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The City of Omaha
Police & Fire Retirement System

Actuarial Valuation as of
January 1, 2019

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November 11, 2019

Board of Trustees
City of Omaha Police and Fire Retirement System
1819 Farnam Street
Omaha, NE 68183

RE: January 1, 2019 Actuarial Valuation

Dear Members of the Board:

In accordance with your request, we have completed an actuarial valuation of the City of Omaha Police and Fire Retirement System as of January 1, 2019 for the plan year ending December 31, 2019. The major findings of the valuation are contained in this report. There have been no changes to the plan provisions or actuarial assumptions and methods since the prior valuation.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the City's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We found this information to be reasonably consistent and comparable with information provided in prior years. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: experience differing from that anticipated by the economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the System's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

Actuarial computations presented in this report are for purposes of determining the actuarial contribution rates for funding the System. The calculations in the enclosed report have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. For example, actuarial computations for purposes of fulfilling financial accounting requirements for the System under Governmental Accounting Standards No. 67 and No. 68 are provided in separate reports.

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 System and future expectations. The Board of Trustees has the final decision regarding the selection of the assumptions and adopted them as indicated in Appendix B.

We respectfully submit the following report and look forward to discussing it with you.

Sincerely,

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

Bryan Hoge, FSA, EA, FCA, MAAA
Senior Actuary

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This report presents the results of the January 1, 2019 actuarial valuation of the City of Omaha Police and Fire Retirement System. The primary purposes of performing the valuation are:

- to estimate the liabilities for the future benefits expected to be provided by the System;
- to determine the actuarial contribution rate, based on the System's funding policy;
- to measure and disclose various asset and liability measures;
- to assess and disclose the key risks associated with funding the System;
- to monitor any deviation between actual System experience and experience predicted by the actuarial assumptions so that recommendations for assumption changes can be made when appropriate;
- to analyze and report on any significant trends in contributions, assets and liabilities over the past several years.

There have been no changes to the plan provisions, actuarial assumptions, or actuarial methods since the prior valuation.

The actuarial valuation results provide a "snapshot" view of the System's financial condition on January 1, 2019. The unfunded actuarial liability (UAL) in the current valuation is $669 million, an increase of $20 million from last year's UAL of $649 million. The valuation results reflect net unfavorable experience for the past plan year as determined by the fact the actual UAL was higher than expected, based on the actuarial assumptions used in the January 1, 2018 actuarial valuation. Unfavorable experience on the actuarial value of assets resulted in an actuarial loss of $14 million and unfavorable demographic experience produced an actuarial loss on liabilities of $1 million. The unfavorable demographic experience was primarily due to salary increases larger than expected and more members electing to retire or DROP than expected, based on the actuarial assumptions.

The System uses an asset smoothing method in the valuation process. As a result, the System's funded status and the actuarial contribution rate are based on the actuarial (smoothed) value of assets – not the market value. The net investment return on the market value of assets during 2018 was -2.8%, but due to deferred investment gains from prior years, the rate of return on the actuarial value of assets for the 2018 plan year was +5.7%. However, this return is still lower than the expected return of 7.75% so the System experienced an actuarial loss on assets. In addition, the net deferred investment experience changed from a $17 million deferred gain in last year's valuation to a $43 million deferred loss in the current valuation (actuarial value of assets is about 6% higher than market value). Actual returns over the next few years will determine the rate at which the deferred investment loss of $43 million is recognized. Given the current deferred losses, a return of 14% on the market value of assets in 2019 would be necessary to produce a 7.75% return on the actuarial value of assets and avoid an actuarial loss on assets in the January 1, 2020 valuation.

The number of active members increased from the prior valuation which resulted in higher covered payroll than expected which favorably impacts the funding of the System. The actual payroll increase was 4.3% compared with the expected increase of 3.25%.

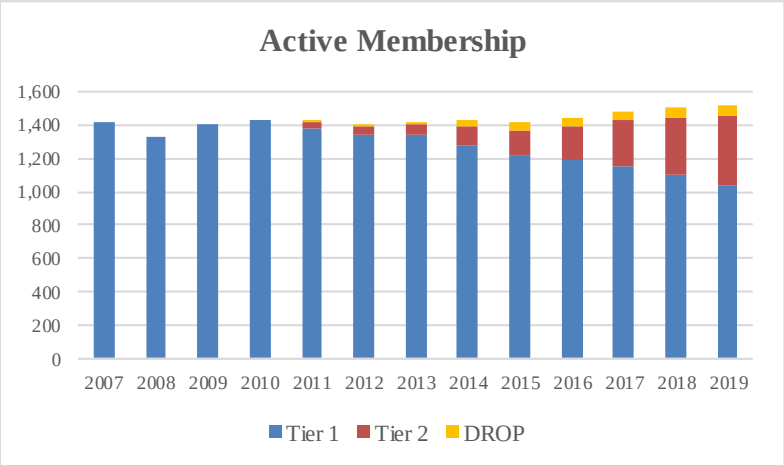
A summary of the key results from the January 1, 2019 valuation is shown in the following table. Additional detail on the changes and experience affecting the valuation results can be found in the following sections of this Board Summary.

	January 1, 2019	January 1, 2018
Unfunded Actuarial Liability ($M)	$669.4	$648.8
Funded Ratio (Actuarial Assets)	52.41%	52.13%
Employee Contribution Rate	16.564%	16.573%
Total City Contribution Rate	34.693%	34.714%
Normal Cost Rate	22.034%	22.211%
UAL Amortization Rate	31.413%	30.988%
Total Contribution Rate	53.447%	53.199%
Contribution (Shortfall)/Margin	(2.190%)	(1.912%)

MEMBERSHIP

There was a total of 1,523 contributing members (active and DROP) in the 2019 valuation compared to 1,509 in the 2018 valuation, a 0.9% increase. The number of non-DROP members was 1,454 in the 2019 valuation compared to 1,446 in the 2018 valuation. The graph below shows the number of contributing members in the valuation over the last 13 years. The size of the active group has varied somewhat over this period, but remained fairly stable. The current count of 1,523 is the highest over the 13 year period. When the number of active members increases, it has a positive impact on the System's funding as covered payroll is higher and more contributions are received. The UAL is amortized assuming covered payroll will grow at 3.25% per year. If total payroll grows more than 3.25% (as this year when the increase was 4.3%), the UAL payment is divided by payroll that is larger than expected, which results in a lower UAL contribution rate. As a result, the total actuarial contribution rate is lower and the contribution shortfall is also lower.

The graph also shows the portion of total actives covered by Tier 1 provisions and Tier 2 provisions (for Police members hired on/after January 1, 2010 and Fire members hired on/after January 1, 2013). In the 2019 valuation, there were 409 Tier 2 members, about 28% of the total active membership. In the January 1, 2018 valuation, the about 24% of the total active group were Tier 2 members.



ASSETS

As of January 1, 2019, the System had total funds of $694.2 million, when measured on a market value basis. This was a decrease of $29.3 million from the prior year and represents an approximate net rate of return of around -2.8%.

The market value of assets is not used directly in the actuarial calculation of the System's funded status and the actuarial contribution rate. An asset valuation method is used to smooth the effects of market fluctuations. The actuarial value of assets is equal to the expected asset value (based on last year's actuarial value of assets, net cash flows and a rate of return equal to the actuarial assumed rate of return for 2018 of 7.75%) plus 25% of the difference between the actual market value and the expected asset value. See Exhibit 2 for the detailed development of the actuarial value of assets as of January 1, 2019. The rate of return on the actuarial value of assets was 5.7% which is below the assumed return of 7.75% during 2018, producing an actuarial loss.

The components of the change in the market value and actuarial value of assets are shown below:

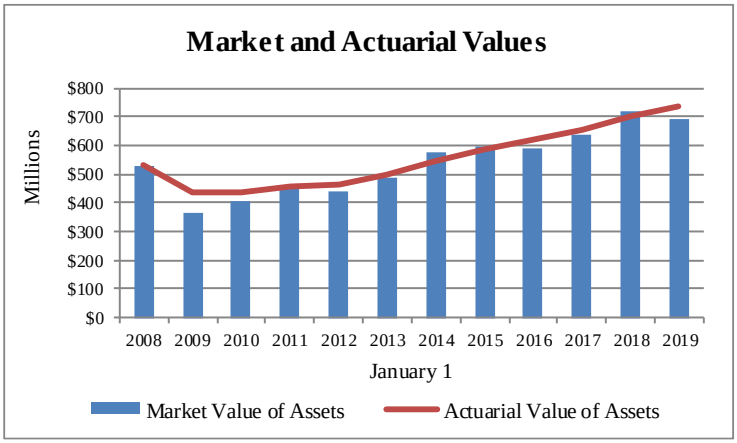
	Market Value ($M)		Actuarial Value ($M)	
Net Assets, January 1, 2018	**$**	723.5	**$**	706.6
• City and Member Contributions	+	71.8	+	71.8
• Benefit Payments and Refunds	–	81.0	–	81.0
• Investment Gain/(Loss)	+	(20.1)	+	40.0
Net Assets, January 1, 2019	**$**	694.2	**$**	737.4
Estimated Net Rate of Return		(2.8%)		5.7%

The deferred investment loss that is not recognized as of January 1, 2019 is $43.2 million, compared with a deferred investment gain of $16.9 million in last year's valuation. The unrecognized loss will be reflected in the determination of the actuarial value of assets for funding purposes over time, to the extent there are no future gains to offset the deferred loss. This means that earning the assumed net rate of investment return of 7.75% per year on a market value basis will result in an actuarial loss on the actuarial value of assets in the future.

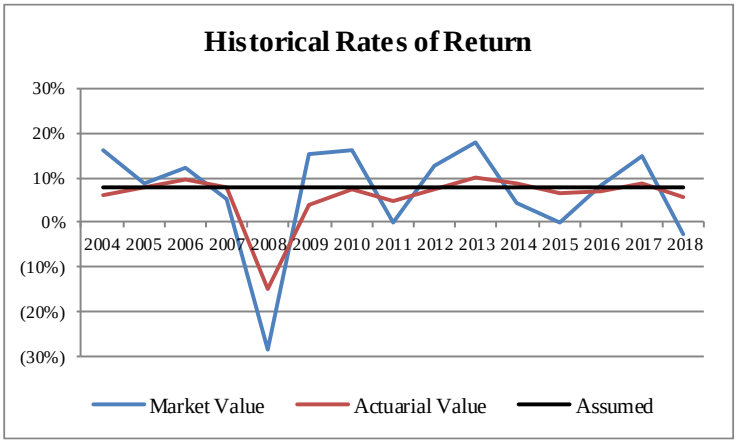
The unrecognized investment loss is 6.2% of the market value of assets at January 1, 2019. If the deferred loss was recognized immediately in the actuarial value of assets, the unfunded actuarial liability would increase by $43.2 million to $712.6 million, the funded percentage would decrease from 52% to 49%, the actuarially determined contribution rate would increase from 53.447% to 55.718%, and the contribution shortfall of 2.190% would increase to 4.461%.

A comparison of asset values on both a market and actuarial basis for the last six years is shown below:

	January 1 ($M)					
	2019	2018	2017	2016	2015	2014
Actuarial Value of Assets	$737	$707	$656	$621	$590	$548
Market Value of Assets	$694	$724	$636	$594	$600	$579
Actuarial Value/Market Value	106%	98%	103%	105%	98%	95%



An asset smoothing method is used to mitigate the volatility in the market value of assets. By using a smoothing method, the actuarial (or smoothed) value is expected to be both above and below the pure market value at different points in time. The significant investment losses in 2008 resulted in the actuarial value of assets exceeding the market value from 2009 through 2013. Since 2014, the actuarial and market values have been relatively close.



The rate of return on the actuarial value of assets has been less volatile than the rate of return on the market value of assets, which is the reason for using a smoothing method. However, during this time period, the rate of return on the actuarial value of assets has been at or below the assumed rate of return for most of the period. Due to smoothing, the calendar year 2008 return impacted the return on actuarial value for many years.

LIABILITIES

The first step in determining the actuarial contribution rate for the System is to calculate the liabilities for all expected future benefit payments. These liabilities represent the present value of future benefits (PVFB) expected to be earned by the current members, assuming that all actuarial assumptions are realized. Thus, the PVFB reflects service and salary increases that are expected to occur in the future before benefit payments commence. The various components of the PVFB can be found in the liabilities portion of the valuation balance sheet (see Exhibit 3).

The other critical measurement of System liabilities in the valuation process is the actuarial liability. This is the portion of the PVFB that will not be paid by the future normal costs (i.e. it is the portion of the PVFB that is allocated to past service).

The following chart compares the actuarial liability and assets for the current and prior valuation.

	As of January 1	
	2019	2018
Actuarial Liability	$ 1,406,832,664	$ 1,355,429,537
Assets at Actuarial Value	(737,383,005)	(706,595,615)
Unfunded Actuarial Liability (Actuarial Value)	$ 669,449,659	$ 648,833,922
Funded Ratio (Actuarial Value)	52%	52%
Actuarial Liability	$ 1,406,832,664	$ 1,355,429,537
Assets at Market Value	(694,210,435)	(723,507,045)
Unfunded Actuarial Liability (Market Value)	$ 712,622,229	$ 631,922,492
Funded Ratio (Market Value)	49%	53%

Note that the funded ratio does not indicate whether or not the System assets are sufficient to settle benefits earned to date. The funded ratio, by itself, also may not be indicative of future funding requirements.

EXPERIENCE FOR THE 2018 PLAN YEAR

The difference between the actuarial liability and the actuarial value of assets at the same date is referred to as the unfunded actuarial liability (UAL). Benefit improvements, experience gains/losses, changes in the actuarial assumptions or methods, and actual contributions made will impact the amount of the unfunded actuarial liability.

Experience or actuarial gains (or losses) result from actual experience that is more (or less) favorable than anticipated based on the actuarial assumptions. These "experience" (or actuarial) gains or losses are reflected in the unfunded actuarial liability and are measured as the difference between the expected unfunded actuarial liability and the actual unfunded actuarial liability, taking into account any changes due to assumptions, methods or benefit provision changes. The experience for 2018, in total, was unfavorable. There was an actuarial loss of $14 million on the actuarial value of assets and an actuarial loss of $1 million on actuarial liabilities. The largest sources of loss on the liabilities were due to salary increases larger than expected and more retirements (including DROP) than expected, based on the actuarial assumptions.

The change in the unfunded actuarial liability between January 1, 2018 and January 1, 2019 is shown below (in millions):

Unfunded Actuarial Liability, January 1, 2018	$649
· Expected change in UAL	6
· Contribution shortfall in 2018	2
· Investment experience	14
· Demographic experience	1
· Other experience	(3)
Unfunded Actuarial Liability, January 1, 2019	$669

CONTRIBUTION LEVELS

The actuarial contribution to the System is composed of two parts:

(1) The normal cost (which is the allocation of costs attributed to the current year of service) and,
(2) The amortization payment on the Unfunded Actuarial Liability (UAL).

