



Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

Pension Funding Report
Ohio Police & Fire Pension Fund
Actuarial Valuation as of
January 1, 2019





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 2019

Board of Trustees
Ohio Police & Fire
Pension Fund 140 East
Town Street
Columbus, Ohio
43215

Members of the Board:

Cavanaugh Macdonald (CMC) is pleased to present this report on the results of the actuarial valuation of the Ohio Police & Fire Pension Fund (OP&F). This report presents the results of the annual actuarial valuation of the assets and liabilities of OP&F as of January 1, 2019, prepared in accordance with Chapter 742 of the Ohio Revised Code (ORC), as amended by Senate Bill No. 340. The valuation takes into account all of the promised benefits to which members are entitled, including pension and survivor benefits.

The principal results of the valuation do not take into account Medicare Part B premium reimbursements or any other health care benefits. However, at the request of the Ohio Retirement Study Council (ORSC), supplemental results have been prepared that do take into account the liability for Medicare Part B premium reimbursements and are presented in Table 1A in the report.

The purpose of the valuation is to determine the financial status of OP&F on an actuarial basis. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. CMC will not accept any liability for any statement made about the report without prior review by CMC.

Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

This report does not include accounting disclosure information under Governmental Accounting Standards Board (GASB) Statement Nos. 67 and 68. CMC will provide disclosure information under Statement Nos. 67 and 68 in a separate report after OP&F’s 2019 year-end. CMC also prepares a separate valuation of OP&F retiree health care benefits.

3802 Raynor Pkwy, Suite 202, Bellevue, NE 68123
Phone (402) 905-4461 • Fax (402) 905-4464
www.CavMacConsulting.com
Offices in Kennesaw, GA • Bellevue, NE



The valuation was based on the actuarial assumptions and methods that have been adopted by the Board of Trustees, including a valuation interest rate of 8.00 percent per annum compounded annually. The assumptions were effective January 1, 2017 and recommended by the actuary based on a five-year experience review covering the period 2012-2016. The next experience review will cover the five-year period 2017-2021. Actuarial Standards of Practice require that the likelihood and extent of future mortality improvements be considered. We have reflected future mortality improvement in the valuation.

Assets and Membership Data

OP&F reported to the actuary the individual data for members as of the valuation date. While we did not verify the data at their source, we did perform tests for internal consistency and reasonableness. The amount of assets in the pension trust fund taken into account in the valuation was based on financial statements prepared for us by OP&F.

An assumption is made by CMC to account for salary adjustments reported by employers assumed to occur after the census information has been provided to CMC by OP&F.

Funding Objectives and Progress

The actuary uses an actuarial cost method to determine the portion of OP&F's liabilities accrued by the members as of the valuation date and the portion that is attributable to future years of service. The rate of contribution necessary to systematically fund the future service liabilities, the normal cost rate, is calculated under the cost method to be a level percentage of active member payroll. The portion of the liabilities accrued as of the valuation date, the actuarial accrued liability (AAL), is compared to a market-related, actuarial value of OP&F's assets. The amount of liabilities in excess of the assets is called the unfunded actuarial accrued liability (UAAL).

The actuary determines how many years are required by OP&F to completely amortize the UAAL (the funding period), using the member and employer contributions reduced by the amount allocated to health care and the amount of normal cost for the year. For 2003-2012, the funding period was infinite years, meaning the annual contribution toward the unfunded when compared to the unfunded amount was not sufficient to pay it off. As a result of benefit and member contribution changes under Senate Bill No. 340, changes to the DROP program, and a reduction in the contribution allocation to the Health Care Stabilization Fund by the Board of Trustees, and favorable asset investment gains, the pension funding period has decreased from 47 years as of January 1, 2013 to 28 years as of January 1, 2018. As of January 1, 2019, the funding period increased to 29 years.

Section 742.16 of the ORC, as adopted by Senate Bill No. 82, sets forth an objective that the funding period is no more than 30 years. If the funding period exceeds 30 years, a plan shall be developed and presented by the Board of Trustees to the ORSC to reduce the funding period to not more than 30 years. Section 742.14 of the ORC, as amended by Senate Bill No. 340, sets forth that the 30-year funding analysis be performed every three years and the 30-year funding plan, if necessary, be developed and presented not later than 90 days after the Board of Trustees' receipt of the actuarial valuation and 30-year funding analysis. The most recent triennial analysis is based on the January 1, 2019 actuarial valuation, and showed the funding period was 29 years, so no 30-year funding plan is required. The next analysis will be performed based on the January 1, 2022 actuarial valuation.

The funded ratio (i.e., the ratio of actuarial assets to the AAL) determined as of January 1, 2019 is 69.4 percent, compared to 69.9 percent determined as of January 1, 2018. If measured using the market value of



assets, the funded ratio would be lower at 65.6 percent on account of net investment losses not yet reflected in the actuarial assets. Taking into account the AAL for Medicare Part B premium reimbursements, the funded ratio would be 68.5 percent using the actuarial assets and 64.7 percent using the market value of assets. The funded ratio is not intended to measure the adequacy of funding in any analysis of a possible settlement of plan liabilities.

Supporting Schedules and Certification

The valuation report shows detailed summaries of the financial results of the valuation and membership data used in preparing this valuation. The actuary prepared the following supporting schedules for inclusion in the Actuarial and Statistical Sections of the OP&F Comprehensive Annual Financial Report: Analysis of Financial Experience, Short-Term Solvency Test, Schedule of Funding Progress, Calculation of Actuarial Value of Assets, and Retirees and Beneficiaries Added to and Removed from the Rolls.

The valuation assumptions were chosen by the Board of Trustees with the advice of the actuary. The assumptions used to develop the January 1, 2019 valuation are individually reasonable and in combination represent our best estimate of anticipated experience under the plan.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and 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. Because of limited scope, CMC performed no analysis of the potential range of such future differences.

The consultants who worked on this assignment are pension actuaries. CMC's advice is not intended to be a substitute for qualified legal or accounting counsel.

This is to certify that the independent consulting actuaries are members of the American Academy of Actuaries, have experience in performing valuations for public retirement plans, and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board and the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement plan and on actuarial assumptions that are internally consistent and reasonable based on the actual experience of the Fund and future expectations. However, the Board of Trustees has the final decision regarding the selection of the assumptions and adopted them as indicated in Appendix C.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'LL'.

Larry Langer, ASA, EA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Patrice Beckham'.

Patrice A. Beckham, FSA, EA, FCA, MAAA
Principal and Consulting Actuary



TABLE OF CONTENTS

Executive Summary..... 1

Section I – Valuation Results

Table 1 – Summary of Results of Actuarial Valuation as of January 1, 2019.....7

Table 1a – Valuation Results as of January 1, 2019 – Adjusted for Medicare Part B
Reimbursement Liabilities.....9

Table 2 – Summary of Market Value of Plan Assets as of December 31, 2018.....10

Table 3 – Derivation of Actuarial Value of Assets as of January 1, 2019.....11

Table 4 – Analysis of Change in Unfunded Actuarial Accrued Liability as of January 1, 2019.....12

Table 5 – Detailed Analysis of Gains and Losses due to Plan Experience.....13

Table 6 – Schedule of Funding Progress.....14

Table 7 – Unfunded Actuarial Accrued Liability Funding Period.....15

Table 8 – Solvency Test – Comparative Summary of Actuarial Accrued Liability and
Actuarial Value of Assets.....16

Section II – Summary of Membership Data

Table 9 – Summary of Membership Data as of January 1, 2019.....17

Table 10 – Active Membership Data as of January 1, 2019 – Number and Allowable
Average Annual Salary.....20

Table 11 – Retiree and Beneficiary Membership Data as of January 1, 2019 – Number and
Annual Retirement Allowances.....23

Table 12 – Retiree and Beneficiary Membership Data as of January 1, 2019 – Number and
Average Annual Allowance.....26

Table 13 – 10-Year History of Membership Data.....29

Table 14 – Reconciliation of Membership Data from January 1, 2018 to January 1, 2019.....31

Section II – Risk Considerations

Table 15 – Historical Asset Volatility Ratio.....36

Table 16 – Historical Cash Flows.....37

Table 17 – Liability Maturity Measurements.....38

Appendices

Appendix A – Summary of Main Benefit Provisions.....39

Appendix B – Statement of Actuarial Assumptions and Other Inputs.....54

Appendix C – Detailed Tabulations of the Data.....68



EXECUTIVE SUMMARY

Introduction

This report presents the results of the actuarial valuation as of January 1, 2019 of pension benefits for the Ohio Police and Fire Pension Fund (OP&F).

The primary purposes of performing an actuarial valuation are to:

- Disclose certain liability and asset measures as of the valuation date,
- Determine the funding period for the unfunded actuarial accrued liability (UAAL), given the current statutory contribution rates,
- Compare the actual experience since the last valuation date to that expected, and
- Analyze and report on any trends in contributions, assets, and liabilities over the past several years.

The principal valuation results include:

- The funding period for the unfunded actuarial accrued liability as of January 1, 2019 is 29 years, given the current statutory contribution rates.
- The funded status of the Plan, determined as of January 1, 2019, based on the actuarial accrued liability and the actuarial value of assets as of that date, is 69.4 percent.
- There was an experience loss (actual experience was less favorable than anticipated by the assumptions) of \$83.2 million for the year ending December 31, 2018.

This valuation report does not contain information under GASB Statement Nos. 67 and 68. CMC will provide disclosure information under Statement Nos. 67 and 68 in a separate report after OP&F's 2019 year-end.

The valuation was completed based upon membership and financial data submitted by OP&F. Note that an assumption is made in the valuation for the impact of late reported salary adjustments from employers. Thus, any salary amounts shown in this report are the amounts reported to Cavanaugh Macdonald Consulting (CMC) by OP&F, increased by an assumed percentage (1.261 percent on the reported salaries for 2018).

A separate valuation, and report, is performed for all health care benefits provided by OP&F. However, at the request of the ORSC, this report includes a supplemental table, Table 1A, that discloses the combined valuation results if the normal cost and AAL for Medicare Part B premium reimbursements were included with the pension benefits.

Changes since Last Year

The plan provisions used in this valuation are unchanged from last year.

During 2018 OP&F retained Cavanaugh Macdonald as their actuary. The January 1, 2019 valuation is the first valuation completed by Cavanaugh Macdonald. During the transitioning of actuarial services to a new firm, a replication valuation is performed to ensure that we have properly programmed our valuation software to reflect the plan provisions and assumptions and to benchmark any difference between our results and the prior actuary's results. This replication was performed on the January 1, 2018 assets and the results of were previously provided to OP&F. Based on the results of our replication, as of January 1, 2019 the actuarial accrued liability increased \$69.7M, which is approximately 0.3% of the 2019 actuarial accrued liability.

**EXECUTIVE SUMMARY**

Summarized below are the principal financial results for the OP&F Pension Fund based upon the actuarial valuation as of January 1, 2019. Comparable results from the January 1, 2018 valuation are also shown.

	January 1, 2019	January 1, 2018
Membership Data		
Active Members		
Number	28,904	28,212
Annualized Salaries	\$ 2,268,610,714	\$ 2,174,667,031
Average Pay	78,488	77,083
Membership Payroll	2,218,017,387	2,209,258,449
Retirees and Beneficiaries		
Number	29,566	29,361
Annual Allowances	\$ 1,105,861,770	\$ 1,067,769,083
Average Benefit Payment	37,403	36,367
Vested Former Members		
Number	226	346
Contribution Rates (as a Percentage of Payroll)		
Statutory Contribution Rates:		
Employer Average	21.62%	21.62%
Member	<u>12.25%</u>	<u>12.25%</u>
Total	33.87%	33.87%
Allocation of Employer Contribution Rate:		
Pension Contribution Rate:		
- Employer Normal Cost	3.78%	3.73%
- Accrued Liability Rate	<u>17.34%</u>	<u>17.39%</u>
-Total Employer Pension Rate	21.12%	21.12%
Health Care Contribution Rate	<u>0.50%</u>	<u>0.50%</u>
Total Employer Contribution Rate	21.62%	21.62%
Actuarial Funded Status		
Actuarial Accrued Liability (AAL)	\$ 21,264,708,173	\$ 20,887,227,279
Actuarial Assets	<u>14,753,160,407</u>	<u>14,594,562,053</u>
Unfunded Accrued Liability (UAAL)	6,511,547,766	6,292,665,226
Funded Ratio	69.4%	69.9%
Funding Period	29 Years	28 Years



EXECUTIVE SUMMARY

Actuarial Funded Status

OP&F's funded status is measured by comparing the actuarial value of assets with the AAL. The AAL is the present value of benefits attributed to past service under OP&F's funding method and reflects future assumed pay increases for active members. The actuarial value of assets is a market-related value of assets that defers recognition of any market returns that are greater than or less than the assumed investment return over four years. The use of this asset valuation method mitigates, or smooths, the impact of market fluctuations from year to year in the valuation assets. The asset valuation method includes a 20 percent corridor around the market value, so that the actuarial value must be no less than 80 percent and no greater than 120 percent of the market value of assets.

As of January 1, 2019, the AAL exceeds the actuarial value of assets, resulting in an unfunded actuarial accrued liability of \$6.5 billion. The funded ratio, which is the ratio of the actuarial assets to the AAL, is 69.4 percent. These figures are based on an actuarial value of assets of \$14.8 billion and an AAL of \$21.3 billion.

Reasons for Change in the Funded Ratio

The funded ratio decreased from 69.9 percent as of January 1, 2018 to 69.4 percent as of January 1, 2019, a decrease of 0.5 percentage points. The primary reasons for the increase are as follows:

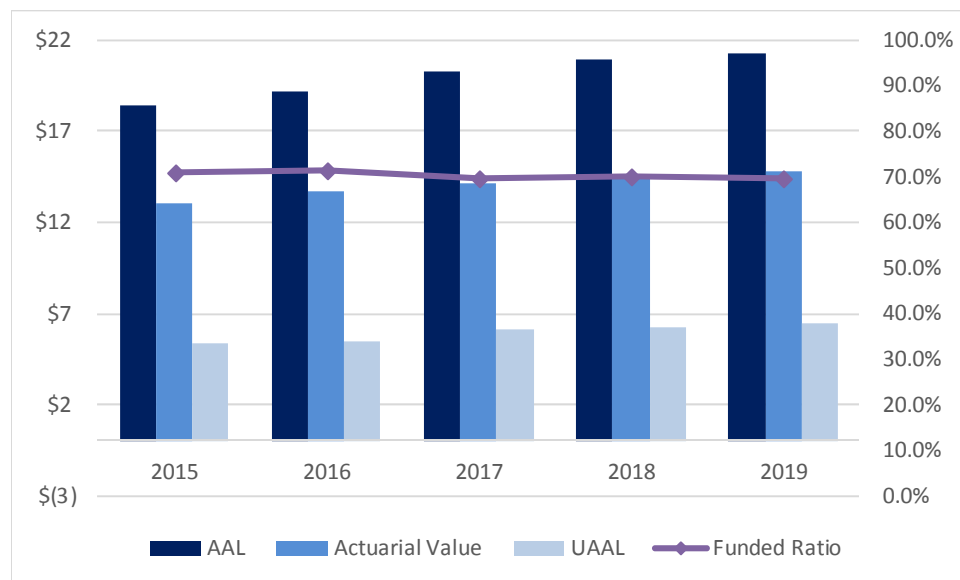
	Increase or (Decrease)
Investment loss based on actuarial value of assets	-2.00%
Net liability gain due to plan experience	0.90%
Net liability gain due to contribution level	0.80%
Net liability loss due to change in actuary	<u>-0.20%</u>
Net increase (decrease)	-0.50%

Five-Year History of Actuarial Funded Status

Valuation as of Jan. 1	Actuarial Accrued Liability (AAL)	Actuarial Assets	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio
2019	\$21,264,708,173	\$14,753,160,407	\$6,511,547,766	69.4%
2018	20,887,227,279	14,594,562,053	6,292,665,226	69.9%
2017	20,290,393,633	14,162,487,807	6,127,905,826	69.8%
2016	19,135,875,916	13,653,004,516	5,482,871,400	71.3%
2015	18,395,592,476	13,029,291,146	5,366,301,330	70.8%



**Five-Year History of Liabilities, Assets and Funded Ratio
(in Billions)**



Net Actuarial Gain (Loss)

The valuation process uses many assumptions to estimate future benefit payments and the corresponding liability. If actual experience is more favorable than expected by the assumption, an actuarial gain occurs. Likewise, if actual experience is unfavorable compared to the assumption, an actuarial loss occurs. The actual experience measured in this valuation is that which occurred during the prior plan year (calendar year 2018). There was a net actuarial loss of \$83.2 million, consisting of a loss of \$429.9 million on the actuarial value of assets, a gain of \$346.7 million on liabilities. The asset loss reflects the investment performance on a the portion of actual market experience during 2018 and the previous three years that is recognized in the January 1, 2019 actuarial value of assets. The liability gain reflects a \$416.4 million actuarial gain from demographic experience and a \$69.7 million loss from the change in actuary. The analysis of the net experience gain/loss is shown in Table 5.

Five-Year History of Actuarial Gains or (Losses)

Fiscal Year Ended			
Dec. 31	Net Gain or (Loss)	As a % of AAL	
2018	\$ (83,052,873)	-0.39%	
2017	(85,099,004)	-0.41%	
2016	(569,516,945)	-2.81%	
2015	(10,335,098)	-0.05%	
2014	291,700,284	1.59%	



EXECUTIVE SUMMARY

Rate of Return on Assets

The investment returns of the trust fund on a market value basis (i.e., total return including both realized and unrealized gains and losses) for years ended December 31, 2014 through December 31, 2018 are shown below. Also shown are the rates of return on the actuarial value of assets used to determine OP&F’s actuarial funded status.

Five-Year History of Rates of Return

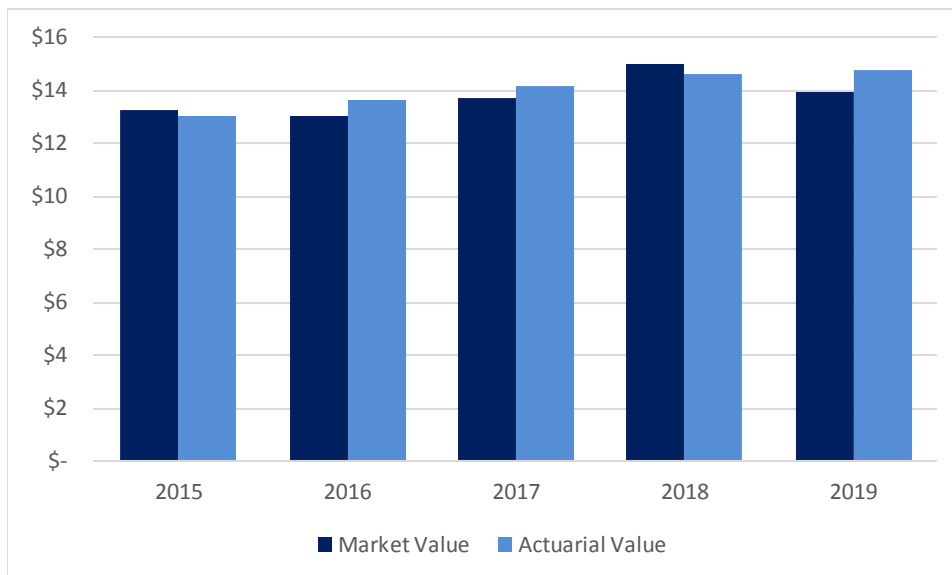
Year Ended Dec. 31	Rate of Return Based on	
	Market Value*	Actuarial Assets**
2018	-3.14%	5.04%
2017	14.30%	6.90%
2016	11.51%	7.33%
2015	0.65%	8.94%
2014	6.79%	10.11%

* Rate of return, gross of fees, as reported in the OP&F CAFR

** Rate of return on actuarial value of assets is net of fees

Five-Year History of Market Value and Actuarial Assets as of January 1

(in Billions)





EXECUTIVE SUMMARY

Funding Period

The actuary determines how many years are required to fully amortize the UAAL (the funding period), using the combined member and employer contribution rates reduced by the amount allocated to fund health care benefits and the normal cost rate for the year. The calculation of the funding period takes into account future payroll growth, currently assumed at 3.25 percent per year. The calculation also takes into account future expected adjustments in the normal cost rate and changes in the statutory contribution rates as a result of Senate Bill No. 340.

The funding period, based on the January 1, 2019 valuation, is 29 years. This is the number of years it will take to pay off the \$6.5 billion UAAL as of January 1, 2019. The funding period increased in the current valuation from 28 years in the January 1, 2018 valuation.

If all assumptions are met on an actuarial basis, the funding period will decrease each year. However, if all assumptions are not met, the period could increase. Two assumptions that greatly impact the funding period are investment returns and future payroll growth. OP&F experienced overall favorable investment results for 2016 and 2017, but returns for 2018 were below the assumed 8.00 percent rate of return, resulting in investment losses to be recognized over four years. As those losses are recognized, and if no significant gains are realized in the next few years to offset the losses, the funding period will increase. If future returns are lower than the assumed return of 8.00 percent, projected contributions will not be sufficient to keep the funding period at or below 30 years. If the investment assumption is met in the future, but payroll growth is less than 3.25 percent over time, then future contributions will be less than projected and may be insufficient to pay off the UAAL over 30 years.

