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Report on the Actuarial Valuations of the

Teachers' Retirement Plan and Police Officers & Firefighters' Retirement Plan

**Prepared as of October 1, 2017
for the District of Columbia
Retirement Board**





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

December 14, 2017

The Board of Trustees
District of Columbia Retirement Board
900 7th Street, NW, 2nd Floor
Washington, DC 20001

Dear Trustees:

We are pleased to submit the results of the annual valuations to the District of Columbia Retirement Board for the District of Columbia Teachers' Retirement Plan the District of Columbia Police Officers and Firefighters' Retirement Plan, prepared as of October 1, 2017.

The purpose of this report is to provide a summary of the funded status of each Plan as of October 1, 2017, and to recommend rates of contribution to be paid by the District in the 2019 fiscal year. The information needed for this Plan under Governmental Accounting Standards Board (GASB) Statement No. 67 is provided in a separate report. However, for informational purposes only, we have also provided accounting information under GASB 25 and 27 in Section VII of the report. While not verifying the data at source, the actuary performed tests for consistency and reasonability.

The promised benefits are included in the actuarially calculated contribution rates which are developed using the entry age normal cost method. A five-year smoothed market value of assets is used for actuarial valuation purposes. The assumptions recommended by the actuary and adopted by the Board are reasonably related to the experience under the Fund and to reasonable expectations of anticipated experience under the Fund.

Since the previous valuation, several changes were made to the actuarial assumptions and methods. The asset smoothing method period was changed from seven years to five years. In addition, many demographic assumptions were changed to better reflect recent experience. The administrative expense rate for the Police Officers and Firefighters' Retirement Plan was increased from 1.20% to 2.10% of payroll.

The funding policy adopted by the Board in 2012 includes the following funding goals:

- To maintain an increasing or stable ratio of Plan assets to actuarial accrued liabilities and reach a 100 percent minimum funded ratio;
- To develop a pattern of stable or declining contribution rates when expressed as a percentage of member payroll as measured by valuations prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board, with a minimum employer contribution equal to the lesser of the normal cost determined under the Entry Age Normal funding method or the current active member contribution rate.



December 14, 2017
The Board of Trustees
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The funding policy was amended by the Board in 2017 to:

- Amortized the legacy Unfunded Actuarial Accrued Liability (UAAL) as of October 1, 2017 over a closed 15-year period on a level dollar basis.
- The assumption and method changes and experience gains for the October 1, 2017 valuation will be amortized over a closed 20-year period from the valuation date.
- In subsequent valuations, all benefit changes, assumption and method changes and experience gains and/or losses that have occurred since the previous valuation will be amortized over a closed 20-year period from the date it is established.
- Change the asset smoothing period from seven years to five years.

Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the System and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the System.

The actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Use of these computations for purposes other than meeting these requirements may not be appropriate.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Edward J. Koebel'.

Edward J. Koebel, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink that reads 'Jonathan T. Craven'.

Jonathan T. Craven, ASA, EA, FCA, MAAA
Consulting Actuary

EJK/JTC:bvb



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SECTION I – SUMMARY OF PRINCIPAL RESULTS

1. For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results for the Teachers' Retirement Plan and Police Officers and Firefighters' Retirement Plan are summarized below in the tables that follow.

SUMMARY OF PRINCIPAL RESULTS FOR TEACHERS' RETIREMENT PLAN (\$ IN THOUSANDS)

VALUATION DATE	October 1, 2017	October 1, 2016
Number of Active Members	5,199	5,141
Annual Covered Payroll	\$447,762	\$438,079
Number of Retired Members and Survivors	3,899	3,882
Annual Retirement Benefits	\$71,201	\$68,790
Assets:		
Actuarial Value	\$1,982,019	\$1,845,476
Market Value	\$2,051,006	\$1,822,113
Liabilities:		
Actuarial Accrued Liability	\$2,142,491	\$2,029,640
Unfunded Actuarial Accrued Liability (UAAL)	\$160,472	\$184,164
Funding Ratios:		
Based on Actuarial Value	92.51%	90.93 %
Based on Market Value	95.73%	89.78 %
CONTRIBUTION FOR FISCAL YEAR ENDING	09/30/2019	09/30/2018
Employer Normal Cost Rate*	7.55%	7.47%
Amortization of UAAL Rate	3.54	4.04
Actuarially Determined Contribution Rate (ADC)	11.09%	11.51%
Estimated Fiscal Year End Covered Payroll	\$466,792	\$456,697
Fiscal Year District Payment before 1-907.02(c)	\$51,767	\$52,566
Shortfall/(Overpayment)	1,576	6,480
Fiscal Year District Payment	\$53,343	\$59,046

*The normal cost rate includes the administrative expense rate of 1.20%.



**SUMMARY OF PRINCIPAL RESULTS FOR POLICE OFFICERS'
RETIREMENT PLAN
(\$ IN THOUSANDS)**

VALUATION DATE	October 1, 2017	October 1, 2016
Total Number of Active Members	3,583	3,651
Total Annual Covered Payroll	\$299,535	\$298,442
Number of Retired Members and Survivors	2,419	2,265
Annual Retirement Benefits	\$72,463	\$63,587
Total Assets:		
Actuarial Value	\$3,794,954	\$3,528,543
Market Value	\$3,949,045	\$3,503,500
Liabilities:		
Actuarial Accrued Liability	\$3,412,554	\$3,108,582
Unfunded Actuarial Accrued Liability (UAAL)	(\$382,400)	(\$419,961)
Funding Ratios:		
Based on Actuarial Value	111.21%	113.51 %
Based on Market Value	115.72%	112.70 %
CONTRIBUTION FOR FISCAL YEAR ENDING	09/30/2019	09/30/2018
Employer Normal Cost Rate*	32.15%	34.22%
Amortization of UAAL Rate	(13.10)	(13.53)
Actuarially Determined Contribution Rate (ADC)	19.05%	20.69%
Estimated Fiscal Year End Covered Payroll	\$312,265	\$311,126
Fiscal Year District Payment before 1-907.02(c)	\$59,486	\$64,372
Shortfall/(Overpayment)	(4,964)	(4,420)
Fiscal Year District Payment	\$54,522	\$59,952

* The normal cost rate includes the administrative expense rate of 2.10% for fiscal year ending 2019, and 1.20% for fiscal year ending 2018.



**SUMMARY OF PRINCIPAL RESULTS FOR FIREFIGHTERS'
RETIREMENT PLAN
(\$ IN THOUSANDS)**

VALUATION DATE	October 1, 2017	October 1, 2016
Total Number of Active Members	1,729	1,708
Total Annual Covered Payroll	\$142,370	\$139,672
Number of Retired Members and Survivors	796	738
Annual Retirement Benefits	\$25,223	\$22,151
Total Assets:		
Actuarial Value	\$1,611,413	\$1,456,508
Market Value	\$1,680,866	\$1,450,964
Liabilities:		
Actuarial Accrued Liability	\$1,465,707	\$1,389,931
Unfunded Actuarial Accrued Liability (UAAL)	(\$145,706)	(\$66,577)
Funding Ratios:		
Based on Actuarial Value	109.94%	104.79 %
Based on Market Value	114.68%	104.39 %
CONTRIBUTION FOR FISCAL YEAR ENDING	09/30/2019	09/30/2018
Employer Normal Cost Rate*	35.46%	38.84%
Amortization of UAAL Rate	(10.07)	(4.58)
Actuarially Determined Contribution Rate (ADC)	25.39%	34.26%
Estimated Fiscal Year End Covered Payroll	\$148,421	\$145,608
Fiscal Year District Payment before 1-907.02(c)	\$37,684	\$49,885
Shortfall/(Overpayment)	(922)	(4,241)
Fiscal Year District Payment	\$36,762	\$45,644

* The normal cost rate includes the administrative expense rate of 2.10% for fiscal year ending 2019, and 1.20% for fiscal year ending 2018.



**SUMMARY OF PRINCIPAL RESULTS FOR POLICE OFFICERS & FIREFIGHTERS'
RETIREMENT PLAN
(\$ IN THOUSANDS)**

VALUATION DATE	October 1, 2017	October 1, 2016
Number of Active Police Officers	3,583	3,651
Annual Covered Payroll	\$299,535	\$298,442
Number of Active Firefighters	1,729	1,708
Annual Covered Payroll	\$142,370	\$139,672
Total Number of Active Members	5,312	5,359
Total Annual Covered Payroll	\$441,905	\$438,114
Number of Retired Members and Survivors	3,215	3,003
Annual Retirement Benefits	\$97,686	\$85,738
Assets:		
Actuarial Value	\$5,406,366	\$4,985,051
Market Value	\$5,629,911	\$4,954,464
Liabilities:		
Actuarial Accrued Liability	\$4,878,260	\$4,498,513
Unfunded Actuarial Accrued Liability (UAAL)	(\$528,106)	(\$486,538)
Funding Ratios:		
Based on Actuarial Value	110.83%	110.82 %
Based on Market Value	115.41%	110.14 %
CONTRIBUTIONS FOR FISCAL YEAR ENDING	09/30/2019	09/30/2018
Employer Normal Cost Rate*	33.21%	35.69%
Amortization of UAAL Rate	(12.12)	(10.68)
Actuarially Determined Contribution Rate (ADC)	21.09%	25.01%
Estimated Fiscal Year End Covered Payroll	\$460,686	\$456,734
Fiscal Year District Payment before 1-907.02(c)	\$97,170	\$114,257
Shortfall/(Overpayment)	(5,886)	(8,661)
Fiscal Year District Payment	\$91,284	\$105,596

* The normal cost rate includes the administrative expense rate of 2.10% for fiscal year ending 2019, and 1.20% for fiscal year ending 2018.



2. The valuation balance sheet showing the results is given in Schedule A.
3. Comments on the valuation results as of October 1, 2017 are given in Section IV and further adjustments of the contribution amounts are set out in Section V.
4. Schedule B of this report shows the development of the actuarial value of assets. Schedule D outlines the full set of actuarial assumptions and methods employed. The following changes to assumptions and methods were made since the previous valuation:
 - Demographic assumptions were changed to better reflect recent experience.
 - The administrative expense rate for the Police Officers and Firefighters' Retirement Plan was increased from 1.20% to 2.10% of payroll.
 - Asset smoothing method was changed from a 7-year period to 5-year period.
5. The funding policy adopted by the Board in 2012 was amended in 2017 to:
 - Amortized the legacy Unfunded Actuarial Accrued Liability (UAAL) as of October 1, 2017 over a closed 15-year period on a level dollar basis.
 - The assumption and method changes and experience gains for the October 1, 2017 valuation will be amortized over a closed 20-year period from the valuation date.
 - In subsequent valuations, all benefit changes, assumption and method changes and experience gains and/or losses that have occurred since the previous valuation will be amortized over a closed 20-year period from the date it is established.
 - Change the asset smoothing period from seven years to five years.
6. The valuation takes into account the effect of any amendments to the Plan through the valuation date. The Main Provisions of the Plans, as summarized in Schedule E, were taken into account in the current valuation. No changes were made to the main provisions since the previous valuation.
7. Membership and asset data was provided by the Plan's staff and was reviewed for reasonableness and consistency with data from prior valuations. Where data was incomplete but thought to be credible, assumptions were made for missing items. The valuation results depend on the integrity of the data. If any of this information is inaccurate, our results may differ and our calculations may need to be revised. All membership data was collected as of July 1, 2017, but for valuation purposes, (e.g., age, service) all members were treated as if remaining in the System as of October 1, 2017.