The normal cost rate is independent of the System's funded status and represents the cost, as a percent of payroll, of the benefits provided by the System which is allocated to the current year of service. Only active members have a normal cost.

Beginning with the 2018 valuation, the UAL is amortized using a "layered" approach. The UAL as of January 1, 2018 continues to be amortized according to the existing schedule at that time (25 years remain as of January 1, 2019). Each new amount of UAL generated as a result of actuarial experience in subsequent years is established as a separate UAL base, with a separate payment schedule over a closed 20-year period.

		January 1, 2019	January 1, 2018	% Chg
1.	Normal Cost Rate	22.034%	22.211%	(0.8)
2.	UAL Contribution Rate	31.413%	30.988%	1.4
3.	Total Contribution Rate (1) + (2)	53.447%	53.199%	0.5
4.	Employee Contribution Rate	16.564%	16.573%	(0.1)
5.	City Contribution Per Ordinance	33.768%	33.750%	0.1
6.	City Prior Service Payment	0.925%	0.964%	(4.0)
7.	Contribution (Shortfall)/Margin (4) + (5) + (6) - (3)	(2.190%)	(1.912%)	14.5

The total normal cost for the System is 22.034% of pay. When offset by the expected employee contributions for 2019, the employer portion of the normal cost is 5.470% of pay. The normal cost represents the long-term cost of the benefit structure in the System, given the current actuarial assumptions and plan membership. As current active member leave in the future and are replaced by new hires who are covered by a different benefit structure, with a lower cost, the normal cost rate is expected to decline.

The System's total actuarial contribution rate (payable as a percent of member payroll) increased by 0.248% of pay, from 53.199% in the January 1, 2018 valuation to 53.477% in the January 1, 2019 valuation. As a result, there is a contribution shortfall of 2.190% in the current valuation (actual contribution rates are less than the actuarial contribution rate). The primary components of the change in the total actuarial contribution rate are shown in the following table:

	Rate	
Total Actuarial Contribution Rate, January 1, 2018	53.199	%
• Actuarial (Gain) / Loss - Investment Experience	0.729	
• Actuarial (Gain) / Loss - Demographic Experience	0.039	
• Other Experience	(0.121)	
• Contributions Below the Actuarial Rate	0.099	
• Change in Normal Cost Rate	(0.177)	
• Payroll Growth Higher than Expected	(0.321)	
Total Actuarial Contribution Rate, January 1, 2019	53.447	%

As the table above illustrates, the most significant factor in the increase in the actuarial contribution rate was the actuarial loss on assets, which increased the actuarial contribution rate by 0.729%. Payroll growth higher than expected offset part of the impact of the asset experience. Due to the increase in the actuarial contribution rate, last year's contribution shortfall of 1.912% of pay is now a contribution shortfall of 2.190% of pay in the current valuation.

COMMENTS

On January 1, 2019, the actuarial value of assets was $737 million and the market value of assets was $694 million. Due to the return on the market value of assets of -2.8% in 2018, the deferred investment gain of $17 million that existed in the prior valuation has become a $43 million deferred investment loss in the current valuation. The return on the actuarial value of assets was below the assumed rate of return (7.75%) which resulted in a $14 million actuarial loss. There was also a liability loss of $1 million during 2018, primarily due to salary increases larger than expected and more retirements (including DROP) than expected, based on the actuarial assumptions. The funded ratio, based on the actuarial value of assets, remains low but held steady at 52%.

As of January 1, 2019, there were 409 Tier 2 members, about 28% of the total active membership, up from 24% in the January 1, 2018 valuation. As a higher portion of total actives is covered by Tier 2 provisions, the normal cost of the System will continue to decline. However, the majority of the liability will remain with the Tier 1 members for many years.

The actuarial contribution rate for calendar year 2019 exceeds the current contribution rates for the members and the City, producing a contribution shortfall of 2.190% of payroll. The contribution shortfall of 2.190% is based on the actuarial valuation performed on January 1, 2019 which is a snapshot measurement on that date and which assumes no future change in either the normal cost rate or the UAL contribution rate. While the System's financial health is expected to improve in future years due to a decrease in the normal cost rate over time, the impact on the System's long-term funding cannot be quantified without performing an open group projection of future valuation results. Such a project is outside the scope of this valuation assignment, but we strongly encourage the System to perform such modeling to assist the Board and other interested parties in the evaluation of the long-term financial health of the System. The model can also be used to perform important analysis of the various risks related to funding the System.

As mentioned earlier in this report, the System uses an asset smoothing method in the actuarial valuation. While this is a very common practice for public retirement systems, it is important to be aware of the potential impact of the unrecognized investment experience. The key valuation results from the 2019 valuation, using both the actuarial and market value of assets, are shown in the following table to provide full disclosure of the impact of asset smoothing on the funding of the System.

($ Millions)	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Liability	$1,406.8	$1,406.8
Asset Value	737.4	694.2
Unfunded Actuarial Liability	669.4	712.6
Funded Ratio	52.4%	49.3%
Normal Cost Rate	22.034%	22.034%
UAL Contribution Rate	31.413%	33.684%
Actuarial Contribution Rate	53.447%	55.718%
Employee Contribution Rate	16.564%	16.564%
City Contribution Rate	34.693%	34.693%
Contribution (Shortfall)/Margin	(2.190%)	(4.461%)

A typical retirement plan faces many different risks. The term "risk" is most commonly associated with an outcome with undesirable results. However, in the actuarial world risk can be translated as 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. Actuarial Standard of Practice Number 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. Risk evaluation is an important part of managing a defined benefit plan. Please see Section II of this report for an in-depth discussion of the specific risks facing the City of Omaha Police and Fire Retirement System.

THE CITY OF OMAHA POLICE AND FIRE RETIREMENT SYSTEM

PRINCIPAL VALUATION RESULTS

	January 1, 2019	January 1, 2018	% Chg
MEMBERSHIP			
1. Active Membership			
- Police Active Members			
- Tier 1	525	560	(6.3)
- Tier 2	302	253	19.4
- Total	827	813	1.7
- Fire Active Members			
- Tier 1	520	546	(4.8)
- Tier 2	107	87	23.0
- Total	627	633	(0.9)
- Total Active Members	1,454	1,446	0.6
- Number of DROP Participants	69	63	9.5
- Total Employees	1,523	1,509	0.9
- Projected Payroll for Upcoming Fiscal Year	$143,575,171	$137,647,929	4.3
- Average Projected Pay	$94,271	$91,218	3.3
2. Inactive Membership			
- Number of Retirees / Beneficiaries	1,291	1,262	2.3
- Number of Disabled Members	224	223	0.4
- Number of Inactive Vesteds	8	11	(27.3)
- Average Annual Benefit	$49,496	$48,068	3.0
- Number of Participants Due a Refund	9	11	(18.2)
ASSETS AND LIABILITIES			
1. Net Assets			
- Market Value	$694,210,435	$723,507,045	(4.0)
- Actuarial Value	$737,383,005	$706,595,615	4.4
2. Actuarial Liability	$1,406,832,664	$1,355,429,537	3.8
3. Unfunded Actuarial Liability	$669,449,659	$648,833,922	3.2
4. Funded Ratios			
Actuarial Value Assets / Actuarial Liability	52.41%	52.13%	0.5
Market Value Assets / Actuarial Liability	49.35%	53.38%	(7.5)
CONTRIBUTIONS			
1. Normal Cost Rate	22.034%	22.211%	(0.8)
2. UAL Rate	31.413%	30.988%	1.4
3. Total Contribution Rate (1) + (2)	53.447%	53.199%	0.5
4. Employee Contribution Rate	16.564%	16.573%	(0.1)
5. City Contribution Per Ordinance	33.768%	33.750%	0.1
6. City Prior Service Payment	0.925%	0.964%	(4.0)
7. Contribution (Shortfall)/Margin (4) + (5) + (6) - (3)	(2.190%)	(1.912%)	14.5

EXHIBIT 1
SUMMARY OF FUND ACTIVITY

(Market Value Basis)

For Year Ended December 31, 2018

Assets at January 1, 2018	$	723,507,045
Receipts:		
City Contributions		48,796,603
Employee Contributions		23,016,566
Investment Earnings, Net of Expenses		(20,041,135)
Total Receipts		51,772,034
Disbursements:		
Benefits Payments		73,961,179
Refund of Contributions		7,083,844
Administrative Expenses		23,621
Total Disbursements		81,068,644
Assets as of December 31, 2018	$	694,210,435
Annualized Net Yield		(2.8%)

EXHIBIT 2

DETERMINATION OF ACTUARIAL VALUE OF ASSETS

The actuarial value of assets is used to minimize the impact of annual fluctuations in the market value of investments on the contribution rate. The current asset valuation method is called the "Expected +25% Method."

The "expected value" of assets is determined by applying the investment return assumption to last year's actuarial value of assets and the net difference of receipts and disbursements for the year. The actual market value is compared to the expected value and 25% of the difference (positive or negative) is added to the expected value to arrive at the actuarial value of assets for the current year.

1.	Actuarial Value of Assets as of January 1, 2018	$	706,595,615
2.	Actual Receipts / Disbursements		
	a. Total Contributions		71,813,169
	b. Benefit Payments/Other		(81,045,023)
	c. Net Change		(9,231,854)
3.	Expected Actuarial Value of Assets as of January 1, 2019 [(1) * 1.0775] + [(2c) * $1.0775^{½}$]		751,773,862
4.	Market Value of Assets as of January 1, 2019		694,210,435
5.	Excess of Market Value over Expected Actuarial Value as of January 1, 2019		(57,563,427)
6.	Preliminary Actuarial Value of Assets as of January 1, 2019 [(3) + 25% of (5)]		737,383,005
7.	Calculation of 20% Corridor		
	a. 80% of (4)		555,368,348
	b. 120% of (4)		833,052,522
8.	Final Actuarial Value of Assets as of January 1, 2019 (6), but not < (7a), nor > (7b)	$	737,383,005
9.	Rate of Return on Actuarial Value of Assets		5.7%

EXHIBIT 2 (continued)

A historical comparison of the market and actuarial value of assets is shown below:

Date	Market Value of Assets (MVA)	Actuarial Value of Assets (AVA)	AVA / MVA
1/1/2008	$529,923,390	$530,493,413	100.1%
1/1/2009	365,923,877	439,108,652	120.0%
1/1/2010	405,390,038	440,478,409	108.7%
1/1/2011	452,640,303	456,158,774	100.8%
1/1/2012	440,429,392	467,375,458	106.1%
1/1/2013	489,800,140	495,847,234	101.2%
1/1/2014	579,494,652	548,360,223	94.6%
1/1/2015	599,927,168	590,191,585	98.4%
1/1/2016	594,178,499	621,403,975	104.6%
1/1/2017	636,381,482	656,171,797	103.1%
1/1/2018	723,507,045	706,595,615	97.7%
1/1/2019	694,210,435	737,383,005	106.2%

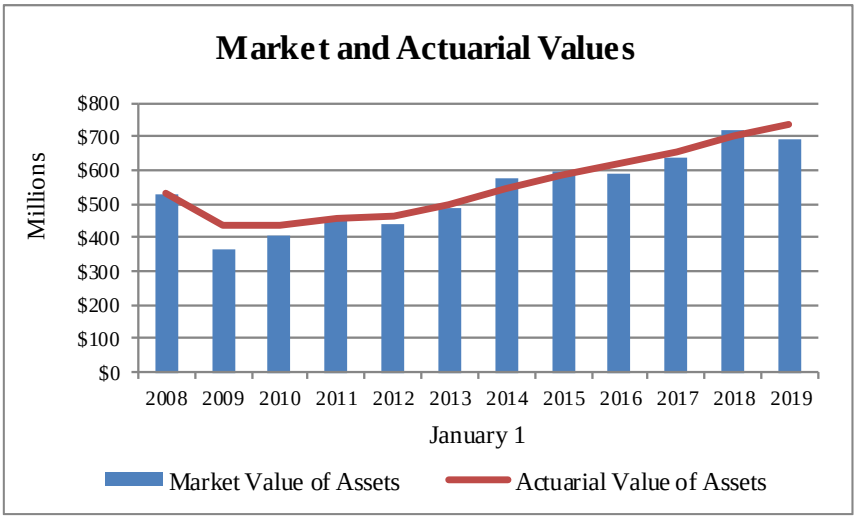


EXHIBIT 3

ACTUARIAL BALANCE SHEET

An actuarial statement of the status of the plan in balance sheet form as of January 1, 2019 is as follows:

Assets

Current assets (actuarial value)		$ 737,383,005
Present value of future normal costs		268,309,123
Present value of future contributions to fund unfunded actuarial liability		669,449,659
Total Assets		$ 1,675,141,787

Liabilities

Present value of future retirement benefits for:		
Active employees	$ 741,000,808	
DROP participants - account balances	10,562,130	
DROP participants - annuities	68,092,991	
Retired employees, contingent annuitants and spouses receiving benefits	747,394,115	
Disabled members	90,876,541	
Inactive vested employees	1,593,862	
Inactive employees due refunds	74,574	
Total		$ 1,659,595,021
Present value of future death benefits payable upon death of active members		9,293,658
Present value of future benefits payable upon termination of active members		6,253,108
Total Liabilities		$ 1,675,141,787

EXHIBIT 4

UNFUNDED ACTUARIAL LIABILITY

As of January 1, 2019

The actuarial liability is the portion of the present value of future benefits which will not be paid by future normal costs. The actuarial value of assets is subtracted from the actuarial liability to determine the unfunded actuarial liability.

The City makes scheduled payments of $1,327,600 annually through the year 2028 in addition to the payroll related contributions. The present value of these contributions was applied to the Unfunded Actuarial Liability (UAL) to determine the amount of the UAL to be funded as a percent of payroll (contribution rates).

1.	Present Value of Future Benefits	$ 1,675,141,787
2.	Present Value of Future Normal Costs	268,309,123
3.	Actuarial Liability (1) – (2)	1,406,832,664
4.	Actuarial Value of Assets	737,383,005
5.	Unfunded Actuarial Liability (3) – (4)	669,449,659
6.	Present Value of Prior Service Payments	9,352,245
7.	Adjusted Unfunded Actuarial Liability (Payable from Payroll Related Contributions) (5) – (6)	$ 660,097,414

EXHIBIT 5

CALCULATION OF ACTUARIAL GAIN / (LOSS)
For Plan Year Ending December 31, 2018

Liabilities		
1. Actuarial liability less prior service payments as of January 1, 2018	$	1,345,470,994
2. Normal cost for 2018		28,859,311
3. Interest at 7.75% on (1) and (2) to December 31, 2018		106,510,599
4. Benefit payments during 2018		(81,045,023)
5. Interest on benefit payments		(3,081,897)
6. Expected actuarial liability as of December 31, 2018	$	1,396,713,984
7. Actuarial liability less prior service payments as of December 31, 2018	$	1,397,480,419
Assets		
8. Actuarial value of assets as of January 1, 2018	$	706,595,615
9. Contributions during 2018		71,813,169
10. Benefit payments during 2018		(81,045,023)
11. Interest on items (8), (9) and (10)		54,410,101
12. Expected actuarial value of assets as of December 31, 2018	$	751,773,862
13. Actual actuarial value of assets as of December 31, 2018	$	737,383,005
Gain / (Loss)		
14. Expected unfunded actuarial liability (6) – (12)	$	644,940,122
15. Actual unfunded actuarial liability (7) – (13)	$	660,097,414
16. Actuarial Gain / (Loss) (14) – (15)	$	(15,157,292)
17. Actuarial Gain / (Loss) on Actuarial Assets (13) – (12)	$	(14,390,857)
18. Actuarial Gain / (Loss) on Actuarial Liability (6) – (7)	$	(766,435)

EXHIBIT 6

ANALYSIS OF EXPERIENCE

The purpose of conducting an actuarial valuation of a retirement plan is to estimate the costs and liabilities for the benefits expected to be paid from the plan, to determine the annual level of contribution for the current plan year that should be made to support these benefits and, finally, to analyze the plan's experience. The costs and liabilities of this retirement plan depend not only upon the benefit formula and plan provisions but also upon factors such as the investment return on the Fund, mortality rates among active and retired members, withdrawal and retirement rates among active members, rates at which salaries increase and the rate at which the cost of living increases.

