Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

The City of Omaha
Employees' Retirement System

Actuarial Valuation as of
January 1, 2018

www.CavMacConsulting.com

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

August 23, 2018

Board of Trustees
City of Omaha Employees' Retirement System
1819 Farnam Street
Omaha, NE 68183

RE: January 1, 2018 Actuarial Valuation

Members of the Board:

In accordance with your request, we have completed an actuarial valuation of the City of Omaha Employees' Retirement System as of January 1, 2018 for the plan year ending December 31, 2018. The major findings of the valuation are contained in this report. There have been no changes to the actuarial methods since the prior valuation. However, there have been several changes to the actuarial assumptions used in this valuation as a result of the completion of an experience study in February 2018. All of the recommended assumptions from the experience study were adopted by the Board of Trustees and are first used in this valuation. The net impact of the assumption changes was an increase in both the unfunded actuarial liability and the total actuarial contribution rate.

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 actuary is a member of the American Academy of Actuaries, has experience in performing valuations for public retirement plans, and meets 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 reasonably based on the actual experience of the System. The Board of Trustees has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix B.

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

Sincerely,

Patrice Beckham

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

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This report presents the results of the January 1, 2018 actuarial valuation of the City of Omaha Employees' 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 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 were no changes to the benefit provisions or actuarial methods since last year's report. However, there have been several changes to the actuarial assumptions used in this valuation as a result of the four-year experience study completed in February 2018. All of the recommended assumptions were adopted by the Board of Trustees and are first used in this valuation, including:

- Inflation assumption decreased from 3.25% to 2.50%.
- Investment return assumption decreased from 8.00% to 7.50%.
- General wage growth assumption decreased from 4.00% to 3.10%.
- Covered payroll growth assumption decreased from 4.00% to 3.00%.
- Interest crediting rate assumption for cash balance accounts decreased from 6.25% to 6.00%.
- Mortality assumption was changed to the RP-2014 Mortality Table (2006 base table) with no age adjustment for males and a one-year age setback for females. Future mortality improvements from 2006 are anticipated with the Mortality Improvement Scale used by the Nebraska Public Employees Retirement System (NPERS).
- Retirement rates were adjusted to better reflect the actual experience.
- Termination rates were changed from unisex to sex-distinct and developed to reflect the actual experience.
- Refund of contributions assumption for terminated vested members was changed to 50% for all ages.

The impact on the actuarial liability due to the assumption changes listed above is amortized as a level-percent of payroll over a closed 25-year period, as recommended by the System's actuary and adopted by the Board. The changes to the actuarial assumptions increased the actuarial liability by $27.5 million and the total actuarial contribution rate by 3.855% of pay. The changes to the investment return and mortality assumptions had the most significant impact on the valuation results.

The impact of the assumption changes on the January 1, 2018 valuation results is summarized in the following table ($ millions):

	Old Assumptions	New Assumptions	Difference
Actuarial Liability (AL)	$447.1	$474.6	$27.5
Actuarial Value of Assets (AVA)	251.3	251.3	0.0
Unfunded AL (UAL)	$195.8	$223.3	$27.5
Funded Ratio	56.21%	52.95%	(3.26%)
Normal Cost Rate	9.525%	9.923%	0.398%
UAL Contribution Rate	17.676%	21.133%	3.457%
Total Actuarial Contribution Rate	27.201%	31.056%	3.855%
Contribution (Shortfall)/Margin	1.649%	(2.206%)	3.855%

Note: Numbers may not add due to rounding.

The actuarial valuation results provide a "snapshot" view of the System's financial condition on January 1, 2018. The unfunded actuarial liability (UAL) in the current valuation is $223 million, an increase of $26 million from last year's UAL of $198 million. The valuation results reflect net favorable experience for the past plan year as demonstrated by a lower UAL than expected, based on the actuarial assumptions used in the January 1, 2017 actuarial valuation. Favorable experience on the actuarial value of assets resulted in an experience gain of $1.1 million. There was also a net experience gain on liabilities of $2.0 million. Based on the contribution rates in the bargaining agreements, the actual contributions during 2017 were slightly higher than the actuarial contribution rate which decreased the unfunded actuarial liability by $0.9 million.

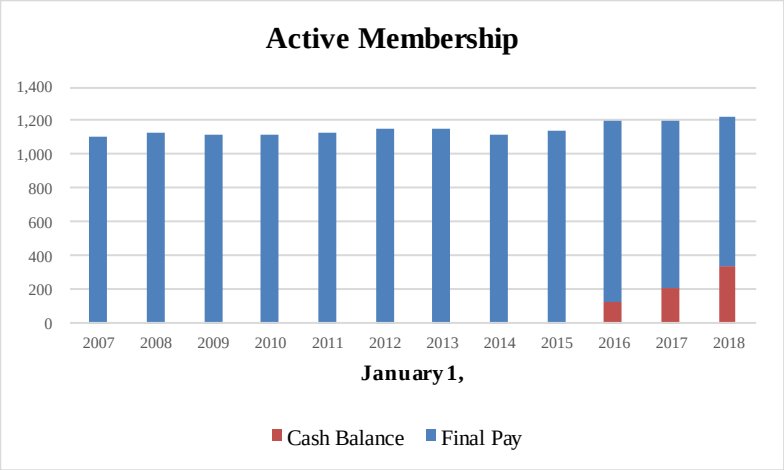
The System uses an asset smoothing method in the valuation process. As a result, the System's funded status and the actuarial contribution rate are based on the actuarial (smoothed) value of assets – not the pure market value. The estimated investment return, net of expenses, on the market value of assets during 2017 was 12.8%. The favorable investment experience during 2017 resulted in a rate of return on the actuarial value of assets of 8.5% for 2017, which is above the assumed return of 8.0% for that year (note the 7.5% investment return assumption applies prospectively). As a result, it generated an actuarial experience gain of $1.1 million. The market value of assets now exceeds the actuarial value of assets by $3.2 million or 1.3% of the market value. Actual market returns over the next few years will determine the rate at which the deferred investment gain is actually recognized. With the current deferred gain, a return of 6% on the market value of assets in 2018 would still result in a 7.5% return on the actuarial value of assets.

The change in the assets, liabilities, and contribution rate of the System over the last year are discussed in more detail in the following sections.

MEMBERSHIP

There were 1,222 active members in the 2018 valuation compared to 1,197 in the 2017 valuation, a 2.1% increase. The increase in the number of active members contributed to the increase in covered payroll of 2.7%. The following graph shows the number of active members in the valuation over the last ten years. The current active group count is at its highest in the last 10 years. When the number of active members increases, it has a positive influence on the System's funding and contribution rate. While the normal cost rate is unaffected by the size of the membership, the UAL contribution rate is favorably impacted by a larger group of active members and the resulting higher payroll Going forward, the UAL is amortized assuming covered payroll will grow at 3.0% per year. If total payroll grows more than 3.0%, the UAL payment is divided by payroll that is higher than expected, resulting in a lower UAL contribution rate.

