$17,039,013 | \$17,039,013 | \$ - |
| Series 2016B Subordinate Bond | \$835,000 | \$835,000 | \$ - |
| Series 2019A Revenue Bond | \$4,708,700 | \$4,708,700 | \$ - |
| Series 2019B Revenue Bond | \$2,916,000 | \$2,916,000 | \$ - |
| Series 2019C Revenue Bond | \$1,741,338 | \$1,741,338 | \$ - |
| Series 2019D Revenue Bond | \$12,308,220 | \$12,308,220 | \$ - |
| WASA Bonds – Planned | \$9,298,167 | \$9,298,167 | \$ - |
| Total: Debt Service | \$222,267,823 | \$222,267,823 | \$ - |

| Debt Service | DC Water Financial Plan 2022 | Raftelis Model 2022 | Delta |
|--|---|--------------------------------|--------------------|
| 1998 Revenue Bonds | \$23,364,850 | \$23,364,850 | \$ - |
| Series 2014A Revenue Bond | \$16,849,000 | \$16,849,000 | \$ - |
| Series 2017A Revenue Bond | \$4,591,000 | \$4,591,000 | \$ - |
| Series 2017B Revenue Bond | \$13,255,000 | \$13,255,000 | \$ - |
| Series 2018A Revenue Bond | \$5,000,000 | \$5,000,000 | \$ - |
| Series 2018B Revenue Bond | \$13,326,000 | \$13,326,000 | \$ - |
| Jennings Randolph | \$805,191 | \$805,191 | \$ - |
| Commercial Paper | \$1,500,000 | \$1,500,000 | \$ - |
| EMCP | \$1,500,000 | \$1,500,000 | \$ - |
| Series 2010A Subordinate Bond | \$15,510,750 | \$15,510,750 | \$ - |
| Series 2012A, B-1, B-2, C Subordinate Bond | \$20,087,200 | \$20,087,200 | \$ - |
| Series 2014B Subordinate Bond | \$3,250,000 | \$3,250,000 | \$ - |
| Series 2014C Subordinate Bond | \$30,392,700 | \$30,392,700 | \$ - |
| Series 2015A Subordinate Bond | \$11,922,900 | \$11,922,900 | \$ - |
| Series 2015B Subordinate Bond | \$12,806,363 | \$12,806,363 | \$ - |
| Series 2016A Subordinate Bond | \$17,039,013 | \$17,039,013 | \$ - |
| Series 2016B Subordinate Bond | \$812,500 | \$812,500 | \$ - |
| Series 2019A Revenue Bond | \$4,708,700 | \$4,708,700 | \$ - |
| Series 2019B Revenue Bond | \$2,916,000 | \$2,916,000 | \$ - |
| Series 2019C Revenue Bond | \$1,741,338 | \$1,741,338 | \$ - |
| Series 2019D Revenue Bond | \$12,304,572 | \$12,304,572 | \$ - |
| WASA Bonds – Planned | \$26,814,055 | \$26,399,853 | \$(414,203) |
| Total: Debt Service | \$240,497,131 | \$240,082,928 | \$(414,203) |

Debt service for a planned FY 2022 bond issue vary slightly due to the use of different assumptions on the timing and future rates associated with future debt.

To summarize, a comparison of total revenues and expenses is provided in Table 10.

Table 10: Comparison of Revenues and Expenses

| | DC Water Financial Plan (2021) | Raftelis Model (2021) | Delta |
|--|--------------------------------|-----------------------|---------------|
| Revenue | | | |
| Operating | \$689,092,199 | \$687,508,429 | \$(1,583,770) |
| Non-Operating | \$44,235,752 | \$44,235,752 | \$ - |
| Total: Revenue | \$733,327,951 | \$731,744,181 | \$(1,583,770) |
| Expenses | | | |
| Operating | \$365,658,415 | \$365,658,415 | \$ - |
| Debt Service | \$222,267,822 | \$222,267,822 | \$ - |
| Cash Financed Capital Improvements | \$30,355,334 | \$30,355,334 | \$ - |
| Total: Expenses | \$618,281,571 | \$618,281,571 | \$ - |
| Net Cash Available for PAYGO Capital & Other Cash Needs | \$115,046,380 | \$113,462,610 | \$(1,583,770) |

| | DC Water Financial Plan (2022) | Raftelis Model (2022) | Delta |
|--|--------------------------------|-----------------------|---------------|
| Revenue | | | |
| Operating | \$714,940,216 | \$712,542,456 | \$(2,397,760) |
| Non-Operating | \$50,927,455 | \$50,927,455 | \$ - |
| Total: Revenue | \$765,867,671 | \$763,469,911 | \$(2,397,760) |
| Expenses | | | |
| Operating | \$376,303,303 | \$376,303,303 | \$ - |
| Debt Service | \$240,497,131 | \$240,082,928 | \$(414,203) |
| Cash Financed Capital Improvements | \$37,829,708 | \$37,829,708 | \$ - |
| Total: Expenses | \$654,630,142 | \$654,215,939 | \$(414,203) |
| Net Cash Available for PAYGO Capital & Other Cash Needs | \$111,237,529 | \$109,253,972 | \$(1,983,557) |

3.2.5. REVENUE SUFFICIENCY ANALYSIS FINDINGS

Based on our independent projection based on rates and units of service (number of accounts, billed consumption, and impervious ERUs), Raftelis is able to conclude the following:

- Revenues under proposed rate increases are sufficient to fund utility cash requirements in FY 2021 and FY 2022;
- Reserve funds can be maintained at target levels; and
- Debt service coverage is adequate to meet required bond covenants.

4. Cost of Service Analysis

Raftelis evaluated the level of rate equity under the current rate structure. By developing cost of service-based rates and comparing them to proposed DC Water rates for the test years, FY 2021-FY 2022, Raftelis determined if existing water and sewer customer classes were subsidizing each other. Raftelis used the Model described in the previous sections to allocate costs and calculate cost of service-based rates and charges.

4.1. Revenue Requirements

To forecast the level of revenue necessary to ensure financial sufficiency for the utility, revenue requirements must be identified and projected for the test year. Revenue requirements include all costs incurred to operate the water and wastewater systems. These costs represent the annual cash needs of the utility for operation, but also examine existing and proposed debt, debt service coverage requirements, and the funding of target reserve fund balances. Revenue requirements are funded through sources identified in DC Water's capital improvement plan such as revenue bonds, capital reserves, and current year rate revenues. The revenue requirements identified in this process represent the costs that are currently being recovered from the retail rates.

Operations and Maintenance Expenses. First and foremost, the utility must recover costs associated with the routine operation, maintenance, and repair of the system. This component includes items in the DC Water budget such as labor, power, materials, PILOT, ROW fees, and most other costs associated with the day-to-day functioning of the system.

Capital Improvement Plan. Capital needs are typically the single largest component of a water and wastewater utility's cost structure. These expenditures pay for necessary infrastructure rehabilitation, replacements, expansions, and upgrades. Often, a portion of these costs are recovered through fund balance contributions or rate revenue with the balance funded through debt. Since DC Water has designed its metering fee to also recover ongoing AMR costs, this item in the Model has been added as an adjustment and included in the net revenue requirements.

Capital Financing Plan. Capital needs can be funded in a variety of ways, including, for example, revenue bonds, revolving fund loans, and rate revenues. By using the optimal blend of funding sources, it is possible to manage rate impacts, financial stability, and equitably allocate costs to customers over the useful life of the assets.

Debt Service Coverage Requirements. In addition to meeting cash flow needs, revenues must be adequate to satisfy minimum debt service coverage requirements set forth in DC Water's bond covenants. These requirements stipulate minimum debt coverage ratios as well as what revenues and expenses must be included in calculating coverage ratios. DC Water has set a more stringent management target coverage level of 1.6 times to ensure availability of cash-funded capital and debt service as a percentage of revenue remains at sustainable levels.

Revenue requirements for each test year are presented in Table 11. Note that the PILOT/ROW Remittance is not included, because although it is an expense, it is ultimately reimbursed by the District of Columbia and is therefore not truly part of DC Water's cost of service.

Table 11: Test Years Revenue Requirements (FY 2021 and FY 2022)

| Revenue Requirements | FY 2021 | FY 2022 |
|---|----------------------|----------------------|
| Operating Expenses¹ | \$343,286,641 | \$353,585,241 |
| Debt Service | \$222,267,822 | \$240,082,928 |
| Adjustments – Coverage Allowance | \$133,360,693 | \$144,049,757 |
| Total Revenue Requirements | \$698,915,157 | \$737,717,925 |

- 1) *The operating expenses used in the revenue requirements calculation, shown in this table, do not include District charges (payment in lieu of taxes), as these are not direct expenses for DC Water. These operating expenses are therefore lower than those shown in Table 10.*

The revenue requirements are offset by operating and non-operating income other than user charges, resulting in net revenue requirements. The net revenue requirements represent the level of revenues that must be generated from retail user charges to meet the utility’s operating and capital needs. Revenue offsets itemized within the Model include wholesale revenues, miscellaneous fees, and interest income. Table 12 summarizes the revenue offsets in the test years.

Table 12: Test Years Revenue Offsets (FY 2021 and FY 2022)

| Revenue Offsets | FY 2021 | FY 2022 |
|--|------------------------|------------------------|
| Wholesale Revenue | | |
| LCSA + PI | \$(11,194,341) | \$(11,530,171) |
| WSSC | \$(55,951,847) | \$(57,630,402) |
| Fairfax County | \$(14,839,334) | \$(15,284,514) |
| Other Revenue | | |
| IMA Indirect Cost Reimbursement for Capital Projects | \$(5,073,000) | \$(5,218,000) |
| Development Contracts/Water Service Fees, Taps | \$(4,000,000) | \$(4,000,000) |
| Development Contracts/Liability Deposits/Sewer Service Fees | \$(2,000,000) | \$(2,000,000) |
| Commercial Water Maintenance | \$(32,000) | \$(32,000) |
| DC Fire Protection Fee | \$(12,527,000) | \$(10,796,000) |
| System Availability Fee (SAF) | \$(7,700,000) | \$(7,700,000) |
| Transfer from DC PILOT/ROW Fund | \$ - | \$ - |
| Transfer from Rate Stabilization | \$(2,500,000) | \$(10,500,000) |
| DC Contribution of 50% PILOT Escrow to DCW | \$ - | \$ - |
| Sales to DC Agencies-Steam/Meter | \$(170,000) | \$(170,000) |
| Miscellaneous Revenues (Bid Deposits, Fleet Auction, Compost Sale) | \$(6,000,000) | \$(6,000,000) |
| Pipe Repair Sales/Replacement | \$(22,000) | \$(22,000) |
| Stormwater | \$(1,000,000) | \$(1,000,000) |
| Northern Virginia Debt Service | \$(193,246) | \$(193,246) |
| WSRF | \$(39,717,000) | \$(39,717,000) |
| Interest Income | \$(3,018,506) | \$(3,296,209) |
| Total Revenue Offsets | \$(165,938,274) | \$(175,089,542) |
| Total Revenue Requirements | \$698,915,157 | \$737,717,925 |
| Net Revenue Requirements | \$532,976,883 | \$562,628,383 |

4.2. Allocation of Costs

Once the revenue requirements were projected for the test years, Raftelis evaluated the appropriateness of the allocation factors used in the most recent cost of service analysis. Specifically, Raftelis reviewed each major category of operating costs and identified a reasonable basis of allocation amongst the water volumetric charge, wastewater volumetric charge, and metering fee. Costs allocated to the wastewater volumetric charge were then allocated

between the wastewater volumetric charge and the impervious area fee based on information provided in the engineering allocation analysis.

4.2.1. COST OF SERVICE INITIATIVES

The COS process included several initiatives to re-allocate costs. First, some of the costs associated with the CRIAC charge were re-allocated to the sewer volumetric rate. This re-allocation reflects the fact that the sewer utility pays for part of the Clean Rivers program expenses. The re-allocation will be phased in over three years, ending in FY 2022. Second, some of the operating costs associated with metering and billing were allocated to the metering fee. Historically, only automated metering capital costs were recovered in DC Water’s metering fee. However, peer utilities, including Baltimore, Philadelphia Water, PWCSA, Fairfax Water, Howard County (MD), and Richmond (VA), recover capital and operating costs associated with metering and billing in a fixed meter-based charge. Therefore, shifting costs to the metering fee and away from volumetric rates is in line with industry trends. This re-allocation will be phased in over two years, ending in FY 2022. Finally, the revenue collected from the Water System Replacement Fee, originally designed to fund 1% of DC Water’s annual renewal and replacement program, was used to offset the water utility’s revenue requirements, resulting in a decrease in all water volumetric charges.

4.2.2. COST ALLOCATION METHODOLOGY

Revenue requirements and revenue offsets related directly to providing water service or sewer service were allocated 100% to water or sewer, respectively. Revenue requirements and revenue offsets related entirely to the CSO LTCP were allocated 100% to the CRIAC charge. Per the second COS initiative, a portion of customer service costs were allocated to the metering fee to account for the costs associated with meter and billing. The remaining costs were divided between water and sewer because almost all customers receive a bill for both services. For other direct operating costs, such as Maintenance Services, the same allocation factors were used as in the prior COS Study, with the majority of these costs allocated to wastewater. Engineering and Technical Services were allocated between water and sewer volumetric rates. Raftelis also used similar percentages as in the last COS study to allocate indirect costs, which were based on reasonable allocation factors, such as revenues, employees, vehicles, etc., that were related to individual budget centers. These assumptions are consistent with factors identified in DC Water’s existing inter-municipal agreements (“IMA”).