The actuarial assumptions employed as to these and other contingencies in the current valuation are set forth in Appendix B of this report.

Since the overall results of the valuation will reflect the choice of assumptions made, periodic studies of the various components of the plan's experience are conducted in which the experience for each component is analyzed in relation to the assumption used for that component (called an experience study). This summary is not intended to be an actual "experience study" but rather an analysis of sources of gain and loss in the past plan year.

Gain/(Loss) By Source

The System experienced a net actuarial loss on liabilities of $0.8 million during the plan year ended December 31, 2018, and an actuarial loss on assets of $14.4 million. The net actuarial loss was $15.2 million. The major components of this net actuarial experience loss are shown below:

Liability Sources		**Gain/(Loss)**
Salary Increases	$	(1,143,000)
Mortality		2,064,000
Terminations		113,000
Retirements/DROP		(2,320,000)
Disability		(38,000)
New Entrants/Rehires		(292,000)
Miscellaneous		850,000
Total Liability Gain/(Loss)	$	(766,000)
Asset Gain/(Loss)	$	(14,391,000)
Net Actuarial Gain/(Loss)	$	(15,157,000)

EXHIBIT 7

SCHEDULE OF AMORTIZATION BASES

The System amortizes the unfunded actuarial liability (UAL) using a "layered" approach for the UAL where the UAL as of January 1, 2018 (legacy UAL) is amortized over a closed amortization period of 26 years (25 years remaining as of January 1, 2019). Changes to the UAL resulting from changes in the set of actuarial assumptions are amortized over an appropriate period, as determined by the Board of Trustees in consultation with the actuary. Changes to the UAL in subsequent years that result from actual experience that is different than expected, based on the actuarial assumptions, are set up as a new amortization base with payments determined as a level-percent of pay over a closed 20-year period beginning on that valuation date. The total UAL payment is the sum of the amortization payments on each of the amortization bases.

Amortization Bases	Original Amount	January 1, 2019 Remaining Years	Year of Last Payment	Outstanding Balance as of January 1, 2019	Annual Contribution (mid-year)
2018 Legacy UAL	$ 638,875,379	25	2043	$ 645,489,460	$ 42,670,346
2019 Experience Base	14,607,954	20	2038	14,607,954	1,103,356
Total				**$ 660,097,414**	**$ 43,773,702**

EXHIBIT 8

DEVELOPMENT OF 2019 ACTUARIAL CONTRIBUTION RATE

The actuarial cost method used to determine the required level of annual contributions to support the expected benefits is the Entry Age Normal Cost Method. Under this method, the total cost is comprised of the normal cost rate and the unfunded actuarial liability (UAL) payment. The System is financed by contributions from the employees and the City.

1. Normal Cost During 2019		
a. Retirement	$	24,826,529
b. Disability		3,391,811
c. Pre-retirement death		746,755
d. Termination		929,536
e. Total	$	29,894,631
2. Expected Payroll in 2019 for Current Actives	$	135,677,910
3. Normal Cost Rate (1e) / (2)		22.034%
4. Unfunded Actuarial Liability Payable from Payroll Related Contributions	$	660,097,414
5. Unfunded Actuarial Liability (UAL) Payment	$	43,773,702
6. Prior Service Payment		1,327,600
7. Total Projected Payroll for 2019, Including DROP Members	$	143,575,171
8. UAL and Prior Service Payment as a Percent of Pay [(5) + (6)] / (7)		31.413%
9. Total Actuarial Contribution Rate (3) + (8)		53.447%
10. Employee Contribution Rate		16.564%
11. City Ordinance Contribution Rate		33.768%
12. City Prior Service Contribution Rate		0.925%
13. Contribution (Shortfall)/Margin (10) + (11) + (12) - (9)		(2.190%)

SECTION II

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 September, 2017, 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 the City of Omaha Police and Fire Retirement System (System).

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 can be translated as 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.

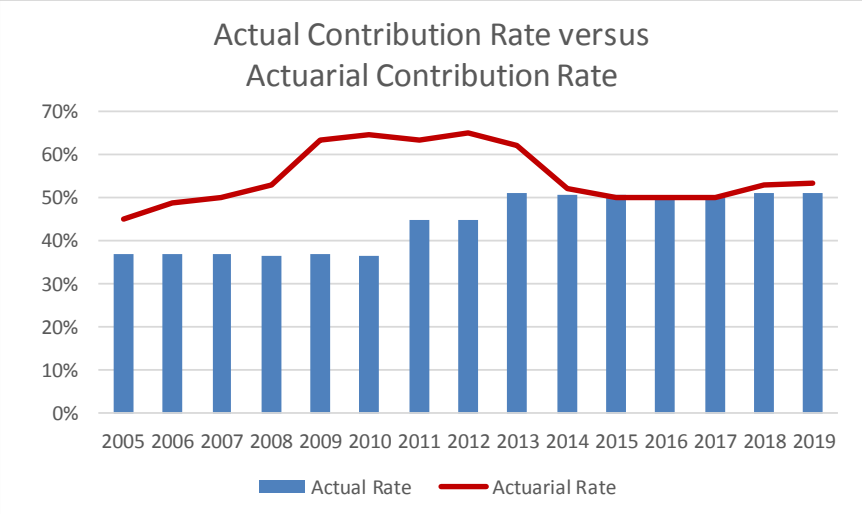
The various risk factors for a given plan can have a significant impact – positive or negative – on the actuarial projection of liability and contribution rates.

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

- economic risks, such as investment return and price 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 to pay;
- external risks such as the regulatory and political environment.

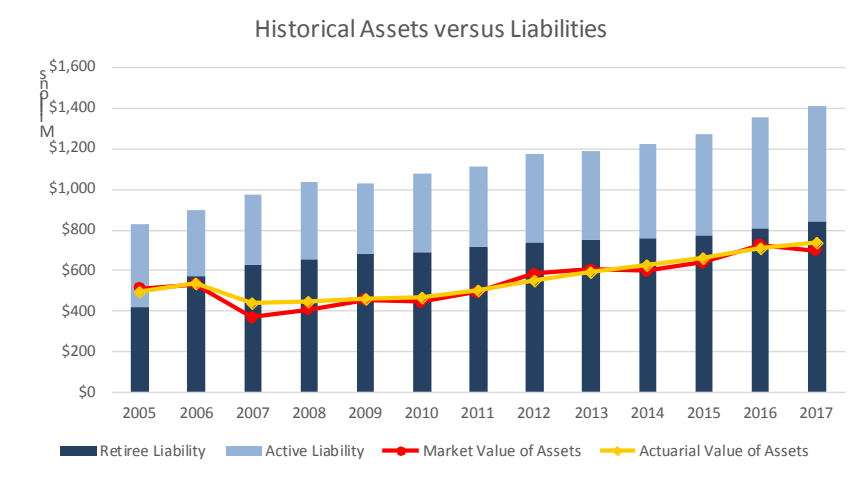
Although the last two are real risks to the retirement system, ASOP 51 does not require the actuary to opine on those risks so no discussion is included here.

There is typically a direct correlation between healthy, well-funded retirement systems and consistent contributions equal to the full actuarial contribution rate each year. The City of Omaha Police and Fire Retirement System is funded by fixed contribution rates made by both the members and the City. This funding approach tends to create more risk than a system whose funding policy requires that the actuarial contribution rate be made each year. Although changes have been made in the past to both the benefits and the contribution rates to address long-term funding concerns, there is typically a lag in implementing such changes. As the following graph illustrates, the fixed contribution rates, which vary by Police, Fire, and the City, have failed to meet the actuarial required contribution amount for 12 of the last 15 years which has restricted the improvement in funded status.



Funding a retirement system with fixed contribution rates creates some unique funding challenges. The most significant risk factor for the City of Omaha Police and Fire' Retirement System is investment return because the inherent volatility of returns due to the asset allocation can produce wide variations in the actual return on the market value of assets from year to year. When the actual experience is lower than expected (based on the assumption), the contributions to the System do not automatically adjust to compensate for the loss of investment income. The delay in responding to adverse economic experience, due to the fact any changes to the benefits or contributions must be resolved in the bargaining process, can result in a significant reduction in funded status before corrective action occurs.

The current funded status of the System, using the market value of assets, is 49%. The market value of assets on January 1, 2019 was $694 million while the retiree liability on the same date was $838 million. Essentially, the current assets are only sufficient to fund about 83% of the retiree liability (and 0% of the active liability), assuming all actuarial assumptions are met, as shown below.



A key demographic risk for all retirement systems, including the City of Omaha Police and Fire Retirement System, is improvements in mortality (longevity) greater than anticipated. While the actuarial assumptions reflect small, continuous improvements in mortality experience over time and these assumptions are refined every experience study, the risk arises because there is a possibility of some sudden shift, perhaps from a significant medical breakthrough that could quickly increase liabilities. Likewise, there is some possibility of a significant public health crisis that could result in a significant number of additional deaths in a short time period, which would also be significant, although more easily absorbed. While either of these events could happen, it represents a small probability and thus represents much less risk to funding the System than the volatility associated with investment returns.

Finally, because the System is funded with fixed contribution rates, there is no adjustment made to the contribution rate when future covered payroll is lower than assumed. This can result from a decrease in the number of active members, lower actual salary increases than assumed, or a combination of the two. If payroll does not grow as expected, fewer contribution dollars are received and funding progress is delayed which means that a decrease in the number of active members will have a negative impact on the funding of the System. Likewise, an increase in the number of active members, as has occurred over the past ten to fifteen years, improves the funding of the System.

The following exhibits summarize some historical information that helps indicate how certain key risk metrics have changed over time. Many are due to the maturing of the retirement system.

EXHIBIT 9

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 System 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 System. The higher this ratio, the more sensitive a plan's actuarial contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions. For COPFRS, the ratio has held fairly steady over this period.

Actuarial Valuation Date	Market Value of Assets	Estimated Plan Year Payroll	Asset Volatility Ratio	Increase in ACR with a Return 10% Lower than Assumed*
1/1/2005	$420,348,491	$84,765,936	4.96	3.75%
1/1/2006	453,323,009	91,319,898	4.96	3.75%
1/1/2007	507,608,781	99,029,486	5.13	3.87%
1/1/2008	529,923,390	95,109,680	5.57	4.21%
1/1/2009	365,923,877	100,808,720	3.63	2.74%
1/1/2010	405,390,038	110,963,955	3.65	2.76%
1/1/2011	452,640,303	105,025,610	4.31	3.26%
1/1/2012	440,429,392	110,027,537	4.00	3.02%
1/1/2013	489,800,140	116,056,740	4.22	3.19%
1/1/2014	579,494,652	121,040,325	4.79	3.62%
1/1/2015	599,927,168	126,843,763	4.73	3.57%
1/1/2016	594,178,499	129,633,658	4.58	3.46%
1/1/2017	636,381,482	133,044,481	4.78	3.61%
1/1/2018	723,507,045	137,647,929	5.26	3.97%
1/1/2019	694,210,435	143,575,171	4.84	3.66%

Note: Years prior to 1/1/2011 were provided by the prior actuary.

*The impact of asset smoothing is not reflected in the impact on the Actuarial Contribution Rate (ACR). Current year assumptions are used for all years shown.

The assets at January 1, 2019 are 4.84 times payroll, so underperforming the investment return assumption by 10.00% (i.e., earn -2.25% for one year) is equivalent to 48% 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 significant risk associated with volatile investment returns.

EXHIBIT 10

HISTORICAL CASH FLOWS

Plans with negative cash flows will typically experience increased sensitivity to investment return volatility. Cash flows, for this purpose, are measured as contributions less benefit payments. If the System has negative cash flows and 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 may cause significant concerns. Due to increased contributions, the cash flow is less negative in recent years.

Year Begin	Market Value of Assets (MVA)	Contributions	Benefit Payments	Net Cash Flow	Net Cash Flow as a Percent of MVA
1/1/2005	$420,348,491	$27,264,755	$32,526,841	($5,262,086)	(1.25%)
1/1/2006	453,323,009	29,320,239	32,816,158	(3,495,919)	(0.77%)
1/1/2007	507,608,781	33,816,618	34,875,910	(1,059,292)	(0.21%)
1/1/2008	529,923,390	37,023,254	40,439,702	(3,416,448)	(0.64%)
1/1/2009	365,923,877	36,559,759	50,218,091	(13,658,332)	(3.73%)
1/1/2010	405,390,038	38,332,084	53,934,735	(15,602,651)	(3.85%)
1/1/2011	452,640,303	40,455,387	57,582,167	(17,126,780)	(3.78%)
1/1/2012	440,429,392	47,691,935	59,049,363	(11,357,428)	(2.58%)
1/1/2013	489,800,140	54,943,697	60,615,888	(5,672,191)	(1.16%)
1/1/2014	579,494,652	65,498,698	63,124,761	2,373,937	0.41%
1/1/2015	599,927,168	61,475,619	66,558,852	(5,083,233)	(0.85%)
1/1/2016	594,178,499	61,843,394	68,509,652	(6,666,258)	(1.12%)
1/1/2017	636,381,482	63,450,117	71,482,718	(8,032,601)	(1.26%)
1/1/2018	723,507,045	68,366,987	75,783,117	(7,416,130)	(1.03%)
1/1/2019	694,210,435	71,813,169	81,045,023	(9,231,854)	(1.33%)

Note: Years prior to 1/1/2011 were provided by the prior actuary.

