DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

Board of Directors

DC Retail Water and Sewer Rates Committee

Tuesday June 23, 2015

9:30am

1. **Call to Order** .....Alan Roth, Chairman

2. **Management Recommendation on FY 2016 Retail Rates** (Attachment A) ..... Mark Kim
   and Implementation Status Update

3. **Action Items** (Attachment B) ..... Mark Kim
   - (Action Item 1) - FY 2016 Retail Rates, Charges and Fees (effective October 1, 2015)
     a. Approval of Proposed Customer Class-Based Volumetric Rates
     b. Approval of Proposed Lifeline Water Rate for Residential Customers
     c. Approval of Proposed Clean Rivers Impervious Area Charge (CRIAC)
     d. Approval of Proposed Water System Replacement Fee (WSRF) to Recover the Cost of the 1 percent Renewal and Replacement Program for Water Service Lines
     e. Approval to amend CAP Program to give 100 percent credit for Water System Replacement Fee (WSRF)
   - (Action Item 2) - Proposed Amendment for the Water System Replacement Fee
   - (Action Item 3) - Approval of Proposed District of Columbia Fire Protection Service Fee (FY 2015, FY 2016 & FY 2017)

4. **FY 2015 Cost of Service Study Final** (Attachment C) ..... Mark Kim

5. **DC Retail Water and Sewer Rates Committee Workplan** ..... Mark Kim
   - FY 2015 Proposed DC Retail Rates Committee Workplan (Attachment D)

6. **Other Business** ..... Mark Kim

7. **Executive Session**

8. **Agenda for July 28, 2015 Committee Meeting** (Attachment E) .....Alan Roth, Chairman

9. **Adjournment**

* The DC Water Board of Directors may go into executive session at this meeting pursuant to the District of Columbia Open Meetings Act of 2010, if such action is approved by a majority vote of the Board members who constitute a quorum to discuss: matters prohibited from public disclosure pursuant to a court order or law under D.C. Official Code § 2-575(b)(1); contract negotiations under D.C. Official Code § 2-575(b)(1); legal, confidential or privileged matters under D.C. Official Code § 2-575(b)(4); collective bargaining negotiations under D.C. Official Code § 2-575(b)(5); facility security under D.C. Official Code § 2-575(b)(8); disciplinary matters under D.C. Official Code § 2-575(b)(9); personnel matters under D.C. Official Code § 2-575(b)(10);proprietary matters under D.C. Official Code § 2-575(b)(11); decision in an adjudication action under D.C. Official Code § 2-575(b)(13); civil or criminal matters where disclosure to the public may harm the investigation under D.C. Official Code § 2-575(b)(14), and other matters provided in the Act.

FOLLOW-UP-ITEMS – DC Retail Water and Sewer Rates Committee Meeting (February 24, 2015)

There were no follow-up items from February 24, 2015

Attachment A

Management Recommendation on FY 2016 Retail Rates Proposal and Implementation Status Update

Presentation to:

DC Water Retail Water and Sewer Rates Committee

Mark Kim, Chief Financial Officer

June 23, 2015

Agenda

- **Proposed FY 2016 Rates**
  - Overview of the FY 2016 rates recommendation
  - Rate implementation analysis
  - Recommended modification to the Water System Replacement Fee (WSRF)
- **FY 2016 Rate Implementation Update**
  - Vertex implementation update
  - Communications update
- **Next Steps**

FY 2016 Rates Recommendation

	Units	FY 2015 Rates	FY 2016 Recommended Rates	Increase / (Decrease)	
				$	%
DC Water Retail Rates – Water:					
Residential - 0 – 4 Ccf	Ccf	$3.88	**$3.08**	($0.80)	(20.6%)
Residential - > 4 Ccf	Ccf	$3.88	**$3.87**	($0.01)	(0.26%)
Multi-family / DC Housing	Ccf	$3.88	**$3.45**	($0.43)	(11.1%)
Non-Residential	Ccf	$3.88	**$3.99**	$0.11	2.8%
DC Water Retail Rates – Sewer	Ccf	$4.74	**$5.44**	$0.70	14.8%
DC Water Clean Rivers IAC	ERU	$16.75	**$20.30**	$3.55	21.2%
DC Water Customer Metering Fee	5/8”	$3.86	**$3.86**	-	-
DC Water Water System Replacement Fee (WSRF)	5/8”	$0.00	**$6.30**	$6.30	-
District of Columbia PILOT Fee	Ccf	$0.46	**$0.47**	$0.01	2.2%
District of Columbia Right-of-Way Fee	Ccf	$0.17	**$0.17**	-	-

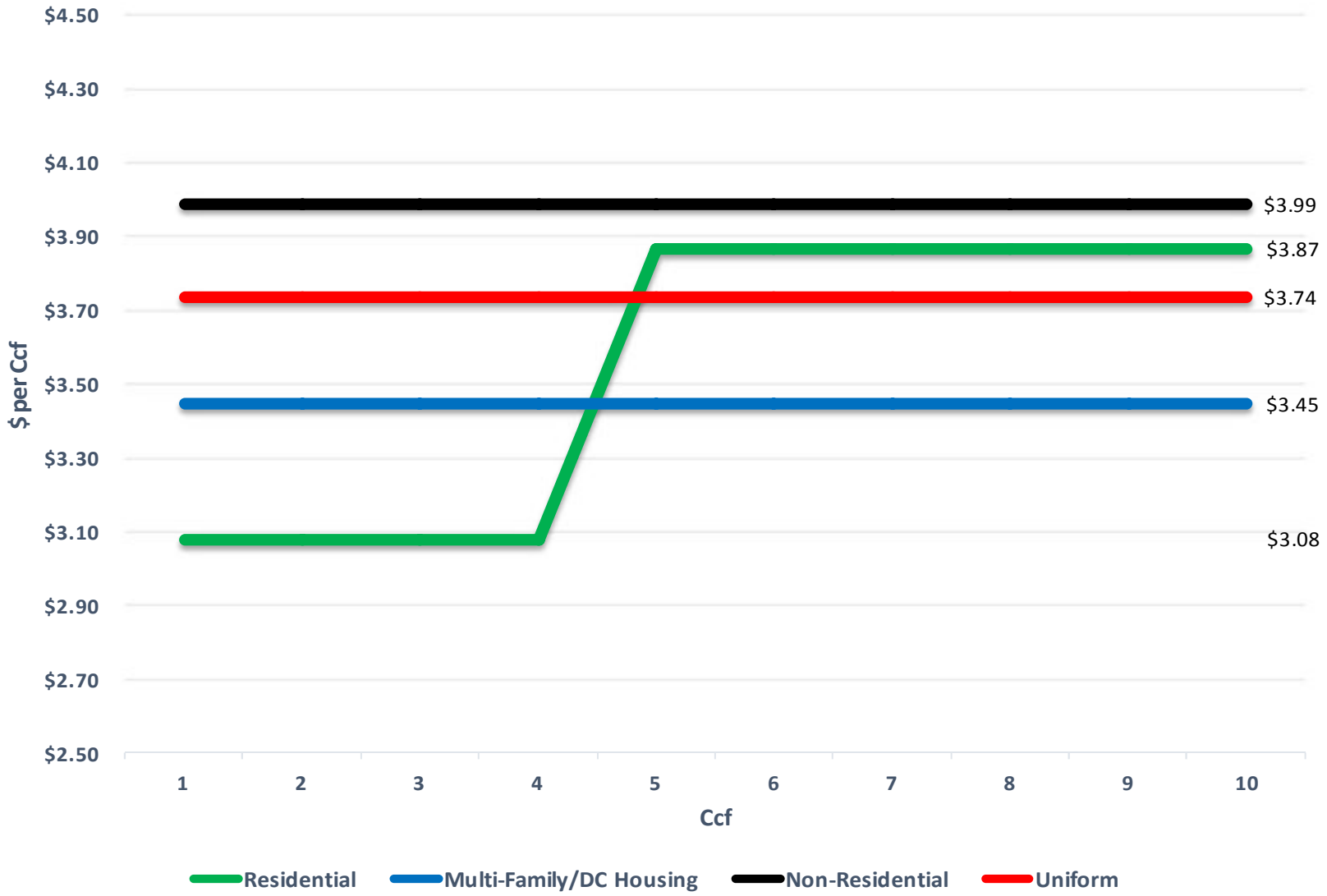
Lifeline Residential Water Rates

- Management recommends establishing a lifeline water rate for Residential Customers by discounting the first 4 Ccfs of "core" consumption

- This structure provides an economic benefit to low-volume Residential Customers

Water Volumetric	Uniform	Class-Based (w/ lifeline)	% increase
Residential - 0-4 Ccf	$ 3.74	**$ 3.08**	-17.6%
Residential - >4 Ccf	$ 3.74	**$ 3.87**	2.7%
Multi-Family / DC Housing	$ 3.74	**$ 3.45**	-7.8%
Non-Residential	$ 3.74	**$ 3.99**	6.7%

FY2016 Rate Structure Comparison



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Water System Replacement Fee (WSRF)

Meter Size	# of Meters	Monthly Fee
5/8”	52,462	**$ 6.30**
3/4”	11,964	**$ 7.39**
1”	41,646	**$ 9.67**
1”x 1.25”	11	**$15.40**
1.5”	4,046	**$41.35**
2”	3,599	**$ 83.75**
3”	1,047	**$ 232.13**
4”	1,079	**$ 561.02**
6”	521	**$ 1,292.14**
8”	27	**$ 5,785.51**
8”x2”	104	**$ 1,899.60**
8”x4”x1”	10	**$ 2,438.35**
>=10”	37	**$ 6,679.65**

- Management recommends adopting a “Water System Replacement Fee”, which is a fixed monthly fee set to recover the costs of the 1% renewal and replacement program for water service lines
- The 1% renewal and replacement program is estimated to cost $40M annually
- DC Water’s low income CAP customers would receive a 100% credit for this fee

The WSRF monthly fee is based upon meter size and average flow

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Rate Implementation Analysis

Detailed analyses by customer class and meter size were conducted to assess the projected impact of the proposed FY16 rates

- Customers with relatively larger meters and higher than average consumption may see the largest $ increase in their bills
- Customers with relatively larger meters and lower than average consumption may see the highest % increase in their bills
  - Customers with zero consumption will see the largest % increase (back-up meters and seasonal meters for irrigation)
    - During peak seasonal use, impacts for seasonal meters are much lower

Potential Mitigation
• Provide customers with the opportunity to assess consumption and potentially downside their meters
• Customers to determine if they need a back-up service with the possibility to disconnect and consolidate meters • Typically customers choose to keep the service active; however they can request to disconnect

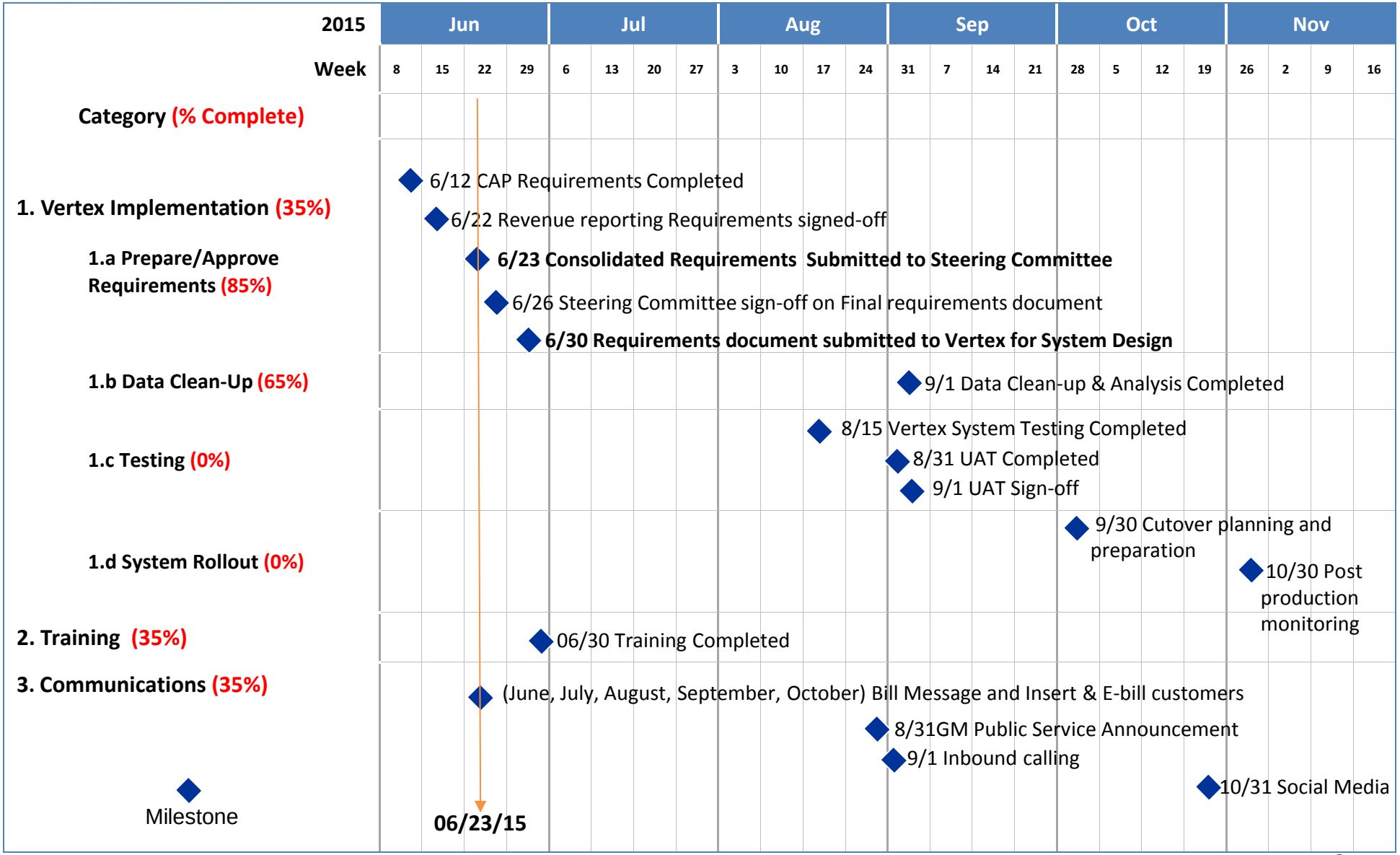
Recommended Modification to the WSRF

- Residential customers with 2" meters may have a significant increase in their bills
  - 1" WSRF fee: $ 9.67
  - 1.5" WSRF fee: $41.35
  - 2" WSRF fee: $83.75
- For residential customer seeking to install fire protection, DC code requires a 2" meter
- Therefore, as a public safety consideration and to remove a disincentive for these customers, management recommends adding a special provision to the rule making with regards to the WSRF

Special Provision 112.11: Residential customer, whose premise is served by a single two inch (2") meter used for both Demand Flow and Fire Flow, shall be charged a monthly Water System Replacement Fee set forth in section 112.10 for a one and one-half inch (1.5") meter.

FY 2016 RATE DESIGN IMPLEMENTATION PROJECT STATUS

FY 2016 Rate Design Implementation Status



Vertex Implementation Update

Implementation Categories	Progress to Date
System Requirements	▪ Designed 85% of new requirements for existing functionality ▪ Completed all modelling for fixed fee components of new rate ▪ Finalized requirements for CAP program
Data Clean-Up	▪ Completed 95% review for the 9,000 premise change ▪ Completing visual inspections of customers with large meters (>6") ▪ Additional data clean-up as required going forward, including residential accounts with meters >1"
Business Rules*	▪ Completed draft business rules for WSRF exceptions, customer disputes, WSRF non-payment, collections
Training	▪ FY'16 training delivered to 35% of customer service representatives and other key stakeholders. Training will continue until conversion. ▪ 4 temporary staff authorized and will begin training in June – all training to be completed by July 31 for temporary staff

**Business rules not included in the overall project status. These are customer service new policies and procedures to address specific scenarios under the new rate structure*

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Communication

Target Audience

- Residential customers
- Low-income customers (and their advocates)
- Large non-residential customers
- Muni & Federal

Communication Tactics

- Town-Hall Meetings
- Bill message and bill inserts & e-bills
- Guide to Customer Service
- Website and Social Media
- Public Service Announcement

Communication Items Completed to Date:

- ✓ Town Hall Meetings
- ✓ In-person Meetings (AOBA)
- ✓ What's on Tap – June
- ✓ Bill Message
- ✓ July Bill Insert, including E-bill

Communication Items To Be Completed:

- August, September, October Bill Inserts
- Update website
- PSA to air on DC City Cable Channel 16
- Inbound calling
- Social media

June – What's on Tap Communication

WHAT'S ON TAP?

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NEWS FOR DC WATER CUSTOMERS | VOL. 14 ISSUE 3

General Manager's Message

Dear Customers,

Each year, DC Water proposes water and sewer rates that are designed to cover the cost of delivering these services. The Board of Directors votes on these rates, and they become effective October 1. The major drivers for rate increases are the aging water and sewer systems that require replacement and repair, and massive multi-billion dollar environmental projects that are required.

But we also care about affordability. We understand that some families are struggling to pay the bills now, and future increases will hit even harder. So this year, DC Water approached the rate-setting process by asking if we can more fairly assess water and sewer charges by considering the amount that customers are using the system. We also looked at how to incorporate a fixed fee to ensure that funds are always there for water system replacement. Finally, we also looked again at our customer assistance programs and how to keep rates affordable for those who need our help the most.

Please read more about your water and sewer rates this summer as we include more information with your bills. You can also read more online at *dcwater.com/rates*.

George S. Hawkins
gmsuggestions@dcwater.com

Drinking water takes the spotlight during National Drinking Water Week

From May 3-9, DC Water joined water utilities around the country to celebrate safe, reliable water, a pillar of healthy economies and communities. After kicking off the week's events at the Washington Nationals' first victory against the Miami Marlins, DC Water's mascot, Wendy the Waterdrop, entertained the crowd celebrating Cinco de Mayo at Medstar's Family Fun Day. DC Water and the American Water Works Association promoted Drinking Water Week with a reusable bottle giveaway at the Thursday FreshFarm market near the White House. The week's festivities concluded in collaboration between Smithsonian Gardens and regional water utilities to promote Drinking Water Week at the Smithsonian Garden Festival. Attendees stayed hydrated thanks to the free water bar delivering cold, refreshing H2O from its taps. Other festival highlights included games, giveaways and an art installation made of plastic water bottles to raise awareness about the wastefulness of bottled water.