Responsibility for debt service coverage is distributed proportionately amongst the rates and charges based on the distribution of debt associated with water, sewer, and the CSO LTCP, respectively. Raftelis reviewed and updated allocations of existing debt service based on actual CIP expenditures. Future debt service associated with planned revenue bonds were allocated proportionately based on the projects identified in the CIP.

Table 13 presents the allocation of test year revenue requirements to the water volumetric charge, metering fee, wastewater volumetric charge, and the CRIAC charge. For the purpose of unit cost calculations, total revenue requirements allocated to each charge component were increased by 3% to reflect the rate of anticipated bill delinquencies prior to calculating rates.

Table 13: Net Revenue Requirement Allocation and Cost of Service Calculation

| | FY 2021 | Water | Meter | Wastewater | CRIAC |
|---|---------------|---------------|---------------|---------------|--------------|
| Retail Revenue Requirements | \$548,966,190 | \$137,086,212 | \$15,404,519 | \$298,517,944 | \$97,957,515 |
| Percent of Retail Revenue Requirements | 100% | 25.0% | 2.8% | 54.4% | 17.8% |
| Units of Service | | 31,825,135 | 258,970 | 30,575,132 | 418,364 |
| Units | | Ccf | Equiv. Meters | Ccf | ERUs |
| Calculated Unit Cost | | \$4.3075 | \$59.4838 | \$9.7634 | \$234.1445 |

| | FY 2022 | Water | Meter | Wastewater | CRIAC |
|---|---------------|---------------|---------------|---------------|--------------|
| Retail Revenue Requirements | \$581,062,535 | \$142,805,804 | \$24,082,852 | \$321,804,229 | \$92,369,650 |
| Percent of Retail Revenue Requirements | 100% | 24.6% | 4.1% | 55.4% | 15.9% |
| Units of Service | | 31,504,004 | 258,970 | 30,249,425 | 418,364 |
| Units | | Ccf | Equiv. Meters | Ccf | ERUs |
| Calculated Unit Cost | | \$4.5329 | \$92.9948 | \$10.6384 | \$220.7880 |

4.3. Metering Fee

The cost pool for the metering fee includes total revenue requirements of \$15,404,519 in FY 2021 and \$24,082,852 in FY 2022. As discussed in Section 4.2.1, the metering fee revenue requirements include a portion of expense that was formerly allocated to water and wastewater volumetric charges. Because of the re-allocation of more customer service expense for metering and billing to the metering fee, the COS rates of \$4.96 and \$7.75 in FY 2021 and FY 2022 are 28% and 101% greater, respectively, than the existing meter fee of \$3.86.

4.4. Water Volumetric Rate

As part of a previous COS Study, Raftelis recommended a class-based water volumetric rate to DC Water which was subsequently implemented in 2016. In a class-based volumetric rate structure, the customer classes that exhibit more peaking in their water usage as compared to other classes are required to pay for their larger share of peaking-related costs. Calculating these rates involves allocating water system volumetric costs between base, or average, demand, and peak-demand, a two-step process.

The first step involves the allocation of all water system cost into functional components consistent with the operating characteristics of the utility. For DC Water these functional components included:

- Source of Supply and Treatment;
- Distribution;
- Storage;
- Pumping;
- Customer Service/Meter; and
- Administration/General.

Raftelis worked closely with DC Water Staff to review and evaluate water system operating costs and developed allocation factors to assign these costs into the categories identified above. Raftelis also reviewed historical capital expenditures identified in the Financial Plan over the past decade, which were used as a basis for allocating debt service and coverage between water source of supply and treatment and the distribution system. Other water revenues exclusive of user charges (revenue offsets) were allocated to the various system functions based on the revenue source. The most significant revenue offsets of note were the DC Fire Protection Fee, which was allocated evenly between water source of supply and treatment and water distribution, water service fees/taps, which was assigned to water distribution, and Water System Replacement Fee (WSRF) revenue, offsets the water volumetric revenue requirement.

Table 14 summarizes the allocation of water system costs to functional categories. Supporting detail for the cost allocations is provided in the Appendix.

Table 14: Allocation of Water Costs into Functional Categories

| | FY 2021 \$ Allocated to Water | Source of Supply & Treatment | Distribution | Storage | Pumping | Customer Service/ Meter | Admin/ General |
|--|-------------------------------|------------------------------|---------------------|--------------------|--------------------|-------------------------|--------------------|
| Operations | \$78,601,940 | \$38,059,620 | \$18,595,526 | \$6,888,377 | \$8,715,400 | \$1,597,168 | \$4,745,848 |
| Administration | \$43,795,026 | \$ - | \$ - | \$ - | \$ - | \$ - | \$43,795,026 |
| Debt Service | \$48,133,914 | \$12,792,440 | \$31,533,315 | \$ - | \$ - | \$3,808,158 | \$ - |
| Revenue Offsets | \$(62,472,707) | \$(6,711,748) | \$(10,913,748) | \$ - | \$ - | \$ - | \$(44,847,210) |
| Adjustment for Coverage | \$28,880,348 | \$7,675,464 | \$18,919,989 | \$ - | \$ - | \$2,284,895 | \$ - |
| Net Water System Revenue Requirements | \$136,938,521 | \$51,815,776 | \$58,135,082 | \$6,888,377 | \$8,715,400 | \$7,690,222 | \$3,693,663 |
| % Allocation | | 37.84% | 42.45% | 5.03% | 6.36% | 5.62% | 2.70% |

| | FY 2022 \$ Allocated to Water | Source of Supply & Treatment | Distribution | Storage | Pumping | Customer Service/ Meter | Admin/ General |
|--|-------------------------------|------------------------------|---------------------|--------------------|--------------------|-------------------------|--------------------|
| Operations | \$80,959,998 | \$39,201,408 | \$19,153,392 | \$7,095,028 | \$8,976,862 | \$1,645,084 | \$4,888,223 |
| Administration | \$45,108,876 | \$ - | \$ - | \$ - | \$ - | \$ - | \$45,108,876 |
| Debt Service | \$52,332,683 | \$13,887,030 | \$34,543,778 | \$ - | \$ - | \$3,901,875 | \$ - |
| Revenue Offsets | \$(63,266,673) | \$(5,887,487) | \$(10,089,487) | \$ - | \$ - | \$ - | \$(47,289,699) |
| Adjustment for Coverage | \$31,399,610 | \$8,332,218 | \$20,726,267 | \$ - | \$ - | \$2,341,125 | \$ - |
| Net Water System Revenue Requirements | \$146,534,494 | \$55,533,170 | \$64,333,950 | \$7,095,028 | \$8,976,862 | \$7,888,083 | \$2,707,401 |
| % Allocation | | 37.90% | 43.90% | 4.84% | 6.13% | 5.38% | 1.85% |

Once costs were allocated into functional components, the next step in the process was to allocate functional costs into service cost or behavioral cost components, particularly volumetric costs into base and peaking components. Drawing on discussion with DC Water staff and industry experience, Raftelis developed reasonable percentages for distributing costs between serving base and peak demand. Table 15 summarizes the allocation of water system costs to functional components. Supporting detail for the cost allocations is provided in the Appendix.

Table 15: Allocation of Functional Costs into Cost Categories

| | FY 2021 | Base | Extra Capacity | Customer Service/Meter | Admin/General |
|-------------------------------|---------------|---------------|----------------|------------------------|---------------|
| Source of Supply | \$51,815,776 | \$40,717,238 | \$11,098,537 | \$ - | \$ - |
| Distribution | \$58,135,083 | \$49,414,821 | \$8,720,262 | \$ - | \$ - |
| Storage | \$6,888,377 | \$5,510,702 | \$1,377,675 | \$ - | \$ - |
| Pumping | \$8,715,400 | \$4,357,700 | \$4,357,700 | \$ - | \$ - |
| Customer Service/Meter | \$7,690,222 | \$ - | \$ - | \$7,690,222 | \$ - |
| Admin/General | \$3,693,663 | \$ - | \$ - | \$ - | \$3,693,663 |
| | \$136,938,521 | \$100,000,461 | \$25,554,175 | \$7,690,222 | \$3,693,663 |

| | FY 2022 | Base | Extra Capacity | Customer Service/Meter | Admin/General |
|-------------------------------|---------------|---------------|----------------|------------------------|---------------|
| Source of Supply | \$55,533,170 | \$43,323,026 | \$12,210,144 | \$ - | \$ - |
| Distribution | \$64,333,950 | \$54,683,857 | \$9,650,093 | \$ - | \$ - |
| Storage | \$7,095,028 | \$5,676,023 | \$1,419,006 | \$ - | \$ - |
| Pumping | \$8,976,862 | \$4,488,431 | \$4,488,431 | \$ - | \$ - |
| Customer Service/Meter | \$7,888,083 | \$ - | \$ - | \$7,888,083 | \$ - |
| Admin/General | \$2,707,401 | \$ - | \$ - | \$ - | \$2,707,401 |
| | \$146,534,494 | \$108,171,337 | \$27,767,674 | \$7,888,083 | \$2,707,401 |

4.4.1. WATER SUPPLY & TREATMENT

DC Water, the City of Arlington (Arlington), and the City of Falls Church (Falls Church) purchase potable water from the Washington Aqueduct. The total annual cost of the Aqueduct, which is operating by the Army Corps of Engineers, is allocated amongst these three utilities based on both average and peak usage. Specifically, the cost allocation methodology assigns costs into fixed and variable components. Fixed costs, which represent the majority of operating costs and include costs related to providing system capacity, are allocated based on peak-daily demand. Variable costs, which are a function of the amount of water produced and include chemicals and electricity, are allocated based on average usage.

It is important to note the wholesale water purchase methodology does not include a specific allocation of system capacity that DC Water has “purchased” in the Washington Aqueduct. However, DC Water pays for extra water capacity to meet peak demand, so it is reasonable to allocate some portion of source of supply and treatment costs to an extra capacity component. For the purpose of this analysis, and based on a review of historical billing data, Raftelis assigned 78% of water source of supply and treatment to the base component and the remaining 22% of water source of supply and treatment to the extra capacity component. Although it would be preferable to review more detailed water production statistics to enhance the precision of this estimate, DC Water does not own water production facilities, so allocating about a quarter of source of supply and treatment costs to extra capacity is reasonable and consistent with industry standards and practices.

4.4.2. WATER DISTRIBUTION

Based on the results of the Customer Class Segmentation Study completed by Raftelis in 2011, DC Water’s system peaks significantly in aggregate. This is consistent with a predominantly urban customer base with more limited elective consumption, particularly irrigation from residential customers. As a result, a significant portion of water

transmission and distribution costs are associated with serving a base level of demand. However, it is a common practice within the industry to allocate a small percentage of distribution system costs to a peaking component, as DC Water has sized its system to serve peak demand. For this COS Study, Raftelis assigned 15% of the distribution system costs to system peaking. This is consistent to percentages used in other studies for utilities with similar operating characteristics.

4.4.3. WATER STORAGE

Like water distribution, it is reasonable to allocate a portion of water storage costs to a peaking component. DC Water utilizes storage facilities to provide adequate supply and pressure to serve both average and peak demand. Because peaking is relatively low, the extra capacity component should include a relatively small portion of total storage costs. For this COS analysis, Raftelis assigned 20% of the storage costs to system peaking. This is consistent with percentages used in other studies for utilities with similar operating characteristics.

4.4.4. WATER PUMPING

A significant portion of the costs allocated to water pumping are associated with the electricity required to operate the pumping facilities. DC Water has sized its pumping equipment to serve both average and peak demand. During peak times, DC Water pays additional cost for power to accommodate the higher demand for pumping, and it is appropriate to allocate this additional cost to a peaking component. As a result, Raftelis has assigned 50% of the pumping costs to system peaking. This is consistent to percentages used in other studies for utilities with similar operating characteristics.

Raftelis reviewed and evaluated peak monthly usage compared to average monthly usage for a five-year period from 2012-2017 for its established customer classes. The peak monthly capacity factors from this analysis were applied to projected annual usage in FY 2021 and FY 2022. The results are presented in Table 16.

Table 16: Peak Monthly Flow by Customer Class

| | Base (FY 2021) | | Max-Month (FY 2021) | | |
|--------------------------------------|--------------------|-----------------------------|---------------------|------------------------------|----------------------|
| | Annual Usage (CCF) | Average Monthly Usage (CCF) | Peaking Factor | Total Monthly Capacity (CCF) | Extra Capacity (CCF) |
| Residential Tier 1, 0-4 ccf | 3,511,043 | 292,587 | 1.00 | 292,587 | - |
| Residential Tier 2, >4 ccf | 2,792,445 | 232,704 | 1.34 | 311,823 | 79,119 |
| Multi-Family | 8,997,505 | 749,792 | 1.16 | 869,759 | 119,967 |
| Commercial | 11,622,144 | 968,512 | 1.39 | 1,346,232 | 377,720 |
| Federal | 4,159,378 | 346,615 | 1.39 | 481,795 | 135,180 |
| Municipal | 742,621 | 61,885 | 1.39 | 86,020 | 24,135 |
| Total | 31,825,135 | 2,652,095 | | 3,388,215 | 736,121 |

| | Base (FY 2022) | | Max-Month (FY 2022) | | |
|--------------------------------------|--------------------|-----------------------------|---------------------|------------------------------|----------------------|
| | Annual Usage (CCF) | Average Monthly Usage (CCF) | Peaking Factor | Total Monthly Capacity (CCF) | Extra Capacity (CCF) |
| Residential Tier 1, 0-4 ccf | 3,474,328 | 289,527 | 1.00 | 289,527 | - |
| Residential Tier 2, >4 ccf | 2,763,245 | 230,270 | 1.34 | 308,562 | 78,292 |
| Multi-Family | 8,907,530 | 742,294 | 1.16 | 861,061 | 118,767 |
| Commercial | 11,505,922 | 958,827 | 1.39 | 1,332,769 | 373,942 |
| Federal | 4,117,784 | 343,149 | 1.39 | 476,977 | 133,828 |
| Municipal | 735,195 | 61,266 | 1.39 | 85,160 | 23,894 |
| Total | 31,504,004 | 2,652,334 | | 3,354,057 | 728,723 |

The max month total capacity is determined by multiplying the average monthly usage by the peaking factor for each customer class. The total monthly capacity is subtracted from the average monthly usage to determine the extra capacity.

