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PWD RESPONSE TO  
WATER RATE BOARD  
**DISCOVERY QUESTIONS**

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*submitted April 2018*





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# INTRODUCTION

## RATE BOARD DISCOVERY SUMMARY

The purpose of this document is to respond to questions posed by the Water Rate Board regarding PWD's filing for increased rates for FY 2019-FY 2021. The information contained seeks to provide clarity and additional evidence that can inform the Rate Board's decision making process.

## PWD MISSION

The Water Department was established by the Philadelphia Home Rule Charter, approved April 17, 1951 ("Home Rule Charter") as one of the City's ten operating departments. The Department's long history of supplying water dates back to the 1800's. The Water Department is responsible for the planning, construction, operation, and maintenance of the water and wastewater systems; for complying with regulatory requirements; for rate setting and stakeholder engagement; budgeting and detailed cost accounting; and preparation of financial statements for the systems.

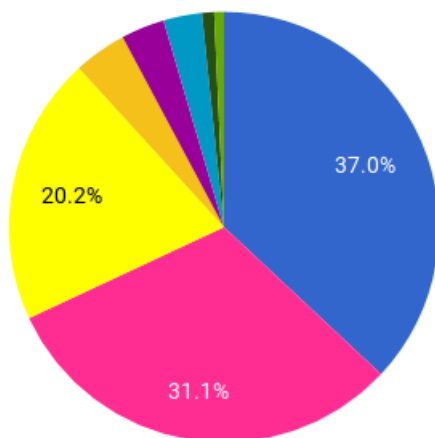
The Philadelphia Water Department's mission is to support public health by planning for, operating, and maintaining the infrastructure and organization necessary to reliably provide an uninterrupted supply of high quality drinking water for its 1.6 million customers; meeting residential, commercial and firefighting needs; and sustaining and enhancing the region's watersheds and quality of life by treating wastewater to high standards and effectively managing stormwater.

## OVERVIEW OF RATE REQUEST

The Water Department is requesting rate increases over a three-year period to generate approximately \$116 million or 10.6% increase in annual service revenues (on a cumulative total annual basis), with the proposed effective dates starting September 1, 2018. In addition, the Department is proposing to make withdrawals from the Rate Stabilization Fund over the same period totaling \$43.7 million to offset some of the projected cost increases and protect rate payers from rising rates. Finally, in order to better align actual revenue losses for the Tiered Assistance Program (TAP) and actual costs of the Low-Income Conservation Program, the Department is proposing an automatic adjustment mechanism - the TAP Rate Rider - which would adjust water and sewer charges in Fiscal Years 2020 and 2021.

Figure 1 presents a high level overview of PWD's projected expenses for FY 2018. Figure 2 on the following page presents the projected revenue and revenue requirements over the requested rate period, as well as a longer term outlook.

FIGURE 1. PWD FY 2018 PROJECTED EXPENSES, BY CATEGORY



EXPENSE CATEGORY	PROJECTED (\$)
Workforce Costs	\$261,853,000
Capital Program - Debt Service Payments	\$220,026,000
Services	\$142,909,000
Materials, Equipment & Supplies	\$28,136,000
Electricity and Gas	\$23,120,000
Chemicals	\$20,527,000
General Fund Reimbursements	\$6,431,000
Indemnities	\$5,141,000
<b>TOTAL</b>	<b>\$ 708,143,000</b>



**FIGURE 2. PROJECTED REVENUE & REVENUE REQUIREMENTS (\$000s)**

	Description	FY 2017 (a)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>OPERATING REVENUE</b>								
1	Water Service - Existing Rates	271,124	280,852	272,455	270,409	268,152	266,038	263,948
2	Wastewater Service - Existing Rates	413,732	430,818	431,108	428,705	425,776	422,912	420,084
3	Total Service Revenue Required	684,856	711,670	703,564	699,115	693,929	688,950	684,032
Additional Service Revenue Required								
4	FY 2019 (1.6% increase/10 months)			9,204	11,186	11,103	11,023	10,945
5	FY 2020 (4.5% increase/10 months)				26,133	31,726	31,499	31,274
6	FY 2021 (4.5% increase/10 months)					27,107	32,916	32,681
7	FY 2022 (6.8% increase/10 months)						42,497	51,607
8	FY 2023 (6.8% increase/10 months)							45,063
9	Total Additional Service Revenue Required			9,204	37,319	69,936	117,936	171,570
10	Total Water & Wastewater Service Revenue	684,856	711,670	712,767	736,434	763,865	806,886	855,603
Other Income (b)								
11	Other Operating Revenue	32,287	39,647	16,187	13,008	10,025	9,948	9,871
12	Debt Reserve Fund Interest Income	-	-	-	-	-	-	-
13	Operating Fund Interest Income	386	406	364	358	376	398	417
14	Rate Stabilization Interest Income	733	702	660	601	543	516	508
15	<b>TOTAL REVENUES</b>	<b>718,260</b>	<b>752,425</b>	<b>729,978</b>	<b>750,401</b>	<b>774,810</b>	<b>817,748</b>	<b>866,398</b>
<b>OPERATING EXPENSES</b>								
16	Total Operating Expenses	(455,742)	(464,118)	(485,844)	(500,535)	(514,420)	(528,771)	(543,451)
<b>NET REVENUES</b>								
17	Transfer from/(to) Rate Stabilization Fund	4,563	12,200	11,400	21,200	11,100	3,900	700
18	Net Revenues After Operations	267,082	300,508	255,534	271,066	271,490	292,876	323,647
<b>DEBT SERVICE</b>								
Senior Revenue Bonds								
19	Outstanding Bonds	(193,841)	(185,756)	(133,964)	(123,040)	(115,891)	(109,229)	(105,309)
20	Pennvest Parity Bonds	(11,816)	(11,500)	(11,682)	(11,636)	(11,636)	(11,636)	(11,636)
21	Projected Future Bonds	-	(22,770)	(53,933)	(73,782)	(81,257)	(104,356)	(132,006)
22	Total Senior Debt Service	(205,657)	(220,026)	(199,579)	(208,458)	(208,783)	(225,221)	(248,951)
23	TOTAL SENIOR DEBT SERVICE COVERAGE	1.29 x	1.36 x	1.28 x	1.30 x	1.30 x	1.30 x	1.30 x
24	Subordinate Debt Service	-	-	-	-	-	-	-
25	Transfer to Escrow	(11,000)	(19,000)	-	-	-	-	-
26	Total Debt Service on Bonds	(216,657)	(239,026)	(199,579)	(208,458)	(208,783)	(225,221)	(248,951)
27	CAPITAL ACCOUNT DEPOSIT	(22,302)	(23,061)	(35,767)	(36,983)	(38,241)	(39,541)	(40,885)
28	TOTAL COVERAGE	1.17 x	1.23 x	1.08 x	1.10 x	1.09 x	1.10 x	1.11 x
<b>RESIDUAL FUND</b>								
29	Beginning of the Year Balance	15,189	15,065	15,040	15,083	15,061	15,082	15,051
30	Interest Income	54	54	54	54	54	54	54
Plus:								
31	End of Year Revenue Fund Balance	28,122	38,421	20,188	25,625	24,466	28,115	33,810
32	Deposit for Transfer to City General Fund (c)	1,866	756	722	736	751	793	865
Less:								
33	Transfer to Construction Fund	(28,300)	(38,500)	(20,200)	(25,700)	(24,500)	(28,200)	(33,900)
34	Transfer to City General Fund	(1,866)	(756)	(722)	(736)	(751)	(793)	(865)
35	Transfer to Debt Service Reserve Fund	-	-	-	-	-	-	-
36	End of Year Balance	<b>15,065</b>	<b>15,040</b>	<b>15,083</b>	<b>15,061</b>	<b>15,082</b>	<b>15,051</b>	<b>15,015</b>
<b>RATE STABILIZATION FUND</b>								
37	Beginning of Year Balance	205,761	201,198	188,998	177,598	156,398	145,298	141,398
38	Deposit from/(to) Revenue Fund	(4,563)	(12,200)	(11,400)	(21,200)	(11,100)	(3,900)	(700)
39	End of Year Balance	<b>201,198</b>	<b>188,998</b>	<b>177,598</b>	<b>156,398</b>	<b>145,298</b>	<b>141,398</b>	<b>140,698</b>

(a) FY 2017 represents a projection of anticipated actual expenses at the time of cost of service analysis as reflected in the filing. These numbers are subject to change and may not reflect final financial figures. (b) Includes operating and non-operating income, including interest income on funds and accounts transferable to the Revenue Fund. Includes Debt Service Reserve Fund releases in FY 2017 and FY 2018 and projected contra revenue credits for TAP. (c) Transfer of interest earnings from Bond Reserve Account to the Residual Fund as shown on Line 32 to satisfy the requirements for the transfer to the City General Fund shown on line 34.

# 1 REVENUE & REVENUE REQUIREMENTS

## 1.1. OPERATION & MAINTENANCE EXPENSES

Figure 8 presents PWD's historical experience with regard to operating expenses against projections developed during prior rate proceedings. PWD does not set rates and charges to recover 100 percent of budget appropriations; therefore, projected operating expense estimates from the budget were adjusted to reflect historic actual to budget spending levels of approximately 89.7% (based upon two-year historical average actual to budget factors for FY 2015 and FY 2016). Operating Expenses for fiscal years 2019 through 2021 (Figure 9) were then projected by applying annual escalation factors to the projected FY 2018 operating expenses by category.

### RATE INCREASE DRIVERS

Three key factors influence the projected increase in O&M costs: (1) rising workforce costs, (2) escalating pensions & fringes, and (3) Stormwater Management Incentive Program (SMIP) and Greened Acre Retrofit Program (GARP). A brief overview of each of these factors is provided below.

### RIISING WORKFORCE COSTS

Rising workforce costs are one of the major factors that have led to PWD's request for rate relief. In recent years, the Department has experienced unavoidable increases in workforce costs and costs related to satisfying ongoing obligations under the Consent Order and Agreement (the COA) with the Pennsylvania Department of Environmental Protection and related long-term control plan projects, aging infrastructure, permits and regulations. For the rate period, PWD anticipates additional costs will be incurred as a result of adding 38 positions in the Operations Division from FY 2019 through FY 2021.

FIGURE 3. PWD BUDGETED AND FILLED POSITIONS

	2015		2016		2017		2018		2019	2020	2021
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual	Budgeted	Projected Filled	Projected Filled	Projected Filled	Projected Filled
PWD Operating Positions	2,368	2,132	2,378	2,167	2,412	2,231	2,494	2,259	2,272	2,285	2,297
PWD Capital Positions	289	218	304	220	310	244	337	303	303	303	303
<b>Total Positions</b>	<b>2,657</b>	<b>2,350</b>	<b>2,682</b>	<b>2,387</b>	<b>2,722</b>	<b>2,475</b>	<b>2,831</b>	<b>2,562</b>	<b>2,575</b>	<b>2,588</b>	<b>2,600</b>

FIGURE 4. PROJECTED SALARY INCREASES

	FY 2018	FY 2019	FY 2020	FY 2021
Salary Increases	-	2.5%	3.0%	3.0%

FIGURE 5. PROJECTED ADJUSTMENTS DUE TO STAFFING INCREASE

	FY 2018	FY 2019	FY 2020	FY 2021
Operations Staff	-	\$ 445,000	\$ 899,000	\$ 1,366,000
Planning & Environmental Services Staff	-	\$ 138,800	\$ 286,000	\$ 368,000
Pensions + Benefits for Associated Personnel	-	\$ 516,000	\$ 1,050,000	\$ 1,532,000

### ESCALATING PENSIONS & FRINGES

The cost of PWD's pension contribution will continue to increase as the City addresses its significant pension liability of below 50%. As of 2018, both expenses are paid from the Revenue Fund as an operating expense. PWD's share of its contribution has increased 75% between 2007 and 2016. The City is taking various steps to address this liability, including annually reducing the assumed rate of return as well as adopting more conservative mortality rates, all of which result in increased annual contributions above the annually required contribution. The City does not expect to be 90% funded until after 2034. In addition to increased pension contributions, PWD anticipated incurring costs with additional positions noted above.

FIGURE 6. PENSION AND FRINGE ESCALATION PROJECTIONS

	2019	2020	2021
Pension - City Finance	3.22%	3.33%	1.47%
Pension Obligations - City Finance	0.00%	0.00%	0.00%
Benefits - City Finance	5.67%	4.50%	4.44%

### STORMWATER MANAGEMENT INCENTIVE PROGRAM (SMIP) AND GREEN ACRE RETROFIT PROGRAM (GARP)

PWD plans to increase the overall annual funding available for SMIP / GARP by \$10 million beginning in FY2019 from current budget levels, bringing the total program costs to \$25 million annually. The Department has chosen to increase the SMIP/GARP budget due to the program's early success in helping meet escalating requirements as outlined in the COA.

FIGURE 7. SMIP AND GARP PROGRAM INCREASES

PROGRAM INCREASE (\$)	2018	2019	2020	2021
SMIP/GARP (Water Finance Professional Services)	\$ 5,000,000	\$ 10,000,000	\$ 10,000,000	\$ 10,000,000

FIGURE 8. HISTORIC EXPENSE SUMMARY (IN \$000s)

		FY 2015		FY 2016		FY 2017	
		Budgeted	Actual	Budgeted	Actual	Budgeted	Actual <sup>(b)</sup>
1	Personal Services	122,065	118,718	126,121	118,415	135,082	125,010
2	Pension and Benefits	106,820	100,570	111,744	106,391	118,243	121,567
3	Subtotal	228,885	219,288	237,865	224,806	253,326	246,577
<b>PURCHASE OF SERVICES</b>							
4	Power	25,714	20,428	27,845	20,072	23,265	18,224
5	Gas	4,000	4,191	5,692	4,013	5,539	3,177
6	Other	136,316	125,367	143,552	124,904	155,988	146,209
7	Subtotal	166,030	149,986	177,089	148,989	184,792	167,609
<b>MATERIALS AND SUPPLIES</b>							
8	Chemicals	23,669	22,325	22,576	21,076	21,881	18,597
9	Other	28,204	23,233	28,470	22,455	30,706	25,905
10	Subtotal	51,873	45,558	51,046	43,530	52,587	44,502
11	Equipment	2,667	1,849	3,398	1,992	3,748	2,120
12	Indemnities and General Fund Reimbursement Expenses (a)	20,605	10,087	17,142	13,541	16,006	19,449
13	Subtotal Water and Wastewater Operations	470,059	426,768	486,541	432,857	510,458	480,257
14	Liquidated Encumbrances	(22,000)	(19,389)	(30,000)	(24,088)	(20,000)	(24,550)
15	<b>Total Water and Wastewater Operations</b>	<b>448,059</b>	<b>407,379</b>	<b>456,541</b>	<b>408,769</b>	<b>490,458</b>	<b>455,708</b>

(a) referred to as "Indemnities and Transfers" in the filing

(b) FY 2017 actuals presented in this figure were updated after the advanced filing was submitted

FIGURE 9. PROJECTED EXPENSE SUMMARY (IN \$000s)

		FY 2018		FY 2019	FY 2020	FY 2021
		Budgeted	Projected	Projected	Projected	Projected
1	Personal Services	139,466	133,333	137,250	141,951	146,723
2	Pension and Benefits	135,308	128,521	134,080	139,285	143,403
3	Subtotal	274,774	261,853	271,330	281,236	290,126
<b>PURCHASE OF SERVICES</b>						
4	Power	24,314	18,385	18,385	18,385	18,936
5	Gas	5,594	4,735	4,924	4,924	5,072
6	Other	158,974	142,909	152,014	156,254	160,636
7	Subtotal	188,881	166,029	175,323	179,564	184,645
<b>MATERIALS AND SUPPLIES</b>						
8	Chemicals	21,873	20,528	21,903	22,735	22,963
9	Other	31,958	25,873	26,002	26,132	26,263
10	Subtotal	53,831	46,400	47,905	48,867	49,225
11	Equipment	3,550	2,263	2,292	2,322	2,352
12	Indemnities and General Fund Reimbursement Expenses (a)	18,105	11,572	12,233	12,398	12,567
13	Subtotal Water and Wastewater Operations	539,141	488,118	509,084	524,387	538,915
14	Liquidated Encumbrances	(20,000)	(24,000)	(23,240)	(23,853)	(24,495)
15	<b>Total Water and Wastewater Operations</b>	<b>519,141</b>	<b>464,118</b>	<b>485,844</b>	<b>500,535</b>	<b>514,420</b>

(a) referred to as "Indemnities and Transfers" in the filing

## 1.2. CAPITAL FINANCING

The Capital Improvement Program is a major driver of the PWD Financial Plan because of its impact on revenue requirements, debt service and long term access to capital. The following section presents additional details about PWD's Capital Program including cash flow, debt service and transfers.

