FIRE AND POLICE PENSION ASSOCIATION
SAMPLE OLD HIRE POLICE PENSION FUND

ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018

GRS Retirement Consulting

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To: Administrative Heads and Finance Officers of the Sample Old Hire Police Pension Fund; administered by FPPA

Date: June 2018

Subject: **Actuarial Valuation Results as of January 1, 2018**

This report contains the actuarial valuation results as of January 1, 2018 for your department as determined by Gabriel, Roeder, Smith & Company (GRS), actuary for the Fire and Police Pension Association (FPPA). Questions about this report should be directed to FPPA, rather than to Gabriel, Roeder, Smith & Company.

Financing Objectives

This valuation was prepared to determine the annual required contribution (ARC) for fiscal years 2019 and 2020. The ARC for FY2019 and FY2020 is $80,582 and is shown in Table 1, Item 11. The annual required contribution the department must pay is the calculated annual contribution, but not less than $0.

The department's calculated annual contribution consists of the sum of three pieces: the normal cost, the amortization of the unfunded actuarial accrued liability (UAAL), and a component to cover administrative expenses. The calculated annual contribution is shown in Table 1, Item 10. Due to the many factors affecting a retirement system, users of this report should be aware that contributions made at that rate do not necessarily guarantee long-term benefit security.

The normal cost (shown in Table 1, Item 2) can be viewed as the regular, ongoing cost of the Plan. The normal cost is accrued over the working lifetime of a member and once a member reaches normal retirement age, there is no more normal cost. Because the Plan has no active members below their normal retirement age, the Plan has no normal cost.

The UAAL is the amount by which the actuarial value of assets falls short of, or exceeds, the actuarial accrued liability for this Plan. Under the current statutes, the UAAL must be amortized under a level dollar method in the lesser of 20 years or the average remaining life expectancy of the group, which currently is 17.32 years. However, based on the current funded status of the plan and the expected benefit payments in the next two years, we have adjusted the amortization period down slightly to help preserve the funded status of the plan. Under this policy, the amortization period for the 2018 actuarial valuation is 16 years. The required payment to amortize the UAAL is shown in Table 1, Item 8.

Benefit Provisions

This actuarial valuation reflects the provisions that were applicable to the Sample Old Hire Police Pension Fund as of the valuation date. The details of the actuarial calculations, based on the current benefit provisions, are described in this report. Departments are allowed to model three alternative benefit packages, if desired. If alternatives were requested, a summary of the alternative requested and the actuarial results based on those packages is shown in Table 17.

Actuarial Assumptions and Methods

This actuarial valuation uses the assumptions and methods that were adopted by the Board of Directors of FPPA based upon the actuary's analysis and recommendations resulting from the 2015 Experience Study and effective in the January 1, 2016 valuations. A summary of those assumptions and methods can be found in Table 14. There were no actuarial or method changes made for this valuation.

Liabilities were determined under the entry age normal actuarial cost method.

The asset valuation method approximates smoothing over a five-year period by recognizing 20% of the difference between the projected actuarial value and the market value at the valuation date.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated annual contribution and funding periods. The actuarial calculations are intended to provide information for rational decision making.

This report does not include a detailed assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

Assets

Table 4 shows the market value of assets for this department and Table 5 shows the development of the actuarial value of assets. The actuarial value is an adjusted market value. It reflects only a portion of the excess (or shortfall) between recent investment returns and the corresponding expected returns based on the annual investment return assumption. The actuarial value recognizes 20% of the difference between the projected actuarial value and the market value at the valuation date with the additional 80% of the difference recognized over the next four years (20% per year). This smoothed average approach dampens the year-to-year fluctuations in the calculated annual contribution.

Member Data

Member data as of January 1, 2018 was supplied by FPPA, as supplied by the department throughout the normal course of business. GRS did not subject the data to any auditing procedures but reviewed it and tested it for reasonableness and consistency. The member count is shown in Table 3.

Experience

Actuarial experience is measured by comparing the expected valuation results with the actual valuation results at the valuation date. The expected valuation results are calculated as if all of the actuarial assumptions had been met. For instance, a gain/(loss) attributable to investment experience is realized when the pension fund assets earn over/(under) the actuarial assumed earnings rate and a gain/(loss) attributable to liability experience is realized when the pension fund liabilities are less/(greater) than the actuarial assumptions predicted (e.g. members not living as long as expected, rank escalation or cost-of-living increases were greater than expected, etc.).