Allocation factors for base and peaking were determined based on the proportion of annual usage and extra capacity, respectively, falling under each customer class category. These factors were multiplied by the costs allocated to base and peak flows, respectively. The volumetric revenue requirements were escalated at a delinquency rate of 3%. The result was a distribution of water volumetric revenue requirements by customer class (see Table 17).

Table 17: Allocation of Base and Peak Volumetric Costs by Customer Class

| FY 2021 | Base | Peaking | Base | Peaking | Allocation for Volumetric Revenue Requirements |
|--------------------------------------|-------------|-------------|----------------------|---------------------|--|
| Residential Tier 1, 0-4 ccf | 11.0% | 0.0% | \$11,864,046 | \$ - | \$12,219,967 |
| Residential Tier 2, >4 ccf | 8.8% | 10.7% | \$9,435,857 | \$2,746,599 | \$12,547,929 |
| Multi-Family | 28.3% | 16.3% | \$30,403,163 | \$4,164,604 | \$35,604,799 |
| Commercial | 36.5% | 51.3% | \$39,271,992 | \$13,112,408 | \$53,955,932 |
| Federal | 13.1% | 18.4% | \$14,054,813 | \$4,692,720 | \$19,309,958 |
| Municipal | 2.3% | 3.3% | \$2,509,365 | \$837,844 | \$3,447,626 |
| Total | 100% | 100% | \$107,539,235 | \$25,554,175 | \$137,086,212 |

| FY 2022 | Base | Peaking | Base | Peaking | Allocation for Volumetric Revenue Requirements |
|-----------------------------|-------|---------|---------------|--------------|--|
| Residential Tier 1, 0-4 ccf | 11.0% | 0.0% | \$12,227,942 | \$ - | \$12,594,780 |
| Residential Tier 2, >4 ccf | 8.8% | 10.7% | \$9,725,275 | \$2,983,279 | \$13,089,811 |
| Multi-Family | 28.3% | 16.3% | \$31,350,162 | \$4,525,566 | \$36,952,000 |
| Commercial | 36.5% | 51.3% | \$40,495,238 | \$14,248,910 | \$56,386,473 |
| Federal | 13.1% | 18.4% | \$14,492,593 | \$5,099,455 | \$20,179,809 |
| Municipal | 2.3% | 3.3% | \$2,587,527 | \$910,464 | \$3,602,930 |
| <i>Total</i> | 100% | 100% | \$110,878,737 | \$27,767,674 | \$142,805,804 |

Volumetric revenue requirements were divided by the respective usage in each customer class, resulting in cost of service-based rates, below.

Table 18: Class-Based Volumetric Rates

| FY 2021 | Volumetric Revenue Requirements | Annual Usage (CCF) | Class Based Volumetric Rate (per CCF) |
|--------------------|---------------------------------|--------------------|---------------------------------------|
| Residential Tier 1 | \$12,219,967 | 3,511,043 | \$3.49 |
| Residential Tier 2 | \$12,547,929 | 2,792,445 | \$4.50 |
| Multi-Family | \$35,604,799 | 8,997,505 | \$3.96 |
| Commercial | \$53,955,932 | 11,622,144 | \$4.65 |
| Federal | \$19,309,958 | 4,159,378 | \$4.65 |
| Municipal | \$3,447,626 | 742,621 | \$4.65 |
| <i>Total</i> | \$137,086,212 | 31,825,135 | |

| FY 2022 | Volumetric Revenue Requirements | Annual Usage (CCF) | Class Based Volumetric Rate (per CCF) |
|--------------------|---------------------------------|--------------------|---------------------------------------|
| Residential Tier 1 | \$12,594,780 | 3,474,328 | \$3.63 |
| Residential Tier 2 | \$13,089,811 | 2,763,245 | \$4.74 |
| Multi-Family | \$36,952,000 | 8,907,530 | \$4.15 |
| Commercial | \$56,386,473 | 11,505,922 | \$4.91 |
| Federal | \$20,179,809 | 4,117,784 | \$4.91 |
| Municipal | \$3,602,930 | 735,195 | \$4.91 |
| <i>Total</i> | \$142,805,804 | 31,504,004 | |

For FY 2021, allocations to the water volumetric cost pool result in revenue requirements of \$137,086,212, which is then divided by projected units of service for the test year of 31,825,135 Ccf. Non-Residential customers had the highest peaking factors and, therefore, were allocated a higher proportion of peaking costs, resulting in a volumetric rate of \$4.65 per Ccf, which is \$1.16 per Ccf higher than the Tier 1 Residential rate of \$3.49 per Ccf. Conversely, Multi-Family customers had lower peaking factors and, therefore, were allocated a lower proportion of peaking costs,

resulting in a volumetric rate for Multi-Family customers of \$3.96 per Ccf, which is \$0.54 per Ccf lower than the Tier 2 Residential rate of \$4.50 per Ccf.

For FY 2022, allocations to the water volumetric cost pool result in revenue requirements of \$142,805,804, which is then divided by projected units of service for the test year of 31,504,004 Ccf. Non-Residential customers had the highest peaking factors and, therefore, were allocated a higher proportion of peaking costs, resulting in a volumetric rate of \$4.91 per Ccf, which is \$1.28 per Ccf higher than the Tier 1 Residential rate of \$3.63 per Ccf. Conversely, Multi-Family customers had lower peaking factors and, therefore, were allocated a lower proportion of peaking costs, resulting in a volumetric rate for Multi-Family customers of \$4.15 per Ccf, which is \$0.59 per Ccf lower than the Tier 2 Residential rate of \$4.74 per Ccf.

4.5. Wastewater Volumetric Rate

DC Water has historically increased water and wastewater rates at the same rate, yet wastewater costs have increased faster than water costs, suggesting a need to rebalance water and wastewater volumetric rates. As compared to water revenue requirements, which totaled \$137,086,212 and \$142,805,804 in FY 2021 and FY 2022, respectively, wastewater revenue requirements totaled \$298,517,944 in FY 2021 and \$321,804,229 in FY 2022. Wastewater revenue requirements were divided by the test years' projected usage volumes of 30,575,132 Ccf and 30,249,425 Ccf, respectively, which results in respective volumetric rates of \$9.77 and \$10.64.

4.6. Impervious Area Charge

Total revenue requirements allocated to the CRIAC for the test years totaled \$97,957,515 for FY 2021 and \$92,369,650 for FY 2022. As discussed in section 4.2.1, some of the CRIAC costs were re-allocated to the wastewater volumetric charge, over a phase-in period of three years ending in FY 2022, to reflect the fact that wastewater pays for a portion of CSO mitigation costs. This re-allocation to wastewater results in a decrease in the CRIAC charge from FY 2021 to FY 2022. Raftelis divided the CRIAC revenue requirements by units of service, as measured by ERUs, and calculated respective rates of \$19.52 and \$18.40 per ERU for FY 2021 and FY 2022.

4.7. COS / Rate Equity Conclusions

The results of the COS analysis support several conclusions and/or recommendations for consideration by DC Water staff and the Board, which are summarized below.

- In general, the existing rate structure provides for a reasonable allocation of costs to utility customers. However, there were several opportunities for improving rate equity when considering proposed rate recommendations in FY 2021 and FY 2022:
 - A portion of stormwater costs were shifted to the wastewater volumetric rate, reflecting wastewater contributions to CSO mitigation and increasing the sewer volumetric charge while decreasing the CRIAC charge.
 - A portion of costs associated with metering, billing, and collections were shifted away from water and sewer volumetric rates to the metering fee, which is in line with trends among peer utilities.
 - Revenues from the Water System Replacement fee was used to offset the water utility's revenue requirements, contributing to lower water volumetric charges.
- DC Water customers will pay higher volumetric rates and metering fees, but this increase will be partly mitigated by a lower CRIAC charge for FY 2021 and FY 2022. The PILOT District Charge on the DC Water bill is also increasing during the test year period.
- Average customer usage is currently at 5.42 Ccf/month, a 12.6% drop over typical usage from the 2015 COS study.
- The cost of providing sewer service is rising faster than the cost of providing water service, in part due to rising costs associated with CSO mitigation requirements.

- The cost of service suggests that DC Water should increase its water and sewer rates year over year, as compared to existing FY 2020 rates.
- The calculated water and sewer rates are designed to generate revenues consistent with projected revenues in the Financial Plan in FY 2021 and FY 2022.

5. Proposed Rates and Impacts

Through our COS analysis, Raftelis calculated proposed rates for FY 2021 and FY 2022, along with corresponding customer impacts. Table 19 presents the existing and proposed rates, along with the increases presented with both percentages and dollars. Table 20 and Table 21 present the customer impacts for a typical Residential customer and a typical Residential CAP customer, respectively, associated with the proposed FY 2021 and FY 2022 rates.

Table 19: Existing and Proposed Rates

| | FY 2020 (Existing) | FY 2021 (Proposed) | FY 2022 (Proposed) | FY 2021 | | FY 2022 | |
|---------------------------------------|-----------------------|-----------------------|-----------------------|---------------|--------------|---------------|--------------|
| | | | | \$ Difference | % Difference | \$ Difference | % Difference |
| Water Volumetric Residential – Tier 1 | \$3.06 | \$3.49 | \$3.63 | \$0.43 | 14.1% | \$0.14 | 4.0% |
| Water Volumetric Residential – Tier 2 | \$4.10 | \$4.50 | \$4.74 | \$0.40 | 9.8% | \$0.24 | 5.3% |
| Water Volumetric – Multi-family | \$3.54 | \$3.96 | \$4.15 | \$0.42 | 11.9% | \$0.19 | 4.8% |
| Water Volumetric – Non-Residential | \$4.25 | \$4.65 | \$4.91 | \$0.40 | 9.4% | \$0.26 | 5.6% |
| Sewer Volumetric | \$8.89 | \$9.77 | \$10.64 | \$0.88 | 9.9% | \$0.87 | 8.9% |
| Metering Fee | \$3.86 | \$4.96 | \$7.75 | \$1.10 | 28.5% | \$2.79 | 56.3% |
| Clean Rivers IAC | \$20.94 | \$19.52 | \$18.40 | \$(1.42) | -6.8% | \$(1.12) | -5.7% |
| WSRF | \$6.30 | \$6.30 | \$6.30 | \$ - | 0% | \$ - | 0% |

The tables below show the typical customer’s bill under existing and proposed rates. The typical bill is based on a 5/8” meter and 1 REU of impervious area. The previous COS study, completed in FY 2018, compared customer bills based on an average of 6.2 Ccf. Since then, average customer usage has declined by 12.6%, driven by the increased use of water-efficient appliances. The average customer usage is now 5.42 Ccf/month.

Table 20: Residential Customer Monthly Bill Impacts

| | Current (FY 2020) | Cost of Service (FY 2021) | Cost of Service (FY 2022) | FY 2021 | | FY 2022 | |
|--|----------------------|------------------------------|------------------------------|----------------|-------------|----------------|-------------|
| | | | | \$ Change | % Change | \$ Change | % Change |
| DC Water and Sewer Retail Rates | \$ 66.25 | \$ 73.30 | \$ 78.92 | \$ 7.05 | 10.6% | \$ 5.62 | 7.7% |
| DC Water Clean Rivers IAC | 20.94 | 19.52 | 18.40 | (1.42) | -6.8% | (1.12) | -5.7% |
| DC Water Customer Metering Fee | 3.86 | 4.96 | 7.75 | 1.10 | 28.5% | 2.79 | 56.3% |
| DC Water Water System Replacement Fee | 6.30 | 6.30 | 6.30 | - | 0.0% | - | 0.0% |
| Subtotal: DC Water Rates & Charges | \$ 97.35 | \$ 104.08 | \$ 111.37 | \$ 6.73 | 6.9% | \$ 7.29 | 7.0% |
| District of Columbia PILOT | \$ 2.76 | \$ 2.93 | \$ 3.04 | \$ 0.17 | 6.2% | 0.11 | 3.8% |
| District of Columbia Right of Way Fee | 1.03 | 1.03 | 1.03 | - | 0.0% | - | 0.0% |
| District of Columbia Stormwater Fee | 2.67 | 2.67 | 2.67 | - | 0.0% | - | 0.0% |
| Subtotal District of Columbia Charges | \$ 6.46 | \$ 6.63 | \$ 6.74 | \$ 0.17 | 2.6% | \$ 0.11 | 1.7% |
| Total Amount Appearing on DC Water Bill | \$ 103.81 | \$ 110.71 | \$ 118.11 | \$ 6.90 | 6.6% | \$ 7.40 | 6.7% |

Customers who qualify for DC Water’s Customer Assistance Program (CAP) receive a discount on their bill, as shown below. CAP customers receive their first 4 Ccf of monthly water and sewer usage free, and the District PILOT and ROW charges associated with the first 4 Ccf of usage are also waived. CAP customers do not pay the Water System Replacement Fee. In addition, CAP customers pay a reduced CRIAC charge each month. DC Water has increased the CRIAC charge discount from 50% to 75%, beginning in FY 2021.