The graph below also shows the portion of total actives covered by the legacy Final Average Pay Plan and the Cash Balance Plan (for employees hired on/after March 1, 2015). In the 2018 valuation, there were 333 members covered by the Cash Balance Plan, about 27% of the total active membership. In the January 1, 2017 valuation, the Cash Balance Plan covered about 18% of the total active group.



ASSETS

As of January 1, 2018, the System had total funds of $254.5 million, when measured on a market value basis. This was an increase of $14.7 million from the prior year's value of $239.8 million, and represents an approximate rate of return, net of expenses, of 12.8%.

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 7.5%) 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, 2018. The rate of return on the actuarial value of assets was 8.5%, resulting in an actuarial gain of $1.1 million.

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

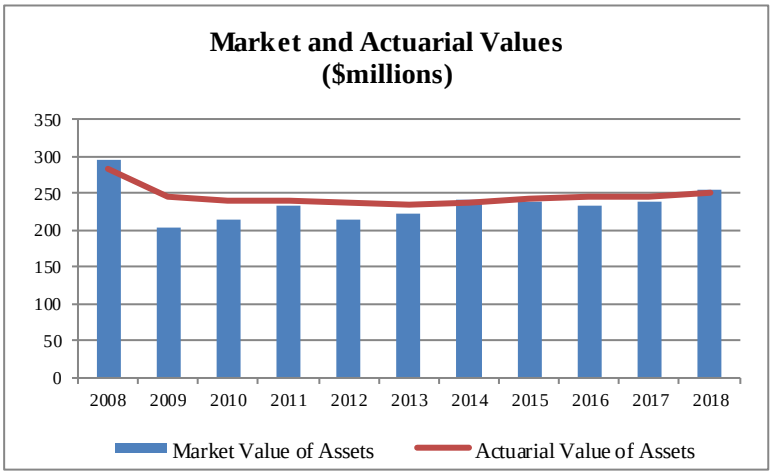
	Market Value ($M)	Actuarial Value ($M)
Net Assets, January 1, 2017	$ 239.8	$ 246.2
City and Member Contributions	+ 20.3	+ 20.3
Benefit Payments and Refunds	- 35.4	- 35.4
Investment Gain/(Loss)	+ 29.8	+ 20.2
Net Assets, January 1, 2018	254.5	251.3
Estimated Rate of Return	12.8%	8.5%

The deferred investment gain that is not recognized as of January 1, 2018 is $3.2 million, compared with $6.4 million of deferred investment loss in last year's valuation. The unrecognized investment gain of $3.2 million will be reflected in the determination of the actuarial value of assets for funding purposes over time, to the extent it is not offset by future losses. This means that earning the assumed rate of investment return of 7.5% per year (net of investment expenses) on a market value basis will result in small actuarial gains on the actuarial value of assets in the future.

The unrecognized investment gain represents 1.3% of the market value of assets (compared to a deferred loss equal to 2.7% of the market value in the 2017 valuation). If the deferred gain was recognized immediately in the actuarial value assets, the UAL would decrease by $3.2 million to $220.1 million, the funded ratio would increase to 53.6%, the actuarial contribution rate would decrease from 31.056% to 30.723%, and the contribution shortfall would decrease to 1.873% of payroll.

A comparison of asset values on both a market and actuarial basis for the last six years is shown in the following table.

	January 1 ($M)					
	2013	2014	2015	2016	2017	2018
Actuarial Value of Assets	$236	$238	$242	$244	$246	$251
Market Value of Assets	$223	$240	$239	$232	$240	$255
Actuarial Value/Market Value	106%	99%	101%	105%	103%	99%



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 can be either above or below the pure market value.

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 System 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 the benefit becomes payable. The PVFB for the various types of benefits provided by the System 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 (AL). 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 prior service periods). As of January 1, 2018, the AL for the System is $474.6 million.

The following chart compares the AL and System assets for the current and prior valuation:

	As of January 1	
	2018	2017
Actuarial Liability (AL)	$474,607,516	$443,771,621
Assets at Actuarial Value	$251,320,837	$246,234,597
Unfunded Actuarial Liability (AVA)	$223,286,679	$197,537,024
Funded Ratio (Actuarial Value)	53%	55%
Assets at Market Value	$254,532,138	$239,825,244
Unfunded Actuarial Liability (MVA)	$220,075,378	$203,946,377
Funded Ratio (Market Value)	54%	54%

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 2017 PLAN YEAR

The difference between the actuarial liability (AL) 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 UAL.

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 UAL and are measured as the difference between the expected UAL and the actual UAL, taking into account any changes due to assumptions/methods or benefit provision changes. During 2017, the net experience was favorable (a lower UAL than expected). There was an actuarial gain for 2017 of $1.1 million on the actuarial value of assets and an actuarial gain of $2.0 million on liabilities. The largest source of gain for the System's liabilities was favorable mortality experience, due to a larger number of retiree deaths than expected.

The change in the UAL between January 1, 2017 and January 1, 2018 is shown below (in millions):

Unfunded Actuarial Liability, January 1, 2017	197.5
· Expected change in UAL	2.5
· Contribution above actuarial rate	(0.9)
· Investment experience	(1.1)
· Demographic experience	(2.0)
· Assumption changes	27.5
· Other experience	(0.2)
Unfunded Actuarial Liability, January 1, 2018	223.3

CONTRIBUTION LEVELS

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

(1) Normal cost (which is the allocation of costs attributed to the current year's membership service) and,
(2) Amortization payment on the unfunded actuarial liability.

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. The total normal cost for the System is 9.923% of pay, or $6.6 million this year. The normal cost rate represents the long-term cost of the benefit structure for the current active members.

The System's total actuarial contribution rate (payable as a percentage of member payroll) increased by 3.316% of pay, to 31.056% in the January 1, 2018 valuation, from 27.740% in the January 1, 2017 valuation. The primary components of the change in the actuarial contribution rate are shown in the following table:

	Rate	
Total Actuarial Contribution Rate, January 1, 2017	27.740	%
· Actuarial (Gain) / Loss - Investment Experience	(0.106)	
· Actuarial (Gain) / Loss - Demographic Experience	(0.203)	
· Contributions Above The Actuarial Rate	(0.087)	
· Change in Normal Cost Rate	(0.196)	
· Payroll Growth Lower than Expected	0.076	
· Assumption Changes	3.855	
· Other Experience	(0.023)	
Total Actuarial Contribution Rate, January 1, 2018	31.056	%

As the table above shows, the actuarial contribution rate increased from 27.740% to 31.056%, mainly due to the new set of assumptions, adopted by the Board as a result of the most recent experience study. For the current valuation, the total actuarial contribution rate for 2018 is 31.056% of pay (9.923% normal cost + 21.133% UAL payment). The scheduled contributions for the year are 28.850%, resulting in a contribution shortfall of 2.206%. This indicates that the target date for full funding will not occur if all actuarial assumptions are met.