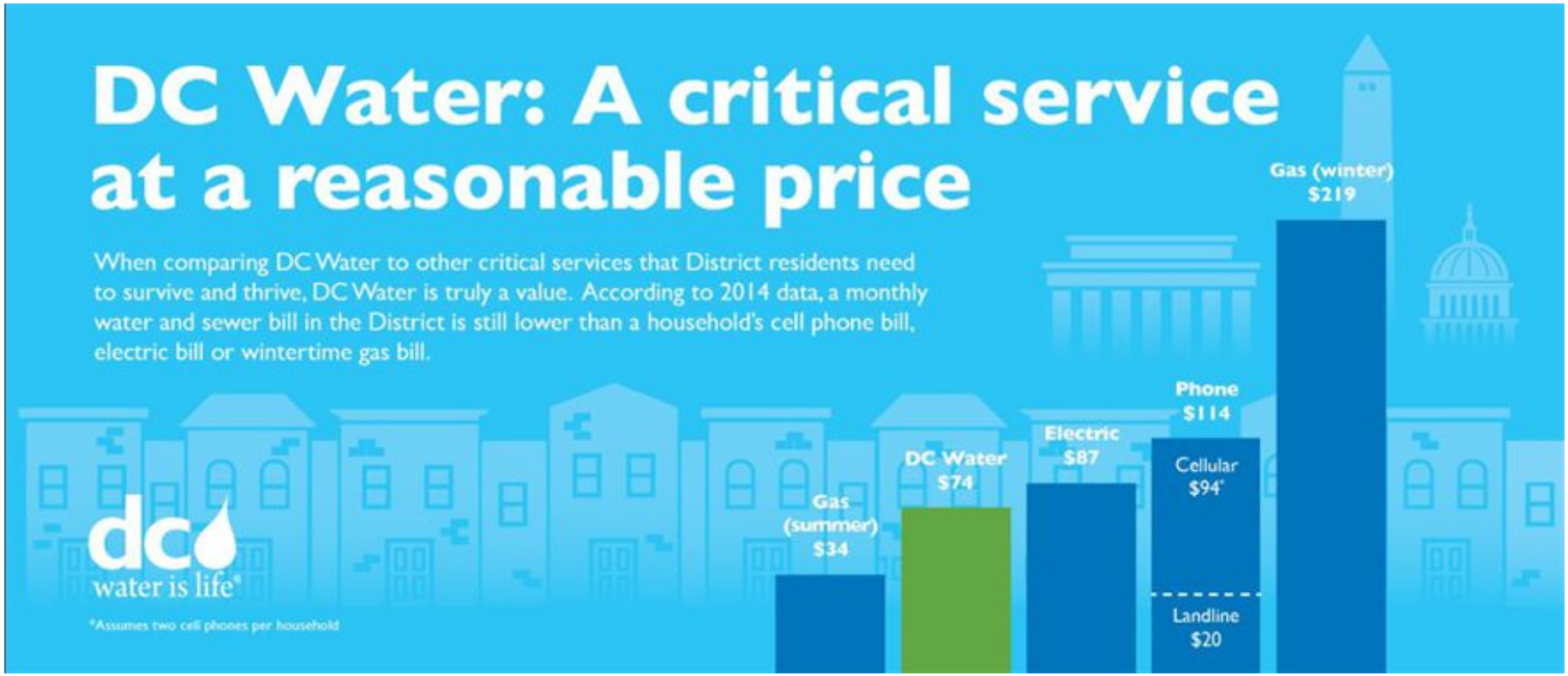
Drinking Water Quality Report available soon

Every year, DC Water produces a report on your drinking water quality, which summarizes the water testing results from the previous year. The full-length edition of the 2015 Drinking Water Quality Report will be available online at *dcwater.com/waterreport* or as a hard copy by request at (202) 787-2200.

A notice of the report's availability will be mailed to every home in the District, even those who do not pay a DC Water bill. It should be in your mail soon, please take the opportunity to learn about your drinking water. Protecting the quality of the drinking water supply is our most fundamental job. We will take all necessary steps to protect public health, including an intensive monitoring program. DC Water has a dedicated, experienced and caring staff that is on duty 24 hours a day, 7 days a week, 365 days a year.

fb.com/mydcwater @dcwater @mydcwater

July Bill Insert



July Bill Insert

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Bill Design – Proposed Residential Bill Format

Meter Number	Prior Read Date	Current Read Date	Number Of Days	Prior Read	Current Read	Usage (CCF)	Usage (Gallons)	Read Type
1305253	02/12/15	03/12/15	28	115	121	6	4,488	ACTUAL

CURRENT WATER AND SEWER CHARGES – RESIDENTIAL

Water System Replacement Fee – 5/8	$6.30
Metering Fee	$3.86
Water Services 4 CCF x $3.08	$12.32
Water Services 2 CCF x $3.87	$7.74
Sewer Services 6 CCF x $5.44	$32.64
Clean Rivers IAC 1 ERU x $20.30	$20.30
Clean Rivers IAC Credit .01CR ERU x $20.80	$.21 CR

CURRENT CHARGES AND CREDITS

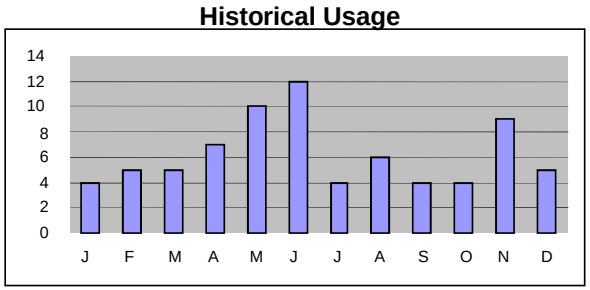
DC Government Pilot Fee 6 CCF x $0.47	$2.82
DC Government Right of Way Fee 6 CCF x $0.17	$1.02
DC Govt Stormwater Fee 1 ERU x $2.67	$2.67
RiverSmart Rewards Discount .26CR ERU x $2.67	$0.69 CR
SPLASH Contribution	$0.81

TOTAL CURRENT CHARGES	$90.00
TOTAL CURRENT BILL	$90.00

IMPORTANT MESSAGES

March 23 through May 4, the disinfectant used for drinking water treatment will temporarily switch from chloramines to chlorine. During this time, you may notice a slight change in the taste and smell of your drinking water. Chlorine levels are monitored daily and will continue to meet target levels.

Individuals and business owners who take special precautions to remove chloramines from tap water, such as dialysis centers, medical facilities and aquatic pet owners, should continue to take the same precautions during the temporary switch to chlorine.



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Bill Design – Proposed CAP Residential Bill Format

Meter Number	Prior Read Date	Current Read Date	Number Of Days	Prior Read	Current Read	Usage (CCF)	Usage (Gallons)	Read Type
1305253	09/30/15	10/31/15	31	115	121	6	4,488	ACTUAL

CURRENT WATER AND SEWER CHARGES – RESIDENTIAL

Water System Replacement Fee – 5/8”	$6.30
Metering Fee	$3.86
Water Services 4 CCF x $3.08	$12.32
Water Services 2 CCF x $3.87	$7.74
Sewer Services 6 CCF x $5.44	$32.64
Clean Rivers IAC 1 ERU x $20.30	$20.30

CURRENT CHARGES AND CREDITS

DC Government Pilot Fee 6 CCF x $0.47	$2.82
DC Government Right of Way Fee 6 CCF x $0.17	$1.02
CAP Credit 4 CCFs	$36.64 CR
DC Govt Stormwater Fee 1 ERU x $2.67	$2.67
CAP Water System Replacement Credit	$6.30 CR

TOTAL CURRENT CHARGES	$46.73
TOTAL CURRENT BILL	$46.73

IMPORTANT MESSAGES

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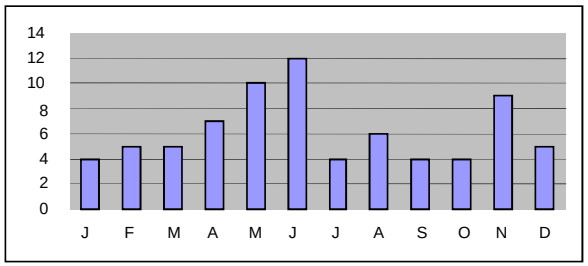

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Bill Design – Proposed Commercial Bill Format

Meter Number	*Prior Read Date*	*Current Read Date*	*Number Of Days*	*Prior Read*	*Current Read*	*Usage (CCF)*	*Usage (Gallons)*	*Read Type*
1305253	09/30/15	10/31/15	28	115	1111	996	745,008	ACTUAL

CURRENT WATER AND SEWER CHARGES – COMMERCIAL

Water System Replacement Fee – 4”	$561.02
Metering Fee	$137.37
Water Services 996 CCF x $3.99	$3974.04
Sewer Services 996 CCF x $5.44	$5418.24
Clean Rivers IAC 1 ERU x $20.30	$20.30
Clean Rivers IAC Credit .01CR ERU x $20.80	$.21 CR

CURRENT CHARGES AND CREDITS

DC Government Pilot Fee 996 CCF x $0.47	$468.12
DC Government Right of Way Fee 996 CCF x $0.17	$169.32
DC Govt Stormwater Fee 1 ERU x $2.67	$2.67
RiverSmart Rewards Discount .26CR ERU x $2.67	$0.69 CR
SPLASH Contribution	$0.82

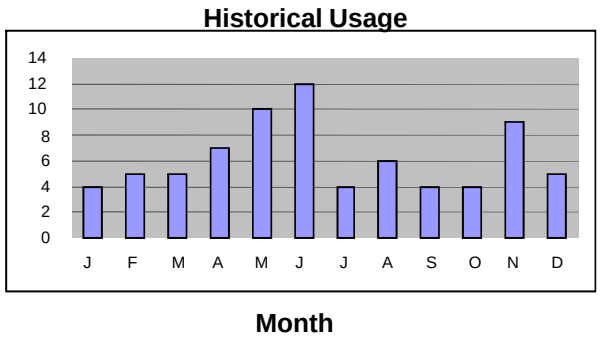
TOTAL CURRENT CHARGES $10,751.00

TOTAL CURRENT BILL $10,751.00

IMPORTANT MESSAGES

March 23 through May 4, the disinfectant used for drinking water treatment will temporarily switch from chloramines to chlorine. During this time, you may notice a slight change in the taste and smell of your drinking water. Chlorine levels are monitored daily and will continue to meet target levels.

Individuals and business owners who take special precautions to remove chloramines from tap water, such as dialysis centers, medical facilities and aquatic pet owners, should continue to take the same precautions during the temporary switch to chlorine.



Next Steps

Proposed FY 2016 rates, charges and fees:

- **06/23/15** – Rates committee recommends approval to Board
- **07/02/15** – Board meeting approval
- **07/17/15** – Publish final rule making in DC Register
- **10/01/15** – FY 16 rates implementation

WSRF modification:

- **06/23/15 –** Rates committee recommends approval to Board
- **07/02/15** – Board meeting approval
- **07/17/15** – Publish proposed WSRF rule making in DC register
- **08/17/15** – Public comment period ends
- **09/03/15** – Rates Committee final recommendation
- **09/03/15** – Board meeting approval
- **09/18/15** – Publish final rule making in DC Register
- **10/01/15** – FY 16 WSRF implementation

APPENDIX

Average Residential Customer Monthly Bill

	FY 2015	Recommended FY 2016	FY 2015 vs FY 2016 ($)	FY 2015 vs FY 2016 (%)
DC Water and Sewer Retail Rates (Ccf), (1)	$ 57.67	$ 59.12	$ 1.45	2.5%
DC Water Clean Rivers IAC (ERU)	16.75	20.30	3.55	21.2%
DC Water Customer Metering Fee	3.86	3.86	-	-
DC Water Water System Replacement Fee, (3)	-	6.30	6.30	N/A
Subtotal DC Water Rates & Charges	**$ 78.28**	**$ 89.58**	**$ 11.30**	**14.4%**
District of Columbia PILOT (Ccf), (1)	3.08	3.14	0.06	2.0%
District of Columbia Right-of-Way Fee (Ccf), (1)	1.14	1.14	-	-
District of Columbia Stormwater Fee (ERU), (2)	2.67	2.67	-	-
Subtotal District of Columbia Charges	**$ 6.89**	**$ 6.95**	**$ 0.06**	**1.0%**
Total Amount Appearing on DC Water Bill	**$ 85.17**	**$ 96.53**	**$ 11.36**	**13.3%**

(1) Assumes average monthly consumption of 6.69 Ccf, or (5,004 gallons)

(2) District Department of the Environment stormwater fee of $2.67 effective November 1, 2010

(3) DC Water " Water System Replacement Fee" of $6.30, for 5/8" meter effective October 1, 2015

Average CAP Residential Customer Monthly Bill

	FY 2015	Recommended FY 2016
DC Water Retail Rates [1]	$ 57.67	59.12
DC Water Clean Rivers IAC	16.75	20.30
DC Water Customer Metering Fee [5]	3.86	3.86
DC Water System Replacement Fee (WSRF) [5]	-	6.30
Subtotal DC Water Rates & Charges	**$ 78.28**	**$ 89.58**
District of Columbia PILOT [1]	$ 3.08	$ 3.14
District of Columbia Right of Way Fee [1]	1.14	1.14
District of Columbia Stormwater Fee [4]	2.67	2.67
Subtotal District of Columbia Charges	**$ 6.89**	**$ 6.95**
Total Amount Appearing on DC Water Bill	**$ 85.17**	**$ 96.53**
Less: CAP Discount (4 Ccf per month) [1], [2]	(37.00)	(36.64)
Water System Replacement Fee (WSRF) [3]	-	(6.30)
Total Amount Appearing on DC Water Bill	**$ 48.17**	**$ 53.59**
CAP Customer Discount as a Percent of Total Bill	**-43.4%**	**-44.5%**

(1) Assumes average monthly consumption of 6.69 Ccf, or (5,004 gallons)

(2) Extension of CAP program in FY 2011 to first 4 Ccf of PILOT and ROW

(3) Assumes 100 percent discount for Water System Replacment (WSRF) to CAP customers

(4) District Department of the Environment stormwater fee of $2.67 effective November 1, 2010

(5) Assumes 1 ERU, 5/8' meter

CAP Customer Consumption Analysis

	Current (FY 2015) 6.69 Ccf	Class Based w/Lifeline 6.69 Ccf	Class Based w/Lifeline 5 Ccf	Class Based w/Lifeline 4 Ccf
DC Water and Sewer Retail Rates	$ 57.67	$ 59.12	$ 43.39	$ 34.08
DC Water Clean Rivers IAC	16.75	20.30	20.30	20.30
DC Water Customer Metering Fee	3.86	3.86	3.86	3.86
DC Water Water System Replacement Fee (WSRF)	-	6.30	6.30	6.30
Subtotal: DC Water Rates & Charges	**$ 78.28**	**$ 89.58**	**$ 73.85**	**$ 64.54**
Increase / Decrease		$ 11.30	$ (4.43)	$ (13.74)
District of Columbia PILOT	$ 3.08	$ 3.14	$ 2.35	$ 1.88
District of Columbia Right of Way Fee	1.14	1.14	0.85	0.68
District of Columbia Stormwater Fee	2.67	2.67	2.67	2.67
Subtotal District of Columbia Charges	$ 6.89	$ 6.95	$ 5.87	$ 5.23
Total Amount Appearing on DC Water Bill	**$ 85.17**	**$ 96.53**	**$ 79.72**	**$ 69.77**
Increase / Decrease Over Prior Year		$ 11.36	$ (5.45)	$ (15.40)
Percent Increase in Total Bill		**13.34%**	**-6.40%**	**-18.08%**
Less: CAP Discount (4 Ccf per month)	**$ (37.00)**	**$ (36.64)**	**$ (36.64)**	**$ (36.64)**
Water System Replacement Fee (WSRF)	**$ -**	**$ (6.30)**	**$ (6.30)**	**$ (6.30)**
Total Amount with CAP Customer Discount	**$ 48.17**	**$ 53.59**	**$ 36.78**	**$ 26.83**
Increase / Decrease Over Prior Year		$ 5.42	$ (11.39)	$ (21.34)
CAP Customer Discount as a Percent of Total Bill		**-44.48%**	**-53.86%**	**-61.55%**

* Assumes 1 ERU and 5/8' meter

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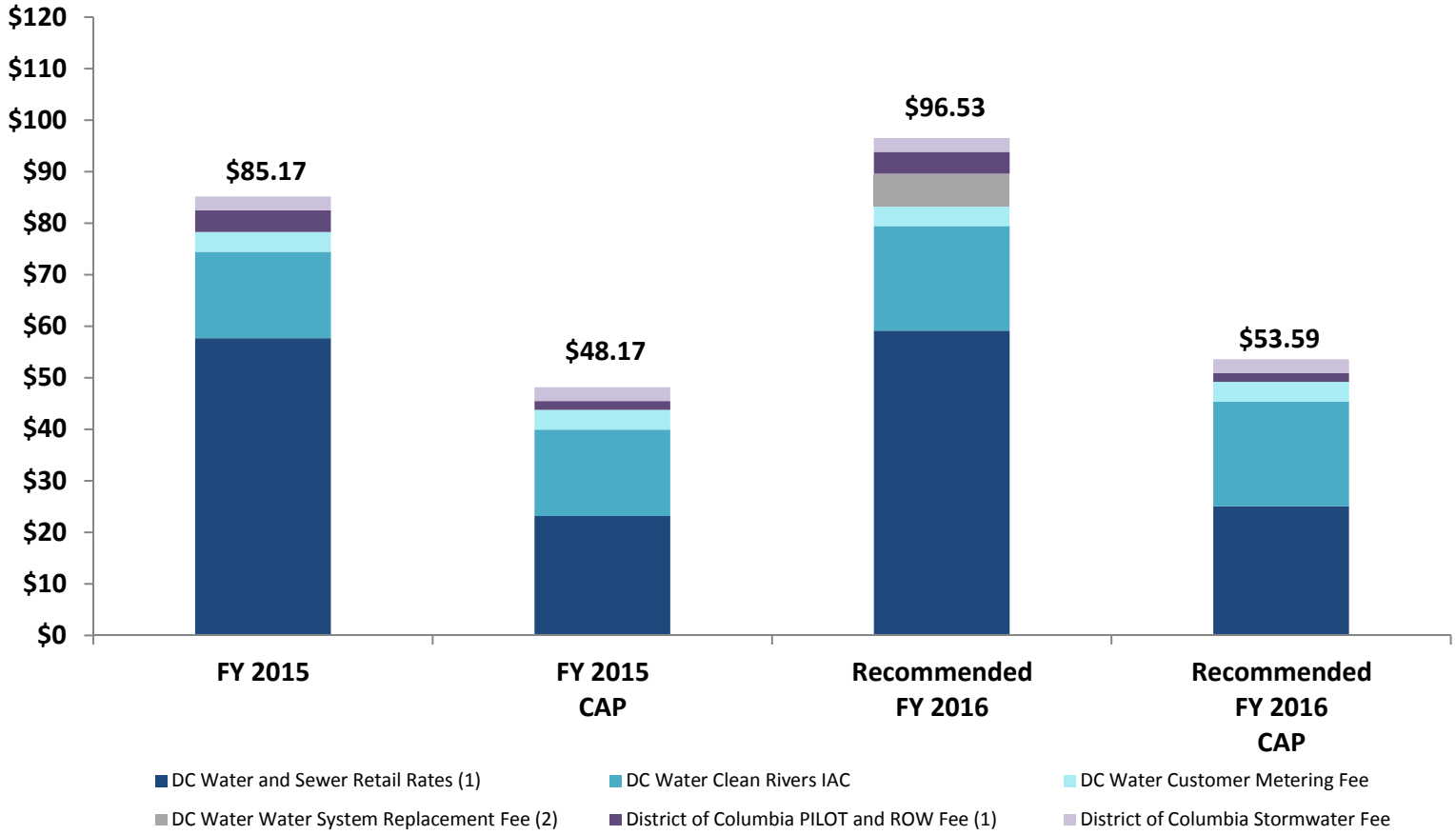
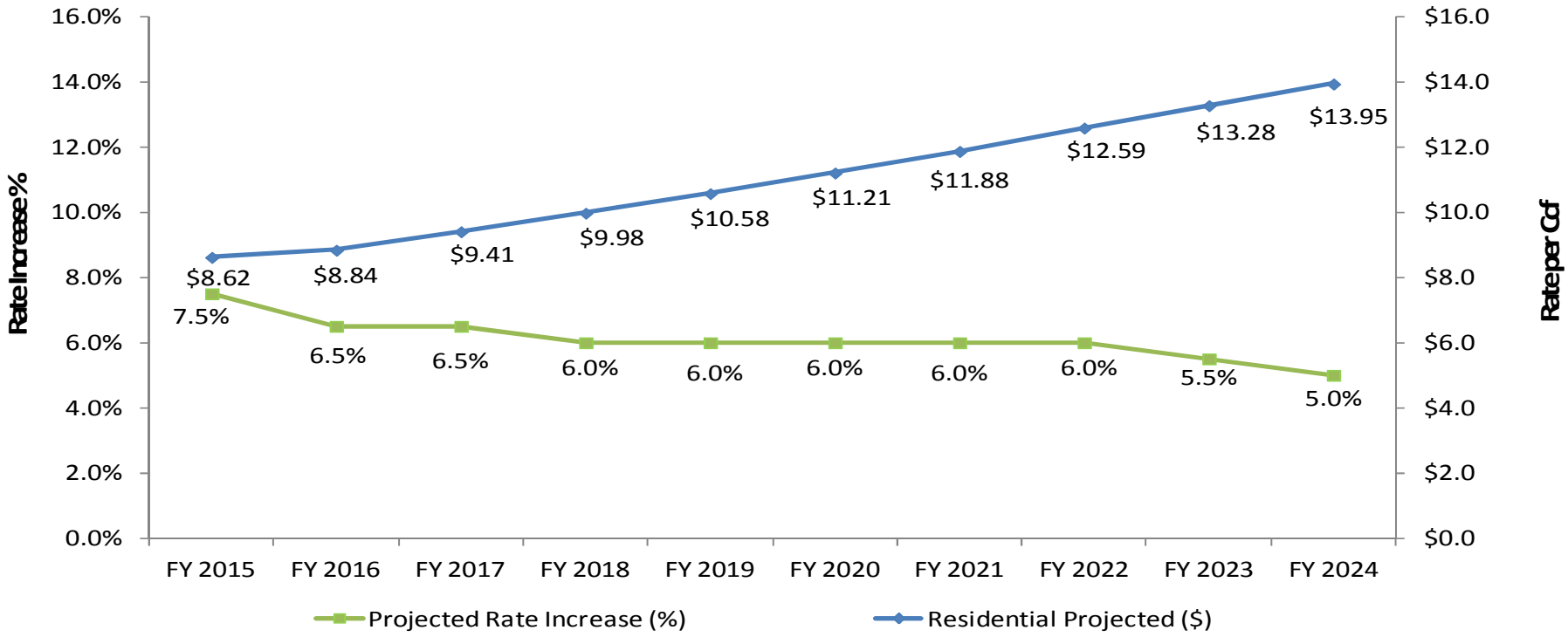
Average Residential & CAP Customer Monthly Bill



