



# DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

## Board of Directors

*Joint Meeting of the  
DC Retail Water and Sewer Rates and  
Finance and Budget Committees*

*5000 Overlook Avenue, SW, Room 407  
Tuesday, January 23, 2018  
10:30 a.m.*

## AGENDA

- I. **Call to Order**.....Rachna Bhatt, DC Retail Water and Sewer Rates, Chairperson  
Timothy L. Firestine, Finance & Budget, Chairperson
- II. **FY 2019 Proposed Budget** (Attachment 1) ..... Matthew T. Brown
- III. **Executive Session\***
- IV. **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.



## FY 2019 Proposed Budget Review

Presentation to the Joint Committee meeting of the DC Retail Water & Sewer and Finance & Budget on January 23, 2018

**DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY**



*Enhanced Clarification Facility*



*"Lucy" Tunnel Boring Machine – First Street Tunnel Project*

*Optimization, Accountability, and Transparency*



# Agenda

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# Executive Summary



## Proposed FY 2019 Budget

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- 💧 DC Water's FY 2019 proposed budget reflects management's continued focus on controlling core operating costs, investing in aging infrastructure, and maintaining a high level of customer service
- 💧 The total operating budget proposal of \$582.8M reflects an increase of \$20.8M over the FY 2018 approved budget
  - Personnel Services - \$13.4M increase primarily due to ratified union contract
  - Non Personnel Services - \$1.8M net increase primarily for chemicals and contractual services, offset by reduction in electricity costs
  - Other - Debt Service increase of \$13.5M, PILOT increase of \$0.3M offset by reduction in Cash Financed Capital Improvements (CFCI) of \$8.2M
- 💧 The 10-year CIP (FY 2018 – FY 2027) proposal of \$4.0B reflects an increase of \$250.5M over last year's plan of \$3.75B
  - DC Clean Rivers - \$90.8M increase to reflect current expenditure schedule
  - Water & Sewer Projects - \$110.3M increase for infrastructure improvements
  - Revised FY 2018 disbursement budget of \$450M is \$62.7M higher than the FY 2018 approved budget

# dc Proposed Revenues, Rates and Fee Changes

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## Proposed FY 2019 and FY 2020 Rates, Fees and Charges

- Management recommends a multi-year rate proposal covering FY 2019 and FY 2020
- Combined rate increase for water, sewer and CRIAC lowered from 6.1% forecasted last year to 5.6%
  - Proposed annual water and sewer rate increase of 13% for FY 2019 and 5% for FY 2020
- Proposed Clean Rivers Impervious Area Charge (CRIAC) of \$23.00 per Equivalent Residential Unit (ERU) in FY 2019 and \$25.58 per ERU in FY 2020
- Customer Metering Fee and Water System Replacement Fee (WSRF) will remain the same as in FY 2018



## Budget Snapshot: Jan 4, 2018 Workshop

(\$ in millions)	FY 2018 Adopted	FY 2018 Revised*	Increase (Decrease) \$	FY 2019 Proposed	Increase (Decrease)	
					\$	%
<b>Capital Disbursements</b>						
- Annual	\$387.3	\$450.0	\$62.7	\$439.1	(\$10.9)	(2.4%)
- Ten-Year	\$3,751.6	n/a	n/a	\$4,002.1	\$250.5	6.7%
<b>Operating Expenditures</b>						
- O&M	\$319.8			\$335.1	\$15.3	4.8%
- Non O&M	\$242.1	n/a	n/a	\$247.7	\$5.6	2.3%
<b>- Total</b>	<b>\$561.9</b>			<b>\$582.8</b>	<b>\$20.9</b>	<b>3.7%</b>
<b>Operating Revenues</b>						
- Retail	\$489.9	\$493.9	\$4.0	\$518.3	\$24.4	4.9%
- Wholesale	\$76.0	\$76.0	-	\$79.2	\$3.2	4.2%
- Other	\$51.3	\$50.6	(\$0.7)	\$52.0	\$1.4	2.8%
<b>- Total</b>	<b>\$617.2</b>	<b>\$620.5</b>	<b>\$3.3</b>	<b>\$649.5</b>	<b>\$29.0</b>	<b>4.7%</b>

\* Reflects FY 2018 revised proposal



# Budget Process & Calendar

Timeline (2018)	Activity	Status
January 4	<b>Budget Workshop with Board of Directors</b>	✓
January 5	Wholesale Customer Briefing	✓
	<b>Committee Discussions &amp; Reviews</b>	
January 18	Environmental Quality & Operations	✓
→ <b>January 23</b>	Joint D.C. Retail Water & Sewer Rates and Finance & Budget	
February 1	Board Meeting ( <i>No Board Action Required</i> )	
	<b>Committee Reviews &amp; Recommendations to Full Board</b>	
February 15	Environmental Quality & Operations	
February 20	D.C. Retail Water & Sewer Rates	
February 22	Finance & Budget	
<b>March 1</b>	<b>Board Adoption</b>	





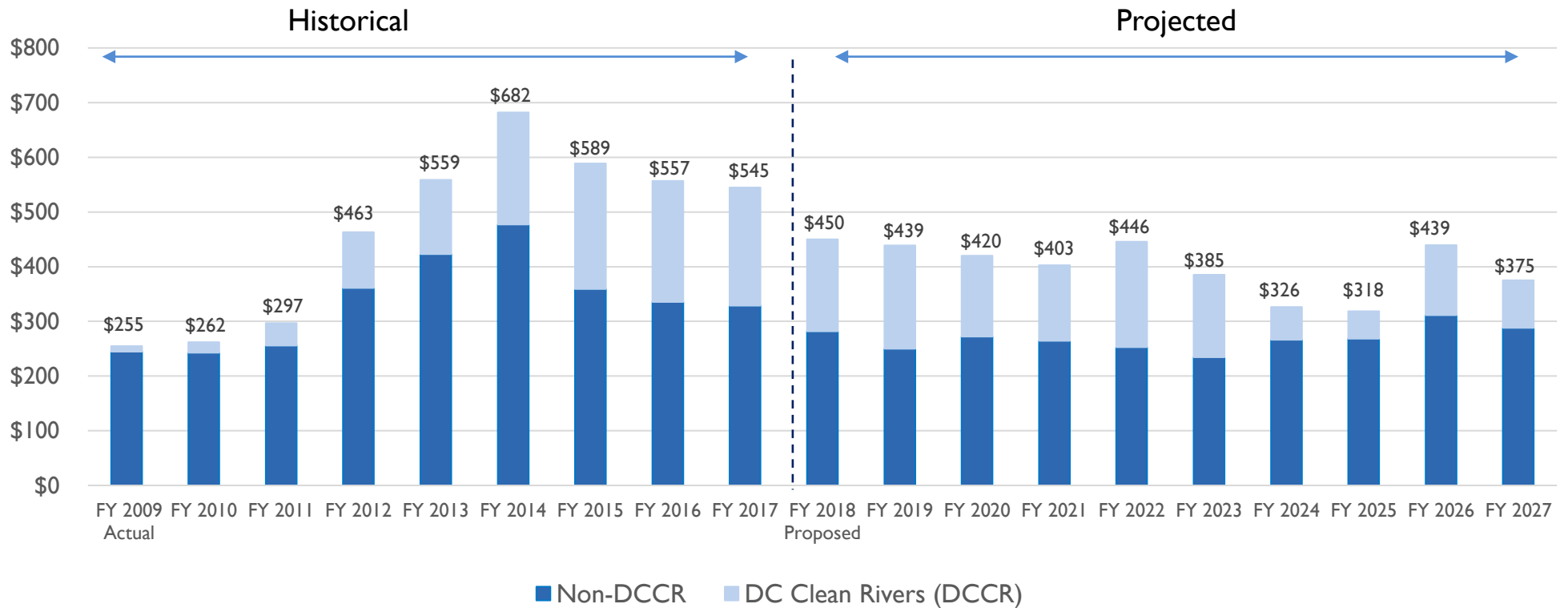
# Proposed FY 2018 – FY 2027 Capital Improvement Program



# CIP: Historical & Projected Disbursements

- DC Clean Rivers is a major driver of the total CIP
  - Historical (FY 2009 – FY 2017) CIP totals \$4.2B / DC Clean Rivers' portion - \$1.2B or 28.1%
  - Proposed (FY 2018 – FY 2027) CIP totals \$4.0B / DC Clean Rivers' portion - \$1.3B or 32.8%

FY 2009 – FY 2027





# 10-Year CIP: Disbursements & Lifetime

- Proposed ten-year capital disbursement is \$4.0B
- Proposed lifetime budget of \$11.1B is for active projects prior to, during, and beyond the ten-year window

Service Area (\$000's)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Disbursement	Lifetime Budget
Non Process Facilities	\$ 32,194	\$ 33,107	\$ 18,907	\$ 7,860	\$ 1,551	\$ 25	\$ 6,615	\$ 7,773	-	-	\$ 108,032	\$ 169,147
Wastewater Treatment	95,485	74,617	77,853	87,960	89,820	69,560	51,607	62,172	117,623	129,252	855,948	3,551,799
Combined Sewer Overflow	13,502	10,951	12,511	9,831	10,227	13,397	20,124	15,593	7,393	5,622	119,151	387,665
DC Clean Rivers	168,314	189,392	148,042	138,289	192,859	151,111	59,569	50,018	128,404	87,197	1,313,196	2,764,255
Stormwater	945	4,909	2,400	2,312	5,839	1,212	1,784	1,642	1,276	2,133	24,452	81,392
Sanitary Sewer	29,802	32,947	34,045	53,050	74,492	73,917	75,912	58,882	60,769	38,672	532,490	1,530,036
Water	58,044	45,747	84,256	62,341	48,241	53,471	88,055	99,661	101,344	89,510	730,672	1,939,272
<b>Capital Projects</b>	<b>398,285</b>	<b>391,670</b>	<b>378,015</b>	<b>361,644</b>	<b>423,029</b>	<b>362,694</b>	<b>303,665</b>	<b>295,742</b>	<b>416,809</b>	<b>352,386</b>	<b>3,683,941</b>	<b>10,423,566</b>
Capital Equipment	39,898	34,518	29,383	27,998	9,579	10,306	10,850	11,177	12,122	12,303	198,133	198,133
Washington Aqueduct	11,768	12,930	12,944	13,039	13,039	12,312	11,768	11,441	10,496	10,315	120,052	120,052
<b>Additional Capital Programs</b>	<b>51,665</b>	<b>47,448</b>	<b>42,327</b>	<b>41,037</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>318,185</b>	<b>318,185</b>
Labor												390,145
<b>Total CIP</b>	<b>\$449,950</b>	<b>\$439,118</b>	<b>\$420,342</b>	<b>\$402,681</b>	<b>\$445,647</b>	<b>\$385,312</b>	<b>\$326,284</b>	<b>\$318,360</b>	<b>\$439,427</b>	<b>\$375,004</b>	<b>\$4,002,125</b>	<b>11,131,895</b>
Last Year's CIP	387,306	394,843	427,208	378,542	335,725	321,367	315,467	302,588	381,579		3,751,623	
(Increase) / Decrease	(62,644)	(44,274)	6,865	(24,139)	(109,923)	(63,945)	(10,817)	(15,772)	(57,849)	(375,004)	(250,503)	



# Comparative Ten-Year CIP Budget

- Ten-year CIP disbursements is projected to increase by \$250.5M, with \$237.6M in capital construction projects in the following areas:
  - Non Process Facilities – Headquarters, Fleet Services and Sewer Operations facilities
  - Wastewater Treatment – National Pollutant Discharge Elimination System (NPDES) Permit requirements
  - DC Clean Rivers – Consent decree requirements
  - Sanitary Sewer – Collection and trunk sewers
  - Water – Ongoing replacement program, pumping stations and distribution systems
  
- Additional Capital Programs – Projected increase of \$12.9M mainly for Capital Equipment and Washington Aqueduct

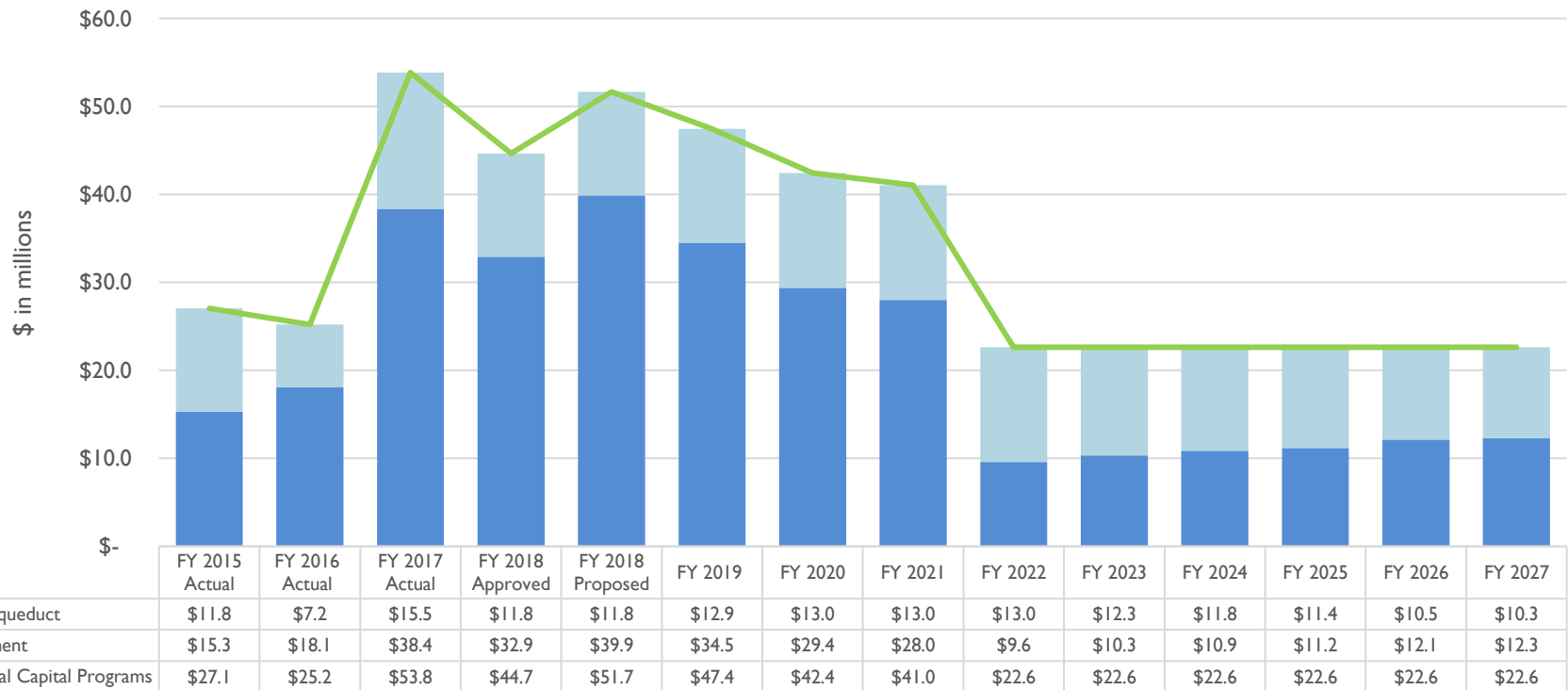
Service Area (\$000's)	FY 2017 - FY 2026 Disbursement Approved	FY 2018 - FY 2027 Disbursement Proposed	(Increase)/ Decrease
Non Process Facilities	\$ 85,486	\$ 108,032	\$ (22,546)
Wastewater Treatment	844,706	855,948	(11,242)
Combined Sewer Overflow	117,826	119,151	(1,325)
DC Clean Rivers	1,222,320	1,313,196	(90,876)
Stormwater	23,055	24,452	(1,397)
Sanitary Sewer	513,517	532,490	(18,973)
Water	639,387	730,672	(91,285)
<b>Capital Projects</b>	<b>3,446,297</b>	<b>3,683,941</b>	<b>(237,644)</b>
Capital Equipment	193,119	198,133	(5,014)
Washington Aqueduct	112,207	120,052	(7,845)
<b>Additional Capital Programs</b>	<b>305,326</b>	<b>318,185</b>	<b>(12,859)</b>
<b>Total CIP</b>	<b>\$ 3,751,623</b>	<b>\$ 4,002,125</b>	<b>\$ (250,503)</b>



# Additional Capital Programs

- **Capital Equipment** - Major drivers include future implementation of Enterprise Resource Planning (ERP) System and ongoing purchase and replacement needs for meters, vehicles, major pumps and facility improvements
- **Washington Aqueduct** – Reflects DCW’s share of WAD’s capital projects, excluding the Advanced Treatment Project (Total estimated cost of \$359.8M; DCW - \$265M)

Historical & Proposed (Cash Disbursement)





## FY 2018 CIP: Proposed Adjustments

💧 The FY 2018 revised budget of \$450M reflects an increase of \$62.6M above the approved FY 2018 budget

Service Area (\$000's)	Actual FY 2017	Approved FY 2018	Revised FY 2018	(Increase) Decrease	Proposed FY 2019
Non Process Facilities	\$25,189	\$20,030	\$32,194	(\$12,165)	\$33,107
Wastewater Treatment	148,104	98,423	95,485	2,938	74,617
Combined Sewer Overflow	13,127	13,762	13,502	260	10,951
DC Clean Rivers	216,298	116,713	168,314	(51,601)	189,392
Stormwater	1,384	2,682	945	1,738	4,909
Sanitary Sewer	40,059	39,294	29,802	9,493	32,947
Water	47,309	51,738	58,044	(6,306)	45,747
<b>Capital Projects</b>	<b>491,470</b>	<b>342,642</b>	<b>398,285</b>	<b>(55,643)</b>	<b>391,670</b>
Capital Equipment	38,362	32,897	39,898	(7,001)	34,518
Washington Aqueduct	15,483	11,768	11,768	0	12,930
<b>Additional Capital Programs</b>	<b>53,845</b>	<b>44,665</b>	<b>51,665</b>	<b>(7,001)</b>	<b>47,448</b>
<b>Total CIP</b>	<b>\$545,315</b>	<b>\$387,306</b>	<b>\$449,950</b>	<b>(\$62,644)</b>	<b>\$439,118</b>