Five-Year History of Contribution Rates and Funding Period

Member contribution rates increased from 10.75 to 11.50 percent on July 2, 2014 and to 12.25 percent on July 2, 2015. The member rates shown in the table below for 2015 are the average, or blended, rates for the calendar year. A funding period of infinity means the contribution rates are not sufficient to pay down the unfunded actuarial accrued liability over any number of years.

Valuation as of Jan 1,	Contribution Rates			Employer Average	Allocation		Funding Period
	Member	Police Employer	Fire Employer		Health Care	Pension	
2019	12.25%	19.50%	24.00%	21.62%	0.50%	33.37%	29 Years
2018	12.25%	19.50%	24.00%	21.62%	0.50%	33.37%	28 Years
2017	12.25%	19.50%	24.00%	21.61%	0.50%	33.36%	28 Years
2016	12.25%	19.50%	24.00%	21.61%	0.50%	33.36%	29 Years
2015	11.88%	19.50%	24.00%	21.61%	0.50%	32.99%	30 Years

Change in Actuary

During 2018 OP&F retained Cavanaugh Macdonald as their actuary. The January 1, 2019 valuation is the first valuation completed by Cavanaugh Macdonald. All results presented in this report for years prior to the December 31, 2018 were performed by the prior actuary(s).



SECTION I – VALUATION RESULTS

**TABLE 1
SUMMARY OF RESULTS OF THE ACTUARIAL VALUATION
AS OF JANUARY 1, 2019**

Item	Police	Firefighters	Total
Membership Data			
1. Number of Members			
a. Active Members			
i. Vested Actives	7,325	6,845	14,170
ii. Non-Vested Actives	8,171	6,563	14,734
iii. Total Actives	15,496	13,408	28,904
b. Vested Former Members	148	78	226
c. Rehired Retirees	134	49	183
d. Retirees and Disableds	12,363	9,245	21,608
e. Beneficiaries and Survivors	4,560	3,398	7,958
f. Contributions Refund Due	2,742	725	3,467
g. Total	35,443	26,903	62,346
2. Annualized Salaries	\$ 1,201,617,032	\$ 1,066,993,682	\$ 2,268,610,714
3. Membership Payroll	1,174,564,480	1,043,452,907	2,218,017,387
4. Annual Allowances	628,256,438	477,605,332	1,105,861,770
Valuation Results			
5. Present Value of Future benefits (PVFB)			
a. Active Members	\$ 6,180,582,870	\$ 5,791,011,539	\$ 11,971,594,409
b. Vested Former Members	23,548,871	12,298,507	35,847,378
c. Rehired Retirees	9,909,396	3,939,064	13,848,460
d. Retirees and Disableds	6,661,801,077	5,068,838,537	11,730,639,614
e. Beneficiaries and Survivors	446,120,931	304,910,458	751,031,389
f. Contributions Refund Due	31,363,341	11,046,386	42,409,727
g. Total PVFB	\$ 13,353,326,486	\$ 11,192,044,491	\$ 24,545,370,977
6. Normal Cost			
a. Normal Cost	\$ 174,584,577	\$ 160,012,310	\$ 334,596,887
b. Administrative Expenses	12,158,070	9,171,877	21,329,947
c. State Subsidy	171,462	129,349	300,811
d. Total: (a) + (b) - (c)	\$ 186,571,185	\$ 169,054,838	\$ 355,626,023
e. Normal Cost Rate: (d) / (3)	15.88%	16.20%	16.03%
7. Present Value of Future Normal Cost	\$ 1,664,964,689	\$ 1,599,434,145	\$ 3,264,398,834



SECTION I – VALUATION RESULTS

TABLE 1
SUMMARY OF RESULTS OF THE ACTUARIAL VALUATION
AS OF JANUARY 1, 2019 (continued)

Item	Police	Firefighters	Total
8. Actuarial Accrued Liability (AAL)			
a. Active Members	\$ 4,515,618,181	\$ 4,191,577,394	\$ 8,707,195,575
b. Vested Former Members	23,548,871	12,298,507	35,847,378
c. Rehired Retirees	9,909,396	3,939,064	13,848,460
d. Retirees and Disableds	6,661,801,077	5,068,838,537	11,730,639,614
e. Beneficiaries and Survivors	446,120,931	304,910,458	751,031,389
f. Contributions Refund Due	31,363,341	11,046,386	42,409,727
g. Total	\$ 11,688,361,797	\$ 9,592,610,346	\$ 21,280,972,143
h. Employer Accrued Liability	(9,275,962)	(6,988,008)	(16,263,970)
i. Adjusted AAL	\$ 11,679,085,835	\$ 9,585,622,338	\$ 21,264,708,173
9. Actuarial Value of Assets*	\$ 8,102,788,213	\$ 6,650,372,194	\$ 14,753,160,407
10. Unfunded Accrued Liability (8) - (9)	3,576,297,622	2,935,250,144	6,511,547,766
11. Funding Period			29
12. Funded Ratio	69.4%	69.4%	69.4%
Allocation of Employer Contribution Rate			
13. Employer Contribution Rate			
a. Total Employer Rate (by law)	19.50%	24.00%	21.62%
b. Health Care Stabilization Fund Allocation	<u>0.50%</u>	<u>0.50%</u>	<u>0.50%</u>
c. Employer Pension Rate: (a) - (b)	19.00%	23.50%	21.12%
d. Total Normal Cost Rate	15.88%	16.20%	16.03%
e. Member Rate (by law)	<u>12.25%</u>	<u>12.25%</u>	<u>12.25%</u>
f. Employer Normal Cost Rate: (d) - (e)	3.63%	3.95%	3.78%
g. Unfunded Accrued Liability			
Amortization Rate: (c) - (f)	15.37%	19.55%	17.34%

* The Actuarial Value fo Assets is split between Police and Firefighters in proportion to the Actuarial Accrued Liability.



SECTION I – VALUATION RESULTS

TABLE 1A

VALUATION RESULTS AS OF JANUARY 1, 2019 ADJUSTED FOR MEDICARE PART B REIMBURSEMENT LIABILITIES*

Item	Police	Fire fighters	Total
Valuation Results			
1. Present Value of Future benefits (PVFB)			
a. Pension Benefits	\$ 13,353,326,486	\$ 11,192,044,491	\$ 24,545,370,977
b. Medicare Part B Benefits	<u>159,149,115</u>	<u>130,858,550</u>	<u>290,007,665</u>
c. Total	\$ 13,512,475,601	\$ 11,322,903,041	\$ 24,835,378,642
2. Normal Cost			
a. Pension Benefits	15.88%	16.20%	16.03%
b. Medicare Part B Benefits	<u>0.08%</u>	<u>0.09%</u>	<u>0.08%</u>
c. Total	15.96%	16.29%	16.11%
3. Actuarial Accrued Liability (AAL)			
a. Pension Benefits	\$ 11,679,085,835	\$ 9,585,622,338	\$ 21,264,708,173
b. Medicare Part B Benefits	<u>150,738,706</u>	<u>122,426,388</u>	<u>273,165,093</u>
c. Total	\$ 11,829,824,541	\$ 9,708,048,726	\$ 21,537,873,266
4. Actuarial Value of Assets*	<u>\$ 8,102,788,213</u>	<u>\$ 6,650,372,194</u>	<u>\$ 14,753,160,407</u>
5. Unfunded Accrued Liability	3,727,036,328	3,057,676,532	6,784,712,859
6. Funded Ratio	68.5%	68.5%	68.5%
Allocation of Employer Contribution Rate			
7. Employer Contribution Rate			
a. Total Employer Rate (by law)	19.50%	24.00%	21.62%
b. Health Care Stabilization Fund Allocation	<u>0.50%</u>	<u>0.50%</u>	<u>0.50%</u>
c. Employer Pension Rate: (a) - (b)	19.00%	23.50%	21.12%
d. Pension Normal Cost Rate	15.88%	16.20%	16.03%
e. Medicare Part B Normal Cost Rate	<u>0.08%</u>	<u>0.09%</u>	<u>0.08%</u>
f. Employer Normal Cost Rate: (d) + (e)	15.96%	16.29%	16.11%
g. Member Rate (by law)	<u>12.25%</u>	<u>12.25%</u>	<u>12.25%</u>
h. Employer Normal Cost Rate: (f) - (g)	3.71%	4.04%	3.86%
i. Unfunded Accrued Liability Amortization Rate: (c) - (h)	15.29%	19.46%	17.26%

* The Actuarial Value of Assets is split between Police and Firefighters in proportion to the pension Actuarial Accrued Liability. While the Actuarial Accrued Liability and Normal Cost have been adjusted in this illustration to reflect the liability for Medicare Part B reimbursements, the Actuarial Value of Assets is unadjusted for any Health Care Stabilization Fund



SECTION I – VALUATION RESULTS

TABLE 2

SUMMARY OF MARKET VALUE OF PLAN ASSETS AS OF DECEMBER 31, 2018

	December 31, 2018
1. Market Value of Assets as of December 31, 2017*	\$ 14,963,614,004
2. Contributions During 2018	
a. Member	\$ 295,472,374
b. Employer	478,294,974
c. State Subsidy	<u>300,811</u>
d. Total	774,068,159
3. Benefit Payments During 2018	\$ 1,314,608,496
4. Administrative Expenses During 2018	\$ 16,234,396
5. Income During 2018	
a. Interest, Dividends and Other Income	\$ 475,420,006
b. Appreciation/(Depreciation)	(887,055,542)
c. Investment Expenses	<u>48,580,550</u>
d. Investment Return After Expenses (a) + (b) - (c)	(460,216,086)
e. Other Income/Changes	<u>(5,566,378)</u>
f. Total Income (d) + (e)	(465,782,464)
6. Market Value of Assets as of December 31, 2018*	\$ 13,941,056,807
(1) + (2d.) - (3) - (4) + (5f.)	
7. Rate of Return	-3.14%
(5d.) / [(1) + 0.5 * ((2d.) - (3) - (4) + (5e.))]	

*The Market Value of Assets includes the DROP accrual balances of \$1,559,194,292 at December 31, 2017 and \$1,656,454,880 at December 31, 2018.



SECTION I – VALUATION RESULTS

TABLE 3

DERIVATION OF ACTUARIAL VALUE OF ASSETS AS OF JANUARY 1, 2019

					January 1, 2019	
1.	Market Value of Assets as of December 31, 2018				\$ 13,941,056,807	
2.	Determination of Deferred Gain (Loss)					
	<u>Return on Market Value of Assets</u>					
	<u>Year</u>	<u>Actual</u>	<u>Expected</u>	<u>Gain/(Loss)</u>	<u>% Deferred</u>	<u>Deferred Amount</u>
	2018	(\$460,216,086)	\$1,174,313,569	(\$1,634,529,655)	75%	(\$1,225,897,241)
	2017	1,808,150,698	1,073,514,102	734,636,596	50%	367,318,298
	2016	1,232,569,108	1,046,667,736	185,901,372	25%	46,475,343
	2015	(11,259,198)	1,088,245,528	(1,099,504,726)	0%	-
						(812,103,600)
3.	Adjustment for 20% corridor				-	
4.	Actuarial Value of Assets as of January 1, 2019: (1) - (2) + (3)				\$ 14,753,160,407	
5.	Actuarial Rate of Return *					
	a.	Actuarial Value of Assets as of January 1, 2018			\$ 14,594,562,053	
	b.	Contributions During 2018			774,068,159	
	c.	Benefits Paid During 2018			1,314,608,496	
	d.	Expenses During 2018			16,234,396	
	e.	Other Income			(5,566,378)	
	f.	Return on an Actuarial Basis			720,939,465	
	g.	Actuarial Rate of Return: (f) / [(a) + 0.5 * ((b) - (c) - (d) + (e))]			5.04%	

* The actuarial rate of return is the rate of return based on the change in the actuarial value of assets from last year to this year. The rate of return is calculated assuming contributions and disbursements occur halfway through the year.



SECTION I – VALUATION RESULTS

TABLE 4

ANALYSIS OF CHANGE IN UNFUNDED ACTUARIAL ACCRUED LIABILITY
AS OF JANUARY 1, 2019

		January 1, 2019
1. Unfunded Accrued Liability at January 1, 2018	\$	6,292,665,226
2. Contributions Toward Unfunded Accrued Liability		421,005,424
3. Interest Credit at 8.00% to December 31, 2018		486,896,971
4. Expected Unfunded Accrued Liability at December 31, 2018 (1)-(2)+(3)		6,358,556,773
5. Actual Unfunded Accrued Liability at January 1, 2019	\$	6,511,547,766
6. Net Gain (Loss) (4) - (5)	\$	(152,990,993)
7. Reasons for Net Gain (Loss)		
a. Experience Gains (Losses)		
i. Gain (Loss) from Investment Return on Actuarial Value of Assets	\$	(429,920,888)
ii. Gain (Loss) from Demographic Experience and Other		416,615,598
ii. Gain (Loss) from the Change in Actuary		(69,747,583)
iii. Subtotal		(83,052,873)
(b) Gain (Loss) from Pay Load Adjustment for Late Reported Pays		(190,537)
(c) Total	\$	(83,243,410)



SECTION I – VALUATION RESULTS

TABLE 5

DETAILED ANALYSIS OF GAINS AND LOSSES DUE TO PLAN EXPERIENCE RESULTING IN DIFFERENCES BETWEEN ASSUMED AND ACTUAL EXPERIENCE

Plan Experience	Gain / (Loss)	
	January 1, 2019	January 1, 2018
Turnover If more liabilities are released by withdrawal separations from active membership than assumed, there is a gain. If smaller releases, there is a loss.	\$ (3,121,347)	\$ (27,220,946)
Retirement If members retire at older ages than assumed, there is a gain. If younger, there is a loss.	32,335,086	(6,766,327)
Death among retired members and beneficiaries If more deaths occur than assumed, there is a gain. If fewer deaths than assumed, there is a loss.	8,808,719	(19,519,180)
Disability retirements If disability claims are less than assumed, there is a gain. If more claims, a loss.	12,441,861	3,477,918
Salary increase/decrease If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	149,203,045	107,318,122
Return to work If participants return to work with previous service restored, there is a loss.	(11,066,219)	(1,185,692)
New Entrants If new entrants join OP&F, there is a loss.	(7,984,831)	(6,304,990)
Deaths among actives If claims costs are less than assumed, there is a gain. If more claims, a loss.	(1,393,575)	(1,236,303)
Investment If there is greater investment return than assumed, there is a gain. If less return, a loss.	(429,920,888)	(148,330,338)
Change in Actuary Difference between CMC results and the prior actuary's results.	(69,747,583)	N/A
Other Experience and Payroll Growth If other experience, including less than expected payroll growth, increases the unfunded liability, there is a loss. Otherwise, there is a gain.	<u>237,392,859</u>	<u>5,633,515</u>
Net gain (or loss) during the year due to plan experience	\$ (83,052,873)	\$ (94,134,221)



SECTION I – VALUATION RESULTS

TABLE 6

SCHEDULE OF FUNDING PROGRESS

Valuation as of Jan. 1	Valuation Assets	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Ratio of Assets to AAL	Active Member Payroll	UAAL as a Percentage of Active Member Payroll
2019	\$ 14,753.2	\$ 21,264.7	\$ 6,511.6	69.4%	\$ 2,218.0	293.6%
2018	14,594.6	20,887.2	6,292.6	69.9%	2,209.3	284.8%
2017	14,162.5	20,290.4	6,127.9	69.8%	2,180.9	281.0%
2016	13,653.0	19,135.9	5,482.9	71.3%	2,060.9	266.1%
2015	13,029.3	18,395.6	5,366.3	70.8%	1,986.6	270.1%
2014	11,063.2	16,577.8	5,514.6	66.7%	1,942.3	283.9%
2013	10,278.0	16,007.9	5,729.9	64.2%	1,913.4	299.5%
2012	10,309.0	16,346.7	6,037.7	63.1%	1,897.4	318.2%
2011	10,681.0	15,384.4	4,703.4	69.4%	1,868.5	251.7%
2010	10,794.1	14,830.7	4,036.6	72.8%	1,895.2	213.0%

Note: Actuarial Assets and Liabilities prior to Jan. 1, 2015 are net of DROP balances.

Note: The amounts reported in this schedule do not include assets or liabilities for post-employment health care benefits.



SECTION I – VALUATION RESULTS

TABLE 7

UNFUNDED ACTUARIAL ACCRUED LIABILITY FUNDING PERIOD
AS OF JANUARY 1, 2019

Year	Plan Year	Outstanding Balance at Beginning of Year of January 1, 2019	Assumed Amortization Contribution Rate ¹	Assumed Payroll 3.25% Growth Rate	Mid-Year Amortization Contribution Amount ²	Outstanding Balance at End of Year of January 1, 2019
		UAAL (a)	(b)	(c)	(d)	UAAL ³ (e)
1	2019	\$6,511,547,766	17.34%	\$2,342,340,562	\$406,161,853	\$6,610,375,808
2	2020	6,610,375,808	17.42%	2,418,466,630	421,345,153	6,701,331,145
3	2021	6,701,331,145	17.50%	2,497,066,796	436,906,087	6,783,391,512
4	2022	6,783,391,512	17.56%	2,578,221,467	452,780,700	6,855,519,327
5	2023	6,855,519,327	17.62%	2,662,013,664	468,955,177	6,916,608,357
6	2024	6,916,608,357	17.66%	2,748,529,108	485,349,396	6,965,547,138
7	2025	6,965,547,138	17.69%	2,837,856,304	502,127,932	7,000,964,255
8	2026	7,000,964,255	17.72%	2,930,086,634	519,217,355	7,021,454,892
9	2027	7,021,454,892	17.74%	3,025,314,450	536,649,232	7,025,469,042
10	2028	7,025,469,042	17.76%	3,123,637,170	554,662,940	7,011,083,929
11	2029	7,011,083,929	17.77%	3,225,155,378	573,238,079	6,976,244,157
12	2030	6,976,244,157	17.79%	3,329,972,927	592,384,629	6,918,719,525
13	2031	6,918,719,525	17.80%	3,438,197,047	612,121,608	6,836,081,652
14	2032	6,836,081,652	17.81%	3,549,938,451	632,391,760	6,725,767,389
15	2033	6,725,767,389	17.82%	3,665,311,451	653,145,344	6,585,060,228
16	2034	6,585,060,228	17.82%	3,784,434,073	674,505,110	6,410,898,774
17	2035	6,410,898,774	17.83%	3,907,428,181	696,563,285	6,199,880,876
18	2036	6,199,880,876	17.83%	4,034,419,597	719,379,172	5,948,270,580
19	2037	5,948,270,580	17.84%	4,165,538,233	743,019,588	5,651,963,620
20	2038	5,651,963,620	17.84%	4,300,918,226	767,484,382	5,306,527,544
21	2039	5,306,527,544	17.85%	4,440,698,068	792,808,254	4,907,139,242
22	2040	4,907,139,242	17.86%	4,585,020,756	818,992,981	4,448,587,908
23	2041	4,448,587,908	17.87%	4,734,033,930	846,030,164	3,925,254,604
24	2042	3,925,254,604	17.88%	4,887,890,033	873,931,981	3,331,058,216
25	2043	3,331,058,216	17.89%	5,046,746,459	902,778,700	2,659,347,727
26	2044	2,659,347,727	17.90%	5,210,765,719	932,576,204	1,902,933,925
27	2045	1,902,933,925	17.90%	5,380,115,605	963,300,460	1,054,077,436
28	2046	1,054,077,436	17.91%	5,554,969,362	995,010,454	104,358,435
29	2047	104,358,435	17.92%	5,735,505,866	1,027,663,164	-
30	2048	-	17.92%	5,921,909,807	1,061,245,648	-

Resulting Funding Period = 29 Years

¹ The amortization contribution rate is the total statutory contribution rate, minus the total normal cost rate, minus the health care contribution rate. The statutory contribution rate is assumed to remain unchanged except for any legislated increases, for which none are assumed after the July 1, 2015 member contribution rate increase. The impact of SB 340 and changes adopted by OP&F that will impact new members will reduce the total normal cost rate over time, and, thus, increase the amortization contribution rate, as reflected above.

² The contribution amount is the product of (b) the amortization contribution rate and (c) the assumed payroll amount.