During the two year period since the prior valuation, the plan experienced liability losses and investment losses due to actual experience deviating from assumptions. Table 2 shows the detailed calculations of the gains and losses since the prior valuation.

GASB Accounting

The Governmental Accounting Standards Board (GASB) Statement No. 67, *Financial Reporting for Pension Plans* (Issued 6/2012), replaced the requirements under GASB Statement No. 25, *Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans* (Issued 11/1994), effective for financial statements for fiscal years beginning after June 15, 2013. GASB Statement No. 68, *Accounting and Financial Reporting for Pensions* (Issued 6/2012), replaced GASB Statement No. 27, *Accounting for Pensions by State and Local Governmental Employers* (Issued 11/1994), effective for fiscal years beginning after June 15, 2014. GASB Statement No. 67 was implemented in FPPA's Comprehensive Annual Financial Report beginning in fiscal year 2014. Employer reporting information for GASB Statement No. 68 is provided in a separate report.

Projected Actuarial Results

To allow the City to anticipate future contribution requirements for the Fund, we have projected the actuarial status of the Fund as of January 1, 2020. The following table provides the calculated annual contribution for Fiscal Years 2019 & 2020 based on the January 1, 2018 actuarial valuation and an estimated annual required contribution for Fiscal Years 2021 and 2022, based on three different investment return scenarios in 2018 & 2019 and a projected January 1, 2020 actuarial valuation.

	Annual Required Contribution		
Fiscal Year (FY)	Assuming 3.5% return in FY 2018 & 2019	Assuming 7.5% return in FY 2018 & 2019	Assuming 11.5% return in FY 2018 & 2019
2019 & 2020	$80,582	$80,582	$80,582
2021 & 2022	$82,319	$80,898	$79,209

The projected liabilities are calculated by rolling forward the liabilities as of January 1, 2018, taking into account interest and benefit payments for the year, including mortality incidence and anticipated cost of living increases. The 7.5% scenario above coincides with the actuarial investment return assumption of 7.5%. The 3.5% and 11.5% scenarios demonstrate the impact of small amounts of investment return volatility. Actual investment return volatility could exceed the illustrated +/-4% deviation from the actuarial investment return assumption of 7.50%.

In addition to investment return experience, demographic experience and future assumption changes could also impact the actual Annual Required Contribution for fiscal years 2021 and 2022.

Tables

This report includes the following sections:

- The executive summary includes a condensed summary of the demographic, financial, and actuarial data.
- Table 1 provides the details of the development of the required contribution.
- Table 2 shows the sources of change in the calculated annual contribution since the prior valuation.

- Table 3 shows historical actuarial and demographic data for the department.
- Tables 4, 5, 6, and 7 show the development of the financial information.
- Tables 8 and 9 provide information that used to be required under the Governmental Accounting Standards Board Statement No. 25 (GASB 25) and No. 27 (GASB 27). These are provided for historical comparison purposes only. These statements have been replaced by GASB 67 and GASB 68 and results under those standards will be provided in a separate report.
- Table 10 shows historical cash flow information.
- Tables 11, 12, and 13 show demographic data for the department.
- Table 14 shows the actuarial assumptions and methods used to calculate the liabilities.
- Table 15 is a summary of the benefit provisions for the department.
- Table 16 provides definitions of several terms used throughout the report.

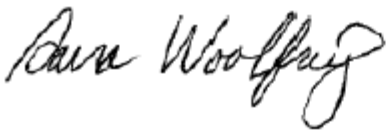
Certification

We certify that the information included herein and contained in the 2018 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Sample Old Hire Police Pension Fund as of January 1, 2018. For financial reporting purposes, the projection of benefits for this Plan does not explicitly incorporate the potential effects of the contractual limits on employer contributions, if applicable.

The supporting schedules in this report were prepared by the actuaries and can be used for completing the actuarial section of the Comprehensive Annual Financial Report. To the best of our knowledge, the supporting schedules fully and fairly disclose the actuarial conditions of the plan.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the State of Colorado statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. Mr. Newton and Ms. Woolfrey are members of the Society of Actuaries and the American Academy of Actuaries, and are also Enrolled Actuaries. Both are experienced in performing valuations for public retirement systems.

