

**DISTRICT OF COLUMBIA
WATER AND SEWER AUTHORITY**

Board of Directors

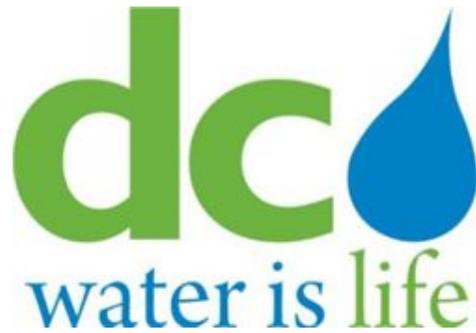
Finance and Budget Committee

Tuesday, December 18, 2018

11:00 a.m.

- 1. **Call to Order**..... Sarah Motsch, Vice Chairperson
- 2. **November 2018 Financial Report (Attachment 1)** Matthew T. Brown
- 3. **Path to Achieve Asset Management (Attachment 2)**..... Matthew T. Brown
- 4. **Agenda for January Committee Meeting (Attachment 3)**..... Sarah Motsch, Vice Chairperson
- 5. **Executive Session**
- 6. **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.



Fiscal Year 2019

Monthly Financial Report

Period Ending November 30, 2018

DEPARTMENT OF FINANCE, ACCOUNTING & BUDGET

Matthew T. Brown, Chief Financial Officer

Ivan Boykin, Director, Finance

Syed Khalil, Director, Rates & Revenue

John Madrid, Controller

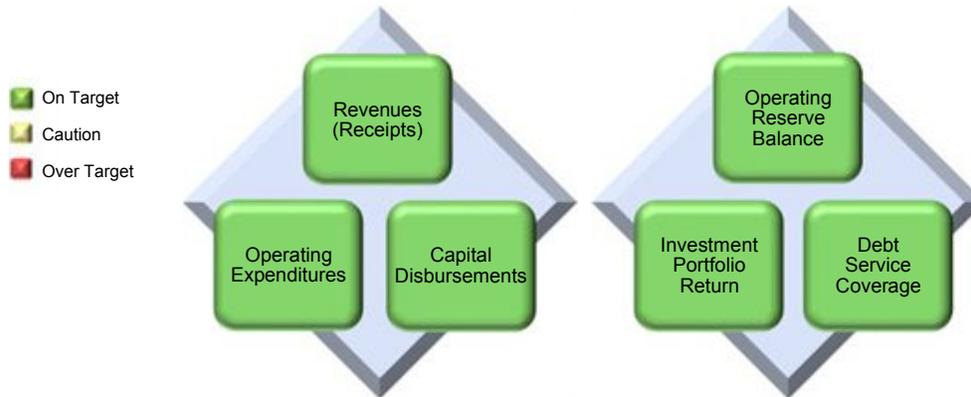
Lola Oyeyemi, Director, Budget

Monthly Financial Report

NOVEMBER 2018

EXECUTIVE SUMMARY

The table below summarizes the first two months of FY 2019 with approximately 16.7 percent of the fiscal year completed. At this early stage in the fiscal year, we are on track with budgetary expectations and targeted performance metrics.



(\$ in millions)

	Budget	YTD Budget	Actual	Variance Favorable (Unfavorable)		Actual % Budget
Revenues (Receipts)*	\$649.5	\$108.2	\$127.4	\$19.2	17.7%	19.6%
Expenditures*	\$582.8	\$97.1	\$84.2	\$12.9	13.3%	14.4%
Capital Disbursements	\$439.1	\$107.4	\$76.2	\$31.2	29.0%	17.4%

**Straight-lined (2/12 of budget)*

Highlights:

- Proposed FY 2020 budget recommendations anticipated for Board review in February 2019
- FY 2018 year-end audits are currently underway and being conducted in accordance with auditing standards generally accepted in the United States. Anticipated completion:
 - Financial Statements Audit – December 20, 2018
 - A133 Audit – January 2019
 - Comprehensive Annual Financial Report – January 2019
- Issued Request for Proposals and completed the interview process for the following services:
 - Underwriters
 - Bond Counsel
 - Merchant Card Services
- Proposals for Enterprise Resource Planning (ERP) system received and under review

Matthew T. Brown, Chief Financial Officer

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Operating Revenues (\$000's)

Category	A	B	C	D = C/A	E = C-B	F = E/B
	FY 2019 BUDGET	YTD BUDGET*	ACTUAL	ACTUAL % BUDGET	VARIANCE \$ Fav/(Unfav)	VARIANCE % Fav/(Unfav)
Res. / Comm. / Multi.	\$373,652	\$62,275	\$68,117	18.2%	\$5,842	9.4%
Federal	67,054	11,176	\$16,785	25.0%	\$5,609	50.2%
Municipal (DC Govt.)	17,362	2,894	\$1,401	8.1%	(\$1,493)	(51.6%)
DC Housing Authority	9,719	1,620	\$2,569	26.4%	\$949	58.6%
Metering Fee	10,776	1,796	\$2,025	18.8%	\$229	12.7%
Water System Replacement Fee (WSRF)	39,717	6,620	\$7,355	18.5%	\$735	11.1%
Wholesale	79,237	13,206	\$19,908	25.1%	\$6,702	50.7%
PILOT/ROW	21,701	3,617	\$3,982	18.3%	\$365	10.1%
All Other	30,249	5,042	\$5,249	17.4%	\$208	4.1%
TOTAL	\$649,467	\$108,244	\$127,391	19.6%	\$19,147	17.7%

*Straight-lined (2/12 of budget)

VARIANCE ANALYSIS FOR MAJOR REPORTED ITEMS

At this early stage of FY 2019, cash receipts are within budget. At the end of November 2018, cash receipts totaled \$127.4 million, or 19.6 percent of the Board-approved FY 2019 budget. Several categories of customers make payments on a quarterly basis, including the Federal Government (which made their first quarterly payment in October), and wholesale customers (who made their first quarter payment in November).

Residential, Commercial and Multi-Family – Receipts for this category are slightly higher at \$68.1 million or 18.2 percent of the approved budget. The higher receipts are due to increased year-end billing of the unbilled accounts and more cut-offs for non-payment in the month of September 2018 as compared to prior months.

Federal – Actual receipts through November 2018 total \$16.8 million or 25.0 percent of the revised FY2019 budget. The Federal government made their first quarter payment in October 2018.

District Government – Receipts are lower at \$1.4 million, or 8.1 percent of the approved budget. The District Government did not pay the November billed amount of approximately \$2.5 million. The overdue amount is anticipated to be received in December 2018.

DC Housing – Receipts are slightly higher at \$2.6 million or 26.4 percent of the approved budget.

Wholesale – The Wholesale customers' actual receipts through November 2018 total \$19.9 million or 25.1 percent of the revised FY 2019 budget. The Wholesale customers made their first quarter payment in November 2018.

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Operating Expenditures (\$000's)

Category	A	B	C	D = C/A	E = C-B	F = E/B
	FY 2019 BUDGET	YTD BUDGET*	ACTUAL	ACTUAL % BUDGET	VARIANCE \$ Fav/(Unfav)	VARIANCE % Fav/(Unfav)
Personnel	\$162,620	\$27,103	\$25,175	15.5%	\$1,928	7.1%
Contractual Services	81,679	13,613	10,748	13.2%	2,865	21.0%
Water Purchases	30,520	5,087	4,529	14.8%	558	11.0%
Supplies & Chemicals	32,091	5,349	4,235	13.2%	1,114	20.8%
Utilities	26,905	4,484	3,766	14.0%	719	16.0%
Small Equipment	1,240	207	59	4.8%	148	71.5%
SUBTOTAL O&M	\$335,055	\$55,843	\$48,511	14.5%	\$7,332	13.1%
Debt Service	199,025	33,171	32,067	16.1%	1,104	3.3%
PILOT/ROW	21,702	3,617	3,617	16.7%	0	0.0%
Cash Financed Capital Improvements	26,999	4,500	0	0.0%	4,500	100.0%
TOTAL OPERATING	\$582,781	\$97,130	\$84,194	14.4%	\$12,937	13.3%
Capital Labor	(18,259)	(3,043)	(2,257)	12.4%	(786)	25.8%
TOTAL NET OPERATING	\$564,522	\$94,087	\$81,937	14.5%	\$12,150	12.9%

*Straight-lined (2/12 of budget)

VARIANCE ANALYSIS FOR MAJOR REPORTED ITEMS

Total operating expenditures for this period are estimated at \$84.2 million or 14.4 percent of the FY 2019 Board-approved budget of \$582.8 million.

These numbers include estimated incurred but unpaid invoices and are subject to revision in subsequent months. The FY 2018 close-out process continues, which entails finalizing a number of GAAP-related accruals.

Personnel Services – Of the 1260 positions authorized, 1154 were filled at the end of November with year-to-date vacancy rate of 8 percent.

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Capital Disbursements (\$000's)

Service Area	A	B	C	D = C/A	E = B-C	F = E/B
	FY 2019 BUDGET	YTD BUDGET	ACTUAL	ACTUAL % BUDGET	VARIANCE \$ Fav/(Unfav)	VARIANCE % Fav/(Unfav)
Non Process Facilities	\$14,226	\$5,803	\$2,095	14.7%	\$3,708	63.9%
Wastewater Treatment	76,773	18,687	10,590	13.8%	8,097	43.3%
Combined Sewer Overflow	195,885	49,377	39,753	20.3%	9,624	19.5%
Stormwater	5,107	570	46	0.9%	524	91.9%
Sanitary Sewer	38,563	8,123	8,227	21.3%	(104)	(1.3%)
Water	61,115	16,959	9,044	14.8%	7,915	46.7%
SUBTOTAL: CAPITAL PROJECTS	\$391,670	\$99,519	\$69,756	17.8%	\$29,763	29.9%
Capital Equipment*	34,518	5,753	6,484	18.8%	(731)	(12.7%)
Washington Aqueduct	12,930	2,155	0	0.0%	2,155	100.0%
SUBTOTAL: ADD'L CAPITAL PROGRAMS	\$47,448	\$7,908	6,484	13.7%	\$1,424	18.0%
TOTAL	\$439,118	\$107,427	\$76,240	17.4%	\$31,187	29.0%

*Straight-lined (2/12 of budget)

VARIANCE ANALYSIS FOR MAJOR REPORTED ITEMS

At the end of November 2018, capital disbursements are \$76.2 million or 17.4 percent of the FY 2019 Board-approved budget of \$439.1 million, which is subject to revision as part of the FY 2020 budget process, and is anticipated for Board review in February 2019.

Capital Projects - Lower disbursements in various service areas are due to invoice lags, which are anticipated in December and January. The detailed project performance and cost drivers will be reviewed by the Department of Engineering & Technical Services in January 2019.

Capital Equipment - Higher than planned disbursements are primarily attributable to IT related equipment purchases for the New Headquarter Building, and invoice payments for prior year equipment purchases. These equipment purchases (mainly for upgrades to the Process Control System and Automated Meter Reading project), were duly accrued as expenditures in FY 2018.

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Cash Investments (\$ in millions)

Cash Balances

Rate Stabilization Fund Balance	\$	61.5
DC Insurance Reserve Balance		1.0

<i>Operating Reserve Accounts</i>	
Renewal & Replacement Balance	35.0
O & M Reserve per Indenture	51.7
Undesignated Reserve Balance	38.8
O & M Reserve per Board Policy	125.5
Excess Above O & M Reserve	14.5
Management O & M Reserve Policy	140.0
Project Billing Refunds	11.0
Excess Revenue	28.4
Operating Reserve Accounts	179.4

Operating Cash Balance Including RSF	\$	241.9
---	-----------	--------------

Debt Service Reserve - Series 1998		23.4
Bond Fund - Construction 2016B		17.0
Bond Fund - Construction 2018A		76.0
Bond Fund - Construction 2018B		147.4
Series B - Commercial Paper		1.2
Fleet Relocation Fund		4.3
Total All Funds	\$	511.3

OVERALL PORTFOLIO PERFORMANCE

- The operating reserve balance was \$179.4 million as compared to the operating reserve level objective of \$125.5 million for FY 2019
- Average cash balance for the month of November was \$171.3 million
- Total investment portfolio was in compliance with the Authority's Investment Policy
- Operating funds interest income for November (on a cash basis) was \$226,221; YTD \$406,973
- A detailed investment performance report is attached

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Cash Flow Summary (\$000's)

	Annual Budget Cash Basis	YTD 17% Cash Budget	YTD Actual Cash Oct. 1, 2018 - Nov. 30, 2018	Variance Favorable (Unfavorable)	
OPERATING BUDGET					
Cash Provided					
Retail	\$518,280	\$86,380	\$99,223	\$12,843	15%
Wholesale	79,237	13,206	19,275	6,069	46%
Other	51,526	8,588	8,351	(237)	-3%
Total Cash Provided	649,043	108,174	126,849	18,675	17%
Operating Cash Used					
Personnel Services	144,361	24,060	25,060	(1,000)	-4%
Contractual Services	81,679	13,613	14,302	(689)	-5%
Chemicals & Supplies	32,082	5,347	6,744	(1,397)	-26%
Utilities	26,915	4,486	4,846	(360)	-8%
Water Purchases	30,520	5,087	5,493	(407)	-8%
Small Equipment	1,240	207	115	92	44%
Total Operating Cash Used	316,797	52,800	56,561	(3,761)	-7%
Defeasance D.S./Cash Financed Capital Construction	26,999	4,500	0	4,500	100%
Other Cash Used					
Debt Service	201,919	33,653	32,067	1,586	5%
Payment In Lieu of Taxes/Right of Way	21,702	3,617	5,425	(1,808)	-50%
Total Other Cash Used	223,620	37,270	37,492	(222)	-1%
Total Cash Used	567,416	94,569	94,053	516	1%
Net Cash Provided (Used) by Operating Act.	81,626	13,604	32,796	19,192	
CAPITAL BUDGET					
Cash Provided					
Debt Proceeds	110,000	18,333	38,901	20,567	112%
EPA Grants	44,339	7,390	2,592	(4,797)	-65%
CSO Grants					0%
System Availability Fee	3,850	642	0	(642)	-100%
Transfer from Operations	111,922	18,654		(18,654)	-100%
Interest Income	2,981	497	932	436	88%
Wholesale Capital Contributions	65,851	10,975	15,171	4,196	38%
Total Cash Provided	338,943	56,490	57,596	1,106	2%
Cash Used					
DC Water Capital Program	426,188	71,031	76,240	(5,209)	-7%
Washington Aqueduct Projects	12,930	2,155		2,155	100%
Total Cash Used	439,118	73,186	76,240	(3,054)	-4%
Net Cash/PAYGO Provided (Used) by Cap. Act.	(\$100,175)	(\$16,696)	(\$18,644)	(\$1,948)	
Beginning Balance, October 1 (Net of Rate Stab. Fund) Projected					
Plus (Less) Operating Surplus	\$166,796		\$166,796		
Wholesale Customer Refunds from Prior Years	81,626	13,604	32,796		
Interest Earned From Bond Reserve	(1,500)	(250)	(230)		
Prior Year Federal Billing Reconciliation	424	71	166		
Project Billing Refunds	(5,821)	(970)	(1,455)		
Cash Used for Capital	(4,000)	(667)			
Balance Attributable to O&M Reserve	(\$8,773)	(14,795)	(18,644)		
	\$148,752		\$179,428		
OTHER CASH RESERVES					
Rate Stabilization Fund	Current				
DC Insurance Reserve	Balance				
Fleet Relocation - DC Reimbursement	\$61,450				
	1,000				
	4,331				

Monthly Financial Report

APPENDIX

Operating Revenues Detail.....	9
Retail Accounts Receivable	10
Overtime by Department	11
Capital Disbursements Detail	12
Investment Report	13

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Operating Revenues Detail

(\$ in millions)

Revenue Category	FY 2019 Budget	YTD Budget	Actual	Variance		Actual % of Budget
				Favorable /	(Unfavorable)	
Residential, Commercial, and Multi-family	\$373.7	\$62.3	\$68.1	\$5.8	9.4%	18.2%
Federal	\$67.1	11.2	16.8	5.6	50.2%	25.0%
District Government	\$17.4	2.9	1.4	(1.5)	-51.6%	8.1%
DC Housing Authority	\$9.7	1.6	2.6	1.0	58.6%	26.4%
Customer Metering Fee	\$10.8	1.8	2.0	0.2	12.7%	18.8%
Water System Replacement Fee (WSRF)	\$39.7	6.6	7.4	0.8	11.1%	18.5%
Wholesale	\$79.2	13.2	19.9	6.7	50.7%	25.1%
Right-of-Way Fee/PILOT	\$21.7	3.6	4.0	0.4	10.1%	18.3%
Subtotal (before Other Revenues)	\$619.3	\$103.2	\$122.2	\$19.0	18.4%	19.7%
Other Revenue without RSF						
IMA Indirect Cost Reimb. For Capital Projects	3.2	0.5	1.1	0.6	120.0%	34.4%
DC Fire Protection Fee	10.8	1.8	0.0	(1.8)	-100.0%	0.0%
Stormwater (MS4)	1.0	0.2	0.3	0.1	50.0%	30.0%
Interest	3.1	0.5	0.6	0.1	20.0%	19.4%
Developer Fees (Water & Sewer)	6.0	1.0	2.0	1.0	100.0%	33.3%
System Availability Fee (SAF)	3.9	0.7	0.0	(0.6)	-96.4%	0.0%
Others	2.2	0.4	1.2	0.8	200.0%	54.5%
Subtotal	\$30.2	\$5.0	\$5.2	\$0.2	4.1%	17.4%
Rate Stabilization Fund Transfer	\$0.0	\$0.0	\$0.0	\$0.0	0.0%	0.0%
Other Revenue Subtotal	\$30.2	\$5.0	\$5.2	\$0.2	4.1%	17.4%
Grand Total	\$649.5	\$108.2	\$127.4	\$19.2	17.7%	19.6%

BREAKDOWN OF RETAIL RECEIPTS BY CUSTOMER CATEGORY
 (\$ in 000's)

Customer Category	Water	Sewer	Clean Rivers			Total
			IAC	Metering Fee	WSRF	
Residential	\$6,318	\$9,965	\$5,744	\$867	\$1,558	\$24,452
Commercial	10,635	11,971	7,138	587	2,719	33,050
Multi-family	5,450	8,382	2,514	278	1,232	17,856
Federal	4,869	5,534	6,382	197	1,444	18,426
District Govt	(97)	(131)	1,630	72	328	1,801
DC Housing Authority	933	1,383	253	23	74	2,667
Total:	\$28,108	\$37,104	\$23,661	\$2,025	\$7,355	\$98,252

Note: The breakdown of Collections into Residential, Commercial, & Multi-family and Water and sewer is approximate as it is based on percentages of historical data and does not take into account adjustments and timing differences

Clean Rivers IAC - Actual vs Budget
 (\$ in 000's)

Customer Category	FY 2019 Budget	Year-To-Date Budget	Actual Received	Variance		Actual % of Budget
				Favorable / <Unfavorable>	Variance % of YTD Budget	
Residential	\$29,078	\$4,846	\$5,744	\$898	19%	20%
Commercial	32,251	5,375	7,138	1,763	33%	22%
Multi-family	12,391	2,065	2,514	449	22%	20%
Federal	25,529	4,255	6,382	2,127	50%	25%
District Govt	8,280	1,380	1,630	250	18%	20%
DC Housing Authority	1,416	236	253	17	7%	18%
Total:	\$108,945	\$18,158	\$23,661	\$5,503	30%	22%

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Retail Accounts Receivable (Delinquent Accounts)

The following tables show retail accounts receivable over 90 days including a breakdown by customer class.

Greater Than 90 Days by Month

	\$ in millions	# of accounts
September 30, 2012	\$5.5	13,063
September 30, 2013	\$4.9	11,920
September 30, 2014	\$5.3	12,442
September 30, 2015	\$6.5	11,981
September 30, 2016	\$7.7	12,406
September 30, 2017	\$8.4	11,526
September 30, 2018	\$13.4	16,273
October 31, 2018	\$14.4	14,890
November 30, 2018	\$13.9	14,091

Notes: The increase in the accounts receivable over 90 days is due to the temporary suspension of collections procedures because of the new billing system VertexOne, which was implemented in December 2017.

Greater Than 90 Days by Customer

	Number of Accounts			Month of November (All Categories)				Total Delinquent				
	W & S	Impervious Only	Total No. of	Active		Inactive		October		November		
	a/c	a/c	a/c	No. of	Amount	No. of	Amount	No. of	Amount	No. of	Amount	%
Commercial	9,028	2,464	11,492	1,093	\$4,928,126	218	\$180,679	1,342	\$5,302,665	1,311	\$5,108,805	37%
Multi-family	8,323	347	8,670	832	\$3,770,644	210	\$81,973	1,051	\$3,727,214	1,042	\$3,852,616	28%
Single-Family Residential	105,570	3,134	108,704	9,133	\$4,634,008	2,605	\$336,810	12,497	\$5,371,183	11,738	\$4,970,818	36%
Total	122,921	5,945	128,866	11,058	\$13,332,777	3,033	\$599,463	14,890	\$14,401,062	14,091	\$13,932,240	100%

Notes: Included in the above \$13.93M (or 14,091 accounts) of the DC Water Over 90 days delinquent accounts, \$4,283,062,12 (or 1,947 accounts) represents Impervious only accounts over 90 days delinquent.

- Reportable delinquencies do not include balances associated with a long standing dispute between DC Water and a large commercial customer.

Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Overtime by Department

Department	FY 2019			
	Budget	YTD Actual	YTD Actual % of Budget	% of Regular Pay
Office of the Board Secretary	\$9,000	\$1,774	19.7%	4.1%
General Manager	9,000	0	0.0%	0.0%
General Counsel	3,000	1,102	36.7%	0.4%
External Affairs	5,000	461	9.2%	0.2%
Internal Audit	-	-	0.0%	0.0%
Information Technology	15,000	2,876	19.2%	0.5%
Procurement	30,000	3,345	11.2%	0.6%
Customer Service *	311,000	135,046	43.4%	8.7%
Finance, Accounting & Budget **	40,000	14,152	35.4%	1.5%
Assistant General Manager - Administrative Services	1,000	-	0.0%	0.0%
Human Capital Management	6,000	0	0.0%	0.0%
Occupational Safety and Health	1,000	0	0.0%	0.0%
Facilities Management	300,000	39,540	13.2%	7.0%
Department of Security	-	254	0.0%	0.2%
Wastewater Engineering	36,000	1,074	0.0%	0.3%
Water Quality and Technology	30,000	701	0.0%	0.2%
Distribution and Conveyance System	800,000	129,572	16.2%	8.9%
Engineering and Technical Services	864,000	168,133	19.5%	7.0%
Water Services	1,522,000	303,708	20.0%	14.3%
Clean Rivers	-	-	0.0%	0.0%
Sewer Services	1,068,000	204,578	19.2%	18.1%
Wastewater Treatment - Operations	1,831,000	299,496	16.4%	16.9%
Wastewater Treatment - Process Engineering	45,000	5,515	12.3%	0.9%
Maintenance Services	545,000	83,149	15.3%	6.6%
Permit Operations	99,000	3,889	3.9%	1.2%
Fleet Management	4,000	489	12.2%	0.4%
Total DC WATER	\$7,575,000	\$1,398,855	18.5%	7.7%

* Customer Service is experiencing high overtime to complete meter reader replacement project

** Finance, Accounting & Budget is due to the fiscal year-end close and financial audit activities

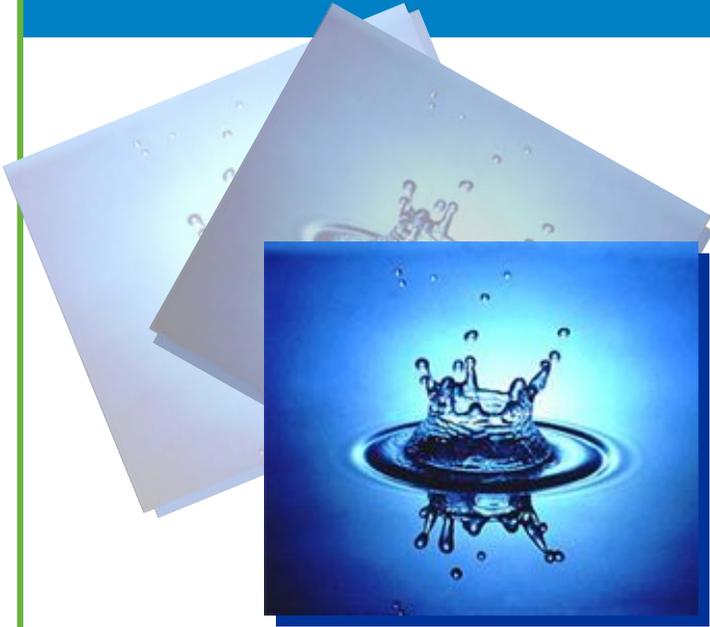
Monthly Financial Report

Fiscal Year-to-Date
As of November 30, 2018

Capital Disbursements Detail by Program (\$000's)

Service Areas			Actual			Variance		
	FY 2019* BUDGET	YTD BUDGET	Oct. 2018	Nov. 2018	YTD ACTUAL	ACTUAL % BUDGET	VARIANCE \$ Fav/(Unfav)	VARIANCE % Fav/(Unfav)
NON PROCESS FACILITIES								
Facility Land Use	\$14,226	\$5,803	\$2,058	\$37	\$2,095	14.7%	\$3,708	63.9%
Subtotal	14,226	5,803	2,058	37	2,095	14.7%	3,708	63.9%
WASTEWATER TREATMENT								
Liquid Processing	21,493	4,609	1,662	3,252	4,915	22.9%	(306)	(6.6%)
Plantwide	15,751	2,573	416	626	1,042	6.6%	1,531	59.5%
Solids Processing	9,124	3,166	101	52	153	1.7%	3,013	95.2%
Enhanced Nitrogen Removal Facilities	30,406	8,340	2,907	1,574	4,481	14.7%	3,859	46.3%
Subtotal	76,773	18,687	5,087	5,504	10,590	13.8%	8,097	43.3%
COMBINED SEWER OVERFLOW								
D.C. Clean Rivers	187,391	47,424	3,734	33,821	37,555	20.0%	9,869	20.8%
Program Management	1,447	212	325	0	325	22.4%	(113)	(53.5%)
Combined Sewer	7,047	1,741	613	1,260	1,873	26.6%	(132)	(7.6%)
Subtotal	195,885	49,377	4,671	35,082	39,753	20.3%	9,625	19.5%
STORMWATER								
Local Drainage	14	1	0	0	0	0.0%	1	100.0%
On-Going	537	55	0	12	12	2.3%	43	77.6%
Pumping Facilities	3,527	315	0	1	1	0.0%	314	99.6%
DDOT	0	0	0	0	0	0.0%	0	0.0%
Research and Program Management	0	0	0	0	0	0.0%	0	0.0%
Trunk/Force Sewers	1,028	199	33	0	33	3.2%	166	83.5%
Subtotal	5,107	570	33	13	46	0.9%	524	91.9%
SANITARY SEWER								
Collection Sewers	3,693	2,789	1,830	65	1,896	51.3%	893	32.0%
On-Going	11,949	1,354	1,501	1,643	3,144	26.3%	(1,790)	(132.2%)
Pumping Facilities	2,645	340	20	104	124	4.7%	217	63.6%
Program Management	3,403	625	410	0	410	12.1%	215	34.4%
Interceptor/Trunk Force Sewers	16,874	3,015	1,280	1,374	2,654	15.7%	361	12.0%
Subtotal	38,563	8,123	5,042	3,186	8,227	21.3%	(104)	(1.3%)
WATER								
Distribution Systems	31,620	8,250	1,483	3,280	4,763	15.1%	3,487	42.3%
Lead Program	4,986	960	99	695	793	15.9%	166	17.3%
On-Going	9,134	1,226	1,615	8	1,623	17.8%	(397)	(32.4%)
Pumping Facilities	1,398	1,056	31	20	51	3.6%	1,006	95.2%
DDOT	1,157	609	0	0	0	0.0%	609	100.0%
Storage Facilities	8,224	4,410	553	531	1,083	13.2%	3,327	75.4%
Program Management	4,597	448	382	349	730	15.9%	(282)	(63.0%)
Subtotal	61,115	16,959	4,162	4,882	9,044	14.8%	7,916	46.7%
Capital Projects	\$391,670	\$99,519	\$21,052	\$48,704	\$69,756	17.8%	29,763	29.9%
CAPITAL EQUIPMENT	34,518	5,753	4,356	2,128	6,484	18.8%	(731)	(12.7%)
WASHINGTON AQUEDUCT	12,930	2,155	0	0	0	0.0%	2,155	100.0%
Additional Capital Programs	47,448	7,908	4,356	2,128	6,484	13.7%	1,424	18.0%
Total	\$439,118	\$107,427	\$25,409	\$50,832	\$76,240	17.4%	31,187	29.0%

*Reflects the Board-approved budget, which is subject to revision as part of the FY 2020 budget process.



DC Water

Investment Performance Report – November 2018



**DC Water
Finance Division
Economic Update**

ECONOMIC COMMENTARY

- The second reading of third quarter GDP showed that the U.S. economy grew at an annual rate of 3.5%, remaining unchanged from the first GDP reading.
- During the month of November, the unemployment rate remained at 3.7%, the lowest unemployment rate since December of 1969. The labor force participation rate also remained unchanged at 62.9%. The U.S. labor market added 155,000 jobs in November, falling short of the market's expectations of 198,000.
- As of the beginning of December, the probability implied by market participants suggested an 81% likelihood that a 0.25% federal funds rate hike will occur at the Federal Open Market Committee's ("FOMC") meeting this month. This would move the target rate to a range of 2.25% to 2.50%.
- The U.S. Treasury yield curve flattened during the month of November. Yields at the short-term end of the curve increased modestly, while intermediate- and longer-term yields experienced decreases. For example, the 6-month Treasury bill increased from 2.49% to 2.52% during the month of November and the yield on the 3-year Treasury note decreased from 2.95% to 2.84%.

PORTFOLIO RECAP

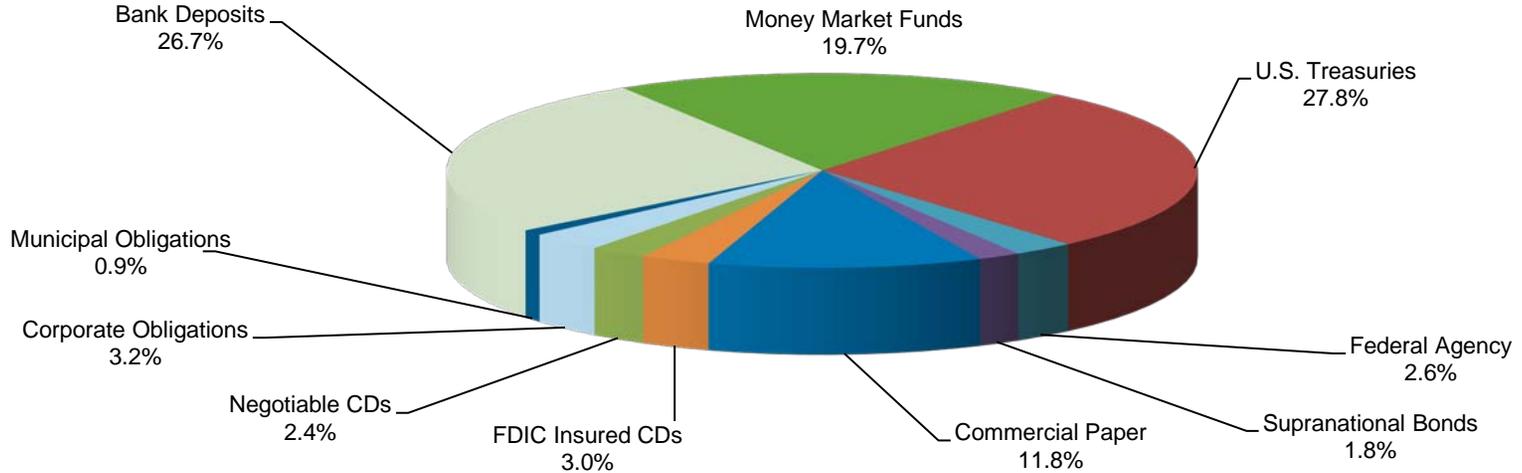
- The portfolio is diversified among Bank Deposits, U.S. Treasuries, Federal Agencies, Supranational Bonds, Commercial Paper, Negotiable CDs, Corporate Notes/Bonds, Municipal Bonds, FDIC Insured CDs, and SEC registered money market funds.
- The overall yield-to-maturity on cost of the portfolio is 2.00%.