³ The outstanding balance at the end of the year is derived from the outstanding balance at the beginning of the year with interest minus the mid-year amortization contribution with interest. (e) = [(a) x 1.08] - [(d) x 1.08^{0.5}]



SECTION I – VALUATION RESULTS

TABLE 8

SOLVENCY TEST – COMPARATIVE SUMMARY OF ACTUARIAL ACCRUED LIABILITY AND ACTUARIAL VALUE OF ASSETS

POLICE

Valuation as of January 1	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Member Employer Financed	Actuarial Value of Assets	Portion of Accrued Liability Covered by Valuation Assets		
					(1)	(2)	(3)
2019	1,584,057	\$7,107,922	\$2,987,107	\$8,102,788	100%	92%	0%
2018	1,515,993	6,870,423	3,138,109	8,052,548	100%	95%	0%
2017	1,451,473	6,576,192	3,184,383	7,825,895	100%	97%	0%
2016	1,386,649	6,085,896	3,002,889	7,473,979	100%	100%	0%
2015	1,210,400	5,857,146	3,015,390	7,141,575	100%	100%	2%
2014	1,171,496	5,368,637	2,583,711	6,088,816	100%	92%	0%
2013	1,131,664	5,166,808	2,532,580	5,670,069	100%	88%	0%
2012	1,100,146	4,960,051	2,969,900	5,694,783	100%	93%	0%

FIREFIIGHTERS

Valuation as of January 1	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Member Employer Financed	Actuarial Value of Assets	Portion of Accrued Liability Covered by Valuation Assets		
					(1)	(2)	(3)
2019	1,423,619	\$5,373,749	\$2,788,255	\$6,650,372	100%	97%	0%
2018	1,345,237	5,150,080	2,867,386	6,542,014	100%	100%	2%
2017	1,276,582	4,922,990	2,878,774	6,336,593	100%	100%	5%
2016	1,213,330	4,614,250	2,832,862	6,179,025	100%	100%	12%
2015	1,062,097	4,337,819	2,912,741	5,887,716	100%	100%	17%
2014	1,028,465	3,924,388	2,501,058	4,974,383	100%	100%	1%
2013	974,362	3,751,279	2,451,195	4,607,962	100%	97%	0%
2012	965,598	3,581,800	2,769,204	4,614,176	100%	100%	2%

TOTAL

Valuation as of January 1	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active Member Employer Financed	Actuarial Value of Assets	Portion of Accrued Liability Covered by Valuation Assets		
					(1)	(2)	(3)
2019	3,007,676	\$12,481,671	\$5,775,361	\$14,753,160	100%	94%	0%
2018	2,861,230	12,020,503	6,005,495	14,594,562	100%	98%	0%
2017	2,728,055	11,499,182	6,063,157	14,162,488	100%	99%	0%
2016	2,599,979	10,700,146	5,835,751	13,653,004	100%	100%	6%
2015	2,272,497	10,194,965	5,928,131	13,029,291	100%	100%	9%
2014	2,199,961	9,293,025	5,084,769	11,063,199	100%	95%	0%
2013	2,106,026	8,918,087	4,983,775	10,278,031	100%	92%	0%
2012	2,065,744	8,541,851	5,739,104	10,308,959	100%	97%	0%

Note: Actuarial Assets and Liabilities prior to Jan. 1, 2015 are net of DROP balances



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 9

SUMMARY OF MEMBERSHIP DATA AS OF JANUARY 1, 2019

POLICE

Item	Male	Female	Total
Number of Members	13,915	1,581	15,496
Annual Salaries	\$ 1,085,308,539	\$ 116,308,493	\$ 1,201,617,032
Average Annual Salary	\$ 77,996	\$ 73,566	\$ 77,544
Average Age	41.7	40.4	41.6
Average Service	14.1	12.6	14.0

FIREFIGHTERS

Item	Male	Female	Total
Number of Members	13,044	364	13,408
Annual Salaries	\$ 1,039,618,843	\$ 27,374,839	\$ 1,066,993,682
Average Annual Salary	\$ 79,701	\$ 75,206	\$ 79,579
Average Age	42.5	40.7	42.5
Average Service	14.8	12.0	14.7

TOTAL

Item	Male	Female	Total
Number of Members	26,959	1,945	28,904
Annual Salaries	\$ 2,124,927,382	\$ 143,683,332	\$ 2,268,610,714
Average Annual Salary	\$ 78,821	\$ 73,873	\$ 78,488
Average Age	42.1	40.4	42.0
Average Service	14.4	12.5	14.3



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 9

SUMMARY OF MEMBERSHIP DATA AS OF JANUARY 1, 2019
(continued)

POLICE

Item	Male	Female	Total
Eligible for Allowances	135	13	148
Eligible for Refunds Only	<u>2,356</u>	<u>386</u>	<u>2,742</u>
Total	2,491	399	2,890

FIREFIGHTERS

Item	Male	Female	Total
Eligible for Allowances	74	4	78
Eligible for Refunds Only	<u>660</u>	<u>65</u>	<u>725</u>
Total	734	69	803

TOTAL

Item	Male	Female	Total
Eligible for Allowances	209	17	226
Eligible for Refunds Only	<u>3,016</u>	<u>451</u>	<u>3,467</u>
Total	3,225	468	3,693



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 9

SUMMARY OF MEMBERSHIP DATA AS OF JANUARY 1, 2019
(continued)

POLICE

Item	Number	Annual Allowance	Average Allowance	Average Age
Service Retirees	8,729	\$ 430,035,753	\$ 49,265	68.3
Survivors and Beneficiaries	4,560	51,440,037	11,281	71.9
Disability Retirees	3,634	146,780,647	40,391	63.8
Total	16,923	\$ 628,256,438	\$ 37,124	68.3

FIREFIGHTERS

Item	Number	Annual Allowance	Average Allowance	Average Age
Service Retirees	6,759	\$ 333,569,772	\$ 49,352	69.0
Survivors and Beneficiaries	3,398	37,869,665	11,145	74.1
Disability Retirees	2,486	106,165,895	42,706	65.6
Total	12,643	\$ 477,605,332	\$ 37,776	69.7

TOTAL

Item	Number	Annual Allowance	Average Allowance	Average Age
Service Retirees	15,488	\$ 763,605,525	\$ 49,303	68.6
Survivors and Beneficiaries	7,958	89,309,703	11,223	72.8
Disability Retirees	6,120	252,946,543	41,331	64.5
Total	29,566	\$ 1,105,861,770	\$ 37,403	68.9



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 10
ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
POLICE

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up	
Under 25	645	-	-	-	-	-	-	-	-	645
	\$50,346	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,346
25-29	1,719	215	-	-	-	-	-	-	-	1,934
	\$59,665	\$74,648	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$61,331
30-34	1,080	900	234	-	1	-	-	-	-	2,215
	\$60,843	\$76,055	\$85,071	\$0	\$41,164	\$0	\$0	\$0	\$0	\$69,575
35-39	406	519	882	227	-	-	-	-	-	2,034
	\$61,323	\$74,850	\$82,524	\$86,402	\$0	\$0	\$0	\$0	\$0	\$76,767
40-44	134	220	460	889	322	3	-	-	-	2,028
	\$54,678	\$73,230	\$79,573	\$85,862	\$90,686	\$110,421	\$0	\$0	\$0	\$81,807
45-49	83	106	318	647	1,492	344	1	-	-	2,991
	\$55,945	\$71,150	\$78,508	\$82,042	\$89,497	\$94,837	\$84,891	\$0	\$0	\$85,747
50-54	28	38	100	238	820	944	190	-	-	2,358
	\$55,512	\$65,282	\$75,045	\$81,183	\$87,006	\$92,260	\$97,748	\$0	\$0	\$88,156
55-59	14	11	32	57	210	382	273	5	-	984
	\$54,059	\$62,501	\$73,543	\$70,066	\$81,970	\$88,651	\$94,372	\$123,727	\$0	\$86,638
60-64	4	5	12	18	55	88	59	16	3	260
	\$55,814	\$64,409	\$64,021	\$64,605	\$76,735	\$81,530	\$87,450	\$101,303	\$100,552	\$80,590
Over 64	-	5	1	4	8	13	6	2	8	47
	\$0	\$56,915	\$76,740	\$86,578	\$70,263	\$78,745	\$81,411	\$56,647	\$116,508	\$81,430
TOTAL	4,113	2,019	2,039	2,080	2,908	1,774	529	23	11	15,496
	\$58,388	\$74,677	\$80,905	\$83,582	\$88,072	\$91,382	\$94,648	\$102,295	\$112,156	\$77,544

Note: Excludes rehired retirees.



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 10
ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
FIREFIGHTERS'

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up	
Under 25	411	1	-	-	-	-	-	-	-	412
	\$54,256	\$93,709	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$54,351
25-29	1,101	215	-	-	-	-	-	-	-	1,316
	\$60,734	\$72,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$62,689
30-34	944	754	219	2	-	-	-	-	-	1,919
	\$62,315	\$76,578	\$81,704	\$99,307	\$0	\$0	\$0	\$0	\$0	\$70,170
35-39	432	583	680	285	2	-	-	-	-	1,982
	\$61,712	\$76,818	\$82,497	\$86,644	\$98,516	\$0	\$0	\$0	\$0	\$76,909
40-44	146	199	430	870	309	-	-	-	-	1,954
	\$60,998	\$78,082	\$82,267	\$86,374	\$91,430	\$0	\$0	\$0	\$0	\$83,529
45-49	31	66	197	694	991	314	3	-	-	2,296
	\$59,991	\$77,998	\$80,167	\$83,183	\$89,836	\$94,881	\$126,421	\$0	\$0	\$86,990
50-54	11	19	54	265	752	710	185	1	-	1,997
	\$65,025	\$75,335	\$72,589	\$81,777	\$88,615	\$91,111	\$100,617	\$73,581	\$0	\$89,009
55-59	14	15	24	86	280	450	266	26	-	1,161
	\$64,524	\$78,475	\$70,408	\$83,294	\$86,773	\$88,627	\$92,963	\$99,695	\$0	\$88,228
60-64	-	5	8	29	82	111	76	9	5	325
	\$0	\$61,542	\$75,257	\$78,630	\$85,871	\$85,723	\$93,012	\$100,085	\$82,376	\$86,549
Over 64	-	1	3	2	10	18	4	4	4	46
	\$0	\$56,098	\$69,343	\$81,971	\$84,160	\$75,413	\$112,446	\$84,081	\$85,516	\$81,636
TOTAL	3,090	1,858	1,615	2,233	2,426	1,603	534	40	9	13,408
	\$60,529	\$76,377	\$81,473	\$84,660	\$89,157	\$90,603	\$95,956	\$97,568	\$83,772	\$79,579

Note: Excludes rehired retirees.



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 10
ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
TOTAL

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & Up	
Under 25	1,056	1	-	-	-	-	-	-	-	1,057
	\$51,867	\$93,709	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$51,907
25-29	2,820	430	-	-	-	-	-	-	-	3,250
	\$60,082	\$73,674	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$61,881
30-34	2,024	1,654	453	2	1	-	-	-	-	4,134
	\$61,529	\$76,294	\$83,443	\$99,307	\$41,164	\$0	\$0	\$0	\$0	\$69,851
35-39	838	1,102	1,562	512	2	-	-	-	-	4,016
	\$61,524	\$75,891	\$82,512	\$86,537	\$98,516	\$0	\$0	\$0	\$0	\$76,837
40-44	280	419	890	1,759	631	3	-	-	-	3,982
	\$57,973	\$75,535	\$80,875	\$86,115	\$91,050	\$110,421	\$0	\$0	\$0	\$82,652
45-49	114	172	515	1,341	2,483	658	4	-	-	5,287
	\$57,045	\$73,778	\$79,143	\$82,632	\$89,632	\$94,858	\$116,039	\$0	\$0	\$86,287
50-54	39	57	154	503	1,572	1,654	375	1	-	4,355
	\$58,195	\$68,633	\$74,184	\$81,496	\$87,776	\$91,767	\$99,163	\$73,581	\$0	\$88,547
55-59	28	26	56	143	490	832	539	31	-	2,145
	\$59,292	\$71,717	\$72,200	\$78,021	\$84,715	\$88,638	\$93,677	\$103,571	\$0	\$87,499
60-64	4	10	20	47	137	199	135	25	8	585
	\$55,814	\$62,976	\$68,515	\$73,258	\$82,204	\$83,869	\$90,581	\$100,864	\$89,192	\$83,901
Over 64	-	6	4	6	18	31	10	6	12	93
	\$0	\$56,778	\$71,192	\$85,042	\$77,983	\$76,810	\$93,825	\$74,937	\$106,177	\$81,532
TOTAL	7,203	3,877	3,654	4,313	5,334	3,377	1,063	63	20	28,904
	\$59,307	\$75,492	\$81,156	\$84,140	\$88,565	\$91,012	\$95,305	\$99,294	\$99,383	\$78,488

Note: Excludes rehired retirees.



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 11

**RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
POLICE**

Group	Number	Annual Allowances as of January 1, 2019		
		Basic	Cost-of-Living Increases	Total
Service Retirees				
Males	8,230	\$ 296,819,587	\$ 108,278,418	\$ 405,098,005
Females	499	19,680,516	5,257,232	24,937,748
Subtotal	8,729	\$ 316,500,103	\$ 113,535,650	\$ 430,035,753
Survivors and Beneficiaries				
Males	199	\$ 871,207	\$ 398,824	\$ 1,270,032
Females	4,361	33,252,081	16,917,924	50,170,005
Subtotal	4,560	\$ 34,123,289	\$ 17,316,749	\$ 51,440,037
Disability Retirees				
Males	3,127	\$ 91,109,027	\$ 35,688,936	\$ 126,797,963
Females	507	14,999,396	4,983,289	19,982,685
Subtotal	3,634	\$ 106,108,422	\$ 40,672,225	\$ 146,780,647
Grand Total	16,923	456,731,814	171,524,624	628,256,438



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 11

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
FIREFIGHTERS'

Group	Number	Annual Allowances as of January 1, 2019		
		Basic	Cost-of-Living Increases	Total
Service Retirees				
Males	6,694	\$ 243,445,135	\$ 87,005,181	\$ 330,450,315
Females	65	2,682,221	437,236	3,119,456
Subtotal	6,759	\$ 246,127,355	\$ 87,442,416	\$ 333,569,772
Survivors and Beneficiaries				
Males	118	\$ 266,693	\$ 140,719	\$ 407,412
Females	3,280	24,955,136	12,507,117	37,462,253
Subtotal	3,398	\$ 25,221,829	\$ 12,647,836	\$ 37,869,665
Disability Retirees				
Males	2,379	\$ 74,708,887	\$ 27,498,795	\$ 102,207,682
Females	107	3,179,862	778,351	3,958,213
Subtotal	2,486	\$ 77,888,749	\$ 28,277,146	\$ 106,165,895
Grand Total	12,643	349,237,933	128,367,399	477,605,332



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 11

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
TOTAL

Group	Number	Annual Allowances as of January 1, 2019		
		Basic	Cost-of-Living Increases	Total
Service Retirees				
Males	14,924	\$ 540,264,721	\$ 195,283,599	\$ 735,548,320
Females	564	22,362,737	5,694,467	28,057,204
Subtotal	15,488	\$ 562,627,458	\$ 200,978,066	\$ 763,605,525
Survivors and Beneficiaries				
Males	317	\$ 1,137,900	\$ 539,544	\$ 1,677,444
Females	7,641	58,207,217	29,425,041	87,632,259
Subtotal	7,958	\$ 59,345,118	\$ 29,964,585	\$ 89,309,703
Disability Retirees				
Males	5,506	\$ 165,817,914	\$ 63,187,731	\$ 229,005,645
Females	614	18,179,258	5,761,640	23,940,898
Subtotal	6,120	\$ 183,997,171	\$ 68,949,372	\$ 252,946,543
Grand Total	29,566	805,969,747	299,892,023	1,105,861,770



SECTION II – SUMMARY OF MEMBERSHIP DATA

**TABLE 12
RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
POLICE**

Age Last Birthday	Number	Annual Allowance	Average Annual Allowance
Service Retirees			
Under 60	1,608	\$ 78,099,898	\$ 48,570
60-64	1,731	93,030,110	53,744
65-69	1,775	93,498,431	52,675
70-74	1,634	84,857,381	51,932
75-79	1,065	48,015,186	45,085
Over 79	<u>916</u>	<u>32,534,747</u>	<u>35,518</u>
Total	8,729	\$ 430,035,753	\$ 49,265
Survivors and Beneficiaries			
Under 60	711	\$ 7,125,095	\$ 10,021
60-64	360	4,761,737	13,227
65-69	599	7,685,468	12,830
70-74	651	7,877,287	12,100
75-79	701	7,958,206	11,353
Over 79	<u>1,538</u>	<u>16,032,245</u>	<u>10,424</u>
Total	4,560	\$ 51,440,037	\$ 11,281
Disability Retirees			
Under 60	1,322	\$ 53,077,406	\$ 40,149
60-64	564	25,013,140	44,350
65-69	602	25,667,769	42,637
70-74	577	23,624,904	40,944
75-79	329	12,041,131	36,599
Over 79	<u>240</u>	<u>7,356,297</u>	<u>30,651</u>
Total	3,634	\$ 146,780,647	\$ 40,391



SECTION II – SUMMARY OF MEMBERSHIP DATA

**TABLE 12
RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
FIREFIGHTERS'**

Age Last Birthday	Number	Annual Allowance	Average Annual Allowance
Service Retirees			
Under 60	1,198	\$ 59,810,729	\$ 49,925
60-64	1,418	77,943,224	54,967
65-69	1,328	70,845,369	53,347
70-74	1,054	52,862,659	50,154
75-79	812	37,701,567	46,431
Over 79	<u>949</u>	<u>34,406,223</u>	<u>36,255</u>
Total	6,759	\$ 333,569,772	\$ 49,352
Survivors and Beneficiaries			
Under 60	477	\$ 4,948,453	\$ 10,374
60-64	215	2,996,275	13,936
65-69	277	3,682,150	13,293
70-74	414	4,973,210	12,013
75-79	538	5,968,316	11,094
Over 79	<u>1,477</u>	<u>15,301,261</u>	<u>10,360</u>
Total	3,398	\$ 37,869,665	\$ 11,145
Disability Retirees			
Under 60	743	\$ 30,770,444	\$ 41,414
60-64	403	18,594,479	46,140
65-69	459	21,300,144	46,406
70-74	390	17,098,516	43,842
75-79	288	11,788,152	40,931
Over 79	<u>203</u>	<u>6,614,159</u>	<u>32,582</u>
Total	2,486	\$ 106,165,895	\$ 42,706



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 12
RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
TOTAL

Age Last Birthday	Number	Annual Allowance	Average Annual Allowance
Service Retirees			
Under 60	2,806	\$ 137,910,627	\$ 49,148
60-64	3,149	170,973,333	54,294
65-69	3,103	164,343,800	52,963
70-74	2,688	137,720,040	51,235
75-79	1,877	85,716,754	45,667
Over 79	<u>1,865</u>	<u>66,940,971</u>	<u>35,893</u>
Total	15,488	\$ 763,605,525	\$ 49,303
Survivors and Beneficiaries			
Under 60	1,188	\$ 12,073,548	\$ 10,163
60-64	575	7,758,012	13,492
65-69	876	11,367,618	12,977
70-74	1,065	12,850,497	12,066
75-79	1,239	13,926,522	11,240
Over 79	<u>3,015</u>	<u>31,333,506</u>	<u>10,393</u>
Total	7,958	\$ 89,309,703	\$ 11,223
Disability Retirees			
Under 60	2,065	\$ 83,847,850	\$ 40,604
60-64	967	43,607,619	45,096
65-69	1,061	46,967,913	44,268
70-74	967	40,723,421	42,113
75-79	617	23,829,284	38,621
Over 79	<u>443</u>	<u>13,970,456</u>	<u>31,536</u>
Total	6,120	\$ 252,946,543	\$ 41,331



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 13

10 YEAR HISTORY OF MEMBERSHIP DATA
ACTIVE MEMBERS

Valuation as of Jan. 1,	Number of Members*	Percentage Change in Membership	Valuation Membership Payroll	Percentage Change in Payroll**
2019	28,904	1.75%	\$ 2,268,611	3.82%
2018	28,408	0.83%	2,185,127	1.46%
2017	28,175	1.99%	2,153,765	4.51%
2016	27,624	(0.52%)	2,060,851	3.74%
2015	27,769	0.59%	1,986,569	2.28%
2014	27,605	0.59%	1,942,269	1.51%
2013	27,444	(0.65%)	1,913,383	0.84%
2012	27,623	(2.12%)	1,897,413	1.55%
2011	28,222	(1.39%)	1,868,502	(1.41%)
2010	28,619		1,895,196	

* Includes rehired retirees

** Increase for 2018 and 2019 includes assumed increases for late reported salaries of 1.258% and 1.261% respectively



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 13

10 YEAR HISTORY OF MEMBERSHIP DATA
RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM THE ROLLS

Year Ended Dec. 31,	Added to Rolls		Removed from Rolls		Number on Rolls End of Year	Annual Allowances	Percentage Change in Allowances	Average Annual Allowances	Percentage Change in Membership
	Number	Annual Allowances	Number	Annual Allowances					
2018	1,292	\$ 66,129	1,087	\$ 28,036	29,566	\$ 1,105,862	3.57%	\$ 37.40	0.70%
2017	1,458	50,476	1,010	24,321	29,361	1,067,769	4.53%	36.37	1.55%
2016	1,401	47,436	890	21,186	28,913	1,021,509	4.67%	35.33	1.80%
2015	1,450	48,864	1,011	22,141	28,402	975,929	4.81%	34.36	1.57%
2014	1,261	41,378	859	17,204	27,963	931,176	4.59%	33.30	1.46%
2013	1,362	44,842	1,044	23,851	27,561	890,288	4.42%	32.30	1.17%
2012	1,390	48,249	1,225	19,469	27,243	852,602	5.58%	31.30	0.61%
2011	1,783	65,572	779	16,397	27,078	807,550	8.52%	29.82	3.85%
2010	1,165	34,553	803	15,721	26,074	744,144	4.74%	28.54	1.41%
2009	1,128	30,920	733	14,566	25,712	710,463	4.52%	27.63	1.56%