Respectfully submitted,
Gabriel Roeder Smith & Company



Dana Woolfrey, FSA, EA, MAAA
Consultant and Actuary

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Senior Consultant

Executive Summary

Item	January 1, 2018	January 1, 2016
	(1)	(2)
Membership		
• Number of:		
- Active members	0	0
- Members in DROP	0	0
- Disabled members	0	0
- Retired members	4	4
- Beneficiaries	2	2
- Total	6	6
• Annualized payroll supplied by FPPA	$ 0	$ 0
• Annualized monthly benefits paid	$ 129,026	$ 129,026
Assets		
• Market value	$ 514,030	$ 538,888
• Actuarial value	517,608	571,721
• Return on market value - Prior year	14.4%	1.7%
• Return on market value - Prior year minus 1	5.3%	6.0%
• Average return on actuarial value	6.2%	5.7%
• Contribution for prior year	$ 75,808	$ 66,481
• Contribution for prior year minus 1	$ 66,481	$ 56,214
• Ratio of actuarial value to market value	100.7%	106.1%
Actuarial Information		
• Actuarial accrued liability	$ 1,255,945	$ 1,300,563
• Unfunded actuarial accrued liability/(surplus)	738,337	728,842
• Amortization period (years)	16	18
• Calculated annual contribution	$ 80,582	$ 75,808
• Funded ratio	41.2%	44.0%
Annual Required Contribution (ARC)		
• For year ending December 31, 2019	$ 80,582	$ 75,808
• For year ending December 31, 2020	$ 80,582	$ 75,808

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Table 1 - Development of Annual Required Contribution

		January 1, 2018 (1)	January 1, 2016 (2)
1.	Covered payroll	$ 0	$ 0
2.	Normal cost	$ 0	$ 0
3.	Actuarial accrued liability for active members		
	a. Present value of future benefits for active members	$ 0	$ 0
	b. Less: present value of future normal costs	0	0
	c. Actuarial accrued liability (a. - b.)	$ 0	$ 0
4.	Total actuarial accrued liability for:		
	a. Retirees and beneficiaries	$ 1,255,945	$ 1,300,563
	b. Disabled members	0	0
	c. Members in DROP	0	0
	d. Active members (3c.)	0	0
	e. Total	$ 1,255,945	$ 1,300,563
5.	Actuarial value of assets	$ 517,608	$ 571,721
6.	Unfunded actuarial accrued liability (UAAL)/(surplus) (4e. - 5.)	$ 738,337	$ 728,842
7.	Funded ratio	41.21%	43.96%
8.	Required payment to amortize the UAAL/(surplus) over 16 years from January 1, 2018	$ 78,426	$ 73,358
9.	Administrative expenses	$ 2,156	$ 2,450
10.	Total calculated annual contribution (2. + 8. + 9.)	$ 80,582	$ 75,808
11.	Annual required contribution (10., not less than 0)	$ 80,582	$ 75,808
12.	Total present value of benefits (4e. + 3b.)	$ 1,255,945	$ 1,300,563

Table 2 - Change in UAAL/Calculated Contribution

1.	Unfunded actuarial accrued liability (UAAL) as of January 1 of prior valuation year	$	728,842
2.	Benefit modifications from prior valuation		0
3.	Total normal cost for FY2016 & FY2017		0
4.	Contributions less administrative expenses during FY2016		(63,798)
5.	Contributions less administrative expenses during FY2017		(74,180)
6.	Interest at 7.5%		103,288
7.	Expected UAAL as of this valuation (sum of 1. to 6.)	$	694,152
8.	Actual UAAL at end of period	$	738,337
9.	Actuarial gain/(loss) for the period (7. - 8.)	$	(44,185)
	SOURCE OF GAINS/(LOSSES)		
10.	Asset gain/(loss) (See Table 7)	$	(13,437)
11.	Salary/rank liability gain/(loss) for the period	$	0
12.	Net liability gain/(loss) for the period (9. - 10. - 11.)	$	(30,748)

Change in Calculated Annual Contribution

1.	Calculated annual contribution 2016			$ 75,808
2.	Benefit changes	$	0	
3.	Change in expense charge		(294)	
4.	Assumption/method changes		0	
5.	Investment experience		1,579	
6.	Salary/rank experience		0	
7.	Change due to excess contribution/contribution shortfall*		0	
8.	Mortality and other liability experience		3,489	
9.	Total change	$	4,774	
10.	Calculated annual contribution 2018			$ 80,582

* Item 7 captures any difference in the future contribution requirements created by the actual contributions being different than the calculated annual contribution during 2016 or 2017.