Table 21: Residential CAP Customer Monthly Bill Impacts

RESIDENTIAL CAP CUSTOMER MONTHLY BILL (5/8" / 5.42 CCF)

| | Current (FY 2020) | Cost of Service (FY 2021) | Cost of Service (FY 2022) | FY 2021 | | FY 2022 | |
|--|----------------------|------------------------------|------------------------------|------------------|--------------|----------------|--------------|
| | | | | \$ Change | % Change | \$ Change | % Change |
| DC Water and Sewer Retail Rates | \$ 66.25 | \$ 73.30 | \$ 78.92 | \$ 7.05 | 10.6% | \$ 5.62 | 7.7% |
| DC Water Clean Rivers IAC | 20.94 | 19.52 | 18.40 | (1.42) | -6.8% | (1.12) | -5.7% |
| DC Water Customer Metering Fee | 3.86 | 4.96 | 7.75 | 1.10 | 28.5% | 2.79 | 56.3% |
| DC Water Water System Replacement Fee | 6.30 | 6.30 | 6.30 | - | 0.0% | - | 0.0% |
| Subtotal: DC Water Rates & Charges | \$ 97.35 | \$ 104.08 | \$ 111.37 | \$ 6.73 | 6.9% | \$ 7.29 | 7.0% |
| District of Columbia PILOT | \$ 2.76 | \$ 2.93 | \$ 3.04 | \$ 0.17 | 6.2% | \$ 0.11 | 3.8% |
| District of Columbia Right of Way Fee | 1.03 | 1.03 | 1.03 | - | 0.0% | - | 0.0% |
| District of Columbia Stormwater Fee | 2.67 | 2.67 | 2.67 | - | 0.0% | - | 0.0% |
| Subtotal District of Columbia Charges | \$ 6.46 | \$ 6.63 | \$ 6.74 | \$ 0.17 | 2.6% | \$ 0.11 | 1.7% |
| Less: CAP Discount - 4 Ccf per Month | \$ (50.60) | \$ (55.96) | \$ (60.08) | \$ (5.36) | 10.6% | \$ (4.12) | 7.4% |
| Less: CAP Discount - % of CRIAC | (10.47) | (14.64) | (13.80) | (4.17) | 39.8% | 0.84 | -5.7% |
| Less: CAP Discount - WSRF | (6.30) | (6.30) | (6.30) | - | - | - | 0.0% |
| Subtotal: CAP Discount | \$ (67.37) | \$ (76.90) | \$ (80.18) | \$ (9.53) | 14.1% | \$ (3.28) | 4.3% |
| Total Amount Appearing on DC Water Bill with CAP Discount | \$ 36.44 | \$ 33.81 | \$ 37.93 | \$ (2.63) | -7.2% | \$ 4.12 | 12.2% |

APPENDIX:
Supporting Schedules

DC Water
Comparison vs. Financial Plan

| | Financial Plan 2021 | Raftelis Model 2021 | Delta 2021 |
|---|------------------------|------------------------|---------------------------------|
| OPERATING REVENUE: | | | |
| Residential & Commercial | \$ 357,362,534 | \$ 355,865,677 | \$ (1,496,857) |
| D. C. Government | 10,714,060 | 10,697,595 | (16,465) |
| Federal Government | 56,030,637 | 56,030,637 | (0) |
| D. C. Housing Authority | 10,805,510 | 10,695,111 | (110,399) |
| Groundwater | 5,000 | 5,000 | - |
| Metering Fee | 15,404,519 | 15,404,519 | (0) |
| Water System Replacement Fee (WSRF) | 39,717,000 | 39,717,000 | - |
| Right-of-Way Fee / PILOT | 22,463,034 | 22,463,034 | - |
| CRIAC CSO Revenue | 94,604,383 | 94,644,335 | 39,952 |
| Total Retail Revenue | \$ 607,106,677 | \$ 605,522,907 | \$ (1,583,770) -0.26% |
| WHOLESALE REVENUE: | | | |
| LCSA + PI | \$ 11,194,341 | \$ 11,194,341 | - |
| WSSC | 55,951,847 | 55,951,847 | - |
| Fairfax County | 14,839,334 | 14,839,334 | - |
| Total Wholesale Revenue | \$ 81,985,522 | \$ 81,985,522 | \$ - |
| TOTAL OPERATING REVENUE | \$ 689,092,199 | \$ 687,508,429 | \$ (1,583,770) -0.23% |
| NON-OPERATING REVENUE: | | | |
| Interest Earnings | \$ 3,018,506 | \$ 3,018,506 | \$ - |
| Other Revenue | 41,024,000 | 41,024,000 | - |
| Northern Virginia Debt Service | 193,246 | 193,246 | - |
| Total Non-Operating Revenue | \$ 44,235,752 | \$ 44,235,752 | \$ - |
| TOTAL REVENUE | \$ 733,327,951 | \$ 731,744,181 | \$ (1,583,770) -0.22% |
| OPERATING EXPENSE: | | | |
| Personnel Services | \$ 153,482,000 | \$ 153,482,000 | \$ - |
| Contractual Services | 88,532,000 | 88,532,000 | - |
| Water Purchases | 36,250,000 | 36,250,000 | - |
| Chemicals & Supplies | 36,081,000 | 36,081,000 | - |
| Utilities & Rent | 27,911,000 | 27,911,000 | - |
| Small Equipment | 1,030,000 | 1,030,000 | - |
| Payment in Lieu of Taxes / Right of Way Fee | 22,372,415 | 22,372,415 | - |
| Total Operating Expenditures | \$ 365,658,415 | \$ 365,658,415 | \$ - 0.00% |
| NET REVENUES | \$ 367,669,536 | \$ 366,085,766 | \$ (1,583,770) |
| DEBT SERVICE: | | | |
| Jennings Randolph | \$ 805,192 | \$ 805,192 | \$ - |
| 1998 Revenue Bonds | 23,364,975 | 23,364,975 | - |
| Series 2014A | 16,849,000 | 16,849,000 | - |
| Series 2017A&B | 17,848,000 | 17,848,000 | - |
| Series 2018A&B | 18,324,250 | 18,324,250 | - |
| WASA Bonds - Planned - Subordinate | 9,298,167 | 9,298,167 | - |
| Capital Equipment Financing | - | - | - |
| Series 2010A Subordinate Bond | 15,564,107 | 15,564,107 | - |
| Series 2012A,B-1,B-2,C Subordinate Bond | 20,086,700 | 20,086,700 | - |
| Series 2013A Subordinate Bond | - | - | - |
| Series 2014B Subordinate Bond | 2,497,698 | 2,497,698 | - |
| Series 2014C Subordinate Bond | 30,348,200 | 30,348,200 | - |
| Series 2015A&B Subordinate Bond | 24,733,263 | 24,733,263 | - |
| Series 2016A Subordinate Bond | 17,039,013 | 17,039,013 | - |
| Series 2016B Subordinate Bond | 835,000 | 835,000 | - |
| Series 2019A Subordinate Bond | 4,708,700 | 4,708,700 | - |
| Series 2019B Subordinate Bond | 2,916,000 | 2,916,000 | - |
| Series 2019C Subordinate Bond | 1,741,338 | 1,741,338 | - |
| Series 2019D Subordinate Bond | 12,308,220 | 12,308,220 | - |
| EMCP | 1,500,000 | 1,500,000 | - |
| Commercial Paper | 1,500,000 | 1,500,000 | - |
| Total Debt | \$ 222,267,822 | \$ 222,267,822 | \$ - Check 0.00% |
| Cash Financed Capital Improvements | \$ 30,355,334 | \$ 30,355,334 | \$ (0) |
| TOTAL DISBURSEMENTS | \$ 618,281,571 | \$ 618,281,571 | \$ (0) 0.00% |
| Total Surplus (Deficit) | \$ 115,046,380 | \$ 113,462,610 | \$ (1,583,770) |

DC Water
Comparison vs. Financial Plan

| | Financial Plan 2022 | Raftelis Model 2022 | Delta 2022 |
|--|-------------------------------|-------------------------------|--|
| <i>*update hard-coded numbers as test year changes</i> | | | |
| OPERATING REVENUE: | | | |
| Residential & Commercial | \$ 381,425,294 | \$ 379,342,293 | \$ (2,083,001) |
| D. C. Government | 11,444,800 | 11,420,260 | (24,540) |
| Federal Government | 50,275,851 | 50,099,510 | (176,341) |
| D. C. Housing Authority | 11,521,410 | 11,402,522 | (118,888) |
| Groundwater | 5,000 | 5,000 | - |
| Metering Fee | 24,082,852 | 24,082,852 | - |
| Water System Replacement Fee (WSRF) | 39,717,000 | 39,717,000 | - |
| Right-of-Way Fee / PILOT | 22,843,650 | 22,843,650 | - |
| CRIAC CSO Revenue | 89,179,272 | 89,184,283 | 5,011 |
| Total Retail Revenue | <u>\$ 630,495,129</u> | <u>\$ 628,097,369</u> | <u>\$ (2,397,760)</u> <i>-0.38%</i> |
| WHOLESALE REVENUE: | | | |
| LCSA + PI | \$ 11,530,171 | \$ 11,530,171 | - |
| WSSC | 57,630,402 | 57,630,402 | - |
| Fairfax County | 15,284,514 | 15,284,514 | - |
| Total Wholesale Revenue | <u>\$ 84,445,087</u> | <u>\$ 84,445,087</u> | <u>\$ -</u> |
| TOTAL OPERATING REVENUE | <u>\$ 714,940,216</u> | <u>\$ 712,542,456</u> | <u>\$ (2,397,760)</u> <i>-0.34%</i> |
| NON-OPERATING REVENUE: | | | |
| Interest Earnings | \$ 3,296,209 | \$ 3,296,209 | \$ - |
| Other Revenue | 47,438,000 | 47,438,000 | - |
| Northern Virginia Debt Service | 193,246 | 193,246 | - |
| Total Non-Operating Revenue | <u>\$ 50,927,455</u> | <u>\$ 50,927,455</u> | <u>\$ -</u> |
| TOTAL REVENUE | <u>\$ 765,867,671</u> | <u>\$ 763,469,911</u> | <u>\$ (2,397,760)</u> <i>-0.31%</i> |
| OPERATING EXPENSE: | | | |
| Personnel Services | \$ 159,621,280 | \$ 159,621,280 | \$ - |
| Contractual Services | 88,641,280 | 88,641,280 | - |
| Water Purchases | 37,700,000 | 37,700,000 | - |
| Chemicals & Supplies | 37,524,240 | 37,524,240 | - |
| Utilities & Rent | 29,027,440 | 29,027,440 | - |
| Small Equipment | 1,071,200 | 1,071,200 | - |
| Payment in Lieu of Taxes / Right of Way Fee | 22,717,863 | 22,717,863 | - |
| Total Operating Expenditures | <u>\$ 376,303,303</u> | <u>\$ 376,303,303</u> | <u>\$ -</u> <i>0.00%</i> |
| NET REVENUES | <u>\$ 389,564,368</u> | <u>\$ 387,166,608</u> | <u>\$ (2,397,760)</u> |
| DEBT SERVICE: | | | |
| Jennings Randolph | \$ 805,191 | \$ 805,191 | \$ - |
| 1998 Revenue Bonds | 23,364,850 | 23,364,850 | - |
| Series 2014A | 16,849,000 | 16,849,000 | - |
| Series 2017A&B | 17,846,000 | 17,846,000 | - |
| Series 2018A&B | 18,326,000 | 18,326,000 | - |
| WASA Bonds - Planned - Subordinate | 26,814,055 | 26,399,853 | (414,202) |
| Capital Equipment Financing | - | - | - |
| Series 2010A Subordinate Bond | 15,510,750 | 15,510,750 | - |
| Series 2012A,B-1,B-2,C Subordinate Bond | 20,087,200 | 20,087,200 | - |
| Series 2013A Subordinate Bond | - | - | - |
| Series 2014B Subordinate Bond | 3,250,000 | 3,250,000 | - |
| Series 2014C Subordinate Bond | 30,392,700 | 30,392,700 | - |
| Series 2015A&B Subordinate Bond | 24,729,263 | 24,729,263 | - |
| Series 2016A Subordinate Bond | 17,039,013 | 17,039,013 | - |
| Series 2016B Subordinate Bond | 812,500 | 812,500 | - |
| Series 2019A Subordinate Bond | 4,708,700 | 4,708,700 | - |
| Series 2019B Subordinate Bond | 2,916,000 | 2,916,000 | - |
| Series 2019C Subordinate Bond | 1,741,338 | 1,741,338 | - |
| Series 2019D Subordinate Bond | 12,304,572 | 12,304,572 | - |
| EMCP | 1,500,000 | 1,500,000 | - |
| Commercial Paper | 1,500,000 | 1,500,000 | - |
| Total Debt | <u>\$ 240,497,131</u> | <u>\$ 240,082,928</u> | <u>\$ (414,202)</u> <i>Check</i> <i>-0.17%</i> |
| Cash Financed Capital Improvements | \$ 37,829,708 | \$ 37,829,708 | \$ (0) |
| TOTAL DISBURSEMENTS | <u>\$ 654,630,142</u> | <u>\$ 654,215,939</u> | <u>\$ (414,202)</u> <i>-0.06%</i> |
| Total Surplus (Deficit) | <u>\$ 111,237,529</u> | <u>\$ 109,253,972</u> | <u>\$ (1,983,557)</u> |