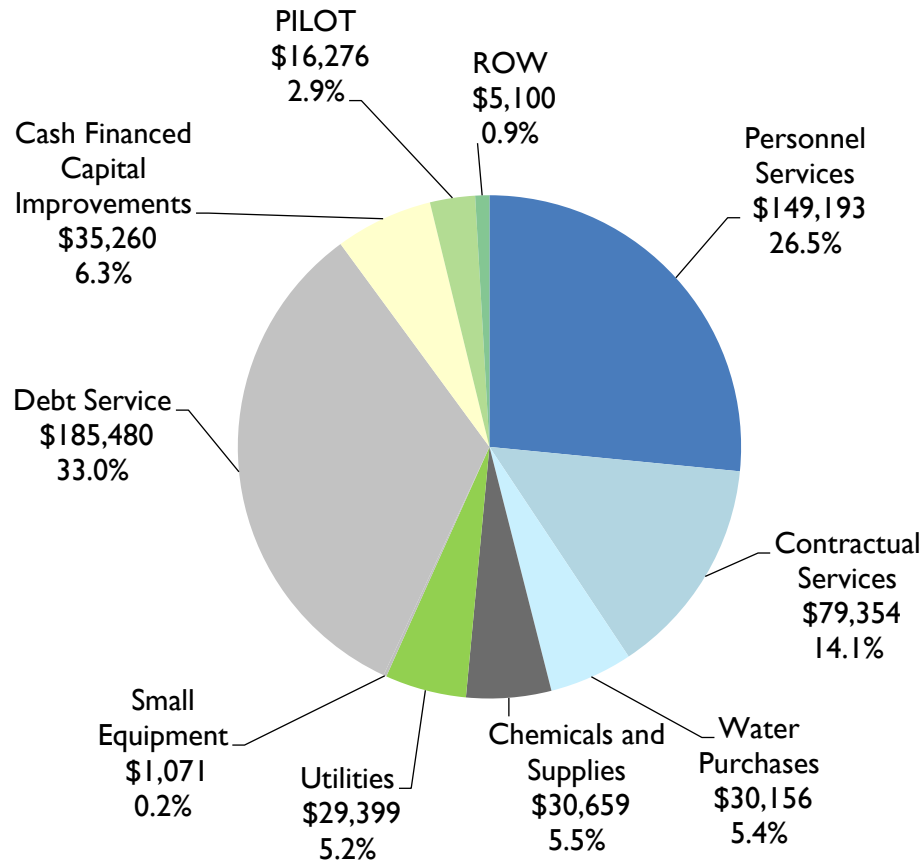
# Operating Expenditure



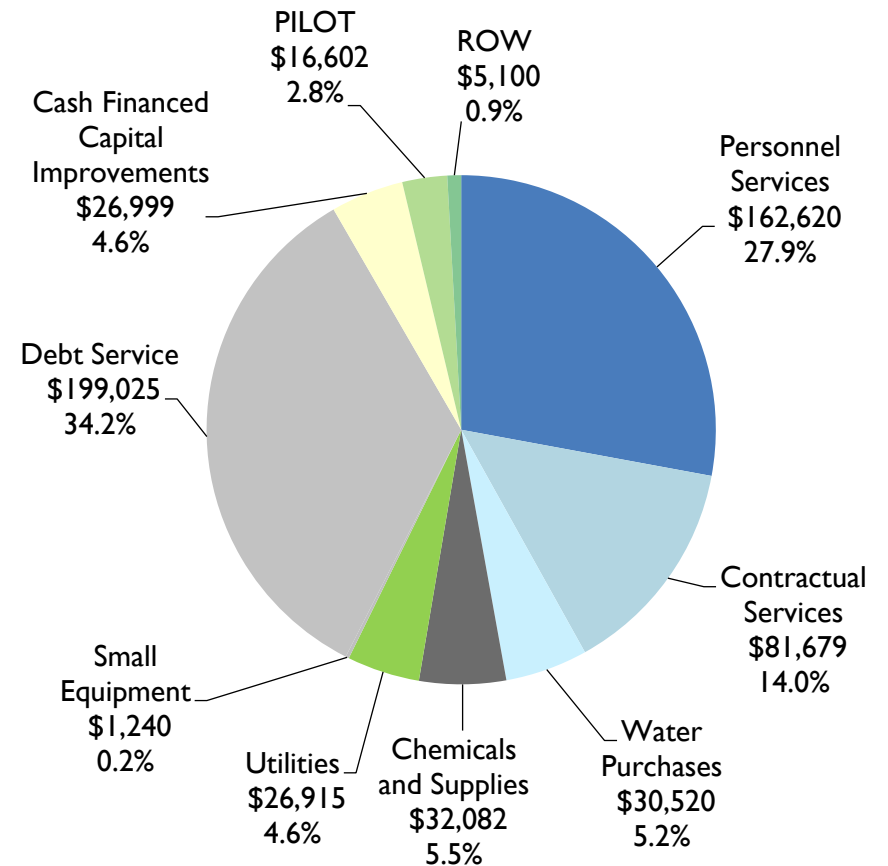
# FY 2018 vs. FY 2019 Expenditure Budgets

**Approved FY 2018**  
\$561,947

(\$000's)



**Proposed FY 2019**  
\$582,781







## Comparison by Cost Category

- 💧 Total Operating expenditure is projected to increase by \$20.8M or 3.7%
- 💧 Total O&M expenditure is projected to increase by \$15.2M or 4.8%

(\$000's)	FY 2017 Approved	FY 2017 Actual	FY 2017 Variance	FY 2018 Approved	FY 2019 Proposed	(Increase)/ Decrease
<i>Authorized Headcount</i>	1260	1260	0	1260	1274	(14)
Regular Pay	\$ 103,910	\$ 108,676	\$ (4,766)	\$ 107,618	\$ 118,909	\$ (11,291)
Benefits	34,096	32,466	1,630	35,397	36,137	(740)
Overtime	6,755	8,150	(1,395)	6,178	7,575	(1,397)
<b>Total Personnel Services</b>	<b>144,761</b>	<b>149,293</b>	<b>(4,532)</b>	<b>149,193</b>	<b>162,620</b>	<b>(13,427)</b>
Chemicals & Supplies	34,709	31,373	3,336	30,659	32,082	(1,423)
Utilities	28,670	24,260	4,410	29,399	26,915	2,484
Contractual Services	82,760	72,951	9,809	79,354	81,679	(2,325)
Water Purchases	29,278	26,796	2,482	30,156	30,520	(364)
Small Equipment	1,230	1,178	52	1,071	1,240	(169)
<b>Total Non-Personnel Services</b>	<b>176,647</b>	<b>156,557</b>	<b>20,090</b>	<b>170,638</b>	<b>172,435</b>	<b>(1,797)</b>
<b>Total Operations &amp; Maintenance</b>	<b>\$ 321,408</b>	<b>\$ 305,850</b>	<b>\$ 15,558</b>	<b>\$ 319,831</b>	<b>\$ 335,055</b>	<b>\$ (15,224)</b>
Debt Service	169,346	161,208	8,138	185,480	199,025	(13,545)
PILOT & ROW	21,057	21,057	-	21,376	21,702	(326)
Cash Financed Capital Improvement	24,014	24,199	(185)	35,260	26,999	8,261
<b>Total Non-O&amp;M</b>	<b>214,417</b>	<b>206,464</b>	<b>7,953</b>	<b>242,116</b>	<b>247,726</b>	<b>(5,610)</b>
<b>Total Operating Expenditure</b>	<b>\$ 535,825</b>	<b>\$ 512,314</b>	<b>\$ 23,511</b>	<b>\$ 561,947</b>	<b>\$ 582,781</b>	<b>\$ (20,834)</b>
Capital Labor Charges	(21,934)	(17,231)	(4,703)	(21,061)	(18,259)	(2,802)
<b>Net Operating Expenditure</b>	<b>\$ 513,891</b>	<b>\$ 495,083</b>	<b>\$ 18,808</b>	<b>\$ 540,886</b>	<b>\$ 564,522</b>	<b>\$ (23,636)</b>

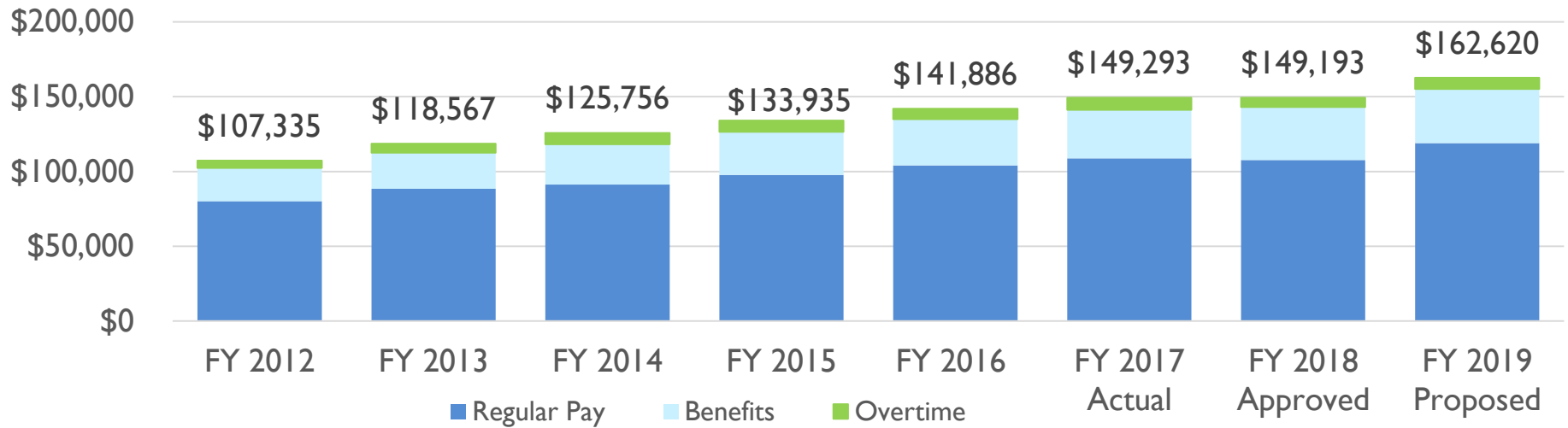
\* FY 2017 actual has been updated to reflect the audited financial statement and is consistent with previously reported total operating budget projections of \$512.8M



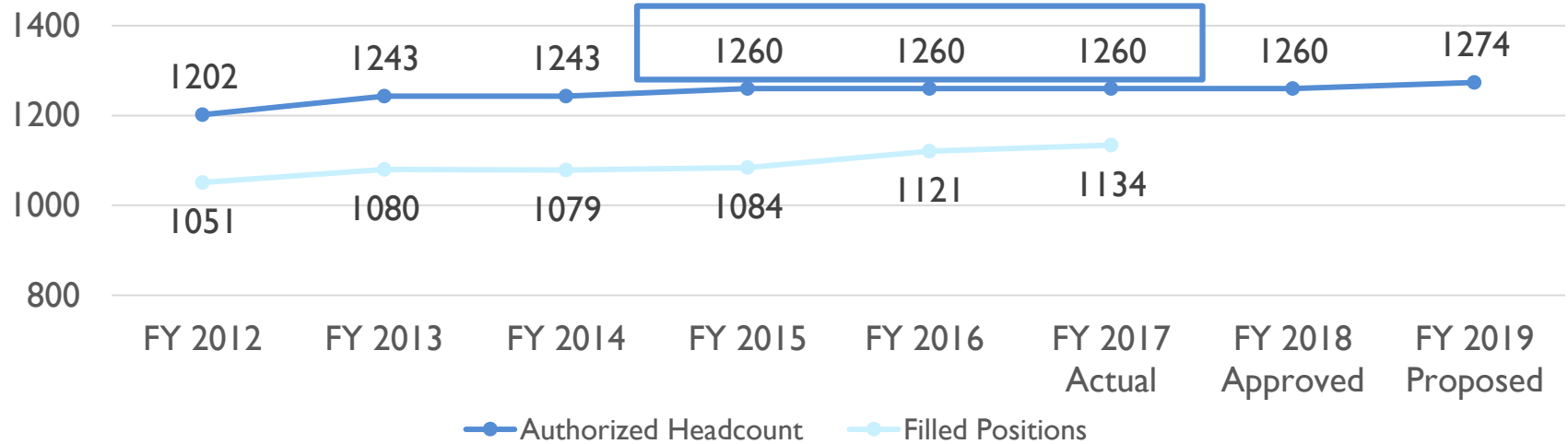
# Personnel Services

\$ in thousands

### Historical & Projected Personnel Expenditure



### Historical & Projected Headcount





## Personnel Services: Benefits

- Major drivers of employee benefits include DCW's share of health coverage costs, retirement and employment taxes
- Proposed FY 2019 benefit at 30.6% of regular pay is consistent with historical trends

Historical & Projected Costs	Actual FY 2015	Actual FY 2016	Actual FY 2017	Approved FY 2018	Proposed FY 2019	(Increase)/Decrease
Life Insurance	\$ 124	\$ 138	\$ 179	\$ 151	\$ 160	\$ (9)
Health	12,375	13,464	13,369	16,504	16,087	417
Dental	445	477	467	529	545	(16)
Optical	133	137	135	194	198	(4)
Retirement	9,206	9,848	10,579	10,035	10,620	(585)
Employment Taxes	6,452	6,797	7,671	7,722	8,054	(332)
Moving/Transit Subsidy	54	90	65	262	473	(211)
<b>Total Benefits</b>	<b>\$ 28,789</b>	<b>\$ 30,951</b>	<b>\$ 32,466</b>	<b>\$ 35,397</b>	<b>\$ 36,137</b>	<b>\$ (740)</b>

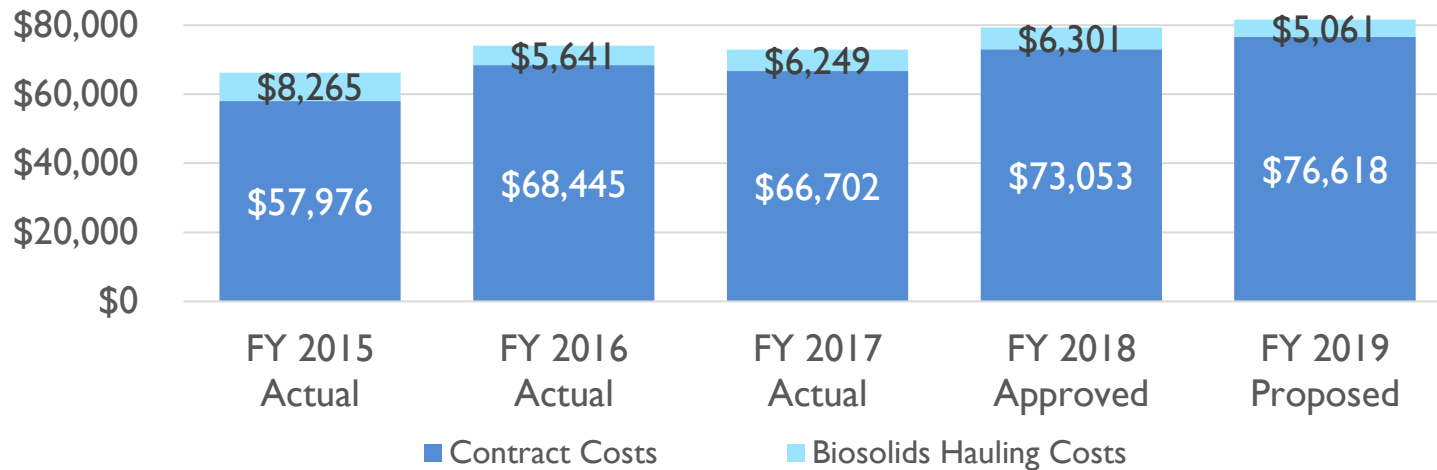
Benefits % of Regular Pay	Actual FY 2015	Actual FY 2016	Actual FY 2017	Approved FY 2018	Proposed FY 2019	(Increase)/Decrease
Life Insurance	0.1%	0.1%	0.2%	0.1%	0.1%	0.0%
Health	12.7%	13.3%	11.3%	14.0%	13.6%	0.4%
Dental	0.5%	0.5%	0.4%	0.4%	0.5%	-0.1%
Optical	0.5%	0.1%	0.1%	0.2%	0.2%	0.0%
Retirement	9.4%	9.7%	8.9%	8.5%	9.0%	-0.5%
Employment Taxes	6.6%	6.7%	6.5%	6.5%	6.8%	-0.3%
Moving/Transit Subsidy	0.1%	0.1%	0.1%	0.2%	0.4%	-0.2%
<b>Total % of Pay</b>	<b>29.5%</b>	<b>30.5%</b>	<b>30.0%</b>	<b>33.1%</b>	<b>30.6%</b>	<b>2.5%</b>



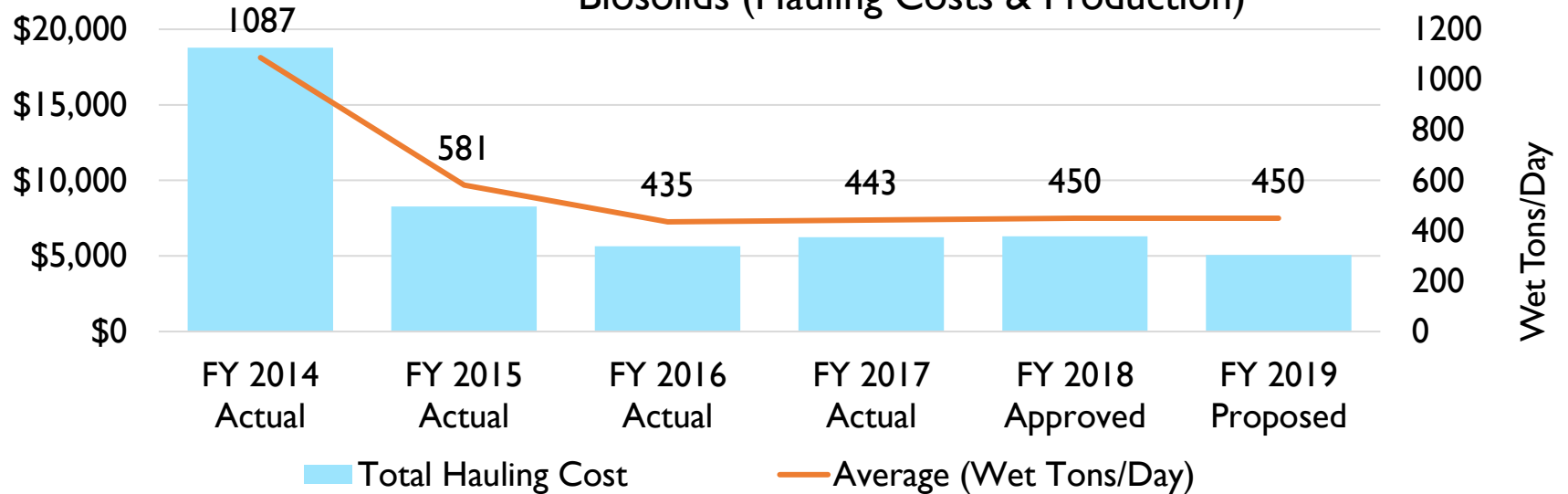
# Contracts & Biosolids

\$ in thousands

Contract Services (inclusive of Biosolids)



Biosolids (Hauling Costs & Production)