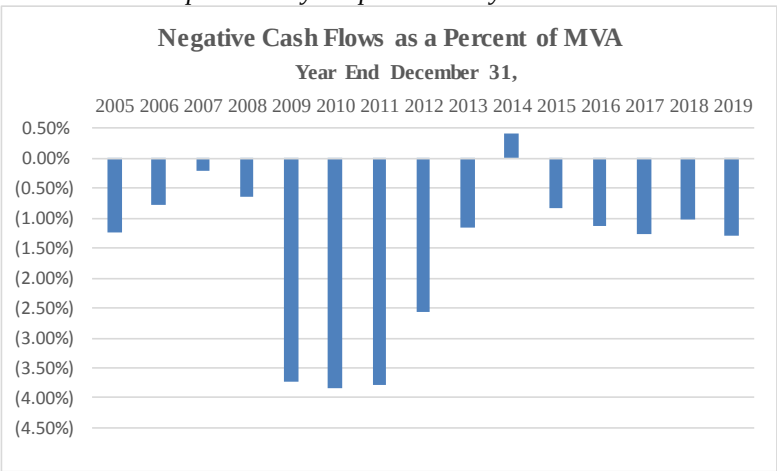


EXHIBIT 11

LIABILITY MATURITY MEASUREMENTS

Most public sector retirement systems have been in operation for many years. As a result, they tend to have aging plan populations, and in some cases declining active populations, resulting in an increasing ratio of retirees to active members and a growing percentage of retiree liability. When more of the total liability resides with retirees, investment volatility has a greater impact on the funding of the system since it is more difficult to restore the system financially after losses occur when there is comparatively less payroll over which to spread costs.

Year End	Retiree Liability (a)	Total Actuarial Liability (b)	Retiree Percentage (a / b)	Covered Payroll (c)	Ratio (b / c)
12/31/2004	N/A	$657,650,175	N/A	$86,800,000	7.58
12/31/2005	N/A	746,490,736	N/A	91,700,000	8.14
12/31/2006	421,211,382	829,097,202	50.8%	99,600,000	8.32
12/31/2007	571,615,718	898,199,279	63.6%	99,500,000	9.03
12/31/2008	628,626,169	971,989,970	64.7%	103,900,000	9.36
12/31/2009	653,663,831	1,034,716,125	63.2%	111,200,000	9.31
12/31/2010	682,671,068	1,028,866,353	66.4%	105,025,610	9.80
12/31/2011	690,568,696	1,077,607,299	64.1%	110,027,537	9.79
12/31/2012	718,209,902	1,108,874,778	64.8%	116,056,740	9.55
12/31/2013	735,256,472	1,170,967,753	62.8%	124,051,668	9.44
12/31/2014	754,837,275	1,189,002,221	63.5%	126,843,763	9.37
12/31/2015	755,079,053	1,223,966,110	61.7%	129,633,658	9.44
12/31/2016	774,112,739	1,267,909,175	61.1%	133,044,481	9.53
12/31/2017	805,195,802	1,355,429,537	59.4%	137,647,929	9.85
12/31/2018	838,270,656	1,406,832,664	59.6%	143,575,171	9.80

Note: Years prior to 1/1/2011 were provided by the prior actuary.

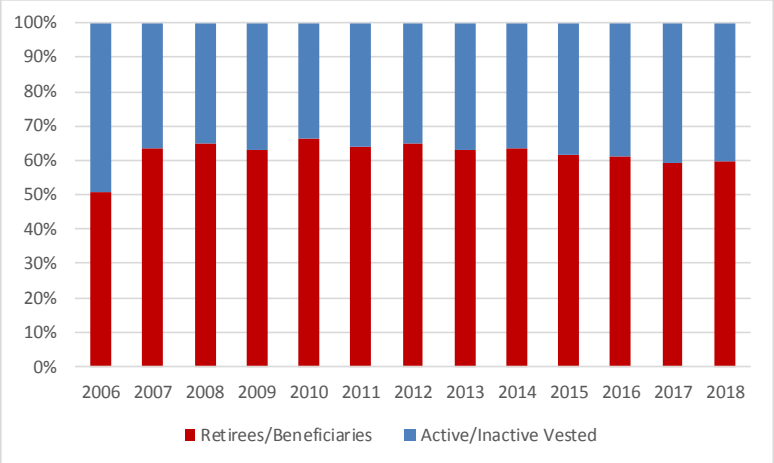


EXHIBIT 12

HISTORICAL MEMBER STATISTICS

Valuation Date January 1,	Number of Active	Number of Retired	Active/ Retired
2005	1,390	1,182	1.18
2006	1,412	1,172	1.20
2007	1,423	1,208	1.18
2008	1,335	1,375	0.97
2009	1,407	1,417	0.99
2010	1,431	1,423	1.01
2011	1,427	1,449	0.98
2012	1,401	1,444	0.97
2013	1,423	1,466	0.97
2014	1,425	1,482	0.96
2015	1,421	1,500	0.95
2016	1,445	1,473	0.98
2017	1,481	1,488	1.00
2018	1,509	1,485	1.02
2019	1,523	1,515	1.01

Note: Years prior to 1/1/2011 were provided by prior actuary.

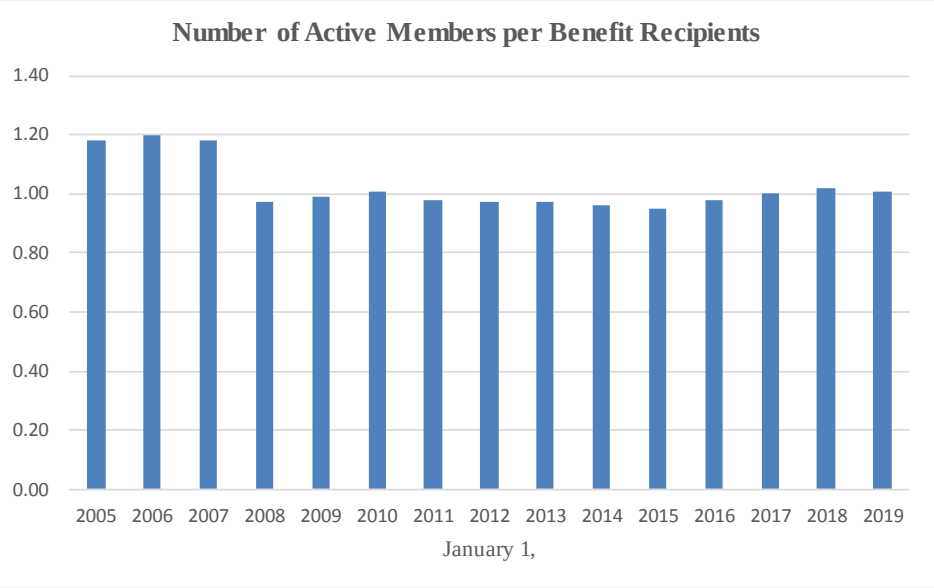


EXHIBIT 13

COMPARISON OF VALUATION RESULTS UNDER ALTERNATE INVESTMENT RETURN ASSUMPTIONS

This exhibit compares the key January 1, 2019 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the System. Note that only the investment return assumption is changed, as identified in the heading below. All other assumptions are unchanged for purposes of this analysis.

Investment Return Assumption	**7.25%**	**7.50%**	**7.75%**	**8.00%**	**8.25%**
Contributions					
Total Normal Cost	24.521%	23.238%	22.034%	20.902%	19.838%
UAL Contribution Rate	33.865%	32.631%	31.413%	30.209%	29.018%
Total Actuarial Contribution Rate	58.386%	55.869%	53.447%	51.111%	48.856%
Employee Contribution Rate	16.564%	16.564%	16.564%	16.564%	16.564%
City Contribution Per Ordinance	33.768%	33.768%	33.768%	33.768%	33.768%
City Prior Service Payment	0.925%	0.925%	0.925%	0.925%	0.925%
Contribution (Shortfall)/Margin	(7.129)%	(4.612)%	(2.190)%	0.146%	2.401%
Actuarial Liability ($ in thousands)	$1,483,633	$1,444,394	$1,406,833	$1,370,857	$1,336,382
Actuarial Value of Assets	737,383	737,383	737,383	737,383	737,383
Unfunded Actuarial Liability	$746,250	$707,011	$669,450	$633,474	$598,999
Funded Ratio	49.70%	51.05%	52.41%	53.79%	55.18%

Note: All other assumptions are unchanged for purposes of this sensitivity analysis.

SECTION III

OTHER INFORMATION

In this section, we provide some historical information regarding the funding progress of the System. These exhibits retain some of the information that used to be required for accounting purposes and are included because they provide relevant information on the System's historical funding.

EXHIBIT 14

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending	Annual Required Contribution* (a)	Total Employer Contribution* (b)	Percentage of ARC Contributed (b) / (a)
12/31/2005	$ 26,255,804	$ 17,762,209	67.65%
12/31/2006	31,102,053	20,171,610	64.86%
12/31/2007	34,842,280	20,699,211	59.41%
12/31/2008	38,073,021	21,700,806	57.00%
12/31/2009	50,507,561	22,701,608	44.95%
12/31/2010	55,488,062	24,183,493	43.58%
12/31/2011	49,945,979	30,775,568	61.62%
12/31/2012	54,310,693	35,302,037	65.00%
12/31/2013	52,895,180	43,838,750	82.88%
12/31/2014	43,524,890	41,851,986	96.16%
12/31/2015	41,910,737	42,138,403	100.54%
12/31/2016	42,468,180	43,235,242	101.81%
12/31/2017	45,939,660	46,608,741	101.46%
12/31/2018	50,677,368	48,796,603	96.29%

*Information prior to 2011 was provided by the prior actuary and has not been reviewed or verified by Cavanaugh Macdonald Consulting.

EXHIBIT 15

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date1	Actuarial Value of Assets (a)	Actuarial Liability (AL) (b)	Unfunded AL (UAL)[2] (b-a)	Funded Ratio (a / b)	Covered Payroll (P / R)[3] (c)	UAL as a Percentage of Covered P / R [(b-a) / c]
12/31/2005	$453,300,000	$ 703,800,000	$250,500,000	64.4%	$ 86,800,000	288.6%
12/31/2006	507,600,000	801,100,000	293,500,000	63.4%	91,700,000	320.1%
12/31/2007	530,800,000	882,700,000	351,900,000	60.1%	99,600,000	353.3%
12/31/2008	365,900,000	947,600,000	581,700,000	38.6%	99,500,000	584.6%
12/31/2009	405,400,000	1,026,200,000	620,800,000	39.5%	103,900,000	597.5%
12/31/2010	452,600,000	1,093,300,000	640,700,000	41.4%	111,200,000	576.2%
1/1/2011	456,158,774	1,028,866,353	572,707,579	44.3%	105,025,610	545.3%
1/1/2012	467,375,458	1,077,607,299	610,231,841	43.4%	110,027,537	554.6%
1/1/2013	495,847,234	1,108,874,778	613,027,544	44.7%	116,056,740	528.2%
1/1/2014	548,360,223	1,170,967,753	622,607,530	46.8%	124,051,668	501.9%
1/1/2015	590,191,585	1,189,002,221	598,810,636	49.6%	126,843,763	472.1%
1/1/2016	621,403,975	1,223,966,110	602,562,135	50.8%	129,633,658	464.8%
1/1/2017	656,171,797	1,267,909,175	611,737,378	51.8%	133,044,481	459.8%
1/1/2018	706,595,615	1,355,429,537	648,833,922	52.1%	137,647,929	471.4%
1/1/2019	737,383,005	1,406,832,664	669,449,659	52.4%	143,575,171	466.3%

1. Results prior to 2011 were provided by the prior actuary and were reported at the end of the year rather than the valuation date. All information prior to 2011 in this exhibit was provided by the prior actuary and has not been reviewed or verified by Cavanaugh Macdonald Consulting, LLC.
2. As of 1/1/2011, the Unfunded AL is not reduced by the Present Value of Prior Service Payments. For the calculation of the Unfunded AL used for funding purposes, please refer to Exhibit 4 of this report.
3. As of 1/1/2014, covered payroll includes DROP participants' pay.

APPENDIX A

SUMMARY OF PLAN PROVISIONS

Average Final Monthly Compensation: Section 22 - 63	Police: Pensionable pay excludes certain overtime pay. For those hired before January 1, 2010, an adjustment is made to include a career average of overtime pay. For those who were age 45 and had at least 20 years of service as of January 1, 2010, highest average monthly compensation is calculated using the highest consecutive twenty-six (26) pay periods out of the last five years of service as a member of the system for which service credit had been earned. All others use the highest seventy-eight (78) pay periods of the final 130 pay periods of service. Fire: For members who were age 45 and had at least 25 years of service or age 50 with at least 20 years of service as of January 1, 2013, highest average monthly compensation during any consecutive twenty-six (26) pay periods out of the last five years of service as a member of the system for which service credit had been earned. All others use the highest seventy-eight (78) pay periods with the final 130 pay periods of service.
Career Overtime Average (COTA):	All Members: Each hour an employee earns for overtime is computed back to their date of hire or 1991 (whichever is later) and divided by the number of years the employee worked after December 31, 1990. This amount shall be included in the member's pension calculation. COTA is excluded for all Police members hired on or after January 1, 2010 and Fire members hired on or after January 1, 2013.
Member Contributions: Section 22 – 73(a) Section 22 - 68	Police: 16.10% of each member's pensionable earnings for contract years 2018-2020, 15.35% thereafter. Fire: 17.15% of each member's pensionable earnings.
City of Omaha Contributions: Section 22 – 73(b)	Police: 34.420% of each member's pensionable earnings for contract years 2018-2020, 33.670% thereafter. Fire: 32.965% of each member's pensionable earnings. In addition, the City shall make contributions of $1,327,600 annually through the year 2028.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Service Retirement Eligibility
Section 22 - 75

Police: After age 55 and 10 years of service or age 45 and 20 years of service. Members hired after January 1, 2010 must be 50 rather than 45. If retiring with less than 30 years of service a 7% reduction is applied for each year prior to age 55.

Fire: Age 55 and 10 years of service or age 50 and 20 years of service. Members hired before 1/1/2013 can also retire at age 45 if they have at least 25 years of service.

Service Retirement Pension
Section 22 - 76

For Police with at least 20 years of service as of September 19, 2010 and Fire members with at least 15 years of service as of January 2, 2013, the following schedule applies.

Years of Service	Minimum Age	Percentage of Average Final Monthly Compensation
10 but less than 15	55	20%
15 but less than 20	55	30%
20 but less than 25	45**	55%*
25 years	45	75%

*55% at 20 years of service, plus 2% for each additional six months of service after 20 years and before 25 years.

** The minimum retirement age with less than 25 years is 50 for Fire.

For Police who did not have 20 years of service as of September 19, 2010 and Fire who did not have 15 years of service as of January 2, 2013, the following schedule applies:

Years of Service	Minimum Age	Percentage of Average Final Monthly Compensation
10 but less than 15	55	20%
15 but less than 20	55	30%
20 but less than 25	45***	50%*
25 but less than 30	45	70%**
30 years	45	75%

*50% at 20 years of service, plus 2% for each additional six months of service after 20 years and before 25 years.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

**70% at 25 years of service, plus 1% for each additional six months of service after 25 years and before 27 years, with an additional 0.5% 29 and 30 years, for a maximum of 75%.