DC Water
Revenue Requirements - FY 2021

| | Test Year: | | | | | |
|--|----------------|----------------|--------------|----------------|----------------|-------|
| | 2021 | Water | Meter Charge | Wastewater | CSO | |
| Operations | | | | | | |
| Wastewater Treatment - Operations | \$ 79,752,999 | \$ - | \$ - | \$ 79,752,999 | \$ - | |
| Wastewater Treatment - Process Engineering | 7,231,748 | - | - | 7,231,748 | - | |
| Maintenance Services | 20,075,315 | 1,405,272 | - | 18,670,043 | - | |
| Water Services | 67,557,015 | 67,557,015 | - | - | - | |
| Water Quality and Technology | - | - | - | - | - | |
| Pumping | 37,970,294 | - | - | 37,970,294 | - | |
| Customer Service | 20,360,362 | 6,343,016 | 7,186,444 | 6,830,901 | - | |
| Distribution & Conveyance Systems | - | - | - | - | - | |
| Engineering & Technical Services | 4,495,876 | 1,213,886 | - | 3,281,989 | - | |
| Wastewater Engineering | 3,355,128 | - | - | 3,355,128 | - | |
| DC Clean Rivers | 1,000,126 | - | - | - | 1,000,126 | |
| Permit Operations | 4,165,499 | 2,082,750 | - | 2,082,750 | - | |
| Subtotal Operations | \$ 245,964,362 | \$ 78,601,940 | \$ 7,186,444 | \$ 159,175,853 | \$ 1,000,126 | |
| | <i>Check</i> | - | - | - | - | |
| Administration | | | | | | |
| General Manager | \$ 4,587,931 | \$ 2,064,569 | \$ - | \$ 2,523,362 | \$ - | |
| Office of the Secretary | 631,562 | 284,203 | - | 347,359 | - | |
| Internal Audit | 742,000 | 333,900 | - | 408,100 | - | |
| General Counsel | 6,643,689 | 2,989,660 | - | 3,654,029 | - | |
| Public Affairs | 2,866,865 | 1,290,089 | - | 1,576,776 | - | |
| Human Resources | 9,769,745 | 4,396,385 | - | 5,373,360 | - | |
| Information Technology | 10,384,372 | 4,672,968 | - | 5,711,405 | - | |
| Procurement | 6,327,327 | 2,847,297 | - | 3,480,030 | - | |
| Finance and Budget | 27,387,717 | 12,324,473 | - | 15,063,244 | - | |
| Assistant General Manager | 634,099 | 285,345 | - | 348,755 | - | |
| Office of Emergency Management | 1,497,802 | 674,011 | - | 823,791 | - | |
| Facilities Management | 8,661,144 | 3,897,515 | - | 4,763,629 | - | |
| Security | 7,887,850 | 3,549,533 | - | 4,338,318 | - | |
| Occupational Safety and Health | 2,335,155 | 1,050,820 | - | 1,284,335 | - | |
| Fleet Management | 6,965,021 | 3,134,260 | - | 3,830,762 | - | |
| Subtotal Administration | \$ 97,322,279 | \$ 43,795,026 | \$ - | \$ 53,527,253 | \$ - | |
| | <i>Check</i> | - | - | - | - | |
| Total O&M | \$ 343,286,641 | \$ 122,396,965 | \$ 7,186,444 | \$ 212,703,106 | \$ 1,000,126 | |
| | <i>Check</i> | - | - | - | - | |
| Debt Service | | | | | | |
| 1998 Revenue Bonds | \$ 23,364,975 | \$ 3,791,211 | \$ 1,913,589 | \$ 17,029,321 | \$ 630,854 | |
| Series 2014A | 16,849,000 | - | - | - | 16,849,000 | |
| Series 2017A | 4,591,000 | - | - | - | 4,591,000 | |
| Series 2017B | 13,257,000 | 4,698,229 | 602,791 | 7,955,981 | - | |
| Series 2018A | 5,000,000 | - | - | - | 5,000,000 | |
| Series 2018B | 13,324,250 | 3,887,801 | 816,874 | 8,619,575 | - | |
| DC Water Bonds Planned | 9,298,167 | 2,176,204 | 106,854 | 4,326,749 | 2,688,361 | |
| Jennings Randolph | 805,192 | 805,192 | - | - | - | |
| Commercial Paper | 1,500,000 | 303,296 | 31,945 | 86,259 | 1,078,500 | |
| Series 2010A Subordinate Bond | 15,564,107 | 2,502,708 | 130,738 | 3,293,365 | 9,637,295 | |
| Series 2012 Subordinate Bond | 20,086,700 | 2,239,667 | 104,451 | 2,932,658 | 14,809,924 | |
| Series 2013A Subordinate Bond | - | - | - | - | - | |
| Series 2014B Subordinate Bond | 2,497,698 | 640,172 | 16,448 | 1,841,078 | - | |
| Series 2014C Subordinate Bond | 30,348,200 | 9,030,513 | 163,462 | 14,694,370 | 6,459,855 | |
| Series 2015A Subordinate Bond | - | - | - | - | 11,926,900 | |
| Series 2015B Subordinate Bond | 12,806,363 | 5,686,341 | 367,507 | 6,752,514 | - | |
| Series 2016A Subordinate Bond | 17,039,013 | 6,629,884 | 125,382 | 8,155,157 | 2,128,589 | |
| Series 2016B Subordinate Bond | 835,000 | - | - | - | 835,000 | |
| Series 2019A Subordinate Bond | 4,708,700 | - | - | - | 4,708,700 | |
| Series 2019B Subordinate Bond | 2,916,000 | 909,816 | 83,173 | 1,923,012 | - | |
| Series 2019C Subordinate Bond | 1,741,338 | 306,900 | 41,597 | 806,010 | 586,831 | |
| Series 2019D Subordinate Bond | 12,308,220 | 3,840,265 | 351,066 | 8,116,890 | - | |
| EMCP | 1,500,000 | 685,715 | - | 814,285 | - | |
| Coverage Allowance | 133,360,693 | 28,880,348 | 2,913,525 | 52,408,334 | 49,158,486 | |
| Total Debt | \$ 222,267,822 | \$ 48,133,914 | \$ 4,855,875 | \$ 87,347,224 | \$ 81,930,810 | |
| | <i>Check</i> | - | 21.7% | 2.2% | 39.3% | 36.9% |
| | <i>Check</i> | - | - | - | - | - |
| Total Capital Cost | \$ 355,628,515 | \$ 77,014,262 | \$ 7,769,399 | \$ 139,755,558 | \$ 131,089,295 | |

| | 2021 | Volume | Meter Charge | Wastewater | CSO |
|--|------|---------|--------------|------------|---------|
| Operations | | | | | |
| Wastewater Treatment - Operations | 100% | | | 100.00% | |
| Wastewater Treatment - Process Engineering | 100% | | | 100.00% | |
| Maintenance Services | 100% | 7.00% | | 93.00% | |
| Water Services | 100% | 100.00% | | | |
| Water Quality and Technology | 100% | 100.00% | | | |
| Pumping | 100% | | | 100.00% | |
| Customer Service | 100% | 31.15% | 35.30% | 33.55% | |
| Distribution & Conveyance Systems | 100% | | | 50.00% | |
| Engineering & Technical Services | 100% | 27.00% | | 73.00% | |
| Wastewater Engineering | 100% | | | 100.00% | |
| DC Clean Rivers | 100% | | | | 100.00% |
| Permit Operations | 100% | 50.00% | | 50.00% | |

| | 2021 | Volume | Meter | Wastewater | CSO |
|--------------------------------|------|--------|-------|------------|-------|
| Administration | | | | | |
| General Manager | 100% | 45.00% | | 55.00% | 0.00% |
| Office of the Secretary | 100% | 45.00% | | 55.00% | 0.00% |
| Internal Audit | 100% | 45.00% | | 55.00% | 0.00% |
| General Counsel | 100% | 45.00% | | 55.00% | 0.00% |
| Public Affairs | 100% | 45.00% | | 55.00% | 0.00% |
| Human Resources | 100% | 45.00% | | 55.00% | 0.00% |
| Information Technology | 100% | 45.00% | | 55.00% | 0.00% |
| Procurement | 100% | 45.00% | | 55.00% | 0.00% |
| Finance and Budget | 100% | 45.00% | | 55.00% | 0.00% |
| Assistant General Manager | 100% | 45.00% | | 55.00% | 0.00% |
| Office of Emergency Management | 100% | 45.00% | | 55.00% | 0.00% |
| Facilities Management | 100% | 45.00% | | 55.00% | 0.00% |
| Security | 100% | 45.00% | | 55.00% | 0.00% |
| Occupational Safety and Health | 100% | 45.00% | | 55.00% | 0.00% |
| Fleet Management | 100% | 45.00% | | 55.00% | 0.00% |

| | 2021 | Volume | Meter | Wastewater | CSO |
|-------------------------------|------|---------|-------|------------|---------|
| Debt Service | | | | | |
| 1998 Revenue Bonds | 100% | 16.23% | 8.19% | 72.88% | 2.70% |
| Series 2014A | 100% | | | | 100.00% |
| Series 2017A | 100% | | | | 100.00% |
| Series 2017B | 100% | 35.44% | 4.55% | 60.01% | |
| Series 2018A | 100% | | | | 100.00% |
| Series 2018B | 100% | 29.18% | 6.13% | 64.69% | |
| DC Water Bonds Planned | 100% | 23.40% | 1.15% | 46.53% | 28.91% |
| Jennings Randolph | 100% | 100.00% | | | |
| Commercial Paper | 100% | 20.22% | 2.13% | 5.75% | 71.90% |
| Series 2010A Subordinate Bond | 100% | 16.08% | 0.84% | 21.16% | 61.92% |
| Series 2012 Subordinate Bond | 100% | 11.15% | 0.52% | 14.60% | 73.73% |
| Series 2013A Subordinate Bond | 100% | 17.62% | 2.39% | 46.29% | 33.70% |
| Series 2014B Subordinate Bond | 100% | 25.63% | 0.66% | 73.71% | |
| Series 2014C Subordinate Bond | 100% | 29.76% | 0.54% | 48.42% | 21.29% |
| Series 2015A Subordinate Bond | 100% | | | | 100.00% |
| Series 2015B Subordinate Bond | 100% | 44.40% | 2.87% | 52.73% | |
| Series 2016A Subordinate Bond | 100% | 38.91% | 0.74% | 47.86% | 12.49% |
| Series 2016B Subordinate Bond | 100% | | | | 100.00% |
| Series 2019A Subordinate Bond | 100% | | | | 100.00% |
| Series 2019B Subordinate Bond | 100% | 31.20% | 2.85% | 65.95% | |
| Series 2019C Subordinate Bond | 100% | 17.62% | 2.39% | 46.29% | 33.70% |
| Series 2019D Subordinate Bond | 100% | 31.20% | 2.85% | 65.95% | |
| EMCP | 100% | 45.71% | | 54.29% | |

| | | | | | |
|---|------------------|-----------------|---------------|------------------|----------------|
| Wholesale Revenue | | | | | |
| LCSA + PI | \$ (11,194,341) | \$ - | \$ - | \$ (11,194,341) | \$ - |
| WSSC | (55,951,847) | - | - | (55,951,847) | - |
| Fairfax County | (14,839,334) | - | - | (14,839,334) | - |
| Other Revenue | | | | | |
| IMA Indirect Cost Reimb. For Capital Projects | (5,073,000) | - | - | (5,073,000) | - |
| Dev. Contr/Water Services Fees, Taps | (4,000,000) | (4,000,000) | - | - | - |
| Dev. Contr/Liability Deposits/Sewer Service Fees | (2,000,000) | - | - | (2,000,000) | - |
| Commercial Water Maintenance | (32,000) | (32,000) | - | - | - |
| DC Fire Protection Fee | (12,527,000) | (12,527,000) | - | - | - |
| System Availability Fee | (7,700,000) | (3,850,000) | - | (3,850,000) | - |
| Transfer from DC PILOT/ROW Fund | - | - | - | - | - |
| Transfer from Rate Stabilization | (2,500,000) | (750,000) | - | (1,750,000) | - |
| DC Contribution of 50% PILOT Escrow to DCW | - | - | - | - | - |
| Sales to DC Agencies-Steam/Meter | (170,000) | (170,000) | - | - | - |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | (6,000,000) | - | - | (6,000,000) | - |
| Pipe Repair Sales/Replacement | (22,000) | (22,000) | - | - | - |
| Stormwater | (1,000,000) | - | - | (1,000,000) | - |
| Northern Virginia Debt Service | (193,246) | (46,379) | - | (146,867) | - |
| WSRF | (39,717,000) | (39,717,000) | - | - | - |
| Interest Income | (3,018,506) | (1,358,328) | - | (1,660,178) | - |
| | - | - | - | - | - |
| Total Revenue Offsets | \$ (165,938,274) | \$ (62,472,707) | \$ - | \$ (103,465,567) | \$ - |
| <i>Check</i> | - | - | - | - | - |
| Unadjusted Revenue Requirement | \$ 532,976,883 | \$ 136,938,521 | \$ 14,955,844 | \$ 248,993,098 | \$ 132,089,421 |
| Reallocation from CRIAC to Sewer | - | - | - | 36,985,038 | (36,985,038) |
| Adjustment for 15-Year AMR | - | - | - | - | - |
| Total Revenue Requirement | \$ 532,976,883 | \$ 136,938,521 | \$ 14,955,844 | \$ 285,978,136 | \$ 95,104,383 |
| | | 26% | 3% | 54% | 18% |

| | 2021 | Volume | Meter | Wastewater | CSO |
|---|------|---------|-------|------------|-------|
| LCSA + PI | 100% | | | 100.00% | 0.00% |
| WSSC | 100% | | | 100.00% | 0.00% |
| Fairfax County | 100% | | | 100.00% | 0.00% |
| IMA Indirect Cost Reimb. For Capital Projects | 100% | | | 100.00% | |
| Dev. Contr/Water Services Fees, Taps | 100% | 100.00% | | | |
| Dev. Contr/Liability Deposits/Sewer Service Fees | 100% | | | 100.00% | |
| Commercial Water Maintenance | 100% | 100.00% | | | |
| DC Fire Protection Fee | 100% | 100.00% | | | |
| System Availability Fee | 100% | 50.00% | | 50.00% | |
| Transfer from DC PILOT/ROW Fund | 100% | 32.55% | | 67.45% | |
| Transfer from Rate Stabilization | 100% | 30.00% | | 70.00% | |
| DC Contribution of 50% PILOT Escrow to DCW | 100% | 32.55% | | 67.45% | |
| Sales to DC Agencies-Steam/Meter | 100% | 100.00% | | | |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | 100% | | | 100.00% | |
| Pipe Repair Sales/Replacement | 100% | 100.00% | | | |
| Stormwater | 100% | | | 100.00% | |
| Northern Virginia Debt Service | 100% | 24.00% | | 76.00% | |
| WSRF | 100% | 100.00% | | | |
| Interest Income | 100% | 45.00% | | 55.00% | |