COMMENTS

There have been several changes to the actuarial assumptions used in this valuation as a result of the four-year experience study completed in February 2018, the most significant of which were decreasing the investment return assumption from 8.0% to 7.5% and moving to a more recent mortality table. The changes to the actuarial assumptions increased the actuarial liability by $27.5 million and the total actuarial contribution rate by 3.855% of pay.

As of January 1, 2018, 333 out of 1,222 active members are covered under the Cash Balance benefit structure, or about 27%. Although nearly 30% of active members are covered by the Cash Balance Plan, the majority of the actuarial liability is attributable to the legacy plan (the Final Average Pay Plan). It will take many years before the cash balance plan design has a significant impact on the System's liabilities and costs. We expect to continue to see growth in the number of active members covered by the cash balance benefit structure, but the System's liabilities will continue to reside with members in the legacy benefit structure (final average pay plan) for many years.

The results of this valuation indicate that the fixed contribution rates in the current bargaining agreements are 2.206% lower than the total actuarial contribution rate. The contribution shortfall is totally attributable to the change in actuarial assumptions. Absent that change, there would have been a contribution margin of 1.649% of pay. The contribution shortfall should not be misunderstood. It is an indication that, if all assumptions are met in the future, the System will not reach full funding at the date anticipated in the System's funding policy (end of the amortization periods). However, it does not necessarily mean the System will never be fully funded. With the new benefit structure for members hired after March 1, 2015, and a corresponding decrease in the normal cost rate, a projection of future valuation results is necessary in order to quantify the expected date the System will reach full funding. Such a project is outside the scope of this 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 perform important analysis of the various risks related to funding the System.

The return on the market value of assets in 2017 was 12.8%. As a result, the deferred investment loss of $6.4 million that existed on January 1, 2017 has been eliminated and there is now a deferred investment gain of $3.2 million. The funded ratio of the system, on a market value basis, is 54% in the January 1, 2018 actuarial valuation. While the System's financial health in future years will be negatively impacted by the contribution shortfall and positively impacted by changes to the benefit structure, the net impact on the System's long-term funding cannot be quantified without performing an open group projection of future valuation results. Such analysis was not performed because it is outside the regular scope of services requested by the Board.

As mentioned earlier in this report, the System uses an asset smoothing method in the actuarial valuation. While this is a very common procedure for public retirement systems, it is important to be aware of the potential impact of the unrecognized investment experience. The System currently has a deferred gain of $3.2 million. It is valuable to compare the key valuation results from the 2018 valuation using both the actuarial and market value of assets (see following table).

	$ Millions	
	Using Actuarial Value of Assets	**Using Market Value of Assets**
Actuarial Liability	$474.6	$474.6
Asset Value	251.3	254.5
Unfunded Actuarial Liability	$223.3	$220.1
Funded Ratio	53.0%	53.6%
Normal Cost Rate	9.923%	9.923%
UAL Contribution Rate	21.133%	20.800%
Total Actuarial Contribution Rate	31.056%	30.723%
Employee Contribution Rate	10.075%	10.075%
City Contribution Rate	18.775%	18.775%
Contribution (Shortfall)/Margin	(2.206%)	(1.873%)

THE CITY OF OMAHA EMPLOYEES' RETIREMENT SYSTEM

PRINCIPAL VALUATION RESULTS

	January 1, 2018	January 1, 2017	% Chg
MEMBERSHIP			
1. Active Membership			
- Number of Members:			
Hired before March 1, 2015	889	985	(9.7)
Hired on or after March 1, 2015	333	212	57.1
Total	1,222	1,197	2.1
- Projected Payroll for Upcoming Fiscal Year	$72,754,142	$70,873,306	2.7
- Average Projected Pay	$59,537	$59,209	0.6
- Average Attained Age	45.6	46.2	(1.3)
- Average Entry Age	36.7	36.7	0.0
2. Inactive Membership			
- Number of Retirees / Beneficiaries	1,364	1,321	3.3
- Number of Disabled Members	101	109	(7.3)
- Number of Deferred Vested Members	81	76	6.6
- Average Annual Benefit	$23,746	$23,323	1.8
- Number of Participants Due a Refund	52	36	44.4
ASSETS AND LIABILITIES			
1. Net Assets			
- Market Value	$254,532,138	$239,825,244	6.1
- Actuarial Value	251,320,837	246,234,597	2.1
2. Projected Liabilities	$529,259,210	$493,356,506	7.3
3. Actuarial Liability	474,607,516	443,771,621	6.9
4. Unfunded Actuarial Liability	$223,286,679	$197,537,024	13.0
5. Funded Ratios			
Actuarial Value Assets / Actuarial Liability	52.95%	55.49%	(4.6)
Market Value Assets / Actuarial Liability	53.63%	54.04%	(0.8)
CONTRIBUTIONS			
1. Normal Cost Rate	9.923%	9.721%	2.1
2. UAL Contribution Rate	21.133%	18.019%	17.3
3. Total Actuarial Contribution Rate (1) + (2)	31.056%	27.740%	12.0
4. Employee Contribution Rate	10.075%	10.075%	0.0
5. City Contribution Rate Per Ordinance	18.775%	18.775%	0.0
6. Contribution (Shortfall)/Margin (4) + (5) - (3)	(2.206%)	1.110%	(298.7)

EXHIBIT 1

SUMMARY OF FUND ACTIVITY
(Market Value Basis)

For Year Ended December 31, 2017

Assets at January 1, 2017	$	239,825,244
Receipts:		
City Contributions		13,227,230
Employee Contributions		7,106,189
Investment Earnings, Net of Expenses		29,803,718
Total Receipts		50,137,137
Disbursements:		
Benefit Payments		34,609,339
Refund of Contributions		815,017
Administrative Expenses		5,887
Total Disbursements		35,430,243
Assets as of December 31, 2017	$	254,532,138
Annualized Net Yield		12.8%

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, 2017	$	246,234,597
2.	Actual Receipts / Disbursements		
	a. Total Contributions		20,333,419
	b. Benefit Payments/Other		(35,424,356)
	c. Net Change		(15,090,937)
3.	Expected Actuarial Value of Assets as of January 1, 2018 [(1) * 1.08] + [(2c) * $1.08^{½}$]		250,250,403
4.	Market Value of Assets as of January 1, 2018		254,532,138
5.	Excess of Market Value over Expected Actuarial Value as of January 1, 2018		4,281,735
6.	Preliminary Actuarial Value of Assets as of January 1, 2018 [(3) + 25% of (5)]		251,320,837
7.	20% Calculation of Corridor		
	a. 80% of (4)		203,625,710
	b. 120% of (4)		305,438,566
8.	Final Actuarial Value of Assets as of January 1, 2018 (6) but not < (7a) nor > (7b)	$	251,320,837
9.	Rate of Return on Actuarial Value of Assets		8.5%