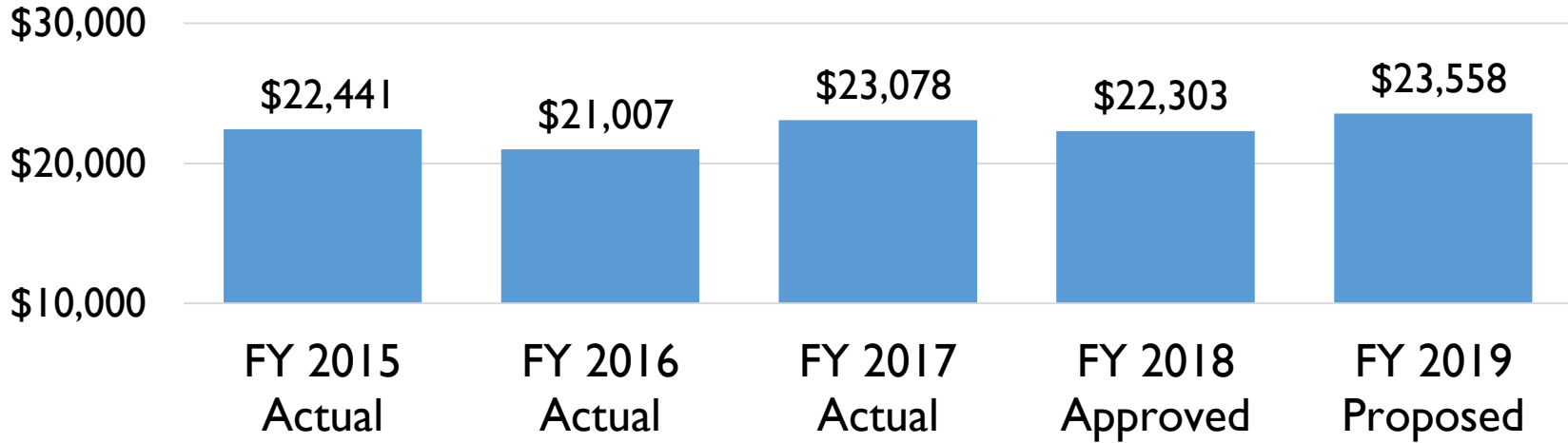




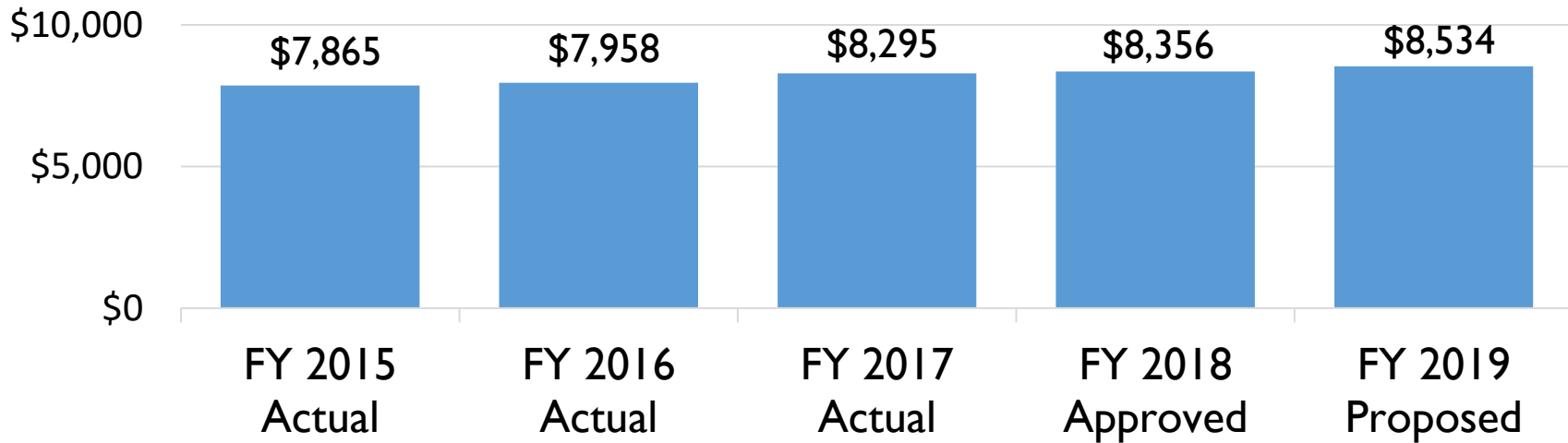
# Chemicals & Supplies

\$ in thousands

## Chemicals



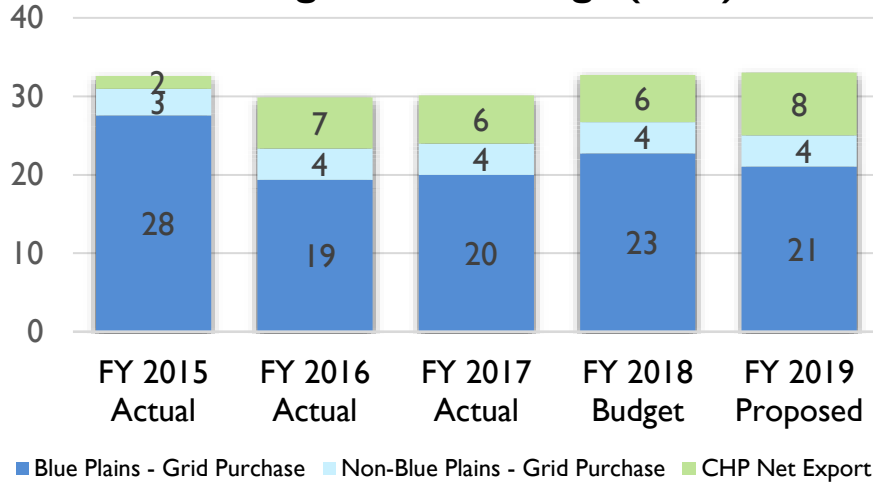
## Supplies



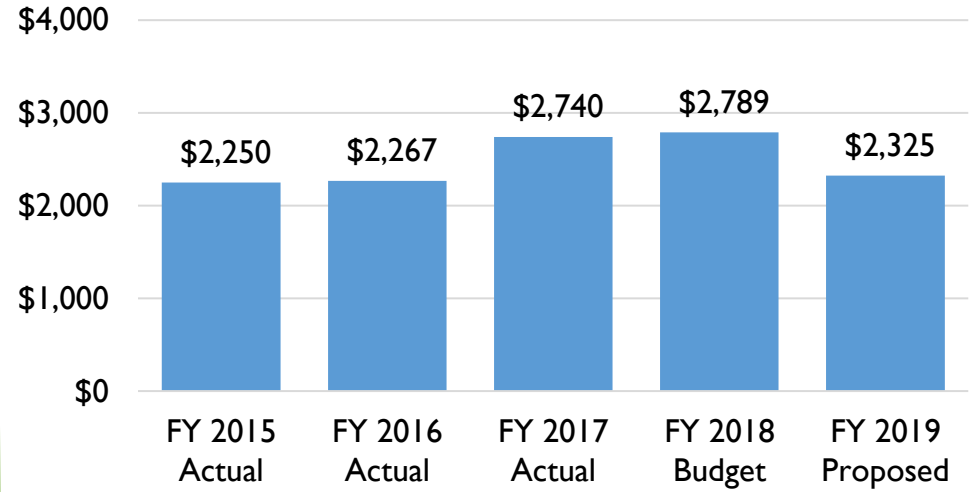


# Utilities

### Average Electric Usage (MW)

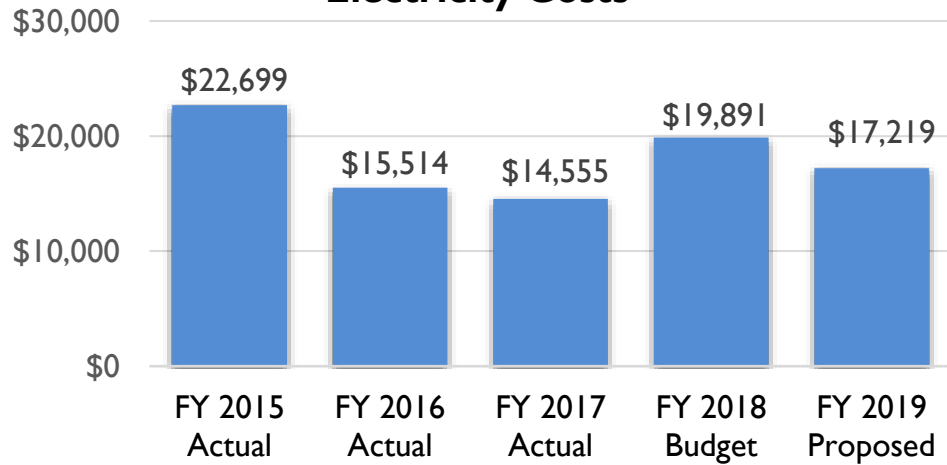


### Water Usage

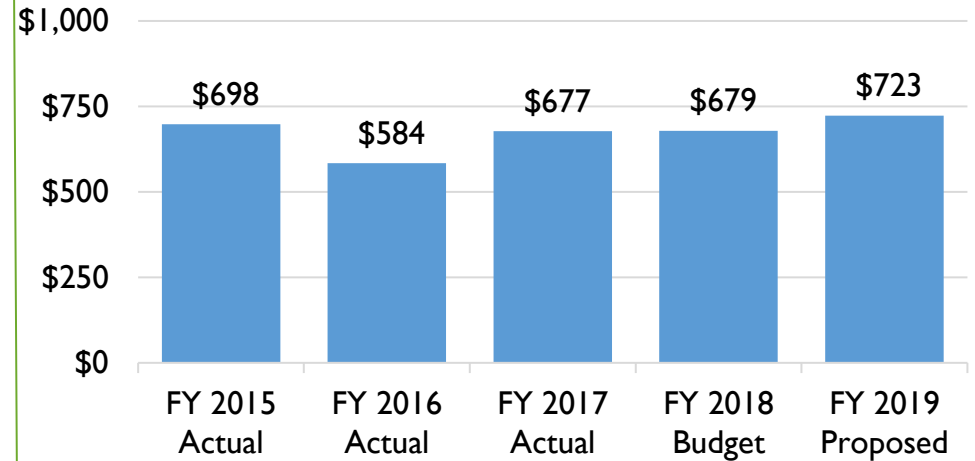


\$ in thousands

### Electricity Costs



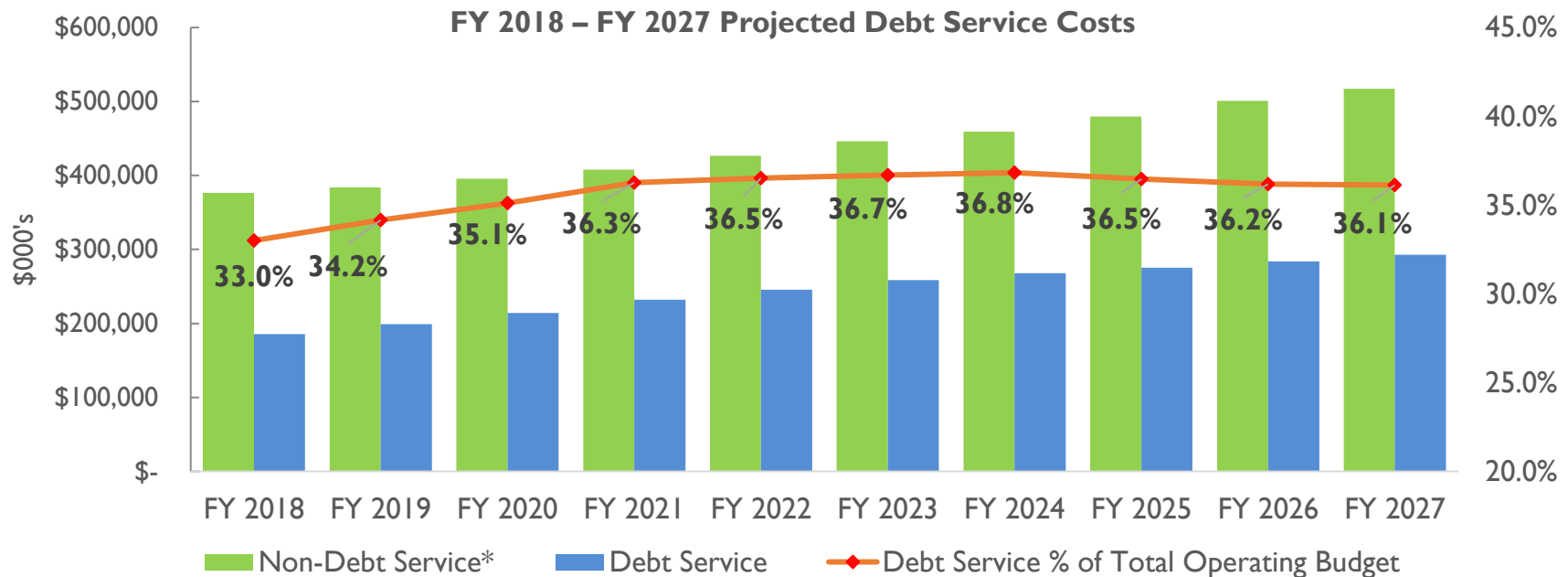
### Fuel





# Debt Service

- 💧 New Bond Issuance - \$300M anticipated during Spring 2018
- 💧 Debt Service – Overall increase is to support the Capital Improvement Programs
  - Represents 33% and 34.2% of the total operating budgets in FY 2018 and FY 2019, respectively
  - Projected to grow from \$185.5M in FY 2018 to \$292.7M by FY 2027 (approx. 58% increase)
  - Projected ten-year average of 36% of total operating budget



\* Non-Debt Service includes O&M, PILOT, ROW and CFCI estimates



## Operational Budget Risks

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- 💧 Higher plant flows and biosolids production
- 💧 Operational and maintenance impacts of new facilities
  - Combined Heat & Power (CHP) – Electricity generation
  - Filtrate Treatment Facility (FTF) & Tunnel Dewatering Pump Station (TDPS) – Electricity and chemicals
- 💧 Market conditions and price volatilities (chemicals and electricity)
- 💧 Healthcare, litigation, claims and insurance premiums
- 💧 Personnel adjustments/projections for insourcing of major contracts (e.g. electrical utilization control and systems maintenance contracts)





# Proposed Revenues, Rates, Fees, & Financial Plan

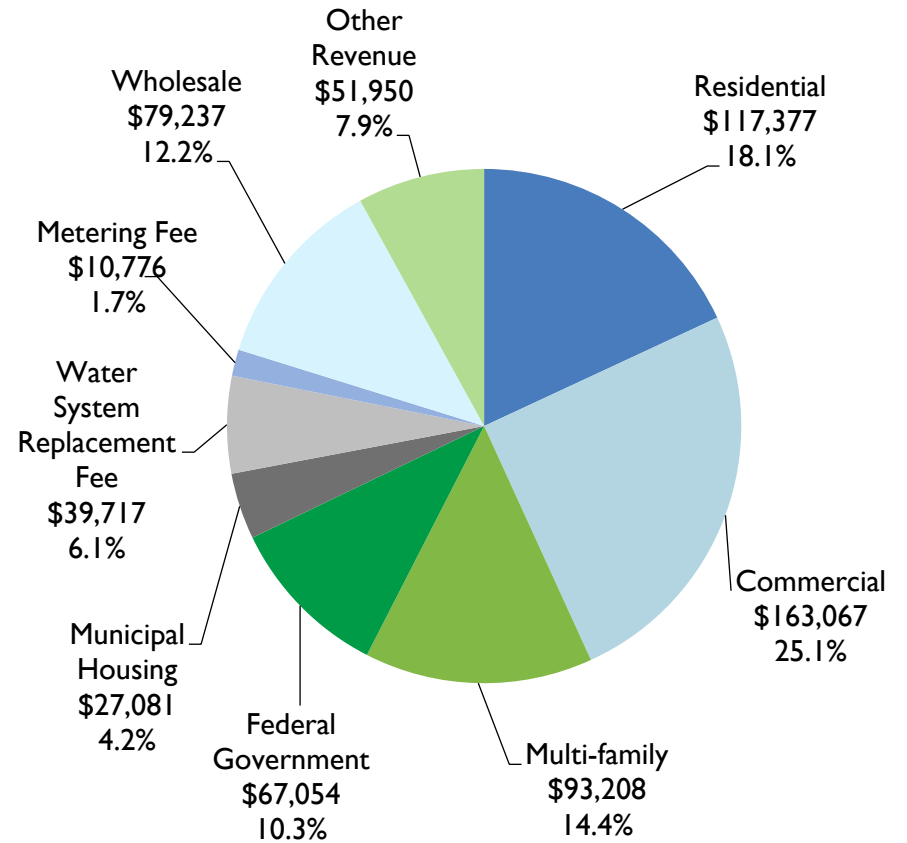
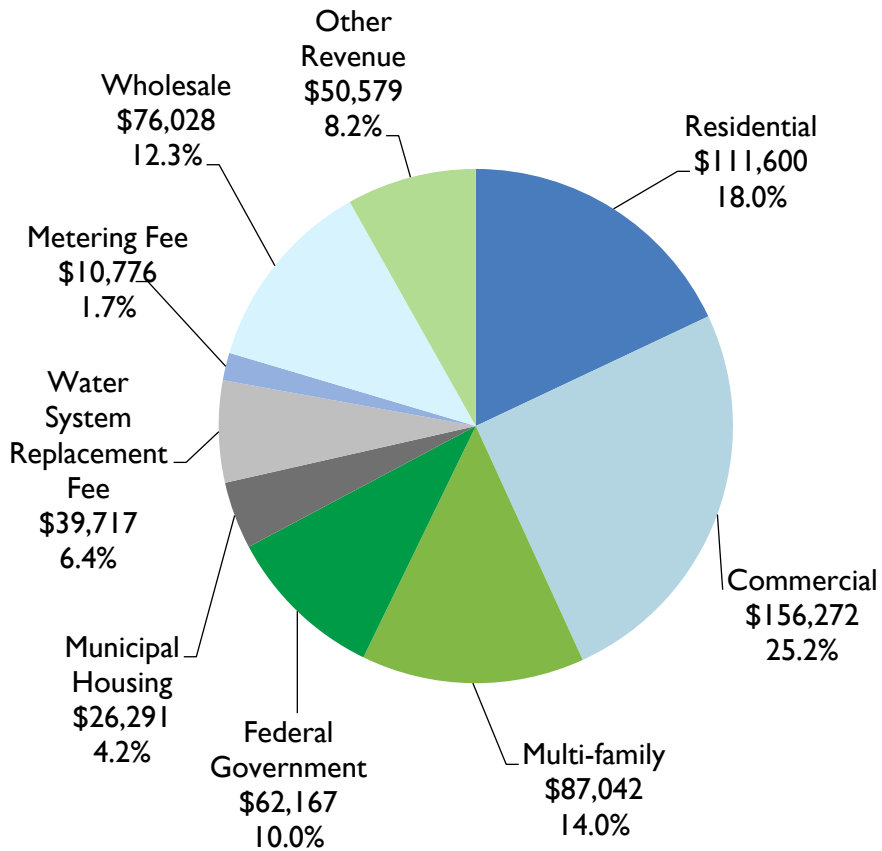


# FY 2018 vs. FY 2019 Operating Revenues

**Revised FY 2018**  
**\$620,472**

(\$000's)

**Proposed FY 2019**  
**\$649,467**





## Revenue Comparison by Customer Class

- Total revenue is projected to increase by \$29.0M or 4.7% for FY 2019 and \$36.3M or 5.6% for FY 2020
- Retail revenue is projected to increase by \$24.4M or 4.9% for FY 2019 and \$30.7M or 5.9% for FY 2020
- Wholesale revenue is projected to increase by \$3.2M or 4.2% for FY 2019 and \$2.4M or 3.0% for FY 2020

	Revised	Proposed	Proposed	FY 2019 vs		FY 2020 vs	
	FY 2018	FY 2019	FY 2020	FY 2018		FY 2019	
		(\$000's)		Incr/(Decr)	%	Incr/(Decr)	%
				\$	%	\$	%
Retail Revenue	\$493,865	\$518,281	\$549,000	\$24,416	4.9%	\$30,719	5.9%
Wholesale Revenue							
Potomac Interceptor (PI)	2,715	2,715	2,715	-	-	-	-
Loudoun County Sanitation Authority (LCSA)	5,418	6,150	6,416	732	13.5%	266	4.3%
Washington Suburban Sanitary Commission (WSSC)	55,320	57,628	59,357	2,308	4.2%	1,729	3.0%
Fairfax County	12,575	12,743	13,126	168	1.3%	383	3.0%
Total Wholesale Revenue	\$76,028	\$79,236	\$81,614	\$3,208	4.2%	\$2,378	3.0%
Other Revenue	50,579	51,950	55,154	1,371	2.7%	3,204	6.2%
Rate Stabilization Fund	-	-	-	-	-	-	-
Total Revenues	\$620,472	\$649,467	\$685,768	\$28,995	4.7%	\$36,301	5.6%