### 1.2.1. CAPITAL BUDGET & EXPENDITURE

The Capital Improvement Program is a major driver of the PWD Financial Plan because of its impact on cash financing, debt service and debt coverage, and long term access to capital. Taking into consideration the Department's judgment on the realistic level of annual capital program execution that needs to occur to meet aging infrastructure/service reliability needs and COA regulatory compliance, projected CIP expenditures are assumed to be at 90% of the annual CIP Budget level. Figure 10 presents a summary of the historical and projected annual CIP budget and expenditure.

**FIGURE 10. HISTORICAL AND PROJECTED ANNUAL CIP BUDGET AND EXPENDITURE (IN \$000s)**

	2015		2016		2017 <sup>1</sup>	
	Budgeted	Actual	Budgeted	Actual	Budgeted	Actual
CIP Spending	174,109	175,672	242,553	178,696	282,000	239,750
	2018 <sup>2</sup>	2018	2019	2020	2021	
	Budgeted	Projected	Projected	Projected	Projected	
CIP Spending	353,658	318,292	328,255	338,518	349,342	

(1) Fiscal year 2017 project expense data is preliminary. (2) Fiscal year 2018 outstanding encumbrances total approximately \$570 million.

### 1.2.2. DEBT SERVICE

Currently, the Philadelphia Water Department has \$1.9 billion of bonds outstanding that reach final maturity in October 2052. PWD strives to match the period of debt repayment, in total, with the useful lives of the assets financed by any such debt and will strive to secure the least costly financing for capital projects. The proposed debt service for the period of FY 2018 through FY 2021 is based on the Department's projected bond issuance and anticipated interest rates. Figure 11 presents a summary of the historical actual debt and Figure 12 presents the annual debt service estimate for FY 2018 through FY 2021.

**FIGURE 11. EXISTING DEBT SERVICE (IN \$000s)**

Description	FY 2015		FY 2016		FY 2017	
	Projected	Actual	Projected	Actual	Projected	Actual
1 Revenue Bonds (a)	192,927	192,927	208,370	206,790	195,371	194,514
2 Pennvest Loans (Revenue Bonds)	12,343	12,343	12,343	12,343	12,343	11,877
3 <b>Total Existing Debt Service</b>	<b>205,270</b>	<b>205,270</b>	<b>220,713</b>	<b>219,133</b>	<b>207,715</b>	<b>206,390</b>

Notes: Projected bond issuances presented based upon prior rate proceedings.

Existing revenue bonds includes all outstanding publicly offered bonds, including refunding issues and bank loans.

(a) Assumes the average interest rates of 3.0 % for the Variable Rate Series 1997B Bonds and 4.53% for the Variable Rate Series 2005B Bonds.



**FIGURE 12. PROPOSED DEBT SERVICE (IN \$000S)**

Description	Fiscal Year Ending June 30,			
	2018	2019	2020	2021
1 Revenue Bonds (a)	208,526	176,140	164,217	142,398
2 Pennvest Loans (Revenue Bonds)	11,500	11,682	11,636	11,636
Proposed				
3 Fiscal Year 2019 (b)		11,756	19,884	19,884
4 Fiscal Year 2020 (c)			12,722	21,141
5 Fiscal Year 2021 (d)				13,725
<b>8 Total Senior Debt Service</b>	<b>220,026</b>	<b>199,579</b>	<b>208,458</b>	<b>208,783</b>

Notes: The presentation of the above table was adjusted from the filing to show a comparison of the debt service on outstanding bonds. The existing bonds presented above include bonds issues associated with refunding efforts, as these are not new money issues.

(a) Assumes the average interest rates of 3.0 % for the Variable Rate Series 1997B Bonds and 4.53% for the Variable Rate Series 2005B Bonds. Reflects savings from Series 2017B Refunding Bonds. Reflects Series 2017B debt service payments.

(b) Assumes interest only payments through FY 2018 based on 5.50% interest. Assumed to be issued during the first quarter of the fiscal year.

(c) Assumes 5.75% interest rate. Assumed to be issued during the first quarter of the fiscal year.

(d) Assumes 6% interest rate. Assumed to be issued during the first quarter of the fiscal year.

### 1.2.3. SUMMARY OF CAPITAL CASH FLOW

Figure 13 presents a summary of the projected capital cash flow developed based on multiple factors including projected annual CIP spend levels, the available fund balance, estimated bond proceeds, and required capital account deposit.

**FIGURE 13. PROJECTED CAPITAL CASH FLOW NEEDS - CAPITAL IMPROVEMENTS FUND (IN \$000S)**

Description	2018	2019	2020	2021
<b>CONSTRUCTION FUND</b>				
1 Beginning Balance	392,111	136,329	146,699	155,504
2 Bond Proceeds	-	282,150	284,097	301,625
3 Capital Account Deposit	23,061	35,767	36,983	38,241
4 Penn Vest Loan Reimbursement	0	0	0	0
5 Transfer from Residual Fund	38,500	20,200	25,700	24,500
6 Interest Income on Construction Fund	949	509	543	587
7 Expenditures	(318,292)	(328,255)	(338,518)	(349,342)
<b>8 Ending Balance</b>	<b>136,329</b>	<b>146,699</b>	<b>155,504</b>	<b>171,115</b>

The sum of the Capital Account Deposit and the Transfer from Residual Fund reflect the projected “cash financing” of capital that the Water Department is likely to achieve.

#### 1.2.4. CAPITAL PROGRAM TRANSFER

PWD is working towards the goal of funding at least 20% of its Capital Program from current revenues, consistent with industry accepted best financial practices. While projections show an increase in transfers to the Capital Account, the Department will still be unable to meet the 20% threshold over the next few years. This is the result of a practical rate setting approach which involves balancing between a revenue-funded capital program and mitigated rate increase.

Figure 14 presents a summary of the historical and projected transfers to the Capital Account deposit, and Figure 15 presents the ratio of cash financing to total annual CIP expenditure, which is one of the important financial performance metric that rating agencies focus on.

FIGURE 14. CAPITAL PROGRAM TRANSFERS (IN \$000s)

	FY 2015		FY 2016		FY 2017		FY 2018	FY 2019	FY 2020	FY 2021
	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Projected	Projected	Projected
Capital Program - Deposits to Capital Account	57,397	38,916	53,044	52,633	51,968	53,603	61,500	55,900	62,600	62,700

FIGURE 15: CAPITAL FUNDING FROM CURRENT REVENUES (IN \$000s)

Fiscal Year	Total Transfer to Capital Account	Total CIP Expenditures	%	Goal Met?
FY 2018	61,500	318,000	19.3%	N
FY 2019	55,900	328,000	17.0%	N
FY 2020	62,600	339,000	18.5%	N
FY 2021	62,700	349,000	18.0%	N

### 1.3. PAYMENTS TO OTHER FUNDS

The Water Fund consists of multiple funds including the Construction Fund; the Debt Service Reserve Fund, the Rate Stabilization Fund, and the Residual Fund. The Rate Stabilization Fund and the Residual Fund are critical for managing the fiscal health of the Water Fund. This section outlines PWD's historic and projected utilization of the Rate Stabilization Fund and the Residual Fund and explains the Department's financial policies when managing fund balances against mitigated rate increases. Capital program transfers, liquidated encumbrances and projected operations and maintenance (O&M) risks are also described later in this section.

#### 1.3.1. RATE STABILIZATION FUND

The fund balance in the Rate Stabilization Fund (RSF) is intended to help stabilize the level of future annual increases in water and wastewater rates as well as meet other PWD financial requirements when necessary. The Rate Stabilization Fund is also the primary source of liquidity recognized by Credit Rating Agencies, as further discussed in Section 2.0.

In the past several years, the Department has used the RSF to "manage" its revenue increases. PWD is planning a series of withdrawals over the Rate Period, while meeting the Department's financial objective of maintaining a targeted RSF balance to support financial liquidity. As such, the Rate Stabilization Fund balance is projected to decrease from \$201.19 Million in FY 2018 to \$145.30 Million by FY 2021 (i.e. the end of the proposed three-year rate increase period). The projected revenue increases were established, taking into consideration this anticipated draw down from the Rate Stabilization Fund. Please refer to Section 2.3 for more information on the Department's liquidity.

FIGURE 16. RATE STABILIZATION FUND (IN \$000s)

	FY 2015		FY 2016		FY 2017		FY 2018	FY 2019	FY 2020	FY 2021
	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Projected	Projected	Projected
1 Beginning of Year Balance	184,796	184,796	206,206	206,447	169,306	205,761	201,198	188,998	177,598	156,398
2 Deposit From/(To) Revenue Fund	21,410	21,456	(36,900)	(1,629)	(15,600)	(4,563)	(12,200)	(11,400)	(21,200)	(11,100)
3 Interest		195		943		562				
4 End of Year Balance	206,206	206,447	169,306	205,761	153,706	201,759	188,998	177,598	156,398	145,298

### 1.3.2. RESIDUAL FUND

After meeting the annual cash obligation for operation and maintenance expenses, payment of debt service, the Capital Account Deposit, and transfers to/from the Rate Stabilization Fund, any remaining revenues are deposited to the Residual Fund. Balances in the Residual Fund may be used for retirement of debt, payment of capital expenditures, and any other payments as provided by the 1989 General Ordinance. An annual balance of approximately \$15 Million is projected to be maintained in the Residual Fund during each year from FY 2018 - FY 2021 as reflected in Figure 5. Transfers to the Construction Fund, General Fund and Debt Service Reserve Fund are also presented in Figure 17.

FIGURE 17. RESIDUAL FUND (IN \$000s)

	FY 2015		FY 2016		FY 2017		FY 2018	FY 2019	FY 2020	FY 2021
	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Projected	Projected	Projected
1 Beginning of Year Balance	25,275	25,275	15,172	14,993	15,255	15,189	15,065	15,040	15,083	15,061
2 Interest Income	73	22	55	60	55	72	54	54	54	54
Additions:										
3 End of Year Revenue Fund Balance	26,524	26,507	31,829	31,136	30,220	31,301	38,421	20,188	25,625	24,466
4 Deposit for Transfer to City General Fund (c)	776	755	789	1,556	794	1,866	756	722	736	751
Withdrawals										
5 Transfer: Construction Fund	(36,700)	(36,811)	(31,800)	(31,000)	(30,400)	(31,301)	(38,500)	(20,200)	(25,700)	(24,500)
6 Transfer: City General Fund	(776)	(755)	(789)	(1,556)	(794)	(1,866)	(756)	(722)	(736)	(751)
7 Transfer: Debt Service Reserve Fund	-	-	-	-	-	-	-	-	-	-
8 End of Year Balance	15,172	14,993	15,255	15,189	15,129	15,262	15,040	15,083	15,061	15,082

## 1.4. REVENUE

PWD's revenues are primarily derived from retail water, sewer and stormwater services and wholesale customers. Other income sources include miscellaneous fee revenues, grants and interest earnings. Also reflected in other income are revenue losses associated with customer assistance programs. Figure 18 presents both PWD's historical and projected revenues.

FIGURE 18A. RECEIPTS UNDER APPROVED RATES (IN \$000s)

Description	FY 2015		FY 2016		FY 2017	
	Projected	Actual	Projected	Actual	Projected	Actual
1 Water Sale Receipts	258,012	258,340	255,999	255,702	266,371	266,342
2 Wastewater Service Receipts	390,651	390,220	388,102	395,925	406,640	413,583
3 <b>Total Water &amp; Wastewater Receipts</b>	<b>648,663</b>	<b>648,561</b>	<b>644,101</b>	<b>651,627</b>	<b>673,011</b>	<b>679,924</b>
<b>OTHER INCOME</b>						
4 Penalties	8,486	8,486	8,614	9,477	8,607	10,056
5 Miscellaneous City Revenues	2,109	2,109	1,960	2,724	1,960	1,710
6 Other	11,223	12,289	8,000	10,162	8,000	9,837
7 State & Federal Grants	1,083	1,083	1,000	744	1,000	1,408
8 Permits Issued by L&I	3,840	3,840	3,000	3,794	2,480	4,595
9 Miscellaneous (Procurement)	327	327	300	358	300	365
10 City & UESF Grants						
11 TAP Discount (a)						
12 Release from Debt Service Reserve Fund (b)						11,829
13 Other Operating Revenues	27,068	28,133	22,874	27,259	22,347	39,799
<b>NON-OPERATING INCOME</b>						
14 Interest Income - Debt Service Reserve Fund (c)	-	-	-	-	-	-
15 Other (d)	1,078	152	956	20	898	920
16 <b>Total Non-Operating Income</b>	<b>1,078</b>	<b>152</b>	<b>956</b>	<b>20</b>	<b>898</b>	<b>920</b>
17 <b>TOTAL RECEIPTS</b>	<b>676,809</b>	<b>676,846</b>	<b>667,931</b>	<b>678,907</b>	<b>696,256</b>	<b>720,643</b>

Note: FY 2015, FY 2016 and FY 2017 projections are based upon prior proceedings.

(a) TAP Discount represents anticipated lost revenue due to TAP, which did not initiate until FY 2018.

(b) Projected Release from Debt Reserve Fund based on outstanding and proposed debt service payments.

(c) Excludes deposit into Residual Fund for Transfer to City General Fund.

(d) Includes interest income on Operating and Rate Stabilization Funds.

FIGURE 18B. PROJECTED RECEIPTS UNDER EXISTING RATES (IN \$000s)

	Description	FY 2018	FY 2019	FY 2020	FY 2021
1	Water Sale Receipts	280,852	272,455	270,409	268,152
	Wastewater Sale Receipts				
2	Sanitary Sewer	272,887	273,347	271,833	270,079
3	Stormwater	157,931	157,761	156,872	155,697
4	Subtotal Wastewater Service Receipts	430,818	431,108	428,705	425,776
5	<b>Total Water &amp; Wastewater Receipts</b>	<b>711,670</b>	<b>703,564</b>	<b>699,115</b>	<b>693,929</b>
	<b>OTHER INCOME</b>				
6	Penalties	10,277	10,217	10,138	10,055
7	Miscellaneous City Revenues	2,300	2,300	2,300	2,300
8	Other	8,600	10,100	10,900	11,300
9	State & Federal Grants	1,000	1,000	1,000	1,000
10	Permits Issued by L&I	2,520	2,520	2,520	2,520
11	Miscellaneous (Procurement)	500	500	500	500
12	City & UESF Grants	(650)	(650)	(650)	(650)
13	TAP Discount (a)	(3,900)	(9,800)	(13,700)	(17,000)
14	Release from Debt Service Reserve Fund (b)	19,000	-	-	-
15	Other Operating Revenues	39,647	16,187	13,008	10,025
	<b>NON-OPERATING INCOME</b>				
16	Interest Income - Debt Service Reserve Fund (c)	-	-	-	-
17	Other (d)	1,109	1,023	959	920
18	<b>Total Non-Operating Income</b>	<b>1,109</b>	<b>1,023</b>	<b>959</b>	<b>920</b>
19	<b>TOTAL RECEIPTS</b>	<b>752,425</b>	<b>720,774</b>	<b>713,081</b>	<b>704,874</b>

(a) TAP Discount represents anticipated lost revenue due to TAP.