Table 3 - Actuarial Experience

		2018	2016	2014	2012	2010	2008	2006
1.	Number of members							
	a. Active	0	0	0	0	0	0	0
	b. Retired	4	4	4	4	5	5	5
	c. DROP	0	0	0	0	0	0	0
	d. Beneficiaries	2	2	2	1	1	1	2
	e. Disabled	0	0	0	0	0	0	0
	f. Total	6	6	6	5	6	6	7
2.	Covered payroll	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
3.	Average compensation	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$
4.	Valuation results							
	a. Normal cost	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
	b. Accrued liability	1,255,945	1,300,563	1,298,676	1,287,162	1,333,608	1,373,164	1,425,499
	c. Actuarial value of assets	517,608	571,721	639,915	713,917	845,832	1,055,166	1,008,884
	d. Unfunded liability	738,337	728,842	658,761	573,245	487,776	317,998	416,615
	e. Remaining amortization period	16	18	18	19	20	14	16
	f. Funded ratio	41.2%	44.0%	49.3%	55.5%	63.4%	76.8%	70.8%
5.	Total calculated annual contributions							
	a. Amount	$ 80,582	$ 75,808	$ 66,481	$ 56,214	$ 49,069	$ 35,998	$ 46,130
	b. Per member	13,430	12,635	11,080	11,243	8,178	6,000	6,590
6.	Annual required contribution (Item 5. Not less than 0)	$ 80,582	$ 75,808	$ 66,481	$ 56,214	$ 49,069	$ 35,998	$ 46,130

Item 5 above is the calculated contribution as it is described throughout the report: normal cost, plus the amortization of the UAAL under the policy as described in the current statutes, plus an explicit charge for administrative expenses.

Table 4 - Reconciliation of Net Plan Assets

		Year Ending 12/31/2017 (1)	Year Ending 12/31/2016 (2)
1.	Market value of assets at beginning of year	$ 500,666	$ 538,888
2.	Revenue for the year		
a.	Plan direct inflows		
i.	Employer contributions	$ 75,808	$ 66,481
ii.	State contributions	0	0
iii.	Affiliations	0	0
iv.	Plan directed expenses	0	0
v.	Total	$ 75,808	$ 66,481
b.	Allocated income		
i.	Interest	$ 1,345	$ 1,426
ii.	Dividends	3,522	3,974
iii.	Other Income	4,181	2,108
iv.	Net change accrued income	313	(36)
v.	Unrealized gain/(loss)	41,854	12,234
vi.	Realized gain/(loss)	21,689	11,489
vii.	Total	$ 72,904	$ 31,195
c.	Total Revenue (2a. + 2b.)	$ 148,712	$ 97,676
3.	Expenditures for the year		
a.	Plan direct outflows		
i.	Net benefits	$ (129,025)	$ (129,025)
ii.	Refunds	0	0
iii.	Total	$ (129,025)	$ (129,025)
b.	Allocated expense		
i.	Investment expenses	$ (4,695)	$ (4,190)
ii.	Directed plan expenses	(501)	(1,876)
iii.	Allocated fees and expenses	(1,127)	(807)
iv.	Total allocated expenditures	$ (6,323)	$ (6,873)
c.	Total expenditures (3a. + 3b.)	$ (135,348)	$ (135,898)
4.	Increase/(Decrease) in net assets (2c. + 3c.)	$ 13,364	$ (38,222)
5.	Market value of assets at end of year (1. + 4.)	$ 514,030	$ 500,666

Table 5 - Development of Actuarial Value of Assets

	Year Ending 12/31/2017 (1)	12/31/2016 (2)
1. Actuarial value of assets at beginning of year	$ 535,536	$ 571,721
2. Cash flow for the year		
a. Contributions	$ 75,808	$ 66,481
b. State contributions	0	0
c. Affiliation contributions	0	0
d. Benefit payments	(129,025)	(129,025)
e. Administrative and other expenses	(1,628)	(2,683)
f. Net cash flow	$ (54,845)	$ (65,227)
3. Expected investment earnings	$ 38,109	$ 40,433
4. Expected actuarial value of assets at end of year	$ 518,800	$ 546,927
5. Actual market value of assets at end of year	$ 514,030	$ 500,666
6. Excess earnings/(shortfall)	$ (4,770)	$ (46,261)
7. Excess earnings/(shortfall) recognized (Table 6, Item 6)	$ (1,192)	$ (11,391)
8. Final actuarial value of assets (Item 4 + Item 7)	$ 517,608	$ 535,536

Table 6 - Development of Amounts to be Recognized in the Actuarial Value of Assets