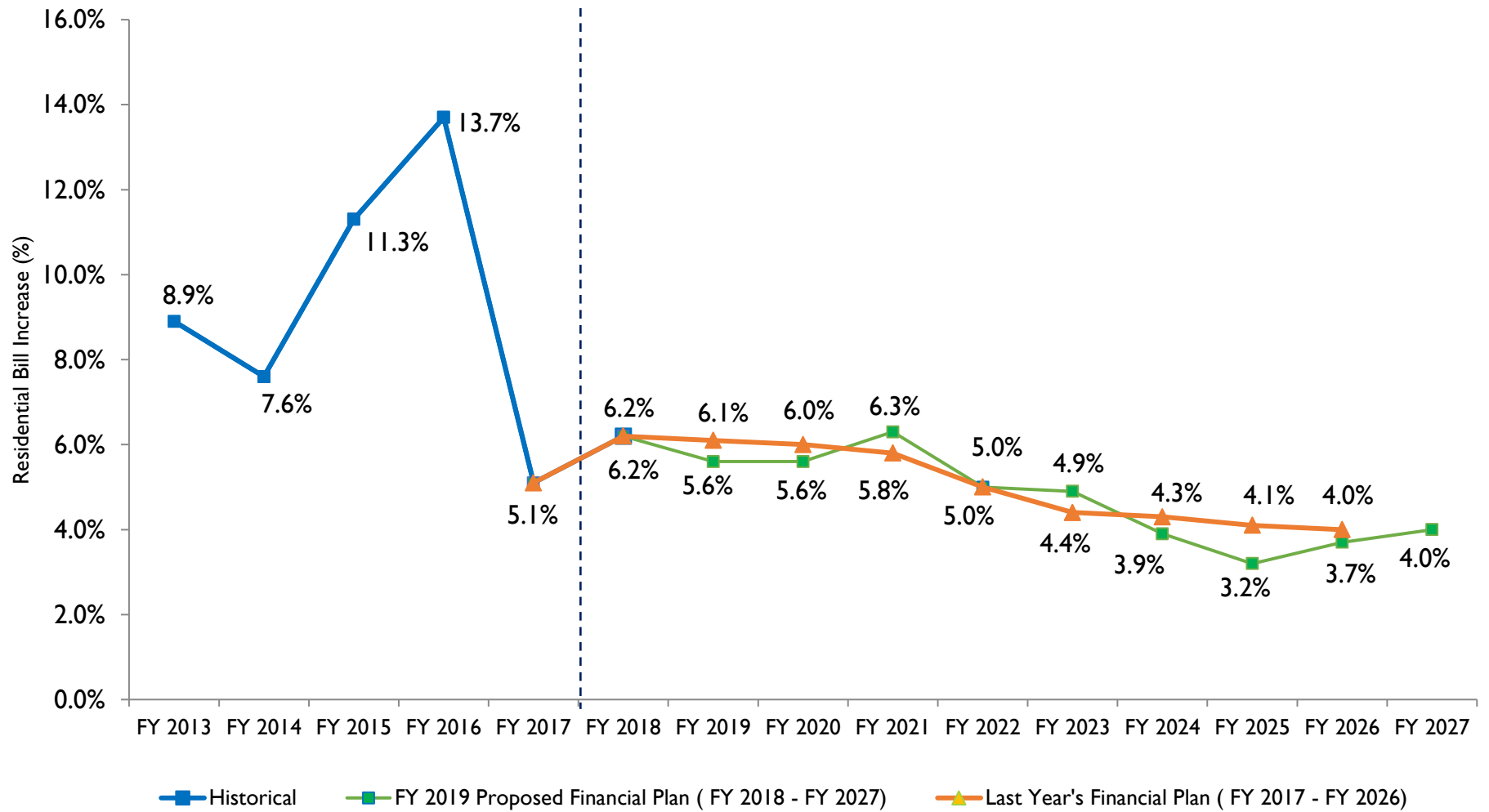


## FY 2019 vs FY 2018 Revenues

	Actual FY 2018	Proposed FY 2019	FY 2019 vs FY 2018	
			Incr/(Decr)	
	(\$000's)		\$	%
Residential & Commercial	\$268,463	\$299,927	\$31,464	11.7%
D. C. Government	8,122	9,082	\$960	11.8%
Federal Government	39,620	41,525	\$1,905	4.8%
D. C. Housing Authority	7,429	8,303	\$874	11.8%
Groundwater	5	5	-	-
Metering Fee	10,776	10,776	-	-
Water System Replacement Fee (WVSRF)	39,717	39,717	-	-
Right-of-Way Fee / PILOT	21,601	21,701	\$100	0.5%
CR-IAC CSO Revenue	119,733	108,945	(\$10,788)	-9.0%
<b>Retail Revenue</b>	<b>\$515,467</b>	<b>\$539,981</b>	<b>\$24,515</b>	<b>4.8%</b>
Wholesale Revenue	76,028	79,237	3,209	4.2%
Other Revenue	28,978	30,249	1,271	4.4%
<b>Total Revenues</b>	<b>\$620,473</b>	<b>\$649,467</b>	<b>\$28,995</b>	<b>4.7%</b>
Rate increase - Proposed Plan	5.0%	13.0%		
Rate increase - Last Year's Adopted Plan	5.0%	5.0%		
CRIAC - Proposed Plan	\$25.18	\$23.00	(\$2.18)	
CRIAC - Last Year's Board Adopted Plan	\$25.18	\$28.41	\$3.23	



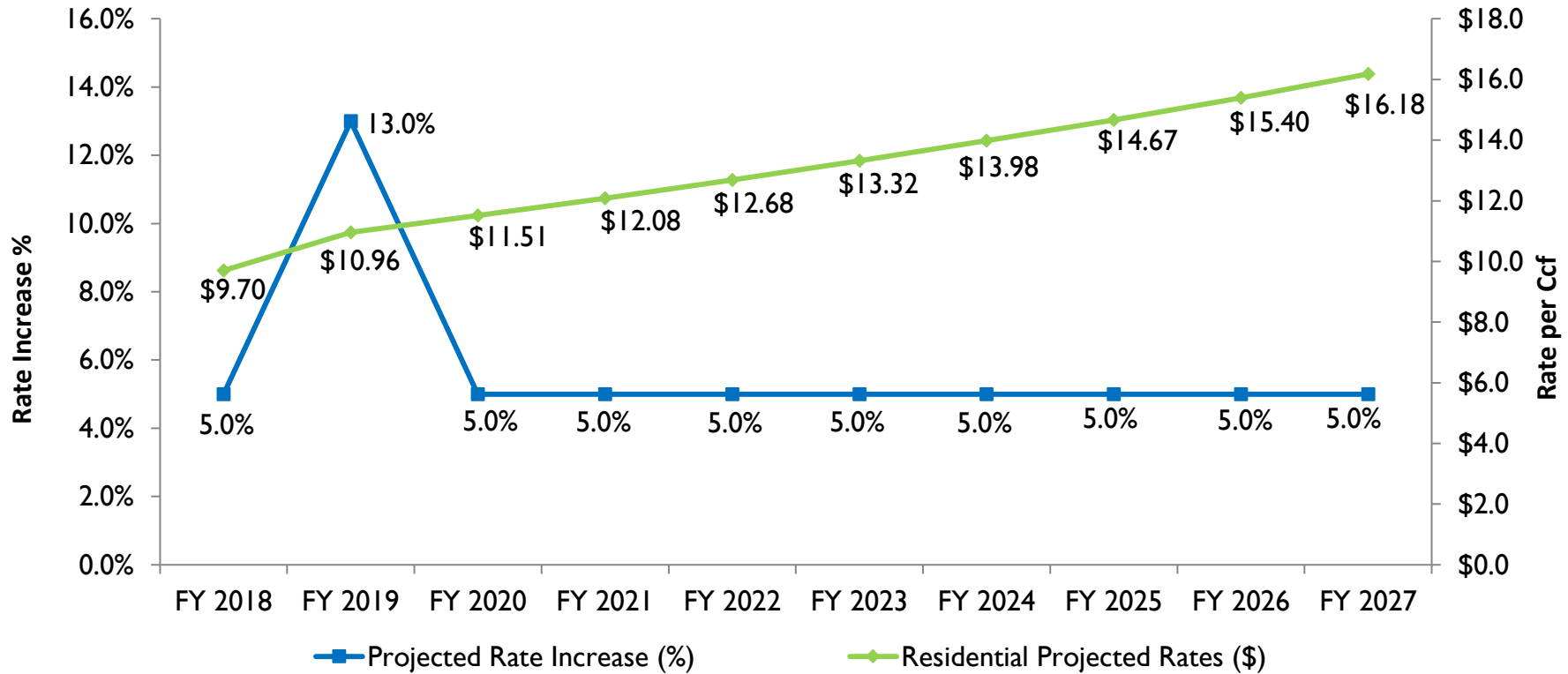
# Historical and Projected Combined Rate Increases





# Projected Retail Water & Sewer Rates

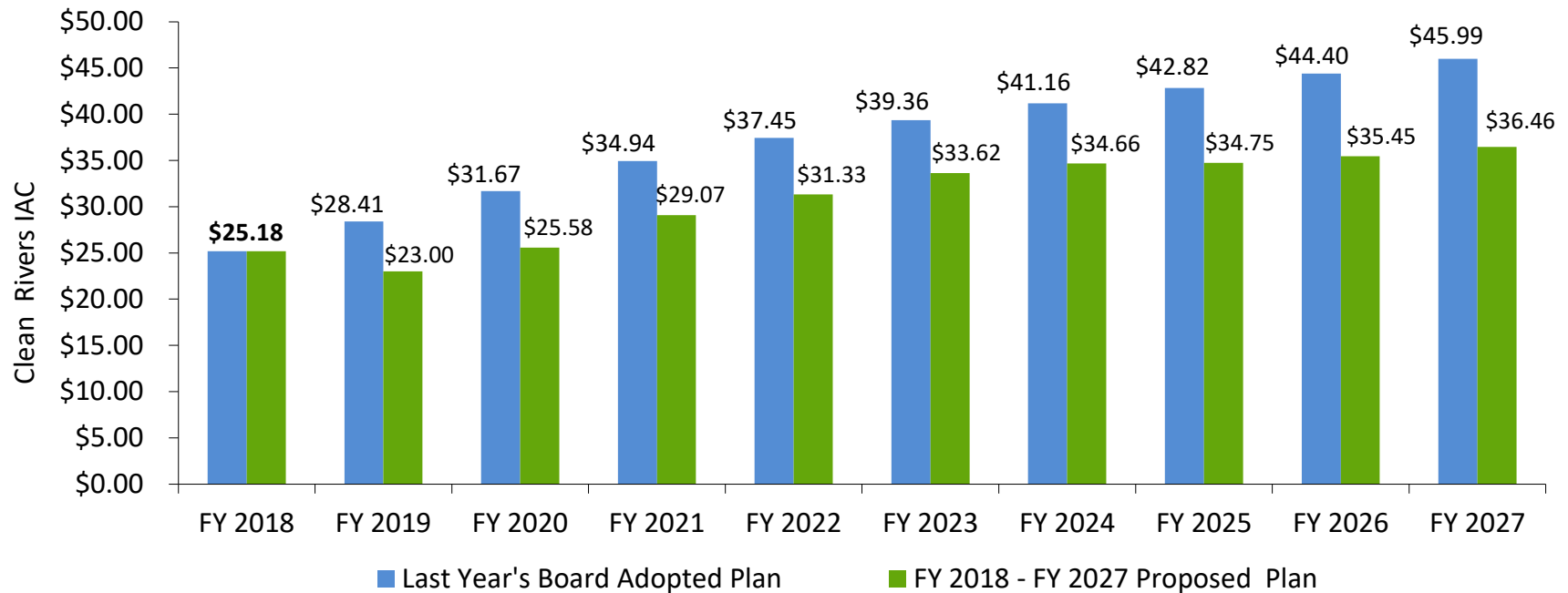
- Projected annual rate increase of 13% in FY 2019 and 5% from FY 2020 to FY 2027
- Projected water and sewer rate increase from \$9.70 to \$16.18/Ccf



\* Rates shown above reflect weighted water and sewer rates for the Residential customer category



# Projected Clean Rivers Impervious Area Charge



- The projected charges displayed in the chart above are primarily driven by anticipated debt service costs necessary to support the \$2.6 billion Clean Rivers Project, which includes the federally mandated CSO-LTCP and the nine minimum controls program
- The annual Clean Rivers Project costs for the average Tier 2 residential customer (700 – 2,000 sq. ft. of impervious area) is projected to increase from \$276.00 in FY 2019 to \$437.52 in FY 2027



# Average Customer Monthly Bill FY 2017 – FY 2020

	Units	FY 2017	Current FY 2018	Proposed FY 2019	Proposed FY 2020
DC Water and Sewer Retail Rates <sup>(1)</sup>	Ccf	\$ 57.25	\$ 60.13	\$ 67.94	\$ 71.33
DC Water Clean Rivers IAC	ERU	22.24	25.18	23.00	25.58
DC Water Customer Metering Fee	5/8"	3.86	3.86	3.86	3.86
DC Water Water System Replacement Fee	5/8"	6.30	6.30	6.30	6.30
<b>Subtotal DC Water Rates &amp; Charges</b>		<b>\$ 89.65</b>	<b>\$ 95.47</b>	<b>\$ 101.10</b>	<b>\$ 107.07</b>
Increase / Decrease		\$ 4.63	\$ 5.82	\$ 5.63	\$ 5.97
District of Columbia PILOT <sup>(1)</sup>	Ccf	\$ 2.98	\$ 3.04	\$ 3.10	\$ 3.16
District of Columbia Right-of-Way Fee <sup>(1)</sup>	Ccf	1.05	1.12	1.12	1.18
District of Columbia Stormwater Fee <sup>(4)</sup>	ERU	\$ 2.67	2.67	2.67	2.67
<b>Subtotal District of Columbia Charges</b>		<b>\$ 6.70</b>	<b>\$ 6.83</b>	<b>\$ 6.89</b>	<b>\$ 7.01</b>
<b>Total Amount</b>		<b>\$ 96.35</b>	<b>\$ 102.30</b>	<b>\$ 107.99</b>	<b>\$ 114.08</b>
Increase / Decrease Over Prior Year		\$ 4.70	\$ 5.95	\$ 5.69	\$ 6.09
<b>Percent Increase in Total Bill</b>		<b>5.1%</b>	<b>6.2%</b>	<b>5.6%</b>	<b>5.6%</b>
Less: CAP Discount (4 Ccf per month) <sup>(1), (2)</sup>		(38.36)	(40.24)	(45.16)	(47.36)
Water System Replacement Fee (WSRF) <sup>(3)</sup>		(6.30)	(6.30)	(6.30)	(6.30)
Clean Rivers IAC <sup>(5)</sup>		(11.12)	(12.59)	(11.50)	(12.79)
<b>Total Amount Appearing on DC Water Bill</b>		<b>\$ 40.57</b>	<b>\$ 43.17</b>	<b>\$ 45.03</b>	<b>\$ 47.63</b>
Increase / Decrease Over Prior Year		\$ (8.14)	\$ 2.60	\$ 1.86	\$ 2.60
<b>CAP Customer Discount as a Percent of Total Bill</b>		<b>-57.9%</b>	<b>-57.8%</b>	<b>-58.3%</b>	<b>-58.2%</b>

(1) Assumes average monthly consumption of 6.2 Ccf, or (4,638 gallons)

(2) Extension of CAP program in FY 2009 to first 4 Ccf of Water and Sewer and to first 4 Ccf of PILOT and ROW in FY 2011

(3) Assumes 100 percent discount for Water System Replacement Fee (WSRF) to CAP customers effective October 1, 2015

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

(5) Assumes 50 percent discount for the Clean Rivers IAC effective May 1, 2017





# Comparison of Residential Customer's Monthly Bill for FY 2018 & FY 2019

	Units	FY 2018	Proposed FY 2019	Incr/Decr (\$)	Incr/Decr (%)
DC Water Water and Sewer Retail Rates <sup>(1)</sup>	Ccf	\$ 60.13	\$ 67.94	\$ 7.81	13.0%
DC Water Clean Rivers IAC	ERU	25.18	23.00	(2.18)	-8.7%
DC Water Customer Metering Fee	5/8"	3.86	3.86	-	0.0%
DC Water Water System Replacement Fee	5/8"	6.30	6.30	-	0.0%
<b>Subtotal DC Water Rates &amp; Charges</b>		<b>\$ 95.47</b>	<b>\$ 101.10</b>	<b>\$ 5.63</b>	<b>5.9%</b>
Increase / Decrease		\$ 5.82	\$ 5.63	\$ (0.19)	-3.3%
<b>Percent Increase in DC Water Portion of Bill</b>		<b>6.5%</b>	<b>5.9%</b>		
District of Columbia PILOT Fee <sup>(1)</sup>	Ccf	\$ 3.04	\$ 3.10	\$ 0.06	2.0%
District of Columbia Right-of-Way Fee <sup>(1)</sup>	Ccf	1.12	1.12	-	0.0%
District of Columbia Right-of-Way Fee / PILOT	Ccf	4.16	4.22	0.06	1.4%
District of Columbia Stormwater Fee	ERU	2.67	2.67	-	0.0%
<b>Subtotal District of Columbia Charges</b>		<b>\$ 6.83</b>	<b>\$ 6.89</b>	<b>\$ 0.06</b>	<b>0.9%</b>
<b>Total Amount Appearing on DC Water Bill</b>		<b>\$ 102.30</b>	<b>\$ 107.99</b>	<b>\$ 5.69</b>	<b>5.6%</b>
Increase / Decrease Over Prior Year		\$ 5.95	\$ 5.69	\$ (0.26)	-4.4%
<b>Percent Increase in Total Bill</b>		<b>6.2%</b>	<b>5.6%</b>		

(1) Assumes average monthly consumption of 6.2 Ccf, or 4,638 gallons



# Sensitivity Analysis: Average Household Bill

	Units	2 Ccf FY 2019	10 Ccf FY 2019
DC Water Water and Sewer Retail Rates <sup>(1)</sup>	Ccf	\$ 21.22	\$ 111.98
DC Water Clean Rivers IAC	ERU	23.00	23.00
DC Water Customer Metering Fee	5/8"	3.86	3.86
DC Water Water System Replacement Fee <sup>(3)</sup>	5/8"	6.30	6.30
<b>Subtotal DC Water Rates &amp; Charges</b>		<b>\$ 54.38</b>	<b>\$ 145.14</b>
District of Columbia PILOT Fee <sup>(1)</sup>	Ccf	\$ 1.00	\$ 5.00
District of Columbia Right-of-Way Fee <sup>(1)</sup>	Ccf	0.36	1.80
District of Columbia Right-of-Way Fee / PILOT	Ccf	1.36	6.80
District of Columbia Stormwater Fee <sup>(2)</sup>	ERU	2.67	2.67
<b>Subtotal District of Columbia Charges</b>		<b>\$ 4.03</b>	<b>\$ 9.47</b>
<b>Total Amount Appearing on DC Water Bill</b>		<b>\$ 58.41</b>	<b>\$ 154.61</b>
<b>% Fixed</b>		<b>61.3%</b>	<b>23.2%</b>
<b>% Volumetric</b>		<b>38.7%</b>	<b>76.8%</b>

(1) Assumes average monthly consumption of 2.0 Ccf, or (1,496 gallons) and 10.0 Ccf, or (7,480 gallons)