(b) Projected Release from Debt Reserve Fund based on outstanding and proposed debt service payments.

(c) Excludes deposit into Residual Fund for Transfer to City General Fund.

(d) Includes interest income on Operating and Rate Stabilization Funds.



#### 1.4.1. WATER & WASTEWATER RECEIPTS

While the total number of customer accounts is anticipated to remain relatively steady, PWD projects an 1.75% annual decline in consumption per account for General Service Customers with 5/8" meters, based upon the 2-year average decline in consumption for FY 2015 and FY 2016. This equates to an overall decline in associated water sales volumes of 0.9 percent. This is supported by a review of historical usage per account which reflects annual changes in usage per account from 2012 to 2016 for PWD's 5/8 inch meter General Service Customers. The overall decline in consumption is consistent with consumption patterns reported by other water utilities in the region. For PWD, the projected annual decrease in General Service Customer consumption results in a projected decrease in revenue of approximately \$11.3 million for the rate period. The projected revenues in Figure 18 reflect these impacts.

More information regarding historical and projected accounts, water and sanitary sewer sales volume, and billable impervious area and gross area square footage associated with projecting water, sanitary sewer, and stormwater revenues are presented in Appendix 2.

**FIGURE 19. WATER SERVICE**

	ACTUAL			PROJECTED				
	2014	2015	2016	2017	2018	2019	2020	2021
Accounts <sup>1</sup>	489,686	485,589	494,532	494,532	494,532	494,532	494,532	494,532
Annual Sales Volume (MCF)	6,300,440	6,344,242	6,208,890	6,335,406	6,278,222	6,221,043	6,164,359	6,107,676

<sup>1</sup> Accounts exclude unmetered fire and hydrants.

**FIGURE 20. SANITARY SEWER SERVICE**

	ACTUAL			PROJECTED				
	2014	2015	2016	2017	2018	2019	2020	2021
Accounts	477,285	471,792	480,613	480,613	480,613	480,613	480,613	480,613
Annual Sales Volume (MCF)	10,535,571	10,300,227	9,825,043	10,218,836	10,161,652	10,104,473	10,047,790	9,991,107

**FIGURE 21. STORMWATER SERVICE**

Similar to water and sanitary sewer accounts, PWD expects the total number of stormwater customer accounts to remain relatively steady over the rate period. Stormwater service revenues are based upon the amount of billable impervious area (IA) and gross area (GA) square footage, which are expected to decline annually over the rate period primarily due to stormwater credits. The credits result in an average additional incremental reduction of roughly 21 million square feet of gross area per year and 9 million square feet of impervious area per year. This equates to approximately \$2.2 million in reduced stormwater revenues by FY 2021. Please note that this is in addition to current lost revenue resulting from stormwater credits of roughly \$17 million (based on FY 2018 rates).

	ACTUAL			PROJECTED				
	2014	2015	2016	2017	2018	2019	2020	2021
Accounts	547,198	546,767	547,161	547,819	547,270	547,270	547,270	547,270
Billable Impervious Area (1,000 SF)	1,145,928	1,130,988	1,123,519	1,118,287	1,108,181	1,100,811	1,092,890	1,083,546
Billable Gross Area (1,000 SF)	2,205,482	2,192,163	2,168,083	2,130,775	2,104,071	2,084,547	2,064,534	2,043,158

### 1.4.2. BILLING & COLLECTIONS

Projected revenues under existing rates reflect the anticipated cumulative receipts for the water, sanitary sewer, and stormwater services (including retail and wholesale receipts) each fiscal year. The receipts for each fiscal year are estimated based on the projected system billings and the associated projected retail collection factors. The system-wide retail collection factors utilized in the financial plan analysis for FY 2018 to FY 2023 are as follows:

**FIGURE 22. PROJECTED RETAIL COLLECTION FACTORS**

	Billing Year	Billing Year Plus 1	Billing Year Plus 2 and Beyond
Non-Stormwater Only	85.90%	9.08%	1.56%
Stormwater Only	60.38%	7.69%	4.01%

Appendix 8 provides a summary of the historic billing and collections (i.e. receipts) from FY 2012 to FY 2016 utilized to develop the above collection factors.

### 1.4.3. WHOLESALE OPERATING REVENUE

For the rate period, it is projected that wholesale water revenues will be approximately \$3.36M annually and wholesale wastewater revenues will be \$37.7M annually. In FY 2017, wholesale revenues represented 5 percent of the Water Department's total water and wastewater revenues. Currently, Aqua Pennsylvania is the Water Department's only wholesale water customer. PWD's service to Aqua Pennsylvania commenced in Fiscal Year 2002. Water charges for this service include a commodity charge designed to recover power and chemical costs and a fixed charge designed to recover allocated capital costs and all other allocated operation and maintenance expenses, excluding power and chemical costs.

The Water Department provides wholesale wastewater service to ten (10) suburban customers on a contractual basis. Contractual rates for wastewater service generally consist of charges for operation and maintenance expense and certain capital costs associated with the collection and treatment facilities used in providing the service. Figure 23 below shows PWD's 2017 wholesale operating revenue:

**FIGURE 23. WHOLESALE CUSTOMER REVENUE**

	FY 17 Total	% Total Revenue	Contract End Date
<b>WASTEWATER</b>			
Delcora	\$ 8,274,572	1.14%	4/1/2028
Bucks County Water & Sewer	\$ 7,940,300	1.09%	3/31/2038
Cheltenham Township	\$ 3,712,261	0.51%	6/30/2025
Lower Southampton Township	\$ 3,540,324	0.49%	6/30/2024
Upper Darby Township	\$ 2,442,757	0.34%	8/8/2023
Lower Merion Township	\$ 2,225,241	0.31%	n/a
Springfield Township			
Erdenheim	\$ 1,864,095	0.26%	6/30/2023
Wyndmoor	\$ 326,765	0.05%	6/30/2023
Bucks (for Bensalem)	\$ 1,925,423	0.27%	6/30/2023
Abington Township	\$ 1,614,469	0.22%	6/30/2023
Lower Moreland Township	\$ 785,757	0.11%	6/30/2025
<b>Subtotal</b>	<b>\$34,651,964</b>		
<b>WATER</b>			
Aqua Pennsylvania	\$ 3,276,834	0.45%	3/1/2026
<b>Subtotal</b>	<b>\$ 3,276,834</b>		
<b>TOTAL WHOLESALE REVENUES</b>	<b>\$37,928,857</b>	<b>5.23%</b>	
	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY2021</b>
Projected Wholesale Water Revenues	\$3.36M	\$3.36M	\$3.36M
Projected Wholesale Wastewater Revenues	\$ 37.7M	\$ 37.7M	\$ 37.7M

Note: Projected wholesale revenues are based on existing rates as of July 1, 2017.

#### 1.4.4. MISCELLANEOUS FEES AND CHARGES

The miscellaneous fees and charges represent various special service fees charged by utilities to recover costs associated with providing ancillary water or wastewater services. Examples of such ancillary services are meter permits, hydrant permits and plan review fees. Utilities recover the costs of providing such services from customers who use those services. The Water Department's Rates and Charges include the Water, Sewer, Stormwater, Fire Service Connection and related miscellaneous charges. As part of the cost of service study, a review was performed of all miscellaneous charges and proposed charges were developed for FY 2019 - FY 2021. Based upon the proposed miscellaneous fees and charges, an increase of \$2.7 million in related revenues is expected by FY 2021. Please refer to Appendix 5 for more information regarding miscellaneous fees and charges.

#### 1.4.5. TAP PROGRAM REVENUE LOSS

A key component of Other Operating Revenue is the revenue loss associated with TAP, as shown in Figure 18 (Line 13) under Section 1.4. The City launched the TAP on July 1, 2017 (FY 2018), and as it involves bill discounts, it results in a reduction in the water, sewer, and stormwater user charge revenues. So far, TAP bills have seen, on average, a discount of \$56.98. Figure 24 below presents a projection of the annual TAP revenue loss. Note the average discount of \$56.98 does not currently reflect any increase in customer rates or in income levels for TAP enrollees over the Rate Period. The average discount of \$56.98 could change during the rate period subject to potential changes in rate increases; income levels of TAP enrollees; and/or Federal Poverty Guidelines.

To address risks associated with TAP Revenue Loss, PWD has proposed a TAP Rate Rider. The rider is intended to address uncertainty associated with enrollment levels and associated TAP discounts as well as the recovery of costs from customers. The TAP Rate Rider is intended to provide a mechanism by which PWD can reconcile, in a timely fashion, the actual TAP revenue loss and other associated program costs with the projected costs included in adopted rates.

FIGURE 24: TAP REVENUE IMPACTS

	PROJECTED ENROLLMENT	PERCENT INCREASE	LOST REVENUE (\$000s)
FY 2018	11,211		(3,900)
FY 2019	16,924	51%	(9,800)
FY 2020	22,981	36%	(13,700)
FY 2021	26,397	15%	(17,000)

#### 1.4.6. NON-OPERATING INCOME

Non-operating Income of the Water Department consists primarily of interest earnings on the amounts within certain funds and accounts. In accordance with the authorizing revenue bond ordinance (the 1989 General Ordinance), the interest earnings in the Debt Service Reserve Fund, Revenue Fund, and the Rate Stabilization Fund are reflected as revenue credits to the Revenue Fund. Interest Earnings in the Debt Service Reserve Fund are first credited to the extent that they are needed to fulfill the Debt Service Reserve Requirement and then amounts in excess of fulfilling the Debt Service Reserve Requirement are permitted to be transferred to the City's General Fund (up to \$4,994,000). Actual annual fund valuations and interest earnings are based on a mark-to-market valuation which the City performs at the end of the fiscal year. The differential between mark-to-market and the Debt Service Reserve Fund requirement results in either a transfer from Operating Fund of the Water Department to the Debt Service Reserve Fund, if there is a deficiency in the Debt Service Reserve Fund, or a transfer from the Debt Service Reserve Fund to the Operating Fund of the Water Department, if there is an excess in the Debt Service Reserve Fund. As noted above, projected transfers from the Debt Service Reserve Fund to the Operating Fund are included as Other Operating Revenue.

#### INTEREST INCOME PROJECTIONS

The interest earnings in the Construction Fund, which primarily consists of bond proceeds, are not available to the Revenue Fund as a part of the overall project revenues available for meeting annual revenue requirements of the Water Department. An interest rate of 0.36 percent was assumed to determine the interest income for FY 2019 through FY 2023.

## 1.5. SUMMARY OF POTENTIAL RISKS

The proposed five-year financial plan analysis and cost of service for the rate period have been developed based on industry accepted principles of municipal utility financial planning, cost of service, and rate setting. As rates are set for the projected rate period of FY 2019 through FY 2021, the projections involve defensible and rational assumptions. Potential risks are inherent in any study that involves projections. The key potential risks inherent in the proposed Rate Period projections and rate increase requests are:

1. Actual annual expenditures exceed projected annual expenditures
2. Actual revenues trail projected annual revenues
3. Unforeseen regulations that require additional or accelerated compliance
4. Changes in economic and customer conditions
5. Infrastructure resilience for service reliability

### 1.5.1. ACTUAL ANNUAL EXPENDITURES EXCEED PROJECTED ANNUAL EXPENDITURES

#### O&M EXPENDITURE PROJECTIONS

As presented in the detailed Revenue and Revenue Requirement Assumptions document that was filed with the Testimony, the O&M projections for the rate period are largely based on “anticipated actual expenditures” and not based on 100% of the budget. The actual to budget factors were carefully developed at cost item and class level where applicable, with due diligence based on historical average actual to budget ratios; the Department’s completed procurements for aspects such as electric and gas costs; and industry accepted rational levels of general O&M escalation. Yet, it is quite plausible that during one or more of the rate period years, O&M actual expenditures can exceed the projected expenditures due to myriad unforeseen reasons, including failure of systems that require immediate remediation to restore service; any unforeseen litigation; moderate or significant operational failures due to weather conditions.

Any policy changes during the rate period, such as transitioning personnel costs or fleet costs to O&M that are currently capitalized, could have a direct immediate impact on the O&M actual expenditures. Therefore, actual annual expenditures exceeding the O&M expenditures projected for the rate period is a legitimate risk.

**MITIGATION:** Having reasonable levels of fund balance in the Rate Stabilization Fund is critical to managing this potential risk.

#### CIP EXECUTION

Similar to O&M, the annual CIP projections for the rate period are largely based on “anticipated actual expenditures” and not based on 100% of the CIP budget. The 90% actual to budget factor that is used to project annual CIP expenditures is based on historical average actual to budget ratios, and the Department’s seasoned judgment and understanding of areas where CIP execution needs to be accelerated. However, the CIP annual expenditure is heavily dependent on timely issuance of bonds and associated assumptions on debt service interest rates and market conditions. Disruptions in the capital and credit markets could impact interest rates and may limit the City’s access to capital. Similarly, if the requested rate increases are not approved, that could have a direct impact on the borrowing and the ability to execute critical CIP projects. Therefore, potential disruptions to CIP execution and the ability to fulfill the financial commitments on ongoing CIP projects during the rate period is a legitimate risk.

**MITIGATION:** Having reasonable levels of fund balance in the Capital Account Deposit and/or Residual Fund is critical to managing this potential risk.

### 1.5.2. ACTUAL ANNUAL REVENUES TRAIL PROJECTED ANNUAL REVENUES

As discussed in Section 1.4.5, the annual revenue loss due to TAP is projected and included in the study based on projected participation levels and actual experience of the average revenue loss per bill. However, if the participation levels during the rate period accelerate faster than expected and/or income levels of enrollees decrease, then these factors could cause a higher than projected TAP revenue loss. Therefore, the magnitude of revenue loss due to the TAP is a legitimate potential risk.

**MITIGATION:** To address risks associated with TAP Revenue Loss, PWD has proposed a TAP Rate Rider. The rider is intended to address both a higher or lower than anticipated actual TAP revenue loss.

However, the ability to mitigate this potential revenue loss risk is entirely predicated on the Rate Board’s adoption of the proposed TAP Rate Rider. Failure and/or any delay in adopting the proposed rider, which allows for equitable cost adjustments, could impact Rate Stabilization Fund balance and/or require higher rate increase adjustments in the years immediately following the rate period.

### 1.5.3. UNFORESEEN REGULATIONS THAT REQUIRE ADDITIONAL OR ACCELERATED COMPLIANCE

Water and wastewater services are governed by various federal and state environmental protection and health and safety laws and regulations, including the federal Safe Drinking Water Act, the Clean Water Act and similar state laws, and federal and state regulations issued under these laws by the EPA and PaDEP. These laws and regulations establish, among other things, criteria and standards for drinking water and for discharges into the waters of the United States and the Commonwealth. These laws, and the enforcement thereof, have tended to become more stringent over time.

While the Water Department has budgeted for future capital and operating expenditures to comply with these laws and permitting requirements, it is possible that new or stricter standards could be imposed that will require additional capital expenditures or raise operating costs.

**MITIGATION:** Having reasonable levels of fund balance in the Rate Stabilization Fund; the Capital Account Deposit; and Residual Fund is critical to managing the potential risks due to unforeseen regulatory requirements and associated compliance needs.

### 1.5.4. CHANGES IN ECONOMIC AND CUSTOMER CONDITIONS

General economic conditions may affect the Water Department's financial condition and results of operations. A general economic downturn may lead to a reduction in customer's discretionary and recreational water use. In addition, if customer household incomes are impacted, that could lead to potential increase in delinquency and/or delay in cash receipts, resulting in lower than projected system-wide collection factors that are used in revenue receipt projections.