SECTION II – MEMBERSHIP DATA

1. Data regarding the membership of the Plans for use as a basis of the valuation were furnished by DCRB, the District Government and the U.S. Department of the Treasury. The following table shows the number of active members and their annual compensation as of October 1, 2017, on the basis of which the valuation was prepared.

TABLE 1

THE NUMBER AND ANNUAL COMPENSATION OF ACTIVE MEMBERS AS OF OCTOBER 1, 2017 (\$ IN THOUSANDS)

GROUP	NUMBER	COMPENSATION
Teachers	5,199	\$447,762
Police Officers	3,583	299,535
Firefighters	<u>1,729</u>	<u>142,370</u>
Total	10,511	\$889,667

2. The following table shows a five-year history of active member valuation data.

TABLE 2

SCHEDULE OF TOTAL ACTIVE MEMBER VALUATION DATA

VALUATION DATE	NUMBER	ANNUAL PAYROLL (\$ IN THOUSANDS)	ANNUAL AVERAGE PAY	% CHANGE IN AVERAGE PAY
10/01/2017	10,511	\$ 889,667	\$ 84,642	1.43 %
10/01/2016	10,500	876,193	83,447	0.56
10/01/2015	10,403	863,291	82,985	2.04
10/01/2014	10,050	817,341	81,327	2.79
10/01/2013	9,889	782,451	79,123	(0.56)



3. The following table shows the number and annual retirement benefits payable to retired members and survivors on the roll of DCRB as of the valuation date.

TABLE 3
THE NUMBER AND ANNUAL RETIREMENT BENEFITS
OF RETIRED MEMBERS AND SURVIVORS OF DECEASED MEMBERS*
ON THE ROLL AS OF OCTOBER 1, 2017
(\$ IN THOUSANDS)

DISTRICT ONLY

TYPE OF RETIREMENT	GROUP			
	TEACHERS	POLICE OFFICERS	FIREFIGHTERS	TOTAL
Service:				
Number	3,636	1,736	575	5,947
Annual Benefits	\$67,498	\$57,539	\$20,268	\$145,305
Disability:				
Number	110	310	87	507
Annual Benefits	\$2,599	\$9,117	\$2,323	\$14,039
Survivors:				
Number	153	373	134	660
Annual Benefits	\$1,104	\$5,807	\$2,632	\$9,543
Total:				
Number	3,899	2,419	796	7,114
Annual Benefits	\$71,201	\$72,463	\$25,223	\$168,887

*In addition, there are 1,670 deferred vested participants with annual deferred benefits of \$26,140,894.

**TABLE 4**

**THE NUMBER AND ANNUAL RETIREMENT BENEFITS
OF RETIRED MEMBERS AND SURVIVORS OF DECEASED MEMBERS
ON THE ROLL AS OF OCTOBER 1, 2017
(\$ IN THOUSANDS)**

FEDERAL PLUS DISTRICT

TYPE OF RETIREMENT	GROUP			
	TEACHERS	POLICE OFFICERS	FIREFIIGHTERS	TOTAL
Service:				
Number	5,342	3,752	1,146	10,240
Annual Benefits	\$252,514	\$230,868	\$82,148	\$565,530
Disability:				
Number	291	958	355	1,604
Annual Benefits	\$9,370	\$42,495	\$17,978	\$69,843
Survivors:				
Number	428	1,447	533	2,408
Annual Benefits	\$8,923	\$43,055	\$16,534	\$68,512
Total:				
Number	6,061	6,157	2,034	14,252
Annual Benefits	\$270,807	\$316,418	\$116,660	\$703,885

4. Tables 4 through 6 of Schedule F show the distribution by age and service of the number and annual compensation of active members for each plan included in the valuation. Tables 7 through 12 of Schedule F show the distribution by age of the number and annual benefits of retired members for each plan included in the valuation.



SECTION III - ASSETS

- Schedule C shows the additions and deductions of DCRB for the year preceding the valuation date and a reconciliation of the fund balances at market value. As of October 1, 2017, the market value of assets used to determine the actuarial value of assets for each plan is shown below:

TABLE 5
COMPARISON OF MARKET VALUE OF ASSETS AT
OCTOBER 1, 2017 AND OCTOBER 1, 2016
(\$ IN THOUSANDS)

FUND	OCTOBER 1, 2017 MARKET VALUE	OCTOBER 1, 2016 MARKET VALUE
Teachers	\$2,051,006	\$1,822,113
Police Officers and Firefighters	<u>5,629,911</u>	<u>4,954,464</u>
Total Market Value of Assets	\$7,680,917	\$6,776,577

- The five-year market related actuarial value of assets used for the current valuation was \$7,388,385,220. Schedule B shows the development of the actuarial value of assets as of October 1, 2017. The following table shows the actuarial value of assets allocated between each plan.

TABLE 6
COMPARISON OF ACTUARIAL VALUE OF ASSETS AT
OCTOBER 1, 2017 AND OCTOBER 1, 2016
(\$ IN THOUSANDS)

FUND	OCTOBER 1, 2017 ACTUARIAL VALUE	OCTOBER 1, 2016 ACTUARIAL VALUE
Teachers	\$1,982,019	\$1,845,476
Police Officers and Firefighters	<u>5,406,366</u>	<u>4,985,051</u>
Total Actuarial Value of Assets	\$7,388,385	\$6,830,527



SECTION IV - COMMENTS ON VALUATION

Teachers' Retirement Plan

1. The total valuation balance sheet on account of benefits shows that the Teachers' Retirement Plan has total prospective benefit liabilities of \$2,676,644,689, of which \$988,609,725 is for the prospective benefits payable on account of present retired members and survivors of deceased members, \$166,086,480 is for the prospective benefits payable on account of present inactive members, and \$1,521,948,484 is for the prospective benefits payable on account of present active members. Against these benefit liabilities the Teachers' Retirement Plan has a total present actuarial value of assets of \$1,982,018,820 as of October 1, 2017. The difference of \$694,625,869 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits.
2. The contributions to the Plan consist of normal cost contributions and actuarial accrued liability contributions. The valuation indicates the normal contributions at a rate of 14.23% of payroll are required under the entry age method. Of this amount 7.88% will be paid by the members (at the rate of 7.0% of salary for members hired before November 1, 1996 and 8.0% of salary for members hired on or after November 1, 1996), in 2019 and the remaining 6.35% is payable by the District.
3. Estimated budgeted administrative expenses are included in the normal rates. The expenses for the fiscal year ending September 30, 2019 are estimated to be 1.20% of payroll.
4. Prospective normal cost contributions (excluding administrative expenses) at the rate of 14.23% have a present value of \$534,153,549. When this amount is subtracted from \$694,625,869, which is the present value of total future contributions to be made, there remains \$160,472,320 as the amount of unfunded actuarial accrued liability contributions. The development of the unfunded actuarial accrued liability is shown in Schedule A.
5. The unfunded actuarial accrued liability (UAAL) decreased approximately \$23.7 million for the plan year ending September 30, 2017 and the funding ratio increased from 90.93% to 92.51%. The decrease in the UAAL was primarily due to lower salary increases for active members than was expected, and lower actual Cost-of-Living Adjustment (COLA) for retired members than expected and investment earnings on an actuarial value basis that was higher than the expected rate of 6.50%. These gains were partially offset by the changes to the assumptions and methods from the most recent Experience Study Report. See Schedule H for a complete breakdown of the experience of the Plan.



Police Officers and Firefighters' Retirement Plan

1. The total valuation balance sheet on account of benefits shows that the combined Police Officers and Firefighters' Retirement Plan has total prospective benefit liabilities of \$6,819,279,379, of which \$1,884,687,678 is for the prospective benefits payable on account of present retired members and survivors of deceased members, \$106,011,181 is for the prospective benefits payable on account of present inactive members, and \$4,828,580,520 is for the prospective benefits payable on account of present active members. Against these benefit liabilities the Police Officers and Firefighters' Retirement Plan has a total present actuarial value of assets of \$5,406,366,400 as of October 1, 2017. The difference of \$1,412,912,979 between the total liabilities and the total present actuarial value of assets represents the present value of contributions to be made in the future on account of benefits.
2. The contributions to the Plan consist of normal cost contributions and actuarial accrued liability contributions. The valuation indicates the normal contributions at a rate of 38.81% of payroll are required under the entry age method. Of this amount 7.70% will be paid by the members (at the rate of 7.0% of salary for members hired before November 10, 1996 and 8.0% of salary for members hired on or after November 10, 1996), in 2019 and the remaining 31.11% is payable by the District.
3. Estimated budgeted administrative expenses are included in the normal rates. The expenses for the fiscal year ending September 30, 2019 are estimated to be 2.10% of payroll.
4. Prospective normal cost contributions (excluding administrative expenses) at the rate of 38.81% have a present value of \$1,941,019,238. When this amount is subtracted from \$1,412,912,979, which is the present value of total future contributions to be made, there remains a surplus of (\$528,106,259) as the amount of unfunded actuarial accrued liability contributions. The development of the unfunded actuarial accrued liability is shown in Schedule A.
5. The unfunded actuarial accrued liability (UAAL) decreased approximately \$41.6 million for the plan year ending September 30, 2017 and the funding ratio increased slightly from 110.82% to 110.83%. The decrease in the UAAL was primarily due to lower salary increases for active members than was expected, and lower actual Cost-of-Living Adjustment (COLA) for retired members than expected and investment earnings on an actuarial value basis that was higher than the expected rate of 6.50%. These gains were partially offset by the changes in the assumptions and methods from the most recent Experience Study. See Schedule H for a complete breakdown of the experience of the Plan.



SECTION V - §1-907.02(c) ADJUSTMENT TO FISCAL YEAR 2019 DISTRICT PAYMENT

1. Beginning in fiscal year 2001, the District payment was adjusted pursuant to D.C. Code §1-907.02(c). This section stipulates that "...the enrolled actuary shall determine whether the amount appropriated for the applicable fiscal year resulted in an overpayment or a shortfall based upon the actual covered payroll."
2. The D.C. Code §1-907.02(c) adjustment to the fiscal year 2019 District payment is calculated by taking the actual fiscal year 2017 covered payroll for each employee class (which is provided by the District) and multiplying by the corresponding fiscal year 2017 contribution rates, which were determined as of October 1, 2015. This result is the fiscal year 2017 contribution that was required to be made by the District, based on actual payroll. The required contribution is then compared to the actual contribution that was paid by the District based on projected payroll. The difference between the required and actual contributions is the D.C. Code §1-907.02(c) adjustment. Any adjustment amount that cannot be used in a given year is carried forward to the next fiscal year.