1. Assumes average monthly consumption of 6.69 Ccf (5,004 gallons)
   – FY 2016 rate per gallon is $0.01(water and sewer rates only)
2. Assumes 100 percent discount for Water System Replacement Fee (WSRF) to CAP customers, therefore, WSRF is not shown in the above graph

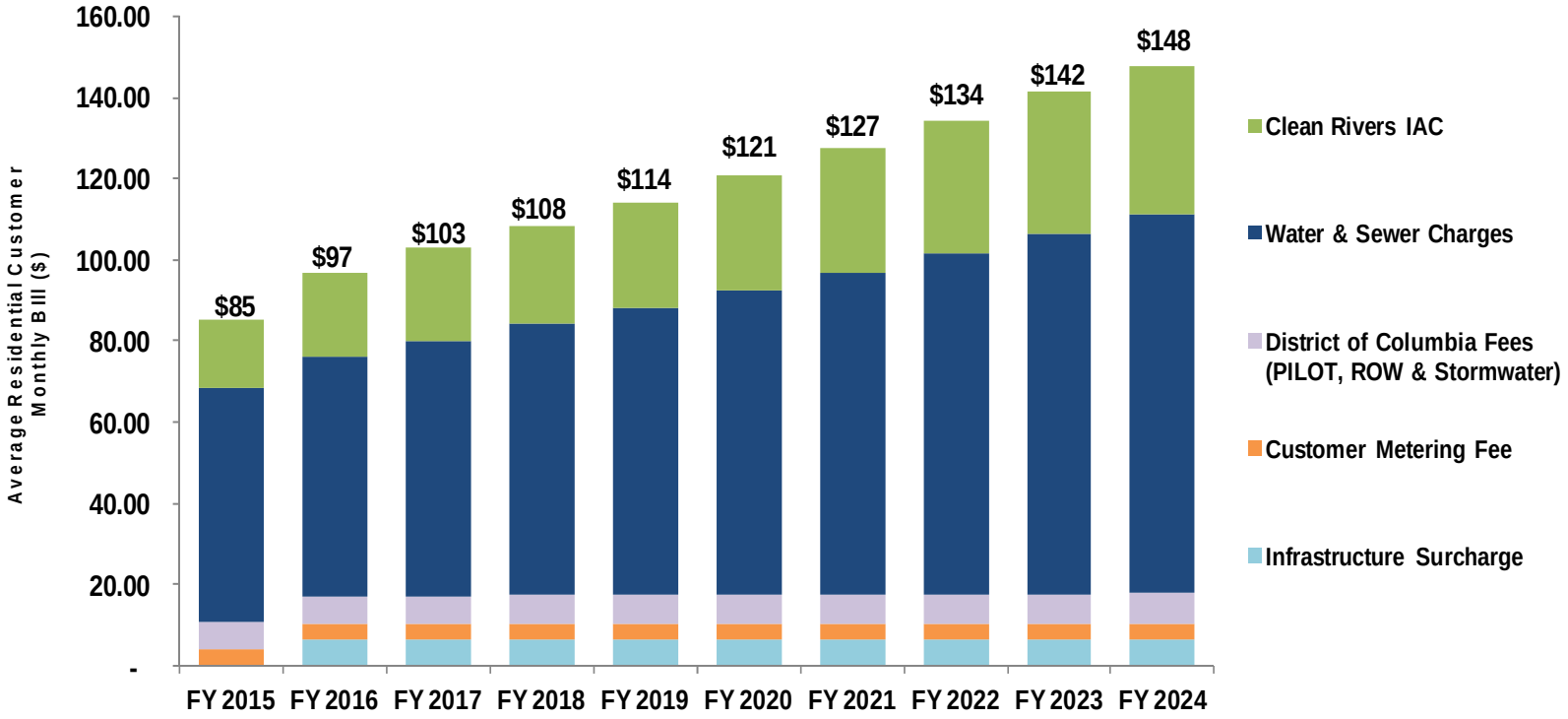
Projected Water & Sewer Rates

- Projected annual rate increases range from 5.0% to 7.5%
- Projected water and sewer rate increase from $8.62 to $13.95/Ccf



Projected Average Residential Customer Bills

- Projected average monthly residential customer bill ranges from $85 in FY2015 to $148 in FY2024



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Ten Year Capital Improvement Plan (CIP)

- Proposed FY2015 – FY2024 CIP disbursement budget of $3.8 billion
- Peak capital spending projected in FY2015, with annual declines through FY2024

Service Area ($000's)	FY 2015 Revised	FY 2016 Proposed	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Wastewater Treatment	$ 206,260	$ 149,375	$ 121,268	$ 110,405	$ 62,461	$ 64,267	$ 52,006	$ 50,750	$ 37,094	$ 29,285	$ 883,171
Sanitary Sewer	40,258	42,175	51,076	42,956	39,711	44,960	25,896	33,524	45,712	39,116	405,384
Combined Sewer Overflow	271,101	238,703	159,531	129,091	165,594	176,571	136,958	115,203	139,437	91,442	1,623,631
Stormwater	2,559	1,178	1,726	1,848	760	772	691	1,115	970	1,270	12,889
Water	65,006	67,546	58,968	50,862	48,795	61,249	68,201	61,153	59,828	68,645	610,250
Capital Projects	**585,183**	**498,977**	**392,570**	**335,162**	**317,321**	**347,818**	**283,752**	**261,745**	**283,041**	**229,758**	**3,535,326**
Total AMR / Meter /CIS	7,900	14,389	14,707	11,345	6,672	1,000	500	500	500	500	58,013
Washington Aqueduct	10,000	10,864	10,850	10,936	11,060	11,045	11,226	11,212	11,081	10,842	109,116
Capital Equipment	22,191	24,810	24,018	15,683	14,282	9,058	9,058	8,058	7,433	7,017	141,608
Sub-Total	**40,091**	**50,063**	**49,575**	**37,964**	**32,014**	**21,103**	**20,784**	**19,770**	**19,014**	**18,359**	**308,737**
Total CIP	**$ 625,274**	**$ 549,040**	**$ 442,145**	**$ 373,126**	**$ 349,335**	**$ 368,921**	**$ 304,536**	**$ 281,515**	**$ 302,055**	**$ 248,117**	**$ 3,844,063**

** Includes $1,426 million for DC Clean Rivers*

Attachment B

DC Retail Water and Sewer Rates Committee

Action Items

1. FY 2016 Approval of Proposed Retail Rates, Charges and Fee
    - Approval of Proposed Customer Class-Based Volumetric Rates
    - Approval of Proposed Lifeline Water Rate for Residential Customers
    - Approval of Proposed Clean Rivers Impervious Area Charge (CRIAC)
    - Approval of Proposed Water System Replacement Fee (WSRF) to Recover the Cost of the 1 percent Renewal and Replacement Program for Water Service Lines
    - Approval to amend CAP Program to give 100 percent credit for Water System Replacement Fee (WSRF)

2. Proposed Amendment for the Water System Replacement Fee

3. Approval of Proposed District of Columbia Fire Protection Service Fee (FY 2015, FY 2016 & FY 2017)

Action Item 1

Action Item
FY 2016 Rates, Charges & Fees
(Effective October 1, 2015)

Action Item 1: Approval of proposed retail rates metered volumetric water & sewer, DC Clean Rivers IAC, Water System Replacement Fee (WSRF) and Payment-in-Lieu of Taxes charges and fees:

Implement Restructuring of DC Water's Water Service Rates

Customer Class-Based Volumetric Rates – Rate differentiation based on the peaking demands of each customer class (residential, multi-family and non-residential)

Lifeline Rate – A lifeline rate for the first 4 Ccf of Single Family Residential (SFR) water use to reflect baseline usage by residential customers without peaking cost.

Water Service Rates

- An increase in the rate for metered water services from $3.88 per one hundred cubic feet ("Ccf"), ($5.19 per 1,000 gallons) to:
    - Residential customers: Consumption of 0 – 4 Ccf: $3.08 per Ccf ($4.12 per 1,000 gallons) of water used.
    - Residential customers: Consumption greater than 4 Ccf: $3.87 per Ccf ($5.17 per 1,000 gallons) of water used.
    - Multi-Family customers: $3.45 per Ccf ($4.61 per 1,000 gallons) of water used.
    - Non–Residential customers: $3.99 per Ccf ($5.33 per 1,000 gallons) of water used.

Sewer Service Rates

- An increase in the rate for metered sewer services from $4.74 per one hundred cubic feet ("Ccf"), ($6.33 per 1,000 gallons) to:
    - Residential customers: $5.44 per Ccf ($7.27 per 1,000 gallons) of water used.
    - Multi-Family/DC Housing customers: $5.44 per Ccf ($7.27 per 1,000 gallons) of water used.

- Non–Residential customers: $5.44 per Ccf ($7.27 per 1,000 gallons) of water used.

- An increase in the annual Clean Rivers Impervious Area Charge (CRIAC) from $201.0 to $243.60 per Equivalent Residential Unit (ERU). The charge per ERU will be billed monthly at:

  - Residential customers: $20.30 for each ERU
  - Multi-Family customers: $20.30 for each ERU
  - Non–Residential customers: $20.30 for each ERU

Implement Water System Replacement Fee (WSRF)

Water System Replacement Fee (WSRF) – Implement a fixed monthly fee designed to recover the cost of the 1 percent renewal replacement of aging water infrastructure for residential, multi-family and non-residential customers:

Meter Size (inches)	Meter Register Type	Monthly Water System Replacement Fee
5/8”	Single Register	$ 6.30
3/4"	Single Register	$ 7.39
1”	Single Register	$ 9.67
1”x1.25”	Single and Multiple Register	$ 15.40
1.5”	Single Register	$ 41.35
2”	Single and Multiple Register	$ 83.75
3”	Single and Multiple Register	$ 232.13
4”	Single and Multiple Register	$ 561.02
6”	Single and Multiple Register	$ 1,292.14
8”	Single and Multiple Register	$ 5,785.51
8”x2”	Multiple Register	$ 1,899.60
8”x4”x1”	Multiple Register	$ 2,438.35
10”	Single and Multiple Register	$ 6,679.65
12”	Single and Multiple Register	$ 6,679.65
16”	Single Register	$ 6,679.65

The following terms will be defined in the proposed rulemaking:

Single Register – Meter that has only one device that displays the consumption volume.

Multiple Register – Meter that has two or more devices that can display the consumption volume at different flow rates (high or low) or different uses, including, but not limited to, Demand Flow and Fire Flow.

Amend Customer Assistance Program

Amend CAP Program - Extend CAP benefits to eligible customers that are charged the monthly Water System Replacement Fee (WSRF) by crediting 100 percent on their monthly bill as follows:

- Eligible households and tenants will receive a credit of 100 percent off of the monthly billed Water System Replacement Fee (WSRF).

District of Columbia Pass Through Charge
Right-of-Way Occupancy / PILOT Fee

- There is no increase in the Right-of-Way fee:
  - Residential customers: $0.17 per Ccf ($0.22 per 1,000 gallons) of water used.
  - Multi-Family customers: $0.17 per Ccf ($0.22 per 1,000 gallons) of water used.
  - Non–Residential customers: $0.17 per Ccf ($0.22 per 1,000 gallons) of water used.
- An increase in the Payment-in-Lieu of Taxes fee from $0.46 per one hundred cubic feet (“Ccf”), ($0.62 per 1,000 gallons) to:
  - Residential customers: $0.47 per Ccf ($0.64 per 1,000 gallons) of water used.
  - Multi-Family customers: $0.47 per Ccf ($0.64 per 1,000 gallons) of water used.
  - Non–Residential customers: $0.47 per Ccf ($0.64 per 1,000 gallons) of water used.

Action Item 2

DC RETAIL WATER AND SEWER RATES COMMITTEE
PROPOSED AMENDMENT FOR THE
WATER SYSTEM REPLACEMENT FEE

ACTION ITEM 2: PROPOSED AMENDMENT FOR THE WATER SYSTEM REPLACEMENT FEE (WSRF)

DC Water requests that the DC Retail Water and Sewer Rates Committee recommend to the Board of Directors the publication for rulemaking, an additional proposed amendment to the District of Columbia Municipal Regulations pertaining to the Water System Replacement Fee (WSRF), as shown below:

21 DCMR 112.11 Residential customer, whose premise is served by a single two inch (2") meter used for both Demand Flow and Fire Flow, shall be charged a monthly Water System Replacement Fee set forth in section 112.10 for a one and one-half inch (1.5") meter.

This rulemaking will be effective, October 1, 2015.

The proposed schedule of rulemaking shall be as follows:

- June 23th – Rates Committee recommendation for proposed amendment
- July 2nd – Board meeting approval of proposed rulemaking
- July 17th – Publish Notice of Proposed Rulemaking
- August 17th – 30-day public comment period ends
- September 3rd – Rates Committee recommendation for final amendment before Board Meeting
- September 3rd – Board meeting approval of final rulemaking
- September 18th – Publish Notice of Final Rulemaking
- October 1st – FY 16 WSRF goes into effect

Action Item 3

DC RETAIL WATER AND SEWER RATES COMMITTEE APPROVAL OF PROPOSED DISTRICT OF COLUMBIA FIRE PROTECTION SERVICE FEE

ACTION ITEM 3: DISTRICT OF COLUMBIA FIRE PROTECTION SERVICE FEE

DC Water requests that the DC Retail Water and Sewer Rates Committee recommend to the Board of Directors the approval of proposed District of Columbia fire protection service fee, as shown below:

4103.1 The Charge to the District of Columbia for fire protection service, including, but not limited to the delivery of water flows for firefighting as well as maintaining and upgrading public fire hydrants in the District of Columbia, (plus the cost of fire hydrant inspections performed by the DC Fire and Emergency Medical Services) shall be Ten Million Seven Hundred Ninety Six Thousand Dollars ($10,796,000) per fiscal year (FY) for FY 2015, FY 2016, and FY 2017.

4103.2 The fee may be examined every three years to determine if the fee is sufficient to recoup the actual costs for providing this service. In the event the costs are not being recouped, the District shall pay the difference and the fee will be appropriately adjusted pursuant to the rulemaking process.

This rulemaking will be effective upon publication of the Notice of Final Rulemaking in the *D.C. Register*.

February 24, 2015	Presentation of proposal to Rates Committee
March 19, 2015	BOD Approval of NOPR
April 3, 2015	Publish NOPR and Notice of Public Hearing in DC Register
April 2015	Public Outreach
May 4, 2015	Public Comment Period Ends
May 13, 2015	Public Hearing
June 23, 2015	Rates Committee approval of proposed Fire Protection Fee
July 2, 2015	Board Approval of NOFR
July 17, 2015	Publish NOFR

ATTACHMENT C

DC WATER

2015 COST OF SERVICE STUDY

Final / June 3, 2015

dc water is life®

FOR INTERNAL REVIEW ONLY

Table of Contents

Appendices

Section 1: EXECUTIVE SUMMARY

1.1. Introduction

Raftelis Financial Consultants, Inc. (RFC) was engaged by the District of Columbia Water and Sewer Authority (DC Water) to perform a Cost of Service (COS) Study. In order to meet the needs of DC Water's Task Order objectives, the following deliverables were prepared:

1. Revenue Sufficiency Model (Model) – RFC conducted a revenue sufficiency analysis to independently forecast operating and capital costs along with units of service for FY 2016; 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.
2. Cost of Service / Rate Equity Analysis – RFC 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.
3. Rate Structure Alternatives - RFC examined rate structure options to strengthen DC Water's pricing objectives such as revenue stability, cost equity, and affordability.

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 forecasting exercises involved in the revenue sufficiency analysis: operating expenditures, capital expenditures, and units of service, which determine revenue generation.

Units of service include number of customer accounts, billed water consumption, and equivalent residential units (ERUs). In order to forecast units of service, and thus revenue, in the most accurate manner, RFC reviewed billed water, customer account, and consumption data from FY 2005 through FY 2013.

Since FY 2005, billable water flows have decreased by an average annual rate of approximately 1.4%. This has occurred even though DC Water's customer base has increased slightly over the same period of time. The trend in declining consumption is likely related to a combination of the expanded use of low-flow fixtures, constrained economic conditions, and a broader awareness of resource conservation. This is consistent with per capita reduction in consumption RFC 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 2016, RFC's 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 negligible.

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 forecast for the test year, FY 2016, showed revenue slightly lower than the Financial Plan by about $504,695. In total, our analysis projects minimal differences versus the Financial Plan. A comparison of total revenues and expenses is provided in Exhibit 1.1.

Exhibit 1.1: Comparison of Projected Revenues and Expenses

	Financial Plan[1] (2016)	RFC Model (2016)	Delta
Revenue			
Operating	$542,222,732	$541,718,037	$(504,695)
Non-Operating	$27,671,212	$27,671,212	$-
Total: Revenue	$569,893,944	$569,389,249	$(504,695)
Expenses			
Operating[2]	$324,202,158	$324,202,036	$(122)
Debt Service	$174,765,568	$174,765,568	$-
Total: Expenses	$498,967,726	$498,967,604	$(122)
Net Cash Available for PAYGO Capital & Other Cash Needs[3]	**$70,926,218**	**$70,421,644**	**$(504,574)**

(1) Financial Plan provided by DC Water Staff (dated 12.04.14)
(2) Includes PILOT and ROW fee.
(3) PAYGO capital is not included as an expense due to the uncertainty of the exact amount of spending that will occur.

This difference versus the Financial Plan is relatively small and is predicated on several assumptions that could materially change the outcome. A more thorough discussion of these assumptions can be found in Section 3.3 of this report. At this time, RFC does not see the need for altering the timing of rate increases proposed in the Financial Plan.

1.3. Cost of Service / Rate Equity

RFC was asked if the proposed test year 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 rate. Exhibit 1.2 presents the allocation of test year revenue requirements to the water volume charge, metering fee, wastewater volume charge, and the CRIAC charge.