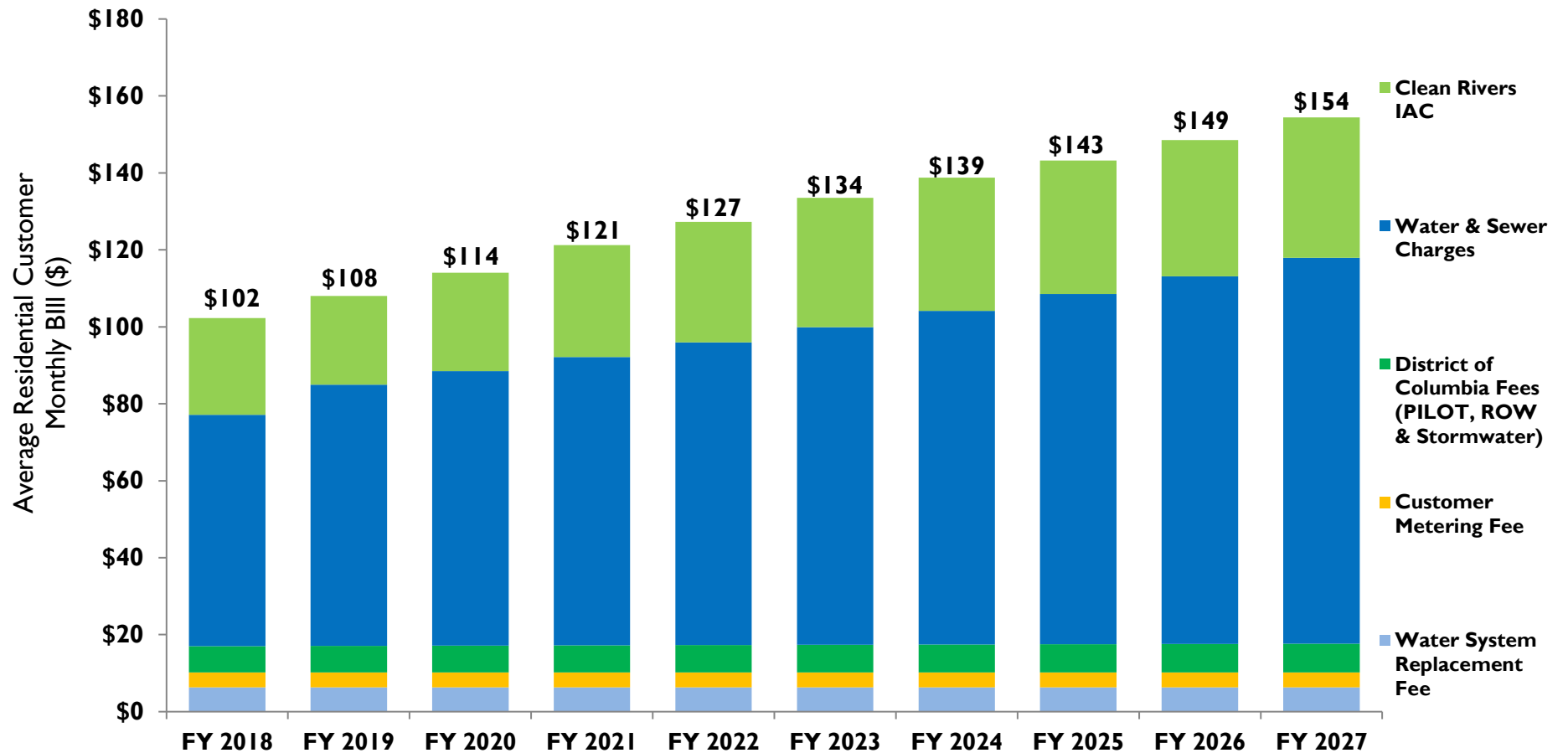
(2) District Department of the Environment stormwater fee of \$2.67 effective November 1, 2010

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



# Projected Average Residential Customer Bill

Projected average monthly residential customer bill ranges from \$102 in FY 2018 to \$154 in FY 2027





## Financial Plan Objectives

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- 💧 **DC Water's 10-year financial plan serves as the fiscal roadmap to achieve the Board's strategic plan**
- 💧 **It is one of management's key tools to monitor progress in meeting financial goals and targets**
- 💧 **It also ensures meeting or exceeding all debt-related legal and policy requirements, as well as maintaining sufficient liquidity to meet all current financial obligations**
- 💧 **DC Water's financial plan objectives focus on:**
  - minimizing rate increases while meeting all financial obligations;
  - satisfying all indenture requirements and Board policies; and
  - maintaining the DC Water's current credit ratings of AAA/Aa1/AA



# 10-Year Financial Plan

DISTRICT OF COLUMBIA WATER & SEWER AUTHORITY  
 FY 2018 - 2027 FINANCIAL PLAN  
 (In 000's)

OPERATING	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
<b>Retail*</b>	\$ 515,466	\$ 539,982	\$ 571,113	\$ 602,587	\$ 629,109	\$ 656,446	\$ 678,437	\$ 696,598	\$ 718,313	\$ 742,257
<b>Wholesale*</b>	76,028	79,237	81,614	84,062	86,584	89,182	91,857	94,613	97,451	100,375
<b>Other</b>	28,978	30,249	33,041	39,588	42,764	43,199	42,708	42,789	44,418	44,803
<b>RSF</b>	-	-	-	-	-	-	-	-	-	-
<b>Operating Receipts (1)</b>	\$ 620,472	\$ 649,467	\$ 685,768	\$ 726,237	\$ 758,456	\$ 788,827	\$ 813,002	\$ 834,000	\$ 860,182	\$ 887,436
<b>Operating Expenses</b>	(320,146)	(338,499)	(348,335)	(358,462)	(368,891)	(379,628)	(390,684)	(402,068)	(413,790)	(427,381)
<b>Debt Service</b>	(184,278)	(199,025)	(214,119)	(232,128)	(245,477)	(258,537)	(267,811)	(275,215)	(283,955)	(292,699)
<b>Cash Financed Capital Improvement</b>	\$ (35,260)	\$ (26,999)	\$ (28,556)	\$ (30,129)	\$ (37,747)	\$ (45,951)	\$ (47,491)	\$ (55,728)	\$ (64,648)	\$ (66,803)
<b>Net Revenues After Debt Service</b>	\$ 80,789	\$ 84,944	\$ 94,758	\$ 105,518	\$ 106,342	\$ 104,711	\$ 107,017	\$ 100,989	\$ 97,788	\$ 100,553
<b>Operating Reserve-Beg Balance</b>	147,212	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000	140,000
<b>Other Misc (Disbursements)/Receipts</b>										
Wholesale/Federal True Up	(16,019)	(7,321)	(1,500)	-	-	-	-	-	-	-
Project Billing Refunds	(4,000)	(4,000)	(4,000)	-	-	-	-	-	-	-
Transfers To RSF	-	-	-	-	-	-	-	-	-	-
Pay-Go Financing	(67,982)	(73,624)	(89,258)	(105,518)	(106,342)	(104,711)	(107,017)	(100,989)	(97,788)	(100,553)
<b>Operating Reserve - Ending Balance</b>	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000	\$ 140,000
<b>Rate Stabilization Fund Balance RSF (2)</b>	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)	\$ (61,450)
<b>Senior Debt Service Coverage</b>	489%	561%	545%	544%	575%	559%	659%	674%	648%	624%
<b>Combined Debt Service Coverage</b>	164%	161%	165%	168%	168%	167%	166%	166%	166%	166%
<b>Actual/Projected Water/Sewer Rate Increases</b>	5.0%	13.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
<b>*Operating Receipts \$ Increase/Decrease</b>										
Retail	20,228	24,515	31,131	31,474	26,522	27,338	21,991	18,161	21,715	23,945
Wholesale	(5,108)	3,209	2,377	2,448	2,522	2,598	2,675	2,756	2,838	2,924
<b>*Operating Receipts % Increase/Decrease</b>										
Retail	4.1%	4.8%	5.8%	5.5%	4.4%	4.3%	3.3%	2.7%	3.1%	3.3%
Wholesale	-6.3%	4.2%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

(1) Includes interest earnings on senior lien revenue bonds' debt service reserve fund

(2) FY 2018 planned transfers of \$0.0 million to Rate Stabilization Fund will maintain the total fund balance at \$61.45 million



# Alternative Scenario Analysis



# Rolling 10 year CIP Options Compared

## Summary of EQ and Ops Discussion 1-18-18

Service Area	Current Baseline	Constrained Plan	Asset Management Plan
<b>DCCR</b>	<b>Fully funded</b> to meet Consent Decree	<b>Fully funded</b> to meet Consent Decree	<b>Fully funded</b> to meet Consent Decree
<b>Wastewater</b>	<b>Generally funded</b> to reduce the risk of critical infrastructure failure	<b>Fully funded</b>	<b>Fully funded</b>
<b>Water</b>			
Pump Stations & Storage Facilities	<b>Generally funded</b> to current service levels	<b>Fully funded</b>	<b>Fully funded</b>
Small Diameter WMs ≤ 12” dia.	<b>Generally funded to meet 1%</b> replacement/rehab goal [11 mi/year]	<b>Funded to ramp up to 1.5%</b> per year replacement level [17 mi/year]	<b>Fully funded to ramp up to 2%</b> replacement level [22 mi/year]
Large Diameter WMs > 12” dia.	<b>Generally funded</b>	<b>Generally funded</b>	<b>Generally funded</b>
<b>Sewer</b>			
Pump Stations	<b>Underfunded</b>	<b>Fully funded</b>	<b>Fully funded</b>
Sewer Lines < 60” dia.	<b>Substantially underfunded</b> [6.2 mi/year]	<b>Funded to ramp up to 1.0%</b> per year rehabilitation level [17.5 mi/year]	<b>Fully funded to ramp up to 2.7%</b> rehabilitation level [40 mi/year]
Sewer Lines ≥ 60” dia.	<b>Generally Funded</b>	<b>Generally Funded</b>	<b>Generally Funded</b>
<b>Non Process</b>	<b>Fully funded</b> for HQ, Fleet and Sewer Operations Facilities	<b>Fully funded</b> for HQ, Fleet and Sewer Operations Facilities	<b>Fully funded</b> for HQ, Fleet and Sewer Operations Facilities

‘Generally Funded’ = What we know or expect to find can be fixed  
 ‘Fully Funded’ = All needs known or expected are met

‘Underfunded’ = What we know or expect to find is not all funded



# CIP: Proposed & Alternative Scenarios

\$ in thousands

Baseline (Proposed) \$4 Billion	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Total
Non Process Facilities	\$ 32,194	\$ 33,107	\$ 18,907	\$ 7,860	\$ 1,551	\$ 25	\$ 6,615	\$ 7,773	\$ -	\$ -	\$ 108,032
Wastewater Treatment	95,485	74,617	77,853	87,960	89,820	69,560	51,607	62,172	117,623	129,252	855,948
Combined Sewer Overflow	181,816	200,343	160,554	148,121	203,086	164,508	79,692	65,611	135,797	92,819	1,432,348
Stormwater	945	4,909	2,400	2,312	5,839	1,212	1,784	1,642	1,276	2,133	24,452
Sanitary Sewer	29,802	32,947	34,046	53,050	74,492	73,917	75,912	58,882	60,769	38,672	532,490
Water	58,044	45,747	84,256	62,341	48,241	53,471	88,055	99,661	101,344	89,510	730,672
Additional Capital Programs	51,665	47,448	42,327	41,037	22,618	22,618	22,618	22,618	22,618	22,618	318,185
<b>Proposed - Total CIP</b>	<b>\$ 449,950</b>	<b>\$ 439,118</b>	<b>\$ 420,342</b>	<b>\$ 402,681</b>	<b>\$ 445,647</b>	<b>\$ 385,312</b>	<b>\$ 326,284</b>	<b>\$ 318,360</b>	<b>\$ 439,427</b>	<b>\$ 375,004</b>	<b>\$ 4,002,125</b>
Constrained \$4.6 Billion	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Total
Non Process Facilities	32,194	33,107	18,907	7,860	1,551	25	6,615	7,773	-	-	108,032
Wastewater Treatment	95,485	74,617	77,853	94,301	104,728	90,636	86,767	117,352	157,870	145,528	1,045,135
Combined Sewer Overflow	181,816	200,343	160,554	158,551	219,449	178,924	93,022	80,838	168,524	120,865	1,562,887
Stormwater	945	4,909	2,400	6,858	9,546	11,489	11,816	11,721	12,006	12,210	83,898
Sanitary Sewer	29,802	32,947	34,046	60,123	64,397	69,072	67,420	66,553	63,214	62,139	549,711
Water	58,044	45,747	84,256	87,555	97,791	103,823	115,717	100,622	99,841	100,023	893,419
Additional Capital Programs	51,665	47,448	42,327	41,037	22,618	22,618	22,618	22,618	22,618	22,618	318,185
<b>Total CIP</b>	<b>\$ 449,950</b>	<b>\$ 439,118</b>	<b>\$ 420,343</b>	<b>\$ 456,285</b>	<b>\$ 520,079</b>	<b>\$ 476,587</b>	<b>\$ 403,974</b>	<b>\$ 407,477</b>	<b>\$ 524,073</b>	<b>\$ 463,382</b>	<b>\$ 4,561,268</b>
Increases vs. Proposed CIP	-	-	-	(53,604)	(74,432)	(91,276)	(77,690)	(89,118)	(84,645)	(88,378)	(559,142)
Asset Management Ramp-up \$5.1 Billion	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Total
Non Process Facilities	32,194	33,107	18,907	7,860	1,551	25	6,615	7,773	-	-	108,032
Wastewater Treatment	95,485	74,617	77,853	94,301	104,728	90,636	86,767	117,352	157,870	145,528	1,045,136
Combined Sewer Overflow	181,816	200,343	160,554	158,551	219,449	178,924	93,022	80,838	168,524	120,865	1,562,887
Stormwater	945	4,909	2,400	6,858	9,546	11,489	11,816	11,721	12,006	12,210	83,898
Sanitary Sewer	29,802	32,947	34,046	85,811	116,478	142,718	145,436	115,238	110,489	99,957	912,921
Water	58,044	45,747	84,256	92,392	110,939	121,149	150,640	140,445	141,230	141,003	1,085,845
Additional Capital Programs	51,665	47,448	42,327	41,037	22,618	22,618	22,618	22,618	22,618	22,618	318,185
<b>Total CIP</b>	<b>\$ 449,950</b>	<b>\$ 439,118</b>	<b>\$ 420,342</b>	<b>\$ 486,809</b>	<b>\$ 585,309</b>	<b>\$ 567,559</b>	<b>\$ 516,914</b>	<b>\$ 495,985</b>	<b>\$ 612,737</b>	<b>\$ 542,182</b>	<b>\$ 5,116,904</b>
Increases vs. Proposed CIP	-	-	-	(84,128)	(139,661)	(182,247)	(190,630)	(177,625)	(173,310)	(167,178)	(1,114,779)





# Comparative Scenarios & Customer Impacts

<b>Baseline (Proposed) \$4.0 Billion</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.66	\$34.75	\$35.45	\$36.46
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$121	\$127	\$134	\$139	\$143	\$149	\$154
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.3%	5.0%	4.9%	3.9%	3.2%	3.7%	4.0%

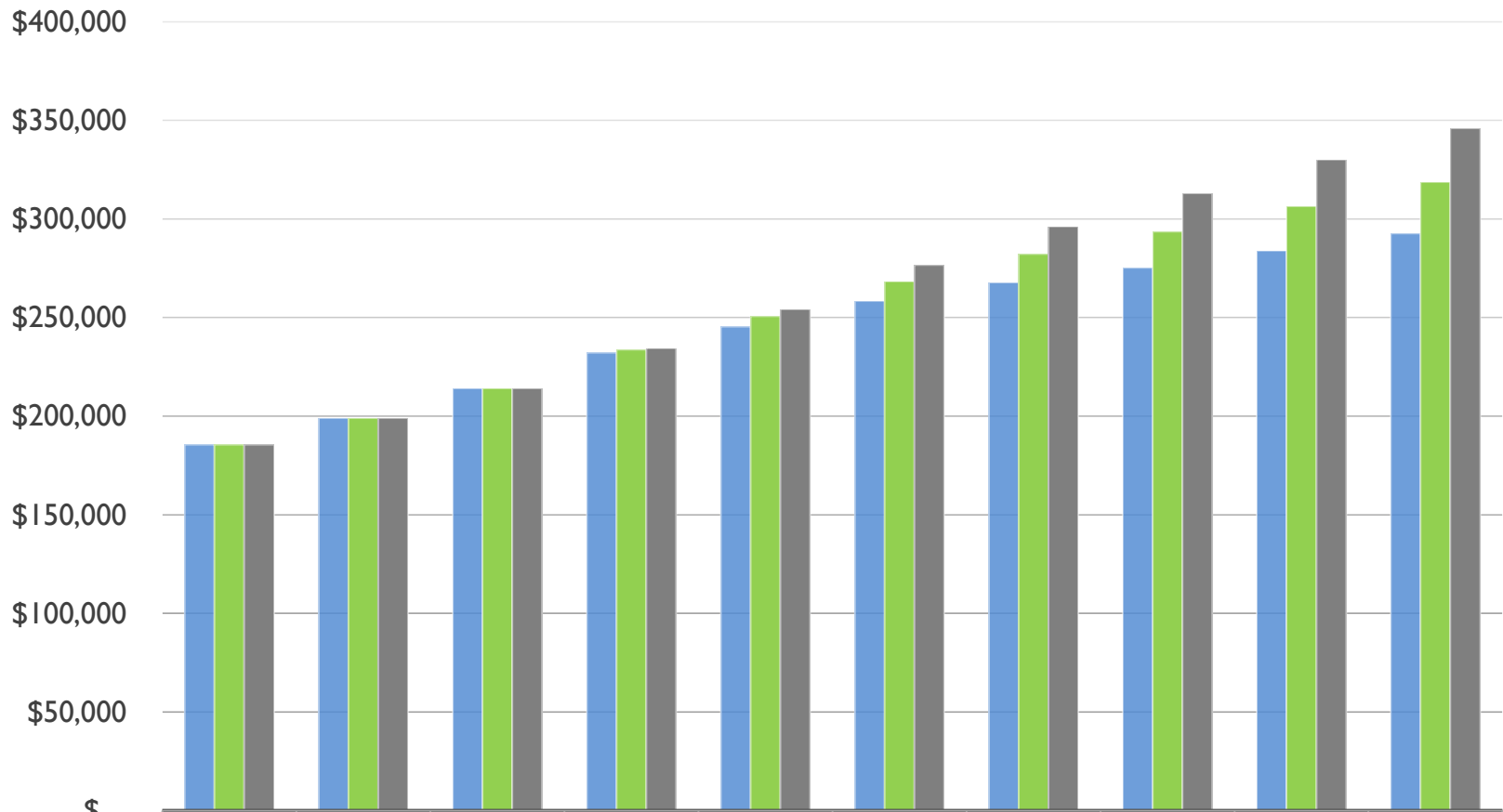
<b>Constrained \$4.6 Billion</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	5.5%	7.0%	6.5%	6.5%	6.5%	6.0%	5.5%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.72	\$34.93	\$35.84	\$37.11
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$122	\$129	\$137	\$144	\$150	\$157	\$164
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.6%	6.3%	5.9%	5.0%	4.3%	4.5%	4.5%

<b>Asset Mgt. Ramp-up \$5.1 Billion</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	6.0%	8.0%	8.0%	8.5%	8.0%	7.0%	6.5%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.72	\$34.93	\$35.84	\$37.11
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$122	\$130	\$139	\$148	\$156	\$164	\$172
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.9%	6.9%	6.8%	6.3%	5.3%	5.3%	5.2%



# Comparative Debt Service Cost Scenarios



	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Baseline (Proposed)	\$185,480	\$199,025	\$214,119	\$232,128	\$245,477	\$258,537	\$267,811	\$275,215	\$283,955	\$292,699
Constrained	\$185,480	\$199,025	\$214,119	\$233,694	\$250,708	\$268,431	\$282,233	\$293,638	\$306,467	\$318,746
Asset Management Ramp-up	\$185,480	\$199,025	\$214,119	\$234,555	\$254,329	\$276,584	\$296,179	\$312,989	\$330,127	\$345,944