	Year Ending 12/31/2017 (1)	Year Ending 12/31/2016 (2)
1. Remaining deferrals of excess (shortfall) of investment income from prior years		
a. Current year - 4	$ 0	$ 0
b. Current year - 3	(3,975)	0
c. Current year - 2	(20,153)	(5,963)
d. Current year - 1	(10,742)	(26,870)
e. Total	$ (34,870)	$ (32,833)
2. Current year (Table 5, Item 6 - Table 6, Item 1)	$ 30,100	$ (13,428)
3. Amounts to be immediately recognized due to offsetting current year experience (Item 2) against prior year deferrals (Item 1)		
a. Current year - 4	$ 0	$ 0
b. Current year - 3	3,975	0
c. Current year - 2	20,153	0
d. Current year - 1	5,972	0
e. Current year	(30,100)	0
f. Total	$ 0	$ 0
4. Remaining prior year deferrals		
a. Current year - 4	$ 0	$ 0
b. Current year - 3	0	0
c. Current year - 2	0	(5,963)
d. Current year - 1	(4,770)	(26,870)
e. Current year	0	(13,428)
f. Total	$ (4,770)	$ (46,261)
5. Deferral of excess (shortfall) of investment income for:		
a. Current year - 4	$ 0	$ 0
b. Current year - 3	0	0
c. Current year - 2	0	(3,975)
d. Current year - 1	(3,578)	(20,153)
e. Current year	0	(10,742)
f. Total	$ (3,578)	$ (34,870)
6. Total amount recognized in actuarial value of assets (Item 3.f + Item 4.f. - Item 5.f.)	$ (1,192)	$ (11,391)

Table 7 - Gain/(Loss) on Actuarial Value of Assets

		January 1, 2018 (1)	January 1, 2016 (2)
1.	Actuarial assets, prior valuation	$ 571,721	$ 639,915
2.	Total contributions since prior valuation	$ 142,289	$ 122,695
3.	Benefits and refunds since prior valuation	$ (258,050)	$ (258,050)
4.	Administrative and other expenses since prior valuation*	$ (4,311)	$ 0
5.	Assumed net investment income at 7.5%		
	a. Beginning assets	$ 88,974	$ 99,587
	b. Contributions	10,509	8,975
	c. Benefits, refunds and administrative expenses	(20,087)	(19,717)
	d. Total	$ 79,396	$ 88,845
6.	Expected actuarial assets (1. + 2. + 3. + 4. + 5.)	$ 531,045	$ 593,405
7.	Actual actuarial assets, this valuation	$ 517,608	$ 571,721
8.	Net asset gain/(loss) since prior valuation (7. - 6.)	$ (13,437)	$ (21,684)
		Loss	Loss

* Item 4 is not applicable as of January 1, 2016 since the change in expense assumption was prospective only and did not impact the gain or loss on the actuarial value of assets as of January 1, 2016.

Table 8 - Statement of Funding Progress

Date	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL (3) - (2))	Funded Ratio (2)/(3)	Annual Covered Payroll	UAAL as a percent of payroll (4)/(6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
January 1, 2002	$ 1,327,318	$ 1,382,682	$ 55,364	96.0%	$ 47,001	118%
January 1, 2004	1,019,915	1,408,282	388,367	72.4%	49,363	787%
January 1, 2006	1,008,884	1,425,499	416,615	70.8%	0	N/A
January 1, 2008	1,055,166	1,373,164	317,998	76.8%	0	N/A
January 1, 2010	845,832	1,333,608	487,776	63.4%	0	N/A
January 1, 2012	713,917	1,287,162	573,245	55.5%	0	N/A
January 1, 2014	639,915	1,298,676	658,761	49.3%	0	N/A
January 1, 2016	571,721	1,300,563	728,842	44.0%	0	N/A
January 1, 2018	517,608	1,255,945	738,337	41.2%	0	N/A

The funded status measure may be appropriate for assessing the need for future contributions. The funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

Table 9 - History of Employer Contributions

The "Annual Required Contribution" (ARC) is the sum of the normal cost and the amortization of the UAAL. This is a historical standardized measure that was previously calculated in accordance with Statements No. 25 and No. 27 of the Governmental Accounting Standards Board (GASB).

The following exhibit shows a history of the ARC and the actual contributions made to the Plan.