General economic volatility also may lead to an investment market downturn, which may result in asset market values (including pension plan assets) suffering a decline and significant volatility. For instance, a decline in the City's pension plans' asset market values could increase the Department's share of required cash contributions to these plans from the Water Fund and increased pension expenses in subsequent years. This could cause higher actual expenditures during the rate period than projected O&M expenditures. Therefore, economic and customer conditions do pose potential legitimate risks to both revenues and expenditure projections.

**MITIGATION:** Having reasonable levels of fund balance in the Rate Stabilization Fund will help manage these types of financial risks.

### 1.5.5. INFRASTRUCTURE RESILIENCE FOR SERVICE RELIABILITY

Catastrophic infrastructure failures and the impacts of extreme weather events and other climate change related impacts present a real risk to the City's water and wastewater infrastructure. Issues related to aging infrastructure and regulatory compliance can be further exacerbated by these events. Additional related risks include interdependencies with other infrastructure such as electricity and natural gas which can impact the Water Department's ability to provide service to its customers; as well as risks to health and human safety.

To address this, the Water Department has initiated a Climate Change Adaptation Program (CCAP) to understand the impacts that climate change will have on the City's drinking water, wastewater and stormwater systems and to develop cost-effective adaptation strategies to minimize these impacts. CCAP will identify strategic upgrades, design recommendations and planning criteria to inform how the Department can minimize the impact of climate change, while continuing to deliver clean safe drinking water along with environmentally responsible wastewater and stormwater services. PWD anticipates CCAP will take several years to complete.

While the Water Department has undertaken CCAP, future capital and operating expenditures are generally related to maintaining, replacing and enhancing existing infrastructure along with meeting current regulatory compliance requirements. Therefore, the costs associated with catastrophic infrastructure failures and extreme weather events are generally not included in projected O&M and capital expenses. In the event of emergencies such as those presented by these types of events, the primary source of funding available to the Water Department is the Rate Stabilization Fund.

Please note that the Department is self-insured, and therefore any claims against the system are borne by the Water Fund.

**MITIGATION:** Having reasonable levels of fund balance in the Rate Stabilization Fund is critical to managing the potential risks due to catastrophic infrastructure failures resulting from extreme weather and climate change driven events.



# 2 CREDIT RATING & PEER METRICS

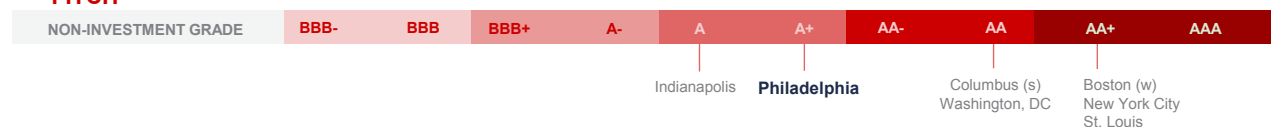
## 2.1. CREDIT RATINGS

The Department's credit ratings for the three most recent debt issuances, as well as current ratings for peer utilities, are provided in Figure 25 below. While the Department's ranking is firmly in the 'A' category, many peer utilities are ranked higher in the 'AA' category. Based on the criteria used in credit evaluations, PWD believes that its 'A' rating is accurate and has established a short term goal of maintaining its current rating. Limiting factors for an increased rating, such as debt service coverage, will be discussed later in this section.

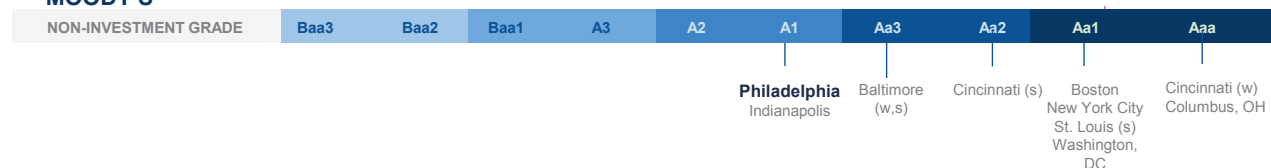
FIGURE 25. PWD & PEER UTILITY CREDIT RATINGS

	Moody's	S&P	Fitch
The City of Philadelphia, Water and Wastewater Revenue Refunding Bonds, Series 2017B	A1	A+	A+
The City of Philadelphia, Water and Wastewater Revenue Refunding Bonds, Series 2017A	A1	A+	A+
The City of Philadelphia, Water and Wastewater Revenue Refunding Bonds, Series 2016	A1	A+	A+

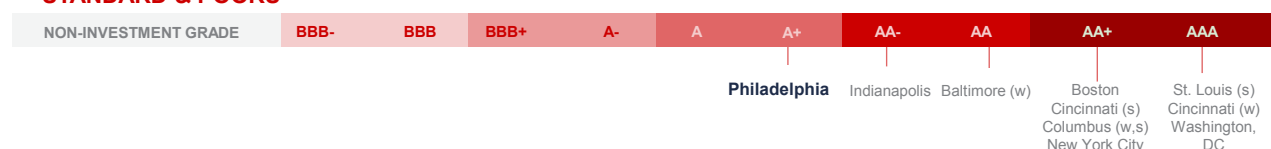
### FITCH



### MOODY'S



### STANDARD & POORS



Note: The following cities have been used as peers for this analysis: Baltimore, Boston, Cincinnati, Columbus (OH), Indianapolis, New York City, St. Louis and Washington, DC. The ratings shown above are the respective utility ratings at the time of bond issuance.

## 2.2. DEBT SERVICE COVERAGE

In Fiscal Years 2015 - 2017, PWD met debt service coverage requirements set by governing bond documents and covenants. The General Ordinance rate covenant requires minimum senior debt service coverage of 1.20 and a minimum total debt service coverage of 1.00. Debt service coverage targets for the projection period also meet these requirements. Figure 26 below details targeted and final debt service coverage results from FY 2015 - FY 2017, as well as projected targets for FY 2018 - FY 2021.

PWD will continue to meet its debt service coverage requirements and target funding 20% of the Capital Program from current revenues. In coming years, PWD will adjust coverage to balance the target of 20% with the rate increase level and overall leverage. PWD has modest debt service coverage (ranging between 1.2 and 1.3x) when compared to peer utilities and is below median coverage for other 'A' rated utilities (1.7x). The ability to raise debt service coverage is hindered by the highly leveraged capital program. Please note that discrepancies in debt service coverage are a result of differences in the debt service coverage definition by PWD and Moody's.

FIGURE 26. EXISTING & PROJECTED DEBT SERVICE COVERAGE

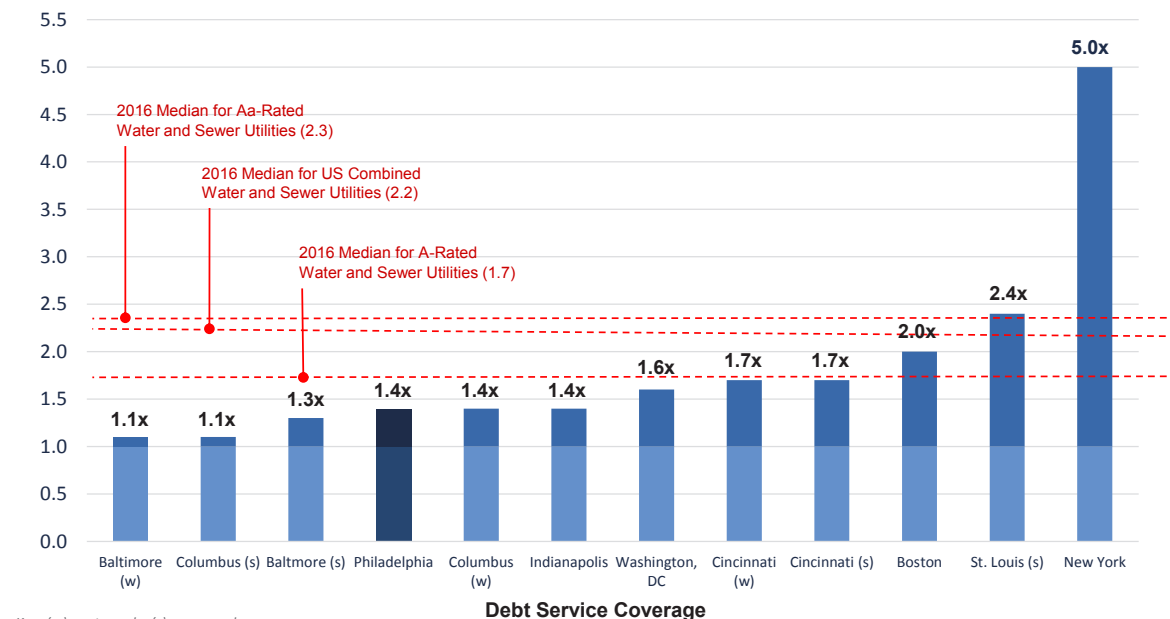
	2015		2016 <sup>a</sup>		2017 <sup>b</sup>		2018	2019	2020	2021
	Target	Final	Target	Final	Target	Prelim	Projected	Projected	Projected	Projected
Revenue Bonds Debt Service Coverage	1.23	1.23	1.24	1.24	1.25	1.31	1.36	1.28	1.30	1.30
Total Debt Service Coverage	1.11	1.12	1.13	1.13	1.13	1.18	1.23	1.08	1.10	1.09

(a) In Fiscal Year 2016, the Water Department met debt service coverage requirements with a revenue bond debt service coverage ratio of 1.24 and a total coverage ratio of 1.13, after taking into account a withdrawal of approximately \$1.6 million from the Rate Stabilization Fund.

(b) For Fiscal Year 2017 Preliminary, the Water Department met debt service coverage requirements with a revenue bond debt service coverage ratio of 1.31 and a total coverage ratio of 1.18, after taking into account a withdrawal of approximately \$4.6 million from the Rate Stabilization Fund.

Note: Debt service coverage estimates for FY 2017 presented in Figure 2 were developed by Black & Veatch prior to final financial figures being available and differ from the metrics presented above.

FIGURE 27. PEER UTILITY ANALYSIS: DEBT SERVICE COVERAGE



Source: Moody's Investor Services.

Note: Annual debt service coverage is defined as "most recent year's net revenue divided by most recent year's debt service, expressed as a multiple."

(source: Moody's US Municipal Utility Revenue Debt Rating Methodology – October 19, 2017)



## 2.3. LIQUIDITY

Credit rating agencies use days cash on hand as an important measure of a utility's liquidity. Figure 29 below shows that from 2015-2021, PWD's days of cash on hand will be reduced from approximately 300 days to approximately 175 days.

FIGURE 28. DAYS OF CASH ON HAND - PEER UTILITIES

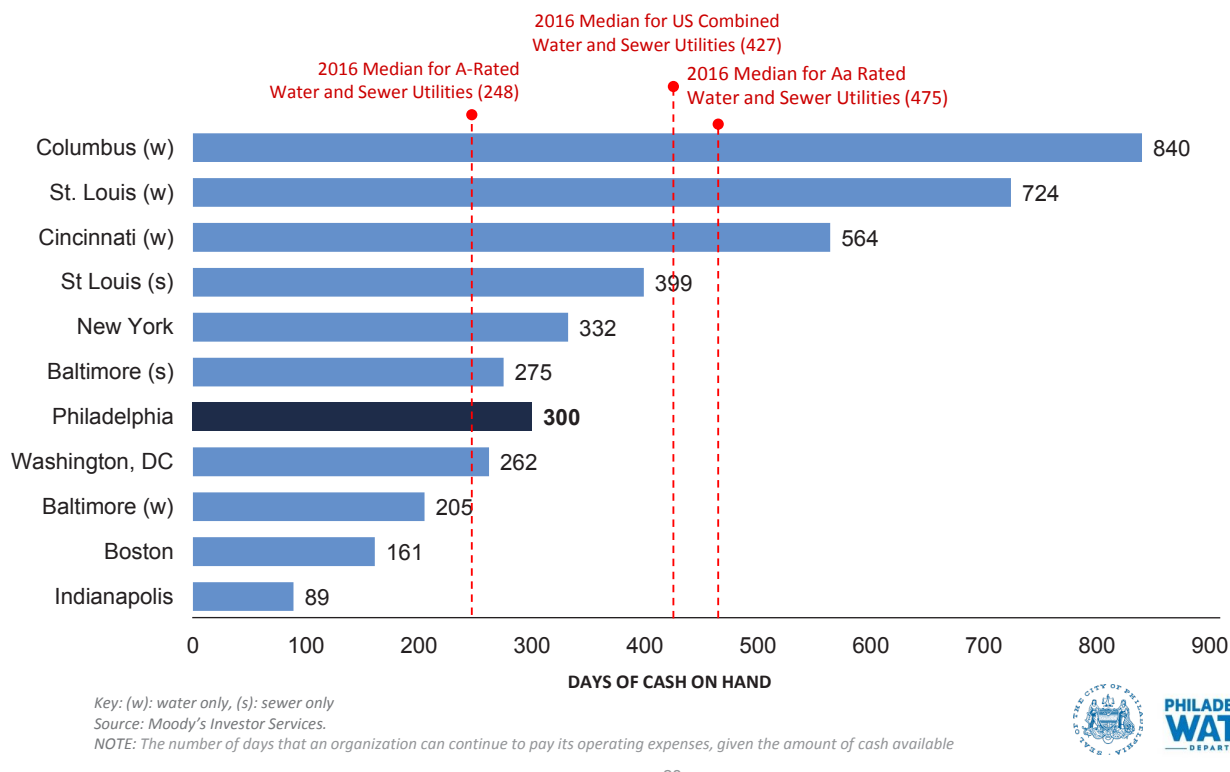


FIGURE 29. HISTORIC & PROJECTED LIQUIDITY ( IN \$000s)

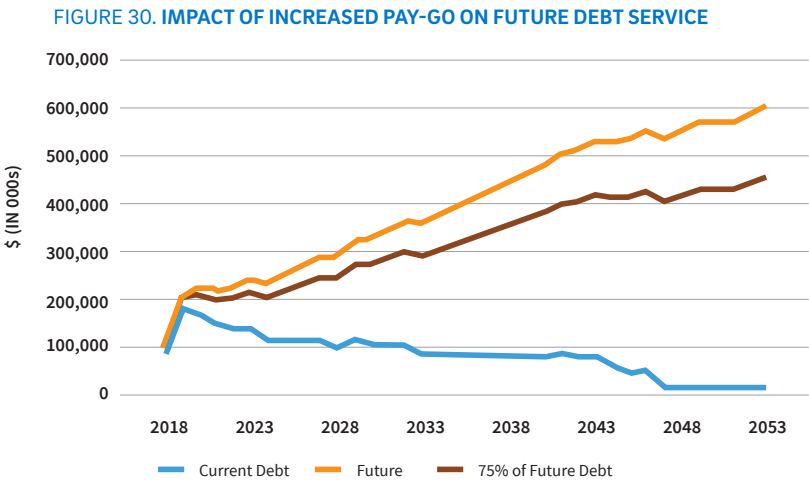
	Historic			Projected			
	2015	2016	2017	2018	2019	2020	2021
Residual +Rate Stabilization	221,440	220,950	217,021	204,038	192,681	171,459	160,380

The level of liquidity of a system is driven in large part by the ongoing debt service coverage and the level of funds used for pay-go capital funding. The Water and Wastewater sector is capital intensive, requiring significant capital investment to insure safe and efficient delivery of service. Debt service coverage provides bondholders comfort of debt service satisfaction (the level of which will affect the rating of the issuer) and ongoing resources to continue to fund a portion of a system's capital needs with pay-go funds. Adequate coverage also insures that reserves are maintained at levels which can mitigate unforeseen expenses and capital needs or dips in expected revenue.