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 14

RECONCILIATION OF MEMBERSHIP DATA FROM
JANUARY 1, 2018 TO JANUARY 1, 2019
POLICE

	Active Members	Former Members	Rehired Retirees	Disableds	Service Retirees	Beneficiaries	Total
As of January 1, 2018	15,072	206	142	3,710	8,558	4,540	32,228
Changes in Status							
a) Retirements	(362)	(21)	(5)	-	383	-	(5)
b) Disabilities	(34)	-	-	34	-	-	-
c) Death With Beneficiary	(10)	(1)	-	(68)	(113)	274	82
d) Death Without Beneficiary	(10)	-	-	(43)	(86)	(236)	(375)
e) Non-Vested Termination	(269)	-	-	-	-	-	(269)
f) Vested Termination	(41)	41	-	-	-	-	-
g) Rehired Retirees	-	-	14	-	-	-	14
h) Return to Work	109	(74)	-	(1)	(1)	-	33
i) Cessation of Benefits/Cash-out	(165)	(11)	(16)	(1)	(16)	(18)	(227)
j) Data Corrections	(1)	8	(1)	3	4	-	13
Total Changes in Status	(783)	(58)	(8)	(76)	171	20	(734)
New Entrants During the Year	1,207	-	-	-	-	-	1,207
Net Change	424	(58)	(8)	(76)	171	20	473
As of January 1, 2019	15,496	148	134	3,634	8,729	4,560	32,701



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABLE 14

RECONCILIATION OF MEMBERSHIP DATA FROM
JANUARY 1, 2018 TO JANUARY 1, 2019
FIREFIGHTERS'

	Active Members	Former Members	Rehired Retirees	Disableds	Service Retirees	Beneficiaries	Total
As of January 1, 2018	13,140	140	54	2,527	6,612	3,414	25,887
Changes in Status							
a) Retirements	(342)	(9)	(1)	-	351	-	(1)
b) Disabilities	(30)	(2)	-	34	(2)	-	-
c) Death With Beneficiary	(12)	-	-	(47)	(101)	212	52
d) Death Without Beneficiary	(4)	-	-	(26)	(94)	(205)	(329)
e) Non-Vested Termination	(80)	-	-	-	-	-	(80)
f) Vested Termination	(18)	18	-	-	-	-	-
g) Rehired Retirees	-	-	1	-	-	-	1
h) Return to Work	81	(68)	-	(2)	-	-	11
i) Cessation of Benefits/Cash-out	(51)	(3)	(5)	-	(6)	(23)	(88)
j) Data Corrections	1	2	-	-	(1)	-	2
Total Changes in Status	(455)	(62)	(5)	(41)	147	(16)	(432)
New Entrants During the Year	723	-	-	-	-	-	723
Net Change	268	(62)	(5)	(41)	147	(16)	291
As of January 1, 2019	13,408	78	49	2,486	6,759	3,398	26,178



SECTION II – SUMMARY OF MEMBERSHIP DATA

TABEL 14

RECONCILIATION OF MEMBERSHIP DATA FROM
JANUARY 1, 2018 TO JANUARY 1, 2019
TOTAL

	Active Members	Former Members	Rehired Retirees	Disableds	Service Retirees	Beneficiaries	Total
As of January 1, 2018	28,212	346	196	6,237	15,170	7,954	58,115
Changes in Status							
a) Retirements	(704)	(30)	(6)	-	734	-	(6)
b) Disabilities	(64)	(2)	-	68	(2)	-	-
c) Death With Beneficiary	(22)	(1)	-	(115)	(214)	486	134
d) Death Without Beneficiary	(14)	-	-	(69)	(180)	(441)	(704)
e) Non-Vested Termination	(349)	-	-	-	-	-	(349)
f) Vested Termination	(59)	59	-	-	-	-	-
g) Rehired Retirees	-	-	15	-	-	-	15
h) Return to Work	190	(142)	-	(3)	(1)	-	44
i) Cessation of Benefits/Cash-out	(216)	(14)	(21)	(1)	(22)	(41)	(315)
j) Data Corrections	-	10	(1)	3	3	-	15
Total Changes in Status	(1,238)	(120)	(13)	(117)	318	4	(1,166)
New Entrants During the Year	1,930	-	-	-	-	-	1,930
Net Change	692	(120)	(13)	(117)	318	4	764
As of January 1, 2019	28,904	226	183	6,120	15,488	7,958	58,879



RISK CONSIDERATIONS

Actuarial Standards of Practice are issued by the Actuarial Standards Board and are binding on credentialed actuaries practicing in the United States. These standards generally identify what the actuary should consider, document and disclose when performing an actuarial assignment. In November, 2018, Actuarial Standard of Practice Number 51, *Assessment and Disclosure of Risk in Measuring Pension Obligations*, (ASOP 51) was issued as final with application to measurement dates on or after November 1, 2018. This ASOP, which applies to funding valuations, actuarial projections, and actuarial cost studies of proposed plan changes, is first applicable for the January 1, 2019 actuarial valuation for OP&F.

A typical retirement plan faces many different risks, but the greatest risk is the inability to make benefit payments when due. If plan assets are depleted, benefits may not be paid which could create legal and litigation risk or the plan could become “pay as you go”. The term “risk” is most commonly associated with an outcome with undesirable results. However, in the actuarial world, risk is translated into uncertainty. The actuarial valuation process uses many actuarial assumptions to project how future contributions and investment returns will meet the cash flow needs for future benefit payments. Of course, we know that actual experience will not unfold exactly as anticipated by the assumptions and that uncertainty, whether favorable or unfavorable, creates risk. ASOP 51 defines risk as the potential of actual future measurements to deviate from expected results due to actual experience that is different than the actuarial assumptions.

The various risk factors for a given plan can have a significant impact – good or bad – on the actuarial projection of liability and contribution rates.

There are a number of risks inherent in the funding of a defined benefit plan. These include:

- economic risks, such as investment return and inflation;
- demographic risks such as mortality, payroll growth, aging population including impact of baby boomers, and retirement ages;
- contribution risk, i.e., the potential for contribution rates to be too high for the plan sponsor/employer to pay and
- external risks such as the regulatory and political environment.

There is a direct correlation between healthy, well-funded retirement plans and consistent contributions equal to the full actuarial contribution rate each year.



SECTION III – RISK CONSIDERATIONS

RISK CONSIDERATIONS

In an actuarially funded plan, the most significant risk factor is investment return because of the volatility of returns and the size of plan assets compared to payroll (see Exhibit I). A perusal of historical returns over 10-20 years reveals that the actual return each year is rarely close to the average return for the same period. This is an expected result given the underlying capital market assumptions and the plan's asset allocation.

The following exhibits summarize some historical information that helps indicate how certain key risk metrics have changed over time.



TABLE 15

HISTORICAL ASSET VOLATILITY RATIOS

As a retirement system matures, the size of the market value of assets increases relative to the covered payroll of active members, on which the Fund is funded. The size of the plan assets relative to covered payroll, sometimes referred to as the asset volatility ratio, is an important indicator of the contribution risk for the Fund. The higher this ratio, the more sensitive a plan’s contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions.

Valuation Date	Market Value of Assets	Covered Payroll	Asset Volatility Ratio
January 1, 2010	\$ 10,043,120,272	\$ 1,895,195,693	5.30
January 1, 2011	11,262,586,733	1,868,502,282	6.03
January 1, 2012	10,976,214,161	1,897,413,344	5.78
January 1, 2013	11,840,698,340	1,913,382,667	6.19
January 1, 2014	13,166,077,870	1,942,269,436	6.78
January 1, 2015	13,453,447,836	1,986,568,535	6.77
January 1, 2016	12,923,943,156	2,060,850,584	6.27
January 1, 2017	13,682,389,240	2,144,265,467	6.38
January 1, 2018	14,963,614,004	2,174,667,031	6.88
January 1, 2019	13,941,056,807	2,268,610,714	6.15

The assets at January 1, 2019 are 615% of payroll so underperforming the investment return assumption by 1% (i.e., earn 7.00% for one year) is equivalent to 6.15% of payroll. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the UAL, this illustrates the risk associated with volatile investment returns.



TABLE 16

HISTORICAL CASH FLOWS

Plans with negative cash flows will experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions less benefit payments. If the Fund has negative cash flows and then experiences returns below the assumed rate, there are fewer assets to be reinvested to earn the higher returns that typically follow. While any negative cash flow will produce such a result, it is typically a negative cash flow of more than 5% of MVA that causes significant concerns.

Year Ended	Market Value of Assets	Contributions	Benefit Payments	Net Cash Flow	Net Cash Flow as a Percent of MVA
December 31, 2009	\$ 10,043,120,272	\$ 446,870,898	\$ (931,955,709)	\$ (485,084,811)	-4.83%
December 31, 2010	11,262,586,733	461,421,921	(988,026,266)	(526,604,345)	-4.68%
December 31, 2011	10,976,214,161	455,627,168	(1,049,873,474)	(594,246,306)	-5.41%
December 31, 2012	11,840,698,340	464,867,162	(1,075,411,270)	(610,544,108)	-5.16%
December 31, 2013	13,166,077,870	537,635,922	(1,110,987,128)	(573,351,206)	-4.35%
December 31, 2014	13,453,447,836	642,482,523	(1,126,154,321)	(483,671,798)	-3.60%
December 31, 2015	12,923,943,156	674,807,572	(1,170,476,866)	(495,669,294)	-3.84%
December 31, 2016	13,682,389,240	723,737,827	(1,187,020,466)	(463,282,639)	-3.39%
December 31, 2017	14,963,614,004	744,400,996	(1,256,254,446)	(511,853,450)	-3.42%
December 31, 2018	13,941,056,807	774,068,159	(1,314,608,496)	(540,540,337)	-3.88%



TABLE 17

LIABILITY MATURITY MEASUREMENTS

Most public sector retirement systems have been in operation for many years. As a result, they have aging plan populations indicated by an increasing ratio of retirees to active members and a growing percentage of retiree liability. The retirement of the remaining baby boomers over the next decade is expected to further exacerbate the aging of the retirement system population. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the Fund since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread costs.

Projections provide the most effective way of analyzing the impact of these changes on future funding measures, but studying several key metrics from the valuation can also provide some valuable insight.

Valuation Date	Retiree Liability	Total Actuarial Liability	Retiree Percentage	Covered Payroll	Ratio
January 1, 2010	\$ 7,371,203,908	\$15,817,068,386	46.60%	\$ 1,895,195,693	8.35
January 1, 2011	7,747,402,126	16,571,524,158	46.75%	1,868,502,282	8.87
January 1, 2012	9,091,917,466	17,634,554,969	51.56%	1,897,413,344	9.29
January 1, 2013	9,435,779,283	17,245,751,991	54.71%	1,913,382,667	9.01
January 1, 2014	9,799,718,068	17,823,319,753	54.98%	1,942,269,436	9.18
January 1, 2015	10,194,964,890	18,395,592,476	55.42%	1,986,568,535	9.26
January 1, 2016	10,700,145,394	19,135,875,916	55.92%	2,060,850,584	9.29
January 1, 2017	11,499,181,496	20,290,393,633	56.67%	2,144,265,467	9.46
January 1, 2018	12,020,502,851	20,887,227,279	57.55%	2,174,667,031	9.60
January 1, 2019	12,481,671,003	21,264,708,173	58.70%	2,268,610,714	9.37



APPENDIX A

SUMMARY OF MAIN BENEFIT PROVISIONS

The following is intended to summarize the key provisions valued in this valuation. Members of OP&F and other parties should not rely on this summary as a substitute for or legal interpretation of the laws and rules covering this retirement plan.

Membership

Membership in OP&F is mandatory under Ohio Law for all full-time police officers employed by Ohio municipalities and appointed under the required statutory provisions. Membership is also mandatory for all full-time firefighters employed by Ohio municipalities, townships, villages, joint fire districts or other political subdivisions. In order to become members of OP&F, full-time firefighters are required to satisfactorily complete, or have satisfactorily completed, a firefighter training course approved under former Section 3303.07, Section 4765.55 or conducted under Section 3737.33 of the ORC.

Eligibility for Membership

Full-time police officers or firefighters are eligible for membership in OP&F immediately upon commencement of employment as a full-time police officer or firefighter.

Contributions

Employer and member contributions are established by statute and both are due monthly. Employers of police officers pay 19.5 percent of salary; employers of firefighters pay 24 percent of salary. Members contributed 10 percent of salary through July 1, 2013. On July 2, 2013 the member contribution rate increased by 0.75 percent to 10.75 percent. The member contribution rate increased annually by 0.75 percent until it reached the current 12.25 percent on July 2, 2015.

Employer Contribution Rates – Percentage of Active Member Payroll:

Time Frame of Rates	Police	Fire
Jan 1, 1986 thru Present	19.50%	24.00%



Member Contribution Rates – Percentage of Active Member Payroll:

Time Frame of Rates	Police	Fire
July 2, 2015 and Thereafter	12.25%	12.25%
July 2, 2014 thru July 1, 2015	11.50%	11.50%
July 2, 2013 thru July 1, 2014	10.75%	10.75%
Sept. 9, 1988 thru July 1, 2013	10.00%	10.00%

Benefits

Service Retirement

Upon attaining a qualifying age with sufficient years of service, a member of OP&F may retire and receive a lifetime monthly pension. OP&F offers four types of service retirement: normal, service commuted, age/service commuted and actuarially reduced. Each type has different eligibility guidelines and is calculated using the member’s average annual salary.

Since average annual salary is subject to certain statutory and administrative limitations, not all salary, earnings, or compensation may be used in the calculation. OP&F calculates allowable average annual salary as follows:

- For OP&F members with 15 or more years of service credit as of July 1, 2013, average annual salary is an average of the three years of highest allowable earnings, regardless of when in their career the highest years occurred.
- For OP&F members with less than 15 years of service credit as of July 1, 2013, average annual salary is an average of the five years of highest allowable earnings, regardless of when in their career the highest years occurred.
- A “salary benchmark” is established for members with 15 or more years of service credit as of July 1, 2013, under which certain increases are excluded from salary for the purpose of determining allowable average annual salary. This benchmarking does not apply to members with less than 15 years of service credit as of July 1, 2013.

Normal Service Retirement

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, minimum retirement age is 52 with at least 25 years of service credit.

For members hired into an OP&F-covered position on or before July 1, 2013, minimum retirement age is 48 with 25 years of service credit.



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

Benefit

An annual pension equal to a percentage of the allowable average annual salary. The percentage equals 2.5 percent for each of the first 20 years of service, 2.0 percent for each of the next five years of service, and 1.5 percent for each year of service in excess of 25 years. The maximum pension of 72 percent of the allowable average annual salary is paid after 33 years of service.

Service Commuted Retirement

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, the minimum retirement age is 52, they must have at least 15 years of service credit and 25 years have elapsed from the date of their full-time hire.

For members hired into an OP&F-covered position on or before July 1, 2013, the minimum retirement age is 48, they must have at least 15 years of service credit and 25 years of service and 25 years have elapsed from the date of their full-time hire.

Benefit

An annual pension equal to 1.5 percent of the allowable average annual salary multiplied by the number of full years of service credit (up to 25 years).

Age/Service Commuted Retirement

Eligibility

Age 62, 15 years of service credit and still working as a full-time police officer or firefighter.

Benefit

An annual pension that uses the same formula as for the Normal Service Retirement benefit.

Actuarially Reduced

Eligibility

For members hired into an OP&F-covered position after July 1, 2013, age 48 with 25 years of service.

Benefit

An annual pension reduced to the actuarial equivalent of the amount payable had the member retired at age 52.



Rights Upon Separation From Service

Deferred Pension

If a member meets the years of service credit required for any of the service retirement pensions but leaves service before attaining the minimum retirement age, a pension becomes payable upon attainment of the qualifying age and filing the appropriate paperwork with OP&F.

Refund of Employee Contributions

Upon separation from service, a member can receive the contributions that he or she made to the plan or the employee share of member contributions picked-up on the member's behalf by their employer. Employer contributions are not refundable.

Termination before Retirement with 25 Years of Service Credit

Benefit

Same as the Normal Service Retirement benefit, except benefit commences once the member reaches minimum retirement age.

- For members hired into an OP&F-covered position after July 1, 2013, minimum retirement age is 52.
- For members hired into an OP&F-covered position on or before July 1, 2013, minimum retirement age is 48.

Termination before Retirement with 15 Years of Service Credit

Benefit

Same as the Service Commuted Retirement, except benefit commences once the member reaches minimum retirement age and 25 years have elapsed from the date of full-time hire.

- For members hired into an OP&F-covered position after July 1, 2013, the minimum retirement age is 52.
- For members hired into an OP&F-covered position on or before July 1, 2013, the minimum retirement age is 48.



Termination Before Retirement With Less Than 15 Years of Service Credit

Benefit

A lump sum amount equal to the sum of the member's contributions to OP&F.

Deferred Retirement Option Plan

Eligibility

When a member is eligible for a normal service retirement they can enter DROP by delaying retirement and continuing to work as a full-time police officer or firefighter.

- For members hired into an OP&F-covered position after July 1, 2013, normal service retirement eligibility is age 52 with at least 25 years of service credit.
- For members hired into an OP&F-covered position on or before July 1, 2013, normal service retirement eligibility is age 48 with at least 25 years of service credit.

Benefit

DROP is a cost neutral benefit offered by OP&F. Upon the DROP effective date, the member's pension is calculated as if that were their date of retirement. While the member continues to work and draw their normal salary, the amount they would have received in retirement benefits accumulates tax-deferred at OP&F on their behalf, as well as a portion of their OP&F employee contributions and interest. Since the member's pension has already been calculated:

- The years of DROP service do not apply towards the member's normal service retirement.
- If a member earns a higher salary after their DROP effective date due to a raise, job promotion, etc., it will not be used to recalculate their pension and, therefore, will not result in that member receiving a higher pension upon retirement.

The DROP interest rate is set by administrative rule and is subject to change at any time. OP&F credits interest to all DROP balances each month at a rate equal to the 10-year United States (U.S.) Treasury Note Business Day Series, as published by the U.S. Department of the Treasury, with a cap of five percent. This variable interest rate is adjusted quarterly to match the published 10-year U.S. Treasury Note rate for the last trading business day of the preceding quarter and is in effect for the subsequent quarter.



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

Members whose election to participate in DROP is effective after July 1, 2013 do not qualify for annual cost-of-living allowances (COLA) at any time during DROP. Members whose election to participate in DROP is effective on or before July 1, 2013 will continue to receive a cost-of-living allowance during DROP, but only when they reach 55 years of age and have been participating in DROP for at least one year. Those members whose enrollment date into DROP qualify them for a cost-of-living allowance during DROP will receive three percent of their base pension.

Member contributions are credited to their DROP account based on the number of years of DROP service. For those members whose election to participate in DROP is effective after July 1, 2013, OP&F applies contributions to DROP in the following manner:

Years of DROP Service	Percentage of Member Contributions
Years 1-3	50% of member's contributions
Years 4-5	75% of member's contributions
Years 6-8	100% of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is five years and the maximum is eight.

- If a member terminates employment within the first five years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing their required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable will receive the entire DROP account balance determined at the time of death.
- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit earned during the DROP participation period.



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

For those members whose election to participate in DROP was on or before July 1, 2013, member contributions are applied to DROP under the following schedule:

Years of DROP Service	Percentage of Member Contributions
Years 1-2	50% of member's contributions
Year 3	75% of member's contributions
Years 4-8	100% of member's contributions

For this group of members, the minimum participation in DROP, without penalty, is three years and the maximum is eight.

- If a member terminates employment within the first three years of joining DROP, then the member forfeits all of their DROP interest. In addition to losing their accumulated interest, members who choose to terminate employment before completing their required participation period cannot withdraw any of the funds in their DROP account until the minimum participation period has expired. The only exception to this rule is if the member dies during the minimum participation period. The member's surviving spouse, designated beneficiary or estate, as applicable will receive the entire DROP account balance determined at the time of death.
- If a member chooses to continue working after eight years in DROP, the member forfeits all DROP benefits and receives the Normal Service Retirement benefit upon retirement, which will be calculated to include the service credit earned during the DROP participation period.

All DROP members retiring before the eight-year max receive their Normal Service Retirement benefit determined at the time of DROP entry, with the COLA adjustment (if applicable) to date of retirement when eligible. These members will also receive the DROP account balance as a lump sum or monthly annuity.

If a member dies while participating in DROP, the member's surviving spouse, designated beneficiary or estate will receive the entire DROP account balance determined at the time of death. The surviving spouse or contingent dependent beneficiary will receive the greater of the retirement allowance made at the time of DROP entry or the Normal Service Retirement benefit paid with COLA adjustments (if applicable) to the date of death, paid as if the member had elected a 50 percent joint and survivor option at death. All other statutory death benefits will apply.



If the member becomes disabled while in DROP, and has not terminated employment, the member must choose either to receive a disability benefit or a service retirement with DROP. If the member chooses the disability benefit, the member forfeits all DROP benefits and receives the disability benefit, with service credit during the DROP period included.

Disability Benefits

Members who become unable to perform their official duties and whose earning capacities are impaired may qualify for disability benefits. Disability benefits are classified as either service-incurred (on-duty) or non-service-incurred (off-duty) and differ in eligibility requirements and benefit formulas. Annual medical evaluations are required for disability benefit recipients who would not have met the age and service requirements for a Normal Service Retirement, unless the Board of Trustee waives this requirement based upon an OP&F physician's certification that the disability is ongoing and further evaluation would not be cost effective. Annual earnings statements are also required to be submitted to OP&F.

Permanent and Total Disability (On-Duty)

Eligibility

No age or service requirement.

Benefit

An annual benefit equal to 72 percent of the allowable average annual salary.

Partial Disability (On-Duty)

Eligibility

No age or service requirement.