*** The minimum retirement age with less than 25 years is 50 for Fire.

For police hired after January 1, 2010, the following schedule applies:

Years of Service	Minimum Age	Percentage of Average Final Monthly Compensation
10 but less than 15	55	20%
15 but less than 20	55	30%
20 but less than 25	50	50%*
25 but less than 30	50	65%**
30 years	50	75%

*50% at 20 years of service, plus 1.5% for each additional six months of service after 20 years and before 25 years. Early retirement reduction applies if less than 30 years of service.

**65% at 25 years of service, plus 1% for each additional six months of service after 25 years and before 30 years. Early retirement reduction applies if less than 30 years of service.

For Fire hired after January 1, 2013, the following schedule applies:

Years of Service	Minimum Age	Percentage of Average Final Monthly Compensation
10 but less than 15	55	20%
15 but less than 20	55	30%
20 but less than 25	50	45%
25 but less than 30	50	55%*
30 years	50	65%

*55% at 25 years of service, plus 2% for each additional year of service after 25 years and before 30 years. Early retirement reduction applies if under age 55, unless the member has 30 years of service.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Cost of Living Adjustment (COLA): The monthly pension shall be increased by the lesser of 3% or $50 ($65 for Fire retirements after June 30, 2007). The increase will be made annually, beginning in the 13th month of retirement.

Deferred Retirement Option Program (DROP): Members may participate in the DROP for three to five years once they reach retirement eligibility with a minimum of 25 years of service. Members continue to make contributions to the system during the DROP period. During the DROP period, the member is credited with the benefits that would have been paid if the member had retired at the start of the DROP period, along with interest at the end of the year. At the end of the DROP period, the member ends employment, receives the DROP account balance, and begins to receive payments as though retirement had occurred at the beginning of the DROP period.

Disability Retirement

1. In Line of Duty
Section 22 - 78

A member shall become entitled to the following benefits while permanently disabled.

Years of Service	Percentage of Average Final Monthly Compensation
Less than 20	50%
20 or more	Same as Service Retirement Pension, without any reduction for early commencement

2. Not in Line of Duty
Section 22 - 79

A member shall become entitled to the following benefits while permanently disabled.

Years of Service	Percentage of Average Final Monthly Compensation
Up to 10 years	10%
10 but less than 15	20%
15 but less than 20	30%
20 or more	Greater of 45% or the Service Retirement Pension without any reduction for early commencement

Note: Not payable while full salary continues

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Spouse's pension:

1. Death of Active member in Line of Duty:

A monthly pension equal to 49% (52% Fire members who were age 45 and had at least 25 years of service or age 50 with at least 20 years of service as of most recent contract date) of the member's average final monthly compensation is paid to the surviving spouse if death occurs while the active member has less than 25 years of service. A monthly pension equal to 69% (72% Fire members who were age 45 and had at least 25 years of service or age 50 with at least 20 years of service as of most recent contract date) of the member's average final monthly compensation is paid to the surviving spouse if death occurs after the active member has 25 years or more of service.

2. Death of Active member Not in Line of Duty:

The following monthly pension is paid to the surviving spouse.

Years of Service at Death	Percentage of Average Final Monthly Compensation*
0-3	0.0%
3-10	35.0%
11	36.4%
12	37.8%
13	39.2%
14	40.6%
15	42.0%
16	43.4%
17	44.8%
18	46.2%
19	47.6%
20-25	49.0%
25+	69.0%

* add 3% to each number for Fire members who were age 45 and had at least 25 years of service or age 50 with at least 20 years of service as of most recent contract date

Note: Benefit terminates upon remarriage of spouse.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

3. Death of Member Eligible for Retirement or Death of Retired Member:
Section 22 - 82

Police: 75% of the pension the member was receiving or was eligible to receive at the time of death. 50% of the pension the member was receiving or was eligible to receive for Police members hired after January 1, 2010. Upon spouse's remarriage, all benefits cease.

Fire: 75% of the pension the member was receiving at the time of death for Fire members who began receiving benefits before July 1, 2007. 90% of the pension the member was receiving or was eligible to receive at the time of death for Fire members who were hired before January 1, 2013 and were not receiving benefits before July 1, 2007. 50% of the pension the member was receiving or was eligible to receive for Fire members hired after January 1, 2013. Upon spouse's remarriage, all benefits cease.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Children's Pension
Section 22 - 82

Upon the death of an active or retired member, the following benefit will be paid to the surviving children until age 18.

Number of Dependent Children	Percentage of Average Final Monthly Compensation
1	15%
2	30%
3	45%
4 or more	50%

Lump Sum Death Benefits

1. Active Member without Eligible Dependents:
Section 22 – 84(a)

Accumulated member's contributions, or $500 if greater.

2. Retired Member without Eligible Dependents:
Section 22 – 84(b)

Accumulated member's contributions, less previous pension payments made, or $500 if greater.

3. Active Member with Eligible Dependents:
Section 22 – 84(c)

An amount payable immediately, equal to one year's salary computed on the basis of the maximum monthly rate for patrolmen and firefighters, plus the decreased member's accumulated contributions less pension payments to his dependents, payable to the dependent who last ceases to receive pension benefits.

4. Retired Member with Eligible Dependents:
Section 22 – 84(c)

$1,000 ($5,000 for Fire retirements after June 30, 2005) payable immediately, plus the excess over $1,000 ($5,000 for Fire retirements after June 30, 2005) if any, of the deceased member's accumulated contributions less pension payments to the member and his dependents, payable to the dependent who last ceases to receive pension benefits.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Vesting:

Section 22 - 86

Upon severance of employment by a member with less than 10 years of service and prior to obtaining eligibility under Section 22 – 75, a refund of such member's accumulated contributions.

Section 22 - 86

Upon severance of employment by a member before age 45 with more than 10 years of service and prior to obtaining eligibility under Section 22 – 75, the member may elect, in lieu of receiving a refund of contributions, to receive a monthly pension, according to the table below, commencing at age 55. Such deferred pension shall be based on service credited to the date of severance.

Years of Service	Minimum Age	Percentage of Average Final Monthly Compensation
10 but less than 15	55	20%
15 but less than 20	55	30%
20 but less than 25	50	55%
25 or more	45	75%

For Police members with less than 15 years of service as of September 19, 2010 and Fire members with less than 15 years of service as of January 2, 2013, the schedules shown under service retirement apply as appropriate.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Cost Method

Valuations of the plan use the *"entry age-normal"* cost method. Under this actuarial method, the value of future costs attributable to future employment of participants is determined. This is called present value of future normal costs. The following steps indicate how this is determined for benefits expected to be paid upon normal retirement or the end of the Deferred Retirement Option Plan (DROP).

1. The expected pension benefit payable at the end of the employee's period in covered employment (later of normal retirement or the end of the DROP, is applicable) is determined for each participant.

2. A normal cost, as a level percent of pay, is determined for each participant assuming that such level percent is paid from the employee's entry age into employment to the end of his covered employment. This normal cost is determined so that its accumulated value at the end of covered employment is sufficient to provide the expected pension benefits.

3. The sum of the normal costs for all participants for one year determines the total normal cost of the plan for one year.

4. The value of future payments of normal cost in future years is determined for each participant based on his years of service to the end of covered employment.

5. The sum of the value of future payments of normal cost for all participants determines the present value of future normal costs.

The value of future costs attributable to past employment of participants, which is called the actuarial liability, is equal to the present value of benefits less the present value of future normal costs. The unfunded actuarial liability is equal to the excess of the actuarial liability over assets.

As experience develops with the plan, actuarial gains and actuarial losses result. These actuarial gains and losses indicate the extent to which actual experience is deviating from that expected on the basis of the actuarial assumptions. In each year, as they occur, actuarial gains and losses are recognized in the unfunded actuarial liability as of the valuation date.

Actuarial Value of Assets

The actuarial value of assets is equal to the expected asset value (based on last year's actuarial value of assets, net cash flows and a rate of return equal to the actuarial assumed rate of 8.0%) plus 1/4 of the difference between the actual market value and the expected asset value. The actuarial value of assets cannot exceed 120% or fall below 80% of the market value of assets.

Unfunded Actuarial Liability Amortization Method

Beginning with the 2018 valuation, the UAL will be amortized using a "layered" approach. Under this method, the UAL as of January 1, 2018 will continue to be amortized according to the current schedule (25 years remain as of January 1, 2019). Any new UAL generated as a result of actuarial experience in subsequent years will be "layered" and amortized as a level-percent of pay over a closed 20-year period.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Investment Return:	7.75% per year, (net of investment expenses)
Inflation:	2.50%
Payroll Growth:	3.25%
Salary Increases:	Merit increases based on service plus a general wage increase
Service Retirement Age:	Graduated rates based on service
Mortality:	
Active Members	RP-2000 Employee Table projected with generational improvements using Scale AA, set forward one year
Service Pensioners and Beneficiaries	RP-2000 Healthy Annuitant Table projected with generational improvements using Scale AA, set forward one year
Disabled	RP-2000 Healthy Annuitant Table projected with generational improvements using Scale AA, set forward five years
Disability:	Graduated Rates by age. See table on next page
Percent of Disabilities in Line of Duty:	85%
Medical Expenses for Disabilities in Line of Duty:	5% load on liability for current and future disabled members.
Percent Married at Death or Retirement:	75%
Spouse Age Difference:	Husbands assumed to be 3 years older than wives
Turnover:	Graduated rates by age. See table on next page
COTA Adjustment:	Members are assumed to retire with their current COTA
Decrement Timing:	Middle of year

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS
(continued)

SAMPLE RATES
Annual Rates

Age on 1/1/2010	Mortality Males	Mortality Females
20	0.03%	0.02%
30	0.05	0.03
40	0.10	0.07
50	0.19	0.15
60	0.46	0.41

SAMPLE RATES
Annual Rates

Current Age	Disability
20	0.17%
30	0.19
40	0.33
50	0.61
60	0.92

SAMPLE RATES
Annual Rates

Years of Service	Turnover Police	Turnover Fire
1	3.0%	1.5%
5	1.8	0.5
10	0.8	0.5
15	0.8	0.5
20	0.0	0.0

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS
(continued)

SAMPLE RATES Salary Progression – Police				
Years of Service	Inflation	Productivity	Merit & Longevity	Total Increase
1	2.50%	0.75%	10.00%	13.25%
5	2.50%	0.75%	4.00%	7.25%
10	2.50%	0.75%	1.20%	4.45%
15	2.50%	0.75%	0.50%	3.75%
20	2.50%	0.75%	0.50%	3.75%
25	2.50%	0.75%	0.00%	3.25%

SAMPLE RATES Salary Progression – Fire				
Years of Service	Inflation	Productivity	Merit & Longevity	Total Increase
1	2.50%	0.75%	5.00%	8.25%
5	2.50%	0.75%	4.50%	7.75%
10	2.50%	0.75%	1.00%	4.25%
15	2.50%	0.75%	1.00%	4.25%
20	2.50%	0.75%	0.00%	3.25%

Assumed retirement rates for Police members hired before January 1, 2010 and Fire members hired before January 1, 2013 are as follows:

SAMPLE RATES Annual Rates		
Years of Service	Retirement	
	Police	Fire
20	3%	15%
21	3	15
22	10	15
23	10	15
24	10	15
25	100	100

If a member has years of service listed above, but is age 62 or older, they are assumed to retire immediately.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Assumed retirement rates for Police members hired after January 1, 2010 and Fire members hired after January 1, 2013 are the earlier of **Age 50 and 30 Years of Service** or **Age 55 and 10 Years of Service**.

DROP Participation Rate:	75% of retirement-eligible members are assumed to enter DROP
DROP Period:	5 years, but not beyond age 60
Interest Credited to DROP Accounts:	4% annually

MEMBERSHIP DATA FOR VALUATION

The summary of member characteristics presented below covers the member group as of January 1, 2019. The schedules at the end of the report show the distribution of the various member groups by present age along with other pertinent data.

Total number of members in valuation:

(a) Active members	1,454
(b) DROP members	69
(c) Inactive vested members	8
(d) Terminated members due a refund	9
(e) Disabled members	224
(f) Retirees, spouses and children receiving benefits	1,291
(g) Total	3,055

Average age of members in valuation:

(a) Active members	
Attained Age	41.3
Hire Age	28.8
(b) DROP members	53.4
(c) Inactive vested members	45.1
(d) Disabled members	67.6
(e) Retired members	66.3
(f) Spouses and children receiving benefits	72.1

Active members as of January 1, 2019:

(a) Eligible for vested benefits	776
(b) Eligible for early or normal retirement benefits	239
(c) Eligible for refund of contributions only (not vested)	439
(d) Total	1,454

MEMBERSHIP DATA RECONCILIATION

January 1, 2018 to January 1, 2019

The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the City for eligible employees as of the valuation date.

	Active Members	Termination Refund Due	Inactive Vested	Disabled Members	DROP Members	Retirees	Beneficiaries	Total
Total Members 1/1/2018	1,446	11	11	223	63	992	270	3,016
New Members	78	0	0	0	0	0	0	78
Terminations								
Rehired	0	0	0	0	0	0	0	0
Refunded: Paid	(9)	(5)	(1)	0	0	0	0	(15)
Refunded: Due	(3)	3	0	0	0	0	0	0
Inactive Vested	(2)	0	2	0	0	0	0	0
Disabled	(3)	0	0	3	0	0	0	0
Retirements	(27)	0	(2)	0	(20)	49	0	0
Participating in DROP	(26)	0	0	0	26	0	0	0
Benefit Payments Ended	0	0	0	0	0	0	(4)	(4)
Data Adjustments	0	0	(2)	4	0	(2)	0	0
Deaths								
With Beneficiary	0	0	0	(2)	0	(17)	19	0
Without Beneficiary	0	0	0	(4)	0	(8)	(8)	(20)
Total Members 1/1/2019	1,454	9	8	224	69	1,014	277	3,055

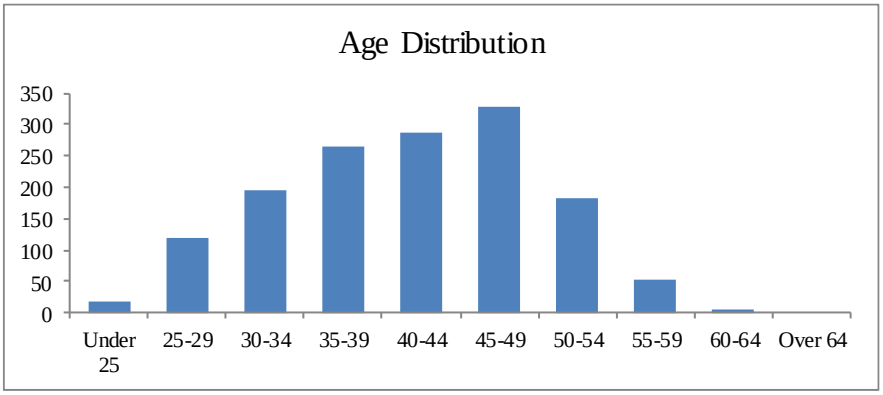
SCHEDULE I

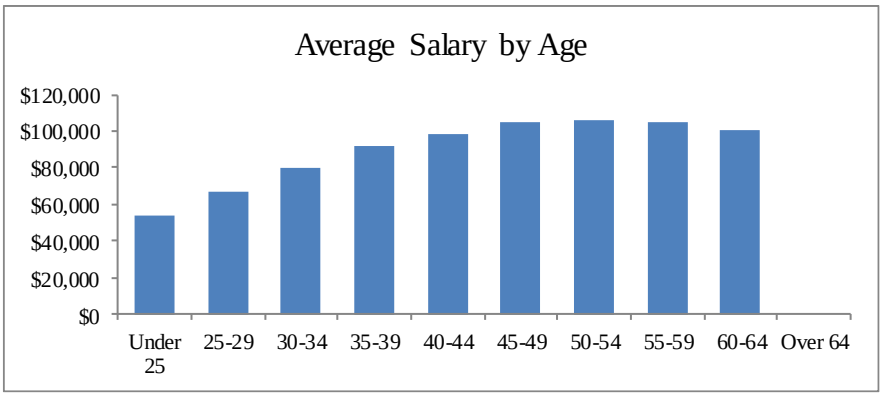
ACTIVE MEMBERS AS OF JANUARY 1, 2019

Total

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	16	3	19	$ 874,511	$ 160,372	$ 1,034,883
25-29	107	14	121	7,281,622	880,939	8,162,561
30-34	167	28	195	13,472,262	2,045,155	15,517,417
35-39	236	28	264	21,818,060	2,458,475	24,276,535
40-44	247	39	286	24,315,391	3,742,516	28,057,907
45-49	290	39	329	30,245,591	4,139,233	34,384,824
50-54	162	20	182	17,236,287	2,127,428	19,363,715
55-59	48	4	52	4,991,415	438,189	5,429,604
60-64	6	0	6	603,593	0	603,593
Over 64	0	0	0	0	0	0
Total	1,279	175	1,454	$120,838,732	$15,992,307	$136,831,039

Numbers may not add due to rounding.