Exhibit 1.2: Net Revenue Requirement Allocation and Cost of Service Calculation

	2016	Water	Meter	Wastewater	CRIAC
Retail Revenue Requirements	$422,848,958	$130,499,709	$11,394,503	$183,773,901	$97,180,845
	100.0%	30.8%	2.7%	43.5%	23.0%
Units of Service		34,847,956	2,949,021	33,756,957	4,788,000
		ccf	equiv meters(1)	ccf	ERU's(1)
Calculated Unit Cost		**$3.74**	**$3.86**	**$5.44**	**$20.30**

(1) Represents annualized equivalent meters and ERUs

The results of the COS analysis support several recommendations for consideration by DC Water staff and the Board of Directors (Board) which are summarized below.

- The calculated water volumetric rate of $3.74 per Ccf represents a decrease of $0.39 per Ccf when compared to the proposed water volumetric rate in the Financial Plan. The calculated sewer volumetric rate of $5.44 per Ccf represents an increase of $0.39 per Ccf when compared to the proposed sewer volumetric rate in the Financial Plan. These differences are related predominantly to a higher level of capital spending on the wastewater system compared to the water system since the last cost of service study. This, coupled with water and sewer rates increasing at equal rates annually over the same time period, has created a need to shift revenue recovery to the sewer utility in FY 2016 to realign the rates with cost of service.

1.4. Rate Structure Alternatives

RFC identified several opportunities for changes to the water and sewer rate structures to enhance some of DC Water's key pricing objectives such as revenue stability, cost equity, and affordability. These rate structure alternatives, which are designed to address key pricing objectives, included:

- Water System Replacement Fee – This will be a new component on the customer bill, targeted specifically at renewal and replacement of aging water infrastructure in the retail service area.
- Class-Based Water Volumetric Differentiation – Rate differentiation by class is based on the peaking demands placed on DC Water's system by each customer class.
- Lifeline Water Rates – This alternative provides a lower water rate for the first 4 Ccf of single-family residential (SFR) water use to recover baseline use by residential customers without peaking costs.
- Development Impact Fees -

The results of the rate structure alternatives are summarized below.

Water System Replacement Fee Implementation

DC Water asked RFC to analyze the impacts of implementing a new fixed charge targeted specifically at recovering costs associated with the renewal and replacement of aging water infrastructure in the retail service area. More specifically, this fee will be set to recover 1 percent of DC Water's capital replacement program expenditures, or approximately $40,000,000 annually.

The new Water System Replacement Fee will be scaled up by meter size according to the corresponding average flow of each meter size. For example, 2" meters on average use approximately 13 times more water than a 5/8" meter, and such the Water System Replacement Fee for a 2" meter will be set approximately 13 times higher than a 5/8" meter. RFC's proposed monthly Water System Replacement Fees by meter size presented in Exhibit 1.3.

Exhibit 1.3: Proposed Monthly Water System Replacement Fee

Meter Size	2016
5/8"	$6.30
3/4"	$7.39
1"	$9.67
1"x1.25"	$15.40
1.5"	$41.35
2"	$83.75
3"	$232.13
4"	$561.02
6"	$1,292.14
8"	$5,785.51
8"x2"	$1,899.60
8"x4"x1"	$2,438.35
10" and Greater	$6,679.65

Class-Based Volumetric Differentiation

DC Water's existing rate structure does not differentiate among customer classes or categories (within classes) based on how they use the water system. Many utilities have developed class-based rate structures that recognize how different types of customers place different demands on utility systems. Differentiation between water customers is typically based on peaking variations.

In a prior Customer Class Segmentation Study conducted by RFC, we identified five different categories of water customers which demonstrated a degree of differentiation in terms of peak usage. These customer categories included:

- Residential;
- Multi-Family/DC Housing;
- Commercial;
- Federal; and
- Municipal.

The concept of a class-based water volumetric rate is that a customer class exhibiting more peaking in its water usage when compared to other customer classes should be required to pay for the related costs. This involves allocating water system volumetric costs between base, or average, demand and peak-demand. Once volumetric costs have been allocated into base and peaking components by customer class, these costs are then divided by annual flows to determine class-based volumetric rates.

Based on an analysis of consumption data, and after extensive discussion with DC Water staff, it has been determined that the Multi-Family and DC Housing customer categories should be combined into their own customer class, labeled Multi-Family. Furthermore, it was also decided that the Commercial, Federal, and Municipal customer categories should remain in the Non-Residential customer class. These segmentation initiatives would leave DC Water with three established customer classes, Residential, Multi-Family, and Non-Residential.

For DC Water, non-residential customers exhibited higher levels of system peaking than residential and multi-family customers. As a result, it may be appropriate for DC Water to recognize the relative difference of the additional cost of service in class-based water volumetric rates. Further segmentation of the non-residential customer class could be examined in the future. Exhibit 1.4 presented a comparison of the monthly peaking factors by customer class.

Exhibit 1.4: Comparison of Monthly Peaking Factors by Customer Class

Customer Class	Monthly Peaking Factor
Residential	1.15
Multi-Family	1.16
Non-Residential	1.39

Exhibit 1.5 shows a comparison of the average volumetric rate and an example of a class based volumetric rate for each customer class. It should be noted that since the Residential and Multi-Family peaking factors are so similar, the same volumetric rate will be charged

to both classes. The differentiation of these peaking factors can be reevaluated in subsequent studies to determine the appropriateness of this methodology.

Exhibit 1.5: Comparison of Average and Class-Based Volumetric Rates

Customer Class	Volumetric Revenue Requirements	Annual Usage (ccf)	Class Based Volumetric Rate (per ccf)	Average Volumetric Rate (per ccf)	Delta (per ccf)	Percentage
Residential	$25,130,063	7,285,002	$3.45	$3.74	$(0.29)	-7.8%
Multi-Family	27,574,725	7,993,690	$3.45	$3.74	$(0.29)	-7.8%
Non-Residential	77,921,506	19,569,264	$3.99	$3.74	$0.25	6.7%
	$130,626,294	**34,847,956**				

Development Impact Fees

Development impact fees are one-time charges assessed to new utility customers or developers/builders to recover a proportional share of capital costs incurred to create the system capacity that provides their service. These charges typically recover costs associated with investment in "trunk and treatment" assets such as water filtration plants (water treatment), transmission mains, interceptors (including CSO tunnels), and water resource reclamation facilities (wastewater treatment). DC Water has elected to look at development impact fees as a method to equitably recover the investment in available system capacity and thus offset pressure on customer rates.

In order to efficiently and accurately assess development impact fees in the Permitting Group, DC Water determined that RFC should devise a method to scale fees based on the meter size of the new connection. Impact fees were initially calculated on a gallon per day (gpd) basis, and such we determined the most equitable scaling factor would be average consumption for each meter size in the DC Water system. This is also consistent with the scaling by meter size done for the Water System Infrastructure Fee.

Development impact fee scaling by meter size is shown in Exhibit 1.6. All SFR connections for meter size 1" and smaller use the same fee amounts.

Exhibit 1.6: Development Impact Fee Scaled by Meter Size

Meter Size (inches)	Meter Register Type [1]	Water Development Impact Fee	Sewer Development Impact Fee	Total Development Impact Fee
SFR: (5/8", 3/4", 1")	Single Register	$ 1,135	$ 2,809	$ 3,943
All Others:				
1"	Single Register	$ 1,282	$ 3,173	$ 4,455
1”x1.25”	Single & Multiple Register	$ 2,047	$ 5,066	$ 7,113
1.5”	Single Register	$ 5,491	$ 13,591	$ 19,082
2”	Single & Multiple Register	$ 11,125	$ 27,536	$ 38,661
3”	Single & Multiple Register	$ 32,500	$ 80,442	$ 112,942
4”	Single & Multiple Register	$ 83,388	$ 206,394	$ 289,783
6” and greater	Single & Multiple Register	$ 229,246	$ 567,408	$ 796,654

Notes:

(1) Development Impact Fees should be assessed based on Domestic Usage (excluding fire flow) for multiple meter register types

Section 2: INTRODUCTION

The District of Columbia Water and Sewer Authority (DC Water) engaged Raftelis Financial Consultants, Inc. (RFC) to provide financial consulting services in the fields of:

- Infrastructure financing;
- Rate revenue policy;
- Program management; and
- Financial planning related analysis and services.

Under the contract, work is assigned on a task order basis.

2.1. Task Order

DC Water developed a specific task order for RFC under this engagement titled "Cost of Service Study 2015." The task order included five specific objectives:

- Review of existing rates and charges for sufficient cost recovery;
- Review and recommend fees or charges not currently assessed but possibly applicable for recovery of DC Water's ongoing activities;
- Ensure that rates and fees provide for recovery of the cost of providing services;
- Determine whether there are any cross-subsidies among the various water and wastewater retail customer classes; and
- Possibly identify alternative rate methodologies to compare to the current rate structure.

RFC proposed to meet these objectives through a three step work approach.

1. RFC will conduct a revenue sufficiency analysis to independently forecast operating and capital costs along with units of service for FY 2016; this will serve as the test year. We will compare our forecasted revenue to the Financial Planning Model (Financial Plan) developed by DC Water Staff, to identify any revenue discrepancies for the test year.
2. RFC will review and update 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.
3. RFC will identify any alternative rate methodologies for evaluation against the existing structure and will prioritize pricing objectives identified by Staff.

Under the on call contract, RFC may also be asked to perform additional analyses and benchmarking as needed by DC Water and directed by Staff.

2.2. Deliverables

RFC proposed to prepare three deliverables for this task order:

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 will be presented in draft form to Staff for review and comment. Comments will be incorporated into the finalization of the task order deliverables.

Section 3: REVENUE SUFFICIENCY ANALYSIS

The first step in the RFC work approach was performing a revenue sufficiency analysis. This analysis is intended to provide an independent forecast of revenues and expenditures for comparison with the Financial Plan developed by DC Water Staff. The analysis is discussed in this section.

3.1. Revenue Sufficiency Model

In order to review the revenue sufficiency in recovering DC Water's cost for providing water and sewer services; RFC has updated a Revenue Sufficiency Model (Model) which assesses the existing rates and charges against the revenue requirements of DC Water. This 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 the Financial Plan developed by Staff at the conclusion of this section. Our analysis assumes a test year of FY 2016. DC Water would be able to incorporate material differences identified in our analysis into the FY 2016 forecast.

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 Revised FY 2014 and Approved FY 2015 Budgets. RFC conducted an independent review of forecasted escalation rates for future O&M costs and concluded that an across the board 3 percent increase was reasonable. However, it should be noted that although over the past several years inflation (as measured by the Consumer Price Index) has been lower than historical results, the potential for future inflation in excess of the 3 percent estimate is plausible. Due to the commodity intensive nature of the water and sewer industry, particularly the use of chemicals and electricity, which have increased more significantly than general inflation over the past decade, DC Water should re-visit these estimates for inflation annually as part of its financial planning process.

Utilizing these escalation criteria, RFC is projecting overall O&M costs of $303,457,878 for the test year, FY 2016. It should be noted that this figure does 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 2016 represent a 4.0% increase compared to the previous fiscal year. Exhibit 3.1 shows the increase in operating expenses from FY 2015 to FY 2016.

Exhibit 3.1: Projected O&M Expenses

Operating Expenses	FY 2015	FY 2016
Personnel Services	$118,278,000	$121,041,000
Contractual Services	76,945,000	79,244,030
Water Purchases	28,598,417	30,740,000
Chemicals & Supplies	36,440,403	35,951,000
Energy/Fuel/Comm./Rental	30,415,000	35,016,849
Equipment	1,028,000	1,465,000
Total: Operating Expenses	**$291,704,820**	**$303,457,878**

3.1.2. Units of Service

In order to determine DC Water's projection of water revenues, historic billing system data was analyzed and included in the Model. Billing data from FY 2005 through FY 2013 was provided by DC Water Staff, which 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 (ERU).

Water consumption used in the Model is based on actual FY 2013 usage with adjustments in FY 2014, FY 2015, and FY 2016 to reflect a projected decline in consumption of 1.0%. The 1.0% decline in consumption was based on a historical analysis of flow data from FY 2005 through FY 2011. RFC believes that the 1.0% annual reduction is appropriate due to expanded use of low-flow plumbing fixtures and a growing culture of resource conservation. This is consistent with the per capita reduction seen in other utilities with similar demographics and service area characteristics.

Our test year assumes the residential water and wastewater classes also include a reduction of 345,600 hundred cubic feet (Ccf) based on a projection for eligible Customer Assistance Program (CAP) accounts. RFC's estimation of CAP accounts is consistent with the Financial Plan, which incorporates 6,000 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 and Howard University. 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 Exhibit 3.2.

Exhibit 3.2: Historical and Projected Consumption per Class and Category

Water Consumption	2008 Historical	2009 Historical	2010 Historical	2011 Historical	2012 Historical	2013 Historical	2014 Projected	2015 Projected	2016 Projected
Residential Adjusted	8,353,597	8,060,625	8,078,424	7,953,307	7,725,096	7,518,576	7,439,934	7,362,079	7,285,002
Residential	8,593,597	8,300,625	8,318,424	8,270,107	8,041,896	7,864,176	7,785,534	7,707,679	7,630,602
CAP Accounts	(240,000)	(240,000)	(240,000)	(316,800)	(316,800)	(345,600)	(345,600)	(345,600)	(345,600)
Commercial	13,337,735	12,995,732	13,162,030	13,442,154	13,165,672	13,429,574	13,295,278	13,162,325	13,030,702
Multi-family	8,341,244	8,011,934	7,991,418	7,831,967	7,533,047	7,466,384	7,391,720	7,317,803	7,244,625
Municipal	1,274,957	1,252,431	1,257,493	1,316,185	804,839	719,481	719,481	719,481	719,481
Federal	6,840,619	6,301,792	5,908,875	5,997,204	5,997,204	5,997,204	5,937,232	5,877,860	5,819,081
D.C. Housing Authority	1,156,775	1,072,888	939,533	907,516	749,065	749,065	749,065	749,065	749,065
Total: Water Consumption	39,304,927	37,695,402	37,337,773	37,448,333	35,974,923	35,880,284	35,532,711	35,188,613	34,847,956
	-3.1%	*-4.1%*	*-0.9%*	*0.3%*	*-3.9%*	*-0.3%*	*-1.0%*	*-1.0%*	*-1.0%*

Customer data from FY 2013 was provided by DC Water Staff and served as the basis for projecting customer growth or decline. As a result of low historical growth in accounts, user accounts were conservatively projected through FY 2016 to remain constant.

Historical and projected customers are presented in Exhibit 3.3.

Exhibit 3.3: Historical and Projected Customers per Class and Category

Customer Accounts	2013	2014	2015	2016
Commercial	10,798	10,798	10,798	10,798
Federal	488	488	488	488
DC Housing	1,128	1,128	1,128	1,128
Municipal	544	544	544	544
Multi-Family	7,500	7,500	7,500	7,500
Residential	104,435	104,435	104,435	104,435
Exempt	41	41	41	41
Wholesale	27	27	27	27
Total: Customer Accounts[1]	**124,961**	**124,961**	**124,961**	**124,961**
	0.00%	**0.00%**	**0.00%**	**0.00%**

(1) Represents estimated number of accounts actively assessed DC Water's Metering Fee.

RFC 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, RFC assumed 399,000 CRIAC units which DC Water expects to capture annually at least through FY 2016.

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 Exhibit 3.4.

Exhibit 3.4: CIP Financing Summary

	2015	2016
Beginning Balance	$ 309,033,133	$ 297,671,236
Sources of Funds		
Proceeds from Rev. Bonds	$ 250,000,000	$ 250,000,000
Proceeds from Treasury Notes	-	-
Capital Equipment Financing	-	-
Transfer from Operations	61,768,583	49,053,741
EPA Grants /DC Reimbursement	51,771,000	67,169,256
CSO Grants	22,200,000	10,125,500
Wholesale Customer Capital Contributions	227,744,770	98,289,000
Interest Income	428,750	550,000
Subtotal: Sources	$ 613,913,103	$ 475,187,497
Uses of Funds		
Water Projects	$ 65,006,000	$ 62,153,000
Blue Plains Projects	206,260,000	138,545,000
Sanitary Sewer Projects	40,258,000	50,527,000
Combined Sewer Overflow / Long Term Control Plan	271,101,000	239,705,000
Stormwater Projects	2,559,000	2,206,000
Washington Aqueduct Division Projects	10,000,000	10,864,000
Capital Equipment	22,191,000	24,810,000
Meter Replacement / AMR	7,900,000	14,389,000
Placeholder Reduction in CIP	-	-
Reimbursement for Prior Capital Expend.	-	-
Subtotal: Uses	$ 625,275,000	$ 543,199,000
Sources Minus Uses	$ (11,361,897)	$ (68,011,503)
Ending Balance	**$ 297,671,236**	**$ 229,659,733**

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 in FY 2015 and FY 2016 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. RFC 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 AA+ is an investment grade rating that indicates a strong capability to meet financial obligations. Moody's and Fitch carry ratings of Aa2 and AA for DC Water, respectively. 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 taken from the Financial Plan. RFC calculated FY 2016 debt service based on projected funding needs in the CIP. Specifically, we assumed an additional $250 million in revenue bonds would be issued in the middle of FY 2015 with a half-year debt service payment. Full debt service on this projected issuance was assumed to occur in FY 2016. It was assumed another $250 million would be issued in the middle of FY 2016 with a half year debt service payment. Full debt service on this projected issuance was assumed to occur in FY 2017. These assumptions are consistent with the Financial Plan. A summary of the projected debt from FY 2015 to FY 2016 is displayed below in Exhibit 3.5.

Exhibit 3.5: Projected Debt Service

	2015	2016
Existing Debt		
Senior Debt		
1998 Revenue Bonds	$ 23,371,575	$ 23,368,475
Series 2009A	12,343,465	11,904,225
Series 2014A	20,031,589	16,849,000
Subtotal: Senior Debt	$ 55,746,629	$ 52,121,700
Subordinated Debt		
District G.O. Bonds:	$ -	$ -
Jennings Randolph:	805,191	805,192
Little Seneca Reservoir:	-	-
Commercial Paper	2,500,000	2,500,000
Series 2003 Subordinate Bond	-	-
Series 2007A Subordinate Bond	6,151,702	5,679,000
Series 2008A Subordinate Bond	15,234,333	14,687,750
Series 2010A Subordinate Bond	11,021,403	11,021,403
Series 2012 Subordinate Bond	22,597,175	22,598,591
Series 2013A Subordinate Bond	14,994,250	14,994,250
Series 2014B Subordinate Bond	3,250,000	3,252,992
Series 2014C Subordinate Bond	15,695,788	17,468,100
Subtotal: Subordinated Debt	$ 92,249,842	$ 93,007,278
Total: Existing Debt	$ 147,996,472	$ 145,128,978
Planned Debt		
WASA Bonds - Planned	$ 8,495,908	$ 26,261,590
Capital Equipment Financing	6,750,000	3,375,000
Total: Planned Debt	$ 15,245,908	$ 29,636,590
Total: Debt	**$ 163,242,380**	**$ 174,765,568**
% Change		*6.9%*

3.2. Comparison to Forecast

DC Water's Financial Plan projects a surplus of $70,926,218 in FY 2016. The small variance of ($504,574) when compared to RFC's forecast of a surplus of $70,421,644 is a result of a 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 Schedule A of the Appendices.

3.2.1. Operating Revenue

As discussed previously in Section 3.1.2, RFC has estimated billable water and sewer flows based on FY 2013 data with adjustments made in FY 2014, FY 2015, and FY 2016 to reflect an anticipated decline in consumption. As a result, RFC is projecting operating revenues of $541,718,037, which is an insignificant $504,695 less than operating revenues in DC Water's Financial Plan. A summary of the operating revenue comparison of the Model and the Financial Plan is provided in Exhibit 3.6.

Exhibit 3.6: Operating Revenue Comparison

Operating Revenue	Financial Plan 2016	RFC Model 2016	Delta
Volumetric Charges	$306,223,768	$305,719,073	$(504,695)
Metering Fee	10,776,046	10,776,046	-
Infrastructure Surcharge	40,000,000	40,000,000	-
Right of Way Fee/PILOT	20,744,158	20,744,158	-
CRIAC CSO Revenue	95,137,005	95,137,005	-
Wholesale Revenue	69,341,755	69,341,755	-
Total: Operating Revenue	**$542,222,732**	**$541,718,037**	**$(504,695)**

Additional detail associated with the difference in specific operating revenue categories is provided below. It should be noted that operating revenue is based on projected receipts.