**ADJUSTMENT TO DISTRICT PAYMENT
AS OF OCTOBER 1, 2017
(\$ IN THOUSANDS)**

	Teachers	Police	Fire
(1) Actual FY 2017 Covered Payroll	\$447,762	\$299,535	\$142,370
(2) FY 2017 Contribution Rate	12.17%	23.75%	39.11%
(3) Actual FY 2017 Contribution Required	\$54,493	\$71,140	\$55,681
(4) Actual FY 2017 Contribution Paid without Adjustment	\$52,917	\$76,104	\$56,603
(5) Preliminary D.C. Code §1-907.02(c) Adjustment to FY 2018 Payment [(3) - (4)]	\$1,576	(\$4,964)	(\$922)
(6) FY 2017 Unrecognized Amount	\$0	\$0	\$0
(7) Final D.C. Code §1-907.02(c) Adjustment to FY 2018 Payment [(5) + (6) if applicable]	\$1,576	(\$4,964)	(\$922)
(8) Applicable Adjustment	\$1,576	(\$4,964)	(\$922)
(9) Carryover Adjustment [(7) - (8)]	\$0	\$0	\$0



SECTION VI – CONTRIBUTIONS PAYABLE

1. The following tables summarize the employer contribution rates, which were determined by the October 1, 2017 valuation and recommended for use for the fiscal year ending September 30, 2019.

TEACHERS' RETIREMENT PLAN ACTUARIAL DETERMINED CONTRIBUTIONS (ADC) FOR FISCAL YEAR ENDING SEPTEMBER 30, 2019

	PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION	EMPLOYER ACTUARIAL DETERMINED CONTRIBUTION (ADC)
Normal Cost	6.35%	\$29,641,000
Expense Load	1.20	5,602,000
Accrued Liability	<u>3.54</u>	<u>16,524,000</u>
Sub-Total	11.09%	\$51,767,000
DC Code Adjustment		<u>1,576,000</u>
Total		\$53,343,000

POLICE OFFICERS AND FIREFIGHTERS' RETIREMENT PLAN ACTUARIAL DETERMINED CONTRIBUTIONS (ADC) FOR FISCAL YEAR ENDING SEPTEMBER 30, 2019

	PERCENTAGE OF ACTIVE MEMBERS' COMPENSATION	EMPLOYER ACTUARIAL DETERMINED CONTRIBUTION (ADC)
Normal Cost	31.11%	\$143,349,000
Expense Load	2.10	9,674,000
Accrued Liability	<u>(12.12)</u>	<u>(55,823,000)</u>
Sub-Total	21.09%	\$97,170,000
DC Code Adjustment		<u>(5,886,000)</u>
Total		\$91,284,000



SECTION VII - ACCOUNTING INFORMATION

1. Governmental Accounting Standards Board (GASB) Statements 67 and 68 are now used to determine the accounting results for the plans and are provided in a separate report. GASB 25 and 27 results are provided for informational purposes only. One such item is a distribution of the number of employees by type of membership, as follows:

NUMBER OF ALL MEMBERS AS OF OCTOBER 1, 2017

GROUP	RETIREMENT PLAN			
	Teachers	Police Officers	Firefighters	Total
Retirees and survivors currently receiving benefits	3,899	2,419	796	7,114
Terminated employees entitled to benefits but not yet receiving benefits	1,330	246	94	1,670
Inactive Members	412	52	20	484
Active Members				
Vested	2,462	2,687	1,473	6,622
Non-vested	<u>2,737</u>	<u>896</u>	<u>256</u>	<u>3,889</u>
Total Active Members	5,199	3,583	1,729	10,511
Totals	10,840	6,300	2,639	19,779



2. Another such item is the schedule of funding progress as shown below.

**SCHEDULE OF FUNDING PROGRESS
(\$ IN THOUSANDS)**

Actuarial Valuation Date	Actuarial Value of Plan Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
<u>TEACHERS' RETIREMENT PLAN</u>						
10/1/2013	\$1,585,775	\$1,759,043	\$173,268	90.1 %	\$369,071	46.9 %
10/1/2014	1,638,583	1,849,230	210,647	88.6 %	378,926	55.6 %
10/1/2015	1,732,017	1,953,305	221,288	88.7 %	417,090	53.1 %
10/1/2016	1,845,476	2,029,640	184,164	90.9 %	438,079	42.0 %
10/1/2017	1,982,019	2,142,491	160,472	92.5 %	447,762	35.8 %
<u>POLICE OFFICERS AND FIREFIGHTERS' RETIREMENT PLAN</u>						
10/1/2013	\$4,013,534	\$3,644,085	(\$369,449)	110.1 %	\$413,380	(89.4)%
10/1/2014	4,288,727	3,998,537	(290,190)	107.3 %	438,415	(66.2)%
10/1/2015	4,607,300	4,283,093	(324,206)	107.6 %	446,201	(72.7)%
10/1/2016	4,985,051	4,498,513	(486,538)	110.8 %	438,114	(111.1)%
10/1/2017	5,406,366	4,878,260	(528,106)	110.8 %	441,905	(119.5)%
<u>TOTAL</u>						
10/1/2013	\$5,599,309	\$5,403,128	(\$196,181)	103.6 %	\$782,451	(25.1)%
10/1/2014	5,927,310	5,847,767	(79,543)	101.4 %	817,341	(9.7)%
10/1/2015	6,339,317	6,236,398	(102,918)	101.7 %	863,291	(11.9)%
10/1/2016	6,830,527	6,528,153	(302,374)	104.6 %	876,193	(34.5)%
10/1/2017	7,388,385	7,020,751	(367,634)	105.2 %	889,667	(41.3)%



3. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at October 1, 2017.

	Teachers	Police Officers & Firefighters
Valuation Date	10/1/2017	10/1/2017
Actuarial cost method	Entry Age Normal	Entry Age Normal
Amortization method	Level Dollar Closed	Level Dollar Closed
Remaining amortization period	15 years	15 years
Asset valuation method	5 year smoothed Market	5 year smoothed Market
Actuarial assumptions:		
Investment rate of return*	6.50%	6.50%
Projected salary increases**	5.50 – 8.63%	4.25 – 9.98%
Cost of living adjustments:	3.50% (COLA limited to 3.00% for those hired after 11/1/1996)	3.50% (COLA limited to 3.00% for those hired after 11/10/1996)

* Includes inflation of 3.50%.

** Includes wage inflation of 4.25%.



SECTION VIII – EXPERIENCE

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the year ended September 30, 2017 is shown below.

Teachers' Retirement Plan

		<u>\$ Thousands</u>
(1)	UAAL* as of October 1, 2016	\$ 184,164
(2)	Total normal cost from last valuation	67,146
(3)	Total actual contributions	91,140
(4)	Interest accrual: $[(1) + (2)] \times .065 - [(3) \times .0325]$	<u>13,373</u>
(5)	Expected UAAL before changes: $(1) + (2) - (3) + (4)$	\$ 173,543
(6)	Change due to plan amendments	0
(7)	Change due to actuarial assumptions or methods	<u>49,986</u>
(8)	Expected UAAL after changes: $(5) + (6) + (7)$	\$ 223,529
(9)	Actual UAAL as of October 1, 2017	\$ 160,472
(10)	Gain/(loss): $(8) - (9)$	\$ 63,057
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of year (\$2,029,640)	3.1%

*Unfunded actuarial accrued liability.

Valuation Date September 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2014	(2.3)%
2015	(0.5)
2016	1.9
2017	3.1



Police Officers and Firefighters' Retirement Plan

		<u>\$ Thousands</u>
(1)	UAAL* as of October 1, 2016	\$ (486,538)
(2)	Total normal cost from last valuation	189,886
(3)	Total actual contributions	179,055
(4)	Interest accrual: $[(1) + (2)] \times .065 - [(3) \times .0325]$	<u>(25,102)</u>
(5)	Expected UAAL before changes: $(1) + (2) - (3) + (4)$	\$ (500,809)
(6)	Change due to plan amendments	0
(7)	Change due to actuarial assumptions or methods	<u>117,975</u>
(8)	Expected UAAL after changes: $(5) + (6) + (7)$	\$ (382,834)
(9)	Actual UAAL as of October 1, 2017	\$ (528,106)
(10)	Gain/(loss): $(8) - (9)$	\$ 145,272
(11)	Gain/(loss) as percent of actuarial accrued liabilities at start of year (\$4,498,514)	3.2%

*Unfunded actuarial accrued liability.

Valuation Date September 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2014	(2.2)%
2015	1.9
2016	4.0
2017	3.2



SCHEDULE A

**VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE DISTRICT OF COLUMBIA RETIREMENT BOARD
AS OF OCTOBER 1, 2017**

TEACHERS' RETIREMENT PLAN

PRESENT AND PROSPECTIVE ASSETS		
Actuarial Value of Present Assets		1,982,018,820
Present value of future members' contributions		259,876,042
Present value of future employer contributions		
Normal contributions	\$274,277,507	
Unfunded accrued liability contributions	<u>160,472,320</u>	
Total prospective employer contributions		<u>434,749,827</u>
Total Present and Prospective Assets		<u>\$2,676,644,689</u>
ACTUARIAL LIABILITIES		
Present value of benefits payable on account of retired members and survivors of deceased members now drawing retirement benefits		\$988,609,725
Present value of prospective benefits payable on account of inactive members		166,086,480
Present value of prospective benefits payable on account of present active members:		
Service retirement benefits	\$1,232,085,307	
Disability retirement benefits	29,592,022	
Survivor benefits	18,191,931	
Separation benefits	<u>242,079,224</u>	
Total		<u>1,521,948,484</u>
Total Actuarial Liabilities		<u>\$2,676,644,689</u>

**SCHEDULE A**

(Continued)

**VALUATION BALANCE SHEET
SHOWING THE PRESENT AND PROSPECTIVE ASSETS AND LIABILITIES OF
THE DISTRICT OF COLUMBIA RETIREMENT BOARD
AS OF OCTOBER 1, 2017**

POLICE OFFICERS & FIREFIGHTERS' RETIREMENT PLAN

PRESENT AND PROSPECTIVE ASSETS		
Actuarial Value of Present Assets		5,406,366,400
Present value of future members' contributions		346,885,354
Present value of future employer contributions		
Normal contributions	\$1,594,133,884	
Unfunded accrued liability contributions	<u>(528,106,259)</u>	
Total prospective employer contributions		<u>1,066,027,625</u>
Total Present and Prospective Assets		<u>\$6,819,279,379</u>
ACTUARIAL LIABILITIES		
Present value of benefits payable on account of retired members and survivors of deceased members now drawing retirement benefits		\$1,884,687,678
Present value of prospective benefits payable on account of inactive members		106,011,181
Present value of prospective benefits payable on account of present active members:		
Service retirement benefits	\$4,319,650,776	
Disability retirement benefits	223,525,756	
Survivor benefits	88,831,015	
Separation benefits	<u>196,572,973</u>	
Total		<u>4,828,580,520</u>
Total Actuarial Liabilities		<u>\$6,819,279,379</u>



SCHEDULE A

(continued)