Operating Reserve

- PFM purchased \$1.9 million of 2-year Federal Agencies at a yield of 2.95%. We also purchased \$925,000 of Corporate Notes at a yield of 3.41%.
- PFM sold \$3.3 million of 7- to 8- month Federal Agencies at an average yield of 2.63%. We also sold \$1.3 million of 6-month Supranational Bonds at a yield of 2.63%.



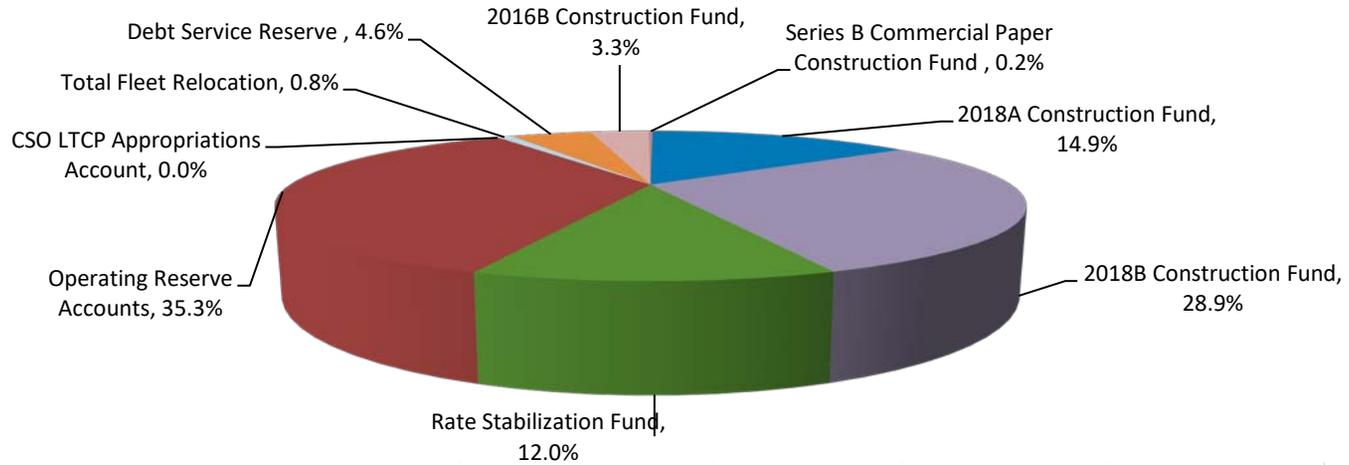
**DC Water
Finance Division
Investments - By Security Type
As of November 30, 2018**



Security Type	Book Value + Accrued Interest	Asset Allocation	Permitted By Policy
Bank Deposits	136,752,361	26.7%	100.0%
Money Market Funds	101,231,446	19.7%	100.0%
U.S. Treasuries	142,849,807	27.8%	100.0%
Federal Agency	13,386,529	2.6%	80.0%
Supranational Bonds	9,364,327	1.8%	30.0%
Commercial Paper	60,407,967	11.8%	35.0%
FDIC Insured CDs	15,430,860	3.0%	30.0%
Negotiable CDs	12,570,281	2.4%	30.0%
Corporate Obligations	16,334,174	3.2%	30.0%
Municipal Obligations	4,766,882	0.9%	20.0%
Total	\$ 513,094,635	100.0%	



**DC Water
Finance Division
Investment Analysis – By Fund
As of November 30, 2018**



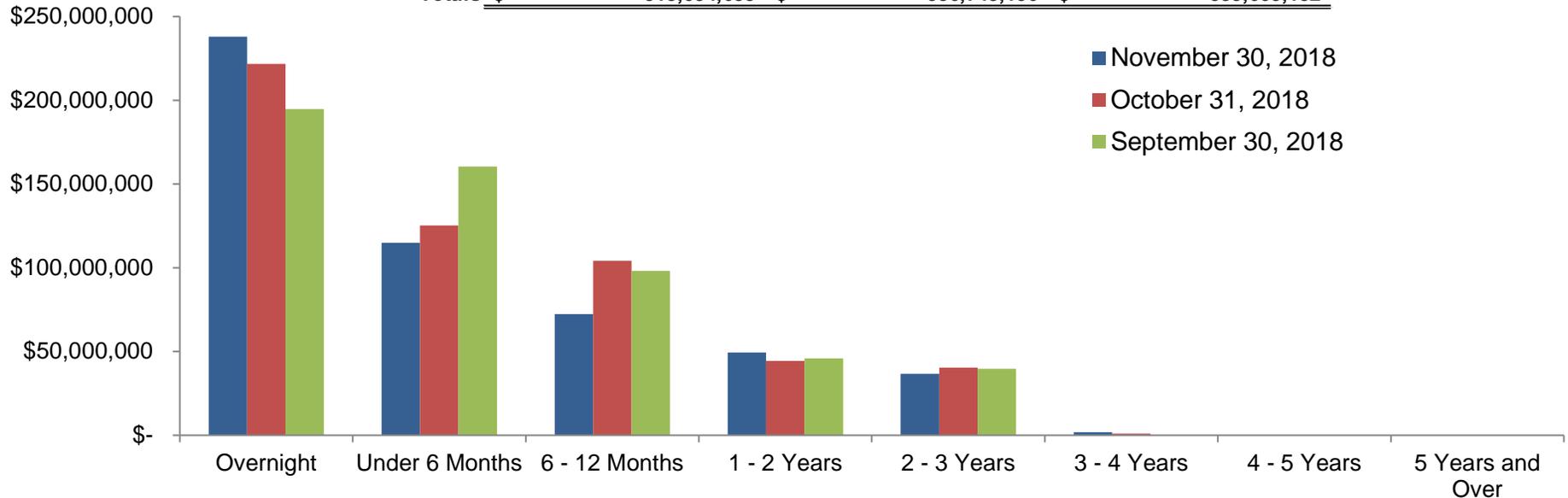
Fund Name	Book Value + Accrued Interest	Yield-to- Maturity at Cost	Effective Duration (years)	Weighted Average Maturity (days)
Rate Stabilization Fund	\$ 61,450,000	1.95%	0.00	1.0
Operating Reserve Accounts	\$ 181,019,642	1.59%	0.89	352.6
CSO LTCP Appropriations Account	\$ 520	1.74%	0.00	1.0
Fleet Relocation	\$ 4,331,000	0.90%	0.00	1.0
Debt Service Reserve	\$ 23,506,493	2.21%	1.04	392.4
Series B Commercial Paper Construction Fund	\$ 1,211,535	1.70%	0.00	1.0
2016B Construction Fund	\$ 16,997,721	2.10%	0.00	1.0
2018A Construction Fund	\$ 76,321,354	2.23%	0.11	39.3
2018B Construction Fund	\$ 148,256,370	2.36%	0.35	130.4
Total	\$ 513,094,635	2.00%	0.48	186.1

Investment Performance Report – November 2018



**DC Water
Finance Division
Investment Analysis – By Maturity**

Maturity Distribution	November 30, 2018	October 31, 2018	September 30, 2018
Overnight	\$ 237,983,806.79	\$ 221,698,134.09	\$ 194,705,650.77
Under 6 Months	114,804,780.91	125,183,501.05	160,356,805.47
6 - 12 Months	72,306,709.08	104,239,194.39	98,066,531.49
1 - 2 Years	49,386,173.44	44,410,435.45	45,909,352.17
2 - 3 Years	36,733,386.30	40,274,400.83	39,635,960.10
3 - 4 Years	1,879,778.39	937,530.38	934,831.87
4 - 5 Years	-	-	-
5 Years and Over	-	-	-
Totals	\$ 513,094,635	\$ 536,743,196	\$ 539,609,132





**DC Water
Finance Division
Investments – Issuer Allocation**

	Credit Ratings S&P / Moody's	Book Value		Investment Policy Limit	Compliance with Investment Policy
Bank Deposits					
TD Bank		136,752,361.13	26.7%	100.0%	Yes
Sub-Total Bank Deposits		136,752,361.13	26.7%	100.0%	Yes
Money Market Mutual Funds					
Wells Fargo Treasury Plus MMF	AAAm	99,831,194.91	19.5%	50.0%	Yes
Wells Fargo Government MMF	AAAm	188,715.35	0.0%	50.0%	Yes
First American Treasury	AAAm	1,211,535.40	0.2%	50.0%	Yes
Sub-Total Money Market Mutual Funds		101,231,445.66	19.7%	100.0%	Yes
U.S. Treasuries					
Treasury Note	AA+ / Aaa	142,849,807.00	27.8%	100.0%	Yes
Sub-Total Treasuries		142,849,807.00	27.8%	100.0%	Yes
Federal Agencies					
Fannie Mae	AA+ / Aaa	9,634,093.35	1.9%	40.0%	Yes
Federal Home Loan Bank	AA+ / Aaa	3,752,435.90	0.7%	40.0%	Yes
Freddie Mac	AA+ / Aaa	-	0.0%	40.0%	Yes
Sub-Total Federal Agencies		13,386,529.25	2.6%	80.0%	Yes
Supranational Bonds					
African Development Bank	AAA / Aaa	2,543,110.49	0.5%	5.0%	Yes
Asian Development Bank	AAA / Aaa	1,636,331.30	0.3%	5.0%	Yes
Inter-American Development Bank	AAA / Aaa	1,982,963.15	0.4%	5.0%	Yes
International Bank for Reconstruction and Development	AAA / Aaa	2,271,906.18	0.4%	5.0%	Yes
International Finance Corporation Note	AAA / Aaa	930,015.90	0.2%	5.0%	Yes
Sub-Total Supranational Bonds		9,364,327.02	1.8%	30.0%	Yes

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.



**DC Water
Finance Division
Investments – Issuer Allocation**

	Credit Ratings S&P / Moody's	Book Value		Investment Policy Limit	Compliance with Investment Policy
Commercial Paper					
BNP Paribas NY Branch	A-1 / P-1	7,869,923.35	1.5%	5.0%	Yes
Canadian Imperial Holding	A-1 / P-1	4,395,326.23	0.9%	5.0%	Yes
Cooperatieve Radobank U.A.	A-1 / P-1	8,410,399.56	1.6%	5.0%	Yes
Dexia Credit Local SA NY	A-1+ / P-1	7,852,652.70	1.5%	5.0%	Yes
JP Morgan Securities LLC	A-1 / P-1	12,917,775.00	2.5%	5.0%	Yes
MUFG Bank Ltd. NY	A-1 / P-1	9,330,384.65	1.8%	5.0%	Yes
Natixis NY Branch	A-1 / P-1	4,373,240.65	0.9%	5.0%	Yes
Toyota Motor Credit Corporation	A-1+ / P-1	5,258,265.00	1.0%	5.0%	Yes
Sub-Total Commercial Paper		60,407,967.14	11.8%	35.0%	Yes
FDIC Insured Certificates of Deposit					
CDARS - Placed by Industrial Bank	NR / NR	15,430,859.86	3.0%	5.0%	Yes
Sub-Total FDIC-Insured Certificates of Deposit		15,430,859.86	3.0%	30.0%	Yes
Negotiable Certificates of Deposit					
Bank of Montreal Chicago	A+ / Aa2	934,835.83	0.2%	5.0%	Yes
Bank of Nova Scotia Houston	A+ / Aa2	938,501.01	0.2%	5.0%	Yes
Canadian Imperial Bank NY	A+ / Aa2	1,405,691.04	0.3%	5.0%	Yes
Goldman Sachs Bank USA	A-1 / P-1	1,411,977.78	0.3%	5.0%	Yes
Nordea Bank AB NY	AA- / Aa3	1,864,117.56	0.4%	5.0%	Yes
Royal Bank of Canada NY	AA- / Aa2	710,899.00	0.1%	5.0%	Yes
Skandinav Enskilda Banken NY	A-1 / P-1	1,861,199.41	0.4%	5.0%	Yes
Swedbank NY	AA- / Aa2	925,874.90	0.2%	5.0%	Yes
UBS AG Stamford CT	A+ / Aa2	1,611,342.22	0.3%	5.0%	Yes
Westpac Banking Corp NY	AA- / Aa3	905,842.50	0.2%	5.0%	Yes
Sub-Total Negotiable Certificates of Deposit		12,570,281.25	2.4%	30.0%	Yes

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.



**DC Water
Finance Division
Investments – Issuer Allocation**

	Credit Ratings S&P / Moody's	Book Value		Investment Policy Limit	Compliance with Investment Policy
Corporate Obligations					
3M Company	AA- / A1	341,532.49	0.1%	5.0%	Yes
Bank of Montreal	A+ / Aa2	471,504.75	0.1%	5.0%	Yes
Bank of New York Mellon	A / A1	918,356.50	0.2%	5.0%	Yes
Bank of Nova Scotia	A+ / Aa2	932,497.38	0.2%	5.0%	Yes
Blackrock	AA- / Aa3	939,549.48	0.2%	5.0%	Yes
Coca-Cola	A+ / A1	380,223.00	0.1%	5.0%	Yes
Exxon Mobil	AA+ / Aaa	930,751.42	0.2%	5.0%	Yes
Johnson & Johnson	AAA / Aaa	195,085.38	0.0%	5.0%	Yes
JP Morgan	A- / A2	940,228.91	0.2%	5.0%	Yes
Pfizer Inc.	AA / A1	1,480,096.88	0.3%	5.0%	Yes
Procter & Gamble	AA- / Aa3	440,700.06	0.1%	5.0%	Yes
Royal Bank of Canada	AA- / Aa2	871,895.81	0.2%	5.0%	Yes
Toronto Dominion Bank NY	AA- / Aa1	1,869,573.11	0.4%	5.0%	Yes
Total Capital	A+ / Aa3	897,504.56	0.2%	5.0%	Yes
Toyota	AA- / Aa3	1,845,356.60	0.4%	5.0%	Yes
Wal-Mart Stores Inc.	AA / Aa2	1,949,793.06	0.4%	5.0%	Yes
Westpac Banking	AA- / Aa3	929,525.04	0.2%	5.0%	Yes
Sub-Total Corporate Obligations		16,334,174.43	3.2%	30.0%	Yes
Municipal Obligations					
California State	AA- / Aa3	1,080,041.56	0.2%	5.0%	Yes
Connecticut State	A / A1	989,278.39	0.2%	5.0%	Yes
Florida State	AA / Aa3	1,816,222.50	0.4%	5.0%	Yes
NYC Transitional Finance Authority	AAA / Aa1	540,882.00	0.1%	5.0%	Yes
University of California	AA / Aa2	340,457.72	0.1%	5.0%	Yes
Sub-Total Municipal Obligations		4,766,882.17	0.9%	20.0%	Yes
Grand Total		\$ 513,094,634.91	100.0%		

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.



**DC Water
Finance Division
Book Value Performance
As of November 30, 2018**

The portfolio is in compliance with the Authority's Investment Policy

	Trailing 1 Months		Trailing 3 Months		Trailing 6 Months		Trailing 12 Months	Trailing 24 Months
	Periodic	Annualized	Periodic	Annualized	Periodic	Annualized		
Rate Stabilization Fund	0.16%	1.97%	0.49%	1.97%	0.91%	1.81%	1.26%	0.94%
Operating Reserve Accounts	0.31%	3.90%	0.69%	2.80%	1.02%	2.05%	1.74%	1.49%
Debt Service Reserve	0.18%	2.27%	0.50%	2.01%	0.90%	1.80%	1.53%	1.25%
2018A Construction Fund	0.14%	1.74%	0.50%	2.02%	n/a	n/a	n/a	n/a
2018B Construction Fund	0.18%	2.21%	0.59%	2.38%	n/a	n/a	n/a	n/a
Short-Term	0.17%	2.05%	0.50%	2.02%	0.95%	1.91%	1.57%	1.27%
Merrill Lynch 3-Month Treasury Index (Book Value) ¹	0.19%	2.33%	0.57%	2.29%	1.07%	2.14%	1.88%	1.41%
Core (1+ Years)	0.16%	1.96%	0.53%	2.13%	1.05%	2.11%	1.89%	1.67%
Merrill Lynch 1-3 Year Treasury Index (Book Value) ²	0.23%	2.85%	0.71%	2.86%	1.37%	2.74%	2.50%	2.01%

- (1) The Merrill Lynch 3-Month Treasury Bill is an unmanaged index tracking the on-the-run Treasury Bill. The Index is produced and maintained by Merrill Lynch & Co. Performance for this index is shown on a book value basis.
- (2) The Merrill Lynch 3-Month Treasury Bill is an unmanaged index tracking a basket of U.S. Treasuries with 1 to 3 year maturities. The Index is produced and maintained by Merrill Lynch & Co. Performance for this index is shown on a book value basis.



**DC Water
Finance Division
Portfolio Holdings by Fund**

DESCRIPTION	CUSIP	PAR AMOUNT	COUPON RATE	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	MARKET VALUE + ACCRUED INTEREST	AMORTIZED COST + ACCRUED INTEREST	TOTAL VALUE
Rate Stabilization Fund										
TD BANK BANK DEPOSIT		\$ 61,450,000		12/1/2018		1.95%	\$ 61,450,000	\$ 61,450,000	\$ 61,450,000	\$ 61,450,000.00
Operating Reserve Accounts										
TD BANK BANK DEPOSIT		\$ 69,970,841		12/1/2018		0.90%	\$ 69,970,841	\$ 69,970,841	\$ 69,970,841	
DC RESERVES TD BANK DEPOSIT		\$ 1,000,000		12/1/2018		2.14%	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	
WELLS FARGO GOVERNMENT MMF		188,715		12/1/2018		2.06%	188,715	188,715	188,715	
INDUSTRIAL BANK CDARS		2,614,746	1.000	1/17/2019	1/18/2018	1.00%	2,614,746	2,637,455	2,637,455	
INDUSTRIAL BANK CDARS		2,573,871	1.000	1/17/2019	1/18/2018	1.00%	2,573,871	2,596,225	2,596,225	
FL ST BOARD ADMIN FIN CORP TXBL REV BD	341271AA2	1,800,000	2.163	7/1/2019	3/8/2016	2.16%	1,800,000	1,810,067	1,816,223	
SKANDINAV ENSKILDA BANKEN NY CD	83050FXT3	1,850,000	1.840	8/2/2019	8/4/2017	1.85%	1,849,279	1,850,585	1,861,199	
GOLDMAN SACHS BANK USA CERT DEPOS	40054PAE5	1,400,000	2.800	8/5/2019	8/13/2018	2.80%	1,400,000	1,409,789	1,411,978	
CT ST TXBL GO BONDS	20772J3D2	985,000	1.300	8/15/2019	8/17/2016	1.23%	987,128	976,182	989,278	
FNMA NOTES	3135G0P49	1,450,000	1.000	8/28/2019	9/2/2016	1.05%	1,447,738	1,436,040	1,453,178	
FNMA NOTES	3135G0P49	1,975,000	1.000	8/28/2019	10/5/2016	1.02%	1,973,815	1,955,985	1,979,796	
AFRICAN DEVELOPMENT BANK NOTE	00828EBQ1	700,000	1.125	9/20/2019	9/20/2016	1.16%	699,258	692,156	701,352	
WAL-MART STORES INC CORP NOTE	931142DY6	430,000	1.750	10/9/2019	10/20/2017	1.75%	429,991	426,970	431,083	
INDUSTRIAL BANK CDARS		5,077,888	0.500	10/10/2019	10/11/2018	0.50%	5,077,888	5,081,435	5,081,435	
THE PROCTER & GAMBLE CO CORP NOTES	742718EZ8	440,000	1.750	10/25/2019	10/25/2017	1.77%	439,846	436,565	440,700	
INDUSTRIAL BANK CDARS		5,110,912	1.500	11/7/2019	11/8/2018	1.50%	5,110,912	5,115,745	5,115,745	
US TREASURY NOTES	912828G61	2,325,000	1.500	11/30/2019	12/5/2016	1.45%	2,328,633	2,296,577	2,326,327	
PFIZER INC CORP NOTE	717081EB5	595,000	1.700	12/15/2019	11/21/2016	1.72%	594,572	591,318	599,516	
PFIZER INC CORP NOTE	717081EB5	300,000	1.700	12/15/2019	11/21/2016	1.73%	299,775	298,144	302,274	
ASIAN DEVELOPMENT BANK NOTE	045167DT7	925,000	1.750	1/10/2020	1/12/2017	1.77%	924,464	920,231	931,138	
US TREASURY NOTES	912828H52	3,475,000	1.250	1/31/2020	1/5/2017	1.52%	3,447,309	3,429,384	3,478,862	
NORDEA BANK AB NY CD	65590ASN7	1,850,000	2.720	2/20/2020	2/22/2018	2.72%	1,850,000	1,853,713	1,864,118	
FNMA NOTES	3135G0T29	1,150,000	1.500	2/28/2020	2/28/2017	1.52%	1,149,264	1,136,432	1,154,148	
US TREASURY NOTES	912828J50	725,000	1.375	2/29/2020	2/3/2017	1.58%	720,610	715,072	725,728	
US TREASURY NOTES	912828J50	2,900,000	1.375	2/29/2020	9/1/2017	1.38%	2,899,887	2,860,289	2,910,077	
UBS AG STAMFORD CT LT CD	90275DHG8	1,600,000	2.900	3/2/2020	3/6/2018	2.93%	1,600,000	1,611,120	1,611,342	
EXXON MOBIL (CALLABLE) CORP NOTE	30231GAG7	925,000	1.912	3/6/2020	4/28/2017	1.77%	928,635	916,274	930,751	
WESTPAC BANKING CORP NOTES	961214DJ9	925,000	2.150	3/6/2020	3/6/2017	2.16%	924,602	916,646	929,525	
AFRICAN DEVELOPMENT BANK NOTE	00828ECA5	1,035,000	1.875	3/16/2020	3/16/2017	1.93%	1,033,468	1,025,629	1,038,373	
CANADIAN IMP BKG COMM NY FLT CERT DEPOS	13606BVF0	1,400,000	2.814	4/10/2020	4/10/2018	2.78%	1,400,000	1,408,455	1,405,691	
TOYOTA MOTOR CREDIT CORP	89236TDU6	630,000	1.950	4/17/2020	4/17/2017	1.97%	629,710	622,474	631,366	
TOYOTA MOTOR CREDIT CORP	89236TDU6	295,000	1.950	4/17/2020	4/17/2017	1.94%	295,089	291,476	295,744	
US TREASURY NOTES	912828K58	2,750,000	1.375	4/30/2020	4/5/2017	1.53%	2,737,646	2,699,421	2,747,478	
US TREASURY NOTES	912828K58	1,575,000	1.375	4/30/2020	4/10/2017	1.55%	1,566,879	1,546,032	1,573,050	
NYC TRANS FIN AUTH, NY TXBL REV BONDS	64971W5W6	540,000	1.960	5/1/2020	6/29/2017	1.96%	540,000	532,933	540,882	
US TREASURY NOTES	912828VF4	1,650,000	1.375	5/31/2020	5/23/2018	2.58%	1,611,070	1,615,450	1,621,045	
BANK OF NOVA SCOTIA HOUSTON CD	06417GU22	925,000	3.080	6/5/2020	6/7/2018	3.10%	924,649	940,666	938,501	
WAL-MART STORES INC CORP NOTES	931142EG4	925,000	2.850	6/23/2020	6/27/2018	2.87%	924,713	934,427	936,050	
TOTAL CAPITAL SA CORP NOTES	89152UAD4	850,000	4.450	6/24/2020	4/10/2017	2.07%	891,492	881,523	897,505	
US TREASURY NOTES	912828XH8	1,825,000	1.625	6/30/2020	6/16/2017	1.51%	1,830,988	1,803,977	1,840,563	
US TREASURY NOTES	912828XH8	3,650,000	1.625	6/30/2020	6/28/2017	1.50%	3,663,117	3,607,953	3,681,796	
BANK OF NOVA SCOTIA HOUSTON CORP BOND	064159XJ5	925,000	2.150	7/14/2020	7/14/2017	2.15%	924,871	917,178	932,497	
FNMA NOTES	3135G0T60	1,850,000	1.500	7/30/2020	9/1/2017	1.49%	1,850,481	1,820,312	1,859,608	
US TREASURY NOTES	912828XM7	825,000	1.625	7/31/2020	7/7/2017	1.60%	825,516	813,497	829,766	

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.



DC Water
Finance Division
Portfolio Holdings by Fund

DESCRIPTION	CUSIP	PAR AMOUNT	COUPON RATE	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	MARKET VALUE + ACCRUED INTEREST	AMORTIZED COST + ACCRUED INTEREST	TOTAL VALUE
Operating Reserve Accounts										
BANK OF MONTREAL CHICAGO CERT DEPOS	06370REU9	925,000	3.190	8/3/2020	8/3/2018	3.23%	925,000	931,223	934,836	
WESTPAC BANKING CORP NY CD	96121T4A3	900,000	2.050	8/3/2020	8/7/2017	2.05%	900,000	891,901	905,843	
INTL BANK OF RECONSTRUCTION AND DEV NOTE	45905UP32	925,000	1.561	9/12/2020	9/19/2017	1.64%	922,780	906,088	926,829	
TORONTO-DOMINION BANK	89114QC71	925,000	3.150	9/17/2020	9/17/2018	3.16%	924,806	929,678	930,815	
FHLB NOTES	3130ACE26	965,000	1.375	9/28/2020	9/8/2017	1.48%	961,902	942,219	965,454	
FANNIE MAE NOTES	3135G0U84	1,850,000	2.875	10/30/2020	11/6/2018	2.95%	1,847,373	1,853,694	1,851,896	
US TREASURY NOTES	912828L99	250,000	1.375	10/31/2020	10/17/2017	1.71%	247,539	243,556	248,729	
INTER-AMERICAN DEVELOPMENT BANK	4581X0CD8	915,000	2.125	11/9/2020	10/10/2017	1.81%	923,481	902,575	921,584	
JOHNSON & JOHNSON CORP NOTE	478160CH5	195,000	1.950	11/10/2020	11/10/2017	1.99%	194,791	191,470	195,085	
COCA-COLA CO/THE GLOBAL NOTES	191216AR1	370,000	3.150	11/15/2020	9/12/2017	1.78%	385,584	370,370	380,223	
SWEDBANK (NEW YORK) CERT DEPOS	87019UD6	925,000	2.270	11/16/2020	11/17/2017	2.30%	925,000	906,198	925,875	
US TREASURY NOTES	912828M98	3,000,000	1.625	11/30/2020	11/3/2017	1.77%	2,986,992	2,930,642	2,991,611	
US TREASURY NOTES	912828N48	1,975,000	1.750	12/31/2020	12/5/2017	1.91%	1,965,588	1,947,726	1,983,031	
US TREASURY NOTES	912828N48	975,000	1.750	12/31/2020	12/6/2017	1.96%	968,830	961,536	977,918	
ASIAN DEVELOPMENT BANK NOTE	045167EF6	700,000	2.250	1/20/2021	1/19/2018	2.29%	699,251	696,235	705,193	
US TREASURY NOTES	912828N89	1,750,000	1.375	1/31/2021	1/4/2018	2.05%	1,715,000	1,705,133	1,733,163	
US TREASURY NOTES	912828N89	800,000	1.375	1/31/2021	1/4/2018	2.08%	783,188	779,489	791,724	
US TREASURY N/B	912828P87	1,100,000	1.125	2/28/2021	2/16/2018	2.42%	1,058,707	1,062,797	1,072,295	
INTERNATIONAL FINANCE CORPORATION NOTE	45950VLQ7	925,000	2.635	3/9/2021	3/16/2018	2.66%	924,306	922,290	930,016	
AFRICAN DEVELOPMENT BANK NOTE	00828ECZ0	800,000	2.625	3/22/2021	3/22/2018	2.66%	799,176	798,229	803,385	
CA ST TXBL GO BONDS	13063DGA0	1,075,000	2.800	4/1/2021	4/25/2018	2.80%	1,075,043	1,070,621	1,080,042	
TOYOTA MOTOR CREDIT CORP	89236TCZ6	475,000	1.900	4/8/2021	3/6/2018	2.82%	462,223	462,152	466,503	
BANK OF MONTREAL CHICAGO CORP NOTES	06367T4W7	470,000	3.100	4/13/2021	4/13/2018	3.14%	469,450	469,329	471,505	
TOYOTA MOTOR CREDIT CORP NOTES	89236TEU5	290,000	2.950	4/13/2021	4/13/2018	2.96%	289,884	288,349	291,048	
TOYOTA MOTOR CREDIT CORP NOTES	89236TEU5	160,000	2.950	4/13/2021	4/13/2018	2.93%	160,082	159,089	160,694	
BANK OF NEW YORK MELLON CORP (CALLABLE)	06406FAA1	515,000	2.500	4/15/2021	2/16/2018	2.93%	508,300	506,727	511,573	
BANK OF NEW YORK MELLON CORP (CALLABLE)	06406FAA1	410,000	2.500	4/15/2021	2/16/2018	2.99%	404,022	403,414	406,783	
INTER-AMERICAN DEVELOPMENT BANK NOTE	4581X0DB1	1,060,000	2.625	4/19/2021	4/19/2018	2.70%	1,057,668	1,056,157	1,061,379	
ROYAL BANK OF CANADA CORP NOTES	78013XKG2	870,000	3.200	4/30/2021	4/30/2018	3.23%	869,382	868,927	871,896	
UNIV OF CAL TXBL REV BONDS	91412HBH5	340,000	3.029	5/15/2021	6/5/2018	3.03%	340,000	340,590	340,458	
US TREASURY NOTES	912828WN6	975,000	2.000	5/31/2021	6/6/2018	2.62%	957,671	955,592	960,460	
ROYAL BANK OF CANADA NY CD	78012UEE1	700,000	3.240	6/7/2021	6/8/2018	3.24%	700,000	711,743	710,899	
TORONTO DOMINION BANK CORP NOTES	89114QBZ0	925,000	3.250	6/11/2021	6/12/2018	3.27%	924,584	936,376	938,758	
FANNIE MAE NOTES	3135G0U35	1,320,000	2.750	6/22/2021	6/25/2018	2.76%	1,319,696	1,332,161	1,335,467	
WAL-MART STORES INC CORP NOTES	931142EJ8	575,000	3.125	6/23/2021	6/27/2018	3.13%	574,971	582,189	582,661	
INTL BANK OF RECONSTRUCTION AND DEV NOTE	459058GH0	1,335,000	2.750	7/23/2021	7/25/2018	2.83%	1,331,876	1,341,728	1,345,077	
US TREASURY NOTES	912828W7	3,500,000	2.750	8/15/2021	9/7/2018	2.72%	3,502,871	3,520,453	3,530,916	
US TREASURY NOTES	912828W7	1,100,000	2.750	8/15/2021	9/28/2018	2.91%	1,095,316	1,106,428	1,104,475	
US TREASURY NOTES	912828W7	450,000	2.750	8/15/2021	10/4/2018	2.89%	448,295	452,630	452,021	
US TREASURY NOTES	912828W7	425,000	2.750	8/15/2021	10/11/2018	2.97%	422,443	427,484	425,997	
3M COMPANY	88579YBA8	340,000	3.000	9/14/2021	9/14/2018	3.07%	339,303	341,475	341,532	
PFIZER INC CORP NOTE	717081EM1	575,000	3.000	9/15/2021	9/7/2018	3.05%	574,224	577,813	578,308	
FEDERAL HOME LOAN BANKS NOTES (CALLABLE)	3130AEXV7	925,000	3.000	9/20/2021	9/20/2018	3.00%	925,000	930,232	930,473	
FEDERAL HOME LOAN BANKS NOTES	3130AF5B9	1,850,000	3.000	10/12/2021	11/6/2018	3.02%	1,848,927	1,861,041	1,856,509	
BLACKROCK INC CORP NOTES	09247XAJO	925,000	3.375	6/1/2022	11/9/2018	3.41%	923,909	940,637	939,549	
JPMORGAN CHASE & CO CORP NOTES	46647PAS5	925,000	3.514	6/18/2022	6/26/2018	3.50%	925,564	936,052	940,229	
								\$		181,019,641.65

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.