Fiscal Year Ending	Annual Required Contribution	Actual Contribution	Percent
(1)	(2)	(3)	(4)
December 31, 2015	$ 66,481	$ 66,481	100%
December 31, 2016	66,481	66,481	100%
December 31, 2017	75,808	75,808	100%
December 31, 2018	75,808	N/A	

Table 10 - Cash Flow Analysis

Year Ending December 31,	Contributions for the Year	Expenditures During the Year: Benefit Payments **	Expenditures During the Year: Expenses	Expenditures During the Year: Total	External Cash Flow for the Year	Market Value of Assets	External Cash Flow as Percent of Market Value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
2007	$ 46,130	$ (132,486)	$ (7,672)	$ (140,158)	$ (94,028)	$ 1,086,062	(8.7%)
2008	46,130	(132,486)	(7,346)	(139,832)	(93,702)	699,835	(13.4%)
2009	35,998	(132,486)	(5,179)	(137,665)	(101,667)	722,642	(14.1%)
2010	35,998	(132,486)	(5,129)	(137,615)	(101,617)	710,238	(14.3%)
2011	49,069	(132,486)	(5,031)	(137,517)	(88,448)	632,950	(14.0%)
2012	49,069	(129,025)	(5,436)	(134,461)	(85,392)	619,822	(13.8%)
2013	58,355	(129,025)	(8,511)	(137,536)	(79,181)	629,464	(12.6%)
2014	56,214	(129,025)	(3,772)	(132,797)	(76,583)	591,979	(12.9%)
2015	66,481	(129,025)	(1,127)	(130,152)	(63,671)	538,888	(11.8%)
2016	66,481	(129,025)	(2,683)	(131,708)	(65,227)	500,666	(13.0%)
2017	75,808	(129,025)	(1,628)	(130,653)	(54,845)	514,030	(10.7%)
2018*	75,808	(128,229)	(2,156)	(130,385)	(54,577)	495,958	(11.0%)
2019*	80,582	(126,367)	(2,210)	(128,577)	(47,995)	483,360	(9.9%)
2020*	80,582	(124,377)	(2,265)	(126,642)	(46,060)	471,824	(9.8%)

* Cash flow estimated based on expected contributions and expected benefit payments.
** Expected Benefit Payments for 2018 and beyond include expected retirements, expected mortality and if applicable, future cost of living increases.

Table 11 - Membership Data

		January 1, 2018 (1)	January 1, 2016 (2)	January 1, 2014 (3)
1.	Active members			
a.	Number	0	0	0
b.	Total payroll	$ 0	$ 0	$ 0
c.	Average annual salary	$ 0	$ 0	$ 0
d.	Average age	N/A	N/A	N/A
e.	Average service	N/A	N/A	N/A
2.	Members in DROP			
a.	Number	0	0	0
b.	Total annual benefits	$ 0	$ 0	$ 0
c.	Average annual benefit	$ N/A	$ N/A	$ N/A
d.	Average age	N/A	N/A	N/A
3.	Service retirees			
a.	Number	4	4	4
b.	Total annual benefits	$ 121,881	$ 121,881	$ 121,881
c.	Average annual benefit	$ 30,470	$ 30,470	$ 30,470
d.	Average age	70.0	68.0	66.0
4.	Disabled retirees			
a.	Number	0	0	0
b.	Total annual benefits	$ 0	$ 0	$ 0
c.	Average annual benefit	$ N/A	$ N/A	$ N/A
d.	Average age	N/A	N/A	N/A
5.	Beneficiaries			
a.	Number	2	2	2
b.	Total annual benefits	$ 7,145	$ 7,145	$ 7,145
c.	Average annual benefit	$ 3,573	$ 3,573	$ 3,573
d.	Average age	84.5	82.5	80.5

Table 12 - Summary of Retirees by Age and Type

	Retirees		Disabled Members		Beneficiaries		Members in DROP		All	
Age	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension	Number	Average Monthly Pension
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Less than 50	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0
50-54	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	0	0
60-64	1	2,633	0	0	0	0	0	0	1	2,633
65-69	0	0	0	0	0	0	0	0	0	0
70-74	2	2,123	0	0	0	0	0	0	2	2,123
75-79	1	3,278	0	0	0	0	0	0	1	3,278
Greater than 80	0	0	0	0	2	298	0	0	2	298
All	4	$ 2,539	0	$ 0	2	$ 298	0	$ 0	6	$ 1,792