**SOLVENCY TEST
(\$ IN THOUSANDS)**

Valuation Date	Aggregate Accrued Liabilities For				Portion of Accrued Liabilities Covered by Reported Asset		
	(1) Active Member Contributions	(2) Retirees, Survivors and Inactive Members	(3) Active Members (Employer Financed Portion)	Reported Assets	(1)	(2)	(3)
TEACHERS' RETIREMENT PLAN							
10/1/2013	\$141,792	\$883,495	\$733,756	\$1,622,376	100%	100.0%	81.4%
10/1/2014	141,943	968,446	738,841	1,746,030	100%	100.0%	86.0%
10/1/2015	144,927	1,053,078	755,300	1,670,976	100%	100.0%	62.6%
10/1/2016	152,459	1,108,032	769,149	1,822,113	100%	100.0%	73.0%
10/1/2017	156,263	1,154,696	831,532	2,051,006	100%	100.0%	89.0%
POLICE OFFICERS AND FIREFIGHTERS' RETIREMENT PLAN							
10/1/2013	\$247,202	\$966,862	\$2,430,021	\$4,168,457	100%	100.0%	100.0%
10/1/2014	255,735	1,149,515	2,593,287	4,588,319	100%	100.0%	100.0%
10/1/2015	262,674	1,388,908	2,631,511	4,462,228	100%	100.0%	100.0%
10/1/2016	260,786	1,650,195	2,587,532	4,954,464	100%	100.0%	100.0%
10/1/2017	261,428	1,990,699	2,626,132	5,629,911	100%	100.0%	100.0%



SCHEDULE B

**DEVELOPMENT OF THE OCTOBER 1, 2017
ACTUARIAL VALUE OF ASSETS**

TEACHERS' RETIREMENT PLAN

(1)	Actuarial Value Beginning of Year*	\$	1,845,475,738
(2)	Market Value End of Year	\$	2,051,006,000
(3)	Market Value Beginning of Year	\$	1,822,113,000
(4)	Cash Flow		
a.	Contributions	\$	91,140,000
b.	Benefit Payments, Refunds, and Transfers		(78,235,000)
c.	Administrative Expenses		(4,694,000)
d.	Net Cash Flow: [(4)a + (4)b + (4)c]	\$	8,211,000
(5)	Investment Income		
a.	Market total: (2) – (3) – (4)d	\$	220,682,000
b.	Assumed Rate		6.50%
c.	Amount of Immediate Recognition	\$	118,704,203
d.	Amount for Phased-in Recognition: (5)a – (5)c	\$	101,977,797
(6)	Phased-In Recognition of Investment Income		
a.	Current Year: (1/5) x (5)d	\$	20,395,559
b.	First Prior Year		(2,691,920)
c.	Second Prior Year		(2,691,920)
d.	Third Prior Year		(2,691,920)
e.	Fourth Prior Year		(2,691,920)
f.	Total Recognized Investment Gain	\$	9,627,879
(7)	Preliminary Actuarial Value End of Year: (1) + (4)d + (5)c + (6)f	\$	1,982,018,820
(8)	Actuarial Value End of Year with 20% Corridor Applied:	\$	1,982,018,820
(9)	Rate of Return on Actuarial Value of Assets		6.94%

*Prior to any corridor restraints.

**SCHEDULE B**

(Continued)

**DEVELOPMENT OF THE OCTOBER 1, 2017
ACTUARIAL VALUE OF ASSETS****POLICE OFFICERS & FIREFIGHTERS' RETIREMENT PLAN**

(1)	Actuarial Value Beginning of Year*	\$	4,985,051,594
(2)	Market Value End of Year	\$	5,629,911,000
(3)	Market Value Beginning of Year	\$	4,954,464,000
(4)	Cash Flow		
a.	Contributions	\$	179,055,000
b.	Benefit Payments, Refunds, and Transfers		(94,184,000)
c.	Administrative Expenses		(12,766,000)
d.	Net Cash Flow: [(4)a + (4)b + (4)c]	\$	72,105,000
(5)	Investment Income		
a.	Market total: (2) – (3) – (4)d	\$	603,342,000
b.	Assumed Rate		6.50%
c.	Amount of Immediate Recognition	\$	324,383,573
d.	Amount for Phased-in Recognition: (5)a – (5)c	\$	278,958,427
(6)	Phased-In Recognition of Investment Income		
a.	Current Year: (1/5) x (5)d	\$	55,791,685
b.	First Prior Year		(7,741,363)
c.	Second Prior Year		(7,741,363)
d.	Third Prior Year		(7,741,363)
e.	Fourth Prior Year		(7,741,363)
f.	Total Recognized Investment Gain	\$	24,826,233
(7)	Preliminary Actuarial Value End of Year: (1) + (4)d + (5)c + (6)f	\$	5,406,366,400
(8)	Actuarial Value End of Year with 20% Corridor Applied:	\$	5,406,366,400
(9)	Rate of Return on Actuarial Value of Assets		6.95%

*Prior to any corridor restraints.



SCHEDULE C

SUMMARY OF CHANGES IN NET ASSETS FOR THE YEAR ENDING OCTOBER 1, 2017

TEACHERS' RETIREMENT PLAN

Additions for the Year

Contributions:

Members (including purchased service)	\$ 34,359,000
Employers	<u>56,781,000</u>

Total \$ 91,140,000

Net Investment Income 220,682,000

TOTAL \$ 311,822,000

Deductions for the Year

Benefit Payments (including refunds and transfers)	\$ (78,235,000)
Administrative Expenses	<u>(4,694,000)</u>

TOTAL \$ (82,929,000)

Excess of Additions Over Deductions \$ 228,893,000

Reconciliation of Asset Balances

Market Value of Assets as of 9/30/2016	\$ 1,822,113,000
Excess of Additions over Deductions	<u>228,893,000</u>
Market Value of Assets as of 9/30/2017*	<u>\$ 2,051,006,000</u>

Rate of Return on Market Value of Assets 12.08%

* The Market Value of Assets shown above is used in the determination of the Actuarial Value of Assets (Schedule B).



SCHEDULE C

(Continued)

**SUMMARY OF CHANGES IN NET ASSETS
FOR THE YEAR ENDING OCTOBER 1, 2017**

POLICE OFFICERS & FIREFIGHTERS' RETIREMENT PLAN

Additions for the Year

Contributions:

Members (including purchased service)	\$ 33,424,000
Employers	<u>145,631,000</u>

Total \$ 179,055,000

Net Investment Income 603,342,000

TOTAL \$ 782,397,000

Deductions for the Year

Benefit Payments (including refunds and transfers)	\$ (94,184,000)
Administrative Expenses	<u>(12,766,000)</u>
TOTAL	<u>\$ (106,950,000)</u>

Excess of Additions Over Deductions \$ 675,447,000

Reconciliation of Asset Balances

Market Value of Assets as of 9/30/2016	\$ 4,954,464,000
Excess of Additions over Deductions	<u>675,447,000</u>
Market Value of Assets as of 9/30/2017*	<u><u>\$ 5,629,911,000</u></u>

Rate of Return on Market Value of Assets 12.09%

* The Market Value of Assets shown above is used in the determination of the Actuarial Value of Assets (Schedule B).



SCHEDULE D

OUTLINE OF ACTUARIAL ASSUMPTIONS AND METHODS (DEMOGRAPHIC ASSUMPTIONS ADOPTED ON JUNE 22, 2017) (ECONOMIC ASSUMPTIONS ADOPTED ON JUNE 22, 2017)

VALUATION DATE: All assets and liabilities are computed as of October 1, 2017. Demographic information was collected as of June 30, 2017.

INVESTMENT RATE OF RETURN: 6.50% per annum, compounded annually (net of investment expenses).

INFLATION ASSUMPTION: 3.50% per annum.

PAYROLL GROWTH ASSUMPTION: 4.25% per annum.

PERCENT MARRIED: 64% of Teachers are assumed to be married and 80% of Police Officers and Firefighters are assumed to be married, with the wife 3 years younger than the husband. Active members are assumed to have one dependent child aged 10.

ACTUARIAL METHOD: Entry Age Normal Cost Method. The amortization of the unfunded actuarial accrued liability uses a level dollar basis.

ASSETS: The method of valuing assets is intended to recognize a “smoothed” market value of assets. Under this method, the difference between actual return on market value from investment experience and the expected return on market value is recognized over a five-year period. The actuarial value of assets is constrained to an 80% to 120% corridor around market value of assets.

WITHDRAWAL ASSUMPTION: For Teachers and Firefighters, it was assumed that 15% of the vested members who terminate elect to withdraw their contributions while the remaining 85% elect to leave their contributions in the plan in order to be eligible for a benefit at their retirement date. For Police Officers, it was assumed that 25% of the vested members who terminate elect to withdraw their contributions while the remaining 75% elect to leave their contributions in the plan.

OTHER ASSUMPTIONS: To value the pre-retirement death benefit for Police Officers and Firefighters, the benefit form for all retirements (normal or disabled) is assumed to be a 67.8% Joint and Survivor annuity for all participants (based on 40% of average pay survivor benefits). One-fourth of all Police Officers and Firefighter active deaths are assumed to occur in the line of duty.

COST OF LIVING ADJUSTMENT: The cost of living as measured by the Consumer Price Index (CPI) will increase at the rate of 3.5% per year.

MILITARY SERVICE: All Police and Fire members assumed to have 0.40 years of military service at retirement.

ADMINISTRATIVE EXPENSES: For Teachers, budgeted administrative expenses of 1.20% of payroll are added to the normal cost rate. For Police Officers and Firefighters, budgeted administrative expenses of 2.10% of payroll are added to the normal cost rate.



SCHEDULE D

(Continued)

TEACHERS

SALARY INCREASES: Representative values of the assumed annual rates of future salary increases are as follows and include inflation at 4.25% per annum:

Pay Increase Assumptions for an Individual Member			
Years of Service	Merit & Seniority	Inflation & Productivity (Economy)	Total Increase (Next Year)
5	4.20%	4.25%	8.63%
10	3.20	4.25	7.59
15	1.20	4.25	5.50
20	1.20	4.25	5.50
25	1.20	4.25	5.50
30	1.20	4.25	5.50
35	1.20	4.25	5.50

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal, service retirement, and disability are shown in the following tables:

Percent of Members Separating Within the Next Year				
Sample Ages	Withdrawal		Service Retirement	
	5 years of service and up ¹		Under 30 yrs service	30 & up yrs service
	Male	Female		Disability Retirement
25	18.00%	18.00%		0.01%
30	16.00	16.00		0.02
35	12.00	10.00		0.03
40	12.00	8.00		0.07
45	8.00	6.50		0.12
50	8.00	6.50	5.00%	5.00%
55	8.00	6.50	9.00	22.00
60			27.00	28.00
62			22.00	25.00
65			25.00	35.00
70			30.00	30.00
71			25.00	30.00
75			100.00	100.00

¹ Members of any age with less than 5 years of service have withdrawal rates of 18% to 26% for males, and 16% to 23% for females



MORTALITY: The RPH-2014 Blue Collar Mortality Table projected generationally with Scale BB, set back 1 year for males is used for healthy active members, retirees, and beneficiaries. The RPH-2014 Disabled Mortality Table set back 6 years for males and set forward 1 year for females is used for disabled retirees. Mortality improvement is anticipated under these assumptions.