Investment Performance Report – November 2018



DC Water
Finance Division
Portfolio Holdings by Fund

DESCRIPTION	CUSIP	PAR AMOUNT	COUPON RATE	MATURITY DATE	SETTLEMENT DATE	YTM AT COST	ORIGINAL COST	MARKET VALUE + ACCRUED INTEREST	AMORTIZED COST + ACCRUED INTEREST	TOTAL VALUE
Debt Service Reserve										
WELLS FARGO TREASURY PLUS MMF		\$ 14,585		12/1/2018		2.10%	\$ 14,585	\$ 14,585	\$ 14,585	
US TREASURY NOTES	912828C65	11,325,000	1.625	3/31/2019	10/2/2018	2.39%	11,282,531	11,322,722	11,328,033	
US TREASURY N/B	912828W97	5,175,000	1.250	3/31/2019	10/10/2017	1.45%	5,160,041	5,164,790	5,182,647	
US TREASURY NOTES	912828F21	7,025,000	2.125	9/30/2021	4/2/2018	2.49%	6,940,206	6,915,140	6,981,227	
										\$ 23,506,493.09
CSO LTCP Appropriations Account										
TD BANK BANK DEPOSIT		\$ 520		12/1/2018		2.14%	\$ 520	\$ 520	\$ 520	\$ 520.08
Fleet Relocation Account										
TD BANK BANK DEPOSIT		\$ 4,331,000		12/1/2018		2.14%	\$ 4,331,000	\$ 4,331,000	\$ 4,331,000	\$ 4,331,000.00
Series B Commercial Paper Construction Fund										
COMMERCIAL PAPER		\$ 1,211,535		12/1/2018		1.70%	\$ 1,211,535	\$ 1,211,535	\$ 1,211,535	\$ 1,211,535.40
2016B Construction Fund										
WELLS FARGO TREASURY PLUS MMF		\$ 16,997,721		12/1/2018		2.10%	\$ 16,997,721	\$ 16,997,721	\$ 16,997,721	\$ 16,997,720.59
2018A Construction Fund										
WELLS FARGO TREASURY PLUS MMF		\$ 48,932,974		12/1/2018		2.10%	\$ 48,932,974	\$ 48,932,974	\$ 48,932,974	
MUFG BANK LTD/NY COMM PAPER	62479MM34	3,450,000	-	12/3/2018	6/7/2018	2.45%	3,408,487	3,449,379.00	3,449,536	
DEXIA CREDIT LOCAL SA NY COMM PAPER	25214PHP1	3,500,000	-	2/26/2019	6/7/2018	2.53%	3,436,347	3,479,014.00	3,479,023	
JP MORGAN SECURITIES LLC COMM PAPER	46640QQ12	5,750,000	-	3/1/2019	6/7/2018	2.58%	5,642,106	5,711,176.00	5,713,631	
TOYOTA MOTOR CREDIT CORP COMM PAPER	89233HQ15	2,300,000	-	3/1/2019	6/7/2018	2.52%	2,257,866	2,284,412.90	2,285,798	
BNP PARIBAS NY BRANCH COMM PAPER	09659CQ19	3,500,000	-	3/1/2019	6/7/2018	2.48%	3,436,662	3,477,218.50	3,478,650	
COOPERATIVE RABOBANK U.A. COMM PAPER	21687BQ12	2,380,000	-	3/1/2019	6/8/2018	2.44%	2,337,795	2,364,929.84	2,365,720	
US TREASURY NOTES	912828XS4	4,795,000	1.250	5/31/2019	6/7/2018	2.34%	4,744,802	4,764,634.90	4,769,578	
US TREASURY NOTES	912828D80	1,850,000	1.625	8/31/2019	8/28/2018	2.45%	1,834,896	1,843,260.14	1,846,443	
										\$ 76,321,354.00
2018B Construction Fund										
WELLS FARGO TREASURY PLUS MMF		\$ 33,885,914		12/1/2018		2.10%	\$ 33,885,914	\$ 33,885,914	\$ 33,885,914	
MUFG BANK LTD/NY COMM PAPER	62479MM34	4,400,000	-	12/3/2018	6/7/2018	2.45%	4,347,056	4,399,208	4,399,408	
CANADIAN IMPERIAL HOLDING COMM PAPER	13607FMH6	4,400,000	-	12/17/2018	6/7/2018	2.42%	4,343,623	4,395,208	4,395,326	
COOPERATIVE RABOBANK U.A. COMM PAPER	21687BMT5	6,055,000	-	12/27/2018	6/8/2018	2.39%	5,974,818	6,044,985	6,044,680	
BNP PARIBAS NY BRANCH COMM PAPER	09659CMX3	4,400,000	-	12/31/2018	6/7/2018	2.41%	4,339,786	4,391,605	4,391,273	
DEXIA CREDIT LOCAL SA NY COMM PAPER	25214PHP1	4,400,000	-	2/26/2019	6/7/2018	2.53%	4,319,979	4,373,618	4,373,629	
NATIXIS NY BRANCH COMM PAPER	63873KP05	4,400,000	-	2/28/2019	8/28/2018	2.49%	4,344,677	4,370,850	4,373,241	
US TREASURY NOTES	912828C24	830,000	1.500	2/28/2019	8/31/2018	2.27%	826,855	831,361	831,618	
JP MORGAN SECURITIES LLC COMM PAPER	46640QQ12	7,250,000	-	3/1/2019	6/7/2018	2.58%	7,113,960	7,201,048	7,204,144	
TOYOTA MOTOR CREDIT CORP COMM PAPER	89233HQ15	1,500,000	-	3/1/2019	6/7/2018	2.52%	1,472,521	1,489,835	1,490,738	
MUFG BANK LTD/NY COMM PAPER	62479MSQ7	1,500,000	-	5/24/2019	8/28/2018	2.61%	1,471,307	1,479,000	1,481,440	
TOYOTA MOTOR CREDIT CORP COMM PAPER	89233HSQ8	1,500,000	-	5/24/2019	8/28/2018	2.57%	1,471,755	1,479,620	1,481,730	
US TREASURY NOTES	912828XS4	27,200,000	1.250	5/31/2019	8/28/2018	2.37%	26,972,625	27,027,752	27,051,258	
US TREASURY NOTES	912828WS5	14,000,000	1.625	6/30/2019	8/31/2018	2.40%	13,911,406	14,017,000	14,033,156	
US TREASURY NOTES	912828K25	4,660,000	1.375	7/31/2019	8/28/2018	2.42%	4,615,766	4,643,009	4,649,476	
US TREASURY NOTES	912828D80	28,225,000	1.625	8/31/2019	8/31/2018	2.46%	27,994,569	28,122,172	28,169,339	
										\$ 148,256,370.10
							\$ 511,239,158.74	\$ 511,910,989.70	\$ 513,094,634.91	\$ 513,094,634.91

CDARS holdings are not managed by PFMAM, and we therefore cannot guarantee the accuracy of holdings information provided.

Investment Performance Report – November 2018



DC Water
Finance Division
Security Purchases
Last 6 Months

CUSIP	DESCRIPTION	PAR	COUPON	MATURITY DATE	SETTLE DATE	YTM	TRANSACTION AMOUNT
<u>Operating Reserve Accounts</u>							
91412HBH5	UNIV OF CAL TXBL REV BONDS	340,000.00	3.03	5/15/2021	6/5/2018	3.03	340,000.00
912828WN6	US TREASURY NOTES	3,250,000.00	2.00	5/31/2021	6/6/2018	2.62	3,193,301.90
06417GU22	BANK OF NOVA SCOTIA HOUSTON CD	925,000.00	3.08	6/5/2020	6/7/2018	3.10	924,648.50
78012UEE1	ROYAL BANK OF CANADA NY CD	700,000.00	3.24	6/7/2021	6/8/2018	3.24	700,000.00
89114QBZ0	TORONTO DOMINION BANK CORP NOTES	925,000.00	3.25	6/11/2021	6/12/2018	3.27	924,583.75
3135G0U35	FANNIE MAE NOTES	1,320,000.00	2.75	6/22/2021	6/25/2018	2.76	1,319,696.40
46647PAS5	JPMORGAN CHASE & CO CORP NOTES	925,000.00	3.51	6/18/2022	6/26/2018	3.50	926,286.57
931142EG4	WAL-MART STORES INC CORP NOTES	925,000.00	2.85	6/23/2020	6/27/2018	2.87	924,713.25
931142EJ8	WAL-MART STORES INC CORP NOTES	575,000.00	3.13	6/23/2021	6/27/2018	3.13	574,971.25
459058GH0	INTL BANK OF RECONSTRUCTION AND DEV NOTE	1,335,000.00	2.75	7/23/2021	7/25/2018	2.83	1,331,876.10
06370REU9	BANK OF MONTREAL CHICAGO CERT DEPOS	925,000.00	3.19	8/3/2020	8/3/2018	3.20	925,000.00
40054PAE5	GOLDMAN SACHS BANK USA CERT DEPOS	1,400,000.00	2.80	8/5/2019	8/13/2018	2.84	1,400,000.00
717081EM1	PFIZER INC CORP NOTE	575,000.00	3.00	9/15/2021	9/7/2018	3.05	574,223.75
9128284W7	US TREASURY NOTES	3,500,000.00	2.75	8/15/2021	9/7/2018	2.72	3,508,886.72
88579YBA8	3M COMPANY	340,000.00	3.00	9/14/2021	9/14/2018	3.07	339,303.00
89114QC71	TORONTO-DOMINION BANK	925,000.00	3.15	9/17/2020	9/17/2018	3.16	924,805.75
3130AEXV7	FEDERAL HOME LOAN BANKS NOTES (CALLABLE)	925,000.00	3.00	9/20/2021	9/20/2018	3.00	925,000.00
9128284W7	US TREASURY NOTES	1,100,000.00	2.75	8/15/2021	9/28/2018	2.91	1,098,933.26
9128284W7	US TREASURY NOTES	450,000.00	2.75	8/15/2021	10/4/2018	2.89	449,976.31
RE1061606	INDUSTRIAL BANK CDARS	5,077,887.90	0.50	10/10/2019	10/11/2018	0.51	5,077,887.90
9128284W7	US TREASURY NOTES	425,000.00	2.75	8/15/2021	10/11/2018	2.97	424,253.65
3130AF5B9	INDUSTRIAL BANK CDARS	5,077,887.90	0.50	10/10/2019	10/11/2018	0.00	5,077,887.90
3135G0U84	FANNIE MAE NOTES	1,850,000.00	2.88	10/30/2020	11/6/2018	2.95	1,848,111.72
	INDUSTRIAL BANK CDARS	5,110,911.79	1.50	11/7/2019	11/7/2018	0.00	5,110,911.79
09247XAJ0	BLACKROCK INC CORP NOTES	925,000.00	3.38	6/1/2022	11/9/2018	3.41	937,610.06
<u>Total Debt Service Reserve</u>							
912828C65	US TREASURY NOTES	11,325,000.00	1.625	3/31/2019	10/2/2018	2.392	11,283,542.41

Securities highlighted in **blue font** denote trades executed during the current month.

Investment Performance Report – November 2018



DC Water
Finance Division
Security Purchases
Last 6 Months

CUSIP	DESCRIPTION	PAR	COUPON	MATURITY DATE	SETTLE DATE	YTM	TRANSACTION AMOUNT
2018A Construction Fund							
06366HK48	BANK OF MONTREAL CHICAGO COMM PAPER	3,450,000.00	0.000	10/4/2018	6/6/2018	2.342	3,423,642.00
22533UL19	CREDIT AGRICOLE CIB NY COMM PAPER	3,450,000.00	0.000	11/1/2018	6/7/2018	2.416	3,416,753.50
25214PHP1	DEXIA CREDIT LOCAL SA NY COMM PAPER	3,500,000.00	0.000	2/26/2019	6/7/2018	2.551	3,436,346.67
46640QQ12	JP MORGAN SECURITIES LLC COMM PAPER	5,750,000.00	0.000	3/1/2019	6/7/2018	2.604	5,642,106.04
62479MM34	MUFG BANK LTD/NY COMM PAPER	3,450,000.00	0.000	12/3/2018	6/7/2018	2.484	3,408,486.92
89233HL10	TOYOTA MOTOR CREDIT CORP COMM PAPER	3,450,000.00	0.000	11/1/2018	6/7/2018	2.385	3,417,176.13
89233HQ15	TOYOTA MOTOR CREDIT CORP COMM PAPER	2,300,000.00	0.000	3/1/2019	6/7/2018	2.541	2,257,865.92
09659CQ19	BNP PARIBAS NY BRANCH COMM PAPER	3,500,000.00	0.000	3/1/2019	6/7/2018	2.510	3,436,661.67
912828T83	US TREASURY NOTES	29,380,000.00	0.750	10/31/2018	6/7/2018	2.089	29,247,819.94
912828U40	US TREASURY N/B	18,065,000.00	1.000	11/30/2018	6/7/2018	2.132	17,971,073.41
912828XS4	US TREASURY NOTES	4,795,000.00	1.250	5/31/2019	6/7/2018	2.336	4,745,948.69
21687BLW9	COOPERATIEVE RABOBANK U.A. COMM PAPER	3,375,000.00	0.000	11/30/2018	6/8/2018	2.369	3,337,101.56
21687BQ12	COOPERATIEVE RABOBANK U.A. COMM PAPER	2,380,000.00	0.000	3/1/2019	6/8/2018	2.468	2,337,794.67
63873KLW5	NATIXIS NY BRANCH COMM PAPER	3,500,000.00	0.000	11/30/2018	7/5/2018	2.416	3,466,042.22
912828A34	US TREASURY NOTES	7,370,000.00	1.250	11/30/2018	8/28/2018	2.100	7,376,280.11
912828D80	US TREASURY NOTES	1,850,000.00	1.625	8/31/2019	8/28/2018	2.450	1,849,682.66
2018B Construction Fund							
06366HK48	BANK OF MONTREAL CHICAGO COMM PAPER	4,400,000.00	0.000	10/4/2018	6/6/2018	2.342	4,366,384.00
13607FMH6	CANADIAN IMPERIAL HOLDING COMM PAPER	4,400,000.00	0.000	12/17/2018	6/7/2018	2.453	4,343,622.56
22533UL19	CREDIT AGRICOLE CIB NY COMM PAPER	4,400,000.00	0.000	11/1/2018	6/7/2018	2.416	4,357,598.67
25214PHP1	DEXIA CREDIT LOCAL SA NY COMM PAPER	4,400,000.00	0.000	2/26/2019	6/7/2018	2.551	4,319,978.67
46640QQ12	JP MORGAN SECURITIES LLC COMM PAPER	7,250,000.00	0.000	3/1/2019	6/7/2018	2.604	7,113,959.79
62479MM34	MUFG BANK LTD/NY COMM PAPER	4,400,000.00	0.000	12/3/2018	6/7/2018	2.484	4,347,055.78
89233HKS2	TOYOTA MOTOR CREDIT CORP COMM PAPER	4,350,000.00	0.000	10/26/2018	6/7/2018	2.384	4,310,302.63
89233HQ15	TOYOTA MOTOR CREDIT CORP COMM PAPER	1,500,000.00	0.000	3/1/2019	6/7/2018	2.541	1,472,521.25
09659CMX3	BNP PARIBAS NY BRANCH COMM PAPER	4,400,000.00	0.000	12/31/2018	6/7/2018	2.443	4,339,786.00
912828S68	US TREASURY N/B	9,920,000.00	0.750	7/31/2018	6/7/2018	1.874	9,929,439.16
912828RE2	US TREASURY NOTES	44,620,000.00	1.500	8/31/2018	6/7/2018	1.968	44,751,253.13
21687BMT5	COOPERATIEVE RABOBANK U.A. COMM PAPER	6,055,000.00	0.000	12/27/2018	6/8/2018	2.422	5,974,818.34
62479MSQ7	MUFG BANK LTD/NY COMM PAPER	1,500,000.00	0.000	5/24/2019	8/28/2018	2.635	1,471,306.67
63873KPU5	NATIXIS NY BRANCH COMM PAPER	4,400,000.00	0.000	2/28/2019	8/28/2018	2.526	4,344,677.33
89233HSQ8	TOYOTA MOTOR CREDIT CORP COMM PAPER	1,500,000.00	0.000	5/24/2019	8/28/2018	2.593	1,471,755.00
912828K5	US TREASURY NOTES	4,660,000.00	1.375	7/31/2019	8/28/2018	2.420	4,620,641.68
912828XS4	US TREASURY NOTES	27,200,000.00	1.250	5/31/2019	8/28/2018	2.370	27,055,302.60
912828C24	US TREASURY NOTES	830,000.00	1.500	2/28/2019	8/31/2018	2.266	826,855.08
912828D80	US TREASURY NOTES	28,225,000.00	1.625	8/31/2019	8/31/2018	2.457	27,994,569.34
912828WS5	US TREASURY NOTES	14,000,000.00	1.625	6/30/2019	8/31/2018	2.397	13,949,735.05

Securities highlighted in **blue font** denote trades executed during the current month.

Investment Performance Report – November 2018



DC Water
Finance Division
Security Sales
Last 6 Months

CUSIP	DESCRIPTION	PAR	COUPON	MATURITY DATE	SETTLE DATE	YTM	TRANSACTION AMOUNT
Operating Reserve Accounts							
3135G0J53	FNMA BENCHMARK NOTE	15,000.00	1.00	2/26/2019	6/6/2018	2.26	14,907.42
3135G0J53	FNMA BENCHMARK NOTE	1,425,000.00	1.00	2/26/2019	6/6/2018	2.26	1,416,204.58
3137EADZ9	FREDDIE MAC NOTES	1,700,000.00	1.13	4/15/2019	6/6/2018	2.29	1,685,964.38
037833BQ2	APPLE INC CORP NOTES	545,000.00	1.70	2/22/2019	6/7/2018	2.42	544,935.21
037833CB4	APPLE INC CORP NOTES	375,000.00	1.10	8/2/2019	6/7/2018	2.54	370,319.38
912828D23	US TREASURY NOTES	700,000.00	1.63	4/30/2019	6/8/2018	2.31	696,994.56
89114QB.J6	TORONTO DOMINION BANK NY CORP NOTES	900,000.00	1.45	8/13/2019	6/12/2018	2.76	890,858.75
912828D23	US TREASURY NOTES	15,000.00	1.63	4/30/2019	6/12/2018	2.31	14,938.83
912828WN6	US TREASURY NOTES	1,340,000.00	2.00	5/31/2021	6/25/2018	2.66	1,316,862.63
912828WN6	US TREASURY NOTES	935,000.00	2.00	5/31/2021	6/26/2018	2.65	919,198.93
912828D23	US TREASURY NOTES	750,000.00	1.63	4/30/2019	6/27/2018	2.32	747,584.91
912828D23	US TREASURY NOTES	225,000.00	1.63	4/30/2019	6/27/2018	2.32	224,275.48
912828D23	US TREASURY NOTES	525,000.00	1.63	4/30/2019	6/27/2018	2.32	523,309.44
459058FK4	INTL BANK OF RECON AND DEV SN NOTE	900,000.00	0.88	8/15/2019	7/25/2018	2.57	887,673.00
912828D23	US TREASURY NOTES	325,000.00	1.63	4/30/2019	7/25/2018	2.35	324,444.17
06367THQ6	BANK OF MONTREAL	900,000.00	1.50	7/18/2019	8/3/2018	2.69	890,473.50
084664CG4	BERKSHIRE HATHAWAY INC NOTES	130,000.00	1.70	3/15/2019	8/13/2018	2.36	130,406.76
19416QEF3	COLGATE-PALMOLIVE COMPANY CORP NOTES	925,000.00	1.75	3/15/2019	8/13/2018	2.44	927,917.86
912828D23	US TREASURY NOTES	250,000.00	1.63	4/30/2019	8/13/2018	2.35	249,879.84
037833CB4	APPLE INC CORP NOTES	525,000.00	1.10	8/2/2019	9/7/2018	2.58	518,651.88
594918BN3	MICROSOFT CORP NOTES	595,000.00	1.10	8/8/2019	9/7/2018	2.53	587,839.04
86958JHB8	SVENSKA HANDELSBANKEN NY CD	1,800,000.00	1.89	1/10/2019	9/7/2018	2.00	1,802,616.55
912828D23	US TREASURY NOTES	800,000.00	1.63	4/30/2019	9/7/2018	2.35	800,873.64
912828D23	US TREASURY NOTES	245,000.00	1.63	4/30/2019	9/10/2018	2.36	245,300.01
166764BH2	CHEVRON CORP NOTES	900,000.00	1.56	5/16/2019	9/14/2018	2.51	898,934.95
912828D23	US TREASURY NOTES	340,000.00	1.63	4/30/2019	9/14/2018	2.37	340,489.67
3130A8DB6	FHLB GLOBAL NOTE	825,000.00	1.13	6/21/2019	9/20/2018	2.49	818,945.53
912828D23	US TREASURY NOTES	110,000.00	1.63	4/30/2019	9/20/2018	2.39	110,183.27
94974BFQ8	WELLS FARGO & COMPANY NOTES	1,103,000.00	2.15	1/15/2019	9/28/2018	2.55	1,106,474.14
594918BV5	MICROSOFT CORP NOTES	445,000.00	1.85	2/6/2020	10/4/2018	2.80	440,830.60
36962G4R2	GENERAL ELECTRIC CAPITAL CORP CORP NOTE	425,000.00	4.38	9/16/2020	10/11/2018	3.60	432,347.48
3130A8DB6	FHLB GLOBAL NOTE	1,015,000.00	1.13	6/21/2019	11/6/2018	2.60	1,010,035.38
3137EAEB1	FHLMC REFERENCE NOTE	1,250,000.00	0.88	7/19/2019	11/6/2018	2.63	1,238,038.37
45818DX7	INTER-AMERICAN DEVELOPMENT BANK	1,260,000.00	1.00	5/13/2019	11/6/2018	2.63	1,255,496.20
3137EAEB1	FHLMC REFERENCE NOTE	1,000,000.00	0.88	7/19/2019	11/9/2018	2.66	990,433.61
2018A Construction Fund							
912828U40	US TREASURY N/B	3,475,000.00	1.00	11/30/2018	7/5/2018	2.07	3,463,391.45

Securities highlighted in **blue font** denote trades executed during the current month.

Investment Performance Report – November 2018



DC Water
Finance Division
Security Maturities
Last 6 Months

CUSIP	DESCRIPTION	PAR	COUPON	MATURITY DATE	SETTLE DATE	YTM	TRANSACTION AMOUNT
<u>Operating Reserve Accounts</u>							
RE0959834	INDUSTRIAL BANK CDARS	5,035,025.80	0.50	10/11/2018	10/11/2018	0.00	5,060,131.96
RE0959842	INDUSTRIAL BANK CDARS	5,085,490.22	0.50	11/8/2018	11/8/2018	0.00	5,110,848.01
<u>Total Debt Service Reserve</u>							
912828RH5	US TREASURY NOTES	4,975,000.00	1.38	9/30/2018	9/30/2018	0.00	4,975,000.00
912828T42	US TREASURY NOTES	6,460,000.00	0.75	9/30/2018	9/30/2018	0.00	6,460,000.00
<u>2018A Construction Fund</u>							
06366HK48	BANK OF MONTREAL CHICAGO COMM PAPER	3,450,000.00	-	10/4/2018	10/4/2018	0.00	3,450,000.00
912828T83	US TREASURY NOTES	29,380,000.00	0.75	10/31/2018	10/31/2018	0.00	29,380,000.00
22533UL19	CREDIT AGRICOLE CIB NY COMM PAPER	3,450,000.00	-	11/1/2018	11/1/2018	0.00	3,450,000.00
89233HL10	TOYOTA MOTOR CREDIT CORP COMM PAPER	3,450,000.00	-	11/1/2018	11/1/2018	0.00	3,450,000.00
21687BLW9	COOPERATIEVE RABOBANK U.A. COMM PAPER	3,375,000.00	-	11/30/2018	11/30/2018	0.00	3,375,000.00
63873KLW5	NATIXIS NY BRANCH COMM PAPER	3,500,000.00	-	11/30/2018	11/30/2018	0.00	3,500,000.00
912828A34	US TREASURY NOTES	7,370,000.00	1.25	11/30/2018	11/30/2018	0.00	7,370,000.00
912828U40	US TREASURY N/B	14,590,000.00	1.00	11/30/2018	11/30/2018	0.00	14,590,000.00
<u>2018B Construction Fund</u>							
912828S68	US TREASURY N/B	9,920,000.00	0.75	7/31/2018	7/31/2018	0.00	9,920,000.00
912828RE2	US TREASURY NOTES	44,620,000.00	1.50	8/31/2018	8/31/2018	0.00	44,620,000.00
06366HK48	BANK OF MONTREAL CHICAGO COMM PAPER	4,400,000.00	-	10/4/2018	10/4/2018	0.00	4,400,000.00
89233HKS2	TOYOTA MOTOR CREDIT CORP COMM PAPER	4,350,000.00	-	10/26/2018	10/26/2018	0.00	4,350,000.00
22533UL19	CREDIT AGRICOLE CIB NY COMM PAPER	4,400,000.00	-	11/1/2018	11/1/2018	0.00	4,400,000.00

Securities highlighted in **blue font** denote trades executed during the current month.



**DC Water
Finance Division
Upcoming Transaction Cash Flows
Next 30 Days**

DATE	TRANSACTION	CUSIP	DESCRIPTION	COUPON	MATURITY DATE	PAR VALUE/SHARES	PRINCIPAL	INTEREST	TOTAL
12/01/18	INTEREST	09247XAJ0	BLACKROCK INC CORP NOTES	3.375	06/01/22	925,000.00	0.00	15,609.38	15,609.38
12/05/18	INTEREST	06417GU22	BANK OF NOVA SCOTIA HOUSTON CD	3.080	06/05/20	925,000.00	0.00	14,086.72	14,086.72
12/07/18	INTEREST	78012UEE1	ROYAL BANK OF CANADA NY CD	3.240	06/07/21	700,000.00	0.00	11,277.00	11,277.00
12/11/18	INTEREST	89114QBZ0	TORONTO DOMINION BANK CORP NOTES	3.250	06/11/21	925,000.00	0.00	14,947.74	14,947.74
12/15/18	INTEREST	717081EB5	PFIZER INC CORP NOTE	1.700	12/15/19	300,000.00	0.00	2,550.00	2,550.00
12/15/18	INTEREST	717081EB5	PFIZER INC CORP NOTE	1.700	12/15/19	595,000.00	0.00	5,057.50	5,057.50
12/18/18	INTEREST	46647PAS5	JPMORGAN CHASE & CO CORP NOTES	3.514	06/18/22	925,000.00	0.00	16,252.25	16,252.25
12/22/18	INTEREST	3135G0U35	FANNIE MAE NOTES	2.750	06/22/21	1,320,000.00	0.00	17,847.50	17,847.50
12/23/18	INTEREST	931142EG4	WAL-MART STORES INC CORP NOTES	2.850	06/23/20	925,000.00	0.00	12,888.33	12,888.33
12/23/18	INTEREST	931142EJ8	WAL-MART STORES INC CORP NOTES	3.125	06/23/21	575,000.00	0.00	8,784.72	8,784.72
12/24/18	INTEREST	89152UAD4	TOTAL CAPITAL SA CORP NOTES	4.450	06/24/20	850,000.00	0.00	18,912.50	18,912.50
12/31/18	INTEREST	912828N48	US TREASURY NOTES	1.750	12/31/20	975,000.00	0.00	8,531.25	8,531.25
12/31/18	INTEREST	912828N48	US TREASURY NOTES	1.750	12/31/20	1,975,000.00	0.00	17,281.25	17,281.25
12/31/18	INTEREST	912828XH8	US TREASURY NOTES	1.625	06/30/20	1,825,000.00	0.00	14,828.13	14,828.13
12/31/18	INTEREST	912828XH8	US TREASURY NOTES	1.625	06/30/20	3,650,000.00	0.00	29,656.25	29,656.25

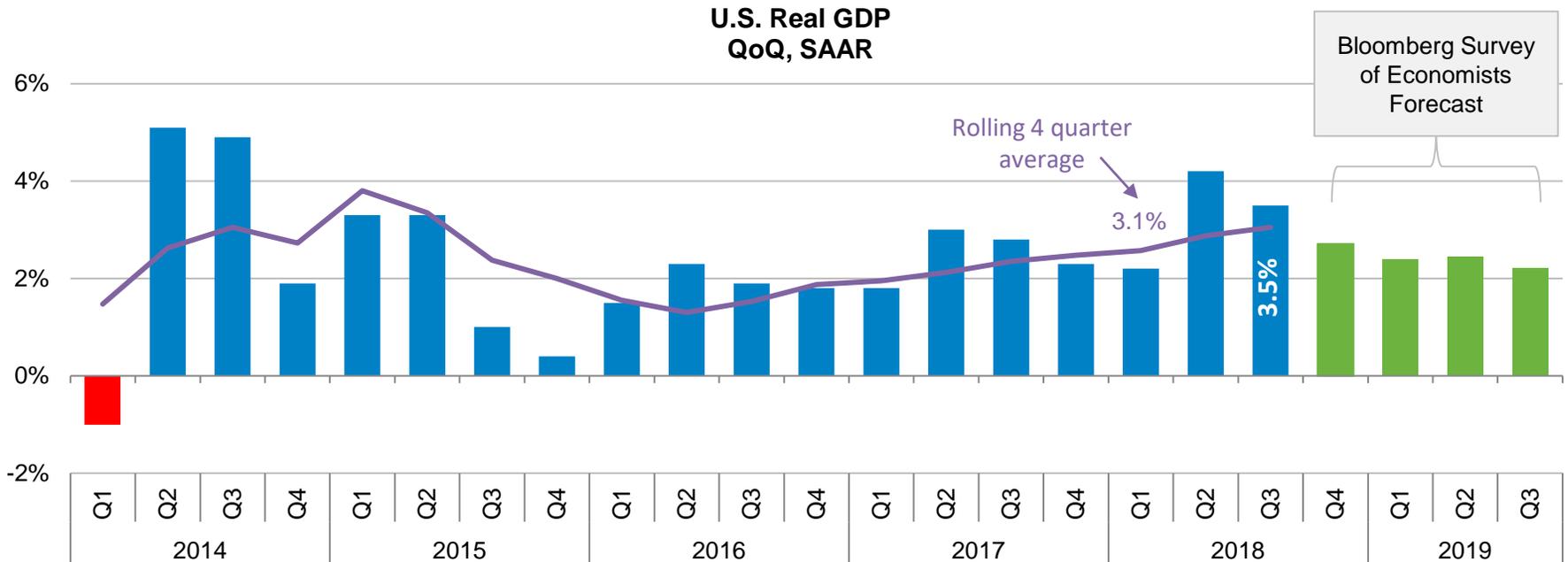


Appendix: Economic Update



Economic Growth Remains Solid in Third Quarter

- U.S. economic activity continued to expand at a strong pace in the third quarter
 - U.S. gross domestic product (GDP) grew at an annual rate of 3.5%, marking the strongest back-to-back quarters since 2014
 - Consumer spending, government spending, and the rebuilding of inventories, offsetting weak business investment, and a drop in U.S exports, were positive contributors.
- However, the rise in third quarter growth may not be sustainable, as reflected in moderated future growth forecasts
 - A widening trade deficit and slower housing market activity are expected headwinds



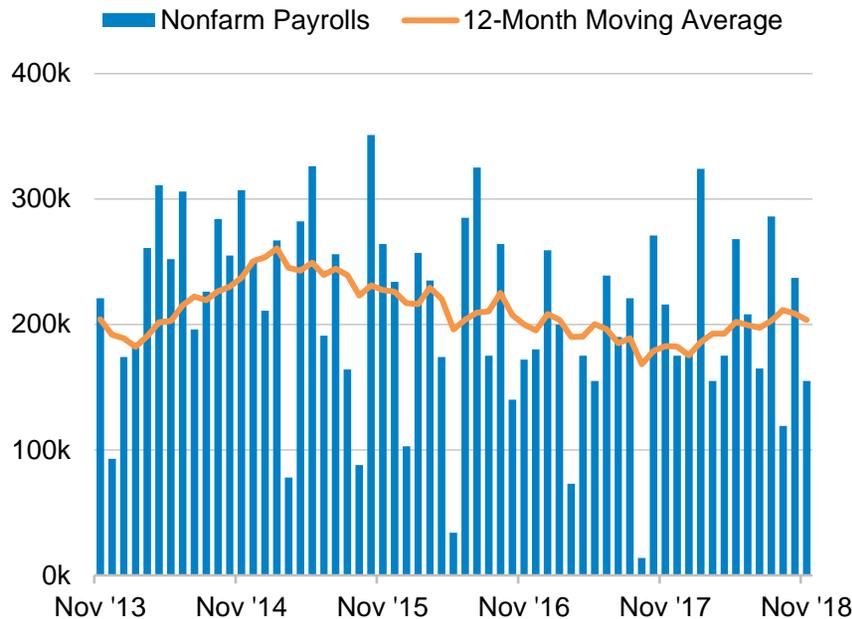
Source: Bloomberg, as of Q3 2018. SAAR is seasonally adjusted annualized rate. Orange denotes rolling four-quarter averages



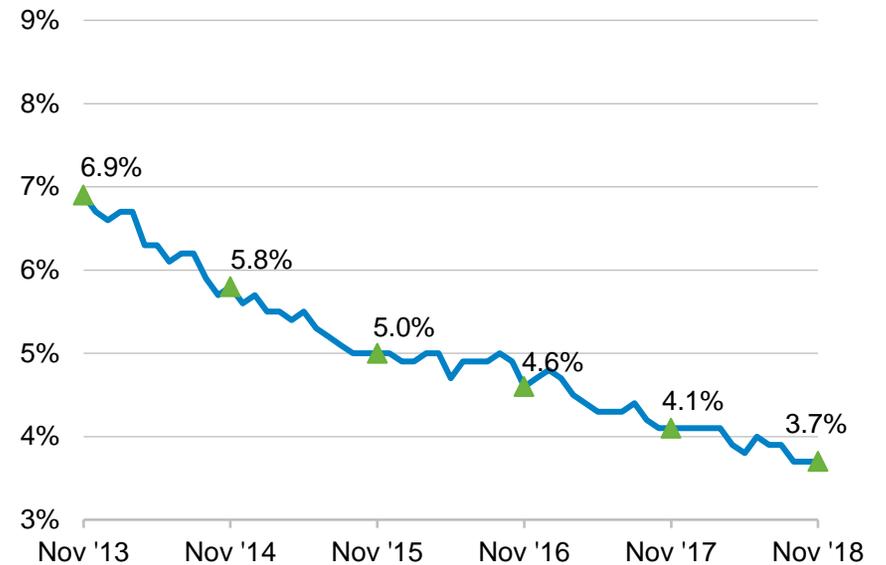
Labor Market Remains Strong in November

- The U.S. economy added 155,000 jobs in November, on the low-side of expectations.
- Job gains have averaged 206,000 per month so far this year
- The unemployment rate remained at 3.7% in November, the lowest level since 1969.
- Average hourly earnings – a key measure of wage growth – remained near the cyclical high of 3.1% in November.