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	$294,658,022	$283,243,750	96.13%
1/1/2009	204,452,506	245,343,007	120.00%
1/1/2010	213,219,632	240,109,413	112.61%
1/1/2011	232,346,583	240,291,310	103.42%
1/1/2012	215,434,784	236,741,347	109.89%
1/1/2013	223,233,088	235,591,941	105.54%
1/1/2014	240,342,815	237,579,690	98.85%
1/1/2015	238,730,446	242,248,074	101.47%
1/1/2016	232,157,235	243,516,453	104.89%
1/1/2017	239,825,244	246,234,597	102.67%
1/1/2018	254,532,138	251,320,837	98.74%

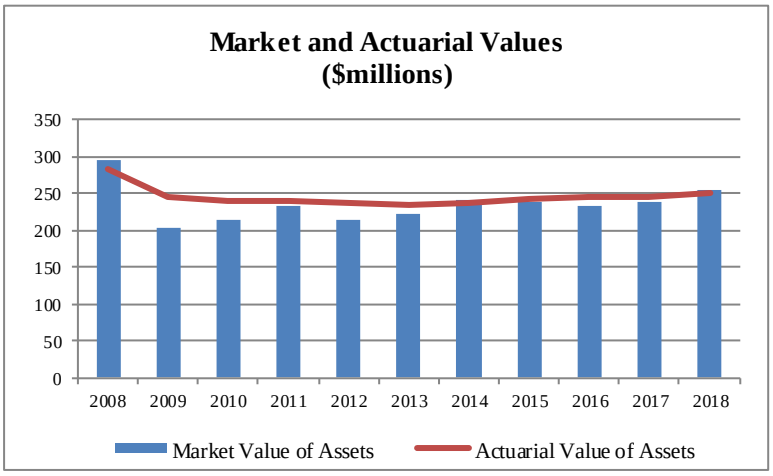


EXHIBIT 3

ACTUARIAL BALANCE SHEET

An actuarial statement of the status of the System in balance sheet form as of January 1, 2018 is as follows:

Assets

Current assets (actuarial value)		$ 251,320,837
Present value of future normal costs		54,651,694
Present value of future employer contributions to fund unfunded actuarial liability		223,286,679
Total Assets		$ 529,259,210

Liabilities

Present value of future retirement benefits for:		
Active employees	$ 143,462,931	
Retired employees, contingent annuitants and spouses receiving benefits	330,910,327	
Deferred vested employees	6,242,680	
Inactive employees due refunds	231,733	
Inactive employees – disabled	20,641,386	
Total		$ 501,489,057
Present value of future death benefits payable upon death of active members		3,378,164
Present value of future benefits payable upon termination of active members		14,437,584
Present value of future benefits payable upon disability of active members		9,954,405
Total Liabilities		$ 529,259,210

EXHIBIT 4

UNFUNDED ACTUARIAL LIABILITY

As of January 1, 2018

The actuarial liability is the portion of the present value of future benefits which will not be paid by future normal costs, i.e., the portion allocated to past years of service. The actuarial value of assets is subtracted from the actuarial liability to determine the unfunded actuarial liability.

1.	Present Value of Future Benefits	$	529,259,210
2.	Present Value of Future Normal Costs		54,651,694
3.	Actuarial Liability (1) – (2)		474,607,516
4.	Actuarial Value of Assets		251,320,837
5.	Unfunded Actuarial Liability (3) – (4)	$	223,286,679
6.	Funded Ratio (4) / (3)		52.95%

EXHIBIT 5

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, 2016 (initial base) is amortized over a closed amortization period of 25 years. 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. The increase in the UAL in the 2018 valuation is amortized over 25 years. 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 percentage of payroll 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.

Note that although an actuarial contribution rate is determined for the City of Omaha Employees' Retirement System, the System is funded based on fixed contribution rates specified in the various collective bargaining agreements.

Amortization Bases	Original Amount	January 1, 2018 Remaining Years	Year of Last Payment	Outstanding Balance as of January 1, 2018	Annual Contribution (mid-year)
2016 Initial UAL Base	$ 193,616,559	23	2040	$ 198,951,099	$ 13,793,493
2017 Experience Base	1,111,921	19	2036	1,116,940	87,151
2018 Assumption Changes	27,470,165	25	2042	27,470,165	1,815,625
2018 Experience Base	(4,251,525)	20	2037	(4,251,525)	(321,013)
Total				**$ 223,286,679**	**$ 15,375,256**

EXHIBIT 6

DEVELOPMENT OF

2018 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 payment. The System is financed by fixed contribution rates from the employees and the City as set out in the bargaining agreements with the various employee groups.

1. (a)	Normal Cost	$	6,578,160
(b)	Expected Payroll in 2018 for Current Actives	$	66,290,502
(c)	Normal Cost Rate (a) / (b)		9.923%
2.	Unfunded Actuarial Liability at Valuation Date	$	223,286,679
3.	Unfunded Actuarial Liability Payment	$	15,375,256
4.	Total Projected Payroll for 2018	$	72,754,142
5.	Unfunded Actuarial Liability Payment as Percent of Pay (3) / (4)		21.133%
6.	Total Actuarial Contribution Rate (1c) + (5)		31.056%
7.	Employee Contribution Rate		10.075%
8.	City Contribution Rate		18.775%
9.	Contribution (Shortfall)/Margin (7) + (8) - (6)		(2.206%)

EXHIBIT 7

CALCULATION OF ACTUARIAL GAIN/(LOSS)

For Plan Year Ending December 31, 2017

Liabilities

1. Actuarial liability as of January 1, 2017	$	443,771,621
2. Normal cost for 2017		6,229,103
3. Interest at 8.00% on (1) and (2) to December 31, 2017		36,000,058
4. Benefit payments during 2017		(35,424,356)
5. Interest on benefit payments		(1,389,715)
6. Assumption changes		27,470,165
7. Expected actuarial liability as of December 31, 2017	$	476,656,876
8. Actuarial liability as of December 31, 2017	$	474,607,516

Assets

9. Actuarial value of assets as of January 1, 2017	$	246,234,597
10. Contributions during 2017		20,333,419
11. Benefit payments during 2017		(35,424,356)
12. Interest at 8.00% on (9), (10) and (11) to December 31, 2017		19,106,743
13. Expected actuarial value of assets as of December 31, 2017	$	250,250,403
14. Actual actuarial value of assets as of December 31, 2017	$	251,320,837

Gain / (Loss)

15. Expected unfunded actuarial liability (7) – (13)	$	226,406,473
16. Actual unfunded actuarial liability (8) – (14)		223,286,679
17. Actuarial Gain / (Loss) (15) – (16)		3,119,794
18. Actuarial Gain / (Loss) on Actuarial Assets (14) – (13)		1,070,434
19. Actuarial Gain / (Loss) on Actuarial Liability (7) – (8)	$	2,049,360

EXHIBIT 8

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 contributions 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 system assets, mortality rates among active and retired members, withdrawal and retirement rates among active members, and rates at which salaries increase.