SCHEDULE D

(Continued)

POLICE OFFICERS

SALARY INCREASES: Police Officers are assumed to receive longevity increases applied to individual base pay after 15, 20, 25, and 30 years of service. Representative values of the assumed annual rates of future salary increases before longevity increases are as follows and include inflation at 4.25% per annum:

Pay Increase Assumptions for an Individual Member			
Years of Service	Merit & Seniority	Inflation & Productivity (Economy)	Total Increase (Next Year)
5	2.00%	4.25%	6.34%
10	2.00	4.25	6.34
15	2.00	4.25	6.34
20	1.75	4.25	6.07
25	0.75	4.25	5.03
30	0.00	4.25	4.25

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal, service retirement, and disability are shown in the following tables:

Percent of Members Separating Within the Next Year						
Sample Ages	Withdrawal		Disability Retirement ²		Years of Service	Service Retirement ³
	(5 years of service & up) ¹					
	Males	Females	Males	Females		
20	5.00%	5.00%	0.03%	0.02%	20	15.0%
25	5.00	5.00	0.06	0.05	25	22.0
30	4.25	4.50	0.11	0.10	30	38.0
35	2.75	3.50	0.16	0.15	35	18.0
40	1.50	1.50	0.23	0.30	40	16.0
45	1.50	1.50	0.32	0.40		
50	1.50	1.50	0.42	0.60		
55	1.50	1.50	0.44	0.70		
60	1.50	1.50	0.51	1.00		

¹ Members of any age with less than 5 years of service have a withdrawal rates of 6% to 13% for males, and 5% to 11% for females

² It is assumed that 75% of the disabilities are due to accidents in the line of duty and the "percent of disability" is assumed to be 100%.

³ 100% of active members are assumed to retire at age 65, regardless of service.



MORTALITY: The RPH-2014 Blue Collar Mortality Table projected generationally with Scale BB, set back 1 year for males is used for healthy active members, retirees, and beneficiaries. The RPH-2014 Disabled Mortality Table set back 6 years for males and set forward 1 year for females is used for disabled retirees. Mortality improvement is anticipated under these.



SCHEDULE D

(Continued)

FIREFIGHTERS

SALARY INCREASES: Firefighters are assumed to receive a longevity increases applied to individual base pay after 15, 20, 25, and 30 years of service. Representative values of the assumed annual rates of future salary increases before longevity increases are as follows and include inflation at 4.25% per annum:

Pay Increase Assumptions for an Individual Member			
Years of Service	Merit & Seniority	Inflation & Productivity (Economy)	Total Increase (Next Year)
5	3.00%	4.25%	7.38%
10	3.00	4.25	7.38
15	3.00	4.25	7.38
20	1.25	4.25	5.55
25	1.25	4.25	5.55
30	1.25	4.25	5.55
35	1.25	4.25	5.55

SEPARATIONS FROM ACTIVE SERVICE: Representative values of the assumed annual rates of withdrawal, service retirement, and disability are shown in the following tables:

Percent of Members Separating Within the Next Year				
Sample Ages	Withdrawal		Years of Service	Service Retirement ³
	(5 years of service & up) ¹	Disability Retirement ²		
20	3.00%	0.01%	20	12.5%
25	3.00	0.05	25	12.5
30	2.60	0.18	30	22.0
35	1.80	0.25	35	40.0
40	1.40	0.30	40	40.0
45	1.20	0.35		
50	1.20	0.40		
55	0.80	0.45		
60	0.60	0.50		

¹ Members of any age with less than 5 years of service have a withdrawal rates of 4.0% to 7.5%.

²It is assumed that 75% of the disabilities are due to accidents in the line of duty and the "percent of disability" is assumed to be 100%.

³100% of active members are assumed to retire at age 60, regardless of service.



MORTALITY: The RPH-2014 Blue Collar Mortality Table projected generationally with Scale BB, set back 1 year for males is used for healthy active members, retirees, and beneficiaries. The RPH-2014 Disabled Mortality Table set back 6 years for males and set forward 1 year for females is used for disabled retirees. Mortality improvement is anticipated under these.



SCHEDULE E

SUMMARY OF DISTRICT OF COLUMBIA TEACHERS' RETIREMENT PLAN PROVISIONS AS INTERPRETED FOR VALUATION PURPOSES

Effective Date Established on July 1, 1997. The U.S. Department of the Treasury is responsible for paying all benefits accrued before this date.

DEFINITIONS

Affiliated Employers District of Columbia Public Schools

Covered Members Permanent, temporary, and probationary teachers for the District of Columbia public day schools become members automatically on their date of employment. Other employees covered by the Retirement of Public School Teachers Act – including librarians, principals, and counselors – also become members on their date of employment. Substitute teachers and employees of the Department of School Attendance and Work Permits are not covered. Some former D.C teachers working at charter schools are eligible to remain in the Program.

Service Credit One year of school service is given for each year of employment with DCPS. After five years of service are accrued, additional service may be purchased or credited for service outside of DCPS. For purposes of eligibility and benefit accrual, Federal service is included in the calculation of the normal retirement benefit.

Average Salary Highest 36 consecutive months of pay, divided by three.

Vested Members who accrue five or more years of Service Credit are vested for benefits. If these members leave service they may leave their Member Contribution Accounts with the Plan for a future benefit when reaching eligibility (deferred vested in this report).

CONTRIBUTIONS

Member Contributions Members hired before November 1, 1996 are required to contribute 7% of annual pay. Members hired on or after November 1, 1996 contribute 8% of annual pay. Interest is not credited to each Member's accumulated contributions.

Refund of Member Contributions In the event a member leaves service for a reason other than death or retirement, member contribution accounts are refunded upon request.



SERVICE RETIREMENT

Eligibility

The Age and Service Credit requirements to be eligible for a full Service Retirement are listed below:

- **Members hired before November 1, 1996**

Age	Service Credit
55	30, including 5 years school service
60	20, including 5 years school service
62	5 years school service

- **Members hired on and after November 1, 1996**

Age	Service Credit
Any Age	30, including 5 years school service
60	20, including 5 years school service
62	5 years school service

Benefit

For members hired before November 1, 1996:

- 1.5% of Average Salary times service up to 5 years, plus
- 1.75% of Average Salary times service between 5 and 10 years, plus
- 2.0% of Average Salary times service over 10 years.

For members hired on or after November 1, 1996:

- 2.0% of Average Salary times service.

All members receive a minimum benefit of 1.0% of Average Salary plus \$25 for each year of service.

INVOLUNTARY SERVICE RETIREMENT

Eligibility

The Age and Service Credit requirements to be eligible for a Reduced Service Retirement are listed below:

- **All Members, regardless of date of hire**

Age	Service Credit
Any Age	25, including 5 years school service
50	20, including 5 years school service

Benefit

Service Retirement Benefit reduced by 1/6% per month (or 2% per year) that date of retirement precedes age 55.



DISABILITY RETIREMENT

Eligibility	Active members with five or more years of school service credit are covered (vested) for disability retirement. To be eligible, the member must be found to be incapable of satisfactorily performing the duties of his/her position.
Benefit	Equal to Service Retirement benefit. Minimum benefit is the lesser of a) or b): a) 40% of Average Salary b) Calculated benefit amount by projecting service to age 60.

SURVIVOR BENEFITS

LUMP SUM

Eligibility	Death before completion of 18 months of school service or death without an eligible spouse, child or parent.
Benefit	Refund of member contributions.

SPOUSE/DOMESTIC PARTNER ONLY

Eligibility	Death before retirement and married/registered domestic partnership for at least two years, or have a child by the marriage.
Benefit	55% of Service Retirement benefit. Minimum benefit is the lesser of a) or b): a) 55% of 40% of Average Salary b) 55% of the calculated benefit amount by projecting service to age 60.

SPOUSE/DOMESTIC PARTNER & DEPENDENT CHILDREN

Eligibility	Death before retirement and married/registered domestic partnership for at least two years, or have a child by the marriage. Children must be unmarried and under age 18, or 22 if full-time student. Also, any dependent child because of a disability incurred before age 18. Death does not have to occur before retirement for the children's benefit.
Spouse/Domestic Partner Benefit	55% of Service Retirement benefit. Minimum benefit is the lesser of a) or b): a) 55% of 40% of Average Salary b) 55% of the calculated benefit amount by projecting service to age 60.
Child Benefit	A benefit per child equal to the smallest of a) or b) or c): a) 60% of Average Salary divided by the number of eligible children b) \$6,931* (if hired before 1/1/1980), \$6,693* (if hired between 1/1/1980 and 10/31/1996), or \$6,518* (if hired on or after 11/1/1996) per child c) \$20,958* (if hired before 1/1/1980), \$20,240* (if hired between 1/1/1980 and 10/31/1996), or \$19,710* (if hired on or after 11/1/1996) divided by the number of children.



DEPENDENT CHILDREN ONLY

Eligibility

Children must be unmarried and under age 18, or 22 if full-time student. Also, any dependent child because of a disability incurred before age 18. Death does not have to occur before retirement for the children's benefit.

Benefit

A benefit per child equal to the smallest of a) or b) or c):

- d) 75% of Average Salary divided by the number of eligible children
- e) \$8,470* (if hired before 1/1/1980), \$8,157* (if hired between 1/1/1980 and 10/31/1996), or \$7,097* (if hired on or after 11/1/1996) per child
- f) \$25,612* (if hired before 1/1/1980), \$24,667* (if hired between 1/1/1980 and 10/31/1996), or \$23,910* (if hired on or after 11/1/1996) divided by the number of children.

PARENTS ONLY

Eligibility

Death before retirement and no eligible spouse/domestic partner or children, and parents must receive at least one-half of their total income from member.

Benefit

55% of Service Retirement benefit. Minimum benefit is the lesser of a) or b):

- a) 55% of 40% of Average Salary
- b) 55% of the calculated benefit amount by projecting service to age 60.

*Survivor benefit amounts are as of March, 2017, and are subject to annual inflation adjustments.

DEFERRED VESTED RETIREMENT

Eligibility

Active members with five or more years of school service credit.

Benefit

Benefit is calculated in the same manner as Service Retirement benefit and may be collected starting at age 62.

OPTIONS

Retirement and disability benefits are payable for the life of the retired member. Optional reduced benefits may be elected at the time of retirement to provide for continuation of a reduced benefit amount to a designated beneficiary. Optional forms include:

a) Reduced Annuity with a Maximum Survivor Annuity (to Spouse or Registered Domestic Partner)

Reduced benefit paid to member so that upon member's death, the spouse/domestic partner will receive 55% of the unreduced normal life annuity. Member's benefit is reduced by 2.5% of retirement benefit, up to \$3,600, plus 10% of any retirement benefit over \$3,600.



b) Reduced Annuity with a Partial Survivor Annuity (to Spouse or Registered Domestic Partner)

Reduced benefit paid to member so that upon member's death, the spouse/domestic partner will receive a partial annuity that can range from \$1 up to any amount less than 55% of the unreduced normal life annuity amount. Member's benefit is reduced by the same amount as option a, multiplied by the ratio of the chosen benefit percent to the maximum benefit percent (55%).

c) Reduced Annuity with a Life Insurance Benefit

Member elects a life insurance amount, payable in a lump sum to designated beneficiary upon member's death.

d) Reduced Annuity with a Survivor Annuity to a Person with an Insurable Interest

A 55% joint and survivor annuity where the original benefit is reduced by 10% plus an additional 5% for each full 5 years, up to 25 years, that the designated beneficiary is younger than the member. Maximum reduction is 40% for any beneficiary who is 25 or more years younger than the member.