Table 13 - Schedule of Retirants & Annuitants Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls-End of Year				
Valuation Year January 1	Number	Annual Benefits*	Number	Annual Benefits	Number	Annual Benefits	% Increase in Annual Benefits	Average Annual Benefits	Average Age
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2004	N/A	N/A	N/A	N/A	6	$ 103,361	N/A	$ 17,227	N/A
2006	1	$ 31,598	0	$ 0	7	$ 134,959	30.6%	$ 19,280	66.4
2008	0	$ 0	1	$ 2,473	6	$ 132,486	(1.8%)	$ 22,081	66.0
2010	0	$ 0	0	$ 0	6	$ 132,486	0%	$ 22,081	68.0
2012	0	$ 0	1	$ 6,922	5	$ 125,564	(5.2%)	$ 25,113	67.4
2014	1	$ 3,462	0	$ 0	6	$ 129,026	2.8%	$ 21,504	70.8
2016	0	$ 0	0	$ 0	6	$ 129,026	0%	$ 21,504	72.8
2018	0	$ 0	0	$ 0	6	$ 129,026	0%	$ 21,504	74.8

* Includes cost-of-living adjustments granted since the prior valuation.

Table 14 - Summary for Actuarial Assumptions, Methods, and Changes

The calculations set forth in this report are based on the following assumptions:

1. Investment Return Rate — 7.5% per annum (net of investment expenses), compounded annually

2. Rates of Decrement due to:

   Retirement — Age 55 and 20 years of service, or any age with 25 years of service.

3. Post-Retirement Mortality

   a) Healthy Retirees, Beneficiaries, and Disabled Retirees (retired after January 1, 1980) — For ages less than 55, RP-2014 Mortality Tables for Blue Collar Employees. For ages 65 and older, RP-2014 Mortality Tables for Healthy Annuitants. For ages 55 through 64, a blend of the previous tables. All tables generationally projected with Scale BB (rates projected through 2018 shown below)

	Annual Rate Per 1,000	
Age	Males	Females
50	2.156	1.221
55	3.655	1.953
60	7.135	4.527
65	12.020	8.314
70	18.352	13.308
75	29.659	21.888
80	48.817	36.365

   b) Disabled Retirees (retired before January 1, 1980) — RP-2014 Disabled Generational Mortality Table generationally projected with Scale BB with a minimum 3% rate for males and 2% rate for females (rates projected through 2018 shown below)

	Annual Rate Per 1,000	
Age	Males	Females
50	30.000	20.000
55	30.000	20.000
60	30.000	20.000
65	30.191	20.000
70	37.979	26.873
75	51.102	39.110
80	72.121	58.129

Table 14 - Summary for Actuarial Assumptions, Methods, and Changes (Continued)

4.	Salary Increase Rate	Inflation rate of 2.50%, plus productivity component of 1.50%. Salary increases are assumed to occur once a year, on January 1st. Therefore, the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, annualized if necessary, and then increased by the salary increase assumption.
5.	Administrative Expenses	An explicit administrative expense equal to the average of the actual expenses for the two prior years.
6.	Marital Status	
	a) Percent married	85% male and female
	b) Age difference	Retirees are assumed to be two years older than Beneficiaries
7.	Benefit Escalation	0.00%
8.	Changes in Actuarial Assumptions	None.
9.	Changes in Actuarial Methods	None.

10. Actuarial Cost Method

Under the entry age actuarial cost method, the normal cost is computed as the level dollar amount which, if paid from the earliest time each member would have been eligible to join the plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the plan. The normal cost for the plan is determined by summing the normal cost of all members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that should have been accumulated had annual contributions been made in prior years equaling to the normal cost. The unfunded actuarial accrued liability/(surplus) is the excess of the actuarial accrued liability over the actuarial value of the plan assets as of the valuation date.

The contribution requirements determined by this valuation will not be effective until one year later, and the determination of the requirement reflects this deferral. It is assumed that there will be no change in the normal cost due to the deferral, and it is assumed that payments are made in the middle of the year.

Table 14 - Summary for Actuarial Assumptions, Methods, and Changes (Continued)

Under this method, experience gains and losses (i.e. decreases or increases in accrued liabilities), attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

11. Asset Valuation Method

The asset valuation method is based on a comparison of expected and actual asset values. The actuarial value of assets is equal to the market value of assets less a five-year phase in of the Excess (Shortfall) between expected investment return and actual income determined as follows:

- At the beginning of each plan year, an expected actuarial asset value is calculated as the sum of the previous year's actuarial value increased with a year's interest at the Plan valuation rate plus net cash flow (excluding expenses) adjusted for interest (at the same rate) to the end of the previous plan year.
- The difference between the expected actuarial asset value and the actual market value is the investment gain or (loss) for the previous plan year.
- If the current year's difference is the opposite sign of any of the prior year's deferred Excesses\(ShortFalls), then the prior year's bases (starting with the oldest) are reduced dollar for dollar along with the current year's base. Any remaining bases are then recognized over five years (20% per year) from their initial creation.