Monthly Change in Nonfarm Payrolls



Unemployment Rate

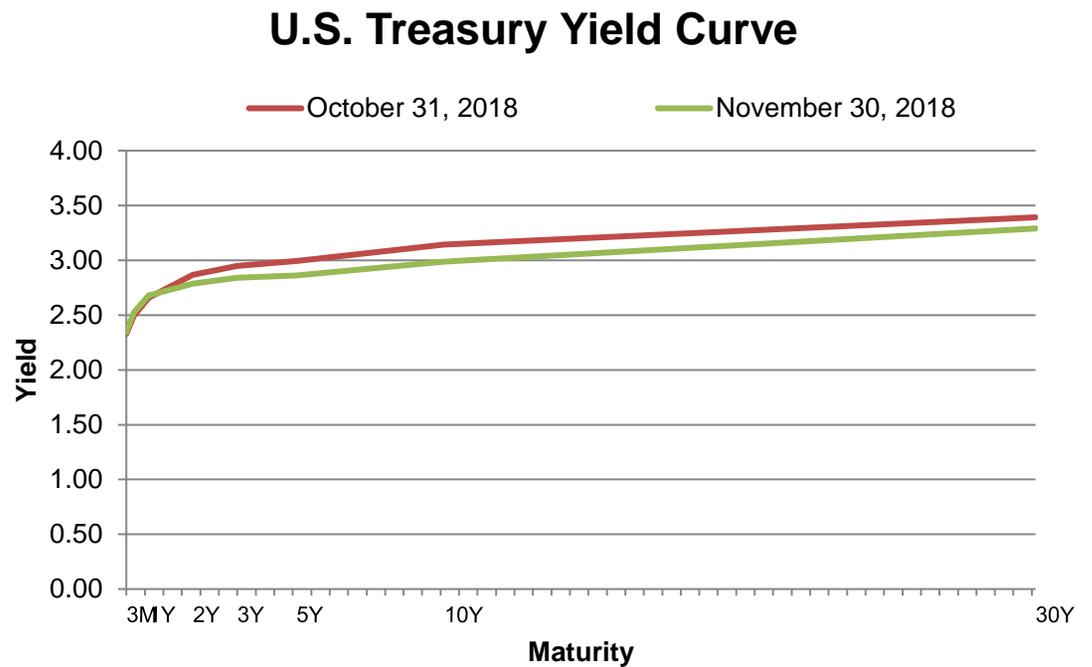


Source: Bloomberg, as of November 2018.



U.S. Treasury Yield Curve Flattens

	<u>10/31/18</u>	<u>11/30/18</u>	<u>Change</u>
3 month	2.33%	2.35%	0.02%
6 month	2.49%	2.52%	0.03%
1 year	2.66%	2.68%	0.02%
2 year	2.87%	2.79%	-0.08%
3 year	2.95%	2.84%	-0.11%
5 year	2.99%	2.86%	-0.13%
10 year	3.14%	2.99%	-0.15%
30 year	3.39%	3.29%	-0.10%

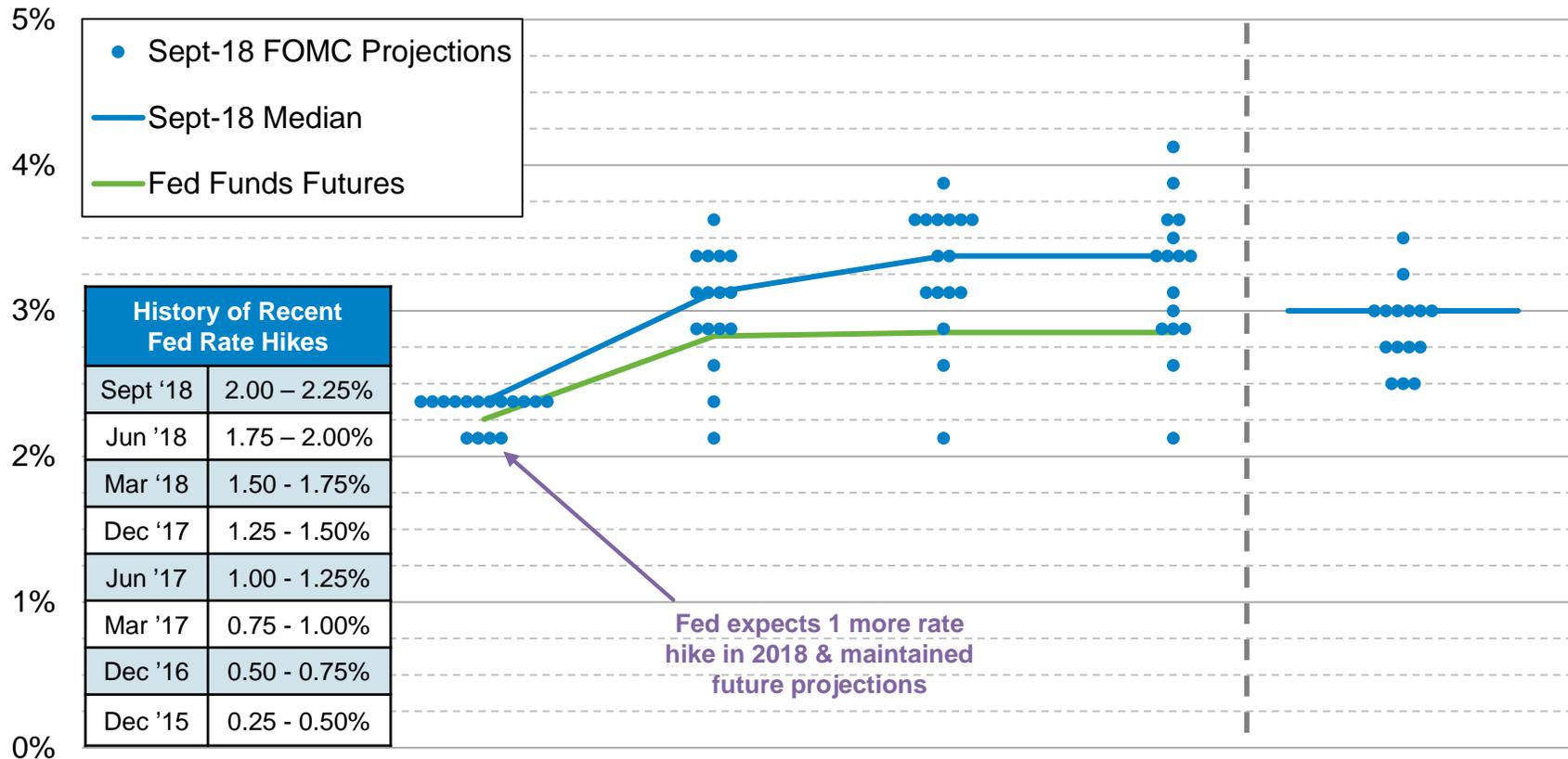


Source: Bloomberg



FOMC's September "Dot Plot" Projects One More Rate Hike in 2018

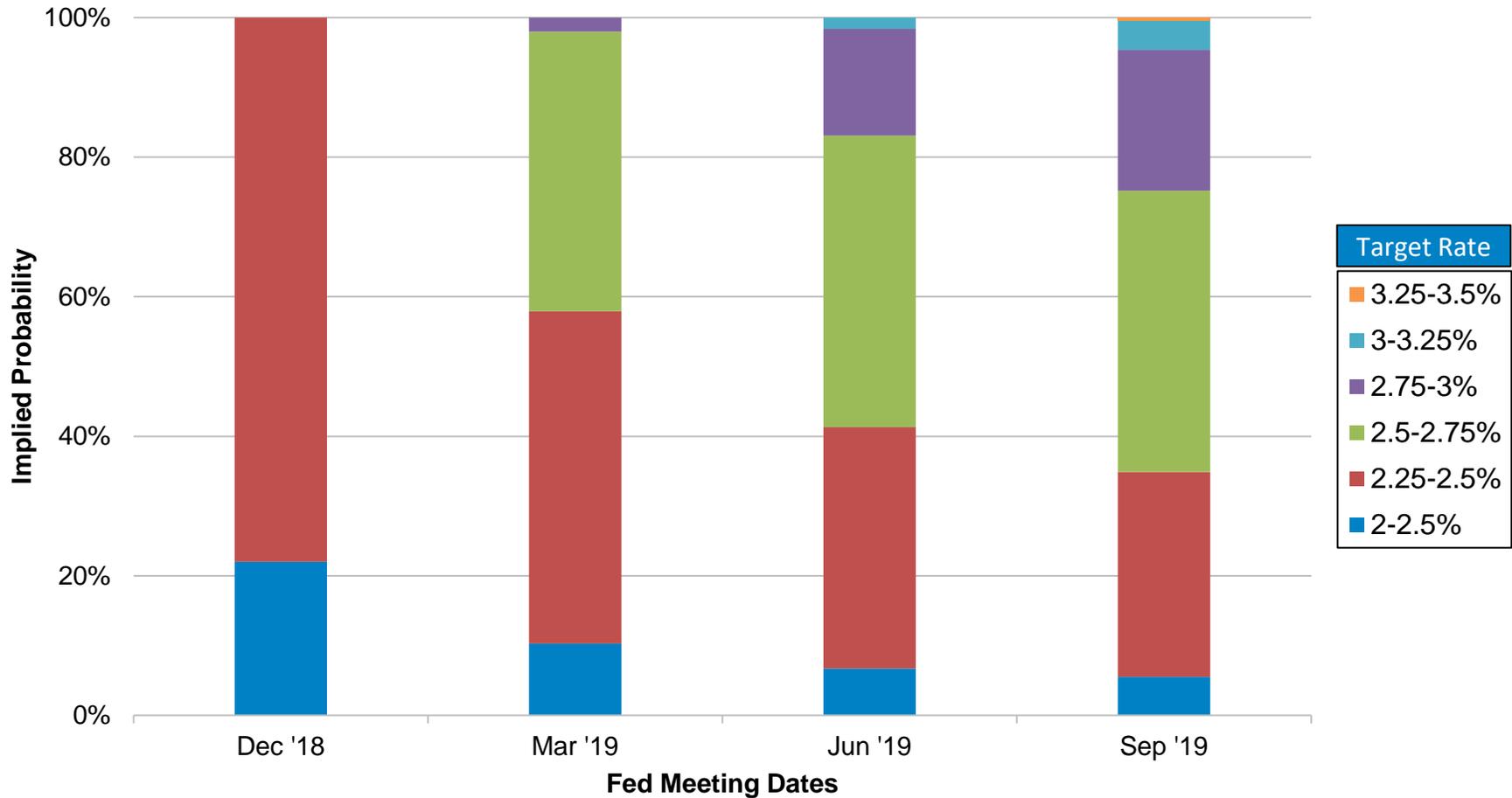
Fed Participants' Assessments of 'Appropriate' Monetary Policy



Source: Federal Reserve and Bloomberg. Individual dots represent each Fed members' judgement of the midpoint of the appropriate target range for the federal funds rate at each year-end. Fed funds futures as of 9/26/18.



Federal Reserve Rate Hike Probabilities



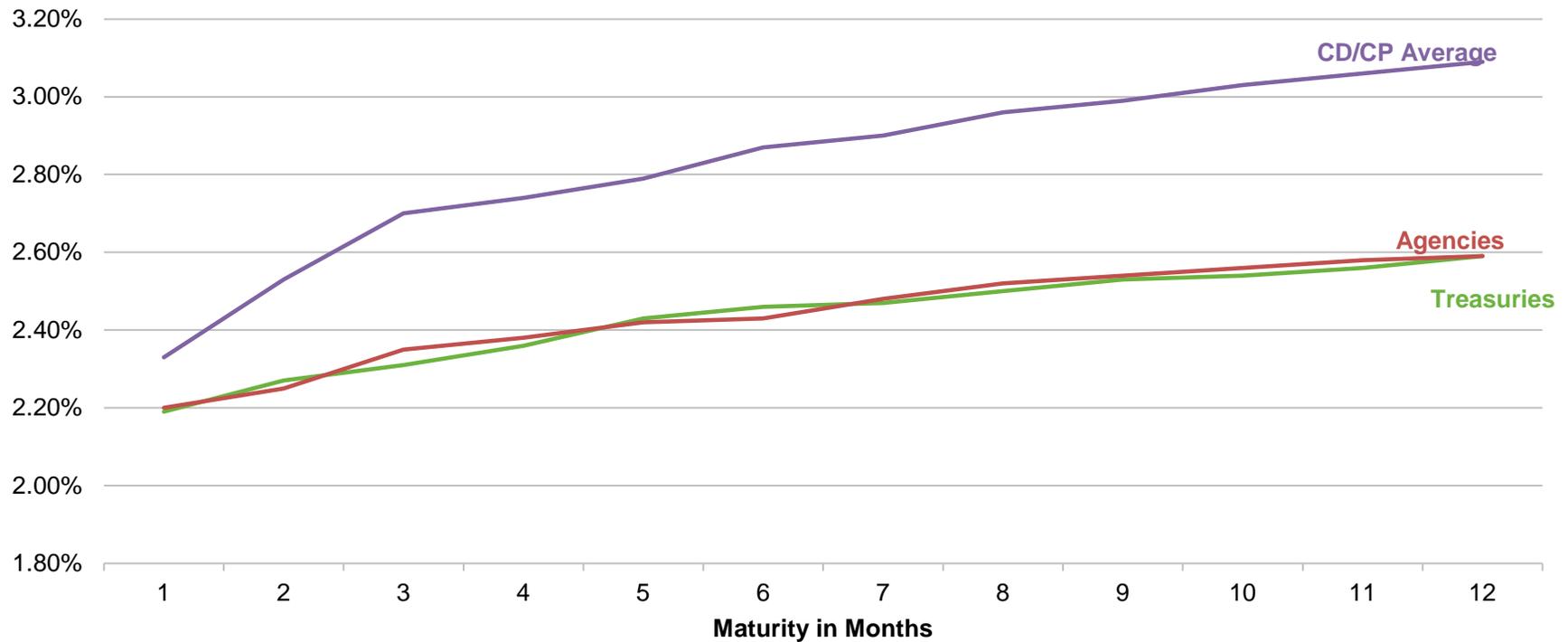
Source: Bloomberg, as of 11/30/18.



Current Short-Term Credit Environment

- Commercial paper and negotiable bank CDs remain attractive alternatives to short-term Treasuries, agencies, bank deposits, and government money market funds.

Money Market Yield Curves



Source: Bloomberg, PFMAM Trading Desk, as of 11/30/18. Not a specific recommendation.



Disclosure

This material is based on information obtained from sources generally believed to be reliable and available to the public, however PFM Asset Management LLC cannot guarantee its accuracy, completeness or suitability. This material is for general information purposes only and is not intended to provide specific advice or a specific recommendation. All statements as to what will or may happen under certain circumstances are based on assumptions, some but not all of which are noted in the presentation. Assumptions may or may not be proven correct as actual events occur, and results may depend on events outside of your or our control. Changes in assumptions may have a material effect on results. Past performance does not necessarily reflect and is not a guaranty of future results. The information contained in this presentation is not an offer to purchase or sell any securities.

CDARS holdings and Bank Deposits are not managed by PFMAM, and therefore we cannot guarantee the accuracy of holdings.



Path to Achieve Asset Management Financial Impacts - Customer & Debt Service

Presentation to the Finance and Budget Committee
December 18, 2018

District of Columbia Water and Sewer Authority





Agenda

- Review financial metrics important to DC Water and credit agencies
- Discuss the capital plan scenarios and their impact on those financial metrics
- Assess the impact of increased capital spending on our customers



Overview of Capital Improvement Program



Rolling 10 year CIP Options Compared

Service Area	Current Baseline	Modified Baseline	Asset Management
DCCR	Fully funded to meet Consent Decree	Fully funded to meet Consent Decree	Fully funded to meet Consent Decree
Wastewater	Generally funded to meet NPDES Permit and established levels of service	Fully funded to meet NPDES Permit and established levels of service	Fully funded to meet NPDES Permit and established levels of service
Stormwater	Underfunded	Fully funded	Fully funded
Water			
Pump Stations & Storage Facilities	Generally funded to current service levels	Generally funded	Fully funded
Small Diameter WMs	Underfunded to meet 1% replacement/rehab goal [11 mi/year]	Funded to meet 1% per year replacement level (increased cost is due to switch to full replacement)	Fully funded to ramp up to 2% replacement level [22 mi/year]
Large Diameter WMs	Generally funded	Generally funded	Generally funded
Sewer			
Pump Stations	Underfunded	Fully funded	Fully funded
Sewer Lines < 60" dia.	Substantially underfunded [0.35%; 6.2 mi/year]	Funded to ramp up to 1.0% per year rehabilitation level [17.5 mi/year] by FY23 and onwards	Fully funded to ramp up to 2.3% rehabilitation level [40 mi/year]
Sewer Lines ≥ 60"	Generally Funded	Generally Funded	Generally Funded
Non Process	Fully funded for HQ, Fleet and Sewer Operations Facilities	Fully funded for HQ, Fleet and Sewer Operations Facilities	Fully funded for HQ, Fleet and Sewer Operations Facilities



Rolling 10 year CIP Options

x1000's	Current Baseline \$4.1 Billion	Modified Baseline \$5.0 Billion	Asset Management \$6.5 Billion
Engineering CIP Total	<u>\$3,764,107</u>	<u>\$4,435,378</u>	<u>\$ 5,417,230</u>
Capital Equipment	Underfunded	Generally Funded	Fully Funded
	\$170,539	\$347,529	\$370,434
Washington Aqueduct	Generally Funded	Fully Funded except Federally Owned Water Main (FOWM) and Advanced Treatment	Fully Funded
	\$118,600	\$187,303	\$670,827
Additional Capital Programs Total	<u>\$289,139</u>	<u>\$534,832</u>	<u>\$1,041,261</u>
TOTAL	<u>\$4,053,246</u>	<u>\$4,970,211</u>	<u>\$ 6,458,490</u>



Summary of CIP Options by Program

\$ in thousands

Approved Baseline (+FY28) \$4.1 Billion	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	10 yr Total
Non Process Facilities	33,107	18,907	7,860	1,551	25	6,615	7,773	-	-	4,000	79,838
Wastewater Treatment	74,617	77,853	87,960	89,820	69,560	51,607	62,172	117,623	129,252	117,551	878,014
Combined Sewer Overflow	200,343	160,554	148,121	203,086	164,508	79,692	65,611	135,797	92,819	91,453	1,341,984
Stormwater	4,909	2,400	2,312	5,839	1,212	1,784	1,642	1,276	2,133	9,845	33,353
Sanitary Sewer	32,947	34,046	53,050	74,492	73,917	75,912	58,882	60,769	38,672	137,088	639,776
Water	45,747	84,256	62,341	48,241	53,471	88,055	99,661	101,344	89,510	118,514	791,143
Engineering CIP Total	391,670	378,015	361,644	423,029	362,694	303,666	295,742	416,809	352,386	478,452	3,764,107
Additional Capital Programs	47,448	42,327	41,037	22,618	22,618	22,618	22,618	22,618	22,618	22,619	289,139
Approved Total CIP	439,118	420,342	402,681	445,647	385,312	326,284	318,360	439,427	375,004	501,071	4,053,246

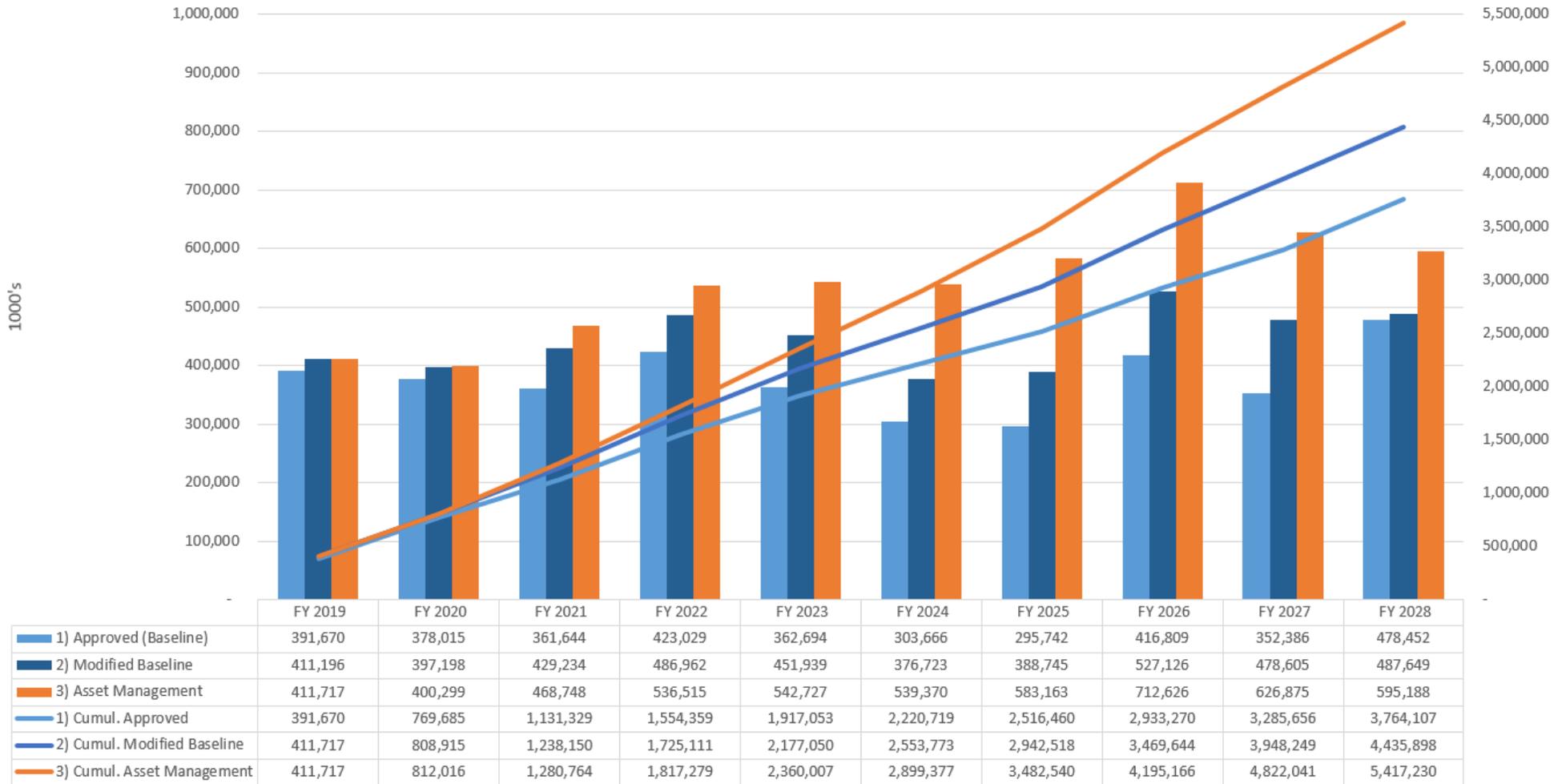
Modified Baseline Program \$5.0 Billion	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	10 yr Total
Non Process Facilities	16,199	42,778	25,341	13,765	7,379	12,159	11,181	4,618	4,201	-	137,621
Wastewater Treatment	82,299	68,754	91,798	95,749	97,391	74,295	82,081	132,586	136,626	122,192	983,771
Combined Sewer Overflow	196,349	153,703	147,502	198,384	157,582	76,745	64,354	150,798	102,978	90,974	1,339,369
Stormwater	7,513	8,495	2,741	7,865	3,679	4,935	7,485	7,452	5,204	10,020	65,390
Sanitary Sewer	41,926	41,324	46,858	74,412	103,622	105,173	114,705	124,868	126,915	145,502	925,305
Water	66,911	82,143	114,995	96,786	82,287	103,415	108,939	106,804	102,681	118,961	983,923
Engineering CIP Total	411,196	397,198	429,234	486,962	451,939	376,723	388,745	527,126	478,605	487,649	4,435,378
Additional Capital Programs	47,624	52,740	50,165	48,408	67,416	51,509	68,272	44,461	46,637	57,600	534,832
Total Modified Baseline CIP	458,821	449,939	479,400	535,369	519,355	428,232	457,017	571,587	525,242	545,250	4,970,211
Increases vs Approved CIP	19,703	29,596	76,718	89,722	134,043	101,948	138,657	132,159	150,237	44,179	916,964

Asset Management \$6.5 Billion	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	10 yr Total
Non Process Facilities	29,858	25,023	24,844	13,827	7,368	14,819	8,474	4,699	4,203	4,209	137,324
Wastewater Treatment	79,332	61,577	90,835	95,631	98,586	101,248	128,046	165,588	138,019	117,551	1,076,413
Combined Sewer Overflow	194,678	156,246	151,227	202,584	159,117	73,113	61,239	151,243	102,210	91,453	1,343,109
Stormwater	6,076	10,216	5,957	12,393	10,502	11,957	14,056	14,873	13,625	9,845	109,502
Sanitary Sewer	39,661	65,672	73,524	106,648	141,754	169,990	189,267	196,194	192,779	192,746	1,368,234
Water	62,113	81,566	122,361	105,433	125,400	168,242	182,081	180,030	176,039	179,383	1,382,647
Engineering CIP Total	411,717	400,299	468,748	536,515	542,727	539,370	583,163	712,626	626,875	595,188	5,417,230
Additional Capital Programs	51,996	53,202	56,493	76,500	89,975	121,266	81,928	58,231	395,774	55,895	1,041,261
Total AM CIP	463,712	453,501	525,241	613,015	632,703	660,636	665,091	770,857	1,022,650	651,083	6,458,490
Increases vs Approved CIP	24,595	33,159	122,560	167,367	247,391	334,353	346,732	331,430	647,646	150,013	2,405,244



Summary of CIP Plan Options

Summary of 10-yr CIP Plans Options (FY19-28)





Financial Metrics and Impacts



Value of Robust Credit Ratings

- Current credit ratings unlock significant value given size and scope of new money capital plan and potential refinancing
- 20-year average life for \$2 billion of capital borrowing

Rating	Yield Differential vs. AAA Rating	Individual Bond Sale (\$200 million)			Aggregate Debt Issuance for Capital Program (\$2 billion)		
		Annual Cost Differential (\$200 million)	Total Cost Differential (Through Maturity)	PV at 4%	Annual Cost (\$2 billion)	Total Cost Differential (Through Maturity)	PV at 4% (\$200MM Issued Annually, 10 Yrs)
AAA	0.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
AA+	0.10%	200,000	4,000,000	2,708,463	2,000,000	40,000,000	19,071,322
AA	0.20%	400,000	8,000,000	5,416,927	4,000,000	80,000,000	38,142,644
AA-	0.30%	600,000	12,000,000	8,125,390	6,000,000	120,000,000	57,213,966
A+	0.40%	800,000	16,000,000	10,833,853	8,000,000	160,000,000	76,285,288
A	0.50%	1,000,000	20,000,000	13,542,316	10,000,000	200,000,000	95,356,610
A-	0.60%	1,200,000	24,000,000	16,250,780	12,000,000	240,000,000	114,427,932