COST-OF-LIVING ADJUSTMENTS (COLA)

Each year on March 1st, benefits which have been paid for at least twelve months preceding March 1st may be increased. The increase is equal to the annual CPI. COLA's are included in benefit payments on and after April 1st. If member's retirement is effective after March 1 of the preceding year, the COLA amount will be prorated.

For members hired on or after November 1, 1996, the cost-of-living increase is limited to 3% per year.



SCHEDULE E

(Continued)

SUMMARY OF DISTRICT OF COLUMBIA POLICE OFFICERS & FIREFIGHTERS' RETIREMENT PLAN PROVISIONS AS INTERPRETED FOR VALUATION PURPOSES

Effective Date Established on July 1, 1997. The U.S. Department of the Treasury is responsible for paying all benefits accrued before this date.

DEFINITIONS

Affiliated Employers The District of Columbia Metropolitan Police Department (MPD) and the District of Columbia Department of Fire and Emergency Medical Services (FEMS).

Covered Members Sworn Police Officers and Firefighters become members on their first day of active duty (cadets are not eligible). Membership is not automatic for uniformed EMT Firefighters.

Service Credit One year of service is given for each year of employment with MPD or FEMS. Additional service may be purchased or credited for lateral transfer service, EMT service, prior military service, and certain civilian service. For purposes of eligibility and benefit accrual, Federal service is included in the calculation of the normal retirement benefit.

Average Salary For members hired before February 15, 1980, the highest 12 consecutive months of pay. For members hired on or after February 15, 1980, the highest 36 consecutive months of pay, divided by 3. Base pay does not include overtime, holiday or military pay.

Vested Members who accrue five or more years of Service Credit are vested for benefits. If these members leave service, they may leave their Member Contribution Accounts with the Plan for a future benefit when reaching eligibility (deferred vested in this report).

CONTRIBUTIONS

Member Contributions Members hired before November 10, 1996 contribute 7.0% of salary. Members hired on or after November 10, 1996 contribute 8.0% of salary. Member contributions, together with any purchased service credit payments, are credited to individual Member Contribution Accounts. No interest is accrued on contributions.

Refund of Member Contributions In the event a member leaves service for a reason other than death or retirement, member contribution accounts are refunded upon request.



SERVICE RETIREMENT

Eligibility

The Age and Service Credit requirements to be eligible for a full Service Retirement are listed below:

- **Members hired before November 10, 1996**

Age	Service Credit
Any age	20 years departmental service (only if hired before 2/15/1980)
50	25 years departmental service
60	5 years departmental service

- **Members hired on and after November 10, 1996**

Age	Service Credit
Any Age	25 years departmental service
60	

Benefit

For members hired before November 10, 1996:

- 2.5% of Average Salary times departmental service up to 25 years (20 years if hired before 2/15/1980), plus
- 3.0% of Average Salary times departmental service over 25 years (or 20 years if hired before 2/15/1980), plus
- 2.5% of Average Salary times purchased or credited service.

For members hired on or after November 10, 1996:

- 2.5% of Average Salary times total service.

All members are subject to a maximum benefit of 80% of Average Salary.

SERVICE-RELATED DISABILITY RETIREMENT

Eligibility

Disabled as a result of an injury or disease that permanently disables him/her for the performance of duty.

Benefit

For members hired before February 15, 1980:

2.5% of Average Salary times total years of service, subject to a minimum of 66-2/3% of Average Salary and a maximum of 70% of Average Salary.

For members hired on or after February 15, 1980:

70% of final pay times percentage of disability, subject to a minimum of 40% of final pay.



NONSERVICE-RELATED DISABILITY RETIREMENT

Eligibility	Active members with five or more years of departmental service are covered (vested) for disability retirement. The member is eligible if found that the disability precludes further service with his/her department.
Benefit	<p>For members hired before February 15, 1980: 2.0% of Average Salary times total years of service, subject to a minimum of 40% of Average Salary and a maximum of 70% of Average Salary.</p> <p>For members hired on or after February 15, 1980: 70% of final pay times percentage of disability, subject to a minimum of 30% of final pay.</p>

SURVIVOR BENEFITS

LUMP SUM

Eligibility	Death before retirement without an eligible spouse or child.
Benefit	Refund of member contributions according to Plan's order of precedence.

LUMP SUM – DEATH IN LINE OF DUTY

Eligibility	Death occurring in the line of duty, not resulting from willful misconduct.
Benefit	\$50,000

SPOUSE ONLY – DEATH IN LINE OF DUTY

Eligibility	Member killed in line of duty, after December 29, 1993.
Benefit	100% of final pay.

SPOUSE ONLY – DEATH NOT IN LINE OF DUTY

Eligibility	Member death, not in line of duty, after December 29, 1993. If retired, must be married for at least one year or have a child by the marriage.
Benefit	<p>40% of the greater of a) or b):</p> <ul style="list-style-type: none">a) Average Salaryb) Salary for step 6 salary class 1 of the DC Police and Fireman's Salary Act in effect, adjusted for cost-of-living increases if death occurs after retirement. <p>Benefit cannot be higher than rate of pay at death (or retirement if death occurs after retirement).</p>



SPOUSE & DEPENDENT CHILDREN

Eligibility

Member death, not in line of duty, after December 29, 1993. If retired, must be married for at least one year or have a child by the marriage. Children must be unmarried and under age 18, or 22 if full-time student. Also, any dependent child because of a disability incurred before age 18. Death does not have to occur before retirement for the children's benefit.

Spouse Benefit

40% of the greater of a) or b):

- a) Average Salary
- b) Salary for step 6 salary class 1 of the DC Police and Fireman's Salary Act in effect, adjusted for cost-of-living increases if death occurs after retirement.

Benefit cannot be higher than rate of pay at death (or retirement if death occurs after retirement).

Child Benefit

A benefit per child equal to the smallest of a) or b) or c):

- a) 60% of Average Salary divided by the number of eligible children
- b) \$4,077* (if hired before 11/1/1996) or \$3,989* (if hired on or after 11/1/1996) per child
- c) \$12,232* (if hired before 11/1/1996) or \$11,967* (if hired on or after 11/1/1996) divided by the number of children.

DEPENDENT CHILDREN ONLY

Eligibility

Children must be unmarried and under age 18, or 22 if full-time student. Also, any dependent child because of a disability incurred before age 18. Death does not have to occur before retirement for the children's benefit.

Benefit

75% of Average Salary divided by the number of eligible children, adjusted for cost-of-living increases.

*Survivor benefit amounts are as of March, 2017, and are subject to annual inflation adjustments.

DEFERRED VESTED RETIREMENT

Eligibility

Active members with five or more years of departmental service.

Benefit

Benefit is calculated in the same manner as Service Retirement benefit and may be collected starting at age 55.



OPTIONS

Retirement and disability benefits are payable for the life of the retired member. This includes an unreduced joint and survivor annuity as defined above in the "Survivor Benefits – Spouse and Dependent Children" sections.

An optional reduced benefit may be elected at the time of retirement to provide for an additional survivor benefit to a designated beneficiary. Member's original annuity is reduced by 10% and that amount is added to the survivor's benefit. If the designated beneficiary is more than five years younger than the member, the additional amount will be reduced by 5% for each full five years that the beneficiary is younger than the member, subject to a maximum of 40%.

COST-OF-LIVING ADJUSTMENTS (COLA)

Each year on March 1st, benefits which have been paid for at least twelve months preceding March 1st may be increased. The increase is equal to the annual CPI. COLA's are included in benefit payments on and after April 1st. If member's retirement is effective after March 1 of the preceding year, the COLA amount will be prorated.

For members hired on or after November 10, 1996, the cost-of-living increase is limited to 3% per year. Members hired before February 15, 1980, receive equalization pay, which is defined as the percentage increase of active employees' salary increases. Equalization increases are not paid to beneficiaries.



SCHEDULE F

SCHEDULES OF MEMBER DATA

TABLE 1

**RECONCILIATION OF MEMBER DATA
AS OF OCTOBER 1, 2017**

TEACHERS' RETIREMENT PLAN

	Actives	Retirees	Disabled	Beneficiaries	Vested Terms	Total
1. Headcounts as of October 1, 2016	5,141	3,617	116	149	1,176	10,199
2. Change in status during the year:						
a. Death		(63)	(6)	(3)		(72)
b. Disabled	(1)	(1)	2			
c. Retired	(61)	84			(23)	
d. Vested Termination	(240)				240	
e. Nonvested Termination	(403)					(403)
f. Benefits Expired/Refund	(158)		(2)	(2)	(34)	(196)
3. New member due to:						
a. New Hire	817					817
b. Rehire	104	(2)			(29)	73
c. Death of Participant				9		9
d. Adjustments		1				1
4. Headcounts as of October 1, 2017	5,199	3,636	110	153	1,330	10,428



SCHEDULE F

SCHEDULES OF MEMBER DATA

TABLE 2

**RECONCILIATION OF MEMBER DATA
AS OF OCTOBER 1, 2017**

POLICE OFFICERS' RETIREMENT PLAN

	Actives	Retirees	Disabled	Beneficiaries	Vested Terms	Total
1. Headcounts as of October 1, 2016	3,651	1,593	310	362	197	6,113
2. Change in status during the year:						
a. Death		(15)	(1)	(5)		(21)
b. Disabled	(2)		3		(1)	
c. Retired	(147)	158			(11)	
d. Vested Termination	(88)				88	
e. Nonvested Termination	(47)					(47)
f. Benefits Expired/Refund	(34)		(2)	(12)	(18)	(66)
3. New member due to:						
a. New Hire	230					230
b. Rehire	21				(9)	12
c. Death of Participant				16		16
d. Adjustments	(1)			12		11
4. Headcounts as of October 1, 2017	3,583	1,736	310	373	246	6,248

**SCHEDULE F****SCHEDULES OF MEMBER DATA****TABLE 3****RECONCILIATION OF MEMBER DATA
AS OF OCTOBER 1, 2017****FIREFIGHTERS' RETIREMENT PLAN**

	Actives	Retirees	Disabled	Beneficiaries	Vested Terms	Total
1. Headcounts as of October 1, 2016	1,708	529	84	125	96	2,542
2. Change in status during the year:						
a. Death		(1)	(1)			(2)
b. Disabled	(3)		3			
c. Retired	(37)	44			(7)	
d. Vested Termination	(14)				14	
e. Nonvested Termination	(14)					(14)
f. Benefits Expired/Refund	(2)			(3)	(4)	(9)
3. New member due to:						
a. New Hire	82					82
b. Rehire	9				(5)	4
c. Death of Participant				2		2
d. Adjustments		3	1	10		14
4. Headcounts as of October 1, 2017	1,729	575	87	134	94	2,619