Volumetric Charges

Revenues from the volumetric charges are calculated primarily based on the projected rates from RFC's COS results multiplied by projected consumption. Projected revenue from the Federal Government is based on information available in the Financial Plan, as the Federal Government pays for service in advance, with a reconciliation performed annually based on actual consumption. This results in volumetric charge revenue which is $504,695 less than DC Water's Financial Plan. The slightly lower level of revenue is still consistent with the Financial Plan, which supports the reasonableness of DC Water's existing forecast.

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. RFC's projection of revenue from the metering fee are consistent with the revenue in DC Water's Financial Plan. DC Water is projected to recover $10,776,046 in FY 2016

Impervious Area Charge

RFC is projecting DC Water to recover $95,137,005 in FY 2016 which is consistent with the revenue projected from the CRIAC in the Financial Planning Model.

3.2.2. Non-Operating Revenue

RFC's projection of non-operating revenues reflect the same amount as DC Water's Financial Plan.

A comparison of total revenues is presented in Exhibit 3.7.

Exhibit 3.7: Total Revenue Comparison

	Financial Plan 2016	RFC Model 2016	*Delta*
Operating Revenue			
Volumetric Charges	$ 306,223,768	$ 305,719,073	*$ (504,695)*
Metering Fee	10,776,046	10,776,046	-
Infrastructure Surcharge	40,000,000	40,000,000	
Right-of-Way Fee / PILOT	20,744,158	20,744,158	-
IAB CSO Revenue	95,137,005	95,137,005	-
Wholesale Revenue	69,341,755	69,341,755	-
Subtotal: Operating Revenues	$ 542,222,732	$ 541,718,037	*(504,695)*
Non-Operating Revenue			
Interest Earnings	$ 1,368,626	$ 1,368,626	*$* -
Other Revenue	26,109,340	26,109,340	-
Transfer from Rate Stabilization Fund	-	-	-
Northern Virginia Debt Service	193,246	193,246	-
Subtotal: Non-Operating Revenues	$ 27,671,212	$ 27,671,212	$ -
Total: Revenue	**$ 569,893,944**	**$ 569,389,249**	**$ (504,695)**

The Model forecasts total revenues in the test year (FY 2016) that are approximately $504,695 less than total revenue projected in the Financial Plan. In the aggregate, this revenue discrepancy is of little to no significance.

3.2.3. Operating Expenses

Operating expenses in the Model are input from the Revised FY 2014 and Approved FY 2015 Budget and forecasted for FY 2016. When compared to the Financial Plan, FY 2016 operating expenses are nearly identical. A comparison of the Model and Financial Plan operating expenses can be viewed in Exhibit 3.8.

Exhibit 3.8: Operating Expense Comparison

Operating Expenses	Financial Plan 2016	RFC Model 2016	Delta
Personnel Services	$121,041,000	$121,041,000	$ -
Contractual Services	79,243,000	79,244,030	1,030
Water Purchases	30,990,000	30,740,000	(250,000)
Chemicals & Supplies	35,701,000	35,951,000	250,000
Utilities & Rent	35,018,000	35,016,849	(1,151)
Small Equipment	1,465,000	1,465,000	-
PILOT/ROW Fee	20,744,158	20,744,158	-
Total: Operating Expenses	**$324,202,158**	**$324,202,036**	**$(122)**

3.2.4. Debt Service

Due to the fact that RFC updated the Model's existing debt service based on actual principal and interest schedules provided in the official statement to investors, and since the same assumptions were used to forecast planned debt issuance, there is not a difference between the Model and the Financial Plan's debt service for FY 2016. A summary of the debt service comparison is displayed in Exhibit 3.9.

Exhibit 3.9: Debt Service Comparison

Debt Service	Financial Plan 2016	RFC Model 2016	Delta
1998 Revenue Bonds	$ 23,368,475	$ 23,368,475	$ -
Series 2009A	11,904,225	11,904,225	-
Series 2014A	16,849,000	16,849,000	-
District G.O. Bonds	-	-	-
Jennings Randolph	805,192	805,192	-
Little Seneca Reservoir	-	-	-
Commercial Paper	2,500,000	2,500,000	-
Series 2003 Subordinate Bond	-	-	-
Series 2007A Subordinate Bond	5,679,000	5,679,000	-
Series 2008A Subordinate Bond	14,687,750	14,687,750	-
Series 2010A Subordinate Bond	11,021,403	11,021,403	-
Series 2012 Subordinate Bond	22,598,591	22,598,591	-
Series 2013A Subordinate Bond	14,994,250	14,994,250	-
Series 2014B Subordinate Bond	3,252,992	3,252,992	-
Series 2014C Subordinate Bond	17,468,100	17,468,100	-
Capital Equipment Financing	3,375,000	3,375,000	-
DC Water Bonds Planned	26,261,590	26,261,590	-
Total: Debt Service	**$174,765,568**	**$174,765,568**	**$ -**

To summarize, a comparison of total revenues and expenses is provided in Exhibit 3.10.

Exhibit 3.10: Comparison of Revenues and Expenses

	Financial Plan[1] (2016)	RFC Model (2016)	Delta
Revenue			
Operating	$542,222,732	$541,718,037	$(504,695)
Non-Operating	$27,671,212	$27,671,212	$-
Total: Revenue	$569,893,944	$569,389,249	$(504,695)
Expenses			
Operating[2]	$324,202,158	$324,202,036	$(122)
Debt Service	$174,765,568	$174,765,568	$-
Total: Expenses	$498,967,726	$498,967,604	$(122)
Net Cash Available for PAYGO Capital & Other Cash Needs[3]	**$70,926,218**	**$70,421,644**	**$(504,574)**

(1) Financial Plan provided by DC Water Staff (dated 12.04.14)
(2) Includes PILOT and ROW fee.
(3) PAYGO capital is not included as an expense due to the uncertainty of the exact amount of spending that will occur

Section 4: COST OF SERVICE ANALYSIS / RATE EQUITY

RFC evaluated the level of rate equity under the current rate structure and alternative rate structures which are discussed in detail in Section 5 (Alternative Rate Structure Analysis). Specifically, RFC was tasked with determining if existing water and sewer customer classes were subsidizing each other by developing cost of service-based rates and comparing them to proposed DC Water rates for the test year, FY 2016. RFC used the Model, described in the previous section, to allocate costs and calculate cost of service-based rates.

4.1. Revenue Requirements

In order 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. Development of revenue requirements includes capital costs and funding 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 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.

The test year revenue requirements are presented in Exhibit 4.1.

Exhibit 4.1: Test Year Revenue Requirements (FY 2016)

Revenue Requirements	2016
Operating Expenses	$303,457,878
Debt Service	$174,765,568
Unadjusted Revenue Requirements	$478,223,446
Adjustments:	
15-year AMR Pro-forma Adjustment	$1,584,737
Adjustments for Coverage	$40,053,741
Adjusted Revenue Requirements	**$519,861,925**

The revenue requirements are offset by other operating and non-operating income from sources in addition to user charges. The net revenue requirements represent the level of revenues that must be generated from 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. Exhibit 4.2 summarizes the revenue offsets in the test year.

Exhibit 4.2: Test Year Revenue Offsets (FY 2016)

	2016
Revenue Offsets	
Wholesale Revenue	
LCSA + PI	$ (6,846,459)
WSSC	(50,283,848)
Fairfax County	(12,211,448)
Other Revenue	
IMA Indirect Cost Reimb. For Capital Projects	(8,000,000)
Dev. Contr/Water Services Fees, Taps	(4,800,000)
Dev. Contr/Liability Deposits/Sewer Service Fees	(2,700,000)
Commercial Water Maintenance	(32,000)
DC Fire Protection Fee	(6,885,340)
Transfer from DC PILOT/ROW Fund	-
DC Contribution of 50% PILOT Escrow to DCW	-
Sales to DC Agencies-Steam/Meter	(170,000)
Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales	(2,500,000)
Pipe Repair Sales/Replacement	(22,000)
Stormwater	(1,000,000)
Northern Virginia Debt Service	(193,246)
Interest Income	(1,368,626)
Total: Revenue Offets	**$ (97,012,967)**

4.2. Allocation of Costs

Once the revenue requirements were projected through the test year, RFC then evaluated the appropriateness of the allocation factors used in the most recent cost of service analysis. Specifically, RFC 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 available in DC Water's most recent CRIAC model.

Revenue requirements and revenue offsets related directly to providing water service or sewer service were allocated 100% to water and sewer, respectively. Revenue requirements related entirely to the CSO LTCP were allocated 100% to the CRIAC. A portion of customer service costs associated with meter maintenance were allocated to the metering fee while the remaining costs were divided equally between water and sewer since almost all customers receive a bill for both services. Permits were also allocated equally between water and wastewater. For other direct operating costs, such as Maintenance Services, the same allocation factors were used as in the prior COS Study. Engineering and Technical Services were allocated based on project expenditures in the CIP. RFC also used similar percentages to 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"). It should be noted that a small portion (1.1%) of several direct operating cost budget centers and indirect costs were allocated to the CRIAC.

Responsibility for debt service coverage is distributed proportionately amongst the water volumetric charge, wastewater volumetric charge, and CRIAC. RFC 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. Further detail of the allocation costs may be found in Schedule B of the Appendices.

Exhibit 4.3 presents the allocation of test year revenue requirements to the water volumetric charge, metering fee, wastewater volumetric charge, and the CRIAC charge.

Exhibit 4.3: Net Revenue Requirement Allocation and Cost of Service Calculation

	2016	Water	Meter	Wastewater	CRIAC
Retail Revenue Requirements	$422,848,958	$130,499,709	$11,394,503	$183,773,901	$97,180,845
	100.0%	30.8%	2.7%	43.5%	23.0%
Units of Service		34,847,956	2,949,021	33,756,957	4,788,000
		ccf	equiv meters(1)	ccf	ERU's(1)
Calculated Unit Cost		**$3.74**	**$3.86**	**$5.44**	**$20.30**

(2) Represents annualized equivalent meters and ERUs

4.3. Metering Fee

The cost pool for the metering fee includes total revenue requirements of $11,394,503 This total includes a pro forma adjustment for historical cost of the AMR program, ongoing AMR costs, and approximately 35 percent of the customer service budget center, which represents a portion of the costs associated with meter maintenance. Based on these allocations, the COS rate of $3.86 is comparable to the meter fee identified in the Financial Plan.

4.4. Water Volumetric Rate

Allocations to the water volumetric cost pool result in revenue requirements of $130,499,709, which is then divided by projected units of service for the test year of 34,847,956 Ccf. The calculated water volumetric rate of $3.74 represents a decrease of $0.39 over the proposed FY 2016 rate of $4.13 identified in the Financial Plan. The primary difference in the calculated water volumetric rate and the proposed FY 2016 rate in the Financial Plan relates to a higher level of capital spending on the wastewater system compared to the water system since the last cost of service study. DC Water has historically increased water and wastewater rates at the same rate, yet costs have increased over that time differently, with wastewater costs rising faster than water. The combination of these two historical occurances suggests a need to rebalance water and wastewater volumetric rates.

4.5. Wastewater Volumetric Rate

Wastewater volume revenue requirements total $183,773,901. The revenue requirements were then divided by the projected test year consumption of 33,756,957 Ccf which result in a unit cost of $5.44. This represents an increase of $0.39 versus the proposed FY 2016 rate of $5.05. Similar to the water volume charge, the calculated wastewater volume charge differs from the Financial Plan because of the aforementioned historical across-the-board rate increases and disportionate cost increases.

4.6. Impervious Area Charge

Total revenue requirements allocated to the CRIAC for the test year, FY 2016, totaled $97,180,845. RFC divided the CRIAC revenue requirements by our units of service, as measured by ERUs, and the calculated charge results in a rate of $20.30 per ERU.

4.7. COS / Rate Equity Conclusions

The results of the COS analysis supports 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 are several opportunities for consideration to provide further rate equity when considering proposed rate recommendations in FY 2016.
- The calculated water volumetric rate of $3.74 represents a decrease of $0.39 over the proposed FY 2016 rate of $4.13 identified in the Financial Plan. The primary difference in the calculated water volumetric rate and the proposed FY 2016 rate in

the Financial Plan relates to a historical shift in the allocation of costs between the water and wastewater systems. DC Water has historically increased water and wastewater rates at the same rate, yet costs have increased over that time differently, with wastewater costs rising faster than water. The combination of these two historical occurances suggestes a need to rebalance water and wastewater volumetric rates . As a result, it is reasonable for DC Water to decrease the water volumetric rate from $3.88 per Ccf to $3.74 per Ccf.

- The calculated sewer volumetric rate of $5.44 represents an increase of $0.39 versus the proposed FY 2016 rate of $5.05. Similar to the water volume charge, the calculated wastewater volume charge differs from the Financial Plan because of the aforementioned historical across-the-board rate increases and disproportionate cost increases. As a result, it is reasonable for DC Water to expand the increase in the sewer volumetric rate from $4.74 per Ccf to $5.44 per Ccf.
- The calculated rates water and sewer rates are designed to generate revenues consistent with projected revenues in the Financial Plan in FY 2016. The shift in emphasis to the sewer volumetric rate in terms of revenue generation is designed to reflect more appropriately the cost of provide services.

Section 5: ALTERNATIVE RATE STRUCTURE ANALYSIS

5.1. Prioritization of Pricing Objectives

The first step in the COS/Rate Design process is to determine the utility's pricing objectives and policy issues. The identification and prioritization of rate and pricing objectives is a very important step to determine if the current rate structure needs to be redesigned. The following pricing objectives are detailed in DC Water's Key Financial Policies:

Pricing Objective	Description
Financial Sufficiency	Ensure that adequate revenues are generated to meet the total "cash needs" of the utility including operating and maintenance costs, capital costs, debt service coverage requirements, and the maintenance of adequate capital reserves.
Simple to Understand and Update	The rate structure should be simple for customers and staff to understand and update in future years.
Legality	The rate structure should be consistent with industry methodologies as well as any local regulations to ensure rates are defensible.
Revenue Stability	The rate structure should provide for a steady and predictable stream of revenues to the utility such that the utility is capable of meeting its current financial requirements.

One of the key questions or issues to assess at the beginning of the cost of service study is whether the current rate structure effectively addresses all of the DC Water's pricing objectives. Building off the last COS study and additional analysis conducted in related studies over the past three to five years, RFC continued discussion with DC Water staff to identify its key pricing objectives. Staff input, along with other important information such as billing system limitations and usage patterns, allowed RFC to assess the appropriateness of the existing rate structure as well as identify rate structure alternatives that might better address DC Water's pricing objectives.

5.2. Existing Retail Rate Structure

The core components of DC Water's existing retail rate structure are those that are found on the customer monthly bill. These core components include the metering fee, water volumetric charge, wastewater volumetric charge, and CRIAC. The customer bill also includes PILOT, ROW, and stormwater fee. The stormwater fee is billed and collected by DC Water for remittance to the District Department of Environment. The PILOT and ROW charges are assessed to DC Water by the District.

The existing retail rate structure scores well on DC Water's pricing objectives identified in Section 5.1. It is designed to generate adequate revenue to cover revenue requirements (Financial Sufficiency) and provide a revenue stream that is relatively stable (Revenue Stability). DC Water's existing rate structure is also uncomplicated and easy for customers to understand (Simple to Understand and Update), while at the same time is legally

defensible (Legality). While there are no "fatal flaws" in the existing rate structure, RFC continues to note some pricing objectives where there may be room for improvement.

5.3. Alternative Rate Structures

In the last COS study, RFC identified several opportunities that merited additional consideration in terms of enhancing DC Water's key pricing objectives. These opportunities are described below.

Cost of Service-Based Allocations

The existing retail rate structure includes some cost of service-based allocation. First, and most importantly, the rate structure allocates cost between water and sewer to ensure that one set of customers is not subsidizing the other. The rate structure also allocates costs to a metering fee and the CRIAC. The metering fee is designed to cover capital costs associated with AMR and meter maintenance. The CRIAC is designed to recover costs associated with the retail customers' portion of the CSO Long Term Control Plan.

There are opportunities to enhance the cost of service nature of the rate structure in two ways. First, the last COS study included a recommendation that DC Water consider an additional allocation of costs associated with customer service, billing, collections, and meter reading into a base charge that can be applied to each customer bill on a per account basis. Second, some utilities may also differentiate between classes of customer based on the demands they place on the utility systems.

Equitable Contributions from New Customers

It is DC Water's practice to handle new customer additions on an ad hoc basis. New customers may be assessed some or all of the costs of upsizing distribution or collection system assets to enable service. However, the existing rate structure does not explicitly address equitable contributions from new customers. The existing customers of DC Water have invested in utility assets that provide water distribution, wastewater collection, and wastewater treatment. These assets have been sized to provide additional capacity so that future customers may receive service as well. It is reasonable to expect that future customers should pay their fair share to "buy in" to the assets bought and paid for by existing customers. An equitable "buy-in" for DC Water was calculated by RFC and is presented in Section 5.3.4 of this report.

Based on the results of the last COS study and continued discussion with DC Water staff and Board, RFC identified three primary rate structure alternatives for further consideration in this COS analysis. These rate structure alternatives, which are designed to address the key pricing objectives opportunities, include:

Class-Based Volumetric Differentiation – This alternative differentiates between customer classes based on their differing use of the system. Water rates may differentiate based on class peaking characteristics while wastewater rates differentiate based on strength characteristics.

Water System Replacement Fee – This will be a new component on the customer bill, targeted specifically at renewal and replacement of aging water infrastructure in the retail service area.

Development Impact Fees – These fees are assessed as new customers join the system. They ensure that new customers pay their fair share to buy in to the assets owned by existing customers. The Development Impact Fees calculated by RFC are presented in Section 6 of this report.

Each of these options is discussed in detail below.

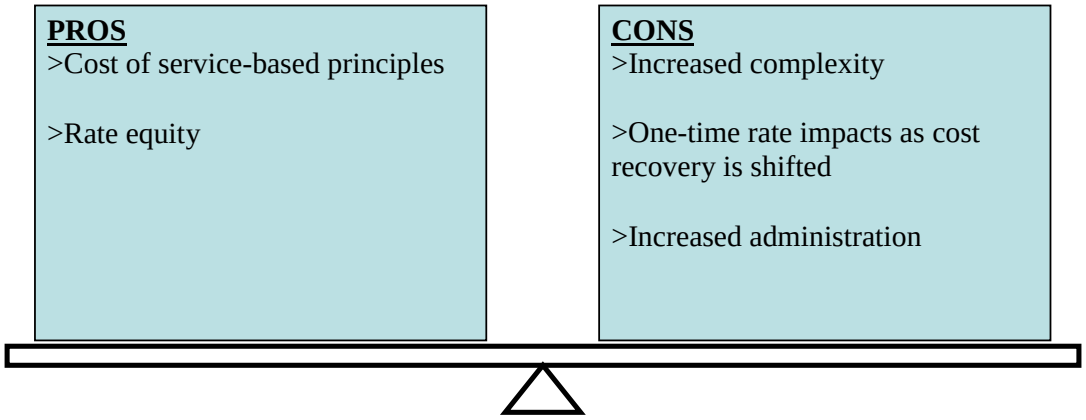
5.3.1. Class-Based Volumetric Differentiation

The existing rate structure does not differentiate among classes of customers based on how they use the water and wastewater systems. Many utilities have developed class-based rate structures that recognize how different types of customers place different demands on utility systems. Differentiation between water customers is typically based on peaking while wastewater differentiation is based on strength contribution.

In 2011, RFC conducted a Customer Class Segmentation Study with a purpose of determining whether or not specific types of customers in DC Water's service area demonstrated different peak usage of the water system. RFC reviewed three years of monthly billing data from 2008 through 2011 for 9 different customer categories. The results of the analysis suggested a reasonable level of differentiation in terms of peak-usage for several customer classes and categories.