DC Water
Revenue Requirements - FY 2022

| | Test Year: | | | | | |
|--|-----------------------|-----------------------|---------------------|-----------------------|-----------------------|-------|
| | 2022 | Water | Meter Charge | Wastewater | CSO | |
| Operations | | | | | | |
| Wastewater Treatment - Operations | \$ 82,145,589 | \$ - | \$ - | \$ 82,145,589 | \$ - | |
| Wastewater Treatment - Process Engineering | 7,448,700 | - | - | 7,448,700 | - | |
| Maintenance Services | 20,677,575 | 1,447,430 | - | 19,230,145 | - | |
| Water Services | 69,583,726 | 69,583,726 | - | - | - | |
| Water Quality and Technology | - | - | - | - | - | |
| Pumping | 39,109,403 | - | - | 39,109,403 | - | |
| Customer Service | 20,971,173 | 6,533,307 | 7,402,038 | 7,035,828 | - | |
| Distribution & Conveyance Systems | - | - | - | - | - | |
| Engineering & Technical Services | 4,630,752 | 1,250,303 | - | 3,380,449 | - | |
| Wastewater Engineering | 3,455,781 | - | - | 3,455,781 | - | |
| DC Clean Rivers | 1,030,129 | - | - | - | 1,030,129 | |
| Permit Operations | 4,290,464 | 2,145,232 | - | 2,145,232 | - | |
| Subtotal Operations | \$ 253,343,293 | \$ 80,959,998 | \$ 7,402,038 | \$ 163,951,129 | \$ 1,030,129 | |
| | <i>Check</i> | - | - | - | - | |
| Administration | | | | | | |
| General Manager | \$ 4,725,569 | \$ 2,126,506 | \$ - | \$ 2,599,063 | \$ - | |
| Office of the Secretary | 650,509 | 292,729 | - | 357,780 | - | |
| Internal Audit | 764,260 | 343,917 | - | 420,343 | - | |
| General Counsel | 6,843,000 | 3,079,350 | - | 3,763,650 | - | |
| Public Affairs | 2,952,871 | 1,328,792 | - | 1,624,079 | - | |
| Human Resources | 10,062,837 | 4,528,277 | - | 5,534,560 | - | |
| Information Technology | 10,695,903 | 4,813,157 | - | 5,882,747 | - | |
| Procurement | 6,517,147 | 2,932,716 | - | 3,584,431 | - | |
| Finance and Budget | 28,209,348 | 12,694,207 | - | 15,515,142 | - | |
| Assistant General Manager | 653,122 | 293,905 | - | 359,217 | - | |
| Office of Emergency Management | 1,542,736 | 694,231 | - | 848,505 | - | |
| Facilities Management | 8,920,978 | 4,014,440 | - | 4,906,538 | - | |
| Security | 8,124,486 | 3,656,019 | - | 4,468,467 | - | |
| Occupational Safety and Health | 2,405,209 | 1,082,344 | - | 1,322,865 | - | |
| Fleet Management | 7,173,972 | 3,228,287 | - | 3,945,685 | - | |
| Subtotal Administration | \$ 100,241,947 | \$ 45,108,876 | \$ - | \$ 55,133,071 | \$ - | |
| | <i>Check</i> | - | - | - | - | |
| Total O&M | \$ 353,585,241 | \$ 126,068,874 | \$ 7,402,038 | \$ 219,084,200 | \$ 1,030,129 | |
| | <i>Check</i> | - | - | - | - | |
| Debt Service | | | | | | |
| 1998 Revenue Bonds | \$ 23,364,850 | \$ 3,791,191 | \$ 1,913,579 | \$ 17,029,229 | \$ 630,851 | |
| Series 2014A | 16,849,000 | - | - | - | 16,849,000 | |
| Series 2017A | 4,591,000 | - | - | - | 4,591,000 | |
| Series 2017B | 13,255,000 | 4,697,520 | 602,700 | 7,954,780 | - | |
| Series 2018A | 5,000,000 | - | - | - | 5,000,000 | |
| Series 2018B | 13,326,000 | 3,888,311 | 816,982 | 8,620,707 | - | |
| DC Water Bonds Planned | 26,399,853 | 6,178,796 | 303,385 | 12,284,735 | 7,632,937 | |
| Jennings Randolph | 805,191 | 805,191 | - | - | - | |
| Commercial Paper | 1,500,000 | 303,296 | 31,945 | 86,259 | 1,078,500 | |
| Series 2010A Subordinate Bond | 15,510,750 | 2,494,129 | 130,290 | 3,282,075 | 9,604,256 | |
| Series 2012 Subordinate Bond | 20,087,200 | 2,239,723 | 104,453 | 2,932,731 | 14,810,293 | |
| Series 2013A Subordinate Bond | - | - | - | - | - | |
| Series 2014B Subordinate Bond | 3,250,000 | 832,990 | 21,402 | 2,395,607 | - | |
| Series 2014C Subordinate Bond | 30,392,700 | 9,043,754 | 163,701 | 14,715,917 | 6,469,328 | |
| Series 2015A Subordinate Bond | - | - | - | - | 11,922,900 | |
| Series 2015B Subordinate Bond | 12,806,363 | 5,686,341 | 367,507 | 6,752,514 | - | |
| Series 2016A Subordinate Bond | 17,039,013 | 6,629,884 | 125,382 | 8,155,157 | 2,128,589 | |
| Series 2016B Subordinate Bond | - | 812,500 | - | - | 812,500 | |
| Series 2019A Subordinate Bond | 4,708,700 | - | - | - | 4,708,700 | |
| Series 2019B Subordinate Bond | 2,916,000 | 909,816 | 83,173 | 1,923,012 | - | |
| Series 2019C Subordinate Bond | 1,741,338 | 306,900 | 41,597 | 806,010 | 586,831 | |
| Series 2019D Subordinate Bond | 12,304,572 | 3,839,126 | 350,961 | 8,114,484 | - | |
| EMCP | 1,500,000 | 685,715 | - | 814,285 | - | |
| Coverage Allowance | 144,049,757 | 31,399,610 | 3,034,233 | 57,520,502 | 52,095,411 | |
| Total Debt | \$ 240,082,928 | \$ 52,332,683 | \$ 5,057,056 | \$ 95,867,504 | \$ 86,825,685 | |
| | <i>Check</i> | - | 21.8% | 2.1% | 39.9% | 36.2% |
| | <i>Check</i> | - | - | - | - | - |
| Total Capital Cost | \$ 384,132,685 | \$ 83,732,293 | \$ 8,091,289 | \$ 153,388,006 | \$ 138,921,096 | |

| | 2022 | Volume | Meter Charge | Wastewater | CSO |
|--|------|---------|--------------|------------|---------|
| Operations | | | | | |
| Wastewater Treatment - Operations | 100% | - | - | 100.00% | - |
| Wastewater Treatment - Process Engineering | 100% | - | - | 100.00% | - |
| Maintenance Services | 100% | 7.00% | - | 93.00% | - |
| Water Services | 100% | 100.00% | - | - | - |
| Water Quality and Technology | 100% | 100.00% | - | - | - |
| Pumping | 100% | 0.00% | - | 100.00% | - |
| Customer Service | 100% | 31.15% | 35.30% | 33.55% | - |
| Distribution & Conveyance Systems | 100% | 50.00% | - | 50.00% | - |
| Engineering & Technical Services | 100% | 27.00% | - | 73.00% | - |
| Wastewater Engineering | 100% | - | - | 100.00% | - |
| DC Clean Rivers | 100% | - | - | - | 100.00% |
| Permit Operations | 100% | 50.00% | - | 50.00% | - |

| | 2022 | Volume | Meter | Wastewater | CSO |
|--------------------------------|------|--------|-------|------------|-------|
| Administration | | | | | |
| General Manager | 100% | 45.00% | - | 55.00% | 0.00% |
| Office of the Secretary | 100% | 45.00% | - | 55.00% | 0.00% |
| Internal Audit | 100% | 45.00% | - | 55.00% | 0.00% |
| General Counsel | 100% | 45.00% | - | 55.00% | 0.00% |
| Public Affairs | 100% | 45.00% | - | 55.00% | 0.00% |
| Human Resources | 100% | 45.00% | - | 55.00% | 0.00% |
| Information Technology | 100% | 45.00% | - | 55.00% | 0.00% |
| Procurement | 100% | 45.00% | - | 55.00% | 0.00% |
| Finance and Budget | 100% | 45.00% | - | 55.00% | 0.00% |
| Assistant General Manager | 100% | 45.00% | - | 55.00% | 0.00% |
| Office of Emergency Management | 100% | 45.00% | - | 55.00% | 0.00% |
| Facilities Management | 100% | 45.00% | - | 55.00% | 0.00% |
| Security | 100% | 45.00% | - | 55.00% | 0.00% |
| Occupational Safety and Health | 100% | 45.00% | - | 55.00% | 0.00% |
| Fleet Management | 100% | 45.00% | - | 55.00% | 0.00% |

| | 2022 | Volume | Meter | Wastewater | CSO |
|-------------------------------|------|---------|-------|------------|---------|
| Debt Service | | | | | |
| 1998 Revenue Bonds | 100% | 16.23% | 8.19% | 72.88% | 2.70% |
| Series 2014A | 100% | - | - | - | 100.00% |
| Series 2017A | 100% | - | - | - | 100.00% |
| Series 2017B | 100% | 35.44% | 4.55% | 60.01% | - |
| Series 2018A | 100% | - | - | - | 100.00% |
| Series 2018B | 100% | 29.18% | 6.13% | 64.69% | - |
| DC Water Bonds Planned | 100% | 23.40% | 1.15% | 46.53% | 28.91% |
| Jennings Randolph | 100% | 100.00% | - | - | - |
| Commercial Paper | 100% | 20.22% | 2.13% | 5.75% | 71.90% |
| Series 2010A Subordinate Bond | 100% | 16.08% | 0.84% | 21.16% | 61.92% |
| Series 2012 Subordinate Bond | 100% | 11.15% | 0.52% | 14.60% | 73.73% |
| Series 2013A Subordinate Bond | 100% | 17.62% | 2.39% | 46.29% | 33.70% |
| Series 2014B Subordinate Bond | 100% | 25.63% | 0.66% | 73.71% | - |
| Series 2014C Subordinate Bond | 100% | 29.76% | 0.54% | 48.42% | 21.29% |
| Series 2015A Subordinate Bond | 100% | - | - | - | 100.00% |
| Series 2015B Subordinate Bond | 100% | 44.40% | 2.87% | 52.73% | - |
| Series 2016A Subordinate Bond | 100% | 38.91% | 0.74% | 47.86% | 12.49% |
| Series 2016B Subordinate Bond | 100% | - | - | - | 100.00% |
| Series 2019A Subordinate Bond | 100% | - | - | - | 100.00% |
| Series 2019B Subordinate Bond | 100% | 31.20% | 2.85% | 65.95% | - |
| Series 2019C Subordinate Bond | 100% | 17.62% | 2.39% | 46.29% | 33.70% |
| Series 2019D Subordinate Bond | 100% | 31.20% | 2.85% | 65.95% | - |
| EMCP | 100% | 45.71% | - | 54.29% | - |

| | | | | | |
|---|------------------|-----------------|---------------|------------------|------------------|
| Wholesale Revenue | | | | | |
| LCSA + PI | \$ (11,530,171) | \$ - | \$ - | \$ (11,530,171) | \$ - |
| WSSC | (57,630,402) | - | - | (57,630,402) | - |
| Fairfax County | (15,284,514) | - | - | (15,284,514) | - |
| Other Revenue | | | | | |
| IMA Indirect Cost Reimb. For Capital Projects | (5,218,000) | - | - | (5,218,000) | - |
| Dev. Contr/Water Services Fees, Taps | (4,000,000) | (4,000,000) | - | - | - |
| Dev. Contr/Liability Deposits/Sewer Service Fees | (2,000,000) | - | - | (2,000,000) | - |
| Commercial Water Maintenance | (32,000) | (32,000) | - | - | - |
| DC Fire Protection Fee | (10,796,000) | (10,796,000) | - | - | - |
| System Availability Fee | (7,700,000) | (3,850,000) | - | (3,850,000) | - |
| Transfer from DC PILOT/ROW Fund | - | - | - | - | - |
| Transfer from Rate Stabilization | (10,500,000) | (3,150,000) | - | (7,350,000) | - |
| DC Contribution of 50% PILOT Escrow to DCW | - | - | - | - | - |
| Sales to DC Agencies-Steam/Meter | (170,000) | (170,000) | - | - | - |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | (6,000,000) | - | - | (6,000,000) | - |
| Pipe Repair Sales/Replacement | (22,000) | (22,000) | - | - | - |
| Stormwater | (1,000,000) | - | - | (1,000,000) | - |
| Northern Virginia Debt Service | (193,246) | (46,379) | - | (146,867) | - |
| WSRF | (39,717,000) | (39,717,000) | - | - | - |
| Interest Income | (3,296,209) | (1,483,294) | - | (1,812,915) | - |
| | - | - | - | - | - |
| Total Revenue Offsets | \$ (175,089,542) | \$ (63,266,673) | \$ - | \$ (111,822,869) | \$ - |
| <i>Check</i> | - | - | - | - | - |
| Unadjusted Revenue Requirement | \$ 562,628,383 | \$ 146,534,494 | \$ 15,493,327 | \$ 260,649,337 | \$ 139,951,225 |
| Reallocation from CRIAC to Sewer | - | - | - | 51,781,953 | (51,781,953) 37% |
| Adjustment for 15-Year AMR | - | - | - | - | - |
| Total Revenue Requirement | \$ 562,628,383 | \$ 146,534,494 | \$ 15,493,327 | \$ 312,431,290 | \$ 89,679,272 |
| | | 26% | 3% | 56% | 16% |