# Next Steps



## Committee Recommendations & Actions

	Environmental Quality & Operations	Finance & Budget	DC Retail Water & Sewer Rates
Capital Budget - FY 2018 – FY 2027 Disbursements - Lifetime Project	Action Required	Action Required	
FY 2019 Operating Budget		Action Required	
Intent to Reimburse Capital Expenditures with Proceeds of a Borrowing		Action Required	
- FY 2019 & FY 2020 Rates, Fees and Revenues - FY 2018 – FY 2027 Financial Plan		Action Required	Action Required



# Appendix



## Key Drivers: O&M Budget

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### **Personnel Services** – Increase of \$13.4M is attributable to:

- Regular pay – Increase of \$11.3M
  - Addition of 14 FTEs for total of 1274 FTEs to provide in-house support of various programs including
    - Resource recovery • Permit compliance for industrial pretreatment • Cross connection
    - Asset management • Equipment reliability • Watershed management • Fats, Oils & Grease
    - Optimization of odor control facilities • Safety oversight for construction activities
  - Funds union labor contracts and other salary adjustments
- Overtime – \$1.4M increase based on current trends
- Benefits – \$0.7M increase for retirement and employment taxes



## Key Drivers: O&M Budget, cont.

- **Non-Personnel Services** – Increase of \$1.8M attributable to:
  - Chemicals and Supplies – \$1.4M increase mainly for
    - Chemical – unit price increases for methanol and impacts of the Filtrate Treatment Facility (FTF) and Tunnel Dewatering Pump Station (TDPS) - \$1.2M
    - Supplies – parts and equipment for maintenance of new facilities - \$0.2M
  - Contracts – \$2.3M net increase due to:
    - **\$6.4M** increase in various maintenance and professional services including commercialization of Intellectual Property and research activities for Advanced Research Testing (ART) program; expansion of emergency management activities; maintenance of new operational facilities; maintenance of Potomac Interceptor odor control & flow meters; litigation; Fats, Oil & Grease (FOG), water quality laboratory research, wet well and industrial cleaning; utility marking; automotive maintenance and parts, credit card fees, postage and other professional services contract costs *offset by*
    - **\$4.1M** decrease in hauling costs from lower production of Class A biosolids (450 wet tons/day) and increased marketing of 42,000 tons; reallocation of surface restoration cost for water main infrastructure due to revised capitalization policy; hauling & disposal of screens; and insourcing initiatives for maintenance of process control system



## Key Drivers: O&M Budget, cont.

### Non-Personnel Services – cont.

- Utilities – \$2.5M net decrease
  - Electricity - \$2.2M decrease based on estimated Authority-wide usage of 25MW, including 2.9MW for new operational facilities (FTF and TDPS), net of 8MW from the Combined Heat & Power (CHP) facility
    - Unit prices – Reduced from all-in-cost of \$84.97 per MWh in FY 2018 to \$81.31 per MWh based on historical and projected market prices.
    - Current block purchases of 15MW in FY 2018 and 5MW in FY 2019
  - Water - \$0.5M decrease reflects higher use of grey water vs city water for steam production in the digesters
  - Rent - \$0.5M decrease due to lease expiration of the 80 M Street facility
  - Others - \$0.7M increase mainly for telecommunication circuits and equipment (\$0.5M), natural gas and fuel costs (\$0.2M)
- Water Purchase - \$0.4M increase for DC Water’s share of Washington Aqueduct’s operating budget
- Small Equipment - \$0.2M increase for anticipated crane service for the TDPS and field instrumentation equipment





# Proposed FY 2019 & FY 2020 Rates, Charges & Fees

	Units	Approved FY 2018	Proposed FY 2019	Proposed FY 2020	Incr/(Decr) FY 2019		Incr/(Decr) FY 2020	
					\$	%	\$	%
DC Water Retail Rates – Water:								
Residential – Lifeline (0- 4 Ccf)	Ccf	\$3.39	\$3.83	\$4.02	\$0.44	13.0%	\$0.19	5.0%
Residential – (> 4 Ccf)	Ccf	4.26	4.81	5.05	\$0.55	13.0%	\$0.24	5.0%
Multi-family	Ccf	3.80	4.29	4.50	\$0.49	13.0%	\$0.21	5.0%
Non-Residential	Ccf	4.40	4.97	5.22	\$0.57	13.0%	\$0.25	5.0%
DC Water Retail Rates – Sewer	Ccf	6.00	6.78	7.12	\$0.78	13.0%	\$0.34	5.0%
DC Water Clean Rivers IAC	ERU	25.18	23.00	25.58	(\$2.18)	(8.7%)	\$2.58	11.2%
DC Water Customer Metering Fee	5/8"	3.86	3.86	3.86	-	-	-	-
DC Water System Replacement Fee	5/8"	6.30	6.30	6.30	-	-	-	-
District of Columbia PILOT Fee	Ccf	0.49	0.50	0.51	\$0.01	2.0%	\$0.01	2.0%
District of Columbia Right of Way Fee	Ccf	0.18	0.18	0.19	-	-	\$0.01	1.0%
District of Columbia Stormwater Fee	ERU	2.67	2.67	2.67	-	-	-	-

10-Year Disbursement Plan - projected annual cash disbursements, \$ in thousands

**Attachment A-1**

	FY 2018 - FY 2027 Proposed Disbursement Plan											Lifetime Budget
	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Total	
<b>NON PROCESS FACILITIES</b>												
Facility Land Use	\$32,194	\$33,107	\$18,907	\$7,860	\$1,551	\$25	\$6,615	\$7,773	\$0	\$0	\$108,032	\$169,147
Subtotal	32,194	33,107	18,907	7,860	1,551	25	6,615	7,773	0	0	108,032	169,147
<b>WASTEWATER TREATMENT</b>												
Liquid Processing	18,554	30,869	37,604	38,228	44,507	35,458	29,607	31,846	74,033	109,131	449,838	1,224,582
Plantwide	12,099	15,060	19,331	32,895	35,204	30,100	18,795	17,671	20,384	10,534	212,072	488,216
Solids Processing	11,229	13,942	18,154	15,302	8,770	1,953	1,288	723	533	555	72,448	802,911
Enhanced Nitrogen Removal Facilities	53,603	14,746	2,763	1,535	1,339	2,049	1,918	11,932	22,673	9,032	121,590	1,036,089
Subtotal	95,485	74,617	77,853	87,960	89,820	69,560	51,607	62,172	117,623	129,252	855,948	3,551,799
<b>COMBINED SEWER OVERFLOW</b>												
DC Clean Rivers	168,314	189,392	148,042	138,289	192,859	151,111	59,569	50,018	128,404	87,197	1,313,196	2,764,255
Program Management	1,934	1,969	2,518	3,495	4,373	4,339	3,012	1,821	0	0	23,460	64,663
Combined Sewer	11,568	8,982	9,993	6,337	5,853	9,058	17,112	13,772	7,393	5,622	95,691	323,002
Subtotal	181,816	200,343	160,554	148,121	203,086	164,508	79,692	65,611	135,797	92,819	1,432,348	3,151,920
<b>STORMWATER</b>												
Local Drainage	92	75	354	69	629	267	861	1,050	219	0	3,617	14,230
On-Going	375	1,074	668	617	744	722	760	464	752	736	6,912	11,315
Pumping Facilities	69	3,410	375	1,134	4,065	19	0	0	305	1,397	10,774	25,232
DDOT	0	0	0	0	0	0	0	0	0	0	0	3,237
Research and Program Management	314	156	36	115	402	204	163	128	0	0	1,517	12,013
Trunk/Force Sewers	95	194	966	377	0	0	0	0	0	0	1,632	15,365
Subtotal	945	4,909	2,400	2,312	5,839	1,212	1,784	1,642	1,276	2,133	24,452	81,392
<b>SANITARY SEWER</b>												
Collection Sewers	4,488	1,244	1,088	7,929	19,594	9,139	11,139	25,253	31,888	18,343	130,105	407,999
On-Going	10,001	9,618	9,475	10,399	9,982	10,535	11,079	11,402	11,589	12,023	106,103	206,045
Pumping Facilities	1,294	428	842	2,332	1,005	1,559	214	0	0	0	7,674	36,151
Program Management	2,999	3,075	7,205	5,032	6,410	6,977	6,128	5,151	1,624	115	44,716	124,972
Interceptor/Trunk Force Sewers	11,019	18,583	15,436	27,358	37,501	45,706	47,353	17,076	15,667	8,191	243,890	754,870
Subtotal	29,802	32,947	34,046	53,050	74,492	73,917	75,912	58,882	60,769	38,672	532,490	1,530,036
<b>WATER</b>												
Distribution Systems	28,353	22,924	56,015	35,946	23,051	29,648	52,339	79,039	81,503	69,487	478,306	1,235,949
Lead Program	3,422	1,487	1,252	1,422	1,528	1,658	1,718	903	235	75	13,700	209,245
On-Going	11,079	11,044	7,569	9,982	9,930	10,183	10,793	11,157	12,429	12,636	106,802	143,288
Pumping Facilities	3,286	1,857	4,561	4,248	4,193	1,840	8,023	1,668	211	0	29,887	118,394
DDOT	904	486	208	2	2	0	0	0	0	0	1,604	33,933
Storage Facilities	7,560	4,967	8,088	3,488	2,099	5,106	9,371	2,343	0	0	43,021	107,520
Program Management	3,441	2,982	6,563	7,252	7,438	5,035	5,812	4,551	6,966	7,312	57,352	90,944
Subtotal	58,044	45,747	84,256	62,341	48,241	53,471	88,055	99,661	101,344	89,510	730,672	1,939,272
<b>CAPITAL PROJECTS</b>												
	398,285	391,670	378,015	361,644	423,029	362,694	303,666	295,742	416,809	352,386	3,683,941	10,423,566
<b>CAPITAL EQUIPMENT</b>												
WASHINGTON AQUEDUCT	39,898	34,518	29,383	27,998	9,579	10,306	10,850	11,177	12,122	12,303	198,133	198,133
	11,768	12,930	12,944	13,039	13,039	12,312	11,768	11,441	10,496	10,315	120,052	120,052
<b>ADDITIONAL CAPITAL PROGRAMS</b>												
	51,665	47,448	42,327	41,037	22,618	22,618	22,618	22,618	22,618	22,618	318,185	318,185
<b>LABOR</b>												
												390,145
<b>TOTAL CAPITAL BUDGETS</b>												
	\$449,950	\$439,118	\$420,342	\$402,681	\$445,647	\$385,312	\$326,284	\$318,360	\$439,427	\$375,004	\$4,002,125	11,131,895



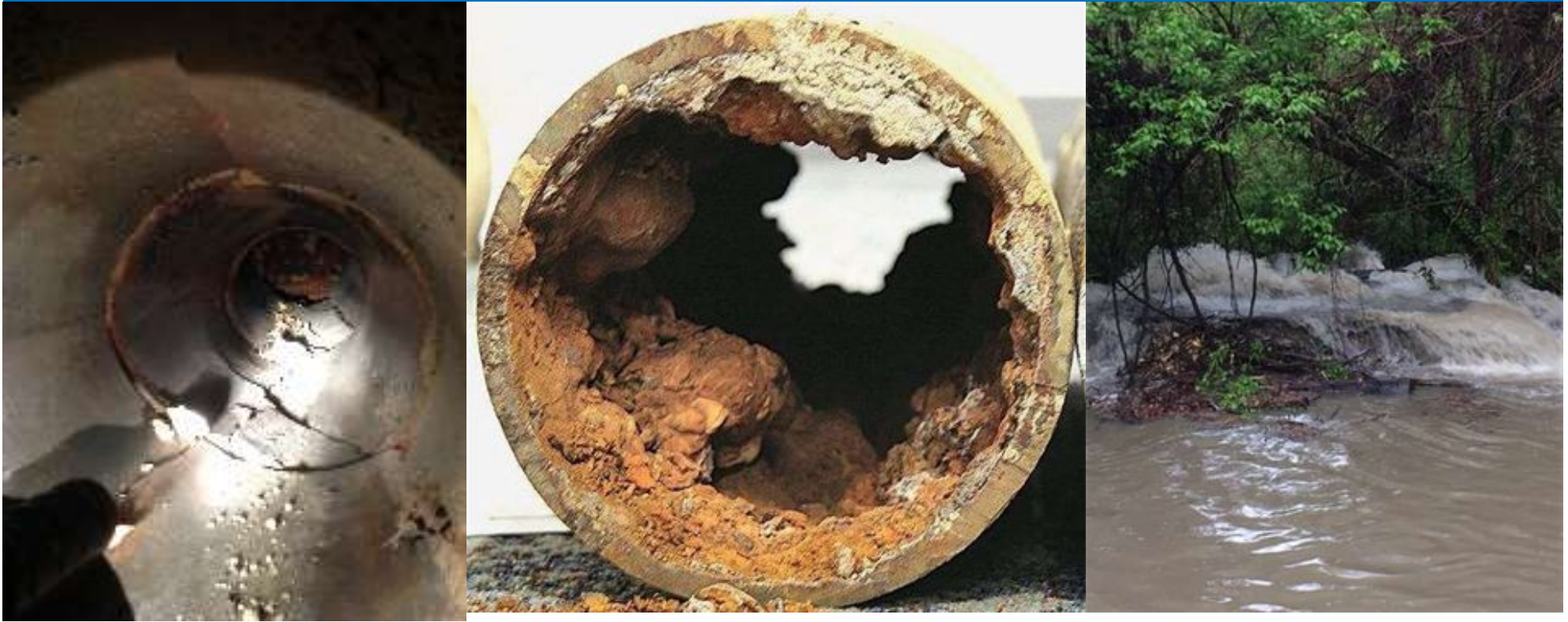
# CIP Presentation to EQ & Ops Committee on January 18, 2018



MEETING OF THE  
**ENVIRONMENTAL QUALITY AND OPERATIONS COMMITTEE**  
COMMITTEE CHAIR – JAMES PATTESON

**CAPITAL IMPROVEMENT PROGRAM** January 18<sup>th</sup> 2018

**District of Columbia Water and Sewer Authority**



*Optimization, Accountability, and Transparency*



# Agenda

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- I. Budget Adoption Calendar
- II. Summary of Responses to BOD Questions
- III. Overview of CIP Recommendations
- IV. Recent Past & Current 'Baseline' Funding by Service Area
- V. Asset Management Overview
- VI. Challenges of Fiscal Constraints
- VII. Asset Management of Linear Assets
- VIII. Service Life Expectancies & Projected Renewal Requirements
- IX. AWWA & ASCE Findings
- X. CIP Development
- XI. Proposed Asset Management CIP
- XII. Impact of Revenue Requirements on Rates
- XIII. Committee Recommendations & Actions



# I - Budget Adoption Calendar

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## Board Member Questions & Follow Up

- Submit budget-related questions to Board Secretary
- Board Secretary will distribute questions to appropriate staff

## Wholesale Customer Briefing – **held January 5**

## Committee Reviews, Recommendations & Actions – **January**

- Environmental Quality & Operations – **January 18**
- Finance & Budget – **January 23**
- DC Retail Water & Sewer Rates – **January 23**

## Board Action – **February 1**



## II – Summary of Responses to BOD Questions

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- Answers to specific questions received were mailed out – Any clarifications needed at this point -
- Answer to the general question regarding the level of funding to reduce systemic risks (asset management principle based).





## III - Overview of CIP Recommendations

### a) 10-Year CIP: Developed within last years budget guidelines and constraints (the BASELINE budget)

Service Area (\$000's)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-Yr Total	Last Year's CIP	(Increase) / Decrease
Non Process Facilities	\$ 32,194	\$ 33,107	\$ 18,907	\$ 7,860	\$ 1,551	\$ 25	\$ 6,615	\$ 7,773	-	-	\$ 108,032	\$ 85,486	\$ (22,545)
Wastewater Treatment	95,485	74,617	77,853	87,960	89,820	69,560	51,607	62,172	117,623	129,252	855,948	844,706	(11,242)
DC Clean Rivers Project	168,314	189,392	148,042	138,289	192,859	151,111	59,569	50,018	128,404	87,197	1,313,196	1,222,320	(90,876)
Combined Sewer Overflow	13,502	10,951	12,511	9,831	10,227	13,397	20,124	15,593	7,393	5,622	119,151	117,826	(1,325)
Stormwater	945	4,909	2,400	2,312	5,839	1,212	1,784	1,642	1,276	2,133	24,452	23,055	(1,397)
Sanitary Sewer	29,802	32,947	34,046	53,050	74,492	73,917	75,912	58,882	60,769	38,672	532,490	513,517	(18,973)
Water	58,044	45,747	84,256	62,341	48,241	53,471	88,055	99,661	101,344	89,510	730,672	639,387	(91,285)
<b>CAPITAL PROJECTS</b>	<b>398,285</b>	<b>391,670</b>	<b>378,015</b>	<b>361,644</b>	<b>423,029</b>	<b>362,694</b>	<b>303,666</b>	<b>295,742</b>	<b>416,809</b>	<b>352,386</b>	<b>3,683,941</b>	<b>3,446,297</b>	<b>(237,644)</b>
Capital Equipment	39,898	34,518	29,383	27,998	9,579	10,306	10,850	11,177	12,122	12,303	198,133	193,119	(5,014)
Washington Aqueduct	11,768	12,930	12,944	13,039	13,039	12,312	11,768	11,441	10,496	10,315	120,052	112,207	(7,845)
<b>ADDITIONAL CAPITAL PROGRAMS</b>	<b>51,665</b>	<b>47,448</b>	<b>42,327</b>	<b>41,037</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>22,618</b>	<b>318,185</b>	<b>305,326</b>	<b>(12,859)</b>
<b>TOTAL CIP</b>	<b>\$449,950</b>	<b>\$439,118</b>	<b>\$420,342</b>	<b>\$402,681</b>	<b>\$445,647</b>	<b>\$385,312</b>	<b>\$326,284</b>	<b>\$318,360</b>	<b>\$439,427</b>	<b>\$375,004</b>	<b>\$4,002,125</b>	<b>3,751,623</b>	<b>(250,503)</b>
Last Year's CIP	387,306	394,843	427,208	378,542	335,725	321,367	315,467	302,588	381,579		3,751,623		
(Increase) / Decrease	(62,644)	(44,274)	6,865	(24,139)	(109,923)	(63,945)	(10,817)	(15,772)	(57,849)	(375,004)	(250,503)		





## III - Overview of CIP Recommendations

### b) Asset Management Level Recommended Funding (AM Ramp-up)

Service Area (\$000's)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-yr Total
Non-Process Facilities	32,194	33,107	18,907	7,860	1,551	25	6,615	7,773	0	0	108,032
Wastewater Treatment	95,485	74,617	77,853	94,301	104,728	90,636	86,767	117,352	157,870	145,528	1,045,135
DC Clean Rivers Project	168,314	189,392	148,042	138,289	192,859	151,111	66,536	56,381	146,727	99,067	1,356,719
Combined Sewer Overflow	13,502	10,951	12,511	20,262	26,590	27,813	26,486	24,457	21,798	21,798	206,168
Stormwater	945	4,909	2,400	6,858	9,546	11,489	11,816	11,721	12,006	12,210	83,898
Sanitary Sewer	29,802	32,947	34,046	85,811	116,478	142,718	145,436	115,238	110,489	99,957	912,921
Water	58,044	45,747	84,256	92,392	110,939	121,149	150,640	140,445	141,230	141,003	1,085,845
<b>Capital Projects</b>	<b>398,285</b>	<b>391,670</b>	<b>378,015</b>	<b>445,773</b>	<b>562,690</b>	<b>544,941</b>	<b>494,295</b>	<b>473,367</b>	<b>590,119</b>	<b>519,564</b>	<b>4,798,719</b>