The pros and cons of this rate alternative are shown below in Exhibit 5.1.

Exhibit 5.1: Class-Based Volumetric Differentiation Analysis



RFC sees merit in the class-based customer differentiation for DC Water rates. As part of this COS analysis, we have developed analytics supporting class-based water volumetric rate differentiation, which is discussed in detail below.

Water Volumetric Rate

As noted in the previous COS study, RFC identified several potential customer classifications that warranted consideration for class-based volumetric rates. Specifically, the recommended customer classifications included:

- Residential,
- Multi-Family/DC Housing,
- Commercial,
- Federal, and
- Municipal.

However, after extensive discussion with DC Water Staff, it was determined that due to various administrative, technical, legal, and implementation issues that need to be considered carefully, the most appropriate customer classifications that could be identified initially include Residential, Multi-Family[1], and Non-Residential[2]. DC Water will continue to review the appropriateness of further segmentation of the Non-Residential customer classification. The concept of a class-based water volumetric rate is that a customer class exhibiting more peaking in its water usage when compared to other customer classes should be required to pay for the related costs. This involves allocating water system volumetric costs between base, or average, demand and peak-demand, which is a two-step allocation 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.

RFC 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. RFC also reviewed historical capital expenditures identified in the Financial Plan over the past decade, which were used a basis of 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 also 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

[1]The Multi-Family class is made up of the Multi-Family and DC Housing customer categories.
[2] The Non-Residential class is made up of the Commercial, Federal, and Municipal customer categories.

supply and treatment and water distribution, and water service fees/taps, which was assigned to water distribution. Exhibit 5.2 summarizes the allocation of water system costs to functional components. Supporting detail for the cost allocations is provided in Schedule C of the Appendices.

Exhibit 5.2: Allocation of Water Costs into Functional Components

	$ Allocated to Water	Source of Supply & Treatment	Distribution	Storage	Pumping	Customer Service/Meter (1)	Admin/General
Water System Costs							
Operations	$ 74,038,304	$ 32,164,597	$ 23,381,481	$ 2,951,317	$ 6,862,775	$ 3,399,531	$ 5,278,602
Administration	27,470,141	-	-	-	-	-	27,470,141
Debt Service & Coverage	47,130,612	11,779,866	33,053,026	-	-	2,297,720	-
Revenue Offsets	(12,442,097)	(3,645,911)	(8,531,451)	-	-	-	(264,735)
Net Water System Revenue Requirements	**$ 136,196,960**	**$ 40,298,552**	**$ 47,903,055**	**$ 2,951,317**	**$ 6,862,775**	**$ 5,697,251**	**$ 32,484,009**
% Allocation	100.0%	29.6%	35.2%	2.2%	5.0%	4.2%	23.9%

(1) Includes portion of metering charge allocated to water.

Once costs were allocated into functional components, the next step in the process was to allocate these functional costs into categories, particularly volumetric costs into base and peaking components. RFC, through discussion with DC Water staff and industry experience, developed reasonable percentages for distributing costs between serving base and peak demand.

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 primarily, 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, RFC assigned 2/3 of water source of supply and treatment to the component and 1/3 of water source of supply and treatment to the extra capacity component. Since DC Water does not own water production facilities, and although it would be preferable to review more detailed water production statistics to enhance the precision of this estimate, allocating 1/3 source of supply and treatment costs to extra capacity is reasonable and consistent with industry standards and practices.

Water Distribution

Based on the results of the Customer Class Segmentation Study, it does not appear that 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 not unreasonable 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 the purpose of this COS analysis, RFC assigned 10% of the distribution system costs to system peaking. This is consistent to percentages used in other studies for utilities with similar operating characteristics.

Water Storage

Similar to 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. Again, due to its limited amount of system peaking, this should represent a relatively small portion of total storage costs. For the purpose of this COS analysis, RFC assigned 20% of the storage costs to system peaking. This is consistent to percentages used in other studies for utilities with similar operating characteristics.

Water Pumping

A significant portion of the costs allocated to water pumping are associated with the electricity required to operate the pumping facilities. During peak flows, DC Water is subject to additional demand charges for power, and it is appropriate to allocate these costs to a peaking component. Additionally, similar to both water distribution and storage, DC Water has sized its pumping equipment to serve both average and peak demand. As a result, RFC 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.

Exhibit 5.3 summarizes the allocation of water system costs to functional categories. Supporting detail for the cost allocations is provided in Schedule D of the Appendices.

Exhibit 5.3: Allocation of Water Costs into Functional Categories

		Allocation Distributions			
Net Water System Costs	FY 2016	Base	Extra Capcity	Customer Service/Meter (1)	Admin/General
Source of Supply	$ 40,298,552	$ 25,791,074	$ 14,507,479	$ -	$ -
Distribution	47,903,055	43,112,750	4,790,306	-	-
Storage	2,951,317	2,361,054	590,263	-	-
Pumping	6,862,775	3,431,388	3,431,388	-	-
Customer Service/Meter	5,697,251	-	-	5,697,251	-
Admin/General	32,484,009	-	-	-	32,484,009
	$ 136,196,960	**$ 74,696,265**	**$ 23,319,435**	**$ 5,697,251**	**$ 32,484,009**

(1) Includes portion of metering charge allocated to water.

As noted previously, RFC's Customer Segmentation Study identified several customer categories that demonstrated a reasonable level of differentiation in terms of peak usage. For the purpose of this COS analysis, the customer classes identified included:

- Residential
- Multi-Family
- Non-Residential

It should be noted that for example purposes, RFC developed preliminary estimates for further segmentation of the Non-Residential classification. For these customers classes and categories, RFC reviewed and evaluated peak monthly usage compared to average monthly usage for a five year period from 2008-2013. The peak monthly capacity factors from this analysis were applied to projected annual usage in FY 2016. The results are presented in Exhibit 5.4.

Exhibit 5.4: Peak Monthly Flow by Customer Class

	Base		Max-Month		
Customer Class	Annual Usage (ccf)	Average Monthly Usage (ccf)	Peaking Factor (1)	Total Monthly Capacity (ccf)	Extra Capacity (ccf)
Single-Family Residential	7,285,002	607,084	1.16	704,217	97,133
Multi-Family Residential (2)	7,993,690	666,141	1.16	772,723	106,583
Non-Residential (2)	19,569,264	1,630,772	1.39	2,266,773	636,001
	34,847,956				**839,717**

(1) Data taken from the 2011 DC Water Customer Segmentation Study
(2) Includes Public and Private DCHA.

As seen above, 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. The distribution of flows per customer class based on both an average day and peak-month was then determined (see Exhibit 5.5).

Exhibit 5.5: Allocation of Flows by Customer Class

	Base Flows		Peak Flows	
Customer Class	Average Monthly Usage (ccf)	% Total	Extra Capacity (ccf)	% Total
Residential	607,084	20.9%	97,133	11.6%
Mult-Family	666,141	22.9%	106,583	12.7%
Non-Residential	1,630,772	56.2%	636,001	75.7%
	2,903,996	**100%**	**839,717**	**100%**

The percentages identified above for each customer class were multiplied by the costs allocated to base and peak flows (see Exhibit 5.4), respectively. The result was a distribution of water volumetric revenue requirements by customer class and base and peaking components (see Exhibit 5.6).

Exhibit 5.6: Allocation of Base and Peak Volumetric Costs by Customer Class

Customer Class	Base	Max-Month	Base	Peaking	Allocation for Volumetric Revenue Requirements
Residential	20.9%	11.6%	$ 22,406,150	$ 2,697,451	$ 25,103,600
Mult-Family/DC Housing	22.9%	12.7%	24,585,828	2,959,860	27,545,688
Non-Residential	56.2%	75.7%	60,188,296	17,662,125	77,850,421
	100.0%	**100.0%**	**$ 107,180,274**	**$ 23,319,435**	**$ 130,499,709**

The volumetric revenue requirements identified above were then divided by annual consumption for each customer class, to develop separate, class-based volumetric rates (see Exhibit 5.7).

Exhibit 5.7: Class-Based Volumetric Rates

Customer Class	Volumetric Revenue Requirements	Annual Usage (ccf)	Class Based Volumetric Rate (per ccf)
Residential	$25,103,600	7,285,002	$3.45
Multi-Family	27,545,688	7,993,690	$3.45
Non-Residential	77,850,421	19,569,264	$3.99
	$130,499,709	**34,847,956**	

As presented in Exhibit 4.3, the calculated uniform volumetric rate was $3.74 per Ccf. However, based on a closer examination of system usage over the past five years, certain types of customers demonstrated a higher level of system peaking based on maximum monthly flow data. Non-Residential customers, in particular, had the highest peaking

factors and, therefore, were allocated a higher proportion of peaking costs. This results in a volumetric rate for Non-Residential customers of $3.99 per Ccf, which is $0.25 per Ccf higher than the average volumetric rate of $3.74 per Ccf. Conversely, Residential and Multi-Family customers had the lowest peaking factors and, therefore, were allocated a lower proportion of peaking costs. This results in a volumetric rate for Residential and Multi-Family customers of $3.45 per Ccf, which is $0.29 per Ccf lower than the average volumetric rate of $3.74 per Ccf. Exhibit 5.8 presents a comparison of the calculated volumetric rates by customer class with the average volumetric rate.

Exhibit 5.8: Comparison of Average and Class-Based Volumetric Rates

Customer Class	Class Based Volumetric Rate (per ccf)	Average Volumetric Rate (per ccf)	Delta (per ccf)	Percentage
Residential	$3.45	$3.74	$(0.29)	-7.8%
Multi-Family	$3.45	$3.74	$(0.29)	-7.8%
Non-Residential	$3.99	$3.74	$0.25	6.7%

5.3.2. Lifeline Water Volumetric Rates

In order to further enhance one of DC Water's pricing objectives, affordability, RFC developed a lifeline based option to be used in conjunction with the class based volumetric rates presented above. This rate structure option would discount the first 4 Ccf of water consumption for all Residential customers. RFC and DC Water have chosen 4 Ccf because it is believed this level of consumption represents a core, or necessary, amount of water. Althought this structure provides an economic benefit to Residential customer using low volumes of water, the costs of peaking and providing this discount are spread among all Residential customers using above 4 Ccf. Exhibit 5.9 presents the class based volumetric rates using this lifeline approach.

Exhibit 5.9: Class-Based Rates with Lifeline Inclusion

Water Volumetric	Uniform	Class-Based (w/o lifeline)	Class-Based (w/ lifeline)
Residential – 0-4 Ccf	$ 3.74	$ 3.45	$ 3.08
Residential - >4 Ccf	$ 3.74	$ 3.45	$ 3.87
Multi-Family / DC Housing	$ 3.74	$ 3.45	$ 3.45
Non-Residential	$ 3.74	$ 3.99	$ 3.99

5.3.3. Water System Replacement Fee (WSRF)

DC Water asked RFC to analyze the impacts of implementing a new fixed charge, or a Water System Replacement Fee (WSRF), targeted specifically at recovering costs

associated with the renewal and replacement of aging water infrastructure in the retail service area. More specifically, this fee will be set to recover 1 percent of DC Water's capital replacement program expenditures, or approximately $40,000,000 annually.

RFC worked closely with DC Water Staff to build a basis of water meter connections to be assessed the WSRF. For fee setting purposes, customer's meters that are exempt were excluded. It was also decided that meters associated with CAP accounts would also be exempt from the WSRF. In total, after removing exemptions, it was determined by DC Water Staff and RFC that there were 116,553 meters which would be assessed the WSRF. Exhibit 5.17 presents a breakdown of these accounts by meter size.

In order to scale the calculated WSRF by meter size, RFC analyzed the FY 2013 billing data for each meter to determine the average monthly consumption by meter size. This data was then used to build a set of meter differentials to calculate equivalent units and the subsequent Fee escalated by meter size. Exhibit 5.10 also presents the average usage per meter size.

Exhibit 5.10: Count of Meters to be Assessed Water System Replacement Fee

Meter Size	Meters	Flow Differential	Equiv. Meters
5/8"	52,462	1.00	52,462
3/4"	11,964	1.17	14,034
1"	41,646	1.53	63,896
1"x1.25"	11	2.44	27
1.5"	4.046	6.56	26,547
2"	3,599	13.29	47,844
3"	1,047	36.85	38,578
4"	1,079	89.05	96,086
6"	521	205.10	106,858
8"	27	918.33	24,795
8"x2"	104	301.52	31,358
8"x4"x1"	10	387.04	3,870
10" and Greater	37	1,060.26	39,230
	Total: 116,553		**Total: 545,585**

As noted above, the new WSRF will be scaled up by meter size according to the corresponding average flow differential of each meter size. For example, 2" meters on average use approximately 13 times more water than a 5/8" meter, and such the WSRF for a 2" meter will be set approximately 13 times higher than a 5/8" meter. RFC's proposed monthly Water System Replacement Fees by meter size presented in Exhibit 5.11.

Exhibit 5.11: Proposed Monthly Water System Replacement Fee

Meter Size	2016
5/8"	$6.30
3/4"	$7.39
1"	$9.67
1"x1.25"	$15.40
1.5"	$41.35
2"	$83.75
3"	$232.13
4"	$561.02
6"	$1,292.14
8"	$5,785.51
8"x2"	$1,899.60
8"x4"x1"	$2,438.35
10" and Greater	$6,679.65

5.3.4. Development Impact Fees

Development impact fees are one-time charges assessed to new utility customers or developers/builders to recover a proportional share of capital costs incurred to create the system capacity that provides their service. These charges typically recover costs associated with investment in "trunk and treatment" assets such as water filtration plants (water treatment), transmission mains, interceptors (including CSO tunnels), and water resource reclamation facilities (wastewater treatment). DC Water has elected to look at development impact fees as a method to equitably recover the investment in available system capacity and thus offset pressure on customer rates.

Development Impact Fee Calculation

Analysis of System Assets (Core System Including CIP)

DC Water's cost of capacity should reflect the value of assets related to the water and wastewater treatment facilities and transmission and conveyance assets in the existing system available to serve new customers. The water and wastewater treatment facilities and related assets were determined using available fixed asset data. The DC Water Finance Department provided a comprehensive listing of fixed asset data for the water and wastewater systems.

The core water transmission and wastewater conveyance, or "trunk", system serving each of these treatment facilities was also determined based on available fixed asset data.

However, the fixed asset data did not separate trunk water transmission or wastewater conveyance infrastructure from local distribution and collection lines, respectively, so reasonable allocation percentages needed to be identified for this purpose. RFC, through discussion with staff, determined that it would be reasonable and appropriate to assume that 40% of water piping infrastructure and 17.8% of wastewater piping infrastructure should be allocated to the transmission and conveyance system, respectively, and the remaining smaller-diameter piping infrastructure should be allocated to the distribution and collection system.

It should be noted that the costs of constructing the distribution and collection systems may be covered through other customer contributions. Since the development impact fee covers only trunk and treatment assets, it does not overlap with existing methods for recovering costs associated with distribution and collection assets.

The development impact fee calculation is not typically updated on an annual basis. Therefore, it is reasonable to assume that elements of the Capital Improvement Program (CIP) currently under design or construction should be included in the fee calculation. Our analysis included a review of CIP projects and identified those that meet the criteria of trunk and treatment assets described above. Of note, DC Water unrestricted reserves were divided between the water and wastewater systems and were also included in the asset inventory.

Industry-accepted practice allows the book value of utility assets (original cost less depreciation or OCLD) to be escalated to reflect present value. The escalated value for existing system assets is based on the replacement cost new less depreciation (RCNLD) methodology. This methodology estimates a current value for DC Water's water and wastewater facilities and infrastructure rather than using OCLD, or book value. RFC used industry-accepted indices such as the Handy-Whitman Index and the Engineering News and Record Index to escalate asset cost to present day dollars.

According to this analysis, the total value of water and wastewater assets applicable to the development impact fee is approximately $7.8 billion. Of that, approximately $1.3 billion is allocated to the water system and $6.3 billion is allocated to the wastewater system. A summary of DC Water's assets available to serve new customers is provided in Exhibit 5.12.

Exhibit 5.12: Assets Available to Serve New Customers

Wastewater		Core %age (1)	Acquisition Cost	Accumulated Depreciation	OCLD (2)	RCNLD (4)	CIP (FY 14-16)	RCNLD + CIP
Categories								
WWT	Wastewater Treatment	100.0%	$ 1,945,938,133	$ 538,305,901	$ 1,407,632,232	$ 4,379,762,892	$ 588,668,000	$ 4,968,430,892
CSO	Combined Sewer System (5)	42.1%	151,951,661	49,177,955	102,773,706	185,231,640	652,953,000	838,184,640
STW	Stormwater	0.0%	-	-	-	-	-	-
SEW	Sanitary Sewer System (6)	17.8%	60,455,984	20,827,262	39,628,722	67,817,821	26,459,700	94,277,521
	Unrestricted Reserves (7)	65.0%	91,325,000		91,325,000	91,325,000		91,325,000
Total			$ 2,249,670,778	$ 608,311,117	$ 1,641,359,660	$ 4,724,137,353	$ 1,268,080,700	$ 5,992,218,053

Water			Acquisition Cost	Accumulated Depreciation	OCLD (2)	RCNLD (4)	CIP (FY 14-16)	RCNLD + CIP
Categories								
AQU	Aqueduct	100.0%	$ 294,099,467	$ 60,442,085	$ 233,657,382	$ 333,682,481	$ 30,000,000	$ 363,682,481
SEN	Little Senaca Reservoir	100.0%	12,327,018	5,992,300	6,334,718	14,973,524	-	14,973,524
WAT	Water Transmission (8)	40.0%	368,060,151	(194,992,742)	563,052,893	866,774,067	85,110	866,859,177
	Unrestricted Reserves (7)	35.0%	49,175,000		49,175,000	49,175,000		49,175,000
Total			$ 723,661,636	$ (128,558,356)	$ 852,219,992	$ 1,264,605,073	$ 30,085,110	$ 1,294,690,182

Notes:

(1) Percentage of Asset Category attributable to Core System
(2) Original Cost Less Depreciation or Book Value
(3) Replacement Cost New
(4) Replacement Cost New Less Depreciation
(5) Includes only an allocation of fixed assets to the core, or "trunk", combined sewer system. Based on information in the District's Sewer Facility Plan, 48.1% of the combined sewer system includes piping 18-inches or larger. For the purpose of this cost of capacity calculation, it is assumed that piping 18-inches and above in diameter is classified as wastewater conveyance and related to providing core system capacity.
(6) Includes only an allocation of fixed assets to the core, or "trunk", sanitary sewer system. Based on information in the District's Sewer Facility Plan, 17.8% of the sanitary sewer system includes piping 18-inches or larger. For the purpose of this cost of capacity calculation, it is assumed that piping 18-inches and above in diameter is classified as wastewater conveyance and related to providing core system capacity.
(7) Based on information provided in the DC Water Financial Statements including only unrestricted cash, cash equivalents, and investments ($140,500,000 projected FY 2014 year end) with 65% allocated to wastewater and 35% allocated ot water.
(8) Allocation of 40% to water transmission and 60% to water distribution

Units of Service

The determination of the value of the system, described above, is the first of the two main components of the development impact fee calculation. The second component is the determination of the units of service, as measured by capacity, available in the water and wastewater systems. The total capacity available for service for the water and wastewater systems are presented in Exhibit 5.13.

Exhibit 5.13: Capacity Available in the Water and Wastewater Systems

Water System Capacity	
Washington Aqueduct Treatment Capacity	MGD
McMilen Plant	100
Dalecarlia Plant	220
Total Capactiy	320
Approximate Use By DC Water (1)	75.0%
Estimated Limiting Capacity Factor (MGD)	240
less: lost water	20%
Net System Capacity (MGD)	**192**
Wastewater System Capacity	
Blue Plains Capacity (MGD)	**370**

It is also important to develop the capacity needs for a SFR connection. Those calculations are shown in Exhibit 5.14.