| | 2022 | Volume | Meter | Wastewater | CSO |
|---|------|---------|-------|------------|-------|
| LCSA + PI | 100% | | | 100.00% | 0.00% |
| WSSC | 100% | | | 100.00% | 0.00% |
| Fairfax County | 100% | | | 100.00% | 0.00% |
| IMA Indirect Cost Reimb. For Capital Projects | 100% | | | 100.00% | |
| Dev. Contr/Water Services Fees, Taps | 100% | 100.00% | | | |
| Dev. Contr/Liability Deposits/Sewer Service Fees | 100% | | | 100.00% | |
| Commercial Water Maintenance | 100% | 100.00% | | | |
| DC Fire Protection Fee | 100% | 100.00% | | | |
| System Availability Fee | 100% | 50.00% | | 50.00% | |
| Transfer from DC PILOT/ROW Fund | 100% | 32.55% | | 67.45% | |
| Transfer from Rate Stabilization | 100% | 30.00% | | 70.00% | |
| DC Contribution of 50% PILOT Escrow to DC | 100% | 32.55% | | 67.45% | |
| Sales to DC Agencies-Steam/Meter | 100% | 100.00% | | | |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | 100% | | | 100.00% | |
| Pipe Repair Sales/Replacement | 100% | 100.00% | | | |
| Stormwater | 100% | | | 100.00% | |
| Northern Virginia Debt Service | 100% | 24.00% | | 76.00% | |
| WSRF | 100% | 100.00% | | | |
| Interest Income | 100% | 45.00% | | 55.00% | |

DC Water

Allocation of Water Costs to Functional Components - FY 2021

| | \$ Allocated to Water | Source of Supply & Treatment | Distribution | Storage | Pumping | Customer Service/Meter | Admin/General |
|---|------------------------|------------------------------|------------------------|---------------------|---------------------|------------------------|------------------------|
| Operations | | | | | | | |
| Maintenance Services | \$ 1,405,272 | \$ - | \$ 1,092,808 | \$ 137,939 | \$ 174,525 | \$ - | \$ - |
| Water Services | 67,557,015 | 35,976,870 | 16,558,742 | 6,631,285 | 8,390,119 | - | - |
| Customer Service | 6,343,016 | - | - | - | - | 1,597,168 | 4,745,848 |
| Distribution & Conveyance Systems | - | - | - | - | - | - | - |
| Engineering & Technical Services | 1,213,886 | - | 943,977 | 119,153 | 150,756 | - | - |
| Permit Operations | 2,082,750 | 2,082,750 | - | - | - | - | - |
| Administration | | | | | | | |
| General Manager | \$ 2,064,569 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 2,064,569 |
| Office of the Secretary | 284,203 | - | - | - | - | - | 284,203 |
| Internal Audit | 333,900 | - | - | - | - | - | 333,900 |
| General Counsel | 2,989,660 | - | - | - | - | - | 2,989,660 |
| Public Affairs | 1,290,089 | - | - | - | - | - | 1,290,089 |
| Human Resources | 4,396,385 | - | - | - | - | - | 4,396,385 |
| Information Technology | 4,672,968 | - | - | - | - | - | 4,672,968 |
| Procurement | 2,847,297 | - | - | - | - | - | 2,847,297 |
| Finance and Budget | 12,324,473 | - | - | - | - | - | 12,324,473 |
| Assistant General Manager | 285,345 | - | - | - | - | - | 285,345 |
| Office of Emergency Management | 674,011 | - | - | - | - | - | 674,011 |
| Facilities Management | 3,897,515 | - | - | - | - | - | 3,897,515 |
| Security | 3,549,533 | - | - | - | - | - | 3,549,533 |
| Occupational Safety and Health | 1,050,820 | - | - | - | - | - | 1,050,820 |
| Fleet Management | 3,134,260 | - | - | - | - | - | 3,134,260 |
| Total Water O&M | \$ 122,396,965 | \$ 38,059,620 | \$ 18,595,526 | \$ 6,888,377 | \$ 8,715,400 | \$ 1,597,168 | \$ 48,540,873 |
| | - | 31.1% | 15.2% | 5.6% | 7.1% | 1.3% | 39.7% |
| Debt Service (1) | | | | | | | |
| 1998 Revenue Bonds | \$ 3,791,211 | \$ 817,351 | \$ 2,209,874 | \$ - | \$ - | \$ 763,986 | \$ - |
| Series 2014A | - | - | - | - | - | - | - |
| Series 2017A | - | - | - | - | - | - | - |
| Series 2017B | 4,698,229 | 1,478,862 | 2,842,369 | - | - | 376,999 | - |
| Series 2018A | - | - | - | - | - | - | - |
| Series 2018B | 3,887,801 | 1,079,633 | 2,363,627 | - | - | 444,541 | - |
| DC Water Bonds Planned | 2,176,204 | 574,475 | 1,553,211 | - | - | 48,518 | - |
| Jennings Randolph | 805,192 | 805,192 | - | - | - | - | - |
| Commercial Paper | 303,296 | 80,830 | 218,540 | - | - | 3,926 | - |
| Series 2010A Subordinate Bond | 2,502,708 | 665,456 | 1,799,196 | - | - | 38,056 | - |
| Series 2012 Subordinate Bond | 2,239,667 | 441,214 | 1,746,940 | - | - | 51,512 | - |
| Series 2013A Subordinate Bond | - | - | - | - | - | - | - |
| Series 2014B Subordinate Bond | 640,172 | 126,114 | 499,334 | - | - | 14,724 | - |
| Series 2014C Subordinate Bond | 9,030,513 | 1,779,011 | 7,043,800 | - | - | 207,702 | - |
| Series 2015B Subordinate Bond | 5,686,341 | 1,789,890 | 3,440,164 | - | - | 456,288 | - |
| Series 2016A Subordinate Bond | 6,629,884 | 1,841,102 | 4,030,704 | - | - | 758,078 | - |
| Series 2016B Subordinate Bond | - | - | - | - | - | - | - |
| Series 2019A Subordinate Bond | - | - | - | - | - | - | - |
| Series 2019B Subordinate Bond | 909,816 | 202,022 | 606,067 | - | - | 101,727 | - |
| Series 2019C Subordinate Bond | 306,900 | 68,146 | 204,439 | - | - | 34,315 | - |
| Series 2019D Subordinate Bond | 3,840,265 | 852,721 | 2,558,163 | - | - | 429,381 | - |
| EMCP | 685,715 | 190,421 | 416,887 | - | - | 78,406 | - |
| Capital Equipment Financing | - | - | - | - | - | - | - |
| 15 Year AMR meter pro forma adjustment | - | - | - | - | - | - | - |
| Total Water Debt | \$ 48,133,914 | \$ 12,792,440 | \$ 31,533,315 | \$ - | \$ - | \$ 3,808,158 | \$ - |
| | - | 26.6% | 65.5% | 0.0% | 0.0% | 7.9% | 0.0% |
| Revenue Offsets | | | | | | | |
| Wholesale Revenue | | | | | | | |
| LCSA + PI | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| WSSC | - | - | - | - | - | - | - |
| Fairfax County | - | - | - | - | - | - | - |
| Other Revenue | | | | | | | |
| IMA Indirect Cost Reimb. For Capital Projects | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| Dev. Contr/Water Services Fees, Taps | (4,000,000) | - | (4,000,000) | - | - | - | - |
| Dev. Contr/Liability Deposits/Sewer Service Fees | - | - | - | - | - | - | - |
| Commercial Water Maintenance | (32,000) | - | (32,000) | - | - | - | - |
| DC Fire Protection Fee | (12,527,000) | (6,263,500) | (6,263,500) | - | - | - | - |
| System Availability Fee | (3,850,000) | - | - | - | - | - | (3,850,000) |
| Transfer from DC PILOT/ROW Fund | - | - | - | - | - | - | - |
| Transfer from Rate Stabilization | (750,000) | - | - | - | - | - | (750,000) |
| DC Contribution of 50% PILOT Escrow to DCW | - | - | - | - | - | - | - |
| Sales to DC Agencies-Steam/Meter | (170,000) | - | (170,000) | - | - | - | - |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | - | - | - | - | - | - | - |
| Pipe Repair Sales/Replacement | (22,000) | - | - | - | - | - | (22,000) |
| Stormwater | - | - | - | - | - | - | - |
| Northern Virginia Debt Service | (46,379) | - | - | - | - | - | (46,379) |
| WSRF | (39,717,000) | - | - | - | - | - | (39,717,000) |
| Interest Income | (1,358,328) | (448,248) | (448,248) | - | - | - | (461,831) |
| Total Water Revenue Offsets | \$ (62,472,707) | \$ (6,711,748) | \$ (10,913,748) | \$ - | \$ - | \$ - | \$ (44,847,210) |
| Unadjusted Net Water Revenue Requirements | \$ 108,058,172 | \$ 44,140,312 | \$ 39,215,093 | \$ 6,888,377 | \$ 8,715,400 | \$ 5,405,327 | \$ 3,693,663 |
| | | 40.8% | 36.3% | 6.4% | 8.1% | 5.0% | 3.4% |
| Adjustment for DS Coverage | \$ 28,880,348 | \$ 7,675,464 | \$ 18,919,989 | \$ - | \$ - | \$ 2,284,895 | \$ - |
| | | | | | | | |
| Adjusted Net Water Revenue Requirements | \$ 136,938,521 | \$ 51,815,776 | \$ 58,135,083 | \$ 6,888,377 | \$ 8,715,400 | \$ 7,690,222 | \$ 3,693,663 |
| | | 37.8% | 42.5% | 5.0% | 6.4% | 5.6% | 2.7% |

DC Water

Allocation to Functional Water Categories - FY 2021

| Functional Categories | Test Year | Allocation Percentages | | | |
|------------------------------|---------------|------------------------|-----------------------------|---------------------------|---------------|
| | 2021 | Base | Extra Capacity Max-Month | Customer Service/Meter | Admin/General |
| Source of Supply & Treatment | \$ 51,815,776 | 78.6% | 21.4% | 0.0% | 0.0% |
| Distribution | 58,135,083 | 85.0% | 15.0% | 0.0% | 0.0% |
| Storage | 6,888,377 | 80.0% | 20.0% | 0.0% | 0.0% |
| Pumping | 8,715,400 | 50.0% | 50.0% | 0.0% | 0.0% |
| Customer Service/Meter | 7,690,222 | 0.0% | 0.0% | 100.0% | 0.0% |
| Admin/General | 3,693,663 | 0.0% | 0.0% | 0.0% | 100.0% |

Total \$ **136,938,521**

| Allocation of Adjusted Test Year Revenue Requirements | | | |
|---|-----------------------------|---------------------------|---------------------|
| Base | Extra Capacity Max-Month | Customer Service/Meter | Admin/General |
| \$ 40,717,238 | \$ 11,098,537 | \$ - | \$ - |
| 49,414,821 | 8,720,262 | - | - |
| 5,510,702 | 1,377,675 | - | - |
| 4,357,700 | 4,357,700 | - | - |
| - | - | 7,690,222 | - |
| - | - | - | 3,693,663 |
| \$ 100,000,461 | \$ 25,554,175 | \$ 7,690,222 | \$ 3,693,663 |

| | Base | Monthly Usage | Peaking Factor (1) | Max-Month Capacity | Extra Capacity |
|------------------------------|-------------------|------------------|--------------------|--------------------|----------------|
| Residential Customers | | | | | |
| 0-4 ccf | 3,511,043 | 292,587 | 1.00 | 292,587 | - |
| >4 ccf | 2,792,445 | 232,704 | 1.34 | 311,823 | 79,119 |
| Multi-Family/DC Housing | 8,997,505 | 749,792 | 1.16 | 869,759 | 119,967 |
| Non-Residential (Commercial) | 11,622,144 | 968,512 | 1.39 | 1,346,232 | 377,720 |
| Non-Residential (Federal) | 4,159,378 | 346,615 | 1.39 | 481,795 | 135,180 |
| Non-Residential (Municipal) | 742,621 | 61,885 | 1.39 | 86,020 | 24,135 |
| | 31,825,135 | 2,652,095 | | 3,388,215 | 736,121 |

| | Base | Max-Month | Base | Max-Month | Allocation for Volumetric Revenue Req. |
|------------------------------|---------------|---------------|-----------------------|----------------------|--|
| Residential Customers | | | | | |
| 0-4 ccf | 11.0% | 0.0% | 11,864,046 | - | 12,219,967 |
| >4 ccf | 8.8% | 10.7% | 9,435,857 | 2,746,599 | 12,547,929 |
| Multi-Family/DC Housing | 28.3% | 16.3% | 30,403,163 | 4,164,604 | 35,604,799 |
| Non-Residential (Commercial) | 36.5% | 51.3% | 39,271,992 | 13,112,408 | 53,955,932 |
| Non-Residential (Federal) | 13.1% | 18.4% | 14,054,813 | 4,692,720 | 19,309,958 |
| Non-Residential (Municipal) | 2.3% | 3.3% | 2,509,365 | 837,844 | 3,447,626 |
| | 100.0% | 100.0% | \$ 107,539,235 | \$ 25,554,175 | \$ 137,086,212 |

| | | |
|------------------------------|----|------|
| Residential Customers | | |
| 0-4 ccf | \$ | 3.49 |
| >4 ccf | \$ | 4.50 |
| Multi-Family/DC Housing | \$ | 3.96 |
| Non-Residential (Commercial) | \$ | 4.65 |
| Non-Residential (Federal) | \$ | 4.65 |
| Non-Residential (Municipal) | \$ | 4.65 |

(1) Factors are from the previous cost of service study.