### c) Alternative Option providing approx. \$80M per year (average) above current proposed baseline CIP (Constrained Plan)

Service Area (\$000's)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	10-yr Total
Non-Process Facilities	32,194	33,107	18,907	7,860	1,551	25	6,615	7,773	0	0	108,032
Wastewater Treatment	95,485	74,617	77,853	94,301	104,728	90,636	86,767	117,352	157,870	145,528	1,045,135
DC Clean Rivers Project	168,314	189,392	148,042	138,289	192,859	151,111	66,536	56,381	146,727	99,067	1,356,719
Combined Sewer Overflow	13,502	10,951	12,511	20,262	26,590	27,813	26,486	24,457	21,798	21,798	206,168
Stormwater	945	4,909	2,400	6,858	9,546	11,489	11,816	11,721	12,006	12,210	83,898
Sanitary Sewer	29,802	32,947	34,046	60,123	64,397	69,072	67,420	66,553	63,214	62,139	549,711
Water	58,044	45,747	84,256	87,555	97,791	103,823	115,717	100,622	99,841	100,023	893,419
<b>Capital Projects</b>	<b>398,285</b>	<b>391,670</b>	<b>378,015</b>	<b>415,248</b>	<b>497,461</b>	<b>453,969</b>	<b>381,356</b>	<b>384,859</b>	<b>501,455</b>	<b>440,764</b>	<b>4,243,083</b>



## IV - Recent Past & Current ‘Baseline’ Funding by Service Area

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- 💧 DC Clean Rivers: Fully funded to meet Consent Decree
- 💧 Wastewater: Generally funded to meet NPDES Permit and established levels of service
- 💧 Water:
  - Pumping stations, storage facilities generally funded to current service levels
  - Small Diameter Water Main Replacement program generally funded to meet 1% replacement/rehab goal
  - Large diameter generally funded
- 💧 Sewer:
  - Substantially underfunded, particularly for rehabilitation of sewer lines
  - Pump stations are underfunded
- 💧 Non-Process: Fully funded for HQ, Fleet and Sewer Operations Facilities

**Note: Refer to Jan 4<sup>th</sup> Budget Workshop slides 16-17 “Deferred and Underfunded Projects”**



# V - Asset Management Overview

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## DEFINE

### **The Facility Plan (FP):**

- Defines long term capital needs
- Considers condition and anticipated service life
- Incorporates feedback from key stakeholders including Operations & Maintenance

## PRIORITIZE

### **The Asset Management Plan (AMP):**

- Incorporates input from key stakeholders to define risk in accordance with Asset Management principles and DC Water criteria
- Validates and informs the prioritization of capital improvements

## DELIVER

### **Capital Improvement Plan (CIP):**

- Defines project scope, schedule, and delivery approach
- Establishes lifetime budgets and forecasted spending to meet financial limits
- Updated annually to reflect performance and/or changes to needs and priorities



## VI - Challenges of Fiscal Constraints

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- Project & Program needs defined by the Asset Management process are essential and do not go away
  - Projects are deferred, delayed or phased to meet fiscal constraints
  
- When capital improvements are deferred, delayed or phased
  - Risk exposure increases
    - Permit Compliance
    - Health and Safety
    - System Reliability
    - Public Confidence/DC Water Reputation
  
  - Cost increases
    - Likelihood of emergency repairs
    - Operations & Maintenance
    - Escalation over time



## VII - Asset Management of Linear Assets

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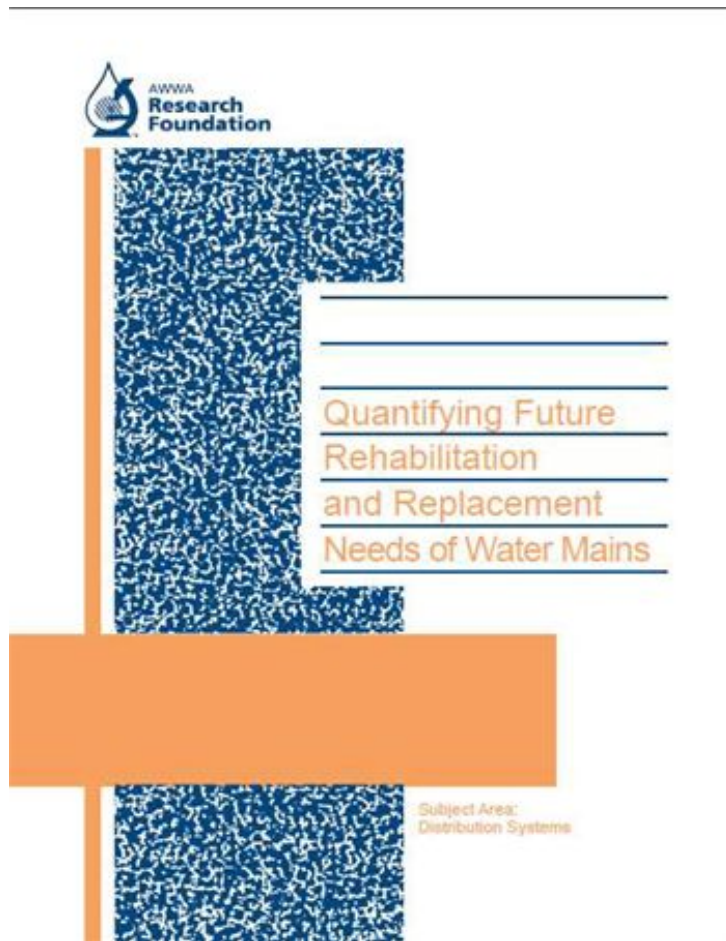
- Goal: Achieve a balance between asset age and remaining useful life
- Asset age  $\ll$  residual service life = new system or extensive investment into system
- Asset age  $\gg$  residual service life = old system and under investment into system
  - System will reach the end of its service life soon
  - High investments required in the future
- “Sweet Spot” : Asset Age = Residual Service Life
  - Target value: residual service life 40-60% of asset age
  - Continuous and adequate asset renewal per model  $\Rightarrow$  50%



# KANEW Modeling of DC Water Water and Sewer Systems

Developed by Water Research Foundation

Licensed by 3S Consult, Germany



KANEW 4



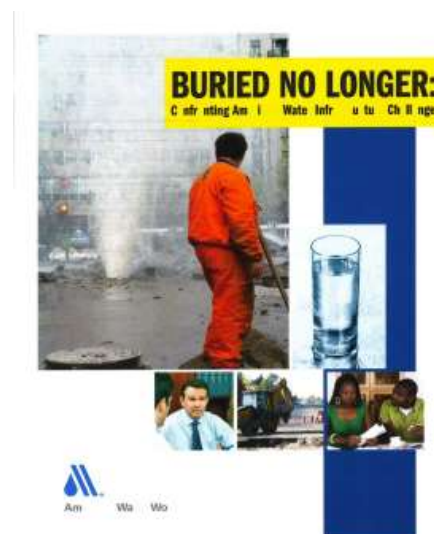
Manual





## KANEW Modeling - Overview

- Long range / strategic renewal planning of water and sewer mains
- System-wide model that predicts renewal rates and schedules for different pipe cohorts (types)
- Uses anticipated life expectancies and age distribution of pipes to calculate the annual length of renewal required
- Determination of service lives
  - AWWA Buried No Longer (water only)
  - DC Water experience and data
  - Asset Management experts

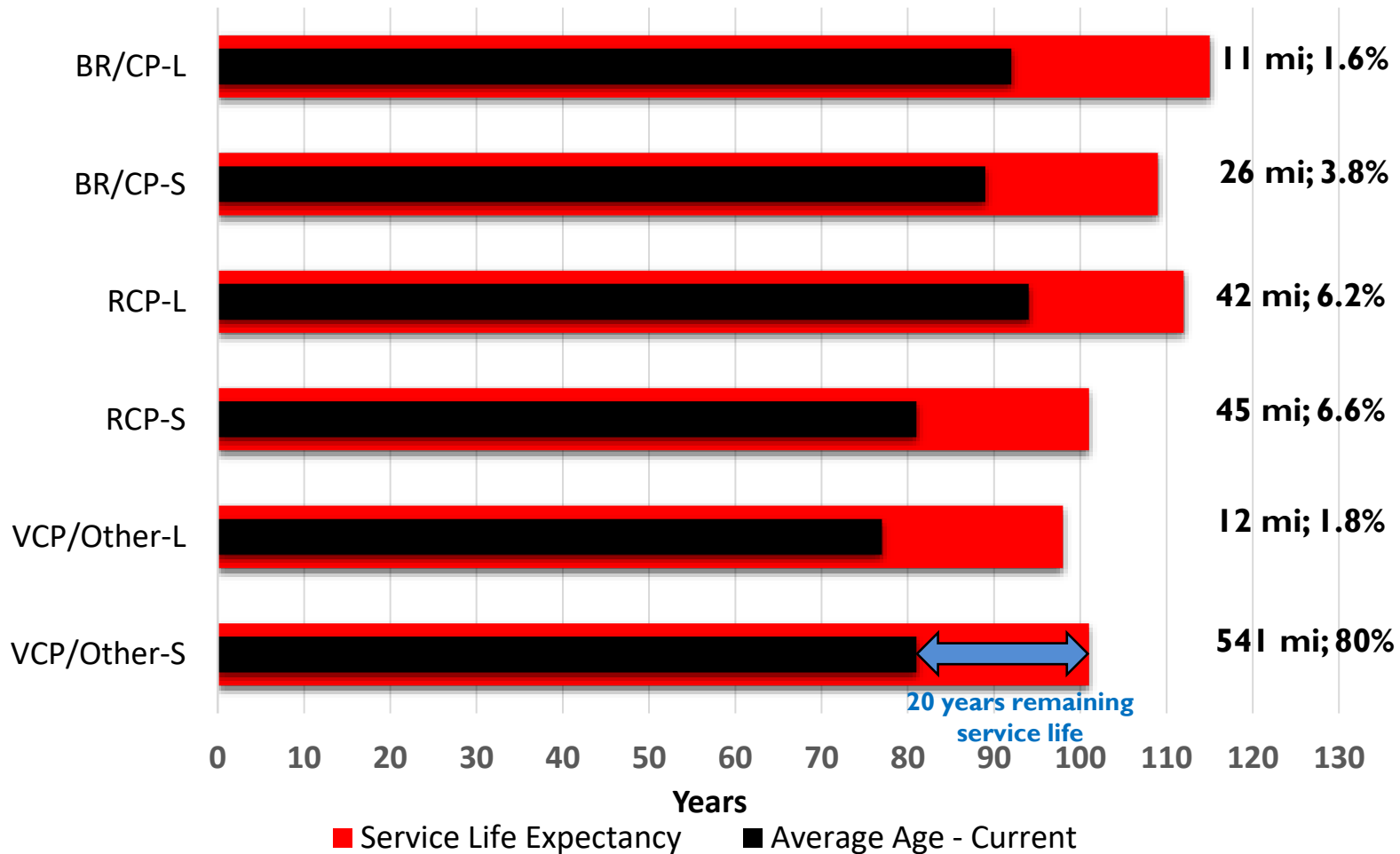




# VIII - Service Life Expectancies & Projected Renewal Requirements

Average Age and Service Life Expectancies by Sanitary Sewer Cohort Type - FY2018

**Average Age: 82 years**

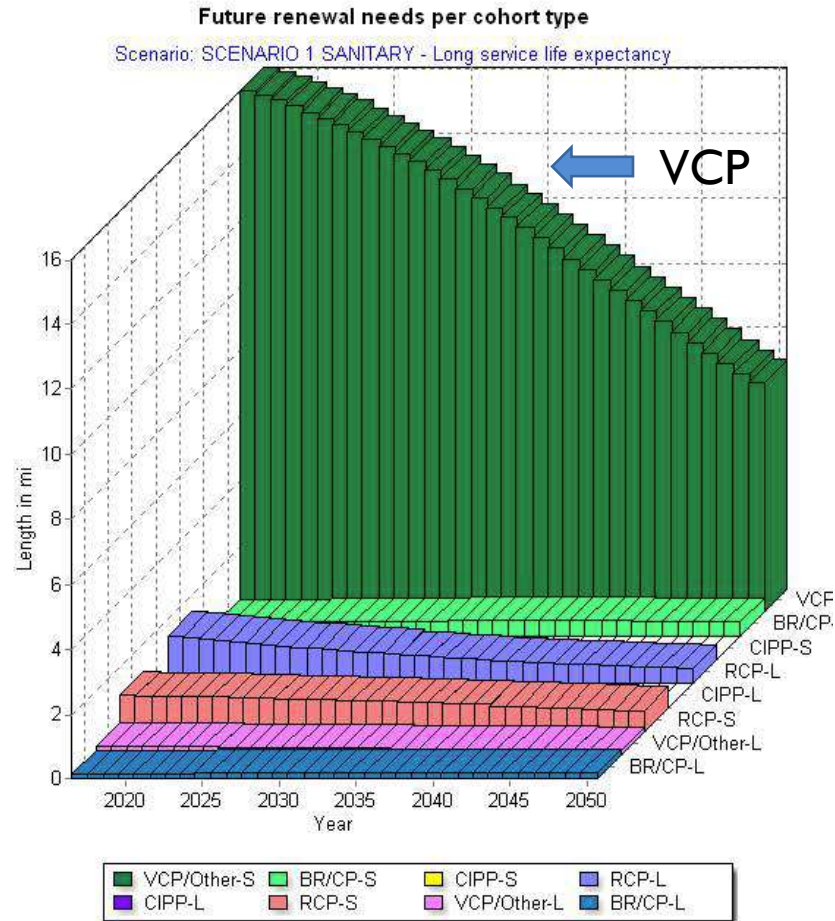






# VIII - Projected Renewal Requirements

## Sanitary Sewer





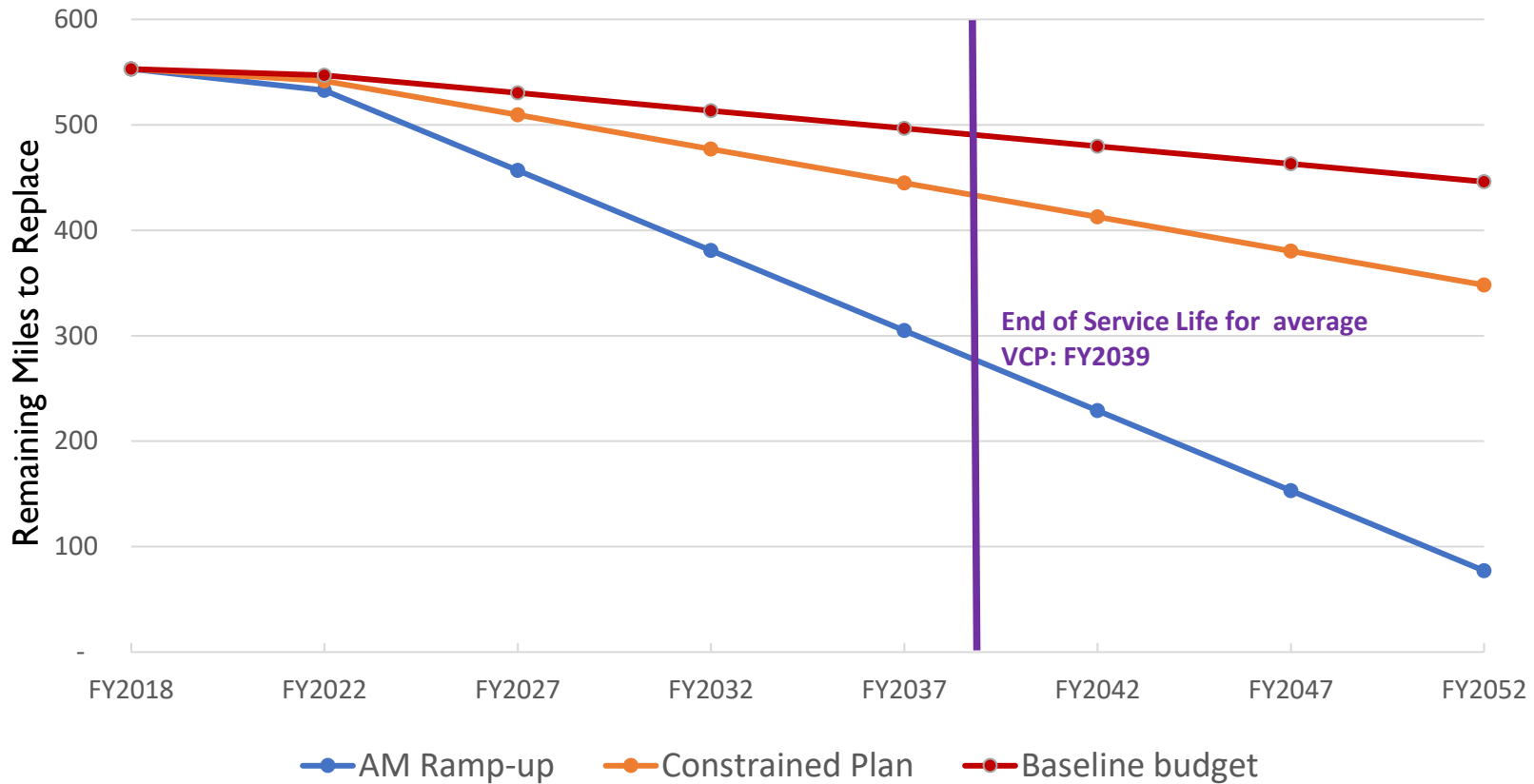
# Sanitary Sewer Renewal Funding Options





# Average Age and Service Life Expectancies Vitrified Clay Pipes

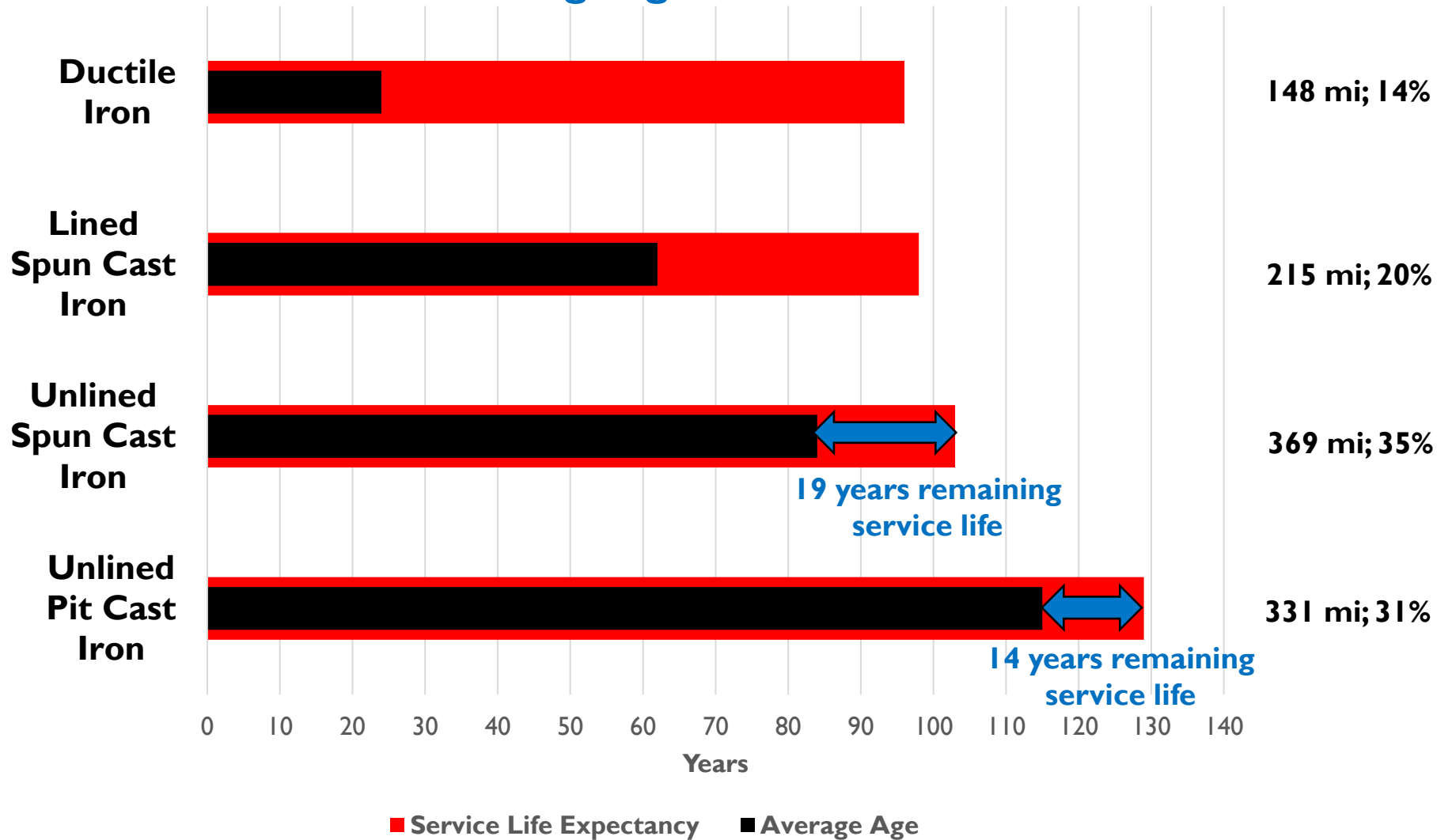
**Vitrified Clay Pipes, miles**  
**Expected Service Life: 100 Years**  
**Current Average Age: 79 years**