Liquidity measures are a critical indicator of the financial stability of utility system. Adequate cash reserves allow systems to contribute to growing capital projects, mitigate system disruptions, and fund unexpected operating expenses. A common measure to determine liquidity is "days cash on hand", which is calculated by totaling unrestricted cash and investments and any restricted cash that is available for general system purposes, divided by operating expenses (minus depreciation), divided by 365. While rating agencies vary in their calculation, in particular with regards to the allowance of balances in the Rate Stabilization Fund and the Residual Fund, all mention and acknowledge the balance in their liquidity consideration. It is critical that the Department be allowed to maintain these targeted levels.

Pay-Go financing is simply funding capital needs with current revenues (rather than debt financed), often with identified user charges or growth related fees. Systems that have been able to fund significant portions of their Capital Improvement Plan (“CIP”) with annual revenues are able to manage their debt without significantly burdening future rate payers. PWD is targeting 20% of their CIP being funded with pay-go revenues (or 80% debt funding). (As a point of reference, Fitch views 65% pay-go funding as strong, 55% as a midrange and 45% pay go funding as on the weaker side in assessing operating risks.) The PWD current target is on the weaker side and should be achieved, and even strengthened, in the future. Systems that are able to sustain higher levels of Pay-Go financing also enjoy healthy debt service coverage and liquidity which are needed to generate the financing resources.

Without any additional capital financing, the current debt will continue to decrease as illustrated in Figure 30. However, given that the Water Department has to finance a large future capital program, a critical issue to consider is the level of future debt financing. For illustrative purposes only, the graph below shows the potential impact of funding a larger percentage of capital needs with pay-go as opposed to debt financing. Comparing annual borrowings of \$250 million (5.5%-30 years amortization) to annual borrowings of \$187.5 million (a 25% reduction) over a period of several years makes clear the long term impact on rate payers. In addition to the increased debt service (\$17 million versus \$12.9 million) associated with the lower pay-go percentage, implementing rate increases to comply with the higher debt service coverage requirements in the future creates significant financial stress which only increases over time. While this is for illustrative purposes, this type of long range planning in assessing future debt burden is critical for systems such as PWD.



## 2.4. MARKET COMPARISON

In addition to insuring that rate increases provide the necessary cash flow for liquidity and pay go, the Department’s credit rating has a direct impact on the cost of capital. This has an impact on the cost of annual debt service as well as the cost to the Department of alternative financing options such as letter of credits, bank loans, and implementing a commercial paper program. Higher rated credits enjoy greater access and lower costs with a range of options in financing their CIP programs and, one of these, short term, variable rate options can be even more advantageous in a rising rate environment. Below are current and historical credit spreads for triple A rating (i.e. highest credit rating) and various lesser bond credit ratings.

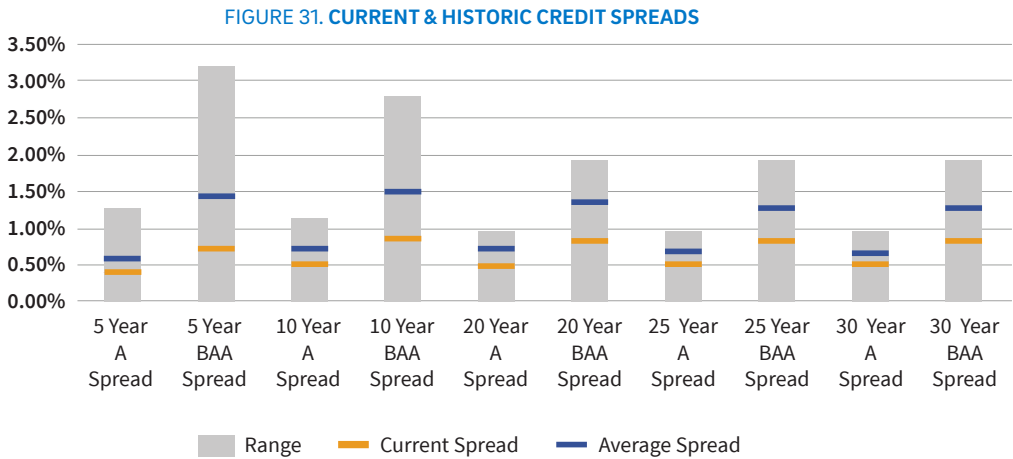
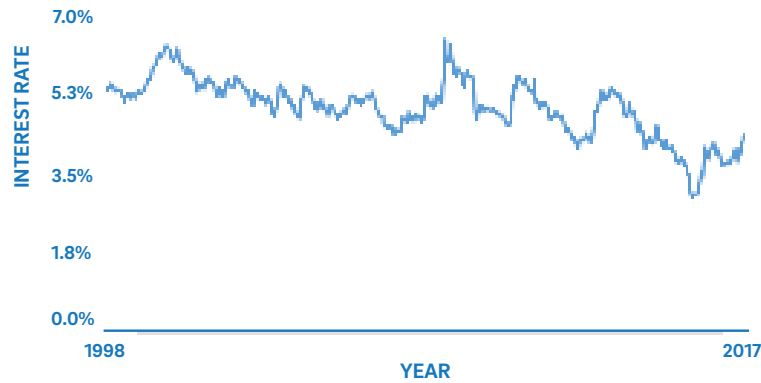


FIGURE 32. HISTORIC INTEREST RATE (REVENUE BOND INDEX)



Over the next five years, the Department expects to issue \$1.560 billion in additional debt. For every 50 basis point increase (or ½ of a percentage point) in the borrowing rate, ratepayers should expect to pay an additional \$6 million in annual debt service on the total debt amount. This increase adds up and can place additional stress on debt service coverage requirements. Below is a historical representation of the range in interest rates for various credits.

FIGURE 33. INTEREST RATES BY CREDIT RATING

Statistic	5 Year A Spread	5 Year BAA Spread	10 Year A Spread	10 Year BAA Spread	20 Year A Spread	20 Year BAA Spread	25 Year A Spread	25 Year BAA Spread	30 Year A Spread	30 Year BAA Spread
<b>1/12/2018</b>	<b>0.41%</b>	<b>0.72%</b>	<b>0.51%</b>	<b>0.86%</b>	<b>0.51%</b>	<b>0.84%</b>	<b>0.51%</b>	<b>0.83%</b>	<b>0.51%</b>	<b>0.83%</b>
Average	0.59%	1.43%	0.74%	1.51%	0.73%	1.36%	0.68%	1.28%	0.68%	1.27%
Spread to Avg.	-0.18%	-0.71%	-0.23%	-0.65%	-0.22%	-0.52%	-0.17%	-0.45%	-0.17%	-0.44%
Minimum	0.31%	0.59%	0.46%	0.73%	0.35%	0.75%	0.28%	0.69%	0.28%	0.65%
Spread to Min.	0.10%	0.13%	0.05%	0.13%	0.16%	0.09%	0.23%	0.14%	0.23%	0.18%
Maximum	1.60%	3.80%	1.60%	3.54%	1.27%	2.70%	1.25%	2.60%	1.26%	2.60%
Spread to Max.	-1.19%	-3.08%	-1.09%	-2.68%	-0.76%	-1.86%	-0.74%	-1.77%	-0.75%	-1.77%



# 3 BILL IMPACTS





## 3.1. CUSTOMER BILL IMPACTS

The Department is requesting an overall rate increase of approximately \$116 million over three fiscal years. If the Department's proposal is approved, the monthly bill for a typical residential customer using 5 ccf of water per month would increase by 1.1% on September 1, 2018, by an additional 5.0% on September 1, 2019, and finally by 4.5% on September 1, 2020. Non-residential increases vary widely based on meter size, the amount of water consumed and the gross and impervious area of each parcel. Examples of changes in monthly bills are shown below for residential, senior citizen and non-residential customers. For more detailed information on proposed rates and charges, please refer to Appendix 3.





$$\text{Monthly Charge} = \text{Water Usage} + \text{Wastewater Usage} + \text{Stormwater} + \text{Service Charge}$$

FIGURE 34. TYPICAL BILL IMPACTS





### RESIDENTIAL CUSTOMER <sup>1</sup>

 CURRENT TYPICAL BILL	 PROPOSED FY 2019 TYPICAL BILL	 PROPOSED FY 2020 TYPICAL BILL	 PROPOSED FY 2021 TYPICAL BILL
Water \$ 21.54	Water \$ 21.97	Water \$ 22.575	Water \$ 23.19
Wastewater \$ 16.23	Wastewater \$ 15.88	Wastewater \$ 16.905	Wastewater \$ 17.87
Stormwater \$ 14.71	Stormwater \$ 16.01	Stormwater \$ 17.14	Stormwater \$ 18.15
Service \$ 14.02	Service \$ 13.38	Service \$ 13.98	Service \$ 14.58
<b>\$66.50</b>	<b>\$67.24</b> 1.1 % increase	<b>\$70.60</b> 5.0 % increase	<b>\$73.79</b> 4.5 % increase

### SENIOR CITIZEN WITH DISCOUNTED BILL <sup>2</sup>

 CURRENT TYPICAL BILL	 PROPOSED FY 2019 TYPICAL BILL	 PROPOSED FY 2020 TYPICAL BILL	 PROPOSED FY 2021 TYPICAL BILL
Water \$ 9.693	Water \$ 9.884	Water \$ 10.159	Water \$ 10.433
Wastewater \$ 7.305	Wastewater \$ 7.148	Wastewater \$ 7.607	Wastewater \$ 8.04
Stormwater \$ 11.032	Stormwater \$ 12.008	Stormwater \$ 12.855	Stormwater \$ 13.612
Service \$ 10.52	Service \$ 10.035	Service \$ 10.485	Service \$ 10.935
<b>\$38.54</b>	<b>\$39.07</b> 1.4% increase	<b>\$41.11</b> 5.2% increase	<b>\$43.02</b> 4.7% increase

### NON-RESIDENTIAL CUSTOMER <sup>3</sup>

 CURRENT TYPICAL BILL	 PROPOSED FY 2019 TYPICAL BILL	 PROPOSED FY 2020 TYPICAL BILL	 PROPOSED FY 2021 TYPICAL BILL
Water \$ 25.84	Water \$ 26.358	Water \$ 27.09	Water \$ 27.822
Wastewater \$ 19.48	Wastewater \$ 19.06	Wastewater \$ 20.29	Wastewater \$ 21.44
Stormwater \$ 49.14	Stormwater \$ 54.10	Stormwater \$ 57.93	Stormwater \$ 61.18
Service \$ 14.02	Service \$ 13.38	Service \$ 13.98	Service \$ 14.58
<b>\$108.48</b>	<b>\$112.90</b> 4.1 % increase	<b>\$119.29</b> 5.7 % increase	<b>\$125.02</b> 4.8 % increase

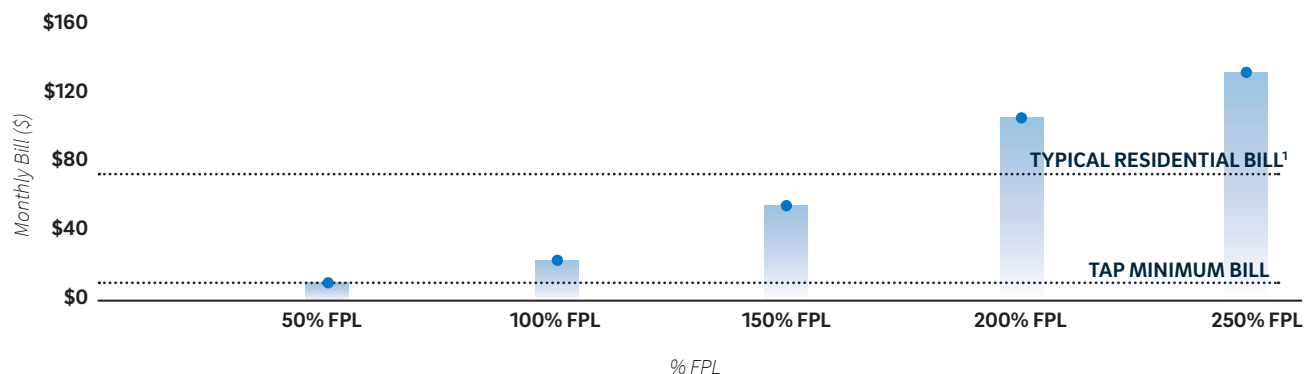
(1) "typical" residential account with 5/8" meter using 5ccf of water monthly. (2) "typical" senior citizen discounted bill account with 5/8" meter using 3ccf of water monthly. (3) "typical" non-residential account with 5/8" meter using 6ccf of water monthly.

## 3.2. TAP RATES & CHARGES

### 3.2.1. TIERED ASSISTANCE PROGRAM (TAP) OVERVIEW

TAP is the City's new affordability program for residential customers who meet low-income or special hardship criteria. TAP provides for participating customers' bills to be capped as a percentage of their income. Bills are capped at between 2% and 4% of their household income based on where their household income stands with respect to the current Federal Poverty Guideline. As Figure 35 indicates for customers who are within 150% of FPL, it will be more advantageous to pay the discounted TAP bill. However for customers with an income greater than 150% of FPL, it may be more advantageous to pay their actual bill based on actual usage should their usage be on par with typical residential usage.

FIGURE 35. TAP MONTHLY (MAXIMUM) BILL CALCULATION



(1) "typical" residential account with 5/8" meter using 5ccf of water monthly

FPL TIER	Median Income Level	Affordability Threshold	Calculated Discounted Bill	Minimum Bill	Applied Discounted Bill
0-50% of FPL	\$ 5,000	2.0%	\$ 8.33	\$ 12.00	\$ 12.00
50-100% of FPL	\$ 13,800	2.5%	\$ 28.75	\$ 12.00	\$ 28.75
100-150% of FPL	\$ 22,800	3.0%	\$ 57.00	\$ 12.00	\$ 57.00
150-200% of FPL	\$ 31,900	4.0%	\$ 106.33	\$ 12.00	\$ 106.33
200-250% of FPL	\$ 40,800	4.0%	\$ 136.00	\$ 12.00	\$ 136.00

As seen in Figure 34, with the requested rate increases a typical residential bill is likely to increase from \$66.50 to \$73.79 for a non-TAP customer. However for a TAP customer, Figure 36 shows the projected monthly bill is likely to remain the same as their current TAP bill if there is no change in their income. At the same time, Department costs will rise over the rate period and with the associated proposed rates and charges, the discount provided to TAP customers will increase as well, impacting the overall lost revenues experienced by PWD. Please see Appendix 4 for more updates regarding TAP implementation.