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 comprising 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 gain on liabilities of $2,049,000 during the plan year ended December 31, 2017, and an actuarial gain on assets of $1,070,000. The total actuarial gain was $3,119,000. The major components of this aggregate actuarial experience are shown below:

Liability Sources		**Gain/(Loss)**
Salary Increases	$	638,000
Mortality		2,589,000
Terminations		(528,000)
Retirements		(579,000)
Disability		(183,000)
New Entrants/Rehires		(354,000)
Disabled Retiree Conversions*		246,000
Miscellaneous		220,000
Total Liability Gain/(Loss)	$	2,049,000
Asset Gain/(Loss)	$	1,070,000
Total Actuarial Gain/(Loss)	$	3,119,000

* Upon reaching age 65, disabled members are converted from disability retirement to service retirement and their benefits are recalculated.

SECTION II

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 9

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Ending	Annual Required Contribution* (a)	Total Employer Contribution* (b)	Percentage of ARC Contributed* (b) / (a)
12/31/2005	$ 6,877,913	$ 4,500,192	65.43%
12/31/2006	6,213,801	4,145,033	66.71%
12/31/2007	8,883,617	4,975,039	56.00%
12/31/2008	9,212,669	5,374,082	58.33%
12/31/2009	12,893,331	5,310,754	41.19%
12/31/2010	14,149,386	5,717,610	40.41%
12/31/2011	14,564,847	6,618,110	45.44%
12/31/2012	15,658,045	7,216,050	46.09%
12/31/2013	17,406,168	7,194,482	41.33%
12/31/2014	17,162,883	12,326,643	71.82%
12/31/2015	14,676,786	12,401,231	84.50%
12/31/2016	11,794,456	12,779,968	108.36%
12/31/2017	12,383,422	13,227,230	106.81%

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

Note: Although an actuarial contribution rate is calculated in the valuation, the system is funded by fixed contribution rates set out in the bargaining agreements for the individual employee groups.

EXHIBIT 10

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date[1]	Actuarial Value of Assets (a)	Actuarial Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (P/R) (c)	UAAL as a Percentage of Covered P / R [(b-a)/c]
12/31/2006	$292,000,000	$361,700,000	$ 69,700,000	80.7%	$48,200,000	144.6%
12/31/2007	294,700,000	369,000,000	74,300,000	79.9%	54,000,000	137.6%
12/31/2008	204,500,000	387,700,000	183,200,000	52.7%	56,400,000	324.8%
12/31/2009	213,200,000	402,800,000	189,600,000	52.9%	55,700,000	340.4%
12/31/2010	232,400,000	414,500,000	182,100,000	56.1%	56,700,000	321.2%
1/1/2011	240,291,310	409,442,601	169,151,291	58.7%	59,235,591	285.6%
1/1/2012	236,741,347	420,810,359	184,069,012	56.3%	62,825,685	293.0%
1/1/2013	235,591,941	436,270,409	200,678,468	54.0%	63,327,394	316.9%
1/1/2014	237,579,690	442,754,113	205,174,423	53.7%	63,413,206	323.6%
1/1/2015	242,248,074	431,160,038	188,911,964	56.2%	64,876,227	291.2%
1/1/2016	244,543,841	437,133,012	192,589,171	55.9%	69,005,865	279.1%
1/1/2017	246,234,597	443,771,621	197,537,024	55.5%	70,873,306	278.7%
1/1/2018	251,320,837	474,607,516	223,286,679	53.0%	72,754,142	306.9%

[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.

Note: the investment return assumption was changed from 8.0% to 7.5% in the 2018 valuation.

APPENDIX A

SUMMARY OF PLAN PROVISIONS

Effective Date: Section 22 - 21	January 1, 1949
Active Member: Section 22 – 24 and 25	All City employees except: policemen, firemen, persons paid on a contractual or fee basis, seasonal, temporary and part-time employees, and elected officials who do not make written application.
Final Average Compensation (FAC): Section 22 - 32	Highest 78 pay periods in the employee's last 130 pay periods of employment divided by three for members who are within five years of normal retirement as of March 1, 2015 under the eligibility criteria set forth in the 2009 through 2012 labor agreements; or the last 130 pay periods divided by five for all other employees. Minimum FAC, regardless of retirement date, shall never be less than the FAC determined as of 2/28/2015 (highest consecutive 26 pay periods in 130 pay periods prior to 2/28/2015).
Member Contributions: Section 22 – 26(a)	Each member will contribute 10.075% of total compensation.
City of Omaha Contributions: Section 22 – 26(e)	The City will contribute a percentage of each member's total compensation as shown in the following table.

Year	Percent Contributed
2013	13.775%
2014	17.775%
2015	18.775%

Service Credits Section 22 – 28 and 29	The member shall receive membership service credit for each full pay period of employment. Intervening periods of military service in time of emergency shall be counted, provided the member is honorably discharged and returns to work within 90 days after such discharge. Membership credits shall be earned by those receiving a disability pension. However, the total credited service will not exceed 30, unless more than 30 years were earned as an active member.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Service Retirement Eligibility: Section 22 - 30	Members who are within five years of normal retirement as of March 1, 2015 under the eligibility criteria set forth in the 2009 through 2012 labor agreement will remain eligible for a service retirement if (a) they are age 60 with five years of service or (b) meet the Rule of 80 with a minimum age of 50. A member is eligible for a service retirement after reaching age 55 with five years of service, but the pension is reduced 8% per year for years prior to age 60. Members who are more than five but less than ten years of normal retirement as of March 1, 2015 under the eligibility criteria set forth in the 2009 through 2012 labor agreement are eligible to retire after age 55 if their age plus service is 85 or more (Rule of 85). Otherwise, a member is eligible to retire after age 57 with five years of service, but the pension is reduced 8% per year for years prior to age 62. Members who are <u>not</u> within ten years of normal retirement as of March 1, 2015 under the eligibility criteria set forth in the 2009 through 2012 labor agreement, are eligible to retire after age 55 if their age plus service is 85 or more (Rule of 85). Otherwise, such member is eligible to retire after age 60 with five years of service, but the pension is reduced 8% per year for years prior to age 65. Members who are hired on or after March 1, 2015 are eligible to retire after age 55 with ten years of service.
Service Retirement Pension: Section 22 - 32	For members hired <u>before</u> March 1, 2015, a monthly pension equal to 2.25% of Final Average Compensation times years of service during and before 2014, plus 1.90% for years of service during and after 2015. For members hired <u>on or after</u> March 1, 2015, the system shall establish and maintain a "cash balance account" for each employee. The cash balance account shall be equal to the sum of the employee's pay credits, interest credits and dividends, which are explained further in the following paragraphs.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Interest Credits and Dividends: On the last day of each plan year, each cash balance account shall receive an interest credit equal to 4.0% of the balance at the beginning of the plan year. Additionally, each account may be credited with a dividend equal to 75% of the System's investment return, on a market value basis, that is over 7.0% on a rolling five-year return. The dividend is capped at 3.0% until January 1, 2020.