Select Peer Group

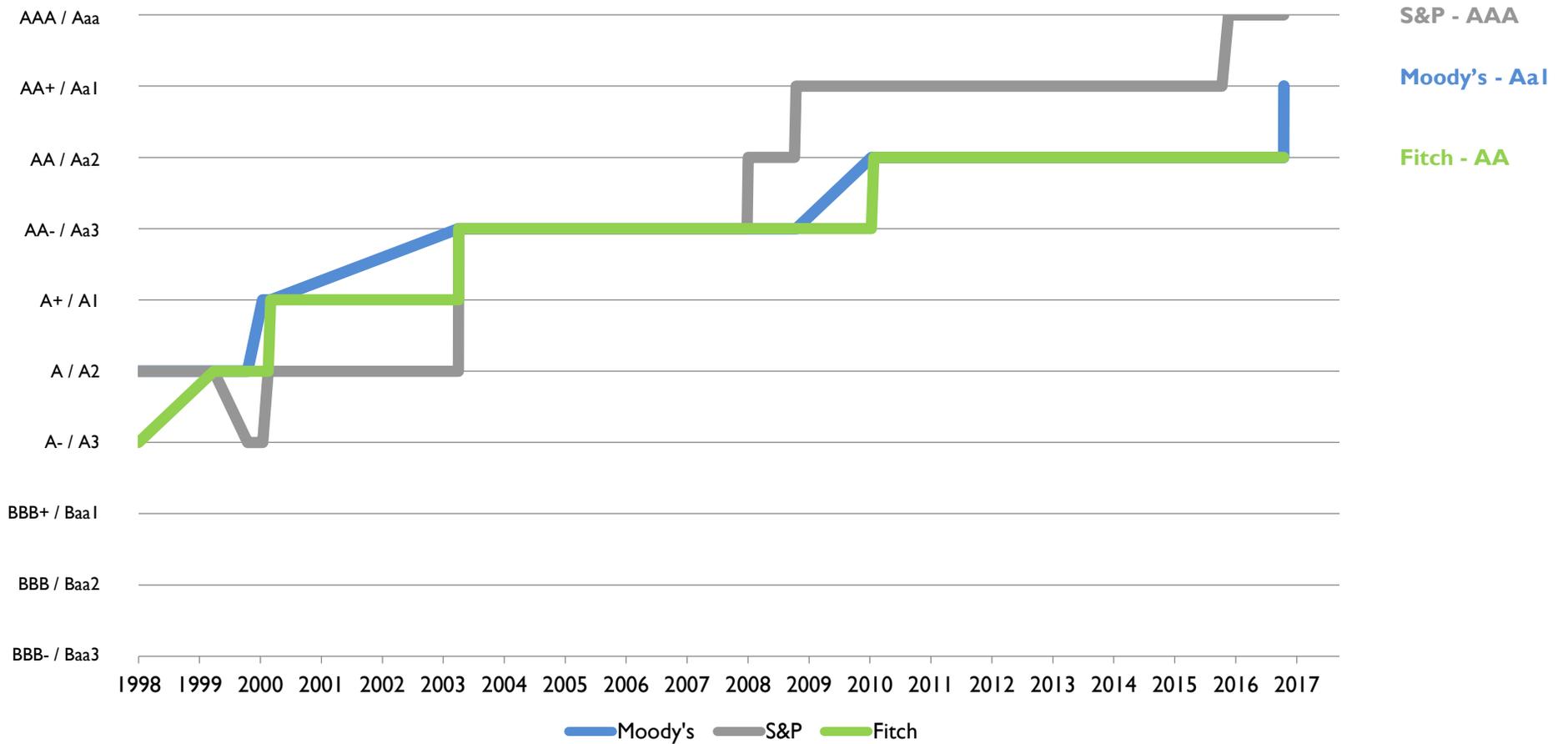
Triple AAA and double AA rated companies within the water and sewer industry

Selected Peer	Type	Moody's Rating (Senior)	S&P Rating (Senior)	Total Operating Revenues (\$000s)	Total Annual Debt Service (\$000s)	Debt Ratio	Long Term Debt (\$000s)	Total Debt Service Coverage	DS as a % of Total Operating Revenues	Days Cash on Hand	Average Bill as % of Median Effective Buying Income
Atlanta, GA	Water & Sewer	Aa2	AA-	486,285	213,856	45.6%	2,924,317	1.9x	44.0%	1,364	4.1%
Charlotte, NC	Water & Sewer	Aaa	AAA	378,019	132,439	40.9%	1,527,327	1.8x	35.0%	864	2.0%
Dallas, TX	Water & Sewer	Aa1	AAA	632,469	182,000	46.7%	2,605,865	2.1x	28.8%	225	1.8% ¹
DC Water	Water & Sewer	Aa1	AAA	624,447	169,346	62.8%	3,224,567	1.9x	27.1%	259	1.6%
Louisville MSD, KY	Sewer	Aa3	AA	273,907	137,857	61.9%	1,865,260	1.4x	50.3%	220	1.3% ¹
Metro St. Louis Sewer District, MO	Sewer	Aa1	AAA	333,470	69,328	40.4%	1,351,437	2.4x	20.8%	623	1.2% ¹
NE Ohio Regional Sewer District	Sewer	Aa1	AA+	343,880	110,603	50.4%	1,546,085	1.9x	32.2%	754	2.3%
NYC Water	Water & Sewer	Aa1	AAA	3,828,715	821,000	97.8%	31,266,750	3.1x	21.4%	382	2.2%
San Antonio, TX	Water & Sewer	Aa1	AA+	678,110	173,005	46.0%	2,811,870	2.1x	25.5%	440	1.7%



Senior Lien Credit Rating History

Senior Lien Ratings History (1998 – Present)





Summary of DC Water Unrestricted Days Cash and Investments

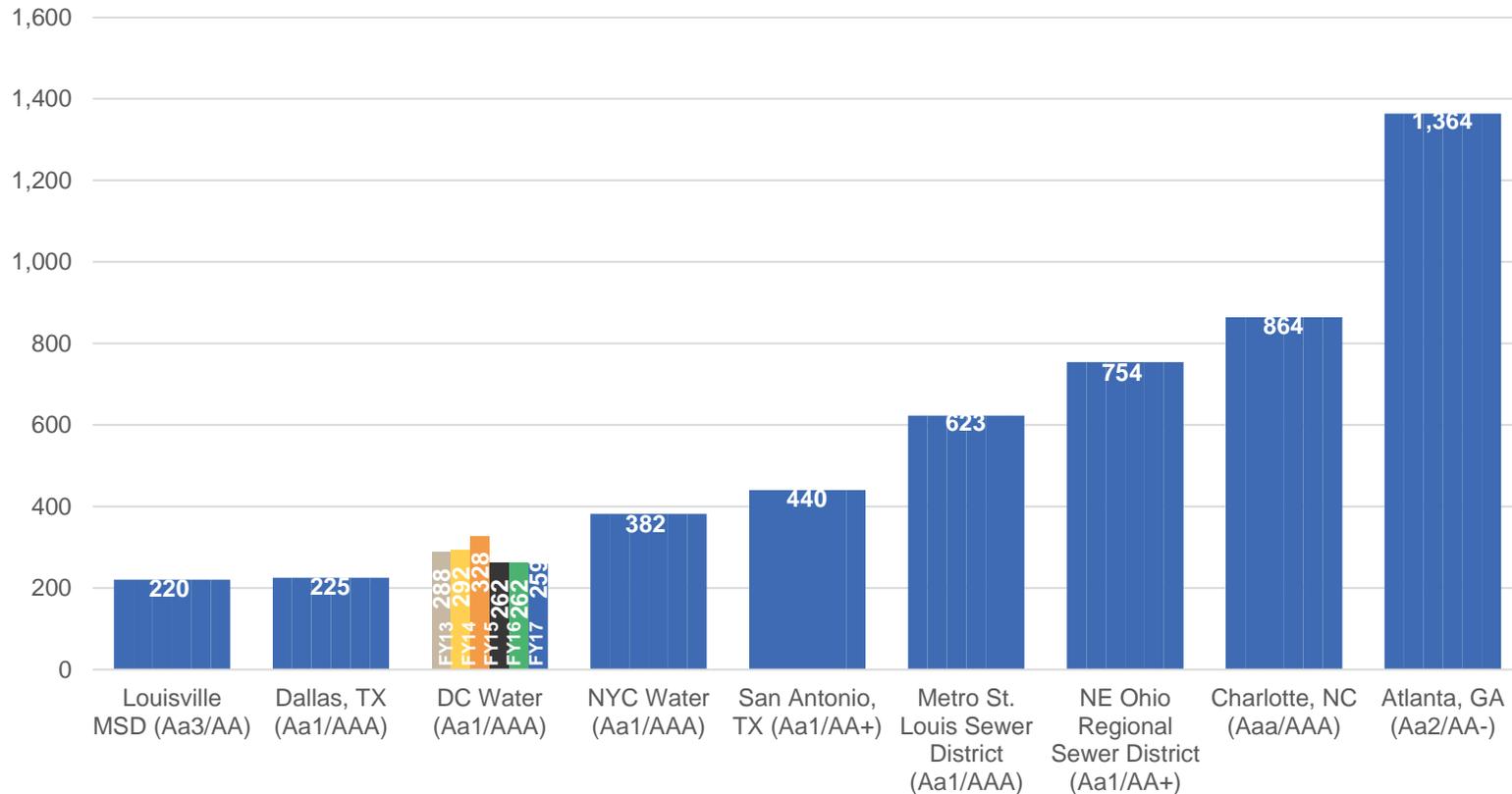
🔹 Days of cash on hand from FY2015 to FY2017

Source	FY 2017		FY 2016		FY 2015	
	\$	Days O&M (days)	\$	Days O&M (days)	\$	Days O&M (days)
Renewal and Replacement Fund	\$35.0 million	44	\$35.0 million	43	\$35.0 million	49
Required O&M Reserve	\$49.8 million	62	\$49.1 million	60	\$46.4 million	63
Discretionary Reserves	\$62.4 million	76	\$78.5 million	96	\$78.7 million	106
Rate Stabilization Fund	\$62.5 million	77	\$51.5 million	63	\$32.5 million	44
Total	\$209.7 million	259	\$214.0 million	262	\$192.6 million	262
O&M Expense ¹	\$299.7 million		\$303.5 million		\$274.4 million	



Days of Cash on Hand

- Days of cash on hand is an important measure of short and long term liquidity due to operational needs of an organization; DC Water typically exceeds 250 days of cash
- Current Board policy is to keep \$120 million, or 120 days of cash on hand, but to maintain current credit ratings, DC Water should keep 250+ days cash on hand
- All three scenarios hold Days of Cash on hand to 250 days





Days of Cash Calculation

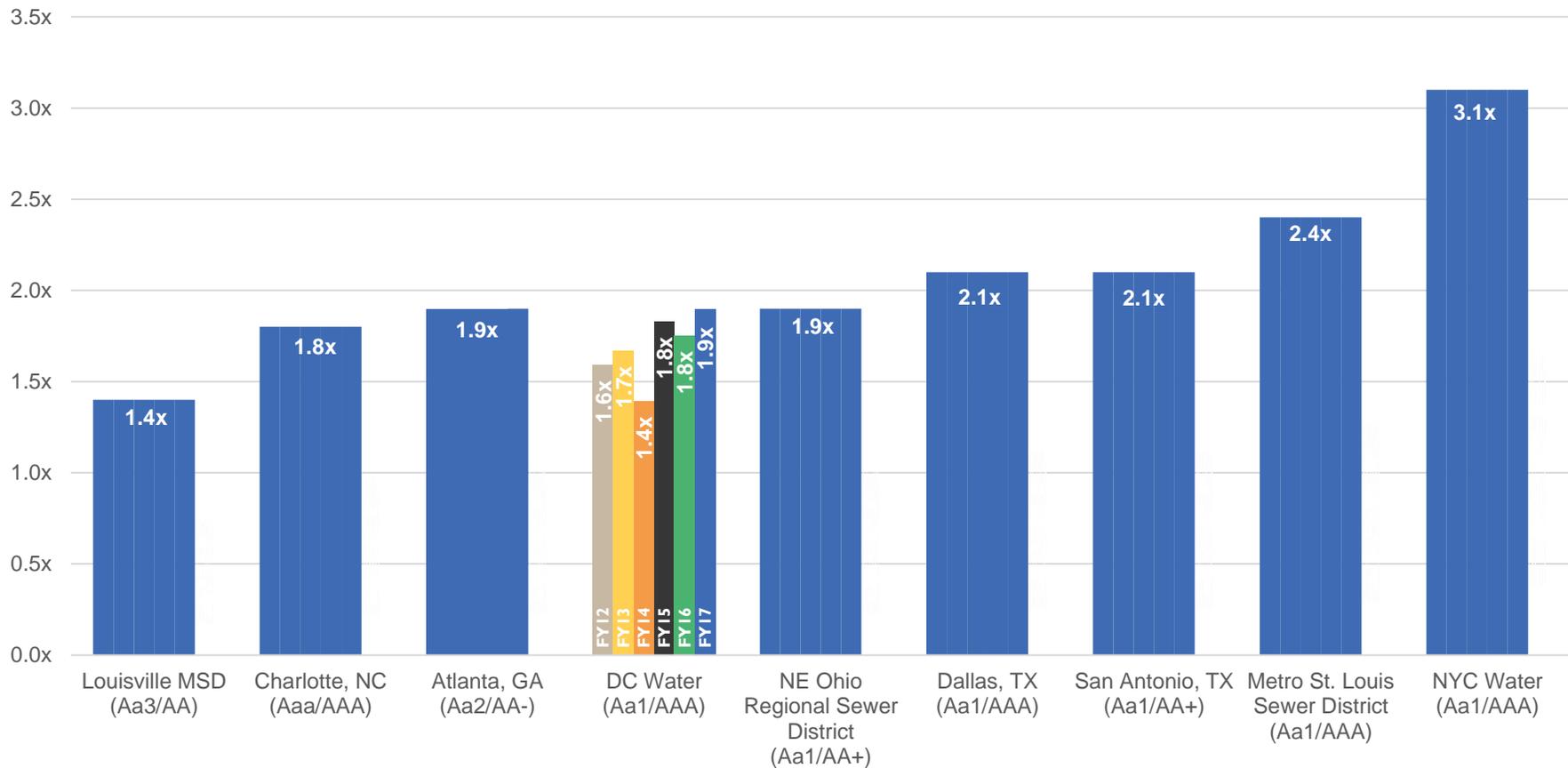
- DC Water is recognized by rating agencies for having over 250 days of cash
- Board Policy is 120 days-of-cash

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
Operating and Maintenance	\$ 313,869,035	\$ 320,137,447	\$ 338,498,706	\$ 348,334,650	\$ 358,462,353	\$ 368,890,500	\$ 379,628,035
Less: PILOT, ROW & Stormwater	21,057,041	21,376,182	23,701,706	22,033,740	23,372,415	22,717,863	23,429,624
Net Operating and Maintenance	\$ 292,811,994	\$ 298,761,265	\$ 314,797,000	\$ 326,300,910	\$ 335,089,938	\$ 346,172,637	\$ 356,198,411
Daily Operating Expenditures	\$ 813,367	\$ 829,892	\$ 874,436	\$ 906,391	\$ 930,805	\$ 961,591	\$ 989,440
Ending Cash Balance	\$ 147,212,244	\$ 166,795,693	\$ 140,000,000	\$ 140,000,000	\$ 140,000,000	\$ 140,000,000	\$ 140,000,000
Rate Stabilization Fund (RSF)	\$ 61,450,000	\$ 61,450,000	\$ 55,450,000	\$ 55,450,000	\$ 55,450,000	\$ 55,450,000	\$ 55,450,000
Ending Cash Balance including RSF	208,662,244	228,245,693	195,450,000	195,450,000	195,450,000	195,450,000	195,450,000
Days Cash on Hand	257	276	223	216	210	204	198



Coverage

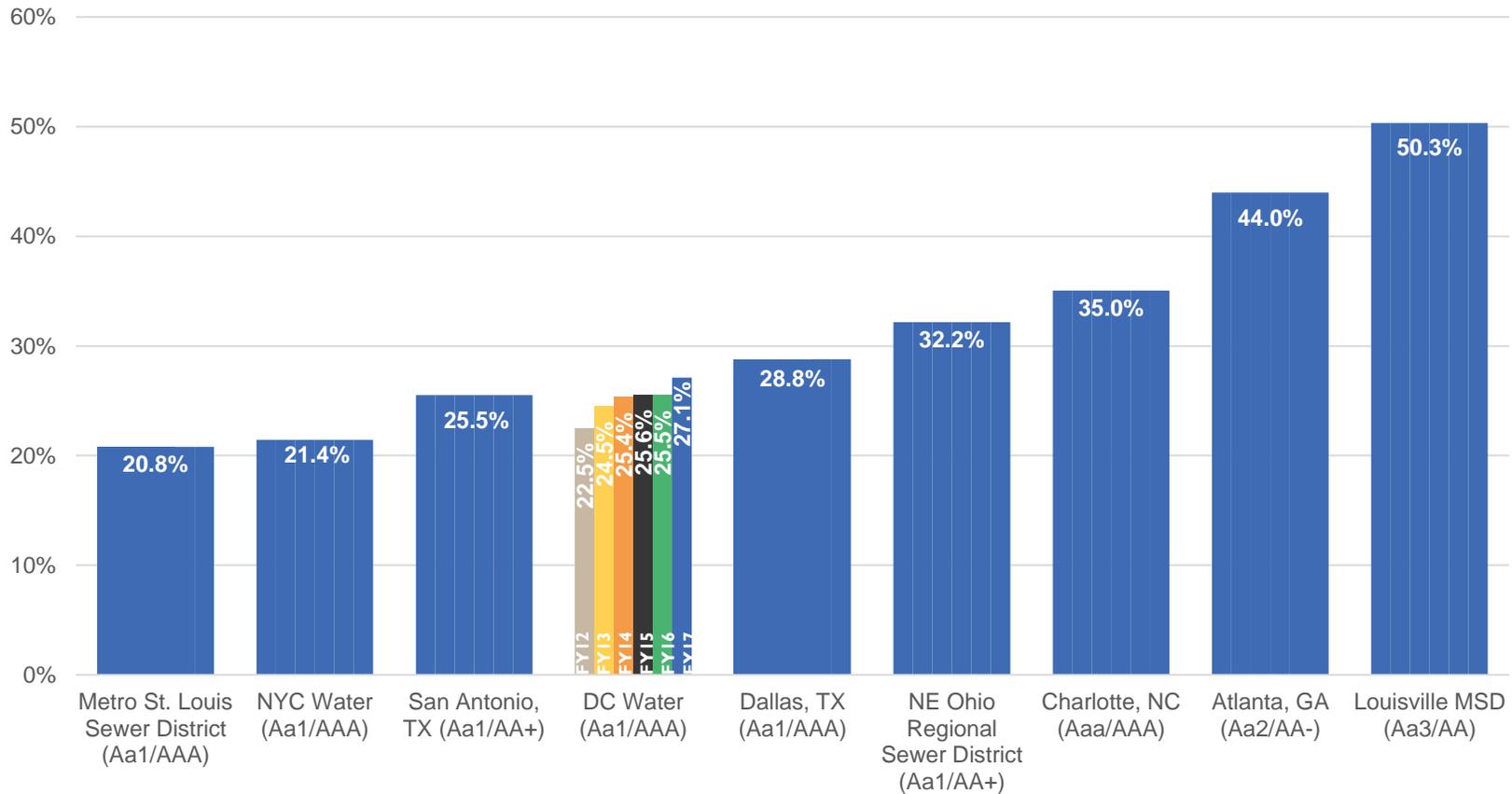
- Senior lien debt service coverage is typically at or above 3x each year, where management budgets combined coverage to achieve 1.6x - 1.7x
- Coverage for utilities with AAA rating range is typically from 1.8 to 3.1
- All three scenarios maintain combined coverage at 1.6x - 1.7x





Debt Service as Percent of Revenue

- Large capital program creates high leverage with projected rate increases for increasing annual debt service costs
- FY2019 budgeted debt service is 30.7% of revenues
- All three scenarios hold debt service as 33% of revenues, or less





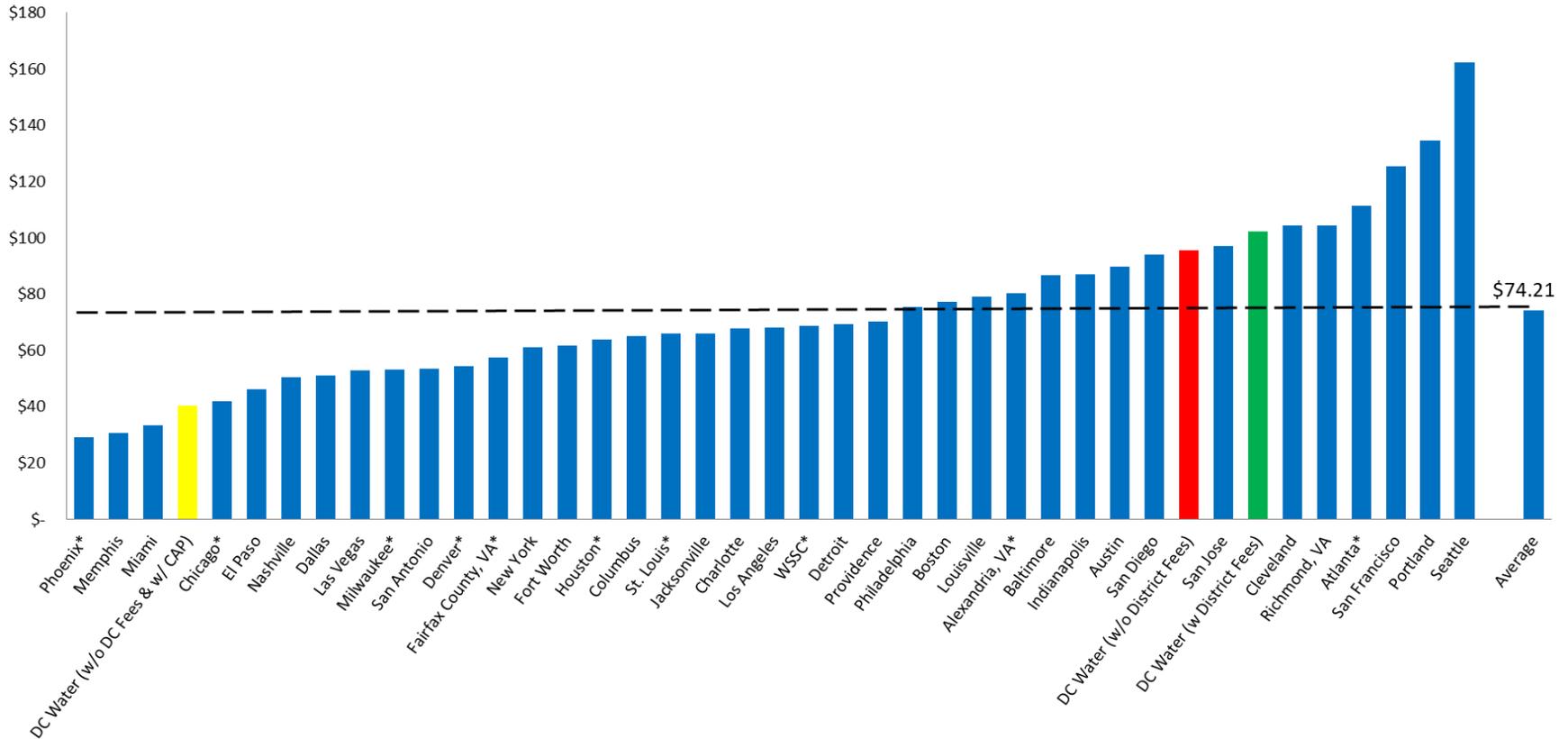
Other Financial Metrics

- PAYGO is the use of cash, rather than borrowing, for capital expenditures
 - Baseline - \$1.6 Billion
 - Modified Baseline - \$2.0 Billion
 - Asset Management - \$2.3 Billion

- New Borrowing
 - Baseline - \$1.3 Billion
 - Modified Baseline - \$ 1.8 Billion
 - Asset Management - \$ 2.6 Billion



DC Water Retail Rates Compared to Other Large Utilities

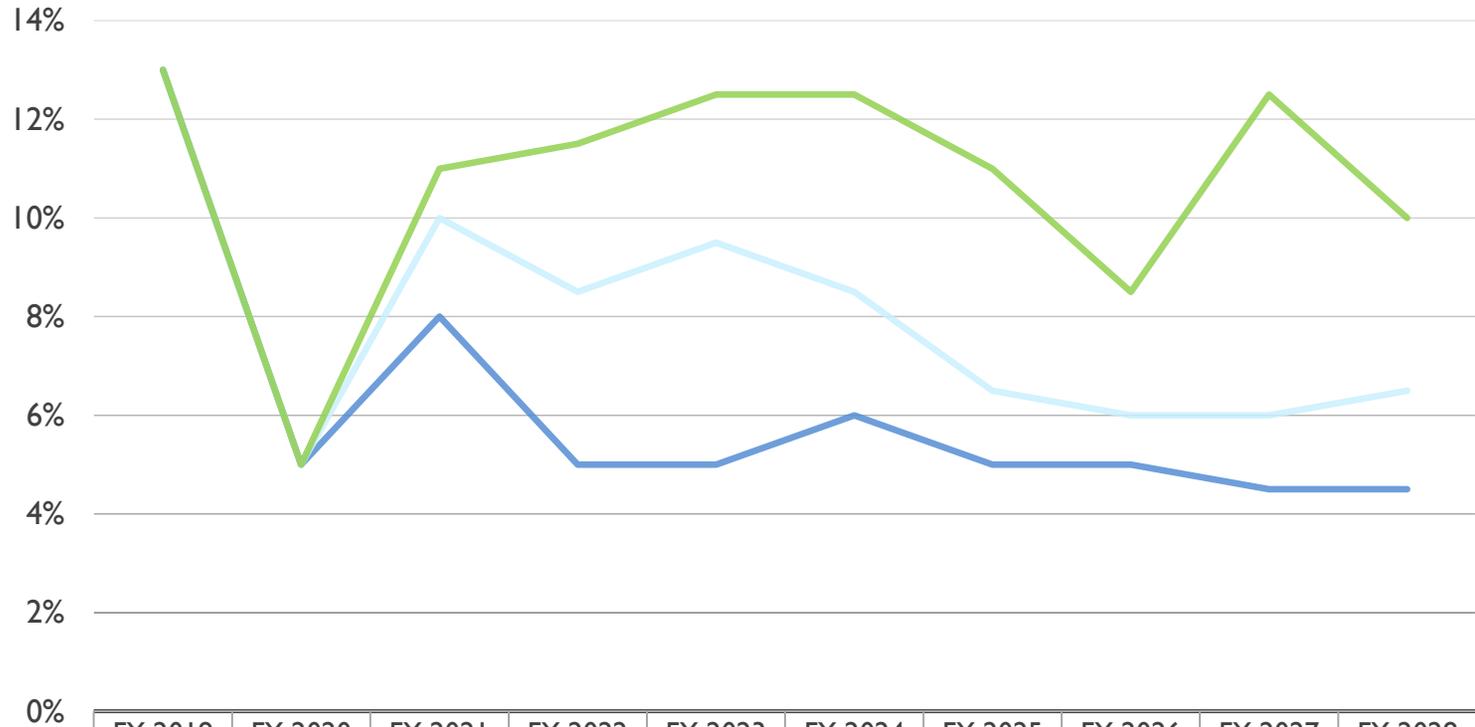


- (1) Assumes average residential consumption of 6.20 Ccf, or 4,638 gallons, per month. Ccf = hundred cubic feet, or 748 gallons
- (2) Reflects rates and fees in place as of March 1, 2018. The Authority's rate includes the PILOT/ROW fee totaling \$0.67 per Ccf (effective October 1, 2017) and the DOEE residential stormwater rate of \$2.67 per ERU per month
- (3) Some cities use property tax revenue or other revenues to pay for part of the cost of water, wastewater, or stormwater services, as indicated by * in the graph above. In such situations, the user charge will not reflect the full cost of water, wastewater or stormwater services
- (4) Based on rates in effect Spring 2018



Water and Sewer Rates

Water and Sewer rates will increase under all of the scenarios

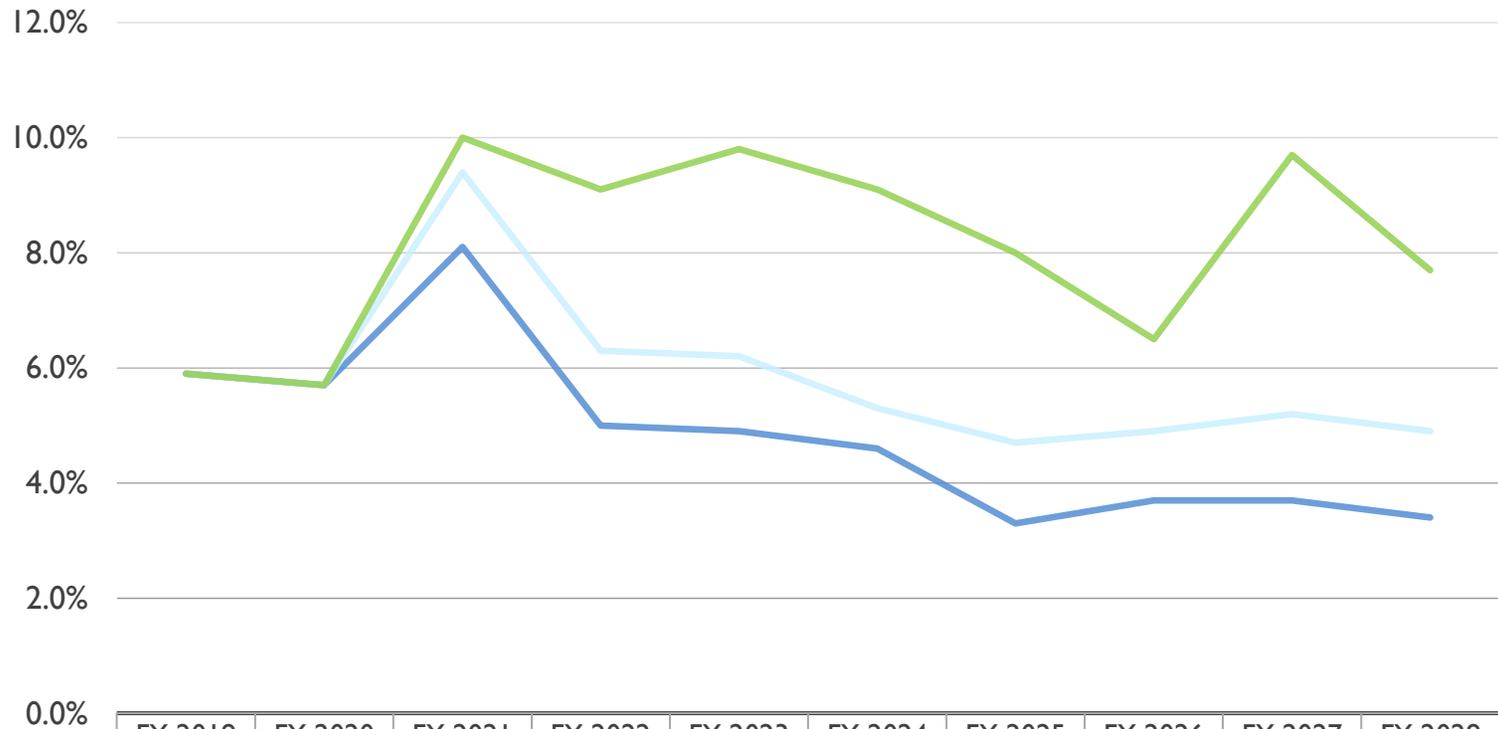


	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Baseline	13%	5%	8%	5%	5%	6%	5%	5%	5%	5%
Modified	13%	5%	10%	9%	10%	9%	7%	6%	6%	7%
Asset Management	13%	5%	11%	12%	13%	13%	11%	9%	13%	10%



Average Residential Customer Bill – Percentage Increases

- Average residential customer bill percentage increases under all of the scenarios



	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Baseline	5.9%	5.7%	8.1%	5.0%	4.9%	4.6%	3.3%	3.7%	3.7%	3.4%
Modified	5.9%	5.7%	9.4%	6.3%	6.2%	5.3%	4.7%	4.9%	5.2%	4.9%
Asset Management	5.9%	5.7%	10.0%	9.1%	9.8%	9.1%	8.0%	6.5%	9.7%	7.7%