Benefit

If the member has less than 25 years of service credit an annual benefit fixed by the Board of Trustees to be a certain percent up to 60 percent of the allowable average annual salary. If the member has 25 or more years of service credit, the annual disability benefit is equal to the Normal Service Retirement amount.



Non-Service Incurred Disability (off-Duty)

Eligibility

Any age and five years of service credit.

Benefit

An annual amount is the percent awarded by the Board of Trustees and may not exceed 60 percent of the allowable average annual salary. Service over 25 years cannot be used in calculating an off-duty disability award.

Pre-Retirement Survivor Annuity

Eligibility

Upon death before retirement, but after having satisfied the requirements for a Normal Service Retirement or an Age/Service Commuted retirement.

Benefit

The surviving spouse or contingent dependent beneficiary will receive the equivalent of a 50 percent joint and survivor annuity, calculated under the assumption that the decedent had retired effective the day following his/her death.

Statutory Survivor Benefits

Eligibility

Upon death of any active or retired member of OP&F.

Benefit

- Surviving Spouse's Benefit

An annual amount equal to \$6,600 (\$550 monthly), plus an annual COLA of three percent of the original base benefit, paid each July 1, beginning July 1, 2000. The benefit is paid to the surviving spouse for life.

If the spouse is receiving a full death benefit under the Death Fund Benefit statute, the spouse's statutory survivor benefit is \$4,920 (\$410 monthly). The Death Benefit Fund is funded by the State of Ohio and provides special benefits to eligible survivors of public safety officers who are killed in the line of duty or who die from injuries or disease incurred in the performance of official duties. These eligible survivors are entitled to receive the member's full monthly salary, which will be reduced at the member's



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

retirement eligibility date. These death benefit payments are in addition to any optional payment plan benefits elected by the member.

- **Surviving Child’s Benefit**

An annual amount equal to \$1,800 (\$150 monthly), payable until such child attains age 18 or marries, whichever occurs first. The payment can continue to an unmarried full-time student until age 22. A dependent disabled child, regardless of age at time of member’s death, is entitled to a benefit until death or recovery from disability. A COLA of three percent of the original base is payable each July 1.

- **Dependent Parents’ Benefit**

If there is no surviving spouse or dependent children, an annual amount of \$2,400 (\$200 monthly) is payable to one dependent parent or \$1,200 (\$100 monthly) each to two dependent parents for life or until dependency ceases or remarriage. A COLA of three percent of the original base is payable each July 1.

Survivors	Monthly Pension	Causes of Termination
Widow/Widower	current amount + future COLA	*Death
Minor child	current amount + future COLA	*Death *Marriage *Attainment of age 18
Dependent disabled child	current amount + future COLA	*Death *Recovery from disability
Student	current amount + future COLA	*Death *Marriage *Attainment of age 22 *Loss of student status
One dependent parent	current amount + future COLA	*Death *Re-marriage
Two dependent parents	1/2 current amount (each) + future COLA	*Termination of dependency

Benefit Type	Base Monthly Benefit		
	Base Monthly Benefit Amount	Amount Plus Increases Through July 1, 2017	Monthly Increases Effective July 1, 2018
Spouse *	\$550	\$842.60 ***	\$16.50
Child	150	229.80 ***	4.50
One Parent	200	306.40 ****	6.00
Two Parents	100	153.20	3.00



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

- * Spouse's benefit is \$410 if spouse is receiving a full death benefit under the Death Fund Benefit statute. There is no annual increase on this benefit payment.
- ** On July 1, 2000 the Statutory Surviving Spouse Benefit increased by \$12.10 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was \$16.50 or three percent of the base benefit.
- *** On July 1, 2000 the Statutory Child Benefit increased by \$3.30 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was \$4.50 or three percent of base benefit.
- **** On July 1, 2000 the Statutory Surviving One Parent Benefit increased by \$4.40 per month. This increase was a percentage of the original benefit amount, equaling the percentage increase in the CPI plus unused prior increases, to a maximum of three percent. Every year after 2000, the monthly increase was \$6.00 or three percent of base benefit.

Lump Sum Death Benefit

Eligibility

Upon death of any retired or disabled member of OP&F.

Benefit

A lump sum payment of \$1,000 is paid to the member's surviving spouse or, if no surviving spouse, to a designated beneficiary. If there is no surviving spouse or beneficiary, then it is paid to the member's estate.

Annuities

Effective Feb. 28, 1980, for those members who are retiring on either a service pension or a disability benefit, optional annuity plans can be chosen, subject to certain limitations. The member can elect actuarially reduced benefits under a joint and survivor annuity, life annuity certain and continuous, or multiple beneficiary annuity plan. The optional annuity plans allow the member's beneficiary(ies) to receive a lifetime payment upon the member's death.



Annuity Types

Single Life Annuity

For unmarried members, this is the standard annuity plan. Married members may elect this plan only if the spouse consents to the selection in writing. This plan pays the maximum retirement allowance that the member is entitled to receive and, upon the member's death, none of the pension or benefit is continued to any beneficiary.

Joint and Survivor Annuity (JSA)

Under this plan, a member designates that, upon his or her death, a certain percentage of the member's actuarially reduced benefit is continued to a surviving designated beneficiary for life.

Any percentage between one percent and 100 percent of the member's reduced pension may be continued to the surviving designated beneficiary, but the percent continued may be limited based on the beneficiary's age. If a member is married at the time benefits are elected, the standard plan is a 50 percent JSA continuing one-half of the member's reduced monthly benefit to his or her surviving spouse. If the member wants to select a plan which provides for the continuation of benefits for someone other than the spouse or less than 50 percent JSA to the spouse, the spouse must consent in writing to this choice. This plan automatically terminates upon death of the beneficiary, to be effective the month following OP&F's receipt of notice of death, or it may be cancelled upon divorce with the consent of the member's spouse or a specific court order, at which point the annuity reverts to the single life annuity to the member. Elected option may be cancelled within one year after benefits commence, with the consent of the beneficiary.



Multiple Beneficiary Annuity

Under the multiple beneficiary annuity plan, a member may designate up to four beneficiaries at the time of retirement so that, upon death, a certain percentage of the member's actuarially reduced benefit is continued to the surviving beneficiaries for their lives. If the member is married at the time of retirement, the spouse must consent in writing for an annuity selection that provides for less than 50 percent JSA payable to the spouse.

Life Annuity Certain and Continuous (LACC)

This plan provides a lifetime allowance to the member and will only be paid to a designated beneficiary if the member dies and the period elected by the member has not expired. The minimum guarantee period is five years and the maximum is 20 years. 100 percent of the member's reduced pension continues to the beneficiary for the guarantee period selected. Elected option may be cancelled within one-year after benefits commence, with the consent of the beneficiary. If the member is married at the time of retirement, the spouse must consent in writing for an annuity selection that provides for less than a 50 percent JSA payable to the spouse.

Tiered Retirement Plan – COLA or Terminal Pay (Non-COLA)

Members retiring on or after July 24, 1986, who had 15 or more years of service credit as of January 1, 1989, are eligible to select between two different pension calculation plans. Under the terminal pay method, a member's monthly pension benefit is calculated using terminal payouts at the time of retirement such as accrued sick leave and vacation compensation to increase the amount of the average annual salary, but subject to certain limitations, and these members are not eligible to receive cost-of-living allowance adjustments. Under the COLA method, terminal payments are not included in the calculation of a member's average annual salary, but the member is eligible to receive COLA increases. The COLA method is the automatic calculation method for any active member with fewer than 15 years of service as of January 1, 1989

Under the COLA method, members who are at least 55 years old and have been receiving OP&F pension benefits for at least one year are eligible for cost-of-living allowance adjustments. The age 55 provision for receiving a COLA does not apply to those who are receiving a permanent and total disability benefit, surviving beneficiaries under optional plans and statutory survivors.

The COLA amount for members who have 15 or more years of service credit as of July 1, 2013 and members who are receiving a pension benefit that became effective before July 1, 2013 will be equal to three percent of the member's base pension benefit.



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

The COLA amount for members who have less than 15 years of service credit as of July 1, 2013, and members whose pension benefit became effective on or after July 1, 2013, will be equal to a percentage of the member's base pension benefit where the percentage is the lesser of three percent or the percentage increase in the consumer price index, if any, over the twelve-month period that ends on the thirtieth day of September of the immediately preceding year, rounded to the nearest one-tenth of one percent.

Members who retired prior to July 24, 1986 or their surviving beneficiaries under optional plans are entitled to cost-of-living allowance increases. The annual increase is paid on July 1st of each year. The annual COLA increase is \$360 under a Single Life Annuity Plan with proportional reductions for optional payment plans.

Re-employed Retiree's Defined Contribution Plan Benefit

Effective June 30, 1991, every person who is retired under an Ohio public pension plan and who is re-employed in an OP&F covered position must contribute to OP&F at the same rate as other police officers or firefighters. The employer pays the normal rate as well. If the re-employed member terminates employment before age 60, Ohio law allows the member to receive a lump sum payment of post-retirement employee contributions made during the period of re-employment, plus interest. If the member waits until age 60 to receive this benefit, he or she can choose to receive either a lump sum payment in an amount equal to twice his or her contributions, plus interest, or a lifetime annuity paid monthly. If, after calculation, the member's lifetime monthly annuity is less than \$25, the member may only select the lump sum payment option. If the member is married spousal consent is required before payment can occur.

Group Health Insurance and Medicare

Commencing January 1, 1974, the Board of Trustees may contract for group health insurance on the basis of part or all of the cost of the premium for the coverage to be paid by OP&F. Medical and prescription drug coverage sponsored by OP&F are not vested rights and are subject to change at any time upon action of the Board of Trustees.

Effective January 1, 1977, OP&F is mandated to pay the premium for supplemental Medicare (Part B) up to the statutory maximum provided the benefit recipient is not eligible for reimbursement from any other sources. By law, OP&F is required to pay monthly to each recipient of service benefits, disability benefits and survivor benefits not less than \$96.40, with the exception that OP&F cannot pay an amount that exceeds the amount paid by the recipient for the coverage. Once OP&F obtains the proper documentation from the service retiree, disability retiree



APPENDIX A – SUMMARY OF MAIN BENEFIT PROVISIONS

or surviving beneficiary of their enrollment in the Medicare program, Medicare (Part B) premium payments begin.

Note: This benefit is not included in the principal valuation results, but is included in the retiree health care valuation results.

Effective July 1992, retirees and survivors make monthly medical benefit contributions, which are credited to the Health Care Stabilization Fund. These contributions are reviewed on an annual basis to determine adequacy with the rising cost of health care. In 2004, a new contribution strategy was implemented. Retirees and survivors now pay a percentage of the full cost of the benefit. The percentage ranges from 25 percent to 100 percent for themselves and dependents based on the year of retirement.



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

APPENDIX B

STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

The actuarial assumptions were adopted as of January 1, 2017, based on a five-year experience review covering the period 2012 through 2016. The next review of the actuarial assumptions is to be completed for adoption with the January 1, 2022 valuation.

Interest Rate

8.00 percent per annum, compounded annually.

Salary Increase Rates

Assumed annual salary increases are as follows:

Years of Service	Salary Increase Rate
Less than 1	10.50%
1	9.00%
2	8.00%
3	6.00%
4	4.50%
5 or more	3.75%

Payroll Growth

3.25 percent per annum, compounded annually, consisting of inflation rate of 2.75 percent plus productivity increase rate of 0.5 percent.

DROP Interest Crediting Rate

4.0 percent per annum, compounded annually.

CPI-Based COLA

2.2 percent simple for increases based on the lesser of the increase in CPI and three percent.



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Withdrawal Rates

The following sample withdrawal rates are based on age and service (for causes other than death, disability, or retirement):

Police

Years of Service	Age							
	25	30	35	40	45	50	55	60
0	9.62%	9.94%	15.93%	17.85%	15.22%	22.00%	18.68%	19.23%
1	5.88%	5.54%	6.49%	7.65%	5.99%	10.15%	11.21%	11.54%
2	3.27%	4.21%	3.92%	5.87%	5.80%	9.90%	9.34%	9.62%
3	4.11%	3.35%	4.66%	5.74%	5.61%	9.17%	8.78%	9.04%
4	3.64%	3.06%	4.29%	5.23%	4.95%	7.95%	7.47%	7.69%
5	2.59%	2.65%	3.49%	4.22%	4.22%	7.57%	8.79%	6.50%
6	2.64%	2.56%	3.28%	3.57%	3.44%	5.86%	7.03%	5.20%
7	2.58%	2.21%	3.18%	3.46%	3.44%	5.71%	6.90%	5.10%
8	2.39%	1.95%	2.56%	1.95%	2.06%	5.57%	6.63%	4.90%
9	2.12%	1.59%	1.74%	1.62%	1.18%	4.43%	6.09%	4.50%
10	1.56%	1.56%	1.66%	1.59%	1.09%	4.31%	6.03%	4.46%
11	1.49%	1.49%	1.58%	1.56%	1.00%	4.20%	5.98%	4.42%
12	1.41%	1.41%	1.50%	1.52%	0.91%	4.09%	5.92%	4.38%
13	1.31%	1.31%	1.42%	1.49%	0.83%	3.97%	5.87%	4.34%
14	1.21%	1.21%	1.33%	1.46%	0.74%	3.86%	5.82%	4.30%
15+	1.17%	1.17%	1.17%	0.91%	0.79%	0.91%	1.10%	1.96%



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Firefighters

Years of Service	Age							
	25	30	35	40	45	50	55	60
0	2.69%	3.46%	3.66%	6.22%	8.48%	6.93%	8.73%	19.11%
1	2.11%	1.46%	2.96%	4.98%	7.01%	5.00%	7.16%	15.66%
2	1.53%	1.64%	1.83%	3.04%	4.98%	4.54%	7.16%	15.66%
3	1.44%	1.55%	1.74%	2.90%	4.80%	4.32%	7.16%	15.66%
4	1.15%	1.46%	1.66%	2.77%	4.61%	3.97%	5.73%	12.53%
5	0.83%	0.94%	1.33%	1.64%	2.05%	2.91%	5.33%	11.94%
6	0.78%	0.87%	1.24%	1.53%	1.72%	2.58%	3.66%	8.19%
7	0.78%	0.80%	1.19%	1.42%	1.51%	2.37%	3.35%	7.51%
8	0.72%	0.73%	1.05%	1.31%	1.40%	2.26%	3.05%	6.82%
9	0.73%	0.73%	0.86%	1.10%	1.18%	1.62%	2.29%	5.12%
10	0.73%	0.73%	0.84%	1.07%	1.16%	1.55%	2.21%	4.95%
11	0.71%	1.71%	0.82%	1.05%	1.14%	1.49%	2.13%	4.78%
12	0.68%	0.68%	0.80%	1.03%	1.12%	1.42%	2.06%	4.60%
13	0.65%	0.65%	0.78%	1.01%	1.10%	1.36%	1.98%	4.43%
14	0.61%	0.61%	0.76%	0.99%	1.07%	1.29%	1.91%	4.26%
15+	0.90%	0.90%	0.90%	0.47%	0.50%	0.59%	0.92%	1.21%



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Rates of Disability

The following are sample rates of disability and occurrence of disability by type:

Age	Police		Fire	
	Hired Before July 2, 2013	Hired After July 1, 2013	Hired Before July 2, 2013	Hired After July 1, 2013
20	0.001%	0.001%	0.001%	0.001%
25	0.007%	0.007%	0.005%	0.005%
30	0.089%	0.089%	0.002%	0.022%
35	0.154%	0.154%	0.091%	0.091%
40	0.403%	0.403%	0.204%	0.204%
45	0.533%	0.533%	0.347%	0.347%
50	1.351%	0.691%	1.337%	0.475%
55	1.119%	1.119%	2.025%	2.025%
60	2.078%	2.078%	3.060%	3.060%
64	3.099%	3.099%	7.190%	7.190%

Upon attainment of normal retirement eligibility, the rate is 0.300%.

Type of Disability	
On duty permanent and total	17%
On duty partial	58%
Off duty ordinary	25%



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Retirement Rates

The following rates of retirement apply to members who have not elected to be in DROP:

Age	Police	Firefighter
48	0%	0%
48-50	5%	4%
51	6%	4%
52	6%	6%
53	10%	6%
54	10%	7%
55-57	11%	11%
58	5%	16%
59	10%	16%
60	18%	20%
61	19%	20%
62	25%	50%
63	25%	20%
64	25%	25%
65-69	35%	25%
70	100%	100%

Deferred Retirement Option Plan Elections

90 percent of members who do not retire when first eligible are assumed to elect DROP.



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

DROP Retirement Rates

The following rates of retirement apply to members in DROP on or before July 1, 2013:

Police

Age	Years in DROP								
	0	1	2	3	4	5	6	7	8
48	5%	5%	0%	0%	0%	0%	0%	0%	0%
49	4%	5%	0%	0%	0%	0%	0%	0%	0%
50	4%	5%	4%	0%	0%	0%	0%	0%	0%
51	4%	5%	4%	10%	0%	0%	0%	0%	0%
52	3%	5%	4%	9%	9%	0%	0%	0%	0%
53	3%	5%	4%	9%	8%	12%	0%	0%	0%
54	4%	5%	5%	10%	9%	13%	13%	0%	0%
55	5%	5%	5%	16%	16%	14%	18%	44%	0%
56	5%	5%	5%	15%	15%	13%	17%	41%	100%
57	5%	5%	5%	16%	15%	14%	17%	43%	100%
58	5%	5%	5%	16%	15%	14%	17%	42%	100%
59	15%	5%	5%	15%	16%	16%	18%	44%	100%
60	17%	5%	5%	16%	17%	18%	19%	47%	100%
61	17%	5%	5%	17%	18%	18%	20%	48%	100%
62	16%	5%	5%	16%	17%	17%	19%	46%	100%
63	18%	6%	6%	18%	19%	19%	21%	50%	100%
64	19%	5%	5%	17%	17%	18%	19%	49%	100%
65	24%	6%	6%	23%	22%	22%	25%	59%	100%
66	24%	6%	6%	20%	19%	22%	22%	54%	100%
67	24%	5%	5%	20%	19%	22%	22%	53%	100%
68	24%	5%	5%	15%	19%	22%	22%	53%	100%
69	24%	5%	5%	20%	19%	22%	22%	47%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Firefighter

Age	Years in DROP								
	0	1	2	3	4	5	6	7	8
48	2%								
49	4%	3%							
50	5%	4%	4%						
51	3%	3%	3%	9%					
52	3%	3%	3%	8%	9%				
53	4%	3%	4%	10%	11%	13%			
54	4%	3%	3%	9%	11%	13%	13%		
55	6%	4%	4%	13%	13%	15%	17%	38%	
56	5%	3%	4%	13%	12%	14%	17%	37%	100%
57	5%	3%	4%	13%	12%	14%	17%	37%	100%
58	5%	3%	4%	17%	15%	15%	17%	46%	100%
59	6%	3%	4%	17%	15%	16%	18%	46%	100%
60	6%	3%	4%	18%	16%	16%	19%	48%	100%
61	6%	3%	4%	17%	15%	15%	19%	45%	100%
62	6%	3%	4%	17%	15%	16%	18%	46%	100%
63	29%	3%	4%	20%	18%	20%	18%	52%	100%
64	32%	3%	4%	21%	20%	22%	19%	55%	100%
65	33%	4%	4%	22%	21%	23%	20%	57%	100%
66	38%	4%	5%	26%	24%	23%	24%	64%	100%
67	38%	4%	5%	26%	24%	23%	24%	65%	100%
68	38%	4%	5%	26%	24%	23%	24%	65%	100%
69	38%	4%	5%	20%	25%	23%	24%	65%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%

The same rates apply for members entering DROP after July 1, 2013, except the rates for years three and four are replaced with the rates for year two.



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

The following rates of retirement apply to members who are not yet in DROP but may become eligible in the future:

Police

Age	Years Eligible for DROP									
	0	1	2	3	4	5	6	7	8	9+
47	6%									
48	12%									
49	7%	5%								
50	6%	5%	5%							
51	6%	5%	5%	5%						
52	6%	5%	5%	5%	5%					
53	11%	5%	5%	5%	5%	12%				
54	10%	5%	5%	5%	5%	13%	13%			
55	12%	6%	6%	6%	6%	14%	18%	43%		
56	12%	6%	5%	5%	5%	13%	17%	41%	96%	
57	13%	6%	5%	5%	5%	14%	17%	43%	94%	100%
58	7%	5%	5%	5%	5%	13%	17%	43%	98%	100%
59	10%	5%	5%	5%	5%	17%	18%	45%	97%	100%
60	20%	8%	6%	6%	6%	18%	20%	48%	98%	100%
61	32%	6%	5%	5%	5%	18%	19%	46%	93%	100%
62	29%	9%	5%	5%	5%	16%	17%	42%	92%	100%
63	33%	5%	7%	7%	7%	18%	19%	46%	95%	100%
64	31%	11%	7%	7%	7%	18%	19%	49%	93%	100%
65	47%	13%	6%	6%	6%	20%	22%	54%	100%	100%
66	47%	13%	5%	5%	5%	20%	20%	50%	100%	100%
67	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
68	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
69	47%	13%	18%	18%	18%	20%	20%	46%	100%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Firefighters

Age	Years Eligible for DROP									
	0	1	2	3	4	5	6	7	8	9+
47	3%									
48	6%									
49	6%	4%								
50	6%	4%	4%							
51	5%	3%	4%	4%						
52	5%	3%	3%	3%	3%					
53	5%	4%	4%	4%	4%	13%				
54	5%	3%	4%	4%	4%	13%	13%			
55	8%	5%	5%	5%	5%	15%	18%	38%		
56	8%	5%	4%	4%	4%	14%	17%	38%	95%	
57	8%	4%	5%	5%	5%	15%	17%	38%	98%	100%
58	8%	5%	4%	4%	4%	16%	19%	46%	97%	100%
59	9%	5%	5%	5%	5%	16%	19%	46%	97%	100%
60	10%	5%	7%	7%	7%	17%	20%	49%	86%	100%
61	11%	5%	4%	4%	4%	16%	19%	45%	93%	100%
62	15%	7%	12%	12%	12%	16%	20%	49%	95%	100%
63	33%	7%	4%	4%	4%	19%	16%	48%	100%	100%
64	37%	7%	3%	3%	3%	20%	18%	49%	100%	100%
65	37%	7%	8%	8%	8%	20%	18%	51%	100%	100%
66	37%	7%	4%	4%	4%	23%	23%	61%	100%	100%
67	37%	7%	4%	4%	4%	23%	23%	53%	100%	100%
68	37%	7%	4%	4%	4%	23%	23%	53%	100%	100%
69	37%	7%	4%	4%	4%	23%	23%	47%	100%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Retirement Age for Inactive Vested Participants

Commencement at age 48 and 25 years of service from full-time hire date, whichever is later.