12. Amortization Policy Used to Determine Contribution Requirement

As of January 1, 2009:

The UAAL must be amortized under a level dollar method over 20 years but not more than the average remaining life expectancy of the group.

Before January 1, 2009:

Old Hire plans used a variety of amortization periods. Some used a 40 year period beginning in 1982 and some used a 10 year period beginning in 1992, but not more than the average remaining life expectancy of the group.

Table 15 - Summary of Benefit Provisions

A. Eligibility

Members included are active employees hired prior to April 8, 1978, electing to remain covered under the provisions of the City's current plan.

B. Compensation

Basic salary for Police Officers.

C. Contribution Rate

The city is currently contributing $75,808 to this fund in 2017 and 2018 based on the required contribution calculated in the latest actuarial study.

D. Normal Retirement Benefit

A Police Officer's Normal Retirement Date shall be the date on which he has attained 55 years of age and completed 20 years of service or upon completion of 25 years of service, if earlier. Any Police Officer who elects to retire on or after his Normal Retirement Date shall be eligible for a monthly pension equal to one-half of his average monthly salary received one year before his retirement. For each year an officer continues working past eligibility for Normal Retirement, an officer's benefit will increase by 4% of his average monthly salary to a maximum benefit of 74%. This benefit is applicable for active service earned after January 1, 1992.

E. Termination Benefit

1. Vested Retirement Benefit

None.

2. Severance Benefit

None.

F. Death and Disability Benefits

1. Pre-Retirement Death and Disability Benefit

None.

2. Post-Retirement Death and Disability Benefit

If a retired Police Officer dies, the surviving spouse shall receive, until death or remarriage, a monthly pension equal to one-half of the monthly pension the Police Officer was entitled to receive prior to his death.

3. Post-Withdrawal Death Benefit

None.

Table 15 - Summary of Benefit Provisions (Continued)

G. Cost-of-Living Adjustment (COLA)

None.

H. Deferred Retirement Option Plan (DROP)

Any member who has attained age 50 with 25 years of service may elect to participate in DROP. Any member who decides to participate in the DROP plan agrees to retire within 5 years of the date of the execution of the agreement. Retirement contributions and benefits paid for that member will be deposited to and held in a separate account until the member retires from active duty. A member who elects to participate in the DROP plan may not thereafter withdraw from DROP. Once the member has elected DROP, such member's retirement benefit shall be fixed and shall not increase as a result of continued years of membership, or due to an increase in such member's average monthly salary.

I. Supplemental Retirement Benefit

None.

J. Stabilization Reserve Account (SRA)

None.

K. Plan Amendments

None.

Table 16 - Definition of Terms

1. Actuarial Cost Method

   A method for determining the actuarial present value of future benefits and allocating such value to time periods in the form of a normal cost and an actuarial accrued liability.

2. Present Value of Future Benefits

   This is computed by projecting the total future benefit cash flow from the Plan, using actuarial assumptions, and then discounting the cash flow to the valuation date.

3. Normal Cost

   Computed differently under different actuarial cost methods, the normal cost generally represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued during a year.

4. Actuarial Accrued Liability

   Computed differently under different actuarial cost methods. Generally actuarial accrued liability represents the value of the portion of the participant's anticipated retirement, termination, and/or death and disability benefits accrued as of the valuation date.

5. Entry Age Actuarial Cost Method

   A method under which a participant's actuarial present value of future benefits is allocated on a level basis over the earnings of the participant between his/her entry into the Plan and his/her assumed exit.

6. Unfunded Actuarial Accrued Liability

   The difference between total actuarial present value of future benefits over the sum of the tangible assets of the Plan and the actuarial present value of the members' future normal costs. The Plan is underfunded if the difference is positive and overfunded if the difference is negative.

7. Actuarial Value of Assets

   The value of cash, investments, and other property belonging to the Plan, as valued by the actuary for purposes of the actuarial valuation.

Table 16 - Definition of Terms (Continued)

8. Actuarial Gain or Loss

From one valuation to the next, if the experience of the plan differs from that anticipated by the actuarial assumptions, an actuarial gain or loss occurs. For example, an actuarial gain would occur if the assets in the trust had a yield of 12% based on actuarial value, while the assumed yield on the actuarial value of assets was 7.5%.

Optional Supplemental Studies