Customer Bill Comparisons

	Average Residential 6.2 Ccf 1 ERU			Multi-family 92.6 Ccf 6.3 ERU			Commercial 114 Ccf 13.1 ERU			Average Residential Customer Bill as % of MHI -		
	Base Line	Mod	Asset Mgt	Base Line	Mod	Asset Mgt	Base Line	Mod	Asset Mgt	Base Line	Mod	Asset Mgt
Average Annual Rate Increase	6.1%	7.9%	10.8%	6.1%	7.9%	10.8%	6.1%	7.9%	10.8%			
Average Bill FY 2019	\$108	\$108	\$108	\$1,303	\$1,303	\$1,302	\$1,850	\$1,850	\$1,850	1.5%	1.5%	1.5%
Average Bill FY 2023	\$136	\$145	\$151	\$1,633	\$1,757	\$1,851	\$2,331	\$2,495	\$2,617	1.6%	1.7%	1.7%
Average Bill FY 2028	\$164	\$185	\$224	\$2,017	\$2,328	\$2,915	\$2,848	\$3,262	\$4,025	1.6%	1.8%	2.1%



Retail Customer Impacts

Baseline (Proposed) \$4.0 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	8.0%	5.0%	5.0%	6.0%	5.0%	5.0%	4.5%	4.5%
CRIAC (\$/ERU)	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.66	\$34.75	\$35.45	\$36.46	37.08
Avg. Customer Bill (\$)	\$108	\$114	\$124	\$130	\$136	\$143	\$147	\$153	\$158	\$164
Avg. Customer Bill (%)	5.9%	5.7%	8.1%	5.0%	4.9%	4.6%	3.3%	3.7%	3.7%	3.4%

Modified Baseline \$4.6 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	10.0%	8.5%	9.5%	8.5%	6.5%	6.0%	6.0%	6.5%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Customer Bill (\$)	\$108	\$114	\$125	\$134	\$145	\$154	\$161	\$168	\$176	\$185
Avg. Customer Bill (%)	5.9%	5.7%	9.4%	6.3%	6.2%	5.3%	4.7%	4.9%	5.2%	4.9%

Asset Management \$5.1 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	11.0%	11.5%	12.0%	12.5%	11.5%	8.5%	12.5%	10.0%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Customer Bill (\$)	\$108	\$114	\$126	\$137	\$151	\$165	\$178	\$189	\$208	\$224
Avg. Customer Bill (%)	5.9%	5.7%	10.0%	9.1%	9.8%	9.1%	8.0%	6.5%	9.7%	7.7%

Assumes: Average monthly consumption of 6.2 Ccf and 1ERU



Multi-family Customer Impacts

Baseline (Proposed) \$4.0 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	8.0%	5.0%	5.0%	6.0%	5.0%	5.0%	4.5%	4.5%
CRIAC (\$/ERU)	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.66	\$34.75	\$35.45	\$36.46	\$37.08
Avg. Multi-family Bill (\$)	\$1,303	\$1,373	\$1,482	\$1,556	\$1,633	\$1,707	\$1,776	\$1,852	\$1,934	\$2,017
Avg. Multi-family Bill (%)	9.2%	5.4%	7.9%	5.0%	5.0%	4.5%	4.0%	4.3%	4.4%	4.3%

Modified Baseline \$4.6 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	10.0%	8.5%	9.5%	8.5%	6.5%	6.0%	6.0%	6.5%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Multi-family Bill (\$)	\$1,303	\$1,372	\$1,503	\$1,619	\$1,756	\$1,884	\$1,987	\$2,091	\$2,204	\$2,328
Avg. Multi-family Bill (%)	9.2%	5.4%	9.5%	7.7%	8.5%	7.3%	5.4%	5.3%	5.4%	5.7%

Asset Mgt. Ramp-up \$5.1 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	11.0%	11.5%	12.0%	12.5%	11.5%	8.5%	12.5%	10.0%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Multi-family Bill (\$)	\$1,302	\$1,372	\$1,515	\$1,668	\$1,851	\$2,048	\$2,246	\$2,413	\$2,679	\$2,915
Avg. Multi-family Bill (%)	9.1%	5.4%	10.4%	10.1%	11.0%	10.7%	9.6%	7.5%	11.0%	8.8%

Assumes: Average monthly consumption of 92.6 Ccf and 6.3 ERU



Commercial Customer Impacts

Baseline (Proposed) \$4.0 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	8.0%	5.0%	5.0%	6.0%	5.0%	5.0%	4.5%	4.5%
CRIAC (\$/ERU)	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.66	\$34.75	\$35.45	\$36.46	\$37.08
Avg. Commercial Bill (\$)	\$1,850	\$1,954	\$2,113	\$2,220	\$2,331	\$2,448	\$2,539	\$2,643	\$2,746	\$2,848
Avg. Commercial Bill (%)	7.7%	5.6%	8.2%	5.1%	5.0%	5.0%	3.7%	4.1%	3.9%	3.7%

Modified Baseline \$4.6 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	10.0%	8.5%	9.5%	8.5%	6.5%	6.0%	6.0%	6.5%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Commercial Bill (\$)	\$1,850	\$1,953	\$2,141	\$2,304	\$2,495	\$2,668	\$2,801	\$2,943	\$3,096	\$3,262
Avg. Commercial Bill (%)	7.7%	5.6%	9.6%	7.6%	8.3%	6.9%	5.0%	5.1%	5.2%	5.4%

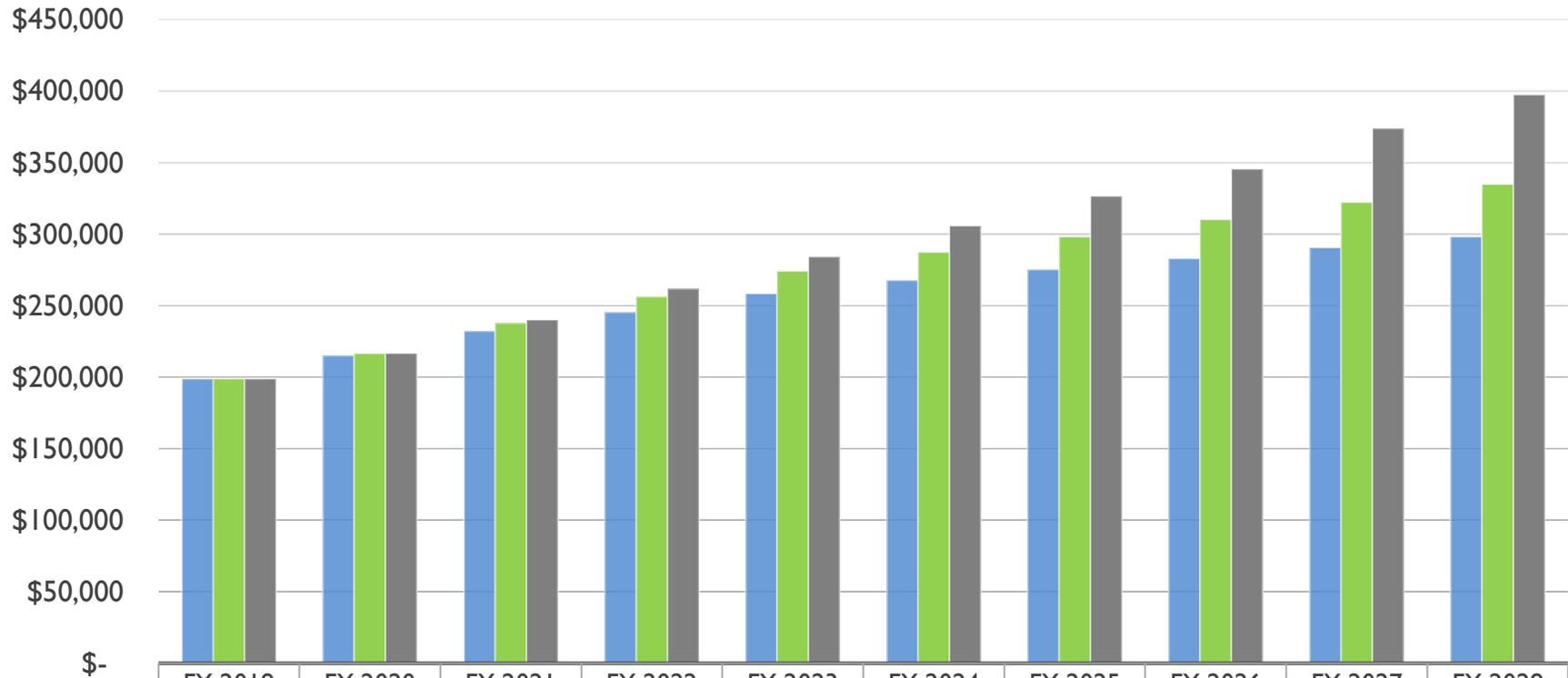
Asset Mgt. Ramp-up \$5.1 Billion	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water & Sewer Rate (%)	13.0%	5.0%	11.0%	11.5%	12.0%	12.5%	11.5%	8.5%	12.5%	10.0%
CRIAC (\$/ERU)	\$22.99	\$25.54	\$29.03	\$31.28	\$33.57	\$34.66	\$34.84	\$35.73	\$36.97	\$37.64
Avg. Commercial Bill (\$)	\$1,850	\$1,953	\$2,156	\$2,367	\$2,617	\$2,859	\$3,115	\$3,360	\$3,713	\$4,025
Avg. Commercial Bill (%)	7.7%	5.6%	10.4%	9.8%	10.6%	9.3%	8.9%	7.9%	10.5%	8.4%

Assumes: Average monthly consumption of 114 Ccf and 13.1ERU



Debt Service Cost Impacts

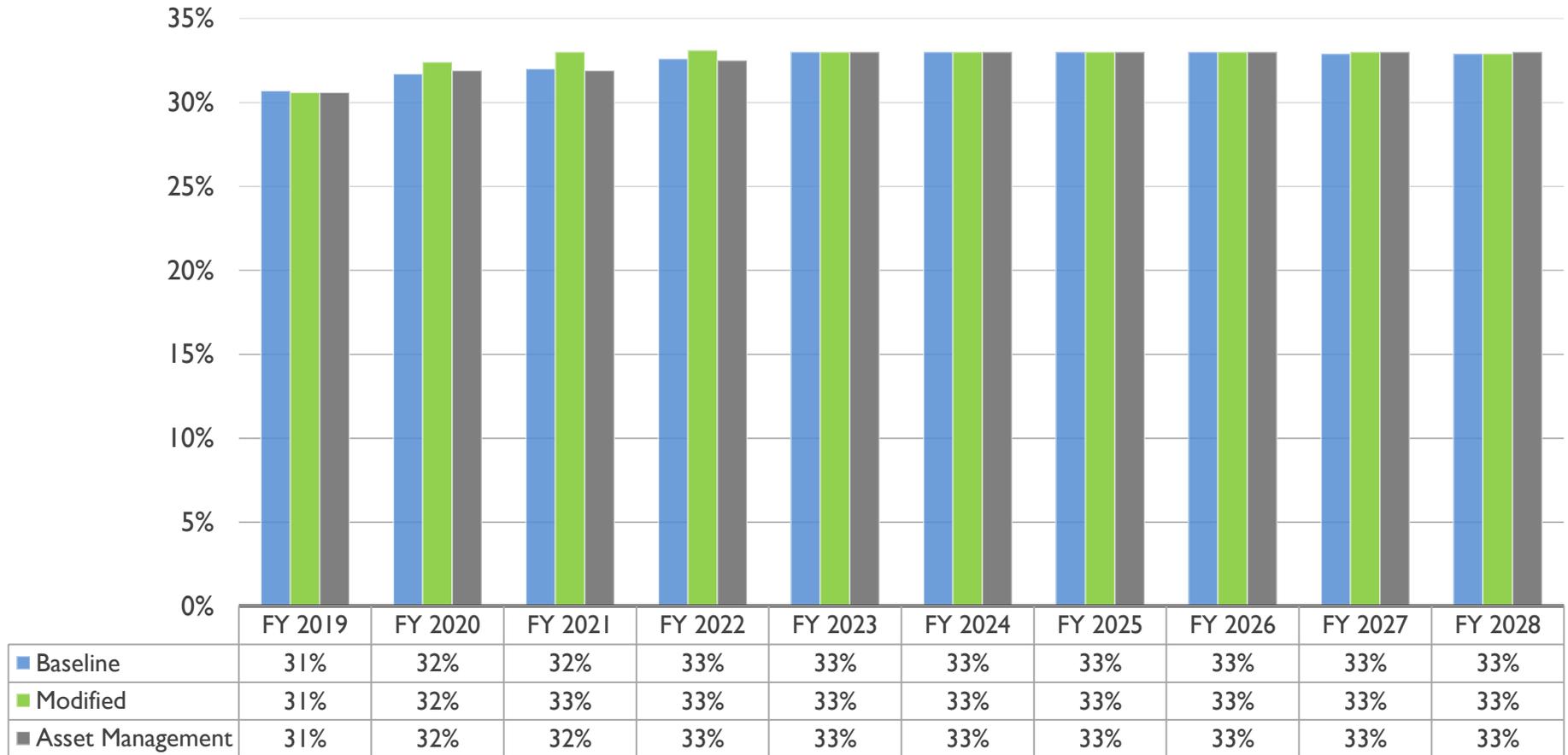
Under the Asset Management Plan, annual debt service costs will be close to \$400 million by 2028



	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
■ Baseline	\$198,754	\$215,098	\$232,248	\$245,392	\$258,411	\$267,735	\$275,138	\$282,936	\$290,737	\$298,148
■ Modified	\$198,754	\$216,476	\$237,888	\$256,268	\$274,159	\$287,302	\$298,114	\$310,158	\$322,448	\$334,833
■ Asset Management	\$198,754	\$216,848	\$240,229	\$261,910	\$284,111	\$305,874	\$326,576	\$345,614	\$373,926	\$397,522

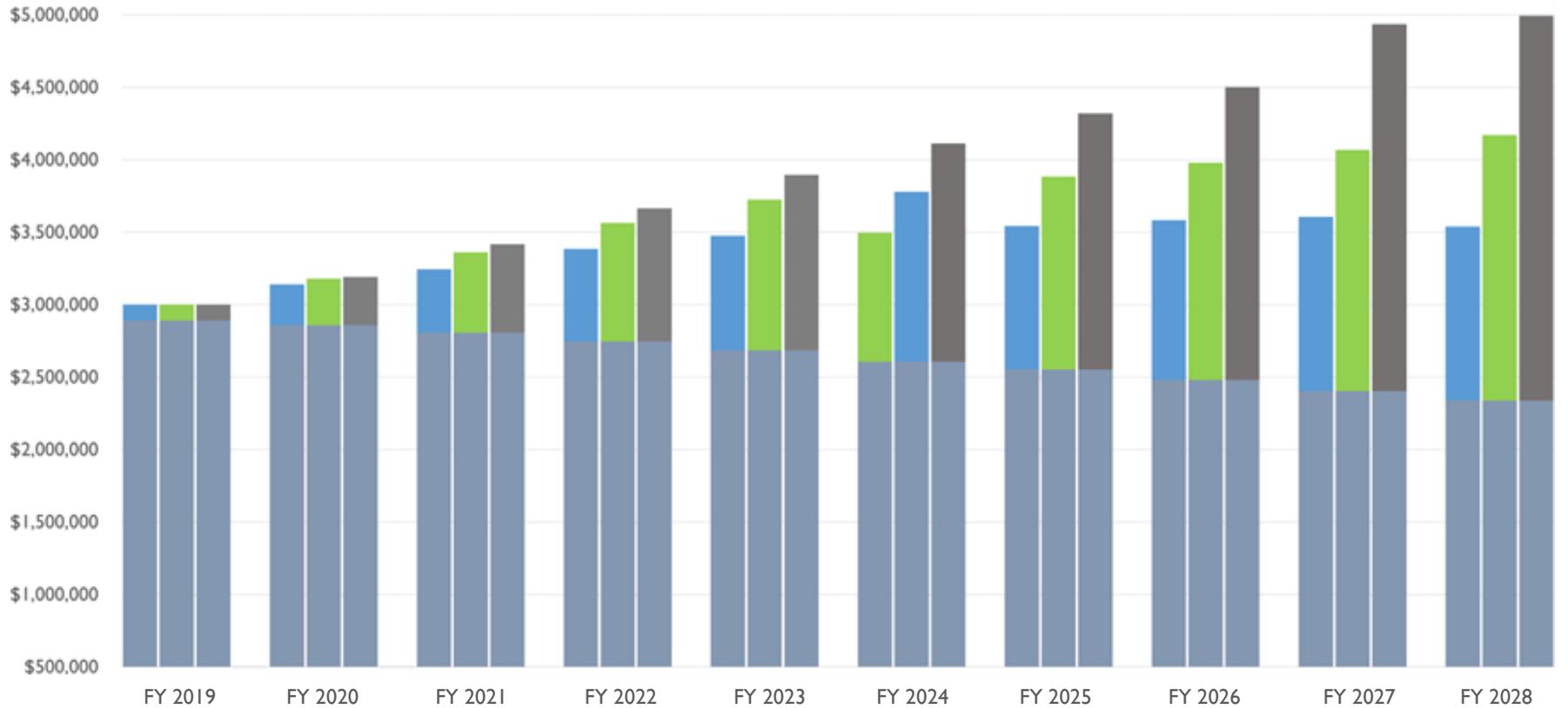


Debt Service % of Revenue





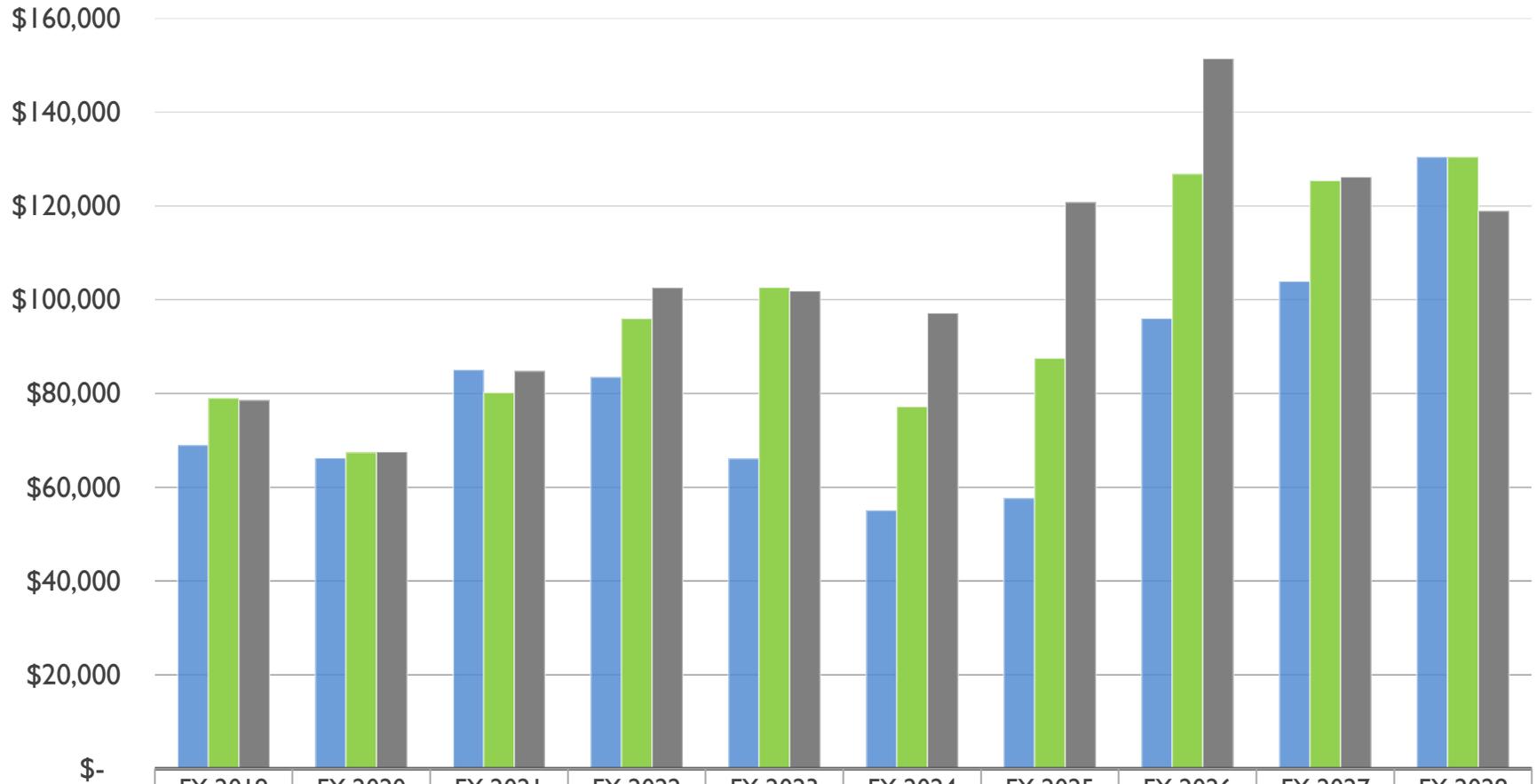
Debt Outstanding – Existing vs. Projected



	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Existing Debt	\$2,890,445	\$2,857,315	\$2,805,995	\$2,745,955	\$2,685,340	\$2,605,625	\$2,552,680	\$2,481,520	\$2,404,340	\$2,338,255
Baseline	\$110,000	\$283,819	\$439,878	\$639,166	\$790,868	\$890,868	\$990,868	\$1,101,369	\$1,201,369	\$1,201,369
Modified Baseline	\$110,000	\$323,182	\$557,034	\$819,733	\$1,039,416	\$1,174,415	\$1,331,378	\$1,499,437	\$1,662,951	\$1,833,577
Asset Management	\$110,000	\$333,799	\$610,725	\$919,391	\$1,209,352	\$1,506,557	\$1,768,028	\$2,020,197	\$2,531,701	\$2,656,701



Wholesale Customer Revenue/Impacts



	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
■ Baseline	\$69,007	\$66,263	\$85,059	\$83,471	\$66,147	\$55,086	\$57,663	\$96,061	\$103,958	\$130,451
■ Modified	79,007	67,442	80,222	95,957	102,614	77,209	87,524	126,849	125,430	130,451
■ Asset Management	78,543	67,577	84,818	102,600	101,916	97,161	120,802	151,435	126,207	118,936



Public Outreach/Customer Engagement

DC Water is committed to our community

- Our water and sewer infrastructure has served us well for 100-plus years but is showing its age. We need to ensure it remains in good condition
- Over the next 10 years DC Water will invest more than \$4 billion in its utility systems to meet federal environmental mandates and to ensure safety and reliability
- While these investments will require rate increases, they will create hundreds of jobs, boost the local economy and provide quality of life benefits for residents
- We are already seeing significant economic development and activity along the Anacostia River as a result of better water quality



Public Outreach/Customer Engagement

Strategy

- Highlight what DC Water has done to benefit residents, create jobs and enhance economic development
- Be honest about consequences of not investing adequately in water and sewer systems
- Arm customers with information on what they can do to help keep their bills low and help the environment
- Use tiered communications that begins with messaging to closest stakeholders, such as the Stakeholders Alliance group, and work outwardly through key audiences to build support
- When appropriate, initiate face-to-face contact with customers and community members to provide updates, gain public input and deliver key messages
- Generate productive earned media coverage
- Develop compelling electronic and printed tools to reinforce key messages and refute opposition
- Utilize online content, advertising and social media to deliver key information and messages to connect with customers and the public



Budget Adoption Calendar

- 💧 CEO & Executive Team Budget Recommendations – **February**
- 💧 Committee Reviews, Recommendations – **February/March**
- 💧 Wholesale Customer Briefing – **February**
- 💧 Budget Adoption – **April**
- 💧 Rate Hearings – **May**



Discussion



Appendix

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

October 24, 2018

Key Takeaways

- Water and sewer rates at S&P Global-rated U.S. public utilities vary widely depending on region, water source, treatment technology, and utility size. They are generally at levels we consider affordable given local incomes and poverty rates.
- Rate inflation is higher in water and sewer than in many other public utility sectors.
- Levels of household consumption affect affordability, as well as rate structure and operating and capital cost.
- Affordability plans can help reduce delinquencies and improve revenue reliability and rate-setting flexibility. Strong public outreach and information, as well as political and Public Utility Commission support, contribute to management flexibility for rate-setting.

S&P Global Ratings maintains revenue debt ratings on 1,600 public water and wastewater utilities in the U.S. This includes multiple security types and issues but with the same obligor (e.g., Baltimore issues both water and wastewater revenue bonds that are separately secured by dedicated revenue streams). However, it excludes debt issued by wholesalers, as well as debt issued by state agencies to fund water and wastewater projects.

In general, water and sewer rates at rated utilities are still at levels that we consider affordable. However, rate inflation in the sector has been higher than in many other utility sectors, and we expect this trend to continue. Over time, we believe that affordability, particularly for low- and fixed-income residents, could come under pressure and constrain revenue-generating flexibility as public utilities work through large capital plans due to aging infrastructure, changing regulatory requirements, and concerns about securing long-term water supply. We will continue to examine the effects of revenue needs and affordability concerns on utility rates and overall financial performance.

Most U.S. Public Utilities Charge "Affordable" Rates

For both utility types, a monthly rate between \$30 and \$40 for 6,000 gallons of service is the most common. Nationally, rates tend to be slightly higher for sewer than water service: The median and

PRIMARY CREDIT ANALYST

Erin Boeke Burke
New York
+ 1 (212) 438 1515
Erin.Boeke-Burke
@spglobal.com

SECONDARY CONTACTS

Theodore A Chapman
Dallas
(1) 214-871-1401
theodore.chapman
@spglobal.com

James M Breeding
Dallas
(1) 214-871-1407
james.breeding
@spglobal.com

RESEARCH CONTRIBUTOR

Shrinivas Parab
CRISIL Global Analytical Center, an
S&P affiliate, Mumbai

**Less than 1% of
water utilities and 3%**

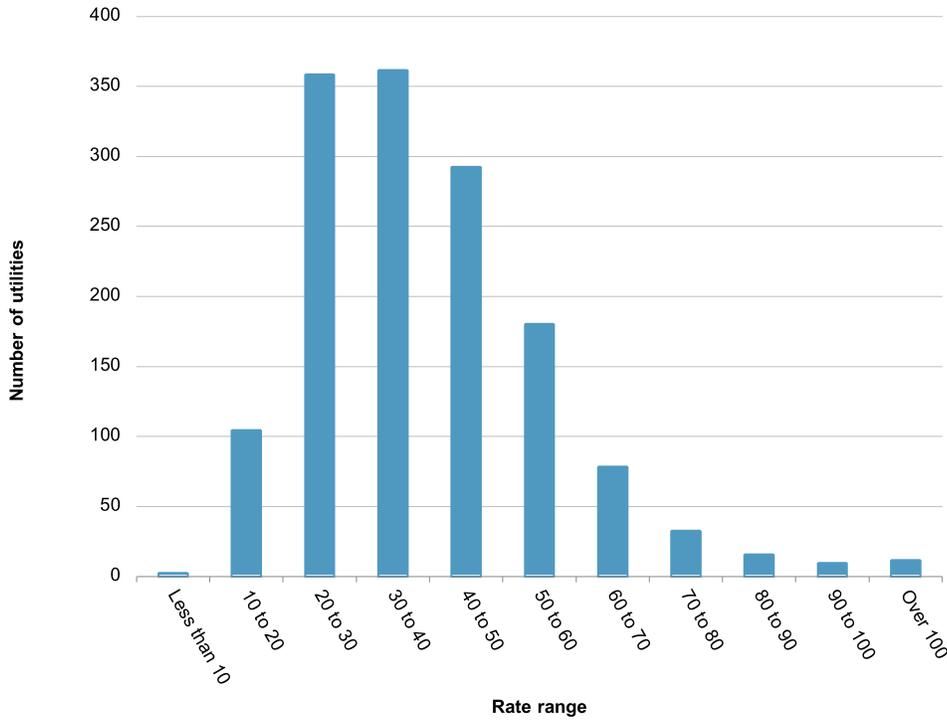
Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

mean are both \$37 for water, in contrast to \$42 (median) and \$45 (mean) for sewer. Less than 1% of the water utilities in the sample and less than 3% of sewer utilities have monthly rates over \$100.

of sewer utilities have average monthly rates over \$100.

Chart 1

Monthly Water Rates, 6k gal

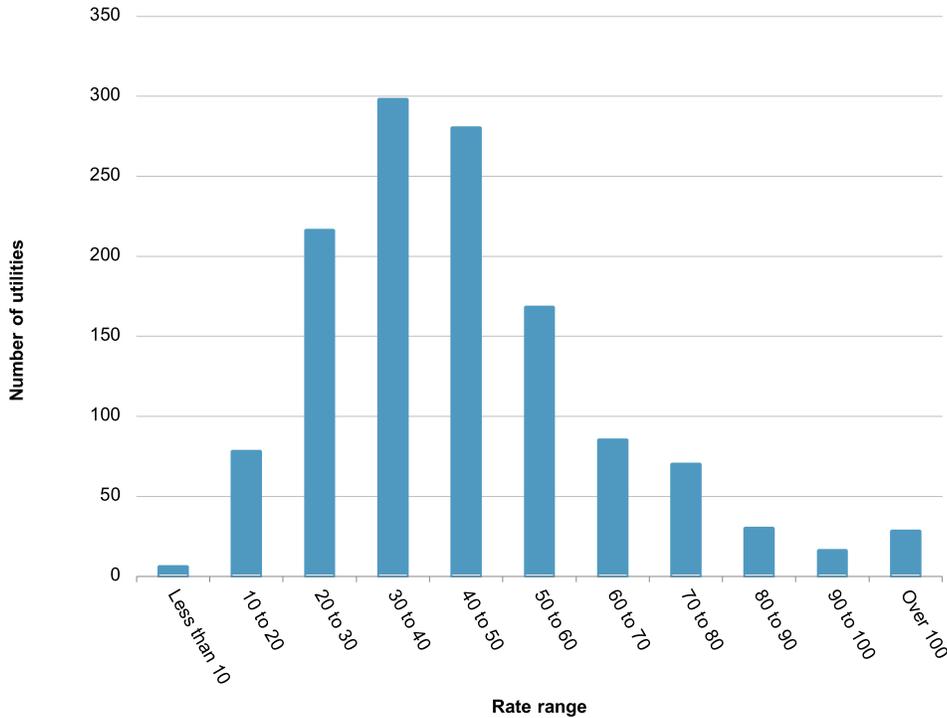


Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 2

Monthly Sewer Rates, 6k gal



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

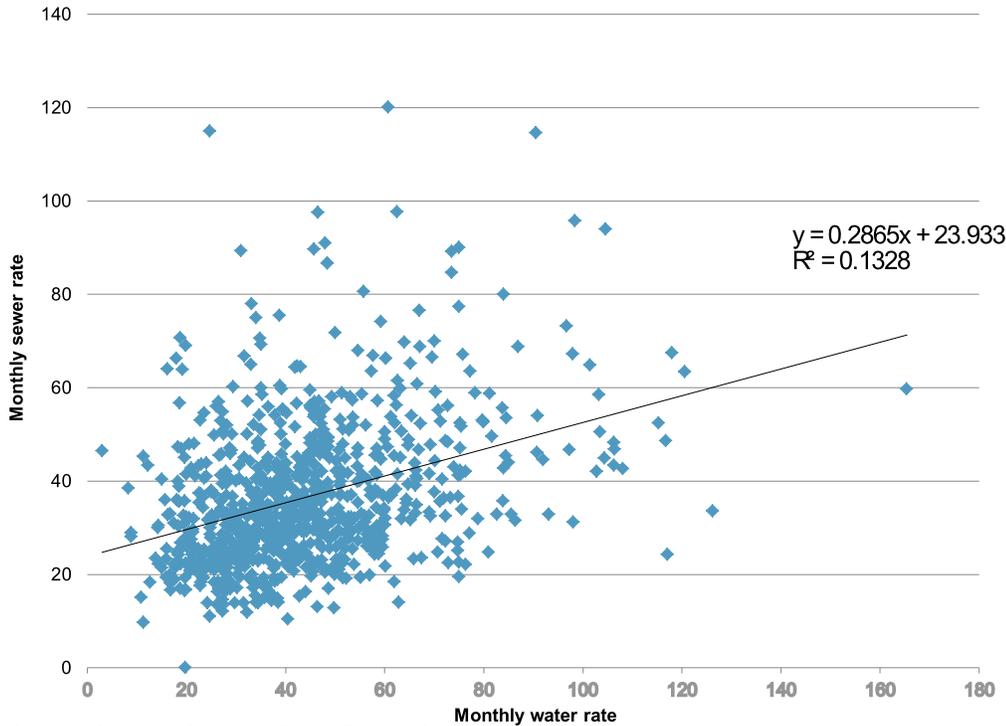
A Note On The Sample

S&P Global Ratings has rate data for over 1,400 water utilities nationwide and 1,200 wastewater utilities, including publicly rated water, sewer, and combined utilities; wholesale utility participants and customers; and utilities that pledge revenue to support bonds where the public rating is based on a different pledge. We acknowledge that this is not a random sample, as we only maintain rate data on utilities associated with public debt. Due to the nature of this sample, these utilities will generally be larger and have greater financial capacity than the universe of all municipal water and sewer utilities in the U.S. Additionally, some states are underrepresented due to alternative forms of financing such as state bond banks (see "Many New England Water And Wastewater Utilities Have Strong Profiles But Face Costly Mandates And Aging Infrastructure," published July 12, 2017, on RatingsDirect). S&P Global Ratings uses a baseline assumption of 6,000 gallons of monthly water or sewer usage; while an average customer bill may not be the same as this 6,000-gallon amount depending on consumption, this single level is used throughout for comparability unless otherwise noted. This assumption is based on research and feedback during the request for comment phase prior to the implementation of the applicable criteria, "Rating Methodology And Assumptions For U.S. Municipal Waterworks And Sanitary Sewer Utility Revenue Bonds" (published Jan. 19, 2016).