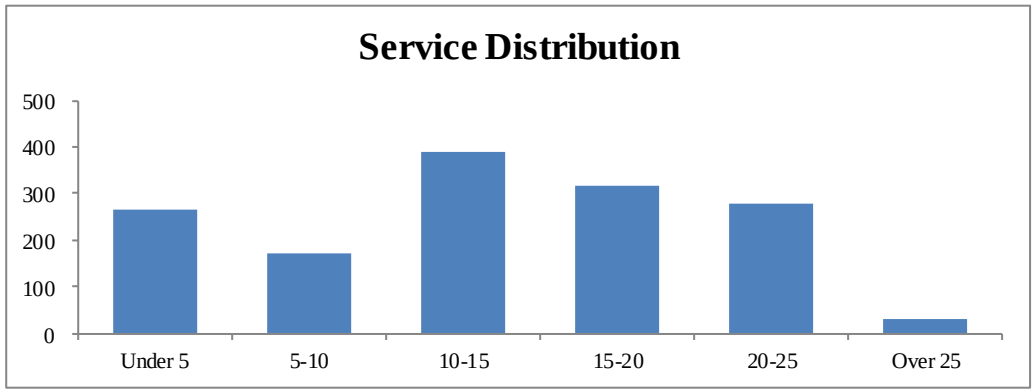


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

Total

Age	Service: Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	19	0	0	0	0	0	0	0	0	19
25-29	96	25	0	0	0	0	0	0	0	121
30-34	85	58	52	0	0	0	0	0	0	195
35-39	38	50	162	14	0	0	0	0	0	264
40-44	17	30	98	108	33	0	0	0	0	286
45-49	9	9	59	121	120	11	0	0	0	329
50-54	2	1	11	59	92	17	0	0	0	182
55-59	0	0	6	13	29	4	0	0	0	52
60-64	0	0	2	1	3	0	0	0	0	6
Over 64	0	0	0	0	0	0	0	0	0	0
Total	266	173	390	316	277	32	0	0	0	1,454



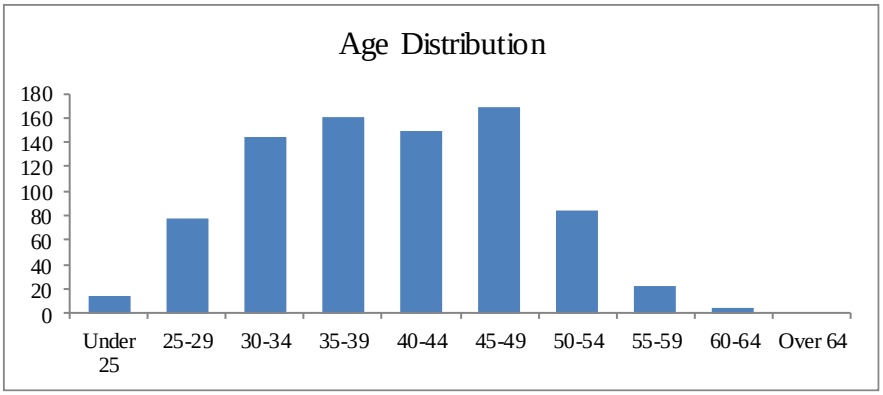
SCHEDULE I (continued)

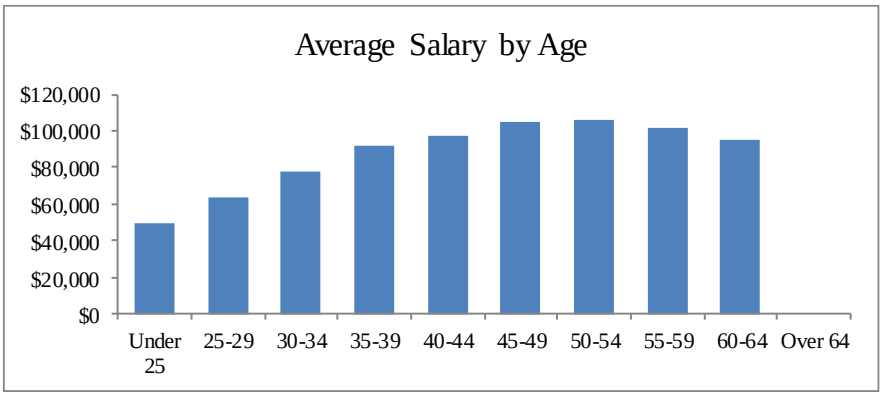
ACTIVE MEMBERS AS OF JANUARY 1, 2019

All Police Members

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	12	2	14	$ 592,278	$ 99,414	$ 691,692
25-29	68	10	78	4,323,470	614,743	4,938,213
30-34	120	24	144	9,470,471	1,722,340	11,192,811
35-39	139	21	160	12,861,609	1,813,240	14,674,849
40-44	118	32	150	11,574,395	3,047,890	14,622,285
45-49	137	32	169	14,368,427	3,315,528	17,683,955
50-54	68	17	85	7,127,378	1,842,345	8,969,723
55-59	20	3	23	2,029,945	318,308	2,348,253
60-64	4	0	4	379,955	0	379,955
Over 64	0	0	0	0	0	0
Total	686	141	827	$62,727,928	$12,773,808	$75,501,736

Numbers may not add due to rounding.



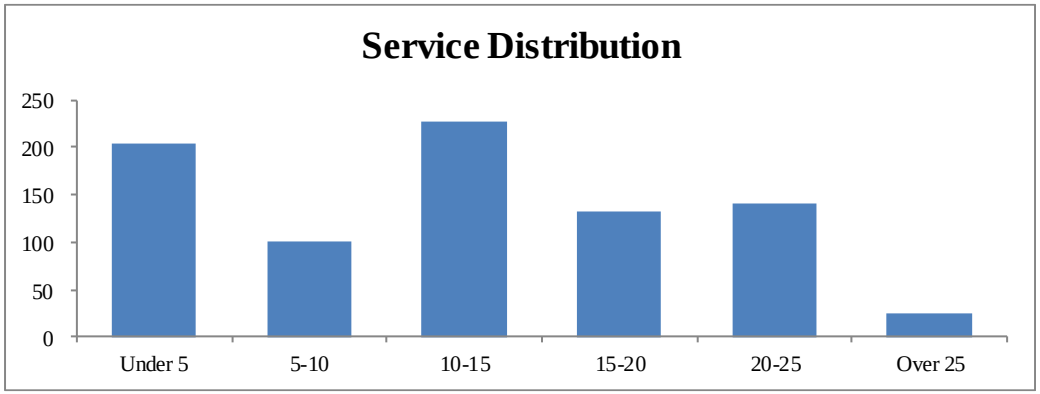


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

All Police Members

	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	14	0	0	0	0	0	0	0	0	14
25-29	70	8	0	0	0	0	0	0	0	78
30-34	72	37	35	0	0	0	0	0	0	144
35-39	27	28	97	8	0	0	0	0	0	160
40-44	12	21	51	44	22	0	0	0	0	150
45-49	6	5	34	53	61	10	0	0	0	169
50-54	2	1	6	20	44	12	0	0	0	85
55-59	0	0	3	6	12	2	0	0	0	23
60-64	0	0	2	1	1	0	0	0	0	4
Over 64	0	0	0	0	0	0	0	0	0	0
Total	203	100	228	132	140	24	0	0	0	827



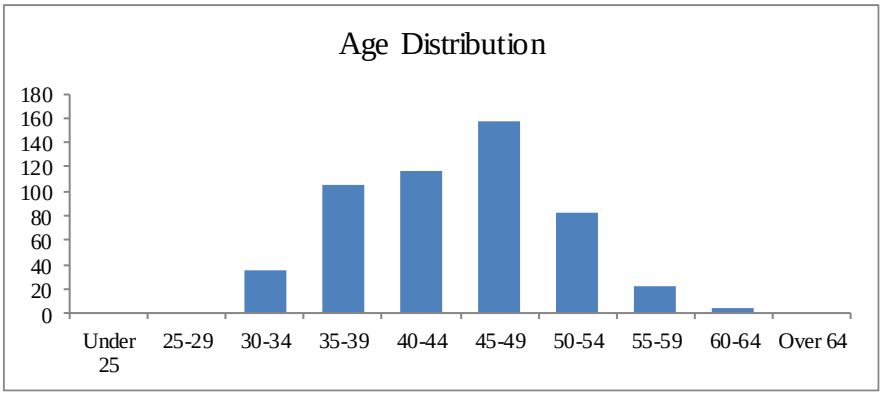
SCHEDULE I (continued)

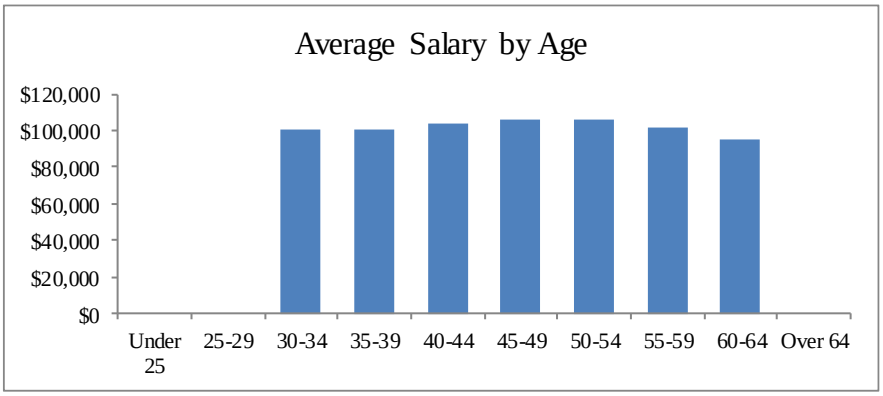
ACTIVE MEMBERS AS OF JANUARY 1, 2019

Police Members Hired Before January 1, 2010

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25-29	0	0	0	0	0	0
30-34	31	4	35	3,133,658	394,135	3,527,793
35-39	92	14	106	9,332,028	1,341,511	10,673,539
40-44	89	28	117	9,372,476	2,719,598	12,092,074
45-49	126	32	158	13,469,767	3,315,527	16,785,294
50-54	66	16	82	6,951,011	1,756,893	8,707,904
55-59	20	3	23	2,029,945	318,308	2,348,253
60-64	4	0	4	379,955	0	379,955
Over 64	0	0	0	0	0	0
Total	428	97	525	$44,668,840	$9,845,972	$54,514,812

Numbers may not add due to rounding.



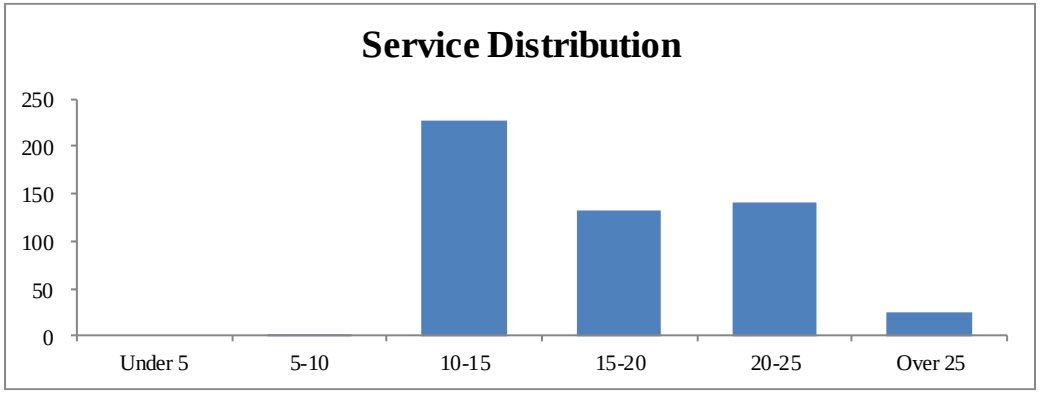


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

Police Members Hired Before January 1, 2010

	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0
30-34	0	0	35	0	0	0	0	0	0	35
35-39	0	1	97	8	0	0	0	0	0	106
40-44	0	0	51	44	22	0	0	0	0	117
45-49	0	0	34	53	61	10	0	0	0	158
50-54	0	0	6	20	44	12	0	0	0	82
55-59	0	0	3	6	12	2	0	0	0	23
60-64	0	0	2	1	1	0	0	0	0	4
Over 64	0	0	0	0	0	0	0	0	0	0
Total	0	1	228	132	140	24	0	0	0	525



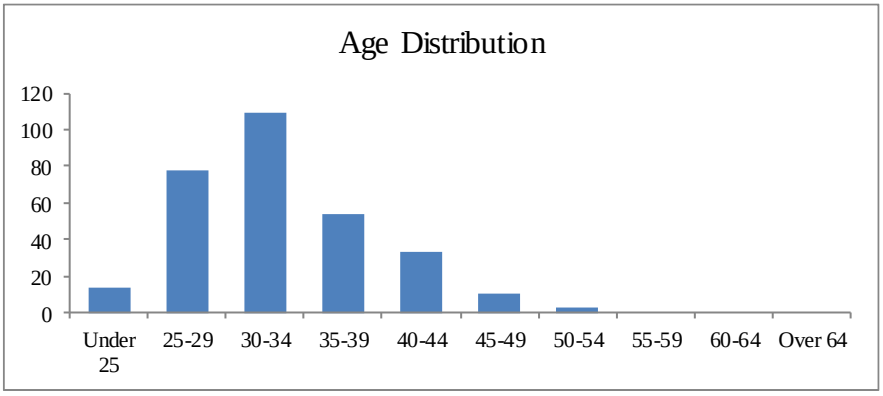
SCHEDULE I (continued)