# Average age and service life expectancies by SDWM cohort type - 2018

**Current Status**  
Average age 81 Years



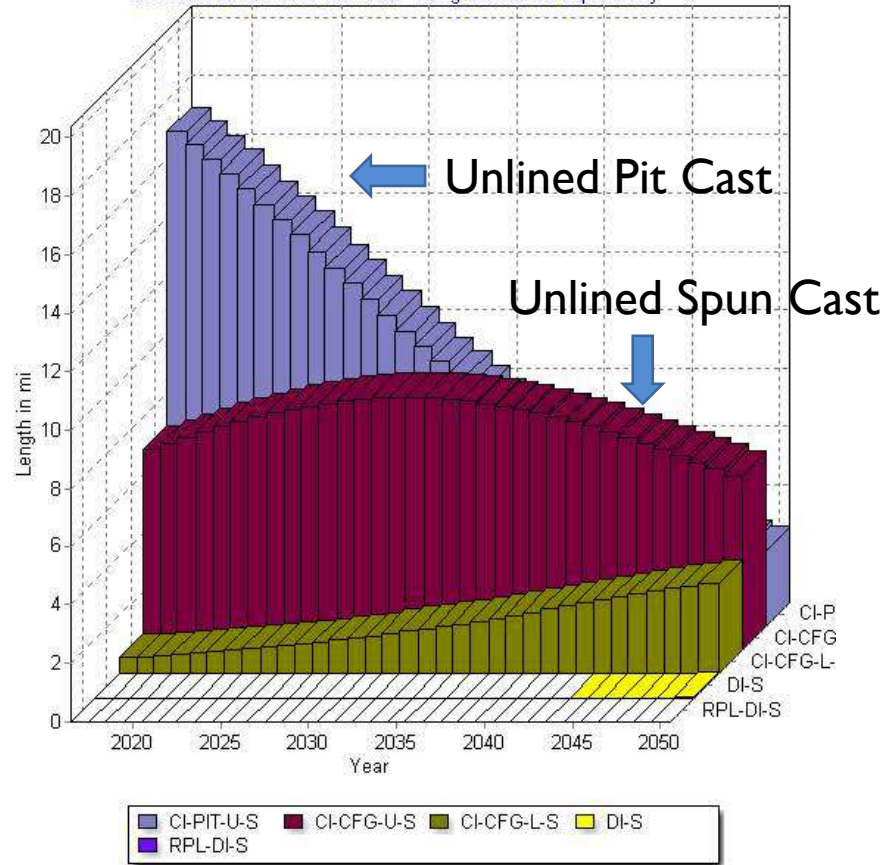


# Projected Renewal Requirements - SDWM

## Small Diameter Water

Future renewal needs per cohort type

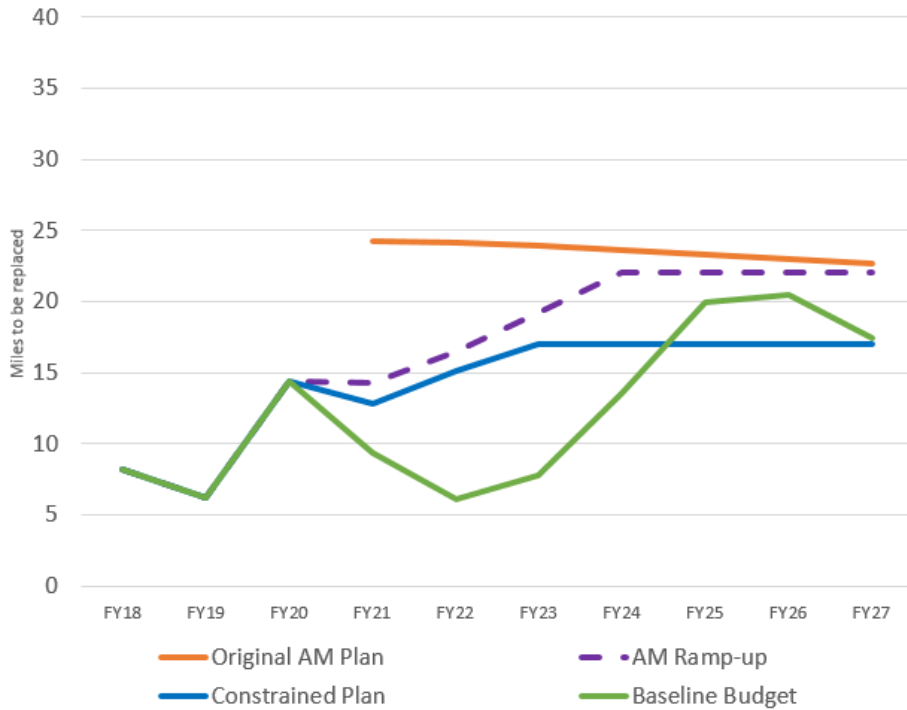
Scenario: SCENARIO 1-SMALL - Long service life expectancy





# SDWM Renewal Funding Options

## Replacement Options - SDWMs



## Funding Options - SDWMs



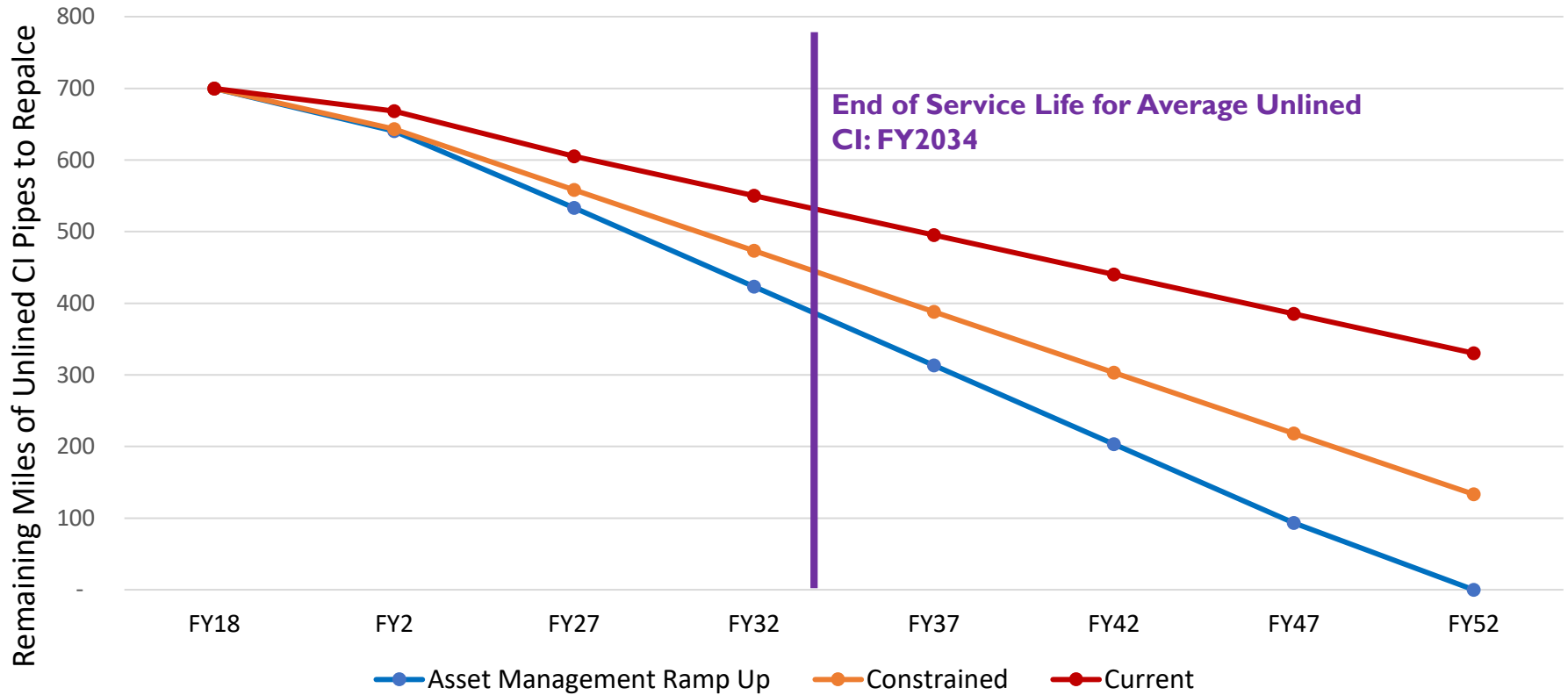


# Unlined Cast Iron Replacement

## Comparison of Three Funding Options

Expected Service Life: 115 years

Current Average Age: 99 years





## IX - AWWA Buried No Longer 2012

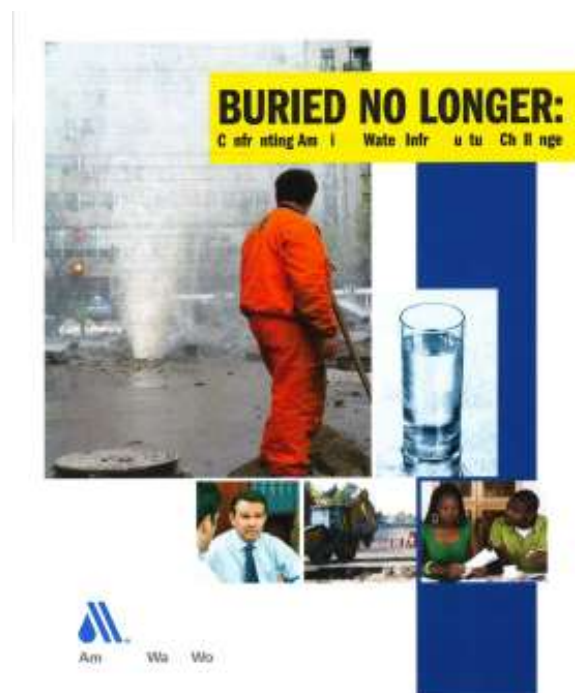
“Restoring existing water systems as they reach the end of their useful lives and expanding them to serve a growing population will cost at \$1 trillion over the next 25 years, if we are to maintain current levels of water service. Delaying the investment can result in degrading water service, increasing water service disruptions, and increasing expenditures for emergency repairs. Ultimately we will have to “catch up” with past deferred investments, and the more we delay the harder the job will be when the day of reckoning comes.”

### Some Key Findings:

- “The Needs Are Large”
- “The Costs Keep Coming”
- “Postponing Investment Only Makes the Problem Worse”

### Report link:

<http://www.awwa.org/portals/0/files/legreg/documents/buriednolonger.pdf>







# ASCE 2016 DC Infrastructure Report Card

## Drinking Water: C+

- “The system entails 1,350 miles of pipes, equivalent of driving from D.C. to Chicago and back. The pipes median age is 79 years, beyond the design lifespan of 50 years and 9% of pipes were installed during the period between the Civil War and the 1890’s.”
- “The District has 400 to 550 water main breaks per year, with 459 breaks in 2014. This averages out to 34 water main breaks per 100 miles of pipe annually, which is a higher rate relative to the American Water Works (AWWA) benchmark. The impact of breaks can be severely disruptive, resulting in road closures, down water service, and higher cost of repair.”

## Wastewater: C+

- “D.C.’s wastewater system dates back to 1810 and includes 1,800 miles of sanitary and combined sewers – a longer distance than from D.C. to Denver.”
- “Continue to invest in the sanitary sewer system, including the collection system, sewer lines, and pumping facilities to ensure a reliable and modern system and reduce the risk of failures.”



## Report link:

<https://www.infrastructurereportcard.org/state-item/district-of-columbia/>



## X - CIP Development

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### **Other Realities and Considerations:**

- 💧 Permitting
- 💧 Contractor availability
- 💧 Market considerations
- 💧 In-house resources/capability
- 💧 Procurement / contracting
- 💧 MBE/WBE goals



## XI - Proposed Asset Management CIP

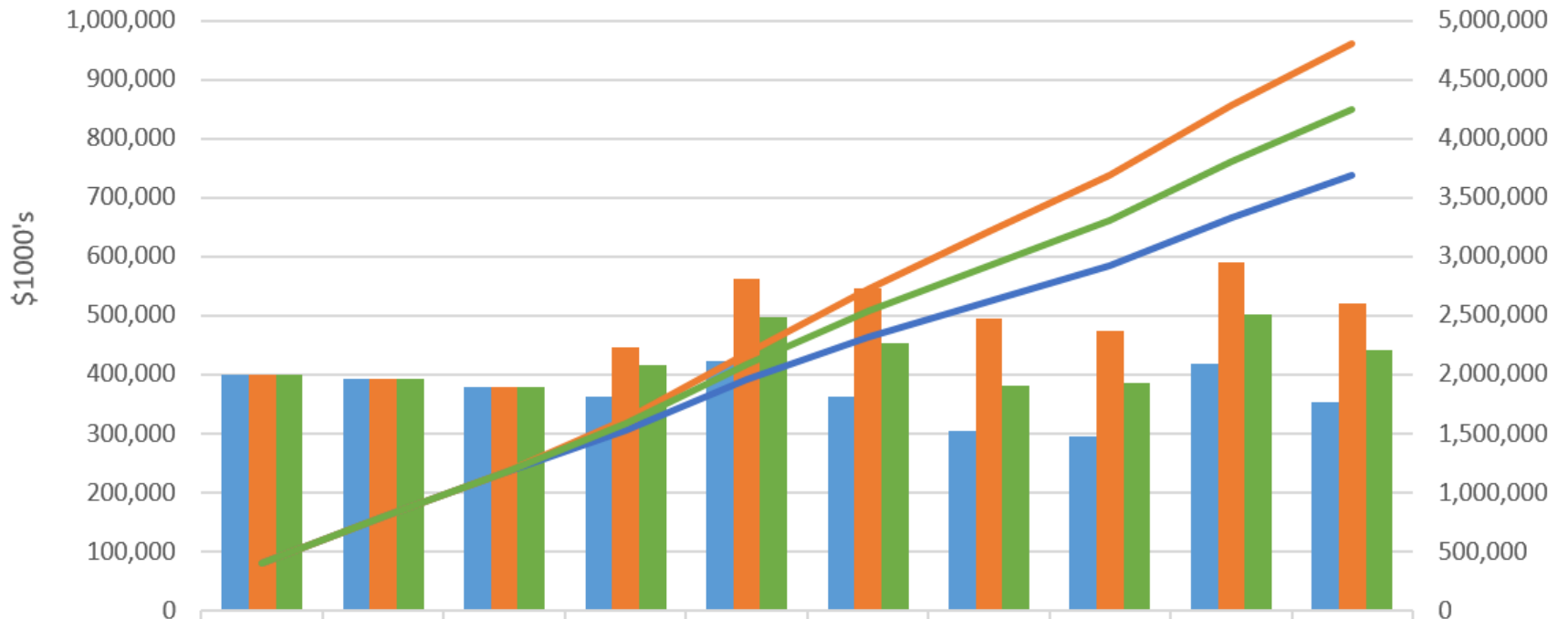
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- 💧 DC Clean Rivers: Fully funded to meet Consent Decree
- 💧 Wastewater: Fully funded to meet NPDES Permit and established levels of service
- 💧 Water:
  - Pumping stations, storage facilities fully funded
  - Small Diameter Water Main Replacement program fully funded to ramp up to 2% asset management replacement level
  - Large diameter generally funded
- 💧 Sewer:
  - Sewer lines Replacement program fully funded to ramp up to 2.7% asset management replacement level
  - Pump stations fully funded
- 💧 Non-Process: Fully funded for HQ, Fleet and Sewer Operations Facilities



# Funding Options for 10-yr CIP

Summary of 10-year CIP Plans Options



	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
<b>A) Proposed Baseline CIP</b>	398,285	391,670	378,015	361,644	423,029	362,694	303,666	295,742	416,809	352,386
<b>B) AM Ramp-up</b>	398,285	391,670	378,015	445,773	562,690	544,941	494,295	473,367	590,119	519,564
<b>C) Constrained</b>	398,285	391,670	378,015	415,248	497,461	453,969	381,356	384,859	501,455	440,764
<b>A) Cumul. Prop. Baseline CIP</b>	398,285	789,955	1,167,970	1,529,614	1,952,644	2,315,338	2,619,004	2,914,745	3,331,554	3,683,941
<b>B) Cumul. AM Ramp-up</b>	398,285	789,955	1,167,970	1,613,743	2,176,433	2,721,374	3,215,669	3,689,036	4,279,155	4,798,719
<b>C) Cumul. Constrained</b>	398,285	789,955	1,167,970	1,583,218	2,080,679	2,534,649	2,916,005	3,300,864	3,802,319	4,243,083



# Comparative Scenarios & Customer Impacts

Baseline (Proposed)	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.66	\$34.75	\$35.45	\$36.46
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$121	\$127	\$134	\$139	\$143	\$149	\$154
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.3%	5.0%	4.9%	3.9%	3.2%	3.7%	4.0%

Constrained \$4.2 Billion	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	5.5%	7.0%	6.5%	6.5%	6.5%	6.0%	5.5%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.72	\$34.93	\$35.84	\$37.11
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$122	\$129	\$137	\$144	\$150	\$157	\$164
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.6%	6.3%	5.9%	5.0%	4.3%	4.5%	4.5%

Asset Management \$4.7 Billion	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Water & Sewer Rate (%)	5.0%	13.0%	5.0%	6.0%	8.0%	8.0%	8.5%	8.0%	7.0%	6.5%
CRIAC (\$/ERU)	\$25.18	\$23.00	\$25.58	\$29.07	\$31.33	\$33.62	\$34.72	\$34.93	\$35.84	\$37.11
Avg. Customer Bill (\$)	\$102	\$108	\$114	\$122	\$130	\$139	\$148	\$156	\$164	\$172
Avg. Customer Bill (%)	6.2%	5.6%	5.6%	6.9%	6.9%	6.8%	6.3%	5.3%	5.3%	5.2%