FIGURE 36. TAP QUALIFIED CUSTOMER - PROJECTED BILL

FPL TIER	Current Discounted Bill <sup>1</sup>	Proposed Discounted Bill (September 1, 2018)	Proposed Discounted Bill (September 1, 2019)	Proposed Discounted Bill (September 1, 2020)
0-50% of FPL	\$ 12.00	\$ 12.00	\$ 12.00	\$ 12.00
50-100% of FPL	\$ 28.75	\$ 28.75	\$ 28.75	\$ 28.75
100-150% of FPL	\$ 57.00	\$ 57.00	\$ 57.00	\$ 57.00

<sup>1</sup> Based on Median Income Level for the respective FPL Tier

# APPENDIX 1

## BOARD QUESTION MATRIX

### REQUESTED INFORMATION

### ANSWER LOCATION

#### OPERATIONS & MAINTENANCE (O&M) EXPENSES

<ul style="list-style-type: none"> <li>Budgeted vs. actual expenses for 2015 and 2016, budgeted and estimated actual expenses for 2017</li> <li>Budgeted 2018 and projected actuals for 2018, 2019, 2020 &amp; 2021 expenses</li> <li>By expense category <ul style="list-style-type: none"> <li>Labor</li> <li>Purchase of Services</li> <li>Materials, Supplies and Equipment</li> <li>Contributions, Indemnities, Refunds &amp; Taxes</li> <li>Payments to Other Funds</li> <li>City charges excluding pensions, pension contributions</li> <li>Payment to construction fund, rate stabilization fund, etc.</li> <li>Liquidated Encumbrances</li> </ul> </li> </ul>	Section 1.1
Identification of significant new facilities and/or programs and the impact on expenses	Section 1.1
Budgeted vs. filled positions for 2015, 2016 and 2017	Section 1.1
Budgeted positions for 2018 and projected positions for 2019 - 2021	Section 1.1
Reasons for significant increases or decreases in staffing	Section 1.1
Percentage increases in salaries & wages by year for 2018 through 2021 under collective bargaining agreements (as applicable)	Section 1.1
Updated outlook for required pension and fringe contributions	Section 1.1
Executive summary of relevant reports regarding the adequacy of maintenance, O&M needs, efficiency initiatives, O&M performance measures, etc., where applicable	Appendix 9
Potential risks in the O&M budget for 2018 and projected 2019 through 2021 expenses	Section 1.5

#### CAPITAL IMPROVEMENT PROGRAM & DEBT SERVICE

<ul style="list-style-type: none"> <li>Budgeted vs. actual values for 2015-2016, budgeted and estimated actual values for 2017</li> <li>Budgeted 2018 and projected 2019-2021 values</li> </ul>	Section 1.2.1
Capital Construction - value of contractual commitments	Section 1.2
Capital Cash Flow Needs	Section 1.2.3
Sources and Uses of Capital Funds	Section 1.2
Debt Service on Outstanding Obligations	Section 1.2.2
Debt Service on Future Obligations <ul style="list-style-type: none"> <li>Amount and timing of each future debt issuance</li> <li>Cost of issuance, terms of bonds and interest rate assumptions</li> <li>Debt service, by year</li> </ul>	Section 1.2.2
Debt Service Coverage	Section 2.2
CIP (including all future years), showing the mandated vs. non-mandated components	Section 1.2
Potential risks on the CIP, debt service and debt service coverage for 2018 and projected 2019, 2020-2021 figures	Section 2
Executive summary of relevant reports regarding capital investment needs, the CIP, CIP performance indicators, etc., where applicable	Appendix 7
Rating Agency reports (most recent)	Appendix 6
Peer comparison: credit ratings, debt service coverage, reserves	Section 2
Market comparison: differences in the long-term borrowing rates for varying credit rating between BBB, A and AA	Section 2.4
Deposit to reserve funds (required or discretionary) or other needs	Section 1.3

## REVENUE, CASH FLOW & RATE PROPOSAL

Customer Characteristics: For each of the last three years through 2017, and for 2018 (budgeted) and 2019-2021 (projected/proposed), as applicable:	
<ul style="list-style-type: none"> <li>Number of customers by meter size and by class and the % change by year (in-City, at year-end)</li> <li>Annual volume of water sales by meter size and by class and the % change by year (in-City)</li> <li>Annual volume of wastewater sales and % change by year (outside-of- City)</li> <li>Annual typical single family usage, stormwater billing characteristics and total bill</li> <li>Annual typical bill per apartments unit for multi-family residential</li> <li>Annual usage and billings for the ten largest customers</li> </ul>	Appendix 2
Notes regarding any factors that will significantly affect water demand and/or stormwater characteristics in 2018 through 2021 and the estimated effect on revenues.	Section 1.5

## RATES

Proposed rates for water, wastewater & stormwater including rate increases and illustrated impacts on customers and customer types	Section 3.1
Illustration of the rates and charges for customers under the TAP affordability assistance program	Section 3.2
Proposed rates and charge for miscellaneous fees and charges	Appendix 4
Billings vs. collections by year for 2015 and 2016, and estimated for 2017, as well as budgeted figures and 2018 and projected 2019, 2020 & 2021	Section 1.4.2., Appendix 8
Update regarding the progress in affordability assistance TAP implementation. Estimates of the number of customers that will be approved for TAP and the basis for updated estimated of the revenue impact by year	Appendix 4
Steps taken since the last rate proceeding regarding new account creation and account/service restoration	Appendix 7
Other available reports since the last rate proceeding regarding customer service (as applicable)	Appendix 7
Potential risks in the revenue budget for 2018 and projected 2019, 2020, & 2021 revenues	Section 1.5

## REVENUES

<ul style="list-style-type: none"> <li>Budgeted vs. actual receipts for 2015 and 2016, budgeted and estimated actual receipts for 2017</li> <li>Budgeted 2018 and projected 2019-2021 customer receipts</li> </ul>	Section 1.4
In-City Customer Receipts by Class Customer Type	Appendix 2
Wholesale wastewater revenue	Section 1.4.3
Receipts from Miscellaneous Fees and Charges	Section 1.4.4
Interest Earnings	Section 1.4.7
Other Revenues Including Transfers from the Rate Stabilization Fund	Section 1.4.6

## CASH FLOW

Liquidity	Section 2.3
Days Cash on Hand and Impacts of Requested Fund Balances	
<ul style="list-style-type: none"> <li>End-of- the-year cash on hand for 2015,2016 and 2017 (budgeted vs. actual), as well as budgeted 2018 and projected 2019-2021</li> <li>Explanation of the manner in which each of the funds listed in 3 and 4 below affects the requested revenue requirements and rates in the rate filing, as well as how each impacts debt service coverage (where applicable)</li> </ul>	Section 2.3
Rate Stabilization Fund: End-of- year balances, additions and withdrawals by year for 2015, 2016 and 2017 (budgeted vs. actual), as well as budgeted 2018, and projected 2019-2021	Section 1.3.1
Residual Fund, Water Operation Fund and Other Available Funds: End-of- year balances, additions and withdrawals by year for 2015, 2016 and 2017 (budgeted vs. actual), as well as budgeted 2018 and projected 2019-2021	Section 1.3.2
Cost of Service vs. Actual and Projected Revenues (for 2015, 2016 and 2017, budgeted 2018 and projected 2019 and through 2021)	
<ul style="list-style-type: none"> <li>Total costs of providing in-City water service, wastewater service and stormwater service vs. the actual and projected revenue for each service by year.</li> <li>Total cost of providing outside-of- City water service and wastewater service vs. the actual and projected revenue for each service by year</li> <li>Total cost of providing miscellaneous services vs. the actual and projected revenue for each service by year.</li> </ul>	Section 1.4
Initial Projections (high level) of Revenue Requirements and Potential Rate Increases on 2021-2023	Introduction, Figure 2

# APPENDIX 2

## CUSTOMER BASE OVERVIEW

### CUSTOMER BASE & CONSUMPTION PATTERNS

FIGURE 1. WATER ACCOUNTS

	ACTUAL			ANNUAL GROWTH			PROJECTED				
	2014	2015	2016	2014	2015	2016	2017	2018	2019	2020	2021
<b>Senior Citizens (SC)</b>											
5/8" Meter	19,518	20,188	21,384	1.5%	3.4%	5.9%	21,384	21,384	21,384	21,384	21,384
>5/8" Meter	5	4	5	0.0%	-20.0%	25.0%	5	5	5	5	5
<b>Total Senior Citizens</b>	<b>19,523</b>	<b>20,192</b>	<b>21,389</b>	<b>1.5%</b>	<b>3.4%</b>	<b>5.9%</b>	<b>21,389</b>	<b>21,389</b>	<b>21,389</b>	<b>21,389</b>	<b>21,389</b>
<b>General Service - Residential</b>											
5/8" Meter	410,553	403,992	410,847	0.0%	-1.6%	1.7%	410,847	410,847	410,847	410,847	410,847
> 5/8" Meter	4,263	4,827	5,524	18.8%	13.2%	14.4%	5,524	5,524	5,524	5,524	5,524
<b>Total - Residential</b>	<b>414,816</b>	<b>408,819</b>	<b>416,371</b>	<b>0.1%</b>	<b>-1.4%</b>	<b>1.8%</b>	<b>416,371</b>	<b>416,371</b>	<b>416,371</b>	<b>416,371</b>	<b>416,371</b>
<b>General Service - Commercial</b>											
5/8" Meter	28,205	28,118	28,151	2.1%	-0.3%	0.1%	28,151	28,151	28,151	28,151	28,151
> 5/8" Meter	7,122	7,374	7,476	6.5%	3.5%	1.4%	7,476	7,476	7,476	7,476	7,476
<b>Total - Commercial</b>	<b>35,327</b>	<b>35,492</b>	<b>35,627</b>	<b>2.9%</b>	<b>0.5%</b>	<b>0.4%</b>	<b>35,627</b>	<b>35,627</b>	<b>35,627</b>	<b>35,627</b>	<b>35,627</b>
<b>General Service - Industrial</b>											
5/8" Meter	537	530	528	0.0%	-1.3%	-0.4%	528	528	528	528	528
> 5/8" Meter	551	550	546	8.3%	-0.2%	-0.7%	546	546	546	546	546
<b>Total - Industrial</b>	<b>1,088</b>	<b>1,080</b>	<b>1,074</b>	<b>4.0%</b>	<b>-0.7%</b>	<b>-0.6%</b>	<b>1,074</b>	<b>1,074</b>	<b>1,074</b>	<b>1,074</b>	<b>1,074</b>
<b>General Service - Public Utilities</b>											
5/8" Meter	37	44	48	8.8%	18.9%	9.1%	48	48	48	48	48
> 5/8" Meter	82	83	90	10.8%	1.2%	8.4%	90	90	90	90	90
<b>Total - Public Utilities</b>	<b>119</b>	<b>127</b>	<b>138</b>	<b>10.2%</b>	<b>6.7%</b>	<b>8.7%</b>	<b>138</b>	<b>138</b>	<b>138</b>	<b>138</b>	<b>138</b>
<b>General Service - Excluding Senior Citizens</b>											
5/8" Meter	439,332	432,684	439,574	0.1%	-1.5%	1.6%	439,574	439,574	439,574	439,574	439,574
> 5/8" Meter	12,018	12,834	13,636	10.7%	6.8%	6.2%	13,636	13,636	13,636	13,636	13,636
<b>Total - Excluding SC</b>	<b>451,350</b>	<b>445,518</b>	<b>453,210</b>	<b>0.3%</b>	<b>-1.3%</b>	<b>1.7%</b>	<b>453,210</b>	<b>453,210</b>	<b>453,210</b>	<b>453,210</b>	<b>453,210</b>
<b>General Service - Including Senior Citizens</b>											
5/8" Meter	458,850	452,872	460,958	0.1%	-1.3%	1.8%	460,958	460,958	460,958	460,958	460,958
> 5/8" Meter	12,023	12,838	13,641	10.7%	6.8%	6.3%	13,641	13,641	13,641	13,641	13,641
<b>Total - including SC</b>	<b>470,873</b>	<b>465,710</b>	<b>474,599</b>	<b>0.4%</b>	<b>-1.1%</b>	<b>1.9%</b>	<b>474,599</b>	<b>474,599</b>	<b>474,599</b>	<b>474,599</b>	<b>474,599</b>
PHA	5,981	5,896	5,731	-0.7%	-1.4%	-2.8%	5,731	5,731	5,731	5,731	5,731
Charity and Schools	2,731	2,607	2,523	1.1%	-4.5%	-3.2%	2,523	2,523	2,523	2,523	2,523
Hospital/University	427	502	493	4.4%	17.6%	-1.8%	493	493	493	493	493
Hand Bill	272	270	264	3.0%	-0.7%	-2.2%	264	264	264	264	264
Scheduled	2	2	3	0.0%	0.0%	50.0%	3	3	3	3	3
Fire Service	3,511	4,104	3,797	6.2%	16.9%	-7.5%	3,797	3,797	3,797	3,797	3,797
Fire Service - Unmetered	<b>5,889</b>	<b>6,498</b>	<b>7,122</b>	<b>8.4%</b>	<b>10.3%</b>	<b>9.6%</b>	<b>7,122</b>	<b>7,122</b>	<b>7,122</b>	<b>7,122</b>	<b>7,122</b>
Fire Hydrants	<b>25,364</b>	<b>25,364</b>	<b>25,364</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>25,364</b>	<b>25,364</b>	<b>25,364</b>	<b>25,364</b>	<b>25,364</b>
<b>Total Retail (In City)</b>	<b>515,050</b>	<b>510,953</b>	<b>519,896</b>	<b>0.5%</b>	<b>-0.8%</b>	<b>1.8%</b>	<b>519,896</b>	<b>519,896</b>	<b>519,896</b>	<b>519,896</b>	<b>519,896</b>

Source: B&V Workpapers Customer -1 and Customer 1A

Notes:

- Reflects Water & Sanitary Sewer Accounts and Water Only Accounts

- Reflects Average Annual Accounts



FIGURE 2. SANITARY SEWER ACCOUNTS

	ACTUAL			ANNUAL GROWTH			PROJECTED				
	2014	2015	2016	2014	2015	2016	2017	2018	2019	2020	2021
<b>Senior Citizens (SC)</b>											
5/8" Meter	19,501	20,171	21,365	1.5%	3.4%	5.9%	21,365	21,365	21,365	21,365	21,365
>5/8" Meter	4	3	3	0.0%	-25.0%	0.0%	3	3	3	3	3
<b>Total Senior Citizens</b>	<b>19,505</b>	<b>20,174</b>	<b>21,368</b>	<b>1.5%</b>	<b>3.4%</b>	<b>5.9%</b>	<b>21,368</b>	<b>21,368</b>	<b>21,368</b>	<b>21,368</b>	<b>21,368</b>
General Service - Residential											
5/8" Meter	409,286	402,733	409,585	-0.1%	-1.6%	1.7%	409,585	409,585	409,585	409,585	409,585
> 5/8" Meter	3,466	3,934	4,721	20.6%	13.5%	20.0%	4,721	4,721	4,721	4,721	4,721
<b>Total -Residential</b>	<b>412,752</b>	<b>406,667</b>	<b>414,306</b>	<b>0.0%</b>	<b>-1.5%</b>	<b>1.9%</b>	<b>414,306</b>	<b>414,306</b>	<b>414,306</b>	<b>414,306</b>	<b>414,306</b>
General Service - Commercial											
5/8" Meter	28,102	28,013	28,046	2.0%	-0.3%	0.1%	28,046	28,046	28,046	28,046	28,046
> 5/8" Meter	6,524	6,692	6,855	6.4%	2.6%	2.4%	6,855	6,855	6,855	6,855	6,855
<b>Total - Commercial</b>	<b>34,626</b>	<b>34,705</b>	<b>34,901</b>	<b>2.8%</b>	<b>0.2%</b>	<b>0.6%</b>	<b>34,901</b>	<b>34,901</b>	<b>34,901</b>	<b>34,901</b>	<b>34,901</b>
General Service - Industrial											
5/8" Meter	534	527	524	0.0%	-1.3%	-0.6%	524	524	524	524	524
> 5/8" Meter	513	510	508	8.5%	-0.6%	-0.4%	508	508	508	508	508
<b>Total - Industrial</b>	<b>1,047</b>	<b>1,037</b>	<b>1,032</b>	<b>4.0%</b>	<b>-1.0%</b>	<b>-0.5%</b>	<b>1,032</b>	<b>1,032</b>	<b>1,032</b>	<b>1,032</b>	<b>1,032</b>
<b>General Service - Public Utilities</b>											
5/8" Meter	37	44	48	8.8%	18.9%	9.1%	48	48	48	48	48
> 5/8" Meter	79	80	87	11.3%	1.3%	8.7%	87	87	87	87	87
<b>Total -Public Utilities</b>	<b>116</b>	<b>124</b>	<b>135</b>	<b>10.5%</b>	<b>6.9%</b>	<b>8.9%</b>	<b>135</b>	<b>135</b>	<b>135</b>	<b>135</b>	<b>135</b>
<b>General Service - Excluding Senior Citizens</b>											
5/8" Meter	437,959	431,317	438,203	0.0%	-1.5%	1.6%	438,203	438,203	438,203	438,203	438,203
> 5/8" Meter	10,582	11,216	12,171	10.8%	6.0%	8.5%	12,171	12,171	12,171	12,171	12,171
<b>Total - Excluding SC</b>	<b>448,541</b>	<b>442,533</b>	<b>450,374</b>	<b>0.3%</b>	<b>-1.3%</b>	<b>1.8%</b>	<b>450,374</b>	<b>450,374</b>	<b>450,374</b>	<b>450,374</b>	<b>450,374</b>
<b>General Service - Including Senior Citizens</b>											
5/8" Meter	457,460	451,488	459,568	0.1%	-1.3%	1.8%	459,568	459,568	459,568	459,568	459,568
> 5/8" Meter	10,586	11,219	12,174	10.8%	6.0%	8.5%	12,174	12,174	12,174	12,174	12,174
<b>Total - including SC</b>	<b>468,046</b>	<b>462,707</b>	<b>471,742</b>	<b>0.3%</b>	<b>-1.1%</b>	<b>2.0%</b>	<b>471,742</b>	<b>471,742</b>	<b>471,742</b>	<b>471,742</b>	<b>471,742</b>
PHA	5,857	5,761	5,619	-0.8%	-1.6%	-2.5%	5,619	5,619	5,619	5,619	5,619
Charity and Schools	2,606	2,500	2,424	0.5%	-4.1%	-3.0%	2,424	2,424	2,424	2,424	2,424
Hospital/University	375	431	426	2.7%	14.9%	-1.2%	426	426	426	426	426
Hand Bill	254	247	242	2.4%	-2.8%	-2.0%	242	242	242	242	242
Scheduled	2	2	3	0.0%	0.0%	50.0%	3	3	3	3	3
Fire Service	81	74	77	-4.7%	-8.6%	4.1%	77	77	77	77	77
Sewer Only	<b>59</b>	<b>66</b>	<b>77</b>	<b>28.3%</b>	<b>11.9%</b>	<b>16.7%</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>
Groundwater	<b>5</b>	<b>4</b>	<b>3</b>	<b>0.0%</b>	<b>-20.0%</b>	<b>-25.0%</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>Total Retail (In City)</b>	<b>477,285</b>	<b>471,792</b>	<b>480,613</b>	<b>0.3%</b>	<b>-1.2%</b>	<b>1.9%</b>	<b>480,613</b>	<b>480,613</b>	<b>480,613</b>	<b>480,613</b>	<b>480,613</b>