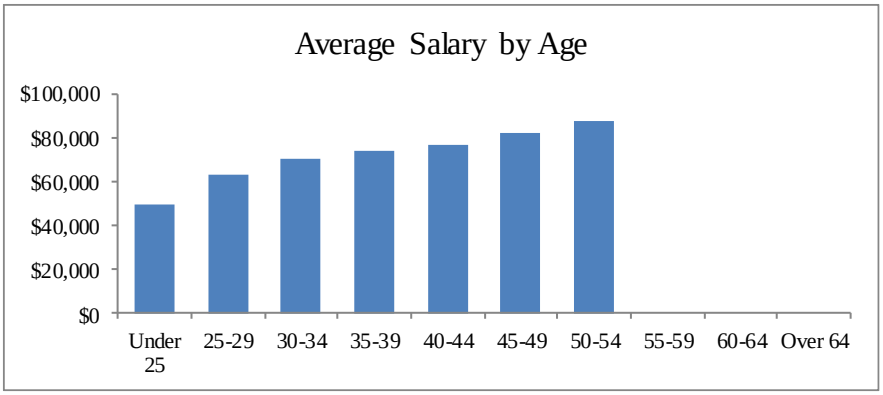
ACTIVE MEMBERS AS OF JANUARY 1, 2019

Police Members Hired On or After January 1, 2010

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	12	2	14	$ 592,278	$ 99,414	$ 691,692
25-29	68	10	78	4,323,469	614,744	4,938,213
30-34	89	20	109	6,336,816	1,328,205	7,665,021
35-39	47	7	54	3,529,581	471,729	4,001,310
40-44	29	4	33	2,201,919	328,292	2,530,211
45-49	11	0	11	898,659	0	898,659
50-54	2	1	3	176,367	85,451	261,818
55-59	0	0	0	0	0	0
60-64	0	0	0	0	0	0
Over 64	0	0	0	0	0	0
Total	258	44	302	$18,059,089	$2,927,835	$20,986,924

Numbers may not add due to rounding.



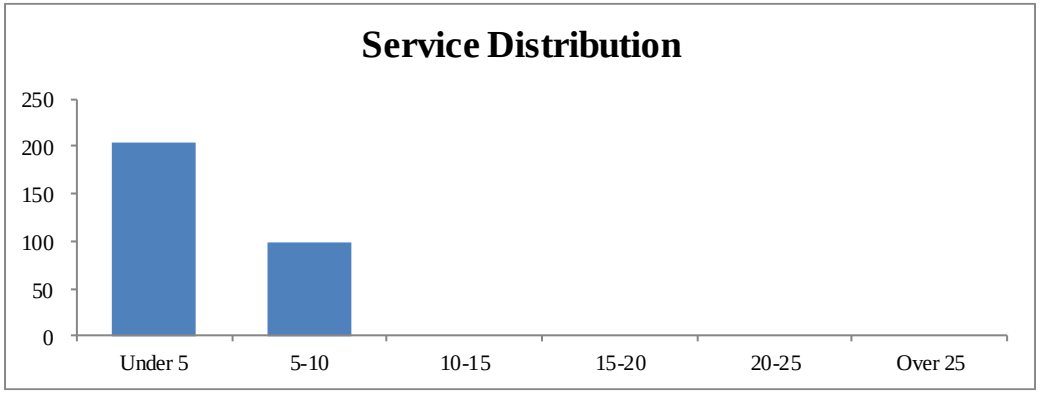


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

Police Members Hired On or After January 1, 2010

	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	14	0	0	0	0	0	0	0	0	14
25-29	70	8	0	0	0	0	0	0	0	78
30-34	72	37	0	0	0	0	0	0	0	109
35-39	27	27	0	0	0	0	0	0	0	54
40-44	12	21	0	0	0	0	0	0	0	33
45-49	6	5	0	0	0	0	0	0	0	11
50-54	2	1	0	0	0	0	0	0	0	3
55-59	0	0	0	0	0	0	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0	0
Over 64	0	0	0	0	0	0	0	0	0	0
Total	203	99	0	0	0	0	0	0	0	302



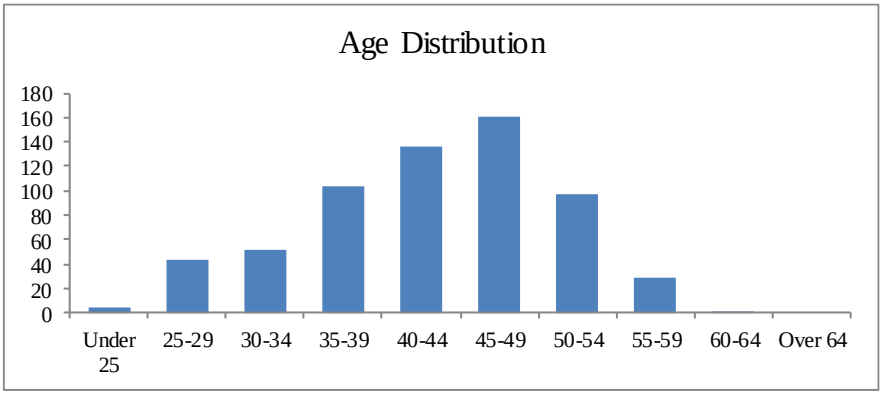
SCHEDULE I (continued)

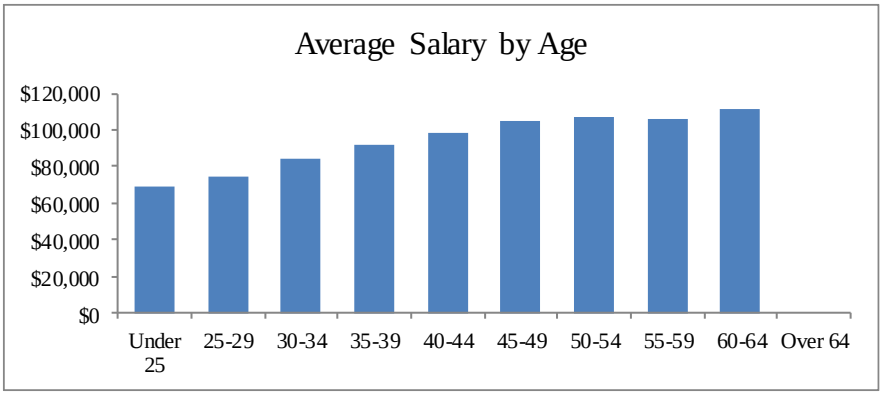
ACTIVE MEMBERS AS OF JANUARY 1, 2019

All Fire Members

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	4	1	5	$ 282,233	$ 60,958	$ 343,191
25-29	39	4	43	2,958,152	266,196	3,224,348
30-34	47	4	51	4,001,791	322,815	4,324,606
35-39	97	7	104	8,956,451	645,235	9,601,686
40-44	129	7	136	12,740,996	694,626	13,435,622
45-49	153	7	160	15,877,164	823,705	16,700,869
50-54	94	3	97	10,108,909	285,083	10,393,992
55-59	28	1	29	2,961,470	119,881	3,081,351
60-64	2	0	2	223,638	0	223,638
Over 64	0	0	0	0	0	0
Total	593	34	627	$58,110,804	$3,218,499	$61,329,303

Numbers may not add due to rounding.



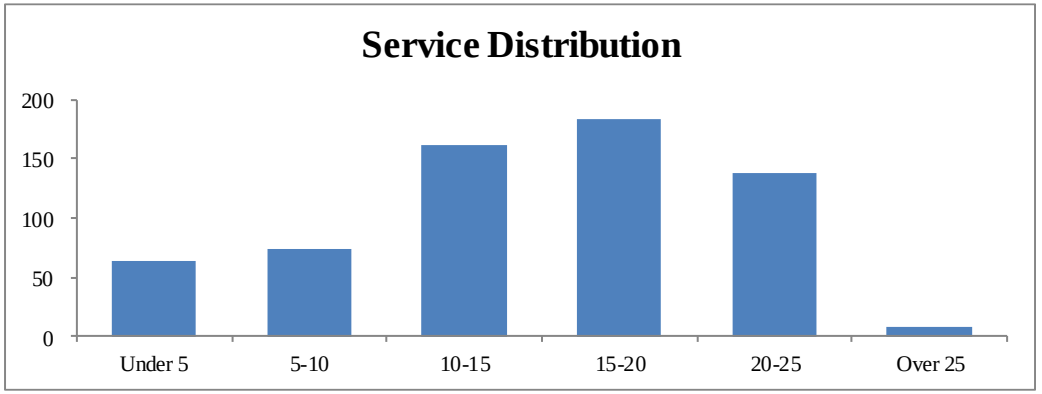


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

All Fire Members

	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	5	0	0	0	0	0	0	0	0	5
25-29	26	17	0	0	0	0	0	0	0	43
30-34	13	21	17	0	0	0	0	0	0	51
35-39	11	22	65	6	0	0	0	0	0	104
40-44	5	9	47	64	11	0	0	0	0	136
45-49	3	4	25	68	59	1	0	0	0	160
50-54	0	0	5	39	48	5	0	0	0	97
55-59	0	0	3	7	17	2	0	0	0	29
60-64	0	0	0	0	2	0	0	0	0	2
Over 64	0	0	0	0	0	0	0	0	0	0
Total	63	73	162	184	137	8	0	0	0	627



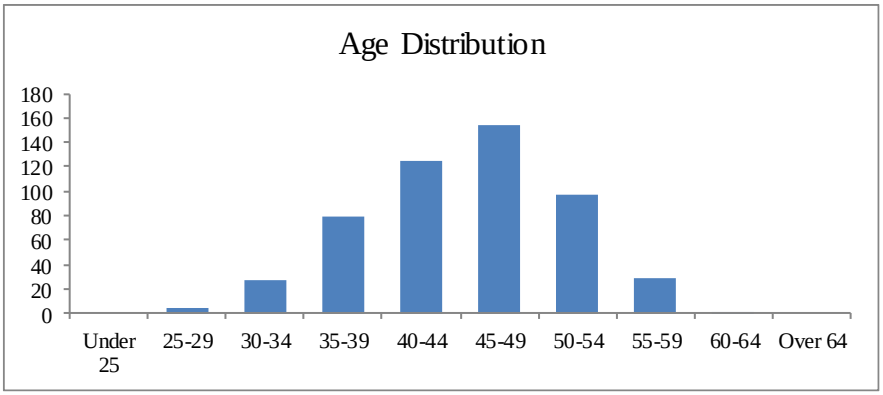
SCHEDULE I (continued)

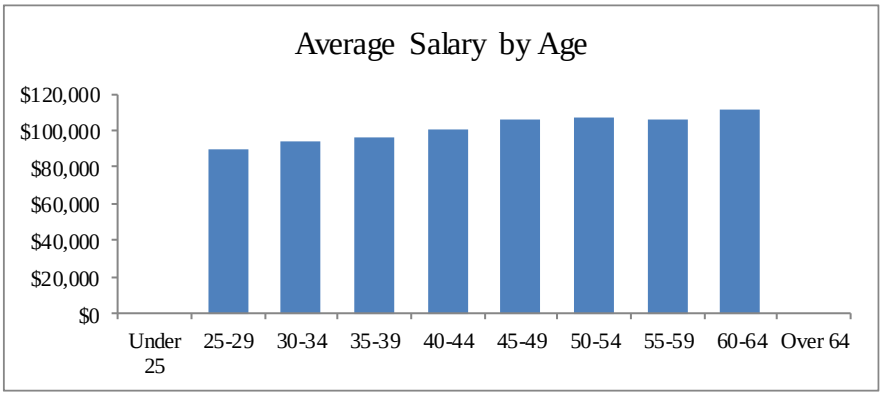
ACTIVE MEMBERS AS OF JANUARY 1, 2019

Fire Members Hired Before January 1, 2013

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25-29	5	0	5	448,985	0	448,985
30-34	26	2	28	2,442,835	196,101	2,638,936
35-39	76	4	80	7,334,907	400,198	7,735,105
40-44	118	7	125	11,899,283	694,626	12,593,909
45-49	147	7	154	15,430,830	823,705	16,254,535
50-54	94	3	97	10,108,909	285,083	10,393,992
55-59	28	1	29	2,961,470	119,881	3,081,351
60-64	2	0	2	223,638	0	223,638
Over 64	0	0	0	0	0	0
Total	496	24	520	$50,850,857	$2,519,594	$53,370,451

Numbers may not add due to rounding.



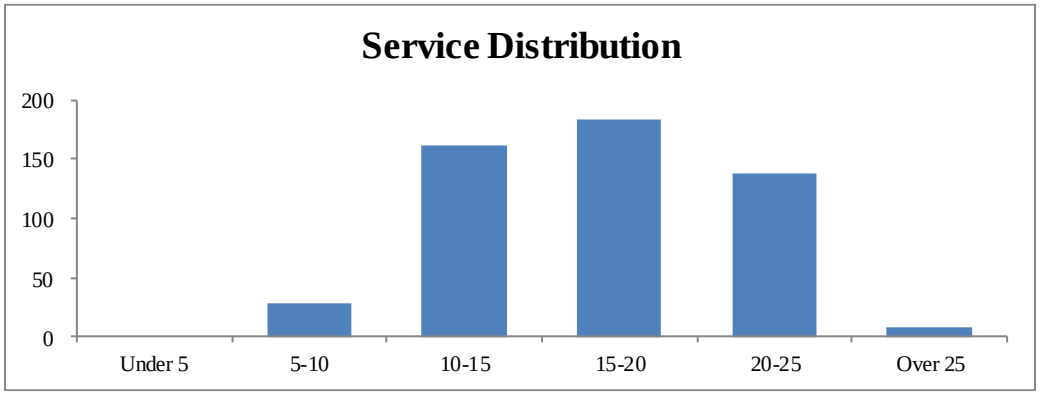


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

Fire Members Hired Before January 1, 2013

	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	0	0	0	0	0	0	0	0	0	0
25-29	0	5	0	0	0	0	0	0	0	5
30-34	0	11	17	0	0	0	0	0	0	28
35-39	0	9	65	6	0	0	0	0	0	80
40-44	0	3	47	64	11	0	0	0	0	125
45-49	0	1	25	68	59	1	0	0	0	154
50-54	0	0	5	39	48	5	0	0	0	97
55-59	0	0	3	7	17	2	0	0	0	29
60-64	0	0	0	0	2	0	0	0	0	2
Over 64	0	0	0	0	0	0	0	0	0	0
Total	0	29	162	184	137	8	0	0	0	520