DC Water
Allocation of Water Costs - FY 2022

| \$ Allocated to Water | Source of Supply & Treatment | Distribution | Storage | Pumping | Customer Service/Meter | Admin/General |
|-----------------------|------------------------------|--------------|---------|---------|------------------------|---------------|
|-----------------------|------------------------------|--------------|---------|---------|------------------------|---------------|

Operations

| | | | | | | | |
|-----------------------------------|--------------|------------|--------------|------------|------------|-----------|-----------|
| Maintenance Services | \$ 1,447,430 | \$ - | \$ 1,125,592 | \$ 142,077 | \$ 179,761 | \$ - | \$ - |
| Water Services | 69,583,726 | 37,056,176 | 17,055,504 | 6,830,223 | 8,641,822 | - | - |
| Customer Service | 6,533,307 | - | - | - | - | 1,645,084 | 4,888,223 |
| Distribution & Conveyance Systems | - | - | - | - | - | - | - |
| Engineering & Technical Services | 1,250,303 | - | 972,296 | 122,728 | 155,279 | - | - |
| Permit Operations | 2,145,232 | 2,145,232 | - | - | - | - | - |

Administration

| | | | | | | | |
|--------------------------------|--------------|------|------|------|------|------|--------------|
| General Manager | \$ 2,126,506 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ 2,126,506 |
| Office of the Secretary | 292,729 | - | - | - | - | - | 292,729 |
| Internal Audit | 343,917 | - | - | - | - | - | 343,917 |
| General Counsel | 3,079,350 | - | - | - | - | - | 3,079,350 |
| Public Affairs | 1,328,792 | - | - | - | - | - | 1,328,792 |
| Human Resources | 4,528,277 | - | - | - | - | - | 4,528,277 |
| Information Technology | 4,813,157 | - | - | - | - | - | 4,813,157 |
| Procurement | 2,932,716 | - | - | - | - | - | 2,932,716 |
| Finance and Budget | 12,694,207 | - | - | - | - | - | 12,694,207 |
| Assistant General Manager | 293,905 | - | - | - | - | - | 293,905 |
| Office of Emergency Management | 694,231 | - | - | - | - | - | 694,231 |
| Facilities Management | 4,014,440 | - | - | - | - | - | 4,014,440 |
| Security | 3,656,019 | - | - | - | - | - | 3,656,019 |
| Occupational Safety and Health | 1,082,344 | - | - | - | - | - | 1,082,344 |
| Fleet Management | 3,228,287 | - | - | - | - | - | 3,228,287 |

Total Water O&M

| | | | | | | |
|----------------|---------------|---------------|--------------|--------------|--------------|---------------|
| \$ 126,068,874 | \$ 39,201,408 | \$ 19,153,392 | \$ 7,095,028 | \$ 8,976,862 | \$ 1,645,084 | \$ 49,997,100 |
| - | 31.1% | 15.2% | 5.6% | 7.1% | 1.3% | 39.7% |

Debt Service (1)

| | | | | | | | |
|--|--------------|------------|--------------|------|------|------------|------|
| 1998 Revenue Bonds | \$ 3,791,191 | \$ 817,346 | \$ 2,209,863 | \$ - | \$ - | \$ 763,982 | \$ - |
| Series 2014A | - | - | - | - | - | - | - |
| Series 2017A | - | - | - | - | - | - | - |
| Series 2017B | 4,697,520 | 1,478,638 | 2,841,940 | - | - | 376,942 | - |
| Series 2018A | - | - | - | - | - | - | - |
| Series 2018B | 3,888,311 | 1,079,774 | 2,363,937 | - | - | 444,600 | - |
| DC Water Bonds Planned | 6,178,796 | 1,631,081 | 4,409,961 | - | - | 137,754 | - |
| Jennings Randolph | 805,191 | 805,191 | - | - | - | - | - |
| Commercial Paper | 303,296 | 80,830 | 218,540 | - | - | 3,926 | - |
| Series 2010A Subordinate Bond | 2,494,129 | 663,175 | 1,793,028 | - | - | 37,926 | - |
| Series 2012 Subordinate Bond | 2,239,723 | 441,225 | 1,746,984 | - | - | 51,514 | - |
| Series 2013A Subordinate Bond | - | - | - | - | - | - | - |
| Series 2014B Subordinate Bond | 832,990 | 164,099 | 649,732 | - | - | 19,159 | - |
| Series 2014C Subordinate Bond | 9,043,754 | 1,781,620 | 7,054,128 | - | - | 208,006 | - |
| Series 2015B Subordinate Bond | 5,686,341 | 1,789,890 | 3,440,164 | - | - | 456,288 | - |
| Series 2016A Subordinate Bond | 6,629,884 | 1,841,102 | 4,030,704 | - | - | 758,078 | - |
| Series 2016B Subordinate Bond | - | - | - | - | - | - | - |
| Series 2019A Subordinate Bond | - | - | - | - | - | - | - |
| Series 2019B Subordinate Bond | 909,816 | 202,022 | 606,067 | - | - | 101,727 | - |
| Series 2019C Subordinate Bond | 306,900 | 68,146 | 204,439 | - | - | 34,315 | - |
| Series 2019D Subordinate Bond | 3,839,126 | 852,468 | 2,557,405 | - | - | 429,253 | - |
| EMCP | 685,715 | 190,421 | 416,887 | - | - | 78,406 | - |
| Capital Equipment Financing | - | - | - | - | - | - | - |
| 15 Year AMR meter pro forma adjustment | - | - | - | - | - | - | - |

Total Water Debt

| | | | | | | |
|---------------|---------------|---------------|------|------|--------------|------|
| \$ 52,332,683 | \$ 13,887,030 | \$ 34,543,778 | \$ - | \$ - | \$ 3,901,875 | \$ - |
| - | 26.5% | 66.0% | 0.0% | 0.0% | 7.5% | 0.0% |

Revenue Offsets

Wholesale Revenue

| | | | | | | | |
|----------------|------|------|------|------|------|------|------|
| LCSA + PI | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| WSSC | - | - | - | - | - | - | - |
| Fairfax County | - | - | - | - | - | - | - |

Other Revenue

| | | | | | | | |
|---|--------------|-------------|-------------|------|------|------|--------------|
| IMA Indirect Cost Reimb. For Capital Projects | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| Dev. Contr/Water Services Fees, Taps | (4,000,000) | - | (4,000,000) | - | - | - | - |
| Dev. Contr/Liability Deposits/Sewer Service Fees | - | - | - | - | - | - | - |
| Commercial Water Maintenance | (32,000) | - | (32,000) | - | - | - | - |
| DC Fire Protection Fee | (10,796,000) | (5,398,000) | (5,398,000) | - | - | - | - |
| System Availability Fee | (3,850,000) | - | - | - | - | - | (3,850,000) |
| Transfer from DC PILOT/ROW Fund | - | - | - | - | - | - | - |
| Transfer from Rate Stabilization | (3,150,000) | - | - | - | - | - | (3,150,000) |
| DC Contribution of 50% PILOT Escrow to DCW | - | - | - | - | - | - | - |
| Sales to DC Agencies-Steam/Meter | (170,000) | - | (170,000) | - | - | - | - |
| Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales | - | - | - | - | - | - | - |
| Pipe Repair Sales/Replacement | (22,000) | - | - | - | - | - | (22,000) |
| Stormwater | - | - | - | - | - | - | - |
| Northern Virginia Debt Service | (46,379) | - | - | - | - | - | (46,379) |
| WSRF | (39,717,000) | - | - | - | - | - | (39,717,000) |
| Interest Income | (1,483,294) | (489,487) | (489,487) | - | - | - | (504,320) |

Total Water Revenue Offsets

| | | | | | | |
|-----------------|----------------|-----------------|------|------|------|-----------------|
| \$ (63,266,673) | \$ (5,887,487) | \$ (10,089,487) | \$ - | \$ - | \$ - | \$ (47,289,699) |
|-----------------|----------------|-----------------|------|------|------|-----------------|

Unadjusted Net Water Revenue Requirements

| | | | | | | |
|----------------|---------------|---------------|--------------|--------------|--------------|--------------|
| \$ 115,134,884 | \$ 47,200,951 | \$ 43,607,683 | \$ 7,095,028 | \$ 8,976,862 | \$ 5,546,958 | \$ 2,707,401 |
| - | 41.0% | 37.9% | 6.2% | 7.8% | 4.8% | 2.4% |

Adjustment for DS Coverage

| | | | | | | |
|---------------|--------------|---------------|------|------|--------------|------|
| \$ 31,399,610 | \$ 8,332,218 | \$ 20,726,267 | \$ - | \$ - | \$ 2,341,125 | \$ - |
| - | - | - | - | - | - | - |

Adjusted Net Water Revenue Requirements

| | | | | | | |
|----------------|---------------|---------------|--------------|--------------|--------------|--------------|
| \$ 146,534,494 | \$ 55,533,170 | \$ 64,333,950 | \$ 7,095,028 | \$ 8,976,862 | \$ 7,888,083 | \$ 2,707,401 |
| - | 37.9% | 43.9% | 4.8% | 6.1% | 5.4% | 1.8% |

DC Water

Allocation to Functional Water Categories - FY 2022

| Functional Categories | Test Year | Allocation Percentages | | | |
|------------------------------|---------------|------------------------|-----------------------------|---------------------------|---------------|
| | 2022 | Base | Extra Capacity Max-Month | Customer Service/Meter | Admin/General |
| Source of Supply & Treatment | \$ 55,533,170 | 78.0% | 22.0% | 0.0% | 0.0% |
| Distribution | 64,333,950 | 85.0% | 15.0% | 0.0% | 0.0% |
| Storage | 7,095,028 | 80.0% | 20.0% | 0.0% | 0.0% |
| Pumping | 8,976,862 | 50.0% | 50.0% | 0.0% | 0.0% |
| Customer Service/Meter | 7,888,083 | 0.0% | 0.0% | 100.0% | 0.0% |
| Admin/General | 2,707,401 | 0.0% | 0.0% | 0.0% | 100.0% |

Total \$ **146,534,494**

| Allocation of Adjusted Test Year Revenue Requirements | | | |
|---|-----------------------------|---------------------------|---------------------|
| Base | Extra Capacity Max-Month | Customer Service/Meter | Admin/General |
| \$ 43,323,026 | \$ 12,210,144 | \$ - | \$ - |
| 54,683,857 | 9,650,093 | - | - |
| 5,676,023 | 1,419,006 | - | - |
| 4,488,431 | 4,488,431 | - | - |
| - | - | 7,888,083 | - |
| - | - | - | 2,707,401 |
| \$ 108,171,337 | \$ 27,767,674 | \$ 7,888,083 | \$ 2,707,401 |

| | Base | Monthly Usage | Peaking Factor (1) | Max-Month Capacity | Extra Capacity |
|------------------------------|-------------------|------------------|--------------------|--------------------|----------------|
| Residential Customers | | | | | |
| 0-4 ccf | 3,474,328 | 289,527 | 1.00 | 289,527 | - |
| >4 ccf | 2,763,245 | 230,270 | 1.34 | 308,562 | 78,292 |
| Multi-Family/DC Housing | 8,907,530 | 742,294 | 1.16 | 861,061 | 118,767 |
| Non-Residential (Commercial) | 11,505,922 | 958,827 | 1.39 | 1,332,769 | 373,942 |
| Non-Residential (Federal) | 4,117,784 | 343,149 | 1.39 | 476,977 | 133,828 |
| Non-Residential (Municipal) | 735,195 | 61,266 | 1.39 | 85,160 | 23,894 |
| | 31,504,004 | 2,625,334 | | 3,354,057 | 728,723 |

| | Base | Max-Month | Base | Max-Month | Allocation for Volumetric Revenue Req. |
|------------------------------|---------------|---------------|-----------------------|----------------------|--|
| Residential Customers | | | | | |
| 0-4 ccf | 11.0% | 0.0% | 12,227,942 | - | 12,594,780 |
| >4 ccf | 8.8% | 10.7% | 9,725,275 | 2,983,279 | 13,089,811 |
| Multi-Family/DC Housing | 28.3% | 16.3% | 31,350,162 | 4,525,566 | 36,952,000 |
| Non-Residential (Commercial) | 36.5% | 51.3% | 40,495,238 | 14,248,910 | 56,386,473 |
| Non-Residential (Federal) | 13.1% | 18.4% | 14,492,593 | 5,099,455 | 20,179,809 |
| Non-Residential (Municipal) | 2.3% | 3.3% | 2,587,527 | 910,464 | 3,602,930 |
| | 100.0% | 100.0% | \$ 110,878,737 | \$ 27,767,674 | \$ 142,805,804 |

| | | |
|------------------------------|----|------|
| Residential Customers | | |
| 0-4 ccf | \$ | 3.63 |
| >4 ccf | \$ | 4.74 |
| Multi-Family/DC Housing | \$ | 4.15 |
| Non-Residential (Commercial) | \$ | 4.91 |
| Non-Residential (Federal) | \$ | 4.91 |
| Non-Residential (Municipal) | \$ | 4.91 |

(1) Factors are from the previous cost of service study.