SCHEDULE F

TABLE 4

**SCHEDULE OF ACTIVE MEMBER DATA
AS OF OCTOBER 1, 2017**

TEACHERS' RETIREMENT PLAN

Attained Age	Completed Years of Service							Total	Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+		
Under 20	0	0	0	0	0	0	0	0	\$ 0
20 to 24	58	0	0	0	0	0	0	58	\$ 3,224,910
25 to 29	693	61	1	0	0	0	0	755	\$ 47,062,487
30 to 34	724	307	36	1	0	0	0	1,068	\$ 81,551,898
35 to 39	501	252	121	10	0	0	0	884	\$ 77,274,414
40 to 44	341	180	116	91	7	0	0	735	\$ 69,738,939
45 to 49	195	125	83	123	53	7	0	586	\$ 56,621,153
50 to 54	106	60	56	54	36	50	16	378	\$ 37,649,115
55 to 59	57	35	43	56	36	50	44	321	\$ 32,451,276
60 to 64	41	37	44	54	23	28	49	276	\$ 27,916,517
65 to 69	18	11	15	13	8	19	23	107	\$ 11,060,158
70 & Over	3	4	1	8	4	2	9	31	\$ 3,211,285
Total	2,737	1,072	516	410	167	156	141	5,199	\$ 447,762,152

Average Age: 40.65

Average Service: 7.81



SCHEDULE F

TABLE 5

**SCHEDULE OF ACTIVE MEMBER DATA
AS OF OCTOBER 1, 2017**

POLICE OFFICERS' RETIREMENT PLAN

Attained Age	Completed Years of Service								Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+	Total	
Under 20	0	0	0	0	0	0	0	0	\$ 0
20 to 24	97	0	0	0	0	0	0	97	\$ 5,805,305
25 to 29	444	52	3	0	0	0	0	499	\$ 32,280,002
30 to 34	231	252	87	0	0	0	0	570	\$ 41,231,142
35 to 39	86	123	294	39	0	0	0	542	\$ 43,320,492
40 to 44	24	40	146	206	70	0	0	486	\$ 42,590,358
45 to 49	6	35	108	175	165	223	0	712	\$ 67,682,776
50 to 54	8	15	47	90	90	253	6	509	\$ 50,071,611
55 to 59	0	7	13	30	19	51	23	143	\$ 14,080,768
60 to 64	0	2	2	6	3	5	7	25	\$ 2,472,119
65 to 69	0	0	0	0	0	0	0	0	\$ 0
70 & Over	0	0	0	0	0	0	0	0	\$ 0
Total	896	526	700	546	347	532	36	3,583	\$ 299,534,573

Average Age: 40.17

Average Service: 13.62



SCHEDULE F

TABLE 6

**SCHEDULE OF ACTIVE MEMBER DATA
AS OF OCTOBER 1, 2017**

FIREFIGHTERS' RETIREMENT PLAN

Attained Age	Completed Years of Service							Total	Payroll
	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30+		
Under 20	0	0	0	0	0	0	0	0	\$ 0
20 to 24	90	7	0	0	0	0	0	97	\$ 5,393,350
25 to 29	83	37	0	0	0	0	0	120	\$ 6,979,323
30 to 34	62	107	157	1	0	0	0	327	\$ 22,693,293
35 to 39	11	78	181	18	0	0	0	288	\$ 21,423,880
40 to 44	4	17	129	75	19	8	0	252	\$ 21,220,113
45 to 49	4	1	46	100	44	120	0	315	\$ 29,841,453
50 to 54	2	1	14	24	69	85	20	215	\$ 22,503,566
55 to 59	0	0	3	7	17	48	28	103	\$ 10,931,523
60 to 64	0	0	1	0	0	2	9	12	\$ 1,383,271
65 & Over	0	0	0	0	0	0	0	0	\$ 0
Total	256	248	531	225	149	263	57	1,729	\$ 142,369,772

Average Age: 40.35

Average Service: 14.80



SCHEDULE F

TABLE 7

SCHEDULE OF RETIREE MEMBER DATA AS OF OCTOBER 1, 2017

TEACHERS' RETIREMENT PLAN DISTRICT ONLY

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	5	\$25,760	5	\$25,760
20 to 24	0	\$0	0	\$0	2	\$6,796	2	\$6,796
25 to 29	0	\$0	0	\$0	0	\$0	0	\$0
30 to 34	0	\$0	0	\$0	0	\$0	0	\$0
35 to 39	0	\$0	0	\$0	2	\$16,860	2	\$16,860
40 to 44	0	\$0	1	\$33,972	3	\$31,119	4	\$65,091
45 to 49	0	\$0	5	\$181,284	0	\$0	5	\$181,284
50 to 54	6	\$203,480	5	\$179,628	1	\$2,480	12	\$385,588
55 to 59	66	\$2,273,062	13	\$476,004	9	\$107,663	88	\$2,856,729
60 to 64	349	\$10,663,514	25	\$723,818	15	\$178,239	389	\$11,565,571
65 to 69	1,013	\$23,062,979	38	\$687,226	33	\$197,826	1,084	\$23,948,031
70 to 74	1,335	\$20,430,481	19	\$291,587	38	\$234,978	1,392	\$20,957,046
75 to 79	615	\$8,030,287	4	\$25,482	29	\$149,440	648	\$8,205,209
80 to 84	201	\$2,236,500	0	\$0	11	\$102,959	212	\$2,339,459
85 to 89	42	\$500,835	0	\$0	5	\$49,915	47	\$550,750
90 to 94	8	\$90,519	0	\$0	0	\$0	8	\$90,519
95 & Over	1	\$5,976	0	\$0	0	\$0	1	\$5,976
Total	3,636	\$67,497,633	110	\$2,599,001	153	\$1,104,035	3,899	\$71,200,669

Average Age: 68.76



SCHEDULE F

TABLE 8

**SCHEDULE OF RETIREE MEMBER DATA
AS OF OCTOBER 1, 2017**

**TEACHERS' RETIREMENT PLAN
FEDERAL PLUS DISTRICT**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	5	\$33,144	5	\$33,144
20 to 24	0	\$0	0	\$0	3	\$20,316	3	\$20,316
25 to 29	0	\$0	0	\$0	0	\$0	0	\$0
30 to 34	0	\$0	0	\$0	0	\$0	0	\$0
35 to 39	0	\$0	0	\$0	2	\$16,860	2	\$16,860
40 to 44	0	\$0	1	\$33,972	3	\$45,744	4	\$79,716
45 to 49	0	\$0	5	\$181,284	2	\$15,396	7	\$196,680
50 to 54	6	\$282,324	5	\$179,628	2	\$14,544	13	\$476,496
55 to 59	66	\$3,282,600	17	\$566,976	14	\$266,964	97	\$4,116,540
60 to 64	350	\$17,459,688	27	\$879,204	17	\$410,220	394	\$18,749,112
65 to 69	1,031	\$48,878,340	46	\$1,452,444	45	\$840,504	1,122	\$51,171,288
70 to 74	1,445	\$68,846,028	59	\$1,835,460	78	\$1,498,572	1,582	\$72,180,060
75 to 79	926	\$43,815,204	36	\$1,046,364	83	\$1,572,840	1,045	\$46,434,408
80 to 84	693	\$32,896,392	39	\$1,217,711	57	\$1,285,824	789	\$35,399,927
85 to 89	474	\$21,548,532	23	\$701,208	56	\$1,368,768	553	\$23,618,508
90 to 94	243	\$10,308,396	19	\$692,424	43	\$1,060,800	305	\$12,061,620
95 & Over	108	\$5,196,288	14	\$583,536	18	\$472,404	140	\$6,252,228
Total	5,342	\$252,513,792	291	\$9,370,211	428	\$8,922,900	6,061	\$270,806,903



SCHEDULE F

TABLE 9

**SCHEDULE OF RETIREE MEMBER DATA
AS OF OCTOBER 1, 2017**

**POLICE OFFICERS' RETIREMENT PLAN
DISTRICT ONLY**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	39	\$325,261	39	\$325,261
20 to 24	0	\$0	0	\$0	5	\$87,356	5	\$87,356
25 to 29	0	\$0	2	\$46,452	0	\$0	2	\$46,452
30 to 34	0	\$0	2	\$48,444	1	\$28,116	3	\$76,560
35 to 39	0	\$0	8	\$285,564	0	\$0	8	\$285,564
40 to 44	0	\$0	18	\$617,196	5	\$129,756	23	\$746,952
45 to 49	2	\$42,535	57	\$2,156,064	32	\$588,936	91	\$2,787,535
50 to 54	481	\$22,243,055	90	\$3,201,468	50	\$854,965	621	\$26,299,488
55 to 59	478	\$19,758,384	67	\$1,688,799	45	\$679,845	590	\$22,127,028
60 to 64	399	\$10,707,180	46	\$877,660	69	\$1,020,713	514	\$12,605,553
65 to 69	270	\$4,002,547	16	\$150,246	64	\$1,052,117	350	\$5,204,910
70 to 74	92	\$662,969	4	\$45,285	42	\$600,607	138	\$1,308,861
75 to 79	14	\$122,641	0	\$0	13	\$287,626	27	\$410,267
80 to 84	0	\$0	0	\$0	4	\$54,479	4	\$54,479
85 to 89	0	\$0	0	\$0	4	\$96,840	4	\$96,840
90 to 94	0	\$0	0	\$0	0	\$0	0	\$0
95 & Over	0	\$0	0	\$0	0	\$0	0	\$0
Total	1,736	\$57,539,311	310	\$9,117,178	373	\$5,806,617	2,419	\$72,463,106

Average Age: 57.17



SCHEDULE F

TABLE 10

**SCHEDULE OF RETIREE MEMBER DATA
AS OF OCTOBER 1, 2017**

**POLICE OFFICERS' RETIREMENT PLAN
FEDERAL PLUS DISTRICT**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	43	\$492,912	43	\$492,912
20 to 24	0	\$0	0	\$0	7	\$149,916	7	\$149,916
25 to 29	0	\$0	2	\$46,452	0	\$0	2	\$46,452
30 to 34	0	\$0	2	\$48,444	2	\$32,136	4	\$80,580
35 to 39	0	\$0	8	\$285,564	0	\$0	8	\$285,564
40 to 44	0	\$0	18	\$617,196	6	\$159,120	24	\$776,316
45 to 49	3	\$78,312	60	\$2,218,176	37	\$1,077,864	100	\$3,374,352
50 to 54	481	\$32,770,776	94	\$3,288,252	58	\$1,406,196	633	\$37,465,224
55 to 59	479	\$33,749,604	95	\$3,328,572	74	\$2,129,124	648	\$39,207,300
60 to 64	466	\$31,887,096	99	\$4,260,888	144	\$4,163,097	709	\$40,311,081
65 to 69	813	\$46,101,768	146	\$6,589,476	232	\$6,750,296	1,191	\$59,441,540
70 to 74	823	\$46,071,288	162	\$7,208,292	256	\$7,733,340	1,241	\$61,012,920
75 to 79	424	\$23,944,776	104	\$5,161,956	204	\$6,442,092	732	\$35,548,824
80 to 84	191	\$11,022,624	73	\$3,974,100	177	\$5,836,140	441	\$20,832,864
85 to 89	57	\$3,995,904	56	\$3,031,812	114	\$3,782,832	227	\$10,810,548
90 to 94	14	\$1,151,664	30	\$1,803,312	66	\$2,011,308	110	\$4,966,284
95 & Over	1	\$93,744	9	\$632,976	27	\$888,432	37	\$1,615,152
Total	3,752	\$230,867,556	958	\$42,495,468	1,447	\$43,054,805	6,157	\$316,417,829