APPENDIX B – STATEMENT OF ACTUARIAL ASSUMPTIONS AND OTHER INPUTS

Healthy Mortality

Mortality for non-disabled participants is based on the RP-2014 Total Employee and Healthy Annuitant Mortality Tables rolled back to 2006, adjusted according to the rates in the following table, and projected with the Buck Modified 2016 Improvement Scale. Rates for surviving beneficiaries are adjusted by 120%.

Age	Police	Fire
67 or less	77%	68%
68-77	105%	87%
78 and up	115%	120%

Disabled Mortality

Mortality for disabled participants is based on the RP-2014 Disabled Mortality Tables rolled back to 2006, adjusted according to the rates in the following table, and projected with the Buck Modified 2016 Improvement Scale.

Age	Police	Fire
59 or less	35%	35%
60-69	60%	45%
70-79	75%	70%
80 and up	100%	90%

Credited Service

Credited service on the valuation date, as provided by OP&F, includes all service credited under the plan, including service transferred from other municipal plans and purchased service. The valuation assumes future service will be credited at the rate of one year per year worked, with no assumed future crediting of transferred service or purchased service.

415 Limits

Benefits are limited by the IRC Section 415, assumed to increase 2.75 percent per annum.



Future Expenses

The normal cost is increased by all administrative expenses budgeted, net of the State Subsidy received from the State of Ohio.

Unknown Data for Members

Same as those exhibited by members with similar known characteristics. Deferred benefits are estimated at termination until OP&F has determined the actual amount at retirement. Reported salaries that are less than \$10,000 when annualized are assumed to be anomalous and are reset to \$60,000. The adjustment for late reported salaries is not applied in this case.

Late Reported Salaries

A 1.261 percent load is added to the 2018 reported salaries to account for salaries accrued but not reported for the valuation. This adjustment is based on an average of plan experience from the prior three years. The raw adjustment rates for each year are as follows:

Pay for Calendar Year	Raw Adjustment
2018	1.256%
2017	0.919%
2016	1.608%

This adjustment will be reviewed annually for future late reported salaries.

Percent Married

75 percent of active members are assumed to be married.

Age of Spouse

Wives are assumed to be three years younger than their husbands.



Optional Form Election

33 percent of service retirees and 10 percent of disability retirees are assumed to elect the 40 percent Joint and Survivor pension at retirement. If the joint annuitant predeceases the retiree, the increase, or pop-up, in the retiree's benefit associated with the 40 percent Joint and Survivor pension is assumed to be 14.36 percent for disability retirees and 10.50 percent for all other retirees.

DROP Account Distributions

For members who terminate DROP before the required three or five years, distribution of the account balance is assumed to be made in a lump sum payment at the end of the three or five year period. Distributions for other members are assumed to be made in a lump sum or installments at retirements in a pattern equivalent to 25 percent receiving lump sums, 30 percent receiving installments over two years, and 45 percent receiving installments over 10 years.

Dependent Parents

None anticipated, but dependency of any dependent parent in receipt of benefits is assumed to continue for the parent's lifetime.

Dependent Children

Each member is assumed to have two children, born when the member was age 26. Dependency is assumed to cease when the child is 22.

Medicare Part B Premium Reimbursement

For service and disability retirements, as well as survivors, Ohio Police & Fire reimburses the standard Medicare Part B premium (\$107.00 per month for 2019) provided the retiree is not eligible for reimbursement from any other sources.

88 percent of members are assumed to be eligible for reimbursement once they reach age 65.

The Medicare Part B Premium assumptions are only used to determine the cost if the Medicare Part B reimbursement payments were to be paid from the pension trust instead of the Health Care Stabilization Fund.



Methods

Actuarial Cost Method

Projected benefit method with individual level percentage entry age normal cost and actuarial accrued liability. Gains and losses are reflected in the actuarial accrued liability. Prior to January 1, 2015, to be consistent with the asset methodology employed by OP&F, DROP balances were netted out of the liabilities.

Adjustment for Re-Employed Retirees

The present value of future benefits and the actuarial accrued liability are increased by an amount for the re-employed retirees' defined contribution plan benefit equal to two times the re-employed retirees' post-retirement contribution balances on the valuation date.

Adjustment for Employer Accrued Liability

The actuarial accrued liability is reduced by the present value of special employer contributions -- referred to as "Local Funds." Local governments are required by state statute to pay the unfunded portion of the actuarially-determined liability of the local police and firefighter's relief and pension funds that were merged to form OP&F in 1967. The ORC designates this obligation of the local governments to the Employers' Accrued Liability. Interest on the outstanding balance is being accrued at the rate of 4.25 percent, compounded semiannually. Local governments began repayment in 1969 and payments are required to be made until 2035. The present value of the remaining payments on the valuation date is determined using the valuation interest rate.

Asset Valuation Method

A four-year moving average market value of assets that spreads the difference between the actual investment income and the expected income on the market value (based on the valuation interest rate) over a period of four years. The actuarial value shall not be less than 80 percent or more than 120 percent of market value.



Data

Census and Assets

The valuation was based on members of OP&F as of the valuation date and does not take into account future members. All census and asset data was supplied by OP&F. Salaries and benefits tabulated in the tables in this report were summed to pennies, but displayed to whole dollars, thus, totals may not be consistent with amounts displayed due to rounding.



EXHIBIT I – 1a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Age
POLICE

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
19	1	\$ 34,809	-	\$ -	1	\$ 34,809
20	3	92,103	-	-	3	92,103
21	31	1,373,339	11	489,026	42	1,862,365
22	115	5,505,342	24	1,042,310	139	6,547,651
23	145	7,354,414	27	1,449,742	172	8,804,155
24	247	12,997,848	41	2,133,991	288	15,131,839
25	296	16,277,961	47	2,508,409	343	18,786,370
26	289	17,128,166	61	3,477,956	350	20,606,122
27	340	20,506,886	55	3,355,534	395	23,862,421
28	364	23,505,180	52	3,217,838	416	26,723,018
29	372	25,091,358	58	3,544,407	430	28,635,765
30	407	27,379,047	29	1,851,526	436	29,230,574
31	413	28,402,563	45	2,516,809	458	30,919,372
32	385	26,870,199	46	2,875,632	431	29,745,831
33	413	29,585,308	33	2,282,676	446	31,867,984
34	403	29,475,963	41	2,868,182	444	32,344,145
35	379	29,002,616	42	2,896,290	421	31,898,906
36	389	28,576,453	34	2,640,590	423	31,217,043
37	343	27,140,073	40	3,017,945	383	30,158,018
38	382	29,531,032	46	3,525,526	428	33,056,557
39	338	26,777,954	41	3,034,829	379	29,812,783
40	326	26,241,316	35	2,831,972	361	29,073,288
41	383	31,185,870	19	1,451,347	402	32,637,217
42	353	28,566,983	38	2,985,094	391	31,552,077
43	392	32,492,006	36	3,076,807	428	35,568,813
44	403	33,749,068	43	3,323,853	446	37,072,921
45	446	37,448,433	52	4,351,624	498	41,800,057
46	511	43,865,836	52	4,243,978	563	48,109,814
47	583	49,489,453	56	4,695,856	639	54,185,309



EXHIBIT I – 1a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Salaries Distributed by Age
 POLICE (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	615	\$ 53,032,581	76	\$ 6,529,449	691	\$ 59,562,030
49	539	47,725,196	61	5,087,979	600	52,813,174
50	513	44,966,379	45	3,898,162	558	48,864,542
51	444	39,088,253	50	4,272,527	494	43,360,780
52	423	37,342,698	51	4,366,738	474	41,709,436
53	396	35,630,244	36	2,919,387	432	38,549,631
54	359	31,859,099	41	3,528,329	400	35,387,428
55	272	24,035,417	32	2,717,252	304	26,752,669
56	218	19,179,961	17	1,414,029	235	20,593,990
57	176	15,040,509	19	1,773,722	195	16,814,230
58	132	11,203,789	12	960,329	144	12,164,118
59	97	8,136,660	9	790,258	106	8,926,918
60	66	5,384,879	12	930,867	78	6,315,746
61	55	4,440,589	8	787,094	63	5,227,683
62	54	3,980,292	4	321,817	58	4,302,108
63	35	3,070,656	3	262,572	38	3,333,228
64	22	1,716,526	1	58,237	23	1,774,764
65	19	1,486,406	-	-	19	1,486,406
66	11	946,009	-	-	11	946,009
67	4	346,498	-	-	4	346,498
68	2	153,181	-	-	2	153,181
69	4	338,228	-	-	4	338,228
70	4	361,518	-	-	4	361,518
71	1	88,235	-	-	1	88,235
72	1	64,995	-	-	1	64,995
73	-	-	-	-	-	-
74	-	-	-	-	-	-
75	1	42,160	-	-	1	42,160
Total	13,915	\$ 1,085,308,539	1,581	\$ 116,308,493	15,496	\$ 1,201,617,032



EXHIBIT I – 1b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Years of Service
POLICE

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	1,037	\$ 50,161,619	213	\$ 9,958,628	1,250	\$ 60,120,247
1	731	39,810,595	98	5,266,282	829	45,076,877
2	621	38,233,111	103	6,449,486	724	44,682,597
3	618	41,727,447	83	5,411,184	701	47,138,631
4	561	39,855,829	48	3,275,436	609	43,131,266
5	543	38,507,764	44	3,114,851	587	41,622,615
6	468	34,564,801	39	2,688,348	507	37,253,149
7	372	28,663,664	24	1,847,746	396	30,511,410
8	283	22,691,167	18	1,333,142	301	24,024,309
9	208	15,797,683	20	1,564,228	228	17,361,911
10	351	27,362,950	38	2,959,124	389	30,322,074
11	509	40,594,978	60	4,898,130	569	45,493,109
12	373	31,009,362	54	4,383,035	427	35,392,397
13	267	22,136,547	30	2,389,600	297	24,526,147
14	316	25,854,845	41	3,375,704	357	29,230,549
15	294	24,509,648	28	2,160,076	322	26,669,724
16	363	30,158,746	41	3,342,974	404	33,501,720
17	405	33,310,711	52	4,478,892	457	37,789,603
18	394	32,933,921	31	2,635,848	425	35,569,769
19	421	35,914,775	51	4,404,467	472	40,319,242
20	503	42,557,824	49	3,886,356	552	46,444,180
21	509	44,697,017	46	4,088,385	555	48,785,403
22	527	46,809,932	56	4,972,930	583	51,782,862
23	572	51,520,914	59	4,919,273	631	56,440,187
24	537	48,396,588	50	4,263,475	587	52,660,062
25	419	38,500,969	57	4,999,255	476	43,500,224



EXHIBIT I – 1b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Salaries Distributed by Years of Service
 POLICE (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
26	344	\$ 31,179,037	43	\$ 3,770,951	387	\$ 34,949,987
27	283	25,592,482	20	1,761,028	303	27,353,510
28	310	28,596,170	24	2,136,854	334	30,733,023
29	257	24,100,962	17	1,474,194	274	25,575,157
30	186	17,726,691	17	1,528,570	203	19,255,261
31	162	15,454,256	16	1,479,783	178	16,934,039
32	90	8,423,365	5	436,763	95	8,860,128
33	35	3,278,641	3	269,064	38	3,547,705
34	14	1,380,827	1	90,636	15	1,471,464
35	4	459,336	-	-	4	459,336
36	7	802,994	-	-	7	802,994
37	3	193,783	-	-	3	193,783
38	3	240,240	1	94,970	4	335,210
39	4	362,633	1	198,823	5	561,456
40	2	177,676	-	-	2	177,676
41	5	510,904	-	-	5	510,904
42	1	107,643	-	-	1	107,643
43	-	-	-	-	-	-
44	-	-	-	-	-	-
45	1	180,985	-	-	1	180,985
46	-	-	-	-	-	-
47	1	110,359	-	-	1	110,359
48	1	146,149	-	-	1	146,149
49	-	-	-	-	-	-
50	-	-	-	-	-	-
Total	13,915	\$ 1,085,308,539	1,581	\$ 116,308,493	15,496	\$ 1,201,617,032



EXHIBIT I – 2a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Age
FIREFIGHTERS'

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
19	4	\$ 197,658	-	\$ -	4	\$ 197,658
20	19	979,148	-	-	19	979,148
21	38	1,906,397	2	80,200	40	1,986,597
22	79	4,143,843	3	179,172	82	4,323,015
23	99	5,627,344	4	201,706	103	5,829,049
24	153	8,431,550	11	645,793	164	9,077,342
25	174	10,429,243	8	423,806	182	10,853,049
26	237	14,414,967	6	305,118	243	14,720,085
27	248	15,687,468	9	545,273	257	16,232,741
28	308	19,409,982	10	610,157	318	20,020,139
29	310	20,308,012	6	364,410	316	20,672,422
30	328	21,482,803	15	1,036,430	343	22,519,233
31	388	26,554,594	11	724,274	399	27,278,867
32	369	25,910,625	11	726,843	380	26,637,469
33	395	28,608,319	9	708,912	404	29,317,231
34	378	27,846,337	15	1,057,538	393	28,903,875
35	372	27,833,034	14	1,025,617	386	28,858,652
36	385	29,186,163	12	915,201	397	30,101,364
37	379	29,068,434	10	723,543	389	29,791,977
38	381	29,747,874	14	1,136,402	395	30,884,276
39	405	31,953,413	10	843,307	415	32,796,719
40	394	32,345,220	13	968,548	407	33,313,768
41	350	28,875,163	13	898,015	363	29,773,178
42	375	31,172,166	11	813,401	386	31,985,568
43	385	32,714,730	14	1,130,092	399	33,844,822
44	393	33,784,993	6	513,803	399	34,298,796
45	379	32,061,929	11	929,918	390	32,991,848
46	435	37,769,246	10	867,067	445	38,636,313
47	474	40,925,223	11	890,001	485	41,815,224



EXHIBIT I – 2a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Salaries Distributed by Age
 FIREFIGHTERS' (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	480	\$ 42,270,091	7	\$ 578,590	487	\$ 42,848,681
49	476	42,250,966	13	1,185,632	489	43,436,598
50	412	36,312,262	12	1,066,415	424	37,378,677
51	372	33,181,595	6	569,882	378	33,751,478
52	376	33,698,162	8	688,549	384	34,386,710
53	392	35,046,405	5	420,589	397	35,466,994
54	408	36,276,151	6	491,897	414	36,768,048
55	325	28,674,046	7	557,738	332	29,231,784
56	274	24,415,555	6	467,240	280	24,882,796
57	228	20,295,244	4	280,468	232	20,575,712
58	181	15,951,320	4	348,588	185	16,299,908
59	130	11,292,618	2	149,706	132	11,442,324
60	118	10,395,671	4	342,491	122	10,738,162
61	82	7,241,084	4	312,572	86	7,553,656
62	46	3,819,387	2	162,654	48	3,982,042
63	36	2,932,301	4	382,105	40	3,314,406
64	28	2,434,828	1	105,178	29	2,540,006
65	12	1,038,858	-	-	12	1,038,858
66	11	863,391	-	-	11	863,391
67	5	376,977	-	-	5	376,977
68	5	402,918	-	-	5	402,918
69	3	286,982	-	-	3	286,982
70	4	330,820	-	-	4	330,820
71	4	322,114	-	-	4	322,114
72	1	65,923	-	-	1	65,923
73	-	-	-	-	-	-
74	1	67,294	-	-	1	67,294
75	-	-	-	-	-	-
Total	13,044	\$ 1,039,618,843	364	\$ 27,374,839	13,408	\$ 1,066,993,682



EXHIBIT I – 2b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Years of Service
FIREFIGHTERS'

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	705	\$ 36,389,586	34	\$ 1,680,013	739	\$ 38,069,599
1	699	39,623,798	28	1,507,621	727	41,131,419
2	585	36,808,454	16	1,010,012	601	37,818,465
3	500	33,040,834	11	678,212	511	33,719,046
4	490	34,664,791	22	1,632,514	512	36,297,305
5	476	35,159,091	19	1,350,038	495	36,509,129
6	373	28,494,693	11	821,170	384	29,315,863
7	369	28,191,761	11	869,761	380	29,061,523
8	323	25,679,553	9	748,927	332	26,428,480
9	261	20,129,415	6	463,207	267	20,592,623
10	371	29,409,811	8	644,921	379	30,054,732
11	338	26,584,346	9	755,953	347	27,340,299
12	330	27,853,379	14	1,150,131	344	29,003,510
13	257	21,062,171	9	633,339	266	21,695,510
14	270	22,788,974	9	695,431	279	23,484,405
15	416	33,739,503	8	598,536	424	34,338,038
16	338	28,404,073	13	1,158,155	351	29,562,228
17	424	36,416,846	18	1,438,214	442	37,855,060
18	485	41,209,352	19	1,542,452	504	42,751,803
19	495	43,036,140	17	1,501,542	512	44,537,682
20	504	44,392,431	20	1,734,511	524	46,126,942
21	493	43,715,785	6	496,255	499	44,212,039
22	503	44,495,893	13	1,209,184	516	45,705,077
23	455	40,912,230	3	250,437	458	41,162,668
24	425	38,631,921	4	455,204	429	39,087,125
25	361	32,368,438	2	148,403	363	32,516,840



EXHIBIT I – 2b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Years of Service
FIREFIGHTERS' (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
26	335	\$ 30,354,049	4	\$ 371,674	339	\$ 30,725,724
27	281	25,916,436	3	311,161	284	26,227,597
28	248	22,156,576	3	259,059	251	22,415,636
29	360	32,861,439	6	488,878	366	33,350,317
30	197	18,366,112	3	252,309	200	18,618,421
31	137	13,471,961	1	74,052	138	13,546,014
32	101	9,928,741	3	245,445	104	10,174,186
33	65	6,369,126	1	106,884	66	6,476,009
34	25	2,334,448	1	91,237	26	2,425,685
35	8	877,021	-	-	8	877,021
36	14	1,481,412	-	-	14	1,481,412
37	11	903,118	-	-	11	903,118
38	4	353,421	-	-	4	353,421
39	3	287,767	-	-	3	287,767
40	3	231,831	-	-	3	231,831
41	3	274,048	-	-	3	274,048
42	-	-	-	-	-	-
43	-	-	-	-	-	-
44	1	56,875	-	-	1	56,875
45	-	-	-	-	-	-
46	-	-	-	-	-	-
47	-	-	-	-	-	-
48	-	-	-	-	-	-
49	-	-	-	-	-	-
50	2	191,193	-	-	2	191,193
Total	13,044	\$ 1,039,618,843	364	\$ 27,374,839	13,408	\$ 1,066,993,682



EXHIBIT I – 3a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Age
TOTAL

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
19	5	\$ 232,467	-	\$ -	5	\$ 232,467
20	22	1,071,251	-	-	22	1,071,251
21	69	3,279,736	13	569,225	82	3,848,962
22	194	9,649,185	27	1,221,481	221	10,870,666
23	244	12,981,757	31	1,651,447	275	14,633,205
24	400	21,429,397	52	2,779,784	452	24,209,181
25	470	26,707,204	55	2,932,215	525	29,639,419
26	526	31,543,133	67	3,783,074	593	35,326,207
27	588	36,194,354	64	3,900,808	652	40,095,162
28	672	42,915,162	62	3,827,995	734	46,743,157
29	682	45,399,370	64	3,908,817	746	49,308,187
30	735	48,861,850	44	2,887,957	779	51,749,807
31	801	54,957,156	56	3,241,082	857	58,198,239
32	754	52,780,824	57	3,602,475	811	56,383,300
33	808	58,193,628	42	2,991,587	850	61,185,215
34	781	57,322,300	56	3,925,720	837	61,248,020
35	751	56,835,650	56	3,921,907	807	60,757,558
36	774	57,762,616	46	3,555,791	820	61,318,407
37	722	56,208,507	50	3,741,488	772	59,949,995
38	763	59,278,906	60	4,661,928	823	63,940,833
39	743	58,731,367	51	3,878,135	794	62,609,502
40	720	58,586,536	48	3,800,520	768	62,387,056
41	733	60,061,033	32	2,349,362	765	62,410,395
42	728	59,739,149	49	3,798,495	777	63,537,644
43	777	65,206,736	50	4,206,899	827	69,413,635
44	796	67,534,061	49	3,837,656	845	71,371,717
45	825	69,510,362	63	5,281,543	888	74,791,905
46	946	81,635,082	62	5,111,045	1,008	86,746,127
47	1,057	90,414,676	67	5,585,857	1,124	96,000,533