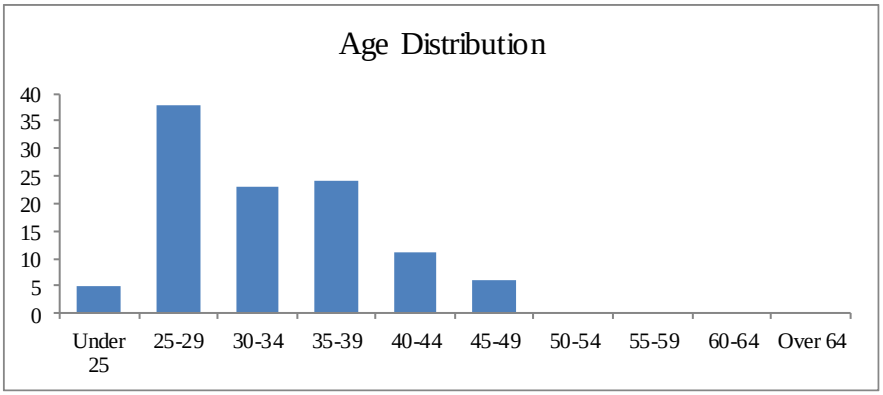
SCHEDULE I (continued)

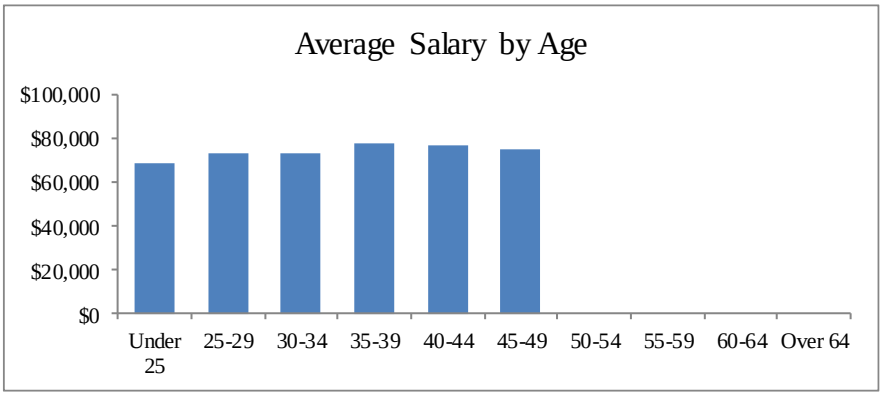
ACTIVE MEMBERS AS OF JANUARY 1, 2019

Fire Members Hired On or After January 1, 2013

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	4	1	5	$ 282,233	$ 60,958	$ 343,191
25-29	34	4	38	2,509,167	266,196	2,775,363
30-34	21	2	23	1,558,952	126,715	1,685,667
35-39	21	3	24	1,621,545	245,038	1,866,583
40-44	11	0	11	841,713	0	841,713
45-49	6	0	6	446,335	0	446,335
50-54	0	0	0	0	0	0
55-59	0	0	0	0	0	0
60-64	0	0	0	0	0	0
Over 64	0	0	0	0	0	0
Total	97	10	107	$7,259,945	$698,907	$7,958,852

Numbers may not add due to rounding.



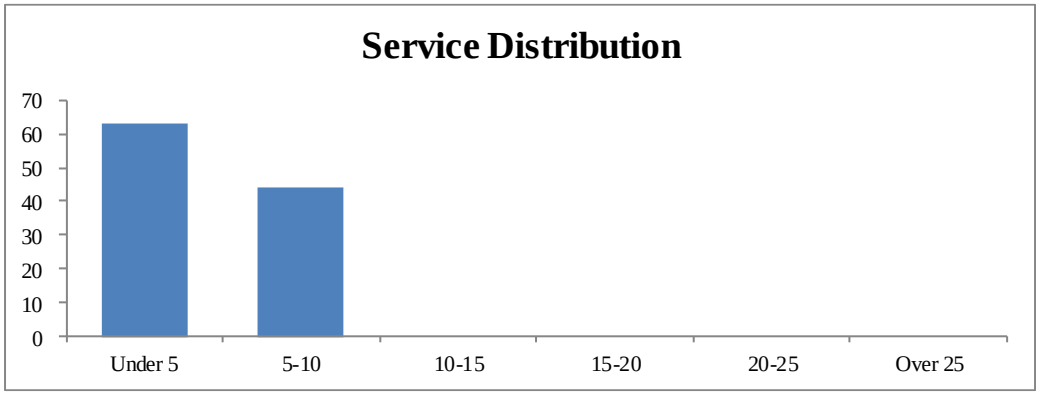


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2019

Fire Members Hired On or After January 1, 2013

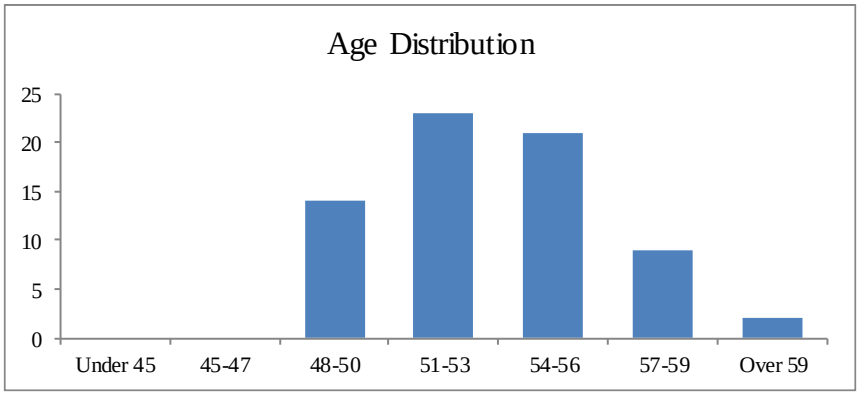
	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	5	0	0	0	0	0	0	0	0	5
25-29	26	12	0	0	0	0	0	0	0	38
30-34	13	10	0	0	0	0	0	0	0	23
35-39	11	13	0	0	0	0	0	0	0	24
40-44	5	6	0	0	0	0	0	0	0	11
45-49	3	3	0	0	0	0	0	0	0	6
50-54	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0	0
Over 64	0	0	0	0	0	0	0	0	0	0
Total	63	44	0	0	0	0	0	0	0	107

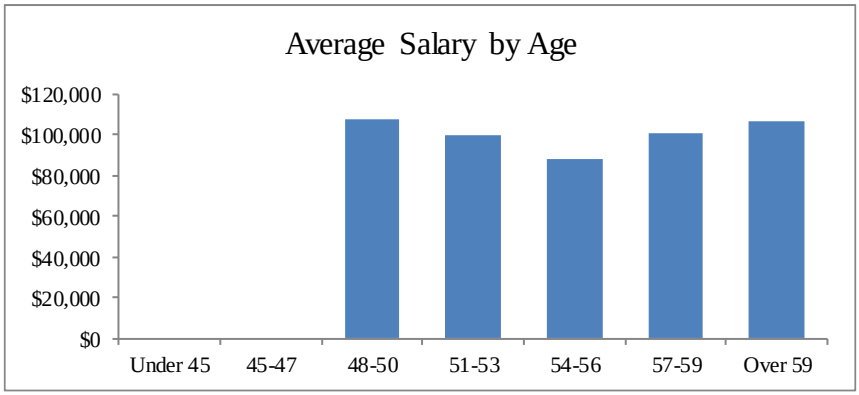


SCHEDULE II

DROP MEMBERS AS OF JANUARY 1, 2019

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 45	0	0	0	$ 0	$ 0	$ 0
45-47	0	0	0	0	0	0
48-50	10	4	14	1,118,921	386,157	1,505,078
51-53	21	2	23	2,079,727	199,544	2,279,271
54-56	18	3	21	1,561,472	281,736	1,843,208
57-59	9	0	9	904,296	0	904,296
Over 59	2	0	2	212,279	0	212,279
Total	60	9	69	$5,876,695	$867,437	$6,744,132

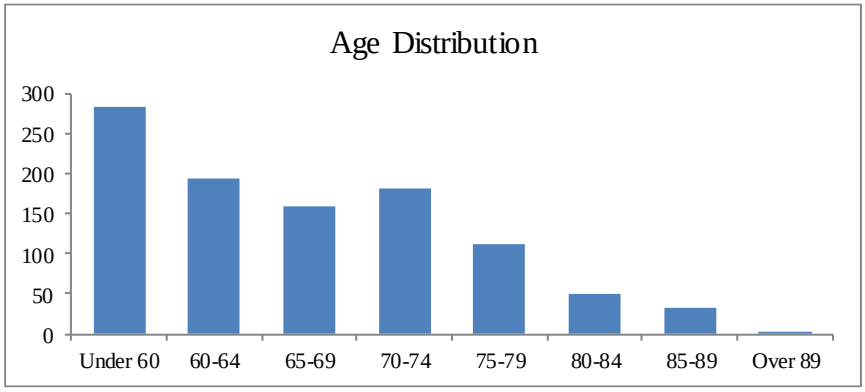


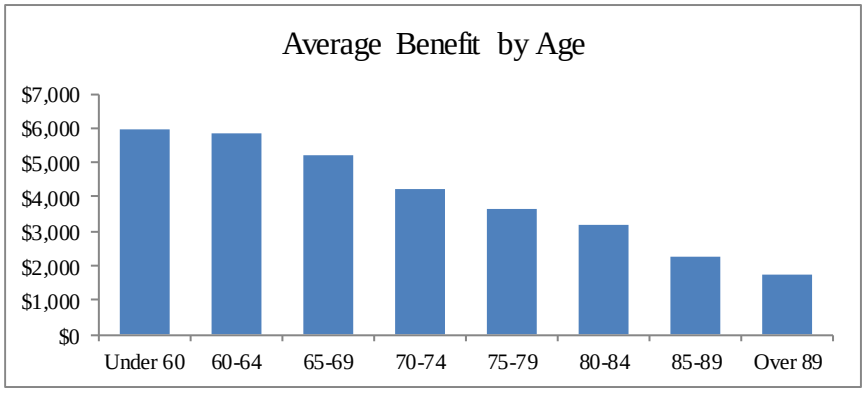


SCHEDULE III

RETIRED MEMBERS AS OF JANUARY 1, 2019

	Count of Retirees			Current Monthly Benefits		
Age	Males	Females	Total	Males	Females	Total
Under 60	240	43	283	$1,466,069	$227,420	$1,693,489
60-64	175	18	193	1,028,980	96,624	1,125,604
65-69	152	6	158	789,665	30,389	820,054
70-74	177	5	182	748,708	18,738	767,446
75-79	111	1	112	402,018	4,665	406,683
80-84	50	0	50	160,519	0	160,519
85-89	32	0	32	73,008	0	73,008
Over 89	4	0	4	6,945	0	6,945
Total	941	73	1,014	$4,675,912	$377,836	$5,053,748

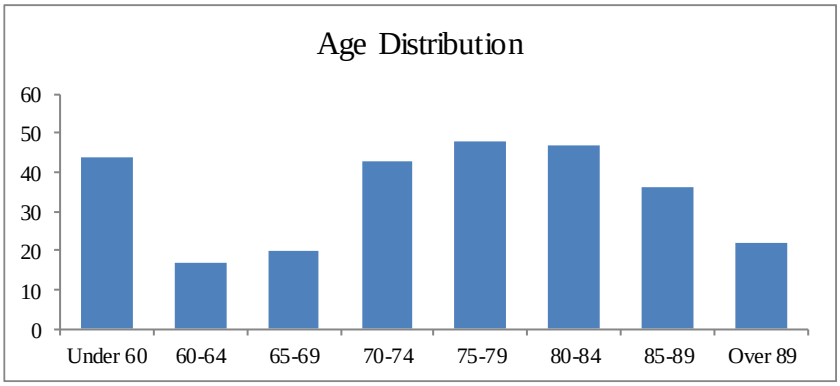


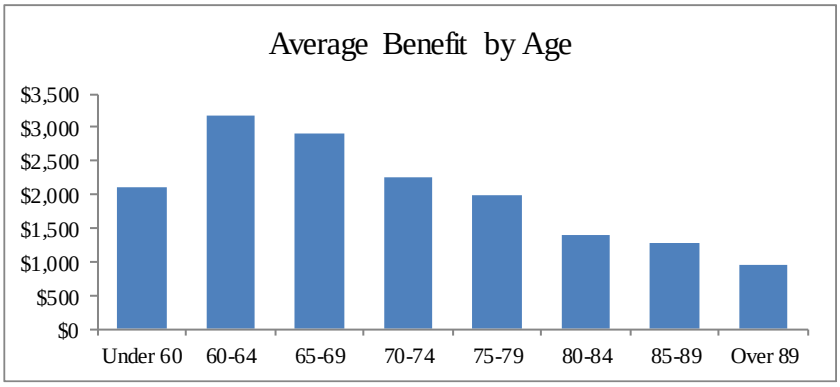


SCHEDULE IV

BENEFICIARIES RECEIVING BENEFITS AS OF JANUARY 1, 2019

	Count of Beneficiaries			Current Monthly Benefits		
Age	Males	Females	Total	Males	Females	Total
Under 60	11	33	44	$16,948	$ 76,474	$93,422
60-64	0	17	17	0	53,751	53,751
65-69	0	20	20	0	58,385	58,385
70-74	0	43	43	0	96,751	96,751
75-79	0	48	48	0	95,171	95,171
80-84	0	47	47	0	66,307	66,307
85-89	0	36	36	0	46,415	46,415
Over 89	0	22	22	0	20,902	20,902
Total	11	266	277	$16,948	$514,156	$531,104





SCHEDULE V

INACTIVE VESTED MEMBERS AS OF JANUARY 1, 2019

	Count of Members			Expected Monthly Benefit		
Age	Males	Females	Total	Males	Females	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25-29	0	0	0	0	0	0
30-34	1	0	1	1,381	0	1,381
35-39	0	1	1	0	1,349	1,349
40-44	1	0	1	2,091	0	2,091
45-49	2	0	2	3,284	0	3,284
50-54	3	0	3	6,232	0	6,232
55-59	0	0	0	0	0	0
Over 59	0	0	0	0	0	0
Total	7	1	8	$12,988	$1,349	$14,337

SCHEDULE VI

DISABLED MEMBERS AS OF JANUARY 1, 2019

	Count of Members			Current Monthly Benefits		
Age	Males	Females	Total	Males	Females	Total
Under 30	0	0	0	$ 0	$ 0	$ 0
30-34	1	0	1	3,190	0	3,190
35-39	2	0	2	6,629	0	6,629
40-44	4	2	6	12,792	6,446	19,238
45-49	10	2	12	36,099	6,210	42,309
50-54	20	4	24	76,599	14,084	90,683
55-59	12	8	20	42,402	25,775	68,177
60-64	14	5	19	48,524	13,354	61,878
65-69	14	0	14	59,752	0	59,752
70-74	54	0	54	160,951	0	160,951
75-79	40	0	40	103,330	0	103,330
80-84	15	0	15	36,351	0	36,351
85-89	14	0	14	26,843	0	26,843
Over 89	3	0	3	3,410	0	3,410
Total	203	21	224	$616,872	$65,869	$682,741