Exhibit 5.14: Water and Wastewater Capacity for a Single SFR Customer

Water Equivalent Residential Unit	
Persons Per Household (1)	2.2
Gallon Per Person, Per Day (2)	70
Gallons Per Household, Per Day	154
Peak Day Factor (3)	1.34
Estimate for 1 SFR (gpd)	**206.24**

Wastewater Equivalent Residential Unit (ERU)	
Persons Per Household (1)	2.2
Gallon Per Person, Per Day (2)	70
Gallons Per Household, Per Day	154
I&I Factor (4)	34.0%
Estimate for ERU	**233.28**

(1) 2010 Census data for the District of Columbia
(2) FY 2012 usage data for residential customers
(3) Historical aveage system peak day ratio from 2002 through 2011
(4) The 2011 CAFR identified 143,462,567 hundred cubic feet (ccf) flows were treated at the District's Blue Plains Wastewater Treatment Facility in 2011. Of this amount, approximately 40%, or 57,385,027 ccf, was estimated to be from the District's retail system with the remaining balance assigned to wholesale customers. Billed retail wastewater flows were 37,884,040 ccf in 2011. Thus, the remaining 19,500,987 ccf, or 34%, has been attributed to infiltration and inflow (I&I).

Other Factors (Debt Service Credit)

In most cases, existing assets have been funded, at least in part, by debt. New customers of the utility system should not be asked to pay development impact fees to buy into assets, then pay for those same assets again through debt service imbedded in monthly water and sewer rates. In order to ensure that customers are not double paying for system capacity, development impact fees incorporate a debt service credit. The debt service credit backs out the portion of capacity costs that are to be paid through future customer rates. The debt service credit is the present value of outstanding principal payments on debt used to fund the capital assets incorporated in the core system described above.

Fee Recommendations

Development impact fee recommendations are based on asset value divided by units of service. Exhibit 5.15 shows water fee recommendations expressed on a per gallon per day basis as well as for a SFR connection.

Exhibit 5.15: Development Impact Fee Recommendation for Water

				RCNLD + CIP
Categories:				
AQU	Aqueduct		$	**363,682,481**
SEN	Little Senaca Reservoir			**14,973,524**
WAT	Water Transmission			**866,859,177**
	Unrestricted Reserves			**49,175,000**
Total Buy-In Value			$	**1,294,690,182**
	less: Debt Service Credit	20.0%	$	(238,382,031)
Net Buy-In Value			$	**1,056,308,151**

				Unit Cost (in $/gpd)
		Capacity (MGD)		RCNLD + CIP
Categories:				
AQU	Aqueduct	192	$	**1.894**
SEN	Little Senaca Reservoir	192		**0.078**
WAT	Water Transmission	192		**4.515**
	Unrestricted Reserves	192		**0.256**
Total Buy-In Value			$	**6.743**
	less: Debt Service Credit	192	$	(1.242)
Net Buy-In Value (in $/gpd)			$	**5.502**
	Water Capacity per ERU (gpd)			206.24
	Fee per ERU		$	**1,134.65**

Likewise, Exhibit 5.16 shows wastewater fee recommendations expressed on a per gallon per day basis as well as for a SFR connection.

Exhibit 5.16: Development Impact Fee Recommendation for Wastewater

			RCNLD + CIP
Categories:			
WWT	Wastewater Treatment		$ 4,968,430,892
CSO	Combined Sewer System		838,184,640
STW	Stormwater		-
SEW	Sanitary Sewer System		94,277,521
	Unrestricted Reserves		91,325,000
Total Buy-In Value			$ 5,992,218,053
	less: Debt Service Credit	80.0%	$ (953,528,123)
Net Buy-In Value			$ 5,038,689,930

			Unit Cost (in $/gpd)
		Capacity (MGD)	RCNLD + CIP
Categories:			
WWT	Wastewater Treatment	370	$ 13.428
CSO	Combined Sewer System	370	2.265
STW	Stormwater	370	
SEW	Sanitary Sewer System	370	0.255
	Unrestricted Reserves	370	0.247
Total Buy-In Value			$ 16.195
	less: Debt Service Credit	370	$ (2.58)
Net Buy-In Value (in $/gpd)			$ 13.618
	WWater Capacity per ERU (gpd)		206.24
	Fee per ERU		$ 2,808.59

Implementation Considerations

Scaling by Meter Size

In order to efficiently and accurately assess development impact fees in the Permitting Group, DC Water determined that RFC should devise a method to scale fees based on the meter size of the new connection. Since fees were calculated on a gallon per day (gpd)

basis, we determined the most equitable scaling factor would be average consumption for each meter size in the DC Water system. This is also consistent with the scaling by meter size done for the Water System Infrastructure Fee discussed in the prior subsection. Development impact fee scaling by meter size is shown in Exhibit 5.17. All SFR connections for meter size 1" and smaller use the same fee amounts.

Exhibit 5.17: Development Impact Fee Scaled by Meter Size

Meter Size (inches)	Meter Register Type [1]	Water Development Impact Fee	Sewer Development Impact Fee	Total Development Impact Fee
SFR: (5/8", 3/4", 1")	Single Register	$ 1,135	$ 2,809	$ 3,943
All Others:				
1"	Single Register	$ 1,282	$ 3,173	$ 4,455
1"x1.25"	Single & Multiple Register	$ 2,047	$ 5,066	$ 7,113
1.5"	Single Register	$ 5,491	$ 13,591	$ 19,082
2"	Single & Multiple Register	$ 11,125	$ 27,536	$ 38,661
3"	Single & Multiple Register	$ 32,500	$ 80,442	$ 112,942
4"	Single & Multiple Register	$ 83,388	$ 206,394	$ 289,783
6" and greater	Single & Multiple Register	$ 229,246	$ 567,408	$ 796,654

Notes:

(1) Development Impact Fees should be assessed based on Domestic Usage (excluding fire flow) for multiple meter register types

Redevelopment Credits

Most of the area within the District is developed and many parcels are served by existing water and wastewater service. As a result, much of the development within the District is actually redevelopment. As such, it is reasonable to offer redevelopment a fee credit based on the capacity of the connection or connections they are removing from the water and wastewater systems. For instance, if a development removes 20 SRF row houses and builds one apartment building with a 3" water service, he would pay $112,941.84 for the new connection and receive a credit for $78,866.63 (20 x $3,943.31) old connections removed from service, producing a net payment of $34,075.64.

Revenue Projections

In order to assess the feasibility of Development Impact Fees, DC Water should have an estimate of their annual revenue potential. In order to determine revenue potential, RFC reviewed the number of building permits and connection sizes processed annually by DC Water. Assuming that development within the District remains steady, we applied recommended fees to determine gross revenue potential. Since the District is built out and much of the construction is tied to redevelopment of existing property, we assumed a redevelopment credit of 40%. This yielded a net revenue potential for development impact fees of approximately $8 million annually as shown in Exhibit 5.18.

Exhibit 5.18: Development Impact Fee Scaled by Meter Size

Account Size	Fee Estimate	# per Year	Redevelopment Credit	Net Additions	Incremental Revenue
1" Meter (SFR std)	$3,943.24	150	40%	90	$354,892
1.5" Meter	$19,081.76	66	40%	40	$763,270
3" and larger	$112,941.84	104	40%	62	$7,002,394
					$8,120,556

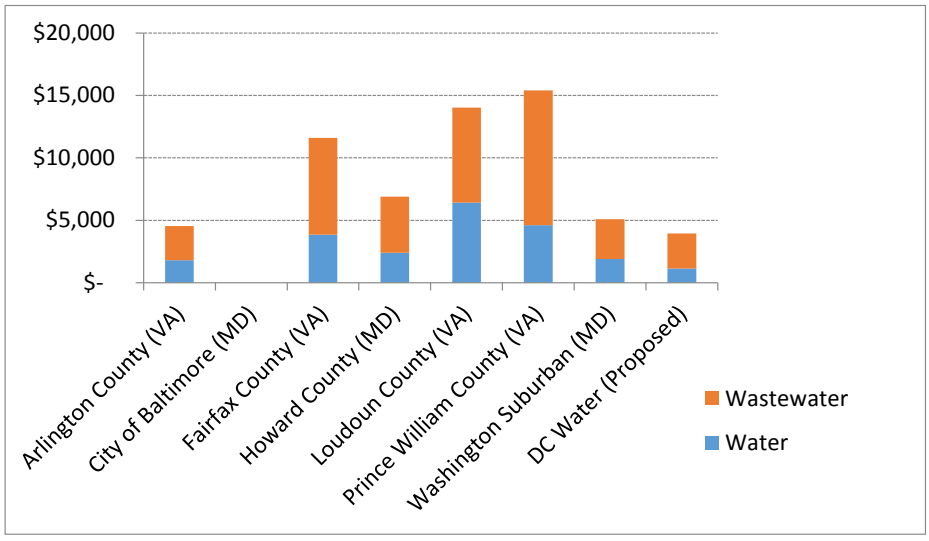
Segregation and Use of Funds

Since development impact fees are developed based on the costs of capital assets, it stands to reason that fee revenue should be segregated from other operating revenue and utilized exclusively to meet capital needs. RFC recommends that development impact fee revenues be tracked in a restricted account. Funds should be spent on capital items such as debt service or pay-as-you-go capital for trunk and treatment assets.

Regional Fee Comparison

In order to assess the feasibility of development impact fees, it is important for DC Water to understand how its proposed fees compare to those of its neighbors in the region. Fee comparisons for a SFR connection are shown in Exhibit 5.19.

Exhibit 5.19: Development Impact Fee Comparison (SFR Connections)



As shown in the exhibit, proposed fees for DC Water are below those charged by most neighboring utilities for SFR connection. As connection sizes increase, proposed DC Water fees remain on the low end of the regional sample.

Section 6: RECOMMNEDATIONS

RFC presented DC Water with the previously presented rate structure options. These options were the class-based volumetric rates, a lifeline rate to accompany the class-based rates, and the new Water System Replacement Fee. Given that each of these options only further strengthens DC Water's pricing objectives, while at the same time minimizing customer impacts, RFC recommends that DC Water adopt all three rate structure options for FY 2016.

RFC also recommends that DC Water implement the calculated Development Impact Fees presented in Section 5. These Fees will help DC Water recover a proportional share of the capital costs incurred to create the system capacity that new utility customers or developers/builders need for their new service to be provided. To further strengthen DC Water's objective of minimizing customer rate increases, RFC recommends that DC Water implement and assess the Development Impact Fees as a method to equitably recover the investment in available system capacity and thus offset pressure on customer rates.

APPENDICES

DC Water
2015 Cost of Service Study
Schedule A
Comparison vs. Financial Plan

	Financial Plan 2016	RFC Model 2016	Delta 2016
OPERATING REVENUE:			
Residential & Commercial	$ 248,481,260	$ 247,627,858	$ (853,402)
D. C. Government	6,643,691	6,599,472	(44,219)
Federal Government	44,250,179	44,669,612	419,433
D. C. Housing Authority	6,843,638	6,817,131	(26,507)
Groundwater	5,000	5,000	-
Metering Fee	10,776,046	10,776,046	-
Infrastructure Surcharge	40,000,000	40,000,000	-
Right-of-Way Fee / PILOT	20,744,158	20,744,158	-
IAB CSO Revenue	95,137,005	95,137,005	-
Total Retail Revenue	$ 472,880,977	$ 472,376,282	$ (504,695)
			-0.11%
WHOLESALE REVENUE:			
LCSA + PI	$ 6,846,459	$ 6,846,459	-
WSSC	50,283,848	50,283,848	-
Fairfax County	12,211,448	12,211,448	-
Total Wholesale Revenue	$ 69,341,755	$ 69,341,755	$ -
TOTAL OPERATING REVENUE	$ 542,222,732	$ 541,718,037	$ (504,695)
			-0.09%
NON-OPERATING REVENUE:			
Interest Earnings	$ 1,368,626	$ 1,368,626	$ -
Other Revenue	26,109,340	26,109,340	-
Transfer from Rate Stabilization Fund	-	-	-
Northern Virginia Debt Service	193,246	193,246	-
Total Non-Operating Revenu	$ 27,671,212	$ 27,671,212	$ -
TOTAL REVENUE	$ 569,893,944	$ 569,389,249	$ (504,695)
			-0.09%
OPERATING EXPENSE:			
Personnel Services	$ 121,041,000	$ 121,041,000	$ -
Contractual Services	79,243,000	79,244,030	1,030
Water Purchases	30,990,000	30,740,000	(250,000)
Chemicals & Supplies	35,701,000	35,951,000	250,000
Utilities & Rent	35,018,000	35,016,849	(1,151)
Small Equipment	1,465,000	1,465,000	-
Payment in Lieu of Taxes / Right of Way Fee	20,744,158	20,744,158	-
Total Operating Expenditure	$ 324,202,158	$ 324,202,036	$ (122)
			0.00%
NET REVENUES	$ 245,691,786	$ 245,187,212	$ (504,573)
DEBT SERVICE:			
1998 Revenue Bonds	23,368,475	$ 23,368,475	$ -
Series 2009A	11,904,225	11,904,225	-
Series 2014A	16,849,000	16,849,000	-
District G.O. Bonds:	-	-	-
Jennings Randolph:	805,192	805,192	-
Little Seneca Reservoir:	-	-	-
Commercial Paper	2,500,000	2,500,000	-
Series 2003 Subordinate Bond	-	-	-
Series 2007A Subordinate Bond	5,679,000	5,679,000	-
Series 2008A Subordinate Bond	14,687,750	14,687,750	-
Series 2010A Subordinate Bond	11,021,403	11,021,403	-
Series 2012 Subordinate Bond	22,598,591	22,598,591	-
Series 2013A Subordinate Bond	14,994,250	14,994,250	-
Series 2014B Subordinate Bond	3,252,992	3,252,992	-
Series 2014C Subordinate Bond	17,468,100	17,468,100	-
Capital Equipment Financing	3,375,000	3,375,000	-
DC Water Bonds Planned	26,261,590	26,261,590	-
Total Debt	$ 174,765,568	$ 174,765,568	$ -
			0.00%
TOTAL DISBURSEMENTS	$ 498,967,726	$ 498,967,604	$ (122)
			0.00%
Total Surplus (Deficit)	$ 70,926,218	$ 70,421,645	$ (504,573)

DC Water
2015 Cost of Service Study
Schedule B
Revenue Requirements

Allocation Costs

	FY 2016	Water	Meter Charge	Wastewater	CSO
Operations					
Wastewater Treatment	$ 95,259,832	$ -	$ -	$ 95,259,832	$ -
Water Services	57,139,208	57,139,208	-	-	-
Sewer Services	22,098,133	-	-	22,098,133	-
Maintenance Services	22,332,863	1,563,300	-	20,769,562	-
Water & Sewer Pumping Services	6,257,344	3,128,672	-	3,128,672	-
Engineering & Technical Services	8,730,972	2,357,362	-	6,277,569	96,041
Customer Service	17,782,378	5,539,878	6,276,513	5,770,382	195,606
Permits	2,343,255	1,171,627	-	1,145,852	25,776
Long Term Control Plan	859,018	-	-	-	859,018
Subtotal Operations	$ 232,803,002	$ 70,900,048	$ 6,276,513	$ 154,450,001	$ 1,176,441
Administration					
Office of the Secretary	$ 653,552	$ 294,098	$ -	$ 352,265	$ 7,189
General Manager	2,833,095	1,274,893	-	1,527,038	31,164
General Counsel	6,194,391	2,787,476	-	3,338,777	68,138
Public Affairs	2,191,378	986,120	-	1,181,153	24,105
Internal Audit	885,516	398,482	-	477,293	9,741
Finance and Budget	10,129,385	4,558,223	-	5,459,739	111,423
Information Technology	10,657,518	2,877,530	-	7,662,755	117,233
Risk Management	5,043,770	2,269,697	-	2,718,592	55,481
Assistant General Manager	373,050	167,872	-	201,074	4,104
Facilities Management	13,492,690	5,532,003	-	7,812,267	148,420
Safety & Security	2,019,446	827,973	-	1,169,259	22,214
Procurement & Materiel Management	4,986,697	2,044,546	-	2,887,298	54,854
Fleet Management	5,692,355	1,195,395	-	4,434,344	62,616
Human Resources	5,502,034	2,255,834	-	3,185,677	60,522
Subtotal Administration	$ 70,654,876	$ 27,470,141	$ -	$ 42,407,531	$ 777,204
Total O&M	$ 303,457,878	$ 98,370,189	$ 6,276,513	$ 196,857,532	$ 1,953,644
Debt Service					
1998 Revenue Bonds	$ 23,368,475	$ 3,791,779	$ 1,913,876	$ 17,031,871	$ 630,949
Series 2009A	11,904,225	2,470,155	76,282	7,393,591	1,964,197
Series 2014A	16,849,000	2,513,354	64,576	7,228,187	7,042,882
DC Water Bonds Planned	26,261,590	5,310,022	559,278	1,510,207	18,882,083
District G.O. Bonds:	-	-	-	-	-
Jennings Randolph:	805,192	805,192	-	-	-
Little Seneca Reservoir:	-	-	-	-	-
Commercial Paper	2,500,000	505,493	53,241	143,766	1,797,500
Series 2003 Subordinate Bond	-	-	-	-	-
Series 2007A Subordinate Bond	5,679,000	2,716,990	27,629	2,321,050	613,332
Series 2008A Subordinate Bond	14,687,750	4,802,766	68,423	8,362,473	1,454,087
Series 2010A Subordinate Bond	11,021,403	1,772,242	92,580	2,332,129	6,824,453
Series 2012 Subordinate Bond	22,598,591	2,519,743	117,513	3,299,394	16,661,941
Series 2013A Subordinate Bond	14,994,250	2,642,643	358,179	6,940,366	5,053,062
Series 2014B Subordinate Bond	3,252,992	485,247	12,468	1,395,527	1,359,751
Series 2014C Subordinate Bond	17,468,100	5,197,867	94,087	8,457,923	3,718,224
Capital Equipment Financing	3,375,000	588,632	95,123	976,745	1,714,500
15 Year AMR meter pro forma adjustment	1,584,737	-	1,584,737	-	-
Total Debt	$ 176,350,305	$ 36,122,124	$ 5,117,990	$ 67,393,230	$ 67,716,961

Allocation Percentages

	FY 2016	Volume	Meter Charge	Wastewater	CSO
Operations					
Wastewater Treatment	100%			100.00%	
Water Services	100%	100.00%		0.00%	
Sewer Services	100%			100.00%	
Maintenance Services	100%	7.00%		93.00%	
Water & Sewer Pumping Services	100%	50.00%		50.00%	
Engineering & Technical Services	100%	27.00%		71.90%	1.10%
Customer Service	100%	31.15%	35.30%	32.45%	1.10%
Permits	100%	50.00%		48.90%	1.10%
Long Term Control Plan	100%	0.00%		0.00%	100.00%
Administration					
Office of the Secretary	100%	45.00%		53.90%	1.10%
General Manager	100%	45.00%		53.90%	1.10%
General Counsel	100%	45.00%		53.90%	1.10%
Public Affairs	100%	45.00%		53.90%	1.10%
Internal Audit	100%	45.00%		53.90%	1.10%
Finance and Budget	100%	45.00%		53.90%	1.10%
Information Technology	100%	27.00%		71.90%	1.10%
Risk Management	100%	45.00%		53.90%	1.10%
Assistant General Manager	100%	45.00%		53.90%	1.10%
Facilities Management	100%	41.00%		57.90%	1.10%
Safety & Security	100%	41.00%		57.90%	1.10%
Procurement & Materiel Management	100%	41.00%		57.90%	1.10%
Fleet Management	100%	21.00%		77.90%	1.10%
Human Resources	100%	41.00%		57.90%	1.10%