Average Age: 67.51



SCHEDULE F

TABLE 11

**SCHEDULE OF RETIREE MEMBER DATA
AS OF OCTOBER 1, 2017**

**FIREFIGHTERS' RETIREMENT PLAN
DISTRICT ONLY**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	23	\$241,602	23	\$241,602
20 to 24	0	\$0	0	\$0	3	\$7,179	3	\$7,179
25 to 29	0	\$0	1	\$21,420	1	\$27,186	2	\$48,606
30 to 34	0	\$0	4	\$109,200	2	\$4,559	6	\$113,759
35 to 39	0	\$0	5	\$159,120	0	\$0	5	\$159,120
40 to 44	0	\$0	6	\$238,320	2	\$59,373	8	\$297,693
45 to 49	0	\$0	13	\$521,424	8	\$261,057	21	\$782,481
50 to 54	47	\$2,373,429	14	\$475,932	12	\$272,845	73	\$3,122,206
55 to 59	168	\$7,548,069	8	\$194,990	20	\$418,731	196	\$8,161,790
60 to 64	207	\$7,377,956	18	\$409,021	19	\$526,515	244	\$8,313,492
65 to 69	110	\$2,411,670	16	\$192,306	18	\$286,628	144	\$2,890,604
70 to 74	39	\$507,946	2	\$1,621	15	\$296,937	56	\$806,504
75 to 79	4	\$48,752	0	\$0	6	\$95,604	10	\$144,356
80 to 84	0	\$0	0	\$0	5	\$133,775	5	\$133,775
85 to 89	0	\$0	0	\$0	0	\$0	0	\$0
90 to 94	0	\$0	0	\$0	0	\$0	0	\$0
95 & Over	0	\$0	0	\$0	0	\$0	0	\$0
Total	575	\$20,267,822	87	\$2,323,354	134	\$2,631,991	796	\$25,223,167

Average Age: 57.85



SCHEDULE F

TABLE 12

**SCHEDULE OF RETIREE MEMBER DATA
AS OF OCTOBER 1, 2017**

**FIREFIGHTERS' RETIREMENT PLAN
FEDERAL PLUS DISTRICT**

Attained Age	Service Retirement		Disability Retirement		Survivors and Beneficiaries		Total	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
Under 20	0	\$0	0	\$0	24	\$331,488	24	\$331,488
20 to 24	0	\$0	0	\$0	4	\$16,260	4	\$16,260
25 to 29	0	\$0	1	\$21,420	1	\$48,276	2	\$69,696
30 to 34	0	\$0	4	\$109,200	2	\$8,148	6	\$117,348
35 to 39	0	\$0	5	\$159,120	1	\$28,428	6	\$187,548
40 to 44	0	\$0	6	\$238,320	2	\$67,872	8	\$306,192
45 to 49	0	\$0	13	\$521,424	9	\$346,392	22	\$867,816
50 to 54	47	\$3,610,344	14	\$475,932	14	\$428,040	75	\$4,514,316
55 to 59	168	\$12,948,984	13	\$417,216	27	\$708,780	208	\$14,074,980
60 to 64	215	\$16,581,564	35	\$1,656,708	38	\$1,202,784	288	\$19,441,056
65 to 69	153	\$11,518,776	44	\$2,322,408	50	\$1,539,612	247	\$15,380,796
70 to 74	208	\$13,989,036	53	\$2,725,704	79	\$2,426,050	340	\$19,140,790
75 to 79	205	\$13,320,084	77	\$4,354,944	96	\$2,933,964	378	\$20,608,992
80 to 84	94	\$6,149,004	40	\$2,038,860	58	\$1,878,120	192	\$10,065,984
85 to 89	42	\$2,990,532	29	\$1,591,080	62	\$2,173,584	133	\$6,755,196
90 to 94	14	\$1,039,524	13	\$822,312	50	\$1,789,344	77	\$3,651,180
95 & Over	0	\$0	8	\$523,091	16	\$607,008	24	\$1,130,099
Total	1,146	\$82,147,848	355	\$17,977,739	533	\$16,534,150	2,034	\$116,659,737



SCHEDULE G

SCHEDULE OF RETIREES ADDED TO AND REMOVED FROM ROLLS

**DISTRICT BENEFIT ONLY
(\$ IN THOUSANDS)**

Fiscal Year Ended	Plan	<u>Added</u>		<u>Removed</u>		Increase Due to Plan Amendments	<u>Rolls at End of Year</u>		Percentage Increase in Annual Allowances	Average Annual Allowances
		Number	Annual Allowances	Number	Annual Allowances		Number	Annual Allowances		
September 30, 2013	Teachers	202	\$5,289	39	\$436	\$706	3,448	\$52,966	11.7%	\$15
	Police	110	\$3,746	24	\$248	\$302	1,584	\$34,392	12.4%	\$22
	Fire	64	\$2,308	6	\$50	\$42	599	\$15,138	17.9%	\$25
September 30, 2014	Teachers	218	\$6,079	65	\$955	\$597	3,601	\$58,687	10.8%	\$16
	Police	157	\$6,139	34	\$399	\$139	1,707	\$40,271	17.1%	\$24
	Fire	80	\$3,326	21	\$496	\$211	658	\$18,179	20.1%	\$28
September 30, 2015	Teachers	183	\$4,950	66	\$822	\$84	3,718	\$62,899	7.2%	\$17
	Police	240	\$10,865	24	\$189	-\$535	1,923	\$50,412	25.2%	\$26
	Fire	44	\$1,953	16	\$235	-\$95	686	\$19,802	8.9%	\$29
September 30, 2016	Teachers	222	\$6,844	58	\$1,021	\$68	3,882	\$68,790	9.4%	\$18
	Police	381	\$15,394	39	\$822	-\$1,397	2,265	\$63,587	26.1%	\$28
	Fire	60	\$2,811	8	\$200	-\$262	738	\$22,151	11.9%	\$30
September 30, 2017	Teachers	96	\$2,599	79	\$1,211	\$1,023	3,899	\$71,201	3.5%	\$18
	Police	189	\$8,485	35	\$537	\$928	2,419	\$72,463	14.0%	\$30
	Fire	63	\$2,802	5	\$141	\$411	796	\$25,223	13.9%	\$32



SCHEDULE G

SCHEDULE OF RETIREES ADDED TO AND REMOVED FROM ROLLS

**FEDERAL PLUS DISTRICT BENEFIT
(\$ IN THOUSANDS)**

Fiscal Year Ended	Plan	<u>Added</u>		<u>Removed</u>		Increase Due to Plan Amendments	<u>Rolls at End of Year</u>		Percentage Increase in Annual Allowances	Average Annual Allowances
		Number	Annual Allowances	Number	Annual Allowances		Number	Annual Allowances		
September 30, 2013	Teachers	390	\$7,883	348	\$6,676	\$5,448	6,172	\$263,691	2.6%	\$43
	Police	164	\$8,218	172	\$7,493	\$3,572	5,695	\$267,499	1.6%	\$47
	Fire	80	\$4,327	60	\$2,896	\$1,322	1,994	\$105,520	2.7%	\$53
September 30, 2014	Teachers	245	\$10,540	228	\$8,792	\$4,251	6,189	\$269,690	2.3%	\$44
	Police	240	\$13,009	218	\$8,382	\$3,689	5,717	\$275,815	3.1%	\$48
	Fire	121	\$6,969	89	\$3,880	\$1,391	2,026	\$110,000	4.2%	\$54
September 30, 2015	Teachers	197	\$8,040	249	\$17,224	\$7,071	6,137	\$267,577	-0.8%	\$44
	Police	312	\$19,957	168	\$9,132	\$4,269	5,861	\$290,909	5.5%	\$50
	Fire	70	\$3,988	103	\$5,370	\$2,006	1,993	\$110,624	0.6%	\$56
September 30, 2016	Teachers	446	\$15,992	400	\$18,508	\$5,143	6,183	\$270,204	1.0%	\$44
	Police	465	\$25,416	216	\$9,739	-\$1,317	6,110	\$305,269	4.9%	\$50
	Fire	83	\$4,887	68	\$3,260	-\$16	2,008	\$112,235	1.5%	\$56
September 30, 2017	Teachers	107	\$3,937	229	\$8,829	\$5,495	6,061	\$270,807	0.2%	\$45
	Police	261	\$14,438	214	\$9,061	\$5,772	6,157	\$316,418	3.7%	\$51
	Fire	84	\$4,919	58	\$2,727	\$2,233	2,034	\$116,660	3.9%	\$57



SCHEDULE H

ANALYSIS OF FINANCIAL EXPERIENCE

Gains & Losses in Actuarial Accrued Liabilities Resulting from Difference Between Assumed Experience & Actual Experience (\$ Millions)

Type of Activity	Teachers	Police	Fire	Police and Fire	Total
Age & Service Retirements. If members retire at older ages, there is a gain. If younger ages, a loss.	\$1.1	(\$0.8)	\$(1.1)	\$(1.9)	(\$0.8)
Disability Retirements. If disability claims are less than assumed, there is a gain. If more claims, a loss.	\$0.4	\$4.6	\$1.3	\$5.9	\$6.3
Death-in Service Benefits. If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	\$0.3	\$1.0	\$0.4	\$1.4	\$1.7
Withdrawal From Employment. If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	\$5.9	\$5.6	(\$6.2)	(\$0.6)	\$5.3
Pay Increases. If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	\$32.7	\$50.8	\$58.3	\$109.1	\$141.8
New Members. Additional unfunded actuarial accrued liability will produce a loss.	(\$32.8)	(\$20.4)	(\$12.8)	(\$33.2)	(\$66.0)
Investment Income. If there is a greater investment income than assumed, there is a gain. If less income, a loss.	\$14.2	\$25.2	\$10.7	\$35.9	\$50.1
Death After Retirement. If retirants live longer than assumed, there is a loss. If not as long, a gain.	\$8.3	\$1.5	\$(2.1)	\$(0.6)	\$7.7
COLA/CPI. If inflation is different than expected, gains or losses can occur.	\$17.2	\$27.9	\$8.6	\$36.5	\$53.7
Other. Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.	<u>\$15.8</u>	<u>\$(4.3)</u>	<u>\$(3.0)</u>	<u>\$(7.3)</u>	<u>\$8.5</u>
Gain (or Loss) During Year From Financial Experience	\$63.1	\$91.1	\$54.1	\$145.2	\$208.3
Non-Recurring Items. Adjustments for plan amendments, assumption changes, method changes or audit changes.	<u>\$(50.0)</u>	<u>\$(125.5)</u>	<u>\$7.5</u>	<u>\$(118.0)</u>	<u>\$(168.0)</u>
Composite Gain (or Loss) During Year	<u>\$13.1</u>	<u>\$(34.4)</u>	<u>\$61.6</u>	<u>\$27.2</u>	<u>\$40.3</u>