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 3

Water And Sewer Rates At Combined Utilities



We have both water and sewer rates for over 800 utilities. This is significantly smaller than the total data set, as separate entities provide water and sewer service in many areas. Among those utilities where we do have both water and sewer rates, we can see that there is a positive association between them: Utilities that charge more for water often also charge more for sewer. There are a variety of possible reasons why this is the case, including management rate-setting philosophy, system age, local cost factors, and political support. The sewer bill is often slightly higher than the water bill, which is consistent with the national rate distributions shown above and our observation that generally sanitary sewer systems are more capital intensive, especially relative to groundwater-based drinking water systems.

The most expensive water rates in our sample are in Missouri. Missouri issuers tend to have higher debt levels and weaker asset management and long-term planning scores. Like many others on the list, these Missouri issuers are in more rural areas so they have smaller customer bases to absorb large fixed costs. The rates listed below do not include additional dry-period assessments and surcharges; many systems also charge higher rates for customers who live outside of the primary municipal jurisdiction ("out of town" rates and surcharges). Where the table identifies rate "up to" a given amount, it means there are multiple billing districts within the service area, but they do not represent "in town" and "out of town" rates.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Table 1

Most Expensive Water Rates At Publicly Rated Utilities, 2018

Peculiar, MO	\$120
West Wise Special Utility District, TX	\$111
Daviess County Public Water Supply District No.1, MO	\$111
North Prairie Rural Water District, ND	Up to \$110
Carroll County Public Water Supply District No. 1, MO	\$105
Ralls County Public Water Supply District No. 1, MO	\$103
Santa Barbara, CA	\$97
West Cumberland Utility District, TN	\$96
West Milford Township Municipal Utility Authority, NJ	\$94
Red River Authority, TX	Up to \$94

The list of the most expensive sewer utilities is more California-centric. California has one of the most restrictive regulatory regimes, which often requires more capital-intensive processes than in other parts of the country. Additionally, many utilities in the state discharge into sensitive environmental areas. Some utilities have high rates due to expensive regulatory-driven capital plans; others are small systems with few customers to bear the financial burden of maintaining aging systems. In several instances, especially where water consumption tends to be strongly seasonal and affected by summer irrigation, sewer bills are based on water consumption, but only in the winter months. We are assuming a 6kgal baseline despite the seasonality in consumption.

Table 2

Most Expensive Sewer Rates at Publicly Rated Utilities, 2018

Sanitary District No. 5 of Marin County, CA	Up to \$165
Pacifica, CA	\$157 (2017)
North Bend, WA	\$153
Newport, RI	\$135
Millbrae Public Financing Authority, CA	\$127
Montecito Sanitary District, CA	\$123
Healdsburg, CA	\$122
Mill Valley, CA	\$121
Deltona, FL	\$117
Oak Island, NC	\$115

The list of the most expensive combined rates includes many of the utilities listed above, but is more geographically diverse with only one state (California) appearing twice on the list. The trend of higher sewer rates continues, with all but one of the utilities charging more for sewer service than for water.

One surprise for many readers may be the absence of Atlanta and Austin, as they have received significant attention for recent rate increases and are often used as examples of areas with "high rates." Both water and sewer rates for both cities were included in our sample. While they are higher than the national average, with a monthly bill of \$43 for water and \$108 for sewer in Atlanta

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

and \$38 for water and \$62 for sewer in Austin, the bills are not as high as those of many other utilities in the sample (although Atlanta does make the list of top 10 for combined rates).

Table 3

Most Expensive Combined Rates At Publicly Rated Utilities, 2018

	Water	Sewer	Combined
North Bend, WA	\$60	\$153	\$213
Newport, RI	\$65	\$135	\$200
West Milford Township Municipal Utility Authority, NJ	\$94	\$105	\$199
Healdsburg, CA	\$63	\$121	\$184
Peculiar, MO	\$120	\$61	\$181
West Travis County Public Utility Agency, TX	\$73	\$97	\$170
Oak Island, NC	\$52	\$115	\$167
Holly Village, MI	\$59	\$99	\$158
Atlanta, GA	\$43	\$108	\$151
Santa Rosa, CA	\$43	\$106	\$150

What Does "Affordable" Mean?**The Environmental Protection Agency (EPA) standard**

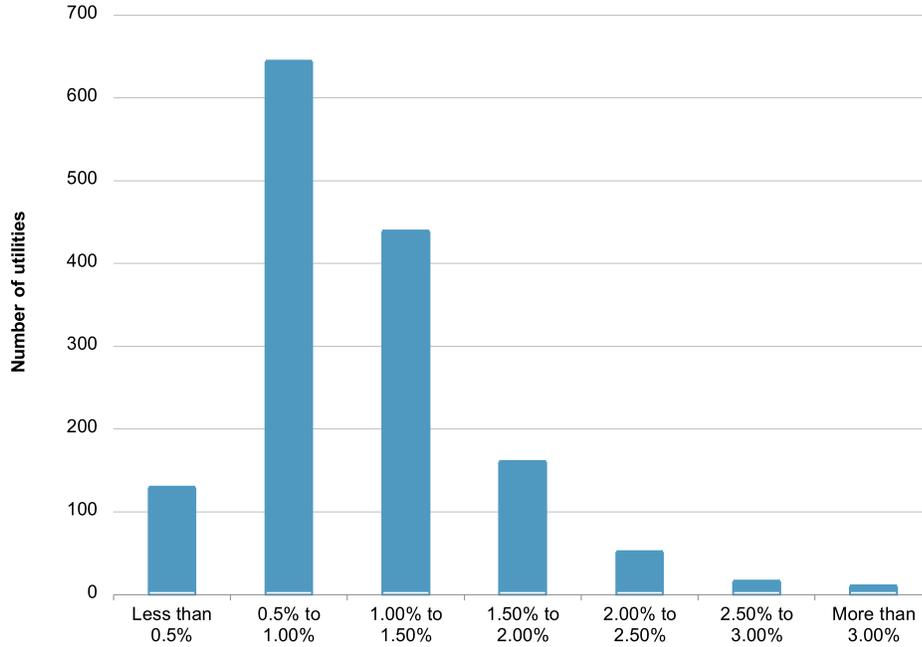
There are a wide range of opinions on what it means for water and sewer service to be "affordable." There is no broadly applicable direct correlation between economic growth and system demands due to changing consumption patterns (discussed below). However, economic fundamentals are still a critical proxy for the current and likely future ability of the customer base to support utility operations and its revenue requirements, as municipal utilities tend to derive nearly all operating revenues from the local rate base. Regardless of the condition of the utility's service area economy, the relative ability of its customer base to pay the utility bill has remained important not only to credit quality but also to the sector itself. Both the EPA and the water utility industry's leading professional organization, the American Water Works Assn. (AWWA), have developed guidelines for measuring affordability.

The EPA's "Interim Economic Guidance for Water Quality Standards Workbook" (EPA 823-B-95-002, March 1995; Section 4) and "Combined Sewer Overflows--Guidance for Financial Capability Assessment and Schedule Development" (EPA 832-B-97-004, February 1997; Section 3) develop affordability criteria for sewer systems, including the residential indicator, which measures the annual utility burden as a percentage of median household income (MHHI). Under the EPA guidance, the benchmark for water systems is 2.5% of annual MHHI. EPA guidance also identifies a number of additional secondary screening criteria such as the local unemployment rate versus the national rate. S&P Global Ratings looks at median household effective buying income (MHHEBI) as opposed to MHHI, since it better captures after-tax, disposable income, or take-home pay (EPA's secondary screening affordability criteria also take into account the household tax burden). If we use the same benchmark of 2.5% despite the differences between MHHI and MHHEBI, approximately 98% of the utilities in our data set charge rates that are "affordable" by the EPA standard.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 4

Water Rates As A Percent Of MHHEBI



MHHEBI—Median household effective buying income.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

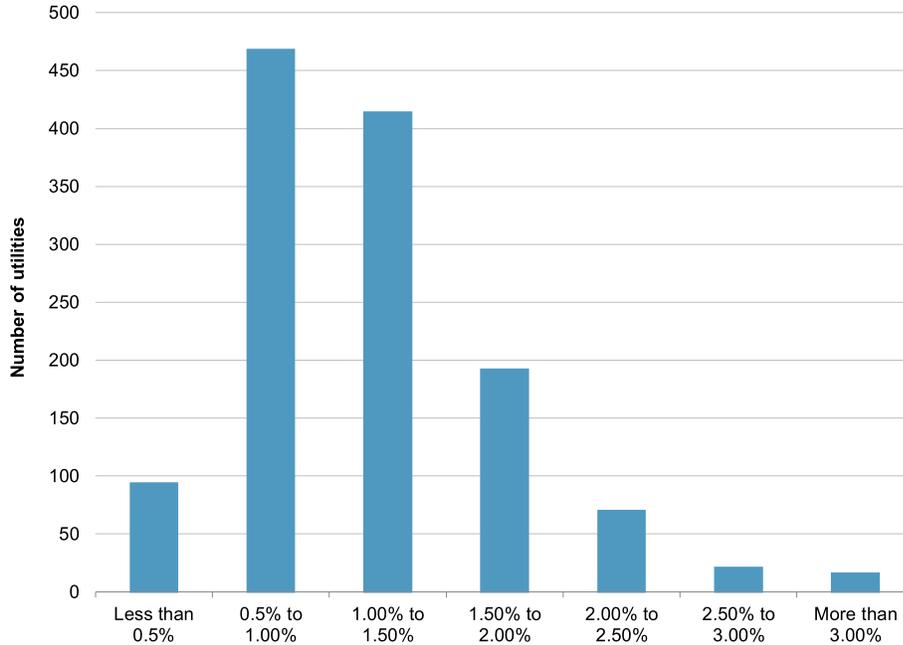
The EPA has a slightly lower benchmark for "affordable" sewer rates, at 2% of MHHI. Looking at the sewer utilities in our sample, the percentage that charge "affordable" rates is 92%, lower in part due to the higher rates in the sewer utilities than at water utilities, as well as the lower benchmark.

Approximately 98% of the water utilities and 92% of the sewer utilities in our data set charge rates that are "affordable" by the EPA standard.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 5

Sewer Rates As A Percent Of MHHEBI



MHHEBI--Median household effective buying income.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

High Rates Are Not A Requirement For Creditworthiness

Not only is affordability one of many inputs into a utility manager's business decisions, but it is also a relevant credit factor. Under S&P Global Ratings' criteria for assessing the creditworthiness of water and sewer utilities, we assign each utility a "market position" score based on our opinion of the relative affordability, comparability of rates with those of peers in the region or state, and management flexibility to increase rates in the future if additional revenues are required to maintain financial strength. In addition to the average household bill as a percentage of MHHEBI, the score includes the county poverty rate. The relative poverty rate is important because service areas that have not just lower MHHEBI levels, but also disproportionately higher percentages of the population located in the lowest quintiles of the MHHEBI distribution curve, may exhibit greater sensitivity toward perceived affordability, even if adjusted for low inflation or a favorable cost of living.

Market position scores range from '1' to '6', with '1' being the strongest. The market position score calculation may use either the average monthly household consumption where available (as this better reflects the average household bill) or our 6,000 gallons/800 cubic feet (ccf) standard. For utilities with an anchor assessment of '5' or '6' that have recently completed or achieved substantial completion of a historically capital-intensive period, the anchor assessment may improve by one point. The committee may also adjust the market position score negatively if a

Service areas that have higher percentages of the population located in the lowest quintiles of the MHHEBI distribution curve may exhibit greater sensitivity toward perceived affordability, even if adjusted for low inflation or a

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

utility is in a period of substantial rate increases, or it otherwise thinks that future rate-setting flexibility may be more constrained.

favorable cost of living.

Table 4

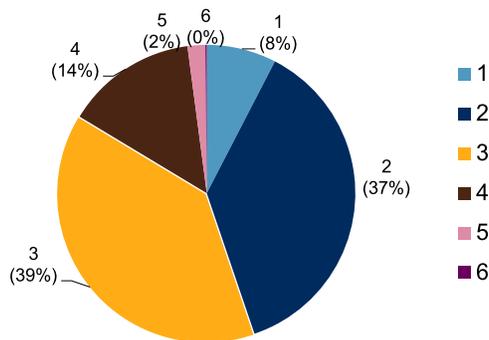
Market Position Assessment: Water- Or Drainage-Only Utilities

Percent of county population living in poverty	Annual utility bill as a percent of MHHEBI		
	Less than 1%	1% to 2%	More than 2%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

MHHEBI--Median household effective buying income.

Chart 6

Market Position Score -- Water-Only Utilities



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Table 5

Market Position Assessment: Sewer-Only Utilities

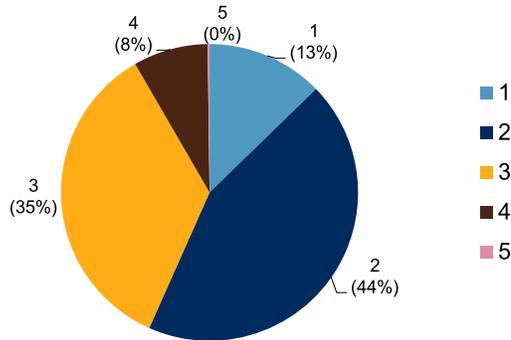
Percent of county population living in poverty	Annual utility bill as a percent of MHHEBI		
	Less than 1.25%	1.25% to 2.50%	More than 2.50%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

MHHEBI--Median household effective buying income.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 7

Market Position Score -- Sewer-Only Utilities



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Table 6

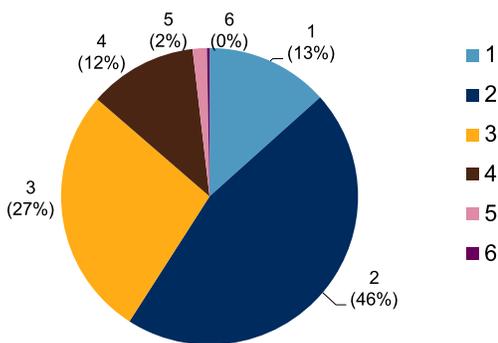
Market Position Assessment: Water And Sewer/Draining Utilities

Percent of county population living in poverty	Annual utility bill as a percent of MHHEBI		
	Less than 2.25%	2.25% to 4.50%	More than 4.50%
Less than 10%	1	2	3
10% to 20%	2	3	4
20% to 30%	3	4	5
More than 30%	4	5	6

MHHEBI--Median household effective buying income.

Chart 8

Market Position Score -- Combined Utilities



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

As the charts show, sewer-only and combined water and sewer utilities tend to have stronger market position scores than water-only utilities have. Well over half of sewer and combined

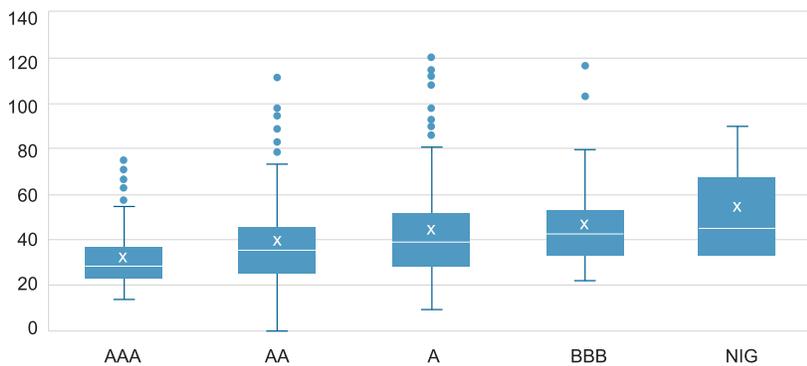
Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

systems score a '1' or a '2', levels we consider extremely or very strong, whereas less than 45% of water utilities have this same flexibility. Sixteen percent of water and 12% of combined utilities score a '4' or higher, levels we consider adequate or vulnerable. Only 8% of sewer utilities have similar market position scores.

As S&P Global Ratings considers rate affordability part of the rating process, it is consistent that affordable rates are a characteristic of higher-rated utilities. For water utilities, there is a clear pattern: Higher-rated utilities tend to charge lower rates for service. For sewer utilities, there is not such a clear correlation. However, both charts show that the financial strength needed for strong credit quality comes from more than just high rates. Many highly rated utilities tend to be in major metropolitan areas and therefore are able to spread fixed costs across a larger customer base; others are newer systems with fewer capital needs associated with maintaining aging infrastructure. (For additional information about the characteristics that tend to lead to higher credit ratings, see "The Common Credit Characteristics Of Highly Rated U.S. Municipal Water And Sewer Utilities," published March 7, 2017.)

Chart 9

Water Rates By Rating Category

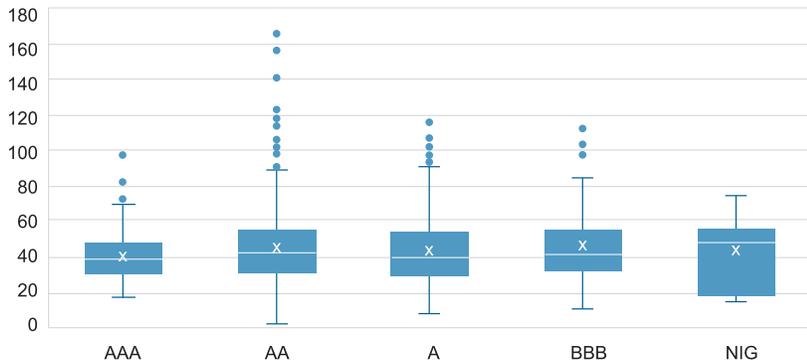


NIG--Noninvestment-grade. Source: S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 10

Sewer Ratings By Rating Category



NIG--Noninvestment-grade. Source: S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Reading Box And Whisker Plots

Box and Whisker plots summarize a lot of information in a single image. For a given sample, the "box" covers the area from the first to third quartile of the sample (the interquartile range [IQR]), with the median marked by a line through the box. The bars extend to the maximum and minimum, excluding outliers. Outliers are identified by the dots, which represent data points more than 3x the IQR away from the edges of the box. An 'x' marks the mean. So shorter boxes depict more compact data sets, and taller ones represent a wider range of results.

High Rates As An ESG Concern

S&P Global Ratings has recognized that environmental, social, and governance (ESG) factors have rapidly grown beyond a niche in the global credit markets (see, for example, "The Rise Of ESG In Fixed Income," published on Sept. 10, 2018) and are now an established set of investing principles. Utility managers, however, may view other asset classes as being late to the game. Among water and sewer utilities, there has been embedded into management strategies the idea of the "triple bottom line" of environmental stewardship, financial integrity, and affordability, which aligns quite nicely with ESG. For this essential service, affordability takes on the question of whether water is a human right, a property right, a commodity, or something else entirely. Potable water is not free, because the infrastructure to access the raw water supply, properly and safely treat it, and ultimately deliver it to the end user is not free. But if it is not free, then how should the cost be determined? As a signatory to the United Nations Principles for Responsible Investment (UN-PRI) global initiative in May 2016, S&P Global Ratings is committed to the goal of encouraging and developing greater transparency and consistency of ESG factors in the credit rating process and credit reports. Just as we seek to better incorporate affordability as part of utility-related ESG

For this essential service, affordability takes on the question of whether water is a human right, a property right, a commodity, or something else entirely.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

evaluations, so do we more broadly seek to update our global analytical approach (see "S&P Global Ratings' Proposal for Environmental, Social and Governance (ESG) Evaluations," published Sept. 24, 2018).

Do Affordability Programs Affect Creditworthiness?

Recent increases in water and sewer rates and charges have drawn attention to affordability concerns, for both local governments and federal officials. While there are federal affordability programs to help low- and fixed-income families afford housing, food, and energy, no such federal program currently exists for water and wastewater service. As a result, many local utilities and municipalities have explored introducing their own affordability programs. According to the most recent AWWA "State of the Water Industry Report," the percentage of survey respondents that indicated their utilities provide some form of bill assistance increased to 48% in 2018 from 39% in 2017. Utility managers have taken a broad range of approaches, including creating rate-funded rebate programs, providing "lifeline" rates, changing rate structures, providing payment plan options, and partnering with third parties to implement programs. Depending on the state, there may be restrictions on the type of programs that may be allowed or how they can be funded, and it is still most common for us to hear from utility managers that "our affordability program is to keep rates low for everyone."

In general, our criteria for creditworthiness are agnostic as to rate structure. This also applies to affordability programs; S&P Global Ratings does not think that affordability programs directly contribute to creditworthiness nor does it have a bias toward or against specific types of programs. However, depending on how a program is implemented, a successful affordability program can contribute to overall credit strength, and a poorly conceived or implemented one can introduce additional risk that may affect our view of the overall creditworthiness of a utility.

Well-constructed affordability programs can improve revenue certainty and stability by helping reduce delinquency and nonpayment rates, and manage political opposition to rate increases for customers that a utility has determined to have a stronger ability to pay. Efforts to increase water and sewer rates are often met with the strongest opposition by people on low or fixed incomes, including retirees. By providing programs to help customers with the greatest affordability constraints, these efforts could reduce resistance to rate increases on others, provided the size of the differential does not get too extreme or raise questions about the cost of service.

Among the most high-profile examples is the process that ultimately led to Great Lakes Water Authority (GLWA), Mich.'s successful water residential assistance program (WRAP). While Detroit's water and sewer department did not experience the profound fiscal distress that the general government did, the city had for years been experiencing chronic delinquencies due to numerous factors, including antiquated billing procedures, inconsistent shut-offs and collection efforts, a significant number of inactive accounts, and socioeconomic factors limiting many residents' ability to pay. Billing enforcement actions such as service shut-offs faced public scrutiny and headline risk.

Soon after GLWA's creation, it established the WRAP and made it available to all qualified low-income customers in its service base. While many of the chronic issues described above are still pressuring collections in Detroit, GLWA has been able to integrate WRAP with its other collections efforts, providing means-based help that management has estimated has since averted 3,100 shut-offs and conducted over 1,000 water audits that have helped customers both detect leaks and establish more efficient conservation. The implementation of WRAP has also helped GLWA focus its collections efforts in several other ways. Collections have improved because the affordability program helps spread repayment of delinquent payments out over time.

In general, our criteria for creditworthiness are agnostic as to rate structure. This also applies to affordability programs.

While many of the chronic issues described above are still pressuring collections in Detroit, GLWA management

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Because any customer who is both enrolled in a payment plan and current in its billing cannot have service shut off, it also focuses the city's efforts on shut-offs for habitually delinquent customers who have not engaged with the city to arrange for a payment plan. For fiscal 2019, GLWA budgeted \$4.9 million for the WRAP, against water and sewer operating revenues from just city of Detroit customers of \$359 million.

Despite the gains in a city like Detroit, attempts to introduce an affordability program can also create additional risks. Depending on the number of customers who qualify for financial assistance and the size of the benefit, program costs (appropriated costs or foregone revenues) could exceed projections to the detriment of system net revenues. Any attempts to introduce a program could face similar public opposition as rate increases often do, causing lawsuits and revenue uncertainty for extended periods. More complicated rate structures can also lead to customer confusion and increase the likelihood of administrative errors.

has estimated it has averted 3,100 shut-offs and conducted over 1,000 water audits since implementing WRAP.

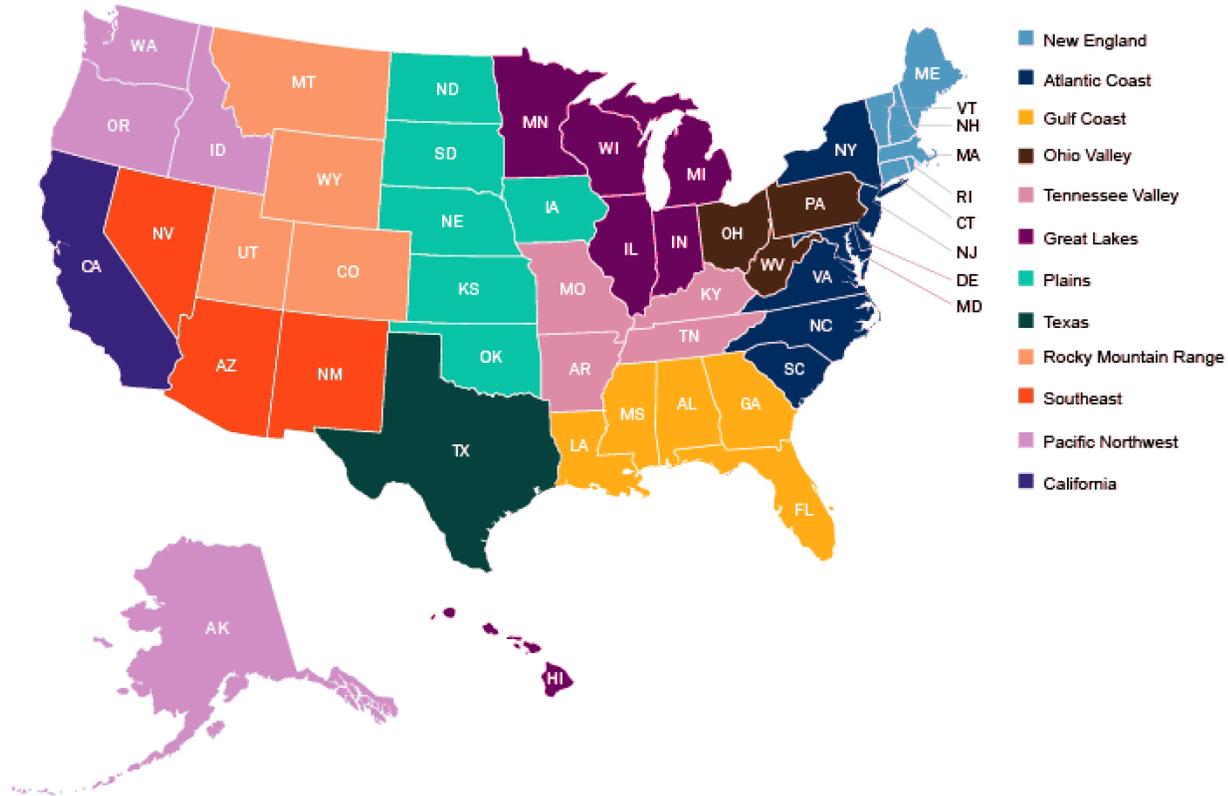
System Location Matters

There are a number of geographic factors that contribute to customer rates, such as climate and type of water supply, as well as utility size and population density. Economic factors can also affect rates, such as local income and poverty levels. Many of the utilities we rate have higher rates for out-of-town customers, to capture those costs associated with the extra distance to their homes, as well as, in some cases, the lack of financial support from the municipality where the utility is based.

S&P Global Ratings rates utility revenue-backed bonds in almost every U.S. state, although the number of ratings depends on a number of factors, including access to state bond banks and debt restrictions. For monitoring and analytical purposes, we have divided the country into 12 regions; these regions share some common characteristics such as climate and consumption patterns, the preponderance of agriculture, and to some extent economic characteristics.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 11
S&P Global Ratings Regions

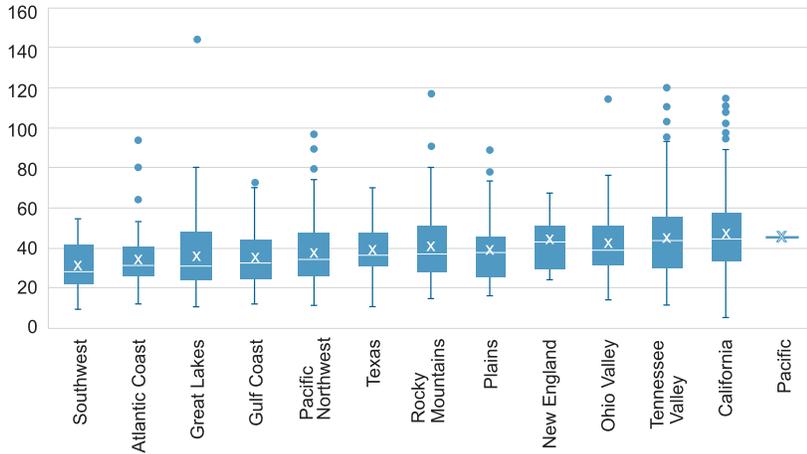


Source: S&P Global Ratings.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Looking at water bills across these regions, the median rate ranges from \$28 in the Southwest to \$45 in the Tennessee Valley and California. The lower rates in the Atlantic Coast (per the chart legend) and Great Lakes states are less surprising given the strong availability of surface and groundwater sources, as well as Public Utility Commission (PUC) regulation of rates in some states (e.g., Wisconsin and Indiana). Low rates in the Southwest are more surprising due to the scarcity of water and large amounts of infrastructure and energy required to transport water to population centers, although many of the systems in that region are newer and don't have as many costs associated with aging infrastructure.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 12
Water Rates By Region



Source: S&P Global Ratings.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

High rates in California partially reflect the cost of large infrastructure to move water from the northern to the southern parts of the state, as well as substantial infrastructure to buffer interyear variance in water supply, as most annual precipitation occurs in a few atmospheric river events during the year. Additionally, more stringent regulatory and environmental requirements than elsewhere in the nation lead to more complex and expensive capital infrastructure and the utilities pass these costs on to their customers.

We expect rates in the West, where scarcity is the norm and supply concerns garner attention even in the mainstream media, to be no less immune to pressures. The recently approved "California Water Fix" is among the most high-profile regional collaboration in decades. In 2017 dollars, the state estimates the project could cost close to \$16.7 billion assuming no cost overruns and the project is fully operational in 2033. One of the participants, the Metropolitan Water District of Southern California (MWD, AAA/Stable) is allocated 26% of the total project, but has also committed to assume the Central Valley Project allocation, increasing total participation up to \$10.8 billion, or 64.6% of the total cost. The management team has estimated the project could affect the average retail ratepayer by about \$4.80 per month. We view the potential for a deviation from budget and timeline as likely, and the actual effect on individual households will likely vary widely based on local circumstances, such as the specific purveyor's water supply mix. We would most likely view it as credit impactful if MWD's members begin to push back, either for continued alternative delivery options and a reduced take from MWD, or in an extreme scenario, trying to affect an exit from their contractual relationship with MWD, citing wholesale (and therefore, retail) rates that are already somewhat high.