		Volume	Meter	Wastewater	CSO
1998 Revenue Bonds	100%	16.23%	8.19%	72.88%	2.70%
Series 2009A	100%	20.75%	0.64%	62.11%	16.50%
Series 2014A	100%	14.92%	0.38%	42.90%	41.80%
DC Water Bonds Planned	100%	20.22%	2.13%	5.75%	71.90%
District G.O. Bonds:	100%	24.00%	0.00%	76.00%	0.00%
Jennings Randolph:	100%	100.00%	0.00%	0.00%	0.00%
Little Seneca Reservoir:	100%	100.00%	0.00%	0.00%	0.00%
Commercial Paper	100%	20.22%	2.13%	5.75%	71.90%
Series 2003 Subordinate Bond	100%	27.92%	2.63%	65.96%	3.50%
Series 2007A Subordinate Bond	100%	47.84%	0.49%	40.87%	10.80%
Series 2008A Subordinate Bond	100%	32.70%	0.47%	56.94%	9.90%
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%	14.92%	0.38%	42.90%	41.80%
Series 2014C Subordinate Bond	100%	29.76%	0.54%	48.42%	21.29%
Capital Equipment Financing	100%	17.44%	2.82%	28.94%	50.80%
15 Year AMR meter pro forma adjustment	100%	0.00%	100.00%	0.00%	0.00%

DC Water
2015 Cost of Service Study
Schedule B
Revenue Requirements

Allocation Costs

	FY 2016	Water	Meter Charge	Wastewater	CSO
		20.5%	2.9%	38.2%	38.4%
Wholesale Revenue					
LCSA + PI	$ 6,846,459	$ -	$ -	$ 6,846,459	$ -
WSSC	50,283,848	-	-	50,283,848	-
Fairfax County	12,211,448	-	-	12,211,448	-
Other Revenue					
IMA Indirect Cost Reimb. For Capital Projects	8,000,000	-	-	8,000,000	-
Dev. Contr/Water Services Fees, Taps	4,800,000	4,800,000	-	-	-
Dev. Contr/Liability Deposits/Sewer Service Fees	2,700,000	-	-	2,700,000	-
Commercial Water Maintenance	32,000	32,000	-	-	-
DC Fire Protection Fee	6,885,340	6,885,340	-	-	-
Transfer from DC PILOT/ROW Fund	-	-	-	-	-
DC Contribution of 50% PILOT Escrow to DCW	-	-	-	-	-
Sales to DC Agencies-Steam/Meter	170,000	55,335	-	114,665	-
Misc. Rev: Bid Deposits, Fleet Auction, Compost Sal	2,500,000	-	-	2,500,000	-
Pipe Repair Sales/Replacement	22,000	7,161	-	14,839	-
Stormwater	1,000,000	-	-	1,000,000	-
Northern Virginia Debt Service	193,246	46,379	-	146,867	-
Interest Income	1,368,626	615,882	-	752,744	-
		-	-	-	-
Total Revenue Offsets	$ (97,012,967)	$ (12,442,097)	$ -	$ (84,570,870)	$ -
Unadjusted Revenue Requirement	$ 382,795,217	$ 122,050,216	$ 11,394,502	$ 179,679,892	$ 69,670,605
Adjustment for Coverage	40,053,741	8,449,493	-	15,764,262	15,839,987
Adjustment for IAC	-	-	-	(11,670,252)	11,670,252
Adjustment for 15-Year AMR	-	-	-	-	-
Total Revenue Requirement	$ 422,848,958	$ 130,499,709	$ 11,394,502	$ 183,773,901	$ 97,180,845

Allocation Percentages

	FY 2016	Volume	Meter Charge	Wastewater	CSO
LCSA + PI	100%			100.00%	
WSSC	100%			100.00%	
Fairfax County	100%			100.00%	
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%		0.00%	
Transfer from DC PILOT/ROW Fund	100%	32.55%		67.45%	
DC Contribution of 50% PILOT Escrow to DCW	100%	32.55%		67.45%	
Sales to DC Agencies-Steam/Meter	100%	32.55%		67.45%	
Misc. Rev: Bid Deposits, Fleet Auction, Compost Sales	100%			100.00%	
Pipe Repair Sales/Replacement	100%	32.55%		67.45%	
Stormwater	100%			100.00%	
Northern Virginia Debt Service	100%	24.00%		76.00%	
Interest Income	100%	45.00%		55.00%	0.00%

DC Water
2015 Cost of Service Study
Schedule C
Allocation of Water Costs to Functional Components

	$ Allocated to Water	Source of Supply & Treatment	Distribution	Storage	Pumping	Customer Service/Meter	Admin/General
Operations							
Water Services	$ 57,139,208	$ 30,992,970	$ 20,332,583	$ 2,566,471	$ 3,247,184	$ -	$ -
Maintenance Services	1,563,300	-	1,215,698	153,451	194,151	-	-
Water & Sewer Pumping Services	3,128,672	-	-	-	3,128,672	-	-
Engineering & Technical Services	2,357,362	-	1,833,199	231,395	292,768	-	-
Permits	1,171,627	1,171,627	-	-	-	-	-
Customer Service	8,678,134	-	-	-	-	3,272,946	5,405,188
Administration							
General Manager	$ 1,274,893	$ -	$ -	$ -	$ -	$ -	$ 1,274,893
Office of the Secretary	294,098	-	-	-	-	-	294,098
Internal Audit	398,482	-	-	-	-	-	398,482
Finance and Budget	4,558,223	-	-	-	-	-	4,558,223
Risk Management	2,269,697	-	-	-	-	-	2,269,697
General Counsel	2,787,476	-	-	-	-	-	2,787,476
Public Affairs	986,120	-	-	-	-	-	986,120
Information Technology	2,877,530	-	-	-	-	-	2,877,530
Assistant General Manager - Support Services	167,872	-	-	-	-	-	167,872
Human Resources	2,255,834	-	-	-	-	-	2,255,834
Facilities Management	5,532,003	-	-	-	-	-	5,532,003
Procurement & Materiel Management	2,044,546	-	-	-	-	-	2,044,546
Safety and Security	827,973	-	-	-	-	-	827,973
Fleet Management	1,195,395	-	-	-	-	-	1,195,395
Total Water O&M	**$ 101,508,446**	**$ 32,164,597**	**$ 23,381,481**	**$ 2,951,317**	**$ 6,862,775**	**$ 3,272,946**	**$ 32,875,329**
		31.7%	*23.0%*	*2.9%*	*6.8%*	*3.2%*	*32.4%*
Debt Service (1)							
1998 Revenue Bonds	$ 4,748,717	$ 1,023,780	$ 2,767,999	$ -	$ -	$ 956,938	$ -
Series 2009A	2,508,296	666,942	1,803,213	-	-	38,141	-
Series 2014A	2,545,642	676,872	1,830,061	-	-	38,709	-
DC Water Bonds Planned	5,589,661	1,475,561	3,989,480	-	-	124,619	-
District G.O. Bonds:	-	-	-	-	-	-	-
Jennings Randolph:	805,192	805,192	-	-	-	-	-
Little Seneca Reservoir:	-	-	-	-	-	-	-
Commercial Paper	532,114	141,811	383,415	-	-	6,888	-
Series 2003 Subordinate Bond	-	-	-	-	-	-	-
Series 2007A Subordinate Bond	2,730,804	733,587	1,983,402	-	-	13,814	-
Series 2008A Subordinate Bond	4,836,978	1,296,747	3,506,019	-	-	34,212	-
Series 2010A Subordinate Bond	1,818,531	483,537	1,307,342	-	-	27,652	-
Series 2012 Subordinate Bond	2,578,499	507,964	2,011,229	-	-	59,305	-
Series 2013A Subordinate Bond	2,821,732	555,881	2,200,951	-	-	64,900	-
Series 2014B Subordinate Bond	491,480	96,822	383,355	-	-	11,304	-
Series 2014C Subordinate Bond	5,244,910	1,033,247	4,091,030	-	-	120,633	-
Capital Equipment Financing	636,193	169,549	458,409	-	-	8,235	-
15 Year AMR meter pro forma adjustment	792,369	-	-	-	-	792,369	-
Total Water Debt	**$ 38,681,119**	**$ 9,667,493**	**$ 26,715,906**	**$ -**	**$ -**	**$ 2,297,720**	**$ -**
		25.0%	*69.1%*	*0.0%*	*0.0%*	*5.9%*	*0.0%*
Revenue Offets							
Wholesale Revenue							
LCSA + PI	$ -						
WSSC	-						
Fairfax County	-						
Other Revenue							
IMA Indirect Cost Reimb. For Capital Projects	-	-	-	-	-	-	-
Dev. Contr/Water Services Fees, Taps	(4,800,000)	-	(4,800,000)	-	-	-	-
Dev. Contr/Liability Deposits/Sewer Service Fees	-	-	-	-	-	-	-
Commercial Water Maintenance	(32,000)	-	(32,000)	-	-	-	-
DC Fire Protection Fee	(6,885,340)	(3,442,670)	(3,442,670)	-	-	-	-
Transfer from DC PILOT/ROW Fund	-	-	-	-	-	-	-
DC Contribution of 50% PILOT Escrow to DCW	-	-	-	-	-	-	-
Sales to DC Agencies-Steam/Meter	(55,335)	-	-	-	-	-	(55,335)
Misc. Rev: Bid Deposits, Fleet Auction, Compost	-	-	-	-	-	-	-
Pipe Repair Sales/Replacement	(7,161)	-	(7,161)	-	-	-	-
Stormwater	-	-	-	-	-	-	-
Northern Virginia Debt Service	(46,379)	-	(46,379)	-	-	-	-
Interest Income	(615,882)	(203,241)	(203,241)	-	-	-	(209,400)
Total Water Revenue Offsets	**$ (12,442,097)**	**$ (3,645,911)**	**$ (8,531,451)**	**$ -**	**$ -**	**$ -**	**$ (264,735)**
Unadjusted Net Water Revenue Requirements	**$ 127,747,468**	**$ 38,186,179**	**$ 41,565,936**	**$ 2,951,317**	**$ 6,862,775**	**$ 5,570,666**	**$ 32,610,594**
		29.9%	*32.5%*	*2.3%*	*5.4%*	*4.4%*	*25.5%*
Adjustment for DS Coverage	8,449,493	$ 2,112,373	$ 6,337,120	$ -	$ -	$ -	$ -
Adjusted Net Water Revenue Requirements	$ 136,196,960	$ 40,298,552	$ 47,903,055	$ 2,951,317	$ 6,862,775	$ 5,570,666	$ 32,610,594
		29.6%	35.2%	2.2%	5.0%	4.1%	23.9%

DC Water
2015 Cost of Service Study
Schedule D
Allocation to Functional Water Categories

Functional Categories	Test Year FY 2016 Adjusted Revenue Requirments	Allocation Percentages Base	Extra Capcity Max-Month	Customer Service/Meter	Admin/General
Source of Supply & Treatment	$ 40,298,552	64.0%	36.0%	0.0%	0.0%
Distribution	47,903,055	90.0%	10.0%	0.0%	0.0%
Storage	2,951,317	80.0%	20.0%	0.0%	0.0%
Pumping	6,862,775	50.0%	50.0%	0.0%	0.0%
Customer Service/Meter	5,570,666	0.0%	0.0%	100.0%	0.0%
Admin/General	32,610,594	0.0%	0.0%	0.0%	100.0%
Total	**$ 136,196,960**				

Allocation of Adjusted Test Year Revenue Requirements			
Base	Extra Capcity Max-Month	Customer Service/Meter	Admin/General
$ 25,791,074	$ 14,507,479	$ -	$ -
43,112,750	4,790,306	-	-
2,361,054	590,263	-	-
3,431,388	3,431,388	-	-
-	-	5,570,666	-
-	-	-	32,610,594
$ 74,696,265	**$ 23,319,435**	**$ 5,570,666**	**$ 32,610,594**

	Base		Max-Month		
	Annual Usage (ccf)	Average Monthly Rate (ccf)	Capacity Factor (1)	Total Capacity (ccf)	Extra Capacity
Residential	7,285,002	607,084	1.16	704,217	97,133
Multi-Family/DC Housing	7,993,690	666,141	1.16	772,723	106,583
Non-Residential (Commercial)	13,030,702	1,085,892	1.39	1,509,390	423,498
Non-Residential (Federal)	5,819,081	484,923	1.39	674,044	189,120
Non-Residential (Municipal)	719,481	59,957	1.39	83,340	23,383
Total	**34,847,956**				**839,717**

	Base	Max-Month	Base	Max-Month	Allocation for Volumetric Revenue Req.
Residential Customers	20.9%	11.6%	$ 22,432,612	$ 2,697,451	$ 25,130,063
Multi-Family/DC Housing	22.9%	12.7%	24,614,865	2,959,860	27,574,725
Non-Residential (Commercial)	37.4%	50.4%	40,125,272	11,760,784	51,886,056
Non-Residential (Federal)	16.7%	22.5%	17,918,621	5,251,978	23,170,598
Non-Residential (Municipal)	2.1%	2.8%	2,215,488	649,363	2,864,852
Total	**100.0%**	**100.0%**	**$ 107,306,859**	**$ 23,319,435**	**$ 130,626,294**

	Unit Cost (per ccf)
Residential Customers	$ 3.45
Multi-Family/DC Housing	$ 3.45
Non-Residential (Commercial)	$ 3.99
Non-Residential (Federal)	$ 3.99
Non-Residential (Municipal)	$ 3.99

	Base	Max-Month	Base	Max-Month	Allocation for Volumetric Revenue Req.
Residential Customers					
0-4 ccf	3,861,051	321,754	1.00	321,754	-
>4 ccf	3,423,951	285,329	1.34	382,341	97,012
Multi-Family/DC Housing	7,993,690	666,141	1.16	772,723	106,583
Non-Residential (Commercial)	13,030,702	1,085,892	1.39	1,509,390	423,498
Non-Residential (Federal)	5,819,081	484,923	1.39	674,044	189,120
Non-Residential (Municipal)	719,481	59,957	1.39	83,340	23,383
	34,847,956				**839,596**

	Base	Max-Month	Base	Max-Month	Allocation for Volumetric Revenue Req.
Residential Customers					
0-4 ccf	11.1%	0.0%	11,889,284	-	11,889,284
>4 ccf	9.8%	11.6%	10,543,328	2,694,468	13,237,796
Multi-Family/DC Housing	22.9%	12.7%	24,614,865	2,960,288	27,575,153
Non-Residential (Commercial)	37.4%	50.4%	40,125,272	11,762,485	51,887,757
Non-Residential (Federal)	16.7%	22.5%	17,918,621	5,252,737	23,171,358
Non-Residential (Municipal)	2.1%	2.8%	2,215,488	649,457	2,864,946
	100.0%	**100.0%**	**$ 107,306,859**	**$ 23,319,435**	**$ 130,626,294**

Residential Customers	
0-4 ccf	$ 3.08
>4 ccf	$ 3.87
Multi-Family/DC Housing	$ 3.45
Non-Residential (Commercial)	$ 3.99
Non-Residential (Federal)	$ 3.99
Non-Residential (Municipal)	$ 3.99

Attachment D

FY 2015 Proposed Committee Workplan

Objective/*Activities*/Task	Date of Activity	Completed	Responsible Department
1. Develop Realistic Retail Rate Revenue Projections and Alternative Retail Revenue Sources			
a. Propose and establish Retail Rates in FY 2016			Rates and Revenue
i. RRC preliminary recommendation on FY 2016 rates	December 19, 2014	√	
ii. FY 2016 Budget workshop	January 8, 2015	√	
iii. RRC final recommendation on proposed FY 2016 rates	January 27, 2015	√	
iv. Board approval	February 5, 2015	√	
v. Publish Proposed Rates in DCMR	February 20, 2015	√	General Counsel
vi. Public Outreach	April 2015	√	External Affairs
vii. Public Hearing	May 13, 2015	√	Board Secretary
viii. Public comment period ends	June 14, 2015	√	
ix. RRC final recommendation to approve FY 2016 rates	June 23, 2015	√	
x. Board Approval on FY 2016 rates	July 2, 2015		
xi. Publish Final Rates in DCMR	July 17, 2015		General Counsel
b. Amendment to the Water System Replacement Fee (WSRF)			
i. Committee proposal to amend the WSRF	June 23, 2015	√	
ii. Board approval on proposed amendment to WSRF	July 2, 2015		
iii. Publish proposed rulemaking in DCMR	July 17, 2015		General Counsel
iv. Public comment period ends	August 17, 2015		
v. RRC final recommendation to approve amended WSRF	September 3, 2015		
vi. Board approval on amended WSRF	September 3, 2015		
vii. Publish final amended WSRF in DCMR	September 18, 2015		General Counsel
2. 2015 Cost of Service Study for Water & Sewer			
a. 2015 Cost of Service Study for Water & Sewer			Rates and Revenue
i. Present draft COS to Retail Rates Committee	December 19, 2014	√	
ii. Present final COS to Retail Rates Committee	June 23, 2015	√	
iii. Present final COS to BOD	July 2, 2015		
b. Alternative Charges: Development Impact Fee (DIF)			
i. RRC recommendation on proposed Development Impact Fee (DIF)	February 24, 2015	√	

FY 2015 Proposed Committee Workplan

Objective/*Activities*/Task	Date of Activity	Completed	Responsible Department
2. 2015 Cost of Service Study for Water & Sewer, (Continued)			
ii. BOD approval of Notice of Proposed Rulemaking (NOPR)	March 19, 2015	√	
iii. Public Outreach	On hold for modification to DIF process		External Affairs
iv. RRC recommendation on amended DIF (now known as proposed System Availability Fee)	September 22, 2015		
v. BOD approval of amended SAF NOPR	October 1, 2015		
vi. Publish amended SAF NOPR in DC Register	October 16, 2015		General Counsel
vii. Public Outreach	October 16, 2015		External Affairs
viii. Public comment period	Oct. 16 – Nov.16, 2015		
ix. RRC discuss comments and recommendation on SAF Notice of Final Rulemaking (NOFR)	November 24, 2015		
x. BOD approval of SAF NOFR	December 3, 2015		
xi. Publish SAF NOFR in DC Register	December 18, 2015		General Counsel
3. 2015 Cost of Service Study for Fire Protection Fee			
a. *Fire Protection Service Fee COS*			Rates and Revenue
i. RRC recommendation on proposed Fire Protection Service Fee	February 24, 2015	√	
ii. BOD approval of Notice of Proposed Rulemaking (NOPR)	March 19, 2015	√	
iii. Publish NOPR in DC Register	April 3, 2015	√	General Counsel
iv. Public Outreach	April 2015	√	External Affairs
v. Public Hearing	May 13, 2015	√	Board Secretary
vi. Public comment period ends	June 14, 2015	√	
vii. RRC approval of proposed Fire Protection Fee	June 23, 2015	√	
viii. BOD approval of Notice of Final Rulemaking (NOFR)	July 2, 2015		
ix. Publish NOFR in DC Register	July 17, 2015		General Counsel
4. Delinquent Accounts			
a. *Soldiers Home Negotiations*	Monthly, as needed		General Counsel
5. Strategic Plan			
a. Develop Alternative Revenue Sources and Achieve Realistic Revenue Projections (DC Water Strategic Plan Framework)	On-going updates to Committee		Rates and Revenue
i. Identify and evaluate potential revenue generating initiatives annually			

Attachment D

FY 2015 Proposed Committee Workplan			
6. DCGIS FY 2014 Flyover			
a. *Update Committee on FY 2014 Flyovers* b. *Update Committee on FY 2014 Flyover*	February 24, 2015 October 27, 2015	√	Customer Service

Attachment E

D.C. WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS
RETAIL WATER & SEWER RATES
COMMITTEE MEETING

TUESDAY, July 28, 2015; 9:30 a.m.
AGENDA

Call to Order	Committee Chairman
Monthly Updates	Chief Financial Officer
Committee Workplan	Chief Financial Officer
Other Business	Chief Financial Officer
Agenda for September 22, 2015 Committee Meeting	Committee Chairman
Adjournment	

*Detailed agenda can be found on DC Water's website at www.dcwater.com/about/board_agendas.cfm