Source: B&V Workpapers Customer -11 and Customer 11A

Notes:

Reflects Water & Sanitary Sewer Accounts and Sanitary Sewer Only Accounts

Reflects Average Annual Accounts

FIGURE 3. STORMWATER ACCOUNTS

	ACTUAL			PROJECTED				
	2014	2015	2016	2017	2018	2019	2020	2021
<b>RESIDENTIAL</b>								
Non-Discount								
Water & Sewer	426,102	425,867	426,034	426,953	426,492	426,492	426,492	426,492
SW Only	10,576	10,065	9,263	8,622	8,943	8,943	8,943	8,943
Discount: Elderly, Education & Charities								
Water & Sewer	20,169	21,425	22,426	23,045	22,736	22,736	22,736	22,736
SW Only	28	30	31	26	29	29	29	29
Discount PHA								
Water & Sewer	4,359	4,330	4,297	4,287	4,292	4,292	4,292	4,292
SW Only	189	172	164	168	166	166	166	166
Subtotal	461,423	461,889	462,215	463,101	462,658	462,658	462,658	462,658
<b>NON-RESIDENTIAL</b>								
Non-Discount								
Water & Sewer	38,402	38,476	38,808	38,670	38,733	38,733	38,733	38,733
SW Only	38,245	37,161	36,840	36,432	36,512	36,512	36,512	36,512
Discount: Elderly, Education & Charities								
Water & Sewer	2,773	2,713	2,677	2,618	2,630	2,630	2,630	2,630
SW Only	309	298	326	304	252	252	252	252
Discount PHA								
Water & Sewer	1,114	977	982	1,174	1,078	1,078	1,078	1,078
SW Only	981	1,114	1,102	1,120	1,100	1,100	1,100	1,100
Subtotal	81,824	80,739	80,735	80,318	80,305	80,305	80,305	80,305
<b>CONDOMINIUMS</b>								
Non-Discount								
Water & Sewer	3,451	3,604	3,630	3,867	3,749	3,749	3,749	3,749
SW Only	24	33	30	29	30	30	30	30
Discount: Elderly, Education & Charities								
Water & Sewer	474	500	549	502	526	526	526	526
SW Only	1	1	1	1	1	1	1	1
Discount PHA								
Water & Sewer	1	1	1	1	1	1	1	1
SW Only								
Subtotal	3,951	4,139	4,211	4,400	4,307	4,307	4,307	4,307
<b>Total</b>	<b>547,198</b>	<b>546,767</b>	<b>547,161</b>	<b>547,819</b>	<b>547,270</b>	<b>547,270</b>	<b>547,270</b>	<b>547,270</b>

Notes: Reflects the number of billable accounts after accounting for exempt accounts like community gardens and residential sideyards

## WATER SALES

FIGURE 4. WATER SALES VOLUME (MCF)

	ACTUAL			ANNUAL GROWTH			PROJECTED				
	2014	2015	2016	2014	2015	2016	2017	2018	2019	2020	2021
<b>Senior Citizens (SC)</b>											
5/8" Meter	109,915	115,925	117,758	-0.1%	5.5%	1.6%	119,750	117,612	115,474	113,549	111,624
>5/8" Meter	48	28	31	-33.8%	-41.3%	9.9%	33	33	33	33	33
<b>Total Senior Citizens</b>	<b>109,963</b>	<b>115,954</b>	<b>117,789</b>	<b>-0.2%</b>	<b>5.4%</b>	<b>1.6%</b>	<b>119,783</b>	<b>117,645</b>	<b>115,507</b>	<b>113,582</b>	<b>111,657</b>
<b>General Service - Residential</b>											
5/8" Meter	2,901,905	2,864,109	2,794,005	-3.9%	-1.3%	-2.4%	2,875,929	2,826,627	2,777,326	2,728,024	2,678,722
> 5/8" Meter	366,322	356,604	352,830	-3.4%	-2.7%	-1.1%	381,156	381,156	381,156	381,156	381,156
<b>Total General Service - Residential</b>	<b>3,268,227</b>	<b>3,220,713</b>	<b>3,146,835</b>	<b>-3.9%</b>	<b>-1.5%</b>	<b>-2.3%</b>	<b>3,257,085</b>	<b>3,207,783</b>	<b>3,158,482</b>	<b>3,109,180</b>	<b>3,059,878</b>
<b>General Service - Commercial</b>											
5/8" Meter	319,577	329,723	318,358	-1.3%	3.2%	-3.4%	323,737	318,106	312,476	307,127	301,779
> 5/8" Meter	1,132,777	1,218,360	1,215,869	-2.2%	6.6%	-0.9%	1,218,588	1,218,588	1,218,588	1,218,588	1,218,588
<b>Total General Service - Commercial</b>	<b>1,452,354</b>	<b>1,548,083</b>	<b>1,534,227</b>	<b>-2.0%</b>	<b>6.6%</b>	<b>-0.9%</b>	<b>1,542,325</b>	<b>1,536,694</b>	<b>1,531,064</b>	<b>1,525,715</b>	<b>1,520,367</b>
<b>General Service - Industrial</b>											
5/8" Meter	5,758	6,221	5,908	-0.1%	8.0%	-5.0%	5,914	5,808	5,708	5,607	5,507
> 5/8" Meter	90,318	84,463	91,021	5.1%	-6.5%	7.8%	87,360	87,360	87,360	87,360	87,360
<b>Total General Service - Industrial</b>	<b>96,076</b>	<b>90,683</b>	<b>96,929</b>	<b>4.8%</b>	<b>-5.6%</b>	<b>6.9%</b>	<b>93,274</b>	<b>93,168</b>	<b>93,068</b>	<b>92,967</b>	<b>92,867</b>
<b>General Service - Public Utilities</b>											
5/8" Meter	424	394	476	-8.4%	-6.9%	20.7%	480	472	464	456	447
> 5/8" Meter	8,085	10,318	10,508	-4.6%	27.6%	1.8%	10,350	10,350	10,350	10,350	10,350
<b>Total General Service - Public Utilities</b>	<b>8,508</b>	<b>10,712</b>	<b>10,984</b>	<b>-4.8%</b>	<b>25.9%</b>	<b>2.5%</b>	<b>10,830</b>	<b>10,822</b>	<b>10,814</b>	<b>10,806</b>	<b>10,797</b>
<b>General Service - Excluding Senior Citizens</b>											
5/8" Meter	3,227,663	3,200,447	3,118,747	-3.7%	-0.8%	-2.6%	3,206,059	3,151,014	3,095,973	3,041,214	2,986,456
> 5/8" Meter	1,597,502	1,669,745	1,670,228	-2.1%	4.5%	0.0%	1,697,454	1,697,454	1,697,454	1,697,454	1,697,454
<b>Total General Service - excluding SC</b>	<b>4,825,166</b>	<b>4,870,192</b>	<b>4,788,975</b>	<b>-3.2%</b>	<b>0.9%</b>	<b>-1.7%</b>	<b>4,903,513</b>	<b>4,848,468</b>	<b>4,793,427</b>	<b>4,738,688</b>	<b>4,683,910</b>
<b>General Service - Including Senior Citizens</b>											
5/8" Meter	3,337,578	3,316,372	3,236,505	-3.6%	-0.6%	-2.4%	3,325,810	3,268,626	3,211,447	3,154,763	3,098,080
> 5/8" Meter	1,597,550	1,669,773	1,670,259	-2.1%	4.5%	0.0%	1,697,487	1,697,487	1,697,487	1,697,487	1,697,487
<b>Total General Service - including SC</b>	<b>4,935,129</b>	<b>4,986,145</b>	<b>4,906,764</b>	<b>-3.1%</b>	<b>1.0%</b>	<b>-1.6%</b>	<b>5,023,297</b>	<b>4,966,113</b>	<b>4,908,934</b>	<b>4,852,250</b>	<b>4,795,567</b>
PHA	165,984	178,327	163,222	-0.6%	7.4%	-8.5%	166,199	166,199	166,199	166,199	166,199
Charity and Schools	217,250	192,057	179,950	0.5%	-11.6%	-6.3%	189,225	189,225	189,225	189,225	189,225
Hospital/University	262,373	272,764	300,850	0.2%	4.0%	10.3%	290,870	290,870	290,870	290,870	290,870
Hand Bill	562,496	573,950	573,219	-0.7%	2.0%	-0.1%	554,400	554,400	554,400	554,400	554,400
Scheduled	22	21	16	41.0%	-5.9%	-22.7%	24	24	24	24	24
Fire Service	9,277	11,569	14,981	-42.0%	24.7%	29.5%	11,391	11,391	11,391	11,391	11,391
<b>Total Retail (In City)</b>	<b>6,152,531</b>	<b>6,214,832</b>	<b>6,139,002</b>	<b>-2.7%</b>	<b>1.0%</b>	<b>-1.2%</b>	<b>6,235,406</b>	<b>6,178,222</b>	<b>6,121,043</b>	<b>6,064,359</b>	<b>6,007,676</b>
<b>Wholesale (Outside City)</b>											
Aqua PA	147,909	129,410	69,888	-8.7%	-12.5%	-46.0%	100,000	100,000	100,000	100,000	100,000
<b>Total</b>	<b>6,300,440</b>	<b>6,344,242</b>	<b>6,208,890</b>	<b>-2.8%</b>	<b>0.7%</b>	<b>-2.1%</b>	<b>6,335,406</b>	<b>6,278,222</b>	<b>6,221,043</b>	<b>6,164,359</b>	<b>6,107,676</b>

## WASTEWATER SALES

FIGURE 5. SANITARY SEWER BILLED VOLUME (MCF)

	ACTUAL			ANNUAL GROWTH			PROJECTED				
	2014	2015	2016	2014	2015	2016	2017	2018	2019	2020	2021
<b>Senior Citizens (SC)</b>											
5/8" Meter	109,832	115,854	117,670	-0.1%	5.5%	1.6%	119,663	117,524	115,386	113,461	111,537
>5/8" Meter	48	28	25	-33.8%	-41.3%	-12.8%	27	27	27	27	27
<b>Total Senior Citizens</b>	<b>109,880</b>	<b>115,882</b>	<b>117,695</b>	<b>-0.2%</b>	<b>5.5%</b>	<b>1.6%</b>	<b>119,689</b>	<b>117,551</b>	<b>115,413</b>	<b>113,488</b>	<b>111,563</b>
General Service - Residential											
5/8" Meter	2,891,728	2,853,362	2,783,319	-4.0%	-1.3%	-2.5%	2,865,243	2,815,941	2,766,640	2,717,338	2,668,036
> 5/8" Meter	363,363	353,284	349,677	-3.3%	-2.8%	-1.0%	378,003	378,003	378,003	378,003	378,003
<b>Total -Residential</b>	<b>3,255,091</b>	<b>3,206,646</b>	<b>3,132,996</b>	<b>-3.9%</b>	<b>-1.5%</b>	<b>-2.3%</b>	<b>3,243,246</b>	<b>3,193,944</b>	<b>3,144,643</b>	<b>3,095,341</b>	<b>3,046,039</b>
General Service - Commercial											
5/8" Meter	318,045	327,982	316,549	-1.3%	3.1%	-3.5%	321,928	316,298	310,668	305,319	299,970
> 5/8" Meter	1,109,930	1,184,252	1,183,177	-2.5%	6.7%	-0.1%	1,185,896	1,185,896	1,185,896	1,185,896	1,185,896
<b>Total - Commercial</b>	<b>1,427,975</b>	<b>1,512,234</b>	<b>1,499,726</b>	<b>-2.2%</b>	<b>5.9%</b>	<b>-0.8%</b>	<b>1,507,824</b>	<b>1,502,194</b>	<b>1,496,564</b>	<b>1,491,215</b>	<b>1,485,866</b>
General Service - Industrial											
5/8" Meter	5,710	6,186	5,865	-0.4%	8.3%	-5.2%	5,871	5,765	5,665	5,564	5,464
> 5/8" Meter	78,617	78,570	84,580	1.6%	-0.1%	7.6%	80,919	80,919	80,919	80,919	80,919
<b>Total - Industrial</b>	<b>84,327</b>	<b>84,756</b>	<b>90,445</b>	<b>1.5%</b>	<b>0.5%</b>	<b>6.7%</b>	<b>86,790</b>	<b>86,684</b>	<b>86,584</b>	<b>86,483</b>	<b>86,383</b>
<b>General Service - Public Utilities</b>											
5/8" Meter	424	394	476	-8.4%	-6.9%	20.7%	480	472	464	456	447
> 5/8" Meter	8,084	10,317	10,507	-4.6%	27.6%	1.8%	10,349	10,349	10,349	10,349	10,349
<b>Total -Public Utilities</b>	<b>8,507</b>	<b>10,711</b>	<b>10,983</b>	<b>-4.8%</b>	<b>25.9%</b>	<b>2.5%</b>	<b>10,829</b>	<b>10,821</b>	<b>10,813</b>	<b>10,805</b>	<b>10,796</b>
<b>General Service - Excluding Senior Citizens</b>											
5/8" Meter	3,215,906	3,187,924	3,106,209	-3.7%	-0.9%	-2.6%	3,193,522	3,138,476	3,083,436	3,028,677	2,973,918
> 5/8" Meter	1,559,994	1,626,423	1,627,941	-2.5%	4.3%	0.1%	1,655,167	1,655,167	1,655,167	1,655,167	1,655,167
<b>Total - Excluding SC</b>	<b>4,775,900</b>	<b>4,814,347</b>	<b>4,734,150</b>	<b>-3.3%</b>	<b>0.8%</b>	<b>-1.7%</b>	<b>4,848,689</b>	<b>4,793,643</b>	<b>4,738,603</b>	<b>4,683,844</b>	<b>4,629,085</b>
<b>General Service - Including Senior Citizens</b>											
5/8" Meter	3,325,738	3,303,778	3,223,879	-3.6%	-0.7%	-2.4%	3,313,184	3,256,000	3,198,821	3,142,138	3,085,455
> 5/8" Meter	1,560,042	1,626,452	1,627,966	-2.5%	4.3%	0.1%	1,655,194	1,655,194	1,655,194	1,655,194	1,655,194
<b>Total - including SC</b>	<b>4,885,780</b>	<b>4,930,230</b>	<b>4,851,845</b>	<b>-3.3%</b>	<b>0.9%</b>	<b>-1.6%</b>	<b>4,968,378</b>	<b>4,911,194</b>	<b>4,854,015</b>	<b>4,797,332</b>	<b>4,740,649</b>
PHA	165,961	178,292	163,177	-0.6%	7.4%	-8.5%	166,154	166,154	166,154	166,154	166,154
Charity and Schools	211,193	190,766	178,962	-1.9%	-9.7%	-6.2%	188,237	188,237	188,237	188,237	188,237
Hospital/University	262,322	272,722	300,812	0.2%	4.0%	10.3%	290,832	290,832	290,832	290,832	290,832
Hand Bill	524,773	497,646	445,530	-0.5%	-5.2%	-10.5%	426,711	426,711	426,711	426,711	426,711
Scheduled	22	21	16	41.0%	-5.9%	-22.7%	24	24	24	24	24
Fire Service	2,991	2,665	6,393	-69.7%	-10.9%	139.9%	4,500	4,500	4,500	4,500	4,500
Sewer Only	<b>76,652</b>	<b>70,303</b>	<b>83,596</b>	<b>34.3%</b>	<b>-8.3%</b>	<b>18.9%</b>	<b>77,000</b>	<b>77,000</b>	<b>77,000</b>	<b>77,000</b>	<b>77,000</b>
Groundwater	<b>157,872</b>	<b>276,587</b>	<b>211,684</b>	<b>-2.2%</b>	<b>75.2%</b>	<b>-23.5%</b>	<b>210,000</b>	<b>210,000</b>	<b>210,000</b>	<b>210,000</b>	<b>210,000</b>
<b>Total Retail (In City)</b>	<b>6,287,566</b>	<b>6,419,231</b>	<b>6,242,015</b>	<b>-2.5%</b>	<b>2.1%</b>	<b>-2.8%</b>	<b>6,331,836</b>	<b>6,274,652</b>	<b>6,217,473</b>	<b>6,160,790</b>	<b>6,104,107</b>