Pay Credits: On the last day of each plan year, each cash balance account shall receive a pay credit equal to the following percentages of the member's pensionable earnings for the plan year:

Years of Service	Percentage
Less Than 8	13.0%
8 – 15	14.0%
16 – 23	15.0%
24 or More	16.0%

Monthly Benefit: At retirement, a member may elect to receive benefit payments as a single life annuity, life annuity with 10 years certain, life annuity with 15 years certain, Joint and 50% Survivor, Joint and 75% Survivor, or Joint and 100% Survivor. The annuity conversion factor shall be based on 5% interest and the RP 2000 Mortality Table Projected to 2034 with a male/female blend of 67%/33%.

Disability Benefits:

1. Non-Service Related
   Section 22 - 35

An employee who sustains an injury or illness not in the line of duty and as a result becomes unfit for active duty shall be granted a non-service-connected disability retirement of 1.50% multiplied by the employee's years of service multiplied by their Final Average Compensation. Members who were hired before March 1, 2015 are eligible for this benefit with five years of service. Members who were hired on or after March 1, 2015 are eligible for this benefit with ten years of service.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

2. Service-Related Section 22 - 35	An employee who is a member of the system who sustains an injury or illness in the line of duty and as a result becomes unfit for active duty shall be granted a service-connected disability retirement of 1.75% multiplied by the employee's years of service multiplied by their Final Average Compensation. This benefit is available only if the member has served a minimum of six months of service.
Spouse's Pension:	
1. Death of Active Member Section 22 - 36	For members hired before March 1, 2015, a monthly pension equal to 75% of the member's accrued pension is paid to the surviving spouse until death or remarriage. The member must have had five years of service or had a service-connected death and six months of service. For members hired on or after March 1, 2015, a lump sum payment of the member's full cash balance account if the member had ten or more years of service prior to death. If the member had less than ten years of service prior to death, then the surviving spouse is eligible to receive a lump sum payment equal to the member's contributions with 4.0% interest.
2. Death of a Member Eligible for Retirement or Death of Retired Member Section 22 - 36	For members hired before March 1, 2015, if the surviving spouse was legally married to the member for at least one year, then they shall be entitled to 75% of the pension the member was receiving or was eligible to receive at the time of death. Upon the spouse's remarriage, all benefits cease.
Children's Pension: Section 22 - 36	For members hired before March 1, 2015, upon the death of the active or retired member, the following benefit will be paid to the surviving children until age 18 or prior to death or marriage, except that if a child is totally disabled, the full pension continues until the cessation of total disability or dependency for support whichever occurs first:

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Number of Dependent Children	Percentage of Accrued Benefit
1	5%
2	10%
3	15%
4 or more	20%

Lump Sum Death Benefits:

1. Active Member without Eligible Dependents Section 22 - 37	Accumulated member's contributions, plus $5,000.
2. Retired Member without Eligible Dependents Section 22 - 37	Accumulated member's contribution less previous pension payments made, plus $5000.
3. Active Member with Eligible Dependents Section 22 - 37	$5,000
4. Retired Member with Eligible Dependents Section 22 - 37	$5,000
Vesting: Section 22 – 39	For members who were hired before March 1, 2015, upon severance of employment with less than five years of service and prior to obtaining eligibility under Section 22 – 30, a refund of such member's accumulated contributions, including credited interest, will be paid. For members who were hired on or after March 1, 2015, upon severance of employment with less than ten years of service and prior to obtaining eligibility under Section 22 – 30, a refund of such member's accumulated contributions, including 4.0% interest, will be paid.

APPENDIX A

SUMMARY OF PLAN PROVISIONS
(continued)

Section 22 – 40	For members who were hired before March 1, 2015, upon severance of employment with more than five years of service and prior to obtaining eligibility for retirement, the member may elect, in lieu of receiving a refund of contributions, to receive a monthly pension, reduced for early retirement if applicable. Such deferred pension shall be based on service credited to the date of severance. For members who were hired on or after March 1, 2015, upon severance of employment with more than ten years of service and prior to obtaining eligibility for retirement, the member may elect, in lieu of receiving a refund of contributions, to leave their contributions in the System and thereby be eligible for a deferred service retirement pursuant to Section 22 – 40.
Supplemental Pension: Section 22 – 123	Retirees (including widows, widowers and children) receive a supplemental pension (Cost of Living Adjustment – COLA) after five years equal to the lesser of 3% or $50 per month. The COLA is granted for the full remaining period that benefits are payable. No COLAs will be available for members who retire after January 28, 1998.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Cost Method

Valuation of the System uses 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.

1. The expected pension benefit at normal retirement 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 his normal retirement. This normal cost is determined so that its accumulated value at normal retirement 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 System 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 normal retirement age.

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 System, actuarial gains and 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 7.5%) 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

The unfunded actuarial liability (UAL) is funded on a "layered" basis, with the initial base being funded as a level-percent of payroll over a 25-year closed period that began January 1, 2016. The base attributable to the increase in the UAL due to the change in assumptions in the 2018 valuation is amortized over a closed 25-year period. In addition, a new base is created in each valuation which is equal to the unexpected change in the UAL from actual versus expected experience, as measured in that valuation. Each experience base is funded as a level percent of payroll over a 20-year closed period.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Investment Return: 7.50% per year, net of investment expenses.

Price Inflation: 2.50% per year, net of investment expenses.

Interest Credited to Cash Balance Accounts: 6.00% per year

Individual Salary Increases:

Years of Service	Annual Rate of Increase For Sample Years: Inflation	Productivity	Merit & Longevity	Total Increase
1	2.50%	0.60%	4.90%	8.00%
5	2.50%	0.60%	1.40%	4.50%
10	2.50%	0.60%	0.90%	4.00%
15	2.50%	0.60%	0.65%	3.75%
20	2.50%	0.60%	0.15%	3.25%
25	2.50%	0.60%	0.15%	3.25%
30	2.50%	0.60%	0.15%	3.25%
35+	2.50%	0.60%	0.00%	3.10%

Payroll Growth Assumption: 3.00%

Service Retirement Age:

Members within 5 Years of Unreduced Retirement Eligibility as of March 1, 2015

Eligible for Unreduced Retirement: Age	1st Year Eligible	Subsequent Years
50-53	35%	25%
54-55	35%	20%
56-60	30%	20%
61	25%	20%
62	25%	30%
63-64	25%	25%
65-69	50%	30%
70	100%	100%

Members eligible for Early, but not Unreduced Retirement, are assumed to retire at a rate of 3.50% per year from age 55 to 59.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Members within 6-10 Years of Unreduced Retirement Eligibility as of March 1, 2015

Eligible for Unreduced Retirement

Age	1st Year Eligible	Subsequent Years
55	35%	20%
56-60	30%	20%
61	25%	20%
62	25%	30%
63-64		25%
65-69		30%
70		100%

Members eligible for Early, but not Unreduced Retirement, are assumed to retire at a rate of 3.50% per year from age 57 to 61.