EXHIBIT I – 3a

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Age
TOTAL (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
48	1,095	\$ 95,302,673	83	\$ 7,108,039	1,178	\$ 102,410,711
49	1,015	89,976,162	74	6,273,611	1,089	96,249,772
50	925	81,278,641	57	4,964,577	982	86,243,219
51	816	72,269,848	56	4,842,410	872	77,112,258
52	799	71,040,859	59	5,055,287	858	76,096,146
53	788	70,676,649	41	3,339,976	829	74,016,624
54	767	68,135,250	47	4,020,226	814	72,155,476
55	597	52,709,463	39	3,274,989	636	55,984,453
56	492	43,595,517	23	1,881,269	515	45,476,786
57	404	35,335,753	23	2,054,189	427	37,389,942
58	313	27,155,109	16	1,308,917	329	28,464,026
59	227	19,429,279	11	939,964	238	20,369,243
60	184	15,780,550	16	1,273,357	200	17,053,908
61	137	11,681,673	12	1,099,666	149	12,781,339
62	100	7,799,679	6	484,471	106	8,284,150
63	71	6,002,957	7	644,677	78	6,647,634
64	50	4,151,355	2	163,415	52	4,314,770
65	31	2,525,264	-	-	31	2,525,264
66	22	1,809,401	-	-	22	1,809,401
67	9	723,475	-	-	9	723,475
68	7	556,099	-	-	7	556,099
69	7	625,210	-	-	7	625,210
70	8	692,339	-	-	8	692,339
71	5	410,349	-	-	5	410,349
72	2	130,918	-	-	2	130,918
73	-	-	-	-	-	-
74	1	67,294	-	-	1	67,294
75	1	42,160	-	-	1	42,160
Total	26,959	\$ 2,124,927,382	1,945	\$ 143,683,332	28,904	\$ 2,268,610,714



EXHIBIT I – 3b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Years of Service
TOTAL

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
0	1,742	\$ 86,551,206	247	\$ 11,638,641	1,989	\$ 98,189,846
1	1,430	79,434,393	126	6,773,902	1,556	86,208,296
2	1,206	75,041,564	119	7,459,498	1,325	82,501,062
3	1,118	74,768,281	94	6,089,396	1,212	80,857,676
4	1,051	74,520,620	70	4,907,950	1,121	79,428,570
5	1,019	73,666,855	63	4,464,889	1,082	78,131,744
6	841	63,059,494	50	3,509,517	891	66,569,011
7	741	56,855,425	35	2,717,508	776	59,572,933
8	606	48,370,720	27	2,082,069	633	50,452,789
9	469	35,927,098	26	2,027,435	495	37,954,534
10	722	56,772,761	46	3,604,045	768	60,376,805
11	847	67,179,324	69	5,654,083	916	72,833,408
12	703	58,862,741	68	5,533,166	771	64,395,907
13	524	43,198,718	39	3,022,939	563	46,221,657
14	586	48,643,819	50	4,071,135	636	52,714,954
15	710	58,249,151	36	2,758,612	746	61,007,762
16	701	58,562,818	54	4,501,129	755	63,063,947
17	829	69,727,557	70	5,917,106	899	75,644,663
18	879	74,143,272	50	4,178,300	929	78,321,572
19	916	78,950,915	68	5,906,009	984	84,856,924
20	1,007	86,950,255	69	5,620,867	1,076	92,571,122
21	1,002	88,412,802	52	4,584,640	1,054	92,997,442
22	1,030	91,305,825	69	6,182,114	1,099	97,487,939
23	1,027	92,433,145	62	5,169,710	1,089	97,602,855
24	962	87,028,508	54	4,718,679	1,016	91,747,187
25	780	70,869,406	59	5,147,658	839	76,017,064



EXHIBIT I – 3b

ACTIVE MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Salaries Distributed by Years of Service
TOTAL (continued)

Age	Male		Female		Total	
	Number	Compensation	Number	Compensation	Number	Compensation
26	679	\$ 61,533,086	47	\$ 4,142,625	726	\$ 65,675,711
27	564	51,508,918	23	2,072,189	587	53,581,107
28	558	50,752,746	27	2,395,913	585	53,148,659
29	617	56,962,402	23	1,963,072	640	58,925,474
30	383	36,092,804	20	1,780,878	403	37,873,682
31	299	28,926,218	17	1,553,835	316	30,480,053
32	191	18,352,106	8	682,208	199	19,034,314
33	100	9,647,767	4	375,948	104	10,023,714
34	39	3,715,275	2	181,873	41	3,897,149
35	12	1,336,357	-	-	12	1,336,357
36	21	2,284,406	-	-	21	2,284,406
37	14	1,096,901	-	-	14	1,096,901
38	7	593,660	1	94,970	8	688,631
39	7	650,400	1	198,823	8	849,223
40	5	409,507	-	-	5	409,507
41	8	784,952	-	-	8	784,952
42	1	107,643	-	-	1	107,643
43	-	-	-	-	-	-
44	1	56,875	-	-	1	56,875
45	1	180,985	-	-	1	180,985
46	-	-	-	-	-	-
47	1	110,359	-	-	1	110,359
48	1	146,149	-	-	1	146,149
49	-	-	-	-	-	-
50	2	191,193	-	-	2	191,193
Total	26,959	\$ 2,124,927,382	1,945	\$ 143,683,332	28,904	\$ 2,268,610,714



EXHIBIT II - 1a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 POLICE SERVICE RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
48	27	\$ 1,254,804	2	\$ 108,771	29	\$ 1,363,574
49	44	1,993,500	1	22,294	45	2,015,794
50	53	2,287,346	7	350,448	60	2,637,794
51	66	3,060,383	7	324,713	73	3,385,096
52	97	4,270,828	9	417,307	106	4,688,135
53	118	5,446,822	14	615,891	132	6,062,713
54	122	5,379,402	12	560,737	134	5,940,139
55	136	6,247,452	18	727,073	154	6,974,525
56	179	8,779,381	19	884,764	198	9,664,145
57	197	9,851,240	29	1,448,670	226	11,299,910
58	182	9,661,371	20	1,052,160	202	10,713,531
59	230	12,348,905	19	1,005,638	249	13,354,542
60	252	13,696,144	33	1,752,258	285	15,448,402
61	287	15,358,127	31	1,447,740	318	16,805,867
62	327	17,750,143	36	1,833,047	363	19,583,190
63	341	18,261,813	28	1,513,140	369	19,774,953
64	360	19,521,344	36	1,896,354	396	21,417,698
65	319	17,101,904	26	1,345,903	345	18,447,807
66	329	17,403,970	25	1,323,017	354	18,726,987
67	341	18,156,110	21	1,126,410	362	19,282,519
68	338	17,455,521	18	920,625	356	18,376,145
69	340	17,779,722	18	885,250	358	18,664,972
70	365	19,685,690	12	633,947	377	20,319,637
71	406	21,664,958	16	880,289	422	22,545,247
72	332	16,722,807	5	250,584	337	16,973,392
73	242	12,133,701	10	488,570	252	12,622,270
74	238	11,967,151	8	429,684	246	12,396,834



EXHIBIT II - 1a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 POLICE SERVICE RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
75	247	\$ 11,895,354	2	\$ 68,952	249	\$ 11,964,306
76	256	11,874,099	4	174,639	260	12,048,737
77	227	10,133,045	3	152,390	230	10,285,435
78	174	7,404,594	3	110,498	177	7,515,092
79	149	6,201,617	-	-	149	6,201,617
80	141	5,678,830	-	-	141	5,678,830
81	122	4,939,380	-	-	122	4,939,380
82	88	3,598,486	2	64,485	90	3,662,971
83	92	3,332,771	1	41,023	93	3,373,795
84	71	2,634,032	-	-	71	2,634,032
85	77	2,820,970	2	39,183	79	2,860,152
86	55	1,732,777	3	80,344	58	1,813,121
87	43	1,252,642	-	-	43	1,252,642
88	36	1,204,299	-	-	36	1,204,299
89	34	1,006,643	-	-	34	1,006,643
90	41	1,165,614	-	-	41	1,165,614
91	24	728,204	-	-	24	728,204
92	30	805,557	-	-	30	805,557
93	18	506,068	-	-	18	506,068
94	16	411,793	-	-	16	411,793
95	9	224,760	-	-	9	224,760
96	2	45,870	-	-	2	45,870
97	6	159,258	-	-	6	159,258
98	3	61,757	-	-	3	61,757
99	-	-	-	-	-	-
Total	8,229	\$ 405,058,961	500	\$ 24,976,792	8,729	\$ 430,035,753



EXHIBIT II – 1b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 POLICE DISABILITY RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
33	1	\$ 44,451	-	\$ -	1	\$ 44,451
34	-	-	-	-	-	-
35	1	17,778	-	-	1	17,778
36	3	95,098	3	101,134	6	196,232
37	4	126,231	1	35,029	5	161,260
38	6	187,635	2	38,272	8	225,907
39	9	226,943	3	59,146	12	286,090
40	10	305,957	1	26,822	11	332,779
41	11	453,688	4	159,492	15	613,180
42	10	324,289	2	44,535	12	368,824
43	19	676,132	10	331,298	29	1,007,430
44	31	1,046,196	5	178,295	36	1,224,492
45	18	633,648	13	460,403	31	1,094,050
46	42	1,608,846	9	266,101	51	1,874,947
47	52	2,111,652	11	439,070	63	2,550,722
48	62	2,496,803	18	707,098	80	3,203,901
49	50	1,825,012	14	550,022	64	2,375,034
50	72	2,990,659	20	753,892	92	3,744,551
51	88	3,595,036	11	342,908	99	3,937,944
52	72	2,955,110	16	588,062	88	3,543,172
53	80	3,451,420	20	769,103	100	4,220,523
54	83	3,268,319	25	898,935	108	4,167,254
55	66	2,774,727	18	769,752	84	3,544,479
56	57	2,509,659	18	747,267	75	3,256,926
57	79	3,399,383	15	570,877	94	3,970,259
58	70	3,181,146	10	455,629	80	3,636,775
59	65	2,958,173	12	520,273	77	3,478,446
60	79	3,518,335	19	867,910	98	4,386,245
61	108	5,043,535	28	1,238,763	136	6,282,298
62	71	3,122,082	28	1,081,089	99	4,203,170
63	78	3,389,363	23	973,647	101	4,363,010
64	113	5,175,138	17	603,279	130	5,778,417
65	96	4,405,799	25	1,081,692	121	5,487,492



EXHIBIT II – 1b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 POLICE DISABILITY RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
66	103	\$ 4,525,738	18	\$ 801,309	121	\$ 5,327,047
67	119	4,877,795	10	455,473	129	5,333,268
68	100	4,136,479	15	626,171	115	4,762,650
69	99	4,066,937	17	690,375	116	4,757,312
70	106	4,493,714	11	486,968	117	4,980,683
71	149	6,269,673	11	357,532	160	6,627,204
72	116	4,608,260	10	375,795	126	4,984,055
73	90	3,749,625	2	68,683	92	3,818,308
74	78	3,056,375	4	158,279	82	3,214,654
75	93	3,528,008	1	35,758	94	3,563,766
76	69	2,372,995	3	87,378	72	2,460,373
77	61	2,293,911	1	41,053	62	2,334,964
78	44	1,672,302	-	-	44	1,672,302
79	57	2,009,725	-	-	57	2,009,725
80	46	1,447,746	3	138,116	49	1,585,862
81	35	1,238,365	-	-	35	1,238,365
82	28	990,038	-	-	28	990,038
83	32	938,236	-	-	32	938,236
84	17	533,953	-	-	17	533,953
85	9	234,673	-	-	9	234,673
86	8	202,808	-	-	8	202,808
87	10	247,166	-	-	10	247,166
88	17	490,068	-	-	17	490,068
89	8	217,049	-	-	8	217,049
90	6	157,593	-	-	6	157,593
91	4	103,048	-	-	4	103,048
92	7	193,568	-	-	7	193,568
93	4	85,541	-	-	4	85,541
94	4	100,927	-	-	4	100,927
95	1	19,642	-	-	1	19,642
96	1	17,760	-	-	1	17,760
Total	3,127	\$ 126,797,963	507	\$ 19,982,685	3,634	\$ 146,780,647



EXHIBIT II – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 POLICE SURVIVORS AND BENEFICIARIES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
3	1	\$ 2,812	-	\$ -	1	\$ 2,812
4	-	-	-	-	-	-
5	-	-	2	5,623	2	5,623
6	4	11,246	-	-	4	11,246
7	1	2,812	1	2,812	2	5,623
8	1	2,812	4	15,105	5	17,916
9	1	2,812	1	2,812	2	5,623
10	5	14,058	6	20,728	11	34,786
11	7	19,681	2	5,623	9	25,304
12	10	28,116	6	16,870	16	44,986
13	5	14,058	6	16,870	11	30,928
14	7	19,681	5	14,058	12	33,739
15	7	19,681	6	16,870	13	36,551
16	7	36,848	11	30,928	18	67,775
17	11	30,928	7	19,681	18	50,609
18	8	22,493	13	36,364	21	58,856
19	14	70,020	7	19,642	21	89,662
20	17	61,067	10	28,116	27	89,183
21	6	19,627	9	25,250	15	44,878
22	2	5,569	-	-	2	5,569
23	-	-	-	-	-	-
24	-	-	-	-	-	-
25	2	5,314	-	-	2	5,314
26	1	2,812	-	-	1	2,812
27	-	-	-	-	-	-
28	3	7,855	-	-	3	7,855
29	1	2,812	1	2,812	2	5,623
30	-	-	-	-	-	-
31	-	-	2	13,121	2	13,121
32	1	27,215	3	30,928	4	58,143
33	-	-	3	21,309	3	21,309
34	1	3,949	-	-	1	3,949
35	-	-	-	-	-	-
36	-	-	2	20,618	2	20,618
37	1	13,340	2	15,229	3	28,569



EXHIBIT II – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
POLICE SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
38	2	\$ 30,949	4	\$ 20,852	6	\$ 51,802
39	2	5,623	1	4,920	3	10,543
40	-	-	-	-	-	-
41	1	2,812	3	31,343	4	34,155
42	-	-	7	95,158	7	95,158
43	-	-	6	59,107	6	59,107
44	1	2,812	7	61,386	8	64,198
45	1	1,416	14	176,481	15	177,897
46	1	15,717	8	122,320	9	138,037
47	1	30,200	14	181,955	15	212,155
48	1	2,812	16	275,613	17	278,424
49	3	38,023	16	157,374	19	195,397
50	1	2,812	18	228,012	19	230,823
51	5	50,456	31	500,499	36	550,954
52	3	21,734	23	322,662	26	344,396
53	1	2,812	31	482,215	32	485,027
54	-	-	43	579,384	43	579,384
55	4	33,739	29	407,326	33	441,065
56	1	2,812	42	543,683	43	546,495
57	3	17,129	39	519,350	42	536,479
58	6	88,665	42	538,922	48	627,587
59	3	51,003	44	586,026	47	637,029
60	2	13,121	68	1,023,232	70	1,036,352
61	4	50,172	79	1,134,279	83	1,184,451
62	4	46,950	57	720,371	61	767,320
63	1	10,309	77	897,248	78	907,557
64	1	10,309	67	855,747	68	866,056
65	1	10,309	108	1,415,843	109	1,426,152
66	-	-	114	1,481,642	114	1,481,642
67	1	10,309	114	1,470,066	115	1,480,375
68	4	64,018	98	1,146,843	102	1,210,862
69	2	20,618	157	2,065,818	159	2,086,437
70	2	20,618	149	1,950,996	151	1,971,615
71	-	-	161	1,867,291	161	1,867,291
72	1	10,309	117	1,381,472	118	1,391,781



EXHIBIT II – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
POLICE SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
73	1	\$ 31,317	77	\$ 951,229	78	\$ 982,546
74	-	-	143	1,664,054	143	1,664,054
75	-	-	152	1,796,452	152	1,796,452
76	1	10,309	156	1,705,650	157	1,715,959
77	-	-	143	1,675,504	143	1,675,504
78	1	2,812	132	1,454,155	133	1,456,967
79	2	36,717	114	1,276,607	116	1,313,324
80	2	21,147	131	1,404,819	133	1,425,967
81	1	10,309	130	1,419,167	131	1,429,476
82	-	-	139	1,468,832	139	1,468,832
83	-	-	135	1,418,008	135	1,418,008
84	2	20,618	101	1,059,868	103	1,080,487
85	-	-	106	1,126,031	106	1,126,031
86	-	-	95	985,414	95	985,414
87	1	10,309	100	1,070,287	101	1,080,596
88	-	-	115	1,181,144	115	1,181,144
89	-	-	93	961,925	93	961,925
90	-	-	92	926,773	92	926,773
91	-	-	78	799,602	78	799,602
92	-	-	67	680,144	67	680,144
93	-	-	37	358,053	37	358,053
94	-	-	42	431,755	42	431,755
95	-	-	21	206,118	21	206,118
96	-	-	12	108,938	12	108,938
97	-	-	13	122,813	13	122,813
98	1	10,309	11	102,490	12	112,799
99	-	-	2	20,618	2	20,618
100	-	-	-	-	-	-
101	-	-	4	36,569	4	36,569
102	-	-	4	39,257	4	39,257
103	-	-	2	20,618	2	20,618
104	-	-	-	-	-	-
105	-	-	1	10,309	1	10,309
Total	199	\$ 1,270,032	4,361	\$ 50,170,005	4,560	\$ 51,440,037



EXHIBIT II – 2a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
FIREFIGHTERS' SERVICE RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
46	1	\$ 17,171	-	\$ -	1	\$ 17,171
47	-	-	-	-	-	-
48	7	307,627	-	-	7	307,627
49	9	364,845	-	-	9	364,845
50	17	819,457	1	36,461	18	855,918
51	35	1,469,702	-	-	35	1,469,702
52	47	2,126,400	2	100,164	49	2,226,564
53	68	3,055,658	2	84,113	70	3,139,771
54	82	3,659,076	7	300,780	89	3,959,856
55	94	4,324,079	6	286,279	100	4,610,358
56	153	7,834,334	2	120,344	155	7,954,678
57	192	9,951,944	8	379,614	200	10,331,557
58	217	11,471,159	6	271,664	223	11,742,823
59	235	12,446,096	7	383,762	242	12,829,858
60	255	14,276,416	4	220,921	259	14,497,337
61	272	15,019,700	2	84,889	274	15,104,589
62	282	15,582,973	1	82,447	283	15,665,420
63	306	16,670,142	2	89,025	308	16,759,166
64	293	15,875,148	1	41,563	294	15,916,711
65	286	15,291,508	5	250,864	291	15,542,372
66	266	14,237,461	2	87,660	268	14,325,120
67	279	15,252,978	1	28,207	280	15,281,186
68	256	13,501,453	2	88,561	258	13,590,014
69	230	12,054,687	1	51,990	231	12,106,677
70	225	11,795,303	1	41,699	226	11,837,003
71	268	13,324,547	-	-	268	13,324,547
72	233	11,662,847	-	-	233	11,662,847
73	146	7,332,470	2	88,449	148	7,420,919



EXHIBIT II – 2a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 FIREFIGHTERS’ SERVICE RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
74	179	\$ 8,617,344	-	\$ -	179	\$ 8,617,344
75	193	9,093,471	-	-	193	9,093,471
76	195	9,177,398	-	-	195	9,177,398
77	150	7,104,786	-	-	150	7,104,786
78	151	6,943,470	-	-	151	6,943,470
79	123	5,382,442	-	-	123	5,382,442
80	121	5,220,638	-	-	121	5,220,638
81	88	4,139,429	-	-	88	4,139,429
82	94	3,771,504	-	-	94	3,771,504
83	95	3,697,304	-	-	95	3,697,304
84	81	3,089,932	-	-	81	3,089,932
85	66	2,314,443	-	-	66	2,314,443
86	56	1,774,170	-	-	56	1,774,170
87	72	2,380,799	-	-	72	2,380,799
88	67	2,114,917	-	-	67	2,114,917
89	46	1,363,404	-	-	46	1,363,404
90	44	1,241,354	-	-	44	1,241,354
91	45	1,274,746	-	-	45	1,274,746
92	28	813,136	-	-	28	813,136
93	15	415,129	-	-	15	415,129
94	15	393,890	-	-	15	393,890
95	6	149,650	-	-	6	149,650
96	3	73,189	-	-	3	73,189
97	3	78,267	-	-	3	78,267
98	2	47,900	-	-	2	47,900
99	2	52,423	-	-	2	52,423
Total	6,694	\$ 330,450,315	65	\$ 3,119,456	6,759	\$ 333,569,772