	ACTUAL			ANNUAL GROWTH			PROJECTED				
	2014	2015	2016	2014	2015	2016	2017	2018	2019	2020	2021
<b>Wholesale (Outside City)</b>											
Abington	102,068	100,091	95,757	4.3%	-1.9%	-4.3%	98,000	98,000	98,000	98,000	98,000
Bensalem	180,864	171,935	165,636	5.8%	-4.9%	-3.7%	170,000	170,000	170,000	170,000	170,000
Bucks County	945,440	846,849	777,314	16.0%	-10.4%	-8.2%	800,000	800,000	800,000	800,000	800,000
Cheltenham	281,173	356,825	294,940	-31.6%	26.9%	-17.3%	325,000	325,000	325,000	325,000	325,000
Lower Moreland	63,271	57,771	51,038	17.8%	-8.7%	-11.7%	55,000	55,000	55,000	55,000	55,000
Lower Southampton	310,188	255,404	219,604	26.7%	-17.7%	-14.0%	260,000	260,000	260,000	260,000	260,000
DELCORA	1,292,169	1,110,372	1,061,410	16.0%	-14.1%	-4.4%	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000
Lower Merion	366,882	357,219	310,320	5.0%	-2.6%	-13.1%	350,000	350,000	350,000	350,000	350,000
Springfield (less Wyndmoor)	176,441	142,623	138,243	18.7%	-19.2%	-3.1%	150,000	150,000	150,000	150,000	150,000
Upper Darby	509,725	463,520	450,345	16.5%	-9.1%	-2.8%	460,000	460,000	460,000	460,000	460,000
Springfield (Wyndmoor)	19,785	18,387	18,421	7.1%	-7.1%	0.2%	19,000	19,000	19,000	19,000	19,000
<b>Total Wholesale (Outside City)</b>	<b>4,248,005</b>	<b>3,880,996</b>	<b>3,583,028</b>	<b>10.0%</b>	<b>-8.6%</b>	<b>-7.7%</b>	<b>3,887,000</b>	<b>3,887,000</b>	<b>3,887,000</b>	<b>3,887,000</b>	<b>3,887,000</b>
<b>TOTAL</b>	<b>10,535,571</b>	<b>10,300,227</b>	<b>9,825,043</b>	<b>2.2%</b>	<b>-2.2%</b>	<b>-4.6%</b>	<b>10,218,836</b>	<b>10,161,652</b>	<b>10,104,473</b>	<b>10,047,790</b>	<b>9,991,107</b>

## STORMWATER USAGE

FIGURE 6. STORMWATER IMPERVIOUS AREA

	ACTUAL			PROJECTED				
	2014	2015	2016	2017	2018	2019	2020	2021
<b>RESIDENTIAL</b>								
Non-Discount								
Water & Sewer	449,676	449,004	448,556	449,008	446,393	446,393	446,393	446,393
SW Only	8,762	8,324	7,732	7,270	9,401	9,401	9,401	9,401
Discount: Elderly, Education & Charities								
Water & Sewer	20,836	21,836	22,788	23,369	23,813	23,813	23,813	23,813
SW Only	44	48	54	53	30	30	30	30
Discount PHA								
Water & Sewer	3,002	2,971	2,949	2,938	4,371	4,371	4,371	4,371
SW Only	123	110	107	113	174	174	174	174
Subtotal	482,443	482,293	482,186	482,751	484,182	484,182	484,182	484,182
<b>Non-Residential</b>								
Non-Discount								
Water & Sewer	465,757	455,436	448,869	444,764	435,724	429,934	423,758	416,530
SW Only	85,171	80,601	80,141	78,119	77,057	76,100	75,043	73,761
Discount: Elderly, Education & Charities								
Water & Sewer	86,769	85,077	84,220	83,361	82,907	82,504	82,058	81,517
SW Only	3,698	3,760	3,377	3,221	3,264	3,252	3,239	3,223
Discount PHA								
Water & Sewer	6,066	6,053	5,996	6,618	6,320	6,320	6,320	6,320
SW Only	1,106	1,170	1,170	1,141	1,149	1,149	1,149	1,149
Subtotal	648,567	632,097	623,773	617,224	606,421	599,259	591,567	582,500
<b>Condominiums</b>								
Non-Discount								
Water & Sewer	14,172	15,746	16,716	17,677	16,803	16,615	16,408	16,156
SW Only	111	197	155	46	164	164	164	164
Discount: Elderly, Education & Charities								
Water & Sewer	608	628	662	562	584	564	543	517
SW Only	21	21	21	21	21	21	21	21
Discount PHA								
Water & Sewer	6	6	6	6	6	6	6	6
SW Only	-	-	-	-	-	-	-	-
Subtotal	14,918	16,598	17,560	18,312	17,577	17,370	17,141	16,864
<b>Total</b>	<b>1,145,928</b>	<b>1,130,988</b>	<b>1,123,519</b>	<b>1,118,287</b>	<b>1,108,181</b>	<b>1,100,811</b>	<b>1,092,890</b>	<b>1,083,546</b>

## TEN LARGEST CUSTOMERS

The table below lists PWD's top 10 customers for Fiscal Year 2017:

FIGURE 7. PWD TEN LARGEST CUSTOMERS

	Customer	Revenue (\$)	% Total Revenue
1	City of Philadelphia*	30,062,770	4.15%
2	Philadelphia Housing Authority	13,672,016	1.89%
3	Veolia Energy Philadelphia	7,027,161	0.97%
4	University of Pennsylvania	5,750,699	0.79%
5	School District of Philadelphia	5,597,120	0.77%
6	Federal Government	3,839,127	0.53%
7	Temple University	3,164,536	0.44%
8	Paperworks Industries Inc.	2,925,902	0.40%
9	SEPTA	2,407,420	0.33%
10	University of Pennsylvania Health System	2,084,287	0.29%
	<b>TOTAL</b>	<b>76,531,040</b>	<b>10.55%</b>

\*The total above for the City of Philadelphia includes, among others, charges for water and wastewater services, which include stormwater services as follows: (i) \$17,703,287.82 – General Fund; (ii) \$4,267,811.64 – Aviation Fund; and (iii) \$2,340,971.77 – Philadelphia Zoo.



# APPENDIX 3

## PROPOSED RATES AND CHARGES

### WATER RATES

FIGURE 8: WATER - PROPOSED RATES FOR GENERAL SERVICE

SERVICE CHARGE				
	Meter Size	FY 2019 Monthly Charge	FY 2020 Monthly Charge	FY 2021 Monthly Charge
1	5/8"	\$ 6.18	\$ 6.40	\$ 6.55
2	3/4"	\$ 7.13	\$ 7.37	\$ 7.53
3	1"	\$ 9.48	\$ 9.77	\$ 9.97
4	1-1/2"	\$ 14.72	\$ 15.09	\$ 15.38
5	2	\$ 21.76	\$ 22.27	\$ 22.69
6	3	\$ 37.36	\$ 38.16	\$ 38.83
7	4	\$ 65.10	\$ 66.56	\$ 67.75
8	6	\$ 125.96	\$ 128.66	\$ 130.95
9	8	\$ 196.44	\$ 200.54	\$ 204.03
10	10	\$ 285.03	\$ 291.04	\$ 296.15
11	12	\$ 498.73	\$ 508.41	\$ 516.98

QUANTITY CHARGE				
	Meter Size	FY 2019 Charge per Mcf	FY 2020 Charge per Mcf	FY 2021 Charge per Mcf
12	First 2 Mcf	\$ 43.93	\$ 45.15	\$ 46.37
13	Next 98 Mcf	\$ 37.78	\$ 38.92	\$ 40.02
14	Next 1,900 Mcf	\$ 29.28	\$ 30.16	\$ 30.99
15	Over 2,000 Mcf	\$ 28.48	\$ 29.34	\$ 30.15

note: Mcf = thousand cubic feet

## WASTEWATER RATES

FIGURE 9: WASTEWATER - PROPOSED RATES FOR GENERAL SERVICE, SANITARY SEWER

SERVICE CHARGE			
Meter Size	FY 2019 Monthly Charge	FY 2020 Monthly Charge	FY 2021 Monthly Charge
1 5/8"	\$ 7.20	\$ 7.58	\$ 8.03
2 3/4"	\$ 9.16	\$ 9.64	\$ 10.22
3 1"	\$ 13.39	\$ 14.14	\$ 14.97
4 1-1/2"	\$ 23.49	\$ 24.85	\$ 26.29
5 2	\$ 36.19	\$ 38.33	\$ 40.52
6 3	\$ 65.17	\$ 69.09	\$ 72.99
7 4	\$ 110.83	\$ 117.44	\$ 124.10
8 6	\$ 218.35	\$ 231.45	\$ 244.53
9 8	\$ 345.40	\$ 366.20	\$ 386.86
10 10	\$ 498.57	\$ 528.56	\$ 558.40
11 12	\$905.54	\$ 960.64	\$ 1014.55

QUANTITY CHARGE			
	FY 2019 Charge per Mcf	FY 2020 Charge per Mcf	FY 2021 Charge per Mcf
12 All billable water usage	\$ 31.76	\$ 33.81	\$ 35.74
13 Groundwater charge	\$ 14.19	\$ 15.01	\$ 15.72

SURCHARGE RATES			
	FY 2019 Charge per lb	FY 2020 Charge per lb	FY 2021 Charge per lb
14 BOD (excess of 250 mg/l)	0.407	0.428	0.452
15 SS (excess of 350 mg/l)	0.398	0.417	0.443

note: Mcf = thousand cubic feet, mg/l-milligrams per liter

## STORMWATER RATES

FIGURE 10: STORMWATER - PROPOSED RATES FOR RESIDENTIAL SERVICE

Description	FY 2019 Monthly Charge	FY 2020 Monthly Charge	FY 2021 Monthly Charge
Stormwater Management Service Charge			
1 Charge Per Parcel	14.18	15.23	16.12
Billing and Collection Charge			
2 Charge Per Bill	1.83	1.91	2.03

FIGURE 11: STORMWATER - PROPOSED RATES FOR NON-RESIDENTIAL SERVICE

Description	FY 2019 Monthly Charge	FY 2020 Monthly Charge	FY 2021 Monthly Charge
Stormwater Management Service Charge			
1 Min Charge	\$14.18	\$15.23	\$16.12
2 GA (per 500 sf)	0.723	0.777	0.821
3 IA (per 500 sf)	5.471	5.862	6.188
Billing and Collection Charge			
4 Charge Per Bill	\$2.38	\$2.49	\$2.64

# APPENDIX 4

## TAP IMPLEMENTATION UPDATE

The City of Philadelphia has launched the Tiered Assistance Program (TAP), its new assistance program for residential customers who meet low-income or special hardship criteria. The initiative is a result of the enactment of Council Bill 140607-AA and rate determination by the Philadelphia Water, Sewer, and Stormwater Rate Board.

The TAP Program launched in July 2017. Prior to the launch, the City completed a variety of preparatory activities including: developing policies, operating procedures, and internal business processes, hiring and training staff, modifying the City's billing system to accommodate TAP, and developing additional information technology resources to support customer application submittals and reviews. In addition, the City focused on a comprehensive customer outreach campaign to support program awareness and enrollment. As a result of the significant planning, preparation, and training, TAP was successfully launched, on-time and in compliance with the City ordinance. Since its launch, TAP operations have been folded into all aspects of WRB and PWD's business processes. In the latter half of the year, while the program was in its infancy, operations continued to evolve, in response to opportunities for greater efficiency and enhanced customer communication

As of January 2018, TAP has received over 28,000 applications. This figure includes both applications requested by customers and those sent as part of the June 2017 mailing to assistance program enrollees and November 2017 through January 2018 recertification reminders. As of January 13, 2018, 5,142 applications have been approved for TAP, including applicants qualifying for TAP special hardship.

WRB and the Water Department are jointly implementing the program and have taken the many steps related to program outreach, application dissemination, application review/approval and initiation of program enrollments, such as:

- Public outreach efforts: In June 2017, WRB dispatched a mass mailing to recent and current WRAP customers describing TAP, the application process and procedures to file application by mail or apply online beginning July 1, 2017 (a TAP application was also included in this mailing);
- Call center staff were made available to assist customers with application questions beginning July 1, 2017;
- WRB initiated a two-user review beginning in October 2017 to facilitate consistency and transparency in the review process
- WRB added 22 staff positions to administer the program and oversee the program intake process

# APPENDIX 5

## MISCELLANEOUS FEES AND CHARGES

Please see attached PDF - **Schedule BV-E4: Summary of Miscellaneous Charges**

# APPENDIX 6

## RATING AGENCY REPORTS

Please see attached PDF - **PWD 2017 Rating Agency Reports**

# APPENDIX 7

## CUSTOMER SERVICE REPORTS

Please see attached PDF - **PWD Customer Service Reports**

# APPENDIX 8

## BILLING & COLLECTIONS

Please see attached PDF - **Schedule RFC-7: FY 2016 Payment Patterns**

# **APPENDIX 9**

## **OPERATIONS & MAINTENANCE EXECUTIVE SUMMARY**

Please refer to attached testimony from Debra McCarty, PWD Commissioner and Donna Schwartz, PWD Deputy Commissioner, Operations.