Members more than 10 Years from Unreduced Retirement Eligibility as of March 1, 2015

Eligible for Unreduced Retirement

Age	1st Year Eligible	Subsequent Years
55	35%	20%
56-60	30%	20%
61	25%	20%
62	25%	30%
63-64	25%	25%
65	50%	30%
66-69		30%
70		100%

Members eligible for Early, but not Unreduced Retirement, are assumed to retire at a rate of 3.50% per year from age 60 to 64.

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Members Hired on or After March 1, 2015

Age	Probability Of Retirement
55-59	5%
60-61	7%
62-64	20%
65	35%
66	25%
67-69	20%
70	100%

Deferred vested members are assumed to begin receiving benefits at age 60.

Decrement Timing

Middle of year

Mortality:

Active Members

RP-2014 Mortality Table, adjusted to 2006 (reflecting the 2006 base mortality rates), with generational projection using the ultimate projection scale used by the Nebraska Public Employees Retirement System

Pensioners

RP-2014 Mortality Table, adjusted to 2006 (reflecting the 2006 base mortality rates), with generational projection using the ultimate projection scale used by the Nebraska Public Employees Retirement System

Disabled

RP-2014 Disabled Mortality Table, adjusted to 2006 (reflecting the 2006 base mortality rates), with generational projection using the MP-2016 scale

Disability:

Age	Annual Rate
20	0.11%
30	0.14%
40	0.19%
50	0.41%
60	1.48%

20% of disabilities are assumed to be service-connected.

Percent Married at Death or Retirement:

75%

APPENDIX B

ACTUARIAL METHODS AND ASSUMPTIONS (continued)

Spouse Age Difference: Husbands assumed to be three years older than wives.

Number of Children per Married Member: 0

Termination:

Years of Service	Annual Rate Male	Annual Rate Female
0	11.00%	15.00%
1	10.00%	14.00%
2	8.25%	12.00%
3	7.25%	10.50%
4	6.25%	9.00%
5	5.50%	8.00%
6	5.00%	7.00%
7	4.50%	6.00%
8	4.25%	5.00%
9	4.00%	4.50%
10	3.75%	4.30%
11	3.50%	4.00%
12	3.25%	3.80%
13	3.00%	3.50%
14	2.75%	3.00%
15	2.50%	2.50%
16	2.25%	2.00%
17+	2.00%	2.00%

Vested Terminations Electing Refund: 50% of members with less than 20 years of service.

For members hired on or after March 1, 2015, members are assumed to take the more valuable of a lump sum or the present value of an annuity at age 60.

APPENDIX C

HISTORICAL SUMMARY OF MEMBERSHIP

The following table displays selected historical data as available.

Valuation Date 1-Jan	Total Count	Active Members						Number		
		Number	Age	Entry Age	Average Service	Annual Pay ($)*	Pay Increase	Disabled	Deferred Vested	Retired
2009	2,440	1,116	47.3	36.4	10.9	47,495	2.21%	122	81	1,121
2010	2,456	1,116	47.8	37.1	10.8	49,667	4.57%	124	83	1,133
2011	2,493	1,130	47.4	36.9	10.5	49,030	(1.28%)	120	82	1,161
2012	2,541	1,156	47.3	36.8	10.5	50,335	2.66%	121	77	1,187
2013	2,580	1,150	46.9	36.7	10.2	50,842	1.01%	122	75	1,233
2014	2,563	1,116	47.1	36.7	10.4	51,501	1.30%	121	77	1,249
2015	2,617	1,143	46.6	36.5	10.1	50,774	(1.41%)	114	74	1,286
2016	2,657	1,194	46.5	36.7	9.8	52,439	3.28%	112	77	1,274
2017	2,703	1,197	46.2	36.7	9.5	54,347	3.64%	109	76	1,321
2018	2,768	1,222	45.6	36.7	8.9	54,718	0.68%	101	81	1,364

* Annual Pay is the actual pay reported for the prior plan year.

MEMBERSHIP DATA FOR VALUATION
(Hired before March 1, 2015)

The summary of member characteristics presented below covers the membership as of January 1, 2018. 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	889
(b) Deferred vested members	81
(c) Terminated members due a refund	20
(d) Disabled members	101
(e) Retired members, spouses and children receiving benefits	1,364
(f) Total members in valuation	2,455

Average age of members in valuation:

(a) Active members	
Attained Age	48.1
Hire Age	36.7
(b) Deferred vested members	48.5
(c) Disabled members	64.3
(d) Retired members	69.8
(e) Spouses and children receiving benefits	72.7

Active members eligible for vested benefits as of January 1, 2018:

(a) Members under age 55 with 5 or more years of service – eligible for deferred vested benefits	462
(b) Members age 55 and over with 5 or more years of service – eligible for early or normal retirement benefits	263
(c) Members eligible for refund of contributions only	164
(d) Total	889

MEMBERSHIP DATA FOR VALUATION
(Hired on or after March 1, 2015)

The summary of member characteristics presented below covers the membership as of January 1, 2018. 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	333
(b) Deferred vested members	0
(c) Terminated members due a refund	32
(d) Disabled members	0
(e) Retired members, spouses and children receiving benefits	0
(f) Total members in valuation	365

Average age of members in valuation:

(a) Active members	
Attained Age	38.9
Hire Age	37.6
(b) Deferred vested members	N/A
(c) Disabled members	N/A
(d) Retired members	N/A
(e) Spouses and children receiving benefits	N/A

Active members eligible for vested benefits as of January 1, 2018:

(a) Members under age 55 with 10 or more years of service – eligible for deferred vested benefits	0
(b) Members age 55 and over with 10 or more years of service – eligible for early or normal retirement benefits	0
(c) Members eligible for refund of contributions only	333
(d) Total	333

MEMBERSHIP DATA RECONCILIATION

January 1, 2017 to January 1, 2018

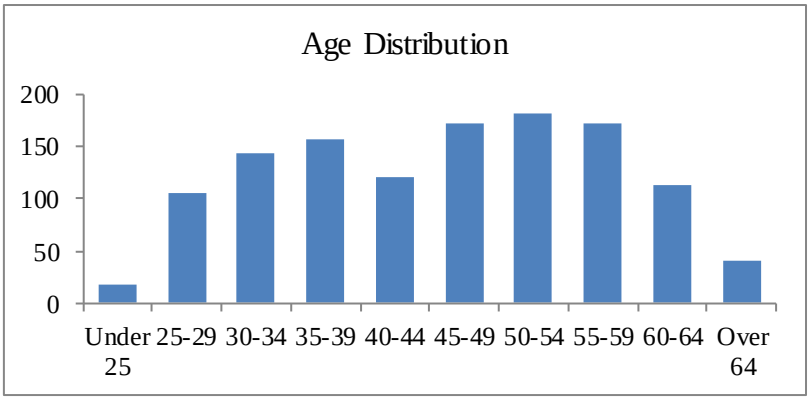
The number of members included in the valuation, as summarized in the table below, is in accordance with the data submitted by the System for eligible employees as of the valuation date.