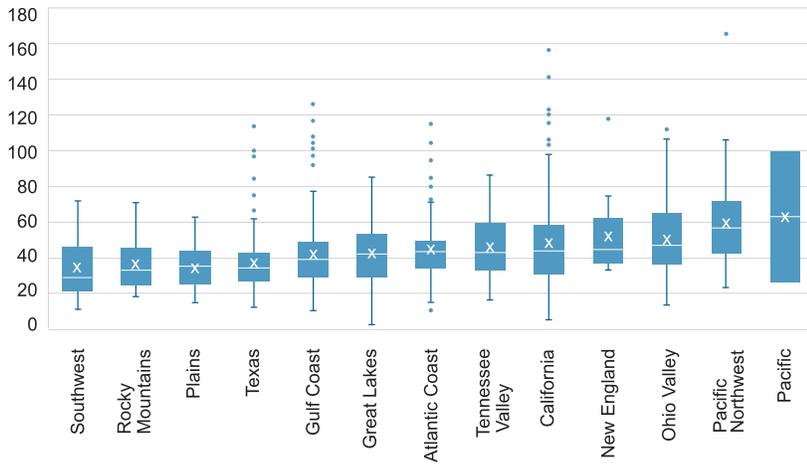
The Southwest also has the lowest sewer rates in our sample, with a median rate of \$29. Many Southwest systems benefit from being relatively young, whereas aging infrastructure and the need to separate old combined sewer systems have increased capital costs at many systems in other parts of the nation. The Pacific Northwest is highest with a median of \$57. The Pacific Northwest number includes 40 utilities in the Seattle-Tacoma-Bellevue metropolitan statistical

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

area, and may be affected by the consent decree signed between the U.S. EPA and Seattle (see more on consent decrees below). Other regions with high sewer rates, such as the Ohio Valley and New England, tend to have high costs due to aging infrastructure and the presence of systems built with combined sewer and wastewater systems.

Chart 13

Sewer Rates By Region



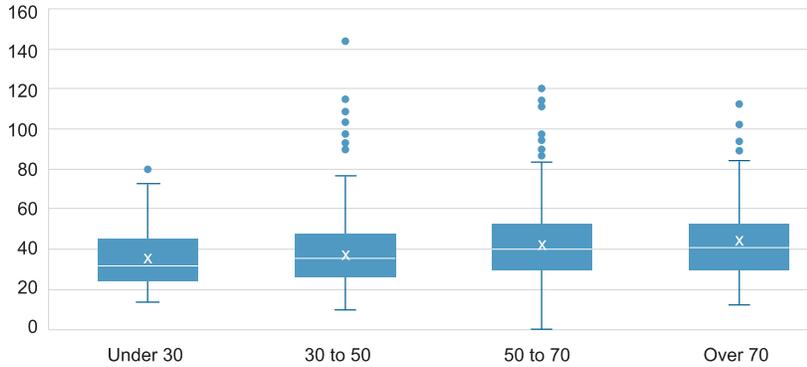
Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Local economic factors can also be a factor in rate setting, as system managers and public officials in charge of rate setting consider ability to pay and the political palatability of rate increases. Under our criteria, we look at a variety of economic factors to help determine creditworthiness, including local income levels (measured using MHHEBI), unemployment levels, the strength of the metropolitan service area (an aggregate assessment that looks at employment diversity, employment growth, and the employment base), the presence of a stabilizing institution such as a major university or military base, and population growth trends. While not all of these factors are likely to affect customer rates, we did look at income levels and poverty rates within the customer base, due to likely concerns about affordability in the rate-setting process and the potential for public opposition to rate increases.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 14

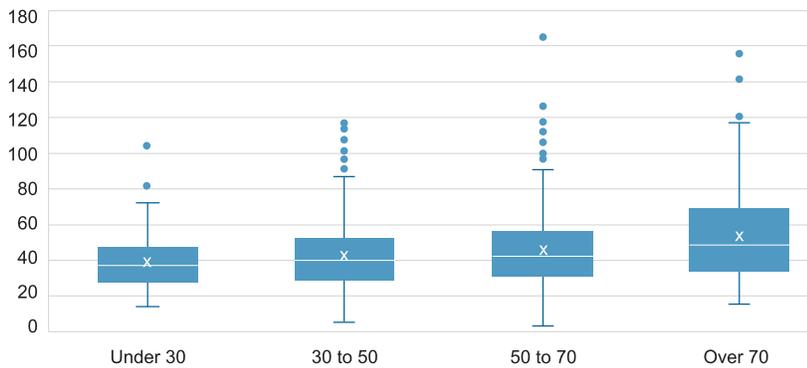
Water Rates By MHHEBI Levels



MHHEBI--Median household effective buying income. Source: S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 15

Sewer Rates By MHHEBI Levels



MHHEBI--Median household effective buying income. Source: S&P Global Ratings. Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

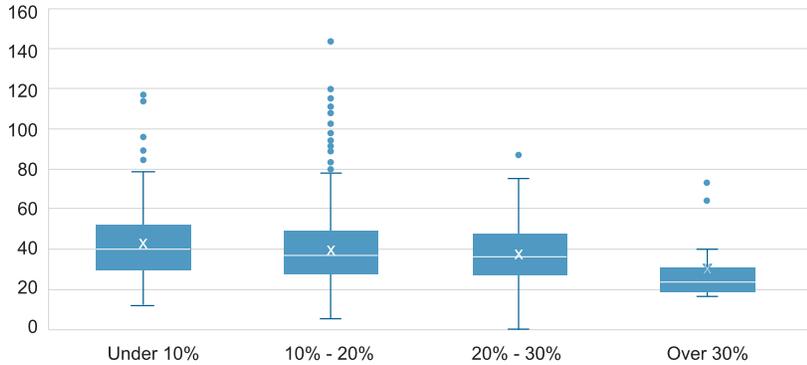
Looking at the data, it appears that higher poverty rates and lower income levels correlate with lower water and sewer bills. In short, ability to pay is a consideration in the rate-setting process. Both income and poverty rates appear to have a more substantial impact on sewer than water bills, possibly because one of the greatest factors in sewer capital plans is regulatory requirements, and there is regulatory sensitivity to affordability concerns. In contrast, water system costs are more the result of local water supply factors than regulatory requirements. It should be noted that the sample of rated utilities with poverty rates over 30% is substantially smaller than the other groups, as these communities likely seek to finance capital investments from other sources before issuing debt in the public market.

Both income and poverty rates appear to have a more substantial impact on sewer than water bills.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 16

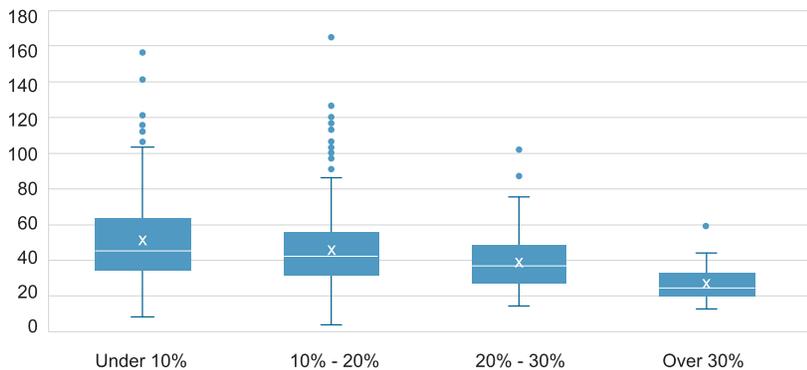
Water Rates By County Poverty Rate



Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 17

Sewer Rates By Poverty Rate



Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Geography Isn't Everything

There are a number of other contributors to system costs and rates, which are less easily quantified and not included in our analysis of creditworthiness. They include, among other factors, the type of technology used for processing and treatment (which affects energy, chemicals, and personnel costs); the average age of infrastructure and its condition; payments in lieu of taxes and other payment to or receipts from local governments; state and local regulatory requirements that may exceed federal standards; and economies of scale from using wholesale providers or combining administration of water, sewer, stormwater, and other utility billing and administration.

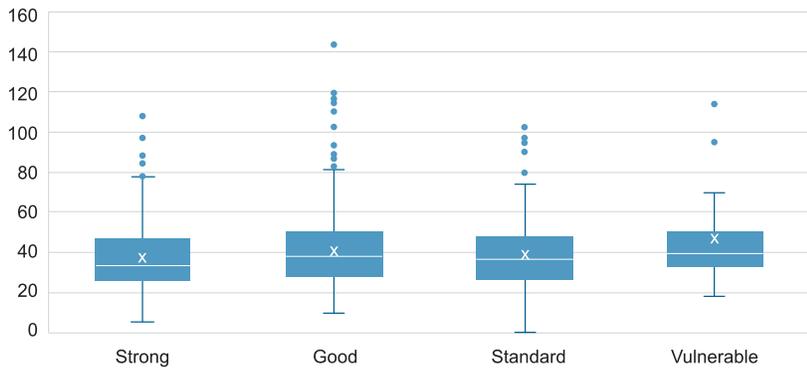
Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Additionally, in states where a PUC regulates the rates of publicly owned water and sewer systems, this can affect both the size and timing of rate changes.

One factor that we are able to review with our data set is whether the strength of rate-setting practices affects the rates charged to customers. The strength of rate-setting practices is part of our assessment of a system's operational management. The score reflects whether a utility does an annual check for revenue sufficiency, how proactive a utility is in setting rates to meet future revenue needs, whether an authority adopts multiyear rate increases or includes an annual adjustment for inflation, legal restrictions such as PUC oversight or control, and compliance with rate covenants and other financial requirements. There does not appear to be a substantial difference in rates depending on the strength of the rate-setting process. As with the percentage of utilities with county poverty rates over 30% above, the proportion of utilities with rate-setting assessments of "vulnerable" is substantially smaller than the rest of the sample.

Chart 18

Water Rates By Rate-Setting Practices

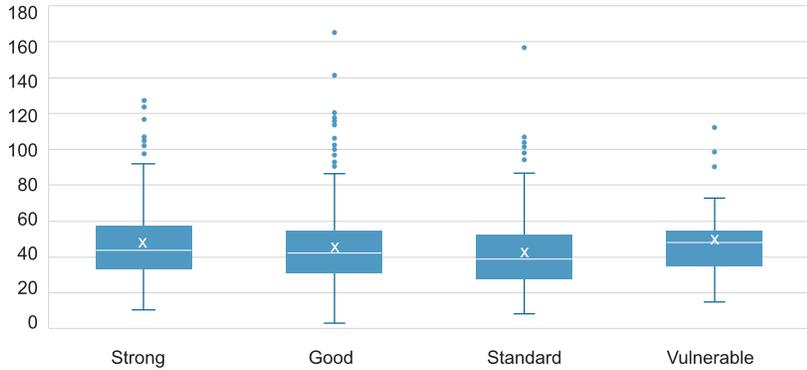


Source: S&P Global Ratings.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Chart 19

Sewer Rates By Rate-Setting Practices



Source: S&P Global Ratings.
 Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

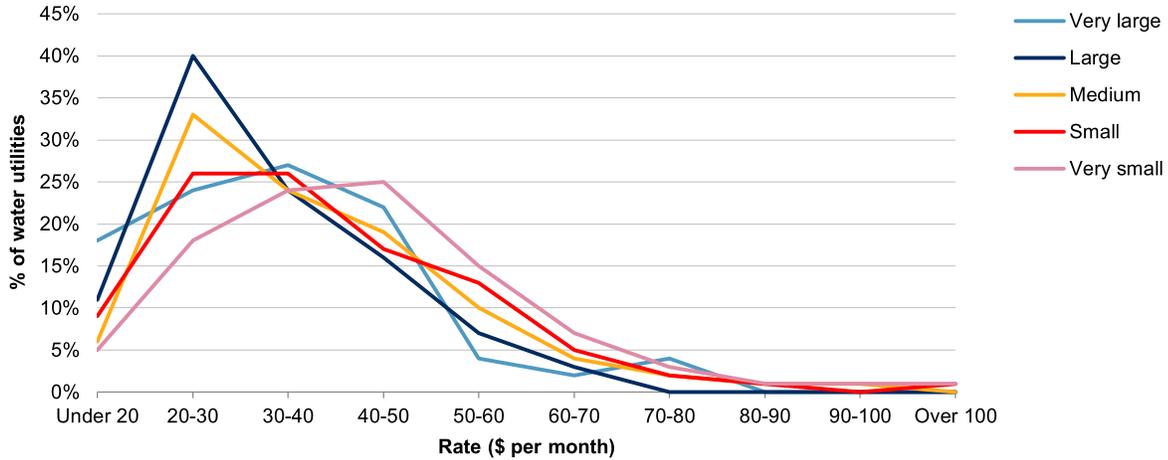
Another factor we considered was utility size. There are a number of advantages to operating a large utility: They are often located in areas with high population density, so there are more ratepayers per mile of pipe, and more customers in total to help pay for system costs. According to the 2018 AWWA survey, half of respondents from very large utilities expressed confidence that they would be "very able" to cover the full cost of providing service, in contrast to 27% and 29% of respondents from small and midsize utilities, respectively. The majority of utilities tracked by S&P Global Ratings fall into our "small" and "very small" categories (between \$5 million and \$25 million in annual operating revenues, and less than \$5 million, respectively). While the bulk of utilities in the "small" to "very large" categories charge rates still below \$40 per month, the highest rates in the sample get bigger as the systems get smaller: The highest rate in a very large system is less than \$80, but by the time you get to a midsize system, it is nearly \$110. Also, the distribution in very small systems appears skewed higher, with nearly half of very small systems setting monthly rates over \$50 as opposed to one-third of larger systems. In addition to having a smaller number of customers to absorb operating and fixed costs, smaller systems also tend to have more regulatory infractions, which can lead to fines and unanticipated capital expenses. (For more information about the effects of utility size, see "U.S. Municipal Utilities Sector 2018 Outlook: Being Bigger Has Its Advantages," published Jan. 18, 2018.)

Nearly half of very small water systems have monthly rates over \$50 as opposed to one-third of larger systems.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

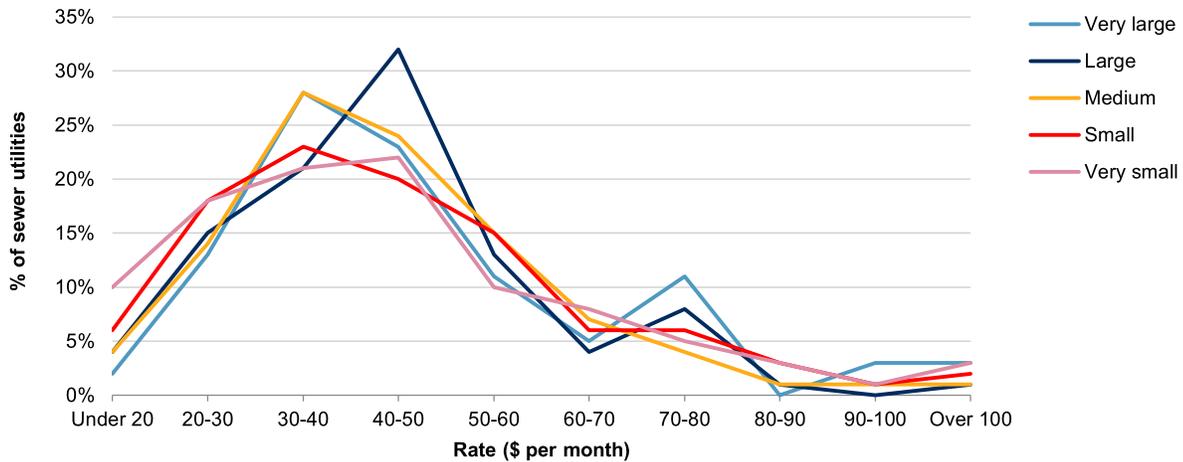
Chart 20

Water Rates By Utility Size



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Sewer Rates By Utility Size



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

There does not appear to be such a clear trend in sewer systems, potentially due to the importance of regulation in determining sewer system capital plans.

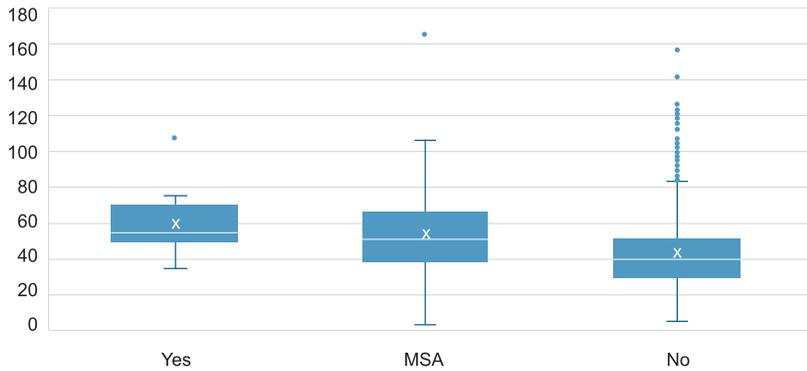
Some states or municipalities have their own environmental and health requirements above and beyond federal standards, such as Florida's restrictions on ocean outflows or local fluoride requirements. State-level differences would be captured in the regional analysis above. However, one of the major sources of costs for sewer utilities in recent decades has been federal EPA

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

consent decrees for sanitary sewer and combined sewer overflows. Plans to address overflows often take decades and many millions of dollars of capital work to address, including such activities as separating combined sewer systems, expanding wet weather capacity at treatment plants and in conveyance systems, and reducing inflow and infiltration throughout the system. As can be seen, the rates at utilities under a consent decree are substantially higher than those that are not.

Chart 22

Sewer Rates By Consent Decree



Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

We have also included a third category: utilities in the same metropolitan area as a utility under a consent decree. The effect of a consent decree on these systems can be either direct or indirect. Systems can be affected directly as wholesale customers of the system under a consent order. For example, the Allegheny County Sanitary Authority (ALCOSAN) serves 83 municipalities in the Pittsburgh area, and the majority of these systems only do collection and conveyance to ALCOSAN. As ALCOSAN has worked through implementing its Wet Weather Plan, it has adopted significant annual increases in the rates that its wholesale customers pay; these utilities then had to pass their rising costs on to ratepayers. Many of the municipalities have also had to do additional work to reduce inflow and infiltration within their service areas. In other areas, the effects may be more indirect, as rising rates at the utility under consent order may make rate increases more politically palatable for neighboring communities. While there will not always be such regional impacts, rates at utilities near one under consent order are also notably higher than those elsewhere. Given that consent decrees appear to lead to rate increases, it is important to note that the EPA does consider the affordability of system improvements. Those utilities (such as ALCOSAN) that have demonstrated affordability concerns have been able to work with the EPA to modify capital plans to reduce affordability stress, including prioritizing capital investments and extending the amount of time to implement capital plans.

Those utilities that have demonstrated affordability concerns have been able to work with the EPA to modify capital plans to reduce affordability stress.

Nationwide, Rates Are Rising

The AWWA each year since 2004 surveys its membership as part of its annual "State of the Water Industry" report. In the most recent report (May 2018), AWWA captures the continued trend of greater efficiency (generally measured in the industry as declining per capita per day

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

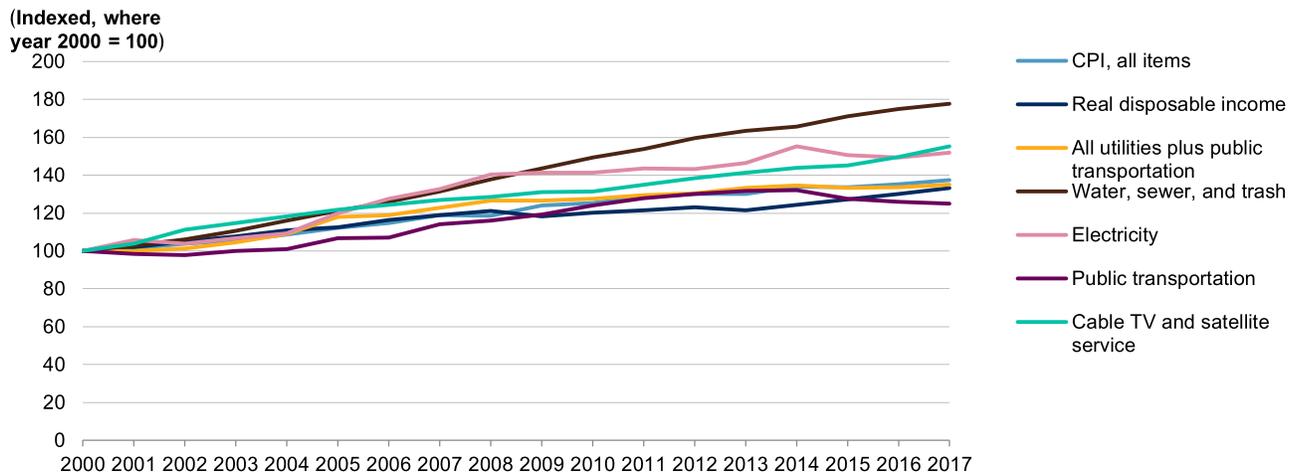
consumption) keeping total water sales flat if not slightly declining as fixed costs for replacements and renewals (regardless of whether discretionary or via unfunded mandates) increase. Simply put, greater revenue requirements and fixed costs are being spread over flat-to-declining sales. Simple numerator-denominator relationships do not favor rates, which remain pretty much the only source of operating revenues for utilities and the ability to pay for capital improvements. The AWWA survey's top two concerns among respondents are replacing aging infrastructure and the ability to finance those replacements.

Adding to the mix is that during the last major phase of large investments in the 1970s and 1980s, the federal level of participation was slightly larger, even as its total contribution to water and sewer infrastructure has remained relatively small overall ("Four Trends in Government Spending on Water and Wastewater Utilities since 1956," Shadi Eskaf, U.S. EPA's Region 4 Environmental Finance Center at University of North Carolina, Chapel Hill. Sept. 9, 2015). Most of the costs of most the infrastructure in the U.S., especially for water and surface transportation, has been borne by state and local governments (SLG). We have previously commented that even if an infrastructure incentive package is approved by Congress and the president, the SLG percentage of the total is unlikely to change appreciably.

While water and sewer provision in the developed world remains incredibly efficient and still with actual costs generally lower than premium TV or smart cellphones, the rate of growth year to year has generally outstripped those services and even outstripped both inflation and real incomes (see chart below). S&P Global Ratings anticipates this trend will continue unabated unless and until a different scheme for paying the costs of an extraordinarily capital-intensive industry has been established and proven.

Chart 23

Selected Inflation Rates, 2000 To 2017



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities**The Effects Of Consumption On Average Bills**

While this article has focused mostly on rates for 6,000 gallons, the actual average bill for households is strongly affected by the rate structure and average consumption levels. Where utility management is able to provide average consumption, we often consider that figure in place of the 6,000-gallon baseline so that our assessment of affordability more closely reflects an actual household bill. For example, in Pennsylvania, many issuers report average household consumption of 4,000 gallons per month (and some are even lower). However, this does not always affect affordability, as many Pennsylvania issuers charge a flat monthly rate, since encouraging conservation is far less of a concern than having predictable levels of revenue given local consumption patterns and water supply. In contrast, utilities in the West often report average consumption of 10,000 gallons or more, given significant irrigation in a dry climate. Rate structures that base sewer bills on winter water consumption attempt to avoid charging for wastewater treatment where water is being used for lawns, not toilets. Additionally, while the rates discussed above have assumed a non-conservation scenario, water rates during drought and other conservation periods can be substantially higher. Some of the utilities we rate charge an additional \$5 per thousand gallons or more during drought periods. These conservation rates are meant to serve as a short-term demand management tool. We would only expect customers to maintain usage levels and pay substantially higher bills for a prolonged period in areas with very low price sensitivity.

In recent years, increases in water and sewer rates have been tempered by increases in conservation. Managers at the utilities we work with have reported declining per capita consumption and flat water demand even as their customer bases have grown. S&P Global Ratings has reflected that within its approach to assessing rates: Its default assumption used to be 8,000 gallons of monthly usage, but it is now 6,000 gallons. However, many of the greatest conservation gains associated with the transition to low-flow appliances have been realized, and we increasingly hear from management that the decline in per-household usage is tapering. Additionally, with national trends of lower consumption and a higher share of fixed costs, many utilities are starting to generate more revenues from fixed charges, as opposed to volume-based revenues. Whereas in the past, increases in volumetric rates were offset by lower use, further increases will have more of an effect when consumption doesn't change or when rate structures draw more revenue from fixed charges.

Whereas in the past, increases in volumetric rates were offset by lower use, further increases will have a bigger effect when consumption doesn't change or when rate structures draw more revenue from fixed charges.

What Lies Ahead For Water And Sewer Rates?

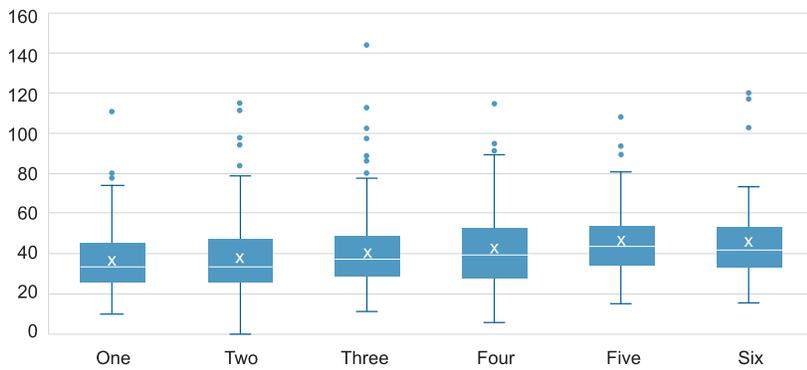
We do not anticipate that the rise in water and sewer rates will slow anytime soon. The tragedy of Flint, Mich., and periodic other high-profile infrastructure crises may create a fever pitch for elected officials and decision-makers to re-think priorities, but local and state budgets are already competing against other infrastructure needs that sometimes also affect rates, such as resilience, climate change, and emerging risks such as cybersecurity. The effect of rising rates on households has been somewhat mitigated over the past decade as water consumption rates have declined across the country and consumers become more savvy about water conservation and efficiency. However, many utilities report that the consumption curve has started to level off, as many of the easy fixes of low-flow plumbing have already been implemented. Shifts to increase the fixed portion of the bill to meet fixed utility costs and fewer easy ways to reduce water bills mean that future rate increases will affect households more directly. Changes will be most difficult in small and rural communities that lack economies of scale and have large amounts of infrastructure relative to the population.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

There have been a number of policy proposals in recent years focused on spurring greater infrastructure investment, including in water and sewer systems. However, it appears that few of these will address concerns about rising system costs and affordability. Most of the policy proposals have focused on expanding federal state revolving funds, the Water Infrastructure Finance and Innovation Act, and other sources of debt, while some focus on increasing private participation in public utilities. However, based on our sample, we can see that higher levels of debt correlate with higher rates. In time, declining public funding and additional debt financing for capital needs will push more system costs onto ratepayers.

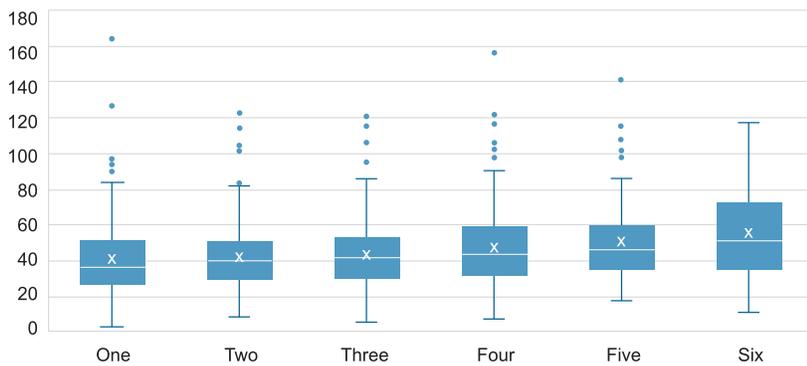
In time, declining public funding and additional debt financing for capital needs will push more system costs onto ratepayers.

Chart 24
Water Rates By Debt Score



Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Chart 25
Sewer Rates By Debt Score



Source: S&P Global Ratings.
Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

The federal EPA has already demonstrated its willingness to work with utilities to allocate more time than was originally proposed to meet overflow concerns while reducing rate shock. Last year, a bill was introduced in the U.S. House of Representatives to create a program to provide grants to municipalities and public water and sewer utilities affected by federal consent decrees so they can provide assistance to low-income households. Some in the EPA as well as local utilities nationwide have pushed for an update to the definition of "affordability" to look at the effects of rates on low- and fixed-income populations, as opposed to the current approach, which focuses on a single metric. AWWA also reports increased interest in affordability programs, and some utilities are already implementing alternative payment plans, base rates, and other forms of financial assistance.

We at S&P Global Ratings will continue to monitor this negotiation between rising costs and affordability concerns to see if management teams continue to obtain the revenue increases as needed to maintain financial strength and keep the water and sewer sector one of the most highly rated in public finance.

This report does not constitute a rating action.

Affordable For Now: Water And Sewer Rates At U.S. Municipal Utilities

Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.

No content (including ratings, credit-related analyses and data, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse engineered, reproduced or distributed in any form by any means, or stored in a database or retrieval system, without the prior written permission of Standard & Poor's Financial Services LLC or its affiliates (collectively, S&P). The Content shall not be used for any unlawful or unauthorized purposes. S&P and any third-party providers, as well as their directors, officers, shareholders, employees or agents (collectively S&P Parties) do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Parties are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, for the results obtained from the use of the Content, or for the security or maintenance of any data input by the user. The Content is provided on an "as is" basis. S&P PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs or losses caused by negligence) in connection with any use of the Content even if advised of the possibility of such damages.

Credit-related and other analyses, including ratings, and statements in the Content are statements of opinion as of the date they are expressed and not statements of fact. S&P's opinions, analyses and rating acknowledgment decisions (described below) are not recommendations to purchase, hold, or sell any securities or to make any investment decisions, and do not address the suitability of any security. S&P assumes no obligation to update the Content following publication in any form or format. The Content should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. S&P does not act as a fiduciary or an investment advisor except where registered as such. While S&P has obtained information from sources it believes to be reliable, S&P does not perform an audit and undertakes no duty of due diligence or independent verification of any information it receives. Rating-related publications may be published for a variety of reasons that are not necessarily dependent on action by rating committees, including, but not limited to, the publication of a periodic update on a credit rating and related analyses.

To the extent that regulatory authorities allow a rating agency to acknowledge in one jurisdiction a rating issued in another jurisdiction for certain regulatory purposes, S&P reserves the right to assign, withdraw or suspend such acknowledgment at any time and in its sole discretion. S&P Parties disclaim any duty whatsoever arising out of the assignment, withdrawal or suspension of an acknowledgment as well as any liability for any damage alleged to have been suffered on account thereof.

S&P keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P may have information that is not available to other S&P business units. S&P has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

S&P may receive compensation for its ratings and certain analyses, normally from issuers or underwriters of securities or from obligors. S&P reserves the right to disseminate its opinions and analyses. S&P's public ratings and analyses are made available on its Web sites, www.standardandpoors.com (free of charge), and www.ratingsdirect.com and www.globalcreditportal.com (subscription), and may be distributed through other means, including via S&P publications and third-party redistributors. Additional information about our ratings fees is available at www.standardandpoors.com/usratingsfees.

STANDARD & POOR'S, S&P and RATINGSDIRECT are registered trademarks of Standard & Poor's Financial Services LLC.



**D.C. WATER AND SEWER AUTHORITY
BOARD OF DIRECTORS
FINANCE & BUDGET
JANUARY COMMITTEE MEETING**

**Thursday, January 24, 2019; 11:00 a.m.
Blue Plains Wastewater Treatment Plant
5000 Overlook Avenue, SW, DC
AGENDA**

Call to Order	Chairman
December 2018 Financial Report	Chief Financial Officer
Agenda for February Committee Meeting	Chairman
Adjournment	Chairman

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