EXHIBIT II – 2b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 FIREFIGHTERS' DISABILITY RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
32	1	\$ 37,025	-	\$ -	1	\$ 37,025
33	2	53,649	-	-	2	53,649
34	-	-	-	-	-	-
35	1	29,886	-	-	1	29,886
36	2	58,589	-	-	2	58,589
37	4	158,764	2	28,601	6	187,366
38	2	50,441	-	-	2	50,441
39	3	110,656	1	10,353	4	121,009
40	7	212,259	-	-	7	212,259
41	9	325,235	1	34,640	10	359,875
42	4	139,173	2	40,703	6	179,876
43	7	233,556	-	-	7	233,556
44	15	533,652	2	88,637	17	622,288
45	17	657,240	-	-	17	657,240
46	17	590,520	2	60,313	19	650,832
47	30	1,213,188	2	33,458	32	1,246,645
48	38	1,582,527	1	45,411	39	1,627,937
49	26	1,202,343	5	148,530	31	1,350,873
50	30	1,135,836	3	161,688	33	1,297,524
51	42	1,571,912	4	144,097	46	1,716,009
52	40	1,854,438	3	98,856	43	1,953,294
53	49	1,922,350	6	256,247	55	2,178,597
54	57	2,457,300	8	297,638	65	2,754,938
55	49	2,059,509	3	123,043	52	2,182,552
56	51	2,250,728	7	243,884	58	2,494,612
57	61	2,552,810	4	158,221	65	2,711,031
58	58	2,769,229	5	198,639	63	2,967,868
59	58	2,716,884	2	117,788	60	2,834,672
60	69	3,237,771	7	245,660	76	3,483,432
61	71	3,269,646	10	379,803	81	3,649,449
62	84	3,867,339	4	119,001	88	3,986,340
63	74	3,591,937	3	131,028	77	3,722,965
64	76	3,536,573	5	215,720	81	3,752,293



EXHIBIT II – 2b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
FIREFIGHTERS' DISABILITY RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
65	88	\$ 4,318,366	3	\$ 142,554	91	\$ 4,460,921
66	95	4,268,485	4	119,649	99	4,388,135
67	81	3,777,989	1	56,771	82	3,834,759
68	84	3,895,605	2	60,097	86	3,955,703
69	99	4,570,743	2	89,884	101	4,660,627
70	88	3,918,586	2	69,675	90	3,988,260
71	100	4,700,765	-	-	100	4,700,765
72	83	3,557,769	1	37,626	84	3,595,395
73	58	2,408,926	-	-	58	2,408,926
74	58	2,405,170	-	-	58	2,405,170
75	70	2,815,138	-	-	70	2,815,138
76	62	2,581,152	-	-	62	2,581,152
77	61	2,411,774	-	-	61	2,411,774
78	52	2,116,190	-	-	52	2,116,190
79	43	1,863,898	-	-	43	1,863,898
80	37	1,343,659	-	-	37	1,343,659
81	31	1,036,231	-	-	31	1,036,231
82	25	910,086	-	-	25	910,086
83	20	661,285	-	-	20	661,285
84	17	562,988	-	-	17	562,988
85	12	355,888	-	-	12	355,888
86	11	374,124	-	-	11	374,124
87	10	285,805	-	-	10	285,805
88	10	281,619	-	-	10	281,619
89	5	143,147	-	-	5	143,147
90	9	260,449	-	-	9	260,449
91	8	191,481	-	-	8	191,481
92	5	134,030	-	-	5	134,030
93	3	73,369	-	-	3	73,369
94	-	-	-	-	-	-
95	-	-	-	-	-	-
Total	2,379	\$ 102,207,682	107	\$ 3,958,213	2,486	\$ 106,165,895



EXHIBIT II – 2c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
FIREFIGHTERS’ SURVIVORS AND BENEFICIARIES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
1	-	\$ -	1	\$ 2,812	1	\$ 2,812
2	-	-	-	-	-	-
3	1	2,812	-	-	1	2,812
4	-	-	-	-	-	-
5	2	5,623	1	2,812	3	8,435
6	4	11,246	2	5,623	6	16,870
7	2	5,623	1	2,812	3	8,435
8	3	8,435	3	8,435	6	16,870
9	-	-	3	8,435	3	8,435
10	5	14,058	-	-	5	14,058
11	2	5,623	3	8,435	5	14,058
12	1	2,812	3	8,435	4	11,246
13	4	11,246	4	11,246	8	22,493
14	5	14,058	3	8,435	8	22,493
15	4	11,246	7	19,627	11	30,874
16	14	51,287	10	28,116	24	79,403
17	4	11,153	6	16,816	10	27,968
18	9	25,304	10	28,022	19	53,327
19	12	41,643	10	28,116	22	69,759
20	11	30,794	5	14,058	16	44,852
21	8	22,493	9	29,325	17	51,818
22	1	2,812	-	-	1	2,812
23	1	2,812	-	-	1	2,812
24	-	-	-	-	-	-
25	-	-	-	-	-	-
26	-	-	2	29,473	2	29,473
27	-	-	-	-	-	-
28	-	-	2	21,544	2	21,544
29	-	-	1	2,812	1	2,812
30	-	-	-	-	-	-
31	1	2,812	-	-	1	2,812
32	-	-	2	20,618	2	20,618
33	-	-	1	10,309	1	10,309
34	-	-	3	26,965	3	26,965
35	-	-	3	10,543	3	10,543
36	1	2,812	4	45,779	5	48,591



EXHIBIT II – 2c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
FIREFIGHTERS' SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
37	-	\$ -	1	\$ 10,309	1	\$ 10,309
38	-	-	2	20,618	2	20,618
39	-	-	1	10,309	1	10,309
40	-	-	2	49,464	2	49,464
41	-	-	2	20,618	2	20,618
42	-	-	2	20,618	2	20,618
43	-	-	6	81,322	6	81,322
44	-	-	-	-	-	-
45	-	-	7	152,594	7	152,594
46	-	-	11	151,738	11	151,738
47	1	2,812	11	182,825	12	185,637
48	1	2,812	10	171,099	11	173,910
49	1	2,812	10	154,915	11	157,727
50	2	13,121	7	86,965	9	100,086
51	2	5,623	17	475,163	19	480,786
52	1	2,812	16	195,981	17	198,793
53	-	-	18	228,899	18	228,899
54	1	2,812	23	382,214	24	385,026
55	1	2,812	22	384,709	23	387,520
56	1	2,812	27	412,222	28	415,033
57	1	2,812	17	238,845	18	241,657
58	1	2,812	24	319,008	25	321,819
59	4	52,293	30	415,370	34	467,663
60	-	-	35	506,706	35	506,706
61	-	-	47	689,488	47	689,488
62	1	2,812	35	491,256	36	494,068
63	1	2,812	46	677,834	47	680,646
64	-	-	50	625,368	50	625,368
65	-	-	37	445,246	37	445,246
66	-	-	63	874,232	63	874,232
67	-	-	56	871,253	56	871,253
68	-	-	55	665,935	55	665,935
69	1	2,812	65	822,672	66	825,484
70	-	-	82	994,518	82	994,518
71	1	2,812	83	1,013,083	84	1,015,895



EXHIBIT II – 2c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 FIREFIGHTERS’ SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
72	-	\$ -	87	\$ 1,084,858	87	\$ 1,084,858
73	1	10,309	71	823,269	72	833,578
74	1	2,812	88	1,041,550	89	1,044,361
75	-	-	90	1,041,762	90	1,041,762
76	-	-	99	1,110,579	99	1,110,579
77	-	-	111	1,234,953	111	1,234,953
78	-	-	120	1,320,760	120	1,320,760
79	-	-	118	1,260,262	118	1,260,262
80	-	-	91	976,074	91	976,074
81	-	-	119	1,277,965	119	1,277,965
82	-	-	79	839,910	79	839,910
83	-	-	106	1,088,236	106	1,088,236
84	-	-	115	1,180,989	115	1,180,989
85	-	-	132	1,397,849	132	1,397,849
86	-	-	105	1,099,245	105	1,099,245
87	-	-	73	722,711	73	722,711
88	-	-	137	1,407,873	137	1,407,873
89	-	-	90	958,676	90	958,676
90	-	-	89	918,049	89	918,049
91	-	-	86	891,582	86	891,582
92	-	-	71	686,377	71	686,377
93	-	-	63	613,469	63	613,469
94	-	-	39	411,374	39	411,374
95	-	-	33	356,279	33	356,279
96	-	-	19	180,734	19	180,734
97	-	-	13	118,613	13	118,613
98	-	-	5	51,546	5	51,546
99	-	-	6	61,855	6	61,855
100	-	-	1	10,309	1	10,309
101	-	-	4	41,237	4	41,237
102	-	-	-	-	-	-
103	-	-	-	-	-	-
104	-	-	-	-	-	-
105	-	-	1	10,309	1	10,309
Total	118	\$ 407,412	3,280	\$ 37,462,253	3,398	\$ 37,869,665



EXHIBIT III – 1a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL SERVICE RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
46	1	\$ 17,171	-	\$ -	1	\$ 17,171
47	-	-	-	-	-	-
48	34	1,562,431	2	108,771	36	1,671,202
49	53	2,358,344	1	22,294	54	2,380,639
50	70	3,106,802	8	386,909	78	3,493,712
51	101	4,530,085	7	324,713	108	4,854,798
52	144	6,397,228	11	517,471	155	6,914,699
53	186	8,502,480	16	700,004	202	9,202,484
54	204	9,038,478	19	861,516	223	9,899,994
55	230	10,571,532	24	1,013,352	254	11,584,883
56	332	16,613,716	21	1,005,108	353	17,618,824
57	389	19,803,184	37	1,828,283	426	21,631,467
58	399	21,132,530	26	1,323,824	425	22,456,354
59	465	24,795,001	26	1,389,399	491	26,184,400
60	507	27,972,560	37	1,973,179	544	29,945,739
61	559	30,377,827	33	1,532,629	592	31,910,456
62	609	33,333,116	37	1,915,494	646	35,248,609
63	647	34,931,955	30	1,602,164	677	36,534,119
64	653	35,396,493	37	1,937,917	690	37,334,409
65	605	32,393,412	31	1,596,767	636	33,990,179
66	595	31,641,431	27	1,410,676	622	33,052,107
67	620	33,409,088	22	1,154,617	642	34,563,705
68	594	30,956,974	20	1,009,186	614	31,966,159
69	570	29,834,409	19	937,240	589	30,771,649
70	590	31,480,993	13	675,646	603	32,156,640
71	674	34,989,505	16	880,289	690	35,869,794
72	565	28,385,654	5	250,584	570	28,636,239
73	388	19,466,170	12	577,019	400	20,043,189



EXHIBIT III – 1a

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
 Number and Annual Retirement Allowances Distributed by Age
 TOTAL SERVICE RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
74	417	\$ 20,584,495	8	\$ 429,684	425	\$ 21,014,179
75	440	20,988,825	2	68,952	442	21,057,776
76	451	21,051,497	4	174,639	455	21,226,135
77	377	17,237,831	3	152,390	380	17,390,222
78	325	14,348,064	3	110,498	328	14,458,562
79	272	11,584,059	-	-	272	11,584,059
80	262	10,899,468	-	-	262	10,899,468
81	210	9,078,809	-	-	210	9,078,809
82	182	7,369,990	2	64,485	184	7,434,474
83	187	7,030,076	1	41,023	188	7,071,099
84	152	5,723,965	-	-	152	5,723,965
85	143	5,135,413	2	39,183	145	5,174,596
86	111	3,506,947	3	80,344	114	3,587,291
87	115	3,633,441	-	-	115	3,633,441
88	103	3,319,217	-	-	103	3,319,217
89	80	2,370,048	-	-	80	2,370,048
90	85	2,406,968	-	-	85	2,406,968
91	69	2,002,949	-	-	69	2,002,949
92	58	1,618,693	-	-	58	1,618,693
93	33	921,197	-	-	33	921,197
94	31	805,683	-	-	31	805,683
95	15	374,410	-	-	15	374,410
96	5	119,059	-	-	5	119,059
97	9	237,525	-	-	9	237,525
98	5	109,657	-	-	5	109,657
99	2	52,423	-	-	2	52,423
Total	14,923	\$ 735,509,276	565	\$ 28,096,248	15,488	\$ 763,605,525



EXHIBIT III – 1b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL DISABILITY RETIREES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
32	1	\$ 37,025	-	\$ -	1	\$ 37,025
33	3	98,099	-	-	3	98,099
34	-	-	-	-	-	-
35	2	47,664	-	-	2	47,664
36	5	153,687	3	101,134	8	254,821
37	8	284,995	3	63,631	11	348,626
38	8	238,076	2	38,272	10	276,348
39	12	337,600	4	69,499	16	407,099
40	17	518,216	1	26,822	18	545,039
41	20	778,923	5	194,132	25	973,055
42	14	463,462	4	85,238	18	548,700
43	26	909,688	10	331,298	36	1,240,986
44	46	1,579,848	7	266,932	53	1,846,780
45	35	1,290,887	13	460,403	48	1,751,290
46	59	2,199,366	11	326,414	70	2,525,779
47	82	3,324,840	13	472,527	95	3,797,367
48	100	4,079,329	19	752,508	119	4,831,838
49	76	3,027,355	19	698,552	95	3,725,907
50	102	4,126,495	23	915,579	125	5,042,074
51	130	5,166,949	15	487,005	145	5,653,953
52	112	4,809,548	19	686,918	131	5,496,466
53	129	5,373,771	26	1,025,350	155	6,399,120
54	140	5,725,618	33	1,196,573	173	6,922,192
55	115	4,834,236	21	892,795	136	5,727,031
56	108	4,760,388	25	991,151	133	5,751,539
57	140	5,952,193	19	729,098	159	6,681,291
58	128	5,950,376	15	654,268	143	6,604,644
59	123	5,675,057	14	638,061	137	6,313,118
60	148	6,756,106	26	1,113,570	174	7,869,677
61	179	8,313,181	38	1,618,567	217	9,931,748
62	155	6,989,421	32	1,200,089	187	8,189,510
63	152	6,981,300	26	1,104,675	178	8,085,975
64	189	8,711,712	22	818,998	211	9,530,710



EXHIBIT III – 1b

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL DISABILITY RETIREES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
65	184	\$ 8,724,166	28	\$ 1,224,247	212	\$ 9,948,413
66	198	8,794,223	22	920,959	220	9,715,182
67	200	8,655,783	11	512,244	211	9,168,028
68	184	8,032,084	17	686,269	201	8,718,353
69	198	8,637,679	19	780,259	217	9,417,938
70	194	8,412,300	13	556,643	207	8,968,943
71	249	10,970,438	11	357,532	260	11,327,969
72	199	8,166,029	11	413,420	210	8,579,450
73	148	6,158,551	2	68,683	150	6,227,234
74	136	5,461,545	4	158,279	140	5,619,825
75	163	6,343,147	1	35,758	164	6,378,905
76	131	4,954,147	3	87,378	134	5,041,525
77	122	4,705,685	1	41,053	123	4,746,738
78	96	3,788,492	-	-	96	3,788,492
79	100	3,873,624	-	-	100	3,873,624
80	83	2,791,405	3	138,116	86	2,929,521
81	66	2,274,595	-	-	66	2,274,595
82	53	1,900,124	-	-	53	1,900,124
83	52	1,599,521	-	-	52	1,599,521
84	34	1,096,940	-	-	34	1,096,940
85	21	590,561	-	-	21	590,561
86	19	576,931	-	-	19	576,931
87	20	532,971	-	-	20	532,971
88	27	771,687	-	-	27	771,687
89	13	360,195	-	-	13	360,195
90	15	418,042	-	-	15	418,042
91	12	294,530	-	-	12	294,530
92	12	327,597	-	-	12	327,597
93	7	158,910	-	-	7	158,910
94	4	100,927	-	-	4	100,927
95	1	19,642	-	-	1	19,642
96	1	17,760	-	-	1	17,760
Total	5,506	\$ 229,005,645	614	\$ 23,940,898	6,120	\$ 252,946,543



EXHIBIT III – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL SURVIVORS AND BENEFICIARIES

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
1	-	\$ -	1	\$ 2,812	1	\$ 2,812
2	-	-	-	-	-	-
3	2	5,623	-	-	2	5,623
4	-	-	-	-	-	-
5	2	5,623	3	8,435	5	14,058
6	8	22,493	2	5,623	10	28,116
7	3	8,435	2	5,623	5	14,058
8	4	11,246	7	23,540	11	34,786
9	1	2,812	4	11,246	5	14,058
10	10	28,116	6	20,728	16	48,844
11	9	25,304	5	14,058	14	39,362
12	11	30,928	9	25,304	20	56,232
13	9	25,304	10	28,116	19	53,420
14	12	33,739	8	22,493	20	56,232
15	11	30,928	13	36,497	24	67,424
16	21	88,134	21	59,044	42	147,178
17	15	42,080	13	36,497	28	78,577
18	17	47,797	23	64,386	40	112,183
19	26	111,663	17	47,758	43	159,420
20	28	91,861	15	42,174	43	134,035
21	14	42,120	18	54,576	32	96,696
22	3	8,381	-	-	3	8,381
23	1	2,812	-	-	1	2,812
24	-	-	-	-	-	-
25	2	5,314	-	-	2	5,314
26	1	2,812	2	29,473	3	32,284
27	-	-	-	-	-	-
28	3	7,855	2	21,544	5	29,399
29	1	2,812	2	5,623	3	8,435
30	-	-	-	-	-	-
31	1	2,812	2	13,121	3	15,932
32	1	27,215	5	51,546	6	78,761
33	-	-	4	31,619	4	31,619
34	1	3,949	3	26,965	4	30,914
35	-	-	3	10,543	3	10,543
36	1	2,812	6	66,398	7	69,209



EXHIBIT III – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
37	1	\$ 13,340	3	\$ 25,538	4	\$ 38,878
38	2	30,949	6	41,471	8	72,420
39	2	5,623	2	15,229	4	20,852
40	-	-	2	49,464	2	49,464
41	1	2,812	5	51,962	6	54,773
42	-	-	9	115,776	9	115,776
43	-	-	12	140,429	12	140,429
44	1	2,812	7	61,386	8	64,198
45	1	1,416	21	329,075	22	330,491
46	1	15,717	19	274,058	20	289,775
47	2	33,012	25	364,780	27	397,792
48	2	5,623	26	446,712	28	452,335
49	4	40,834	26	312,290	30	353,124
50	3	15,932	25	314,976	28	330,909
51	7	56,079	48	975,662	55	1,031,741
52	4	24,546	39	518,643	43	543,189
53	1	2,812	49	711,114	50	713,926
54	1	2,812	66	961,598	67	964,410
55	5	36,551	51	792,035	56	828,585
56	2	5,623	69	955,905	71	961,528
57	4	19,940	56	758,195	60	778,135
58	7	91,477	66	857,929	73	949,406
59	7	103,296	74	1,001,396	81	1,104,693
60	2	13,121	103	1,529,938	105	1,543,059
61	4	50,172	126	1,823,766	130	1,873,938
62	5	49,761	92	1,211,627	97	1,261,388
63	2	13,121	123	1,575,082	125	1,588,203
64	1	10,309	117	1,481,115	118	1,491,424
65	1	10,309	145	1,861,089	146	1,871,398
66	-	-	177	2,355,874	177	2,355,874
67	1	10,309	170	2,341,319	171	2,351,628
68	4	64,018	153	1,812,779	157	1,876,797
69	3	23,430	222	2,888,491	225	2,911,921
70	2	20,618	231	2,945,514	233	2,966,132
71	1	2,812	244	2,880,375	245	2,883,186
72	1	10,309	204	2,466,330	205	2,476,639



EXHIBIT III – 1c

RETIREE AND BENEFICIARY MEMBERSHIP DATA AS OF JANUARY 1, 2019
Number and Annual Retirement Allowances Distributed by Age
TOTAL SURVIVORS AND BENEFICIARIES (continued)

Age	Male		Female		Total	
	Number	Annuities	Number	Annuities	Number	Annuities
73	2	\$ 41,626	148	\$ 1,774,498	150	\$ 1,816,124
74	1	2,812	231	2,705,604	232	2,708,416
75	-	-	242	2,838,214	242	2,838,214
76	1	10,309	255	2,816,229	256	2,826,538
77	-	-	254	2,910,457	254	2,910,457
78	1	2,812	252	2,774,915	253	2,777,727
79	2	36,717	232	2,536,869	234	2,573,586
80	2	21,147	222	2,380,894	224	2,402,041
81	1	10,309	249	2,697,132	250	2,707,441
82	-	-	218	2,308,742	218	2,308,742
83	-	-	241	2,506,244	241	2,506,244
84	2	20,618	216	2,240,857	218	2,261,476
85	-	-	238	2,523,880	238	2,523,880
86	-	-	200	2,084,659	200	2,084,659
87	1	10,309	173	1,792,998	174	1,803,307
88	-	-	252	2,589,016	252	2,589,016
89	-	-	183	1,920,600	183	1,920,600
90	-	-	181	1,844,822	181	1,844,822
91	-	-	164	1,691,184	164	1,691,184
92	-	-	138	1,366,521	138	1,366,521
93	-	-	100	971,522	100	971,522
94	-	-	81	843,129	81	843,129
95	-	-	54	562,397	54	562,397
96	-	-	31	289,672	31	289,672
97	-	-	26	241,426	26	241,426
98	1	10,309	16	154,036	17	164,345
99	-	-	8	82,474	8	82,474
100	-	-	1	10,309	1	10,309
101	-	-	8	77,806	8	77,806
102	-	-	4	39,257	4	39,257
103	-	-	2	20,618	2	20,618
104	-	-	-	-	-	-
105	-	-	2	20,618	2	20,618
Total	317	\$ 1,677,444	7,641	\$ 87,632,259	7,958	\$ 89,309,703