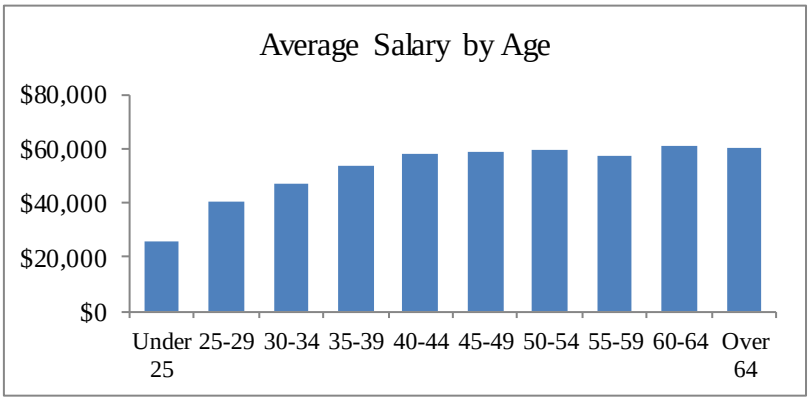
	Active Members	Termination Refund Due	Deferred Vested	Disabled	Retirees	Beneficiaries	Total
Total Members as of 1/1/2017	1,197	36	76	109	1,059	262	2,739
New Members	150	11	0	0	0	0	161
Terminations							
Rehired	0	0	0	0	0	0	0
Refunded: Paid	(25)	(9)	(4)	0	0	0	(38)
Refunded: Due	(14)	14	0	0	0	0	0
Deferred Vested	(13)	0	13	0	0	0	0
LTD	0	0	0	0	0	0	0
Retirements	(71)	0	(4)	0	75	0	0
Benefits Expired	0	0	0	0	0	(1)	(1)
Data Corrections	0	0	0	0	0	(2)	(2)
Deaths							
With Beneficiary	(1)	0	0	(3)	(13)	18	1
Without Beneficiary	(1)	0	0	(5)	(20)	(14)	(40)
Total Members as of 1/1/2018	1,222	52	81	101	1,101	263	2,820

SCHEDULE I

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Total)

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	13	5	18	$ 330,024	$ 136,636	$ 466,660
25-29	70	35	105	2,792,051	1,482,382	4,274,433
30-34	81	62	143	3,776,858	2,961,190	6,738,048
35-39	109	48	157	5,762,791	2,629,833	8,392,624
40-44	80	41	121	4,667,094	2,360,737	7,027,831
45-49	133	38	171	8,107,720	1,935,153	10,042,873
50-54	134	48	182	8,067,494	2,774,586	10,842,080
55-59	118	53	171	6,871,557	2,871,415	9,742,972
60-64	68	45	113	4,223,719	2,635,032	6,858,751
Over 64	28	13	41	1,823,759	655,687	2,479,446
Total	834	388	1,222	$46,423,067	$20,442,651	$66,865,718

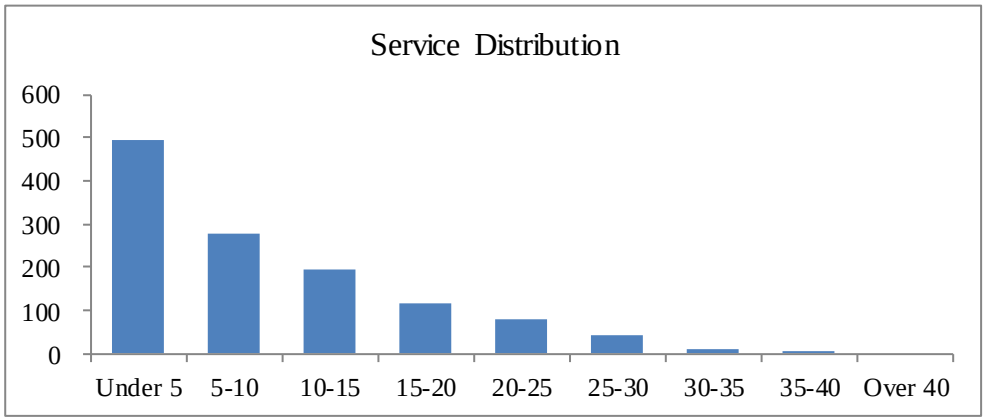




SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Total)

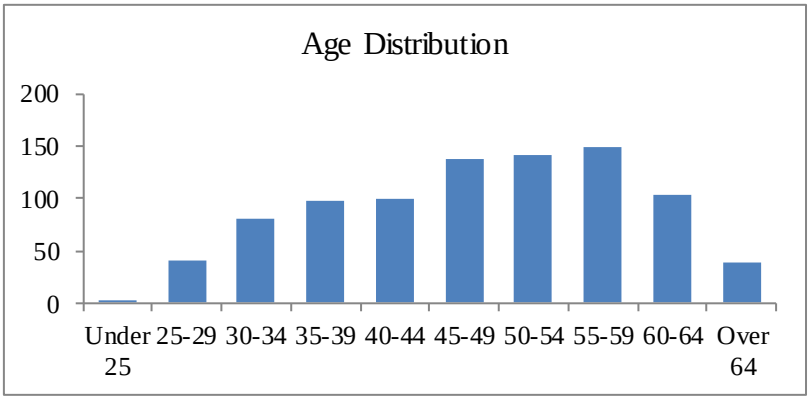
	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	18	0	0	0	0	0	0	0	0	18
25-29	91	14	0	0	0	0	0	0	0	105
30-34	94	43	6	0	0	0	0	0	0	143
35-39	86	40	28	3	0	0	0	0	0	157
40-44	44	40	25	12	0	0	0	0	0	121
45-49	50	45	27	31	15	3	0	0	0	171
50-54	51	25	40	27	24	15	0	0	0	182
55-59	35	33	41	25	16	15	5	1	0	171
60-64	21	26	19	15	21	8	3	0	0	113
Over 64	6	10	9	4	6	3	2	1	0	41
Total	496	276	195	117	82	44	10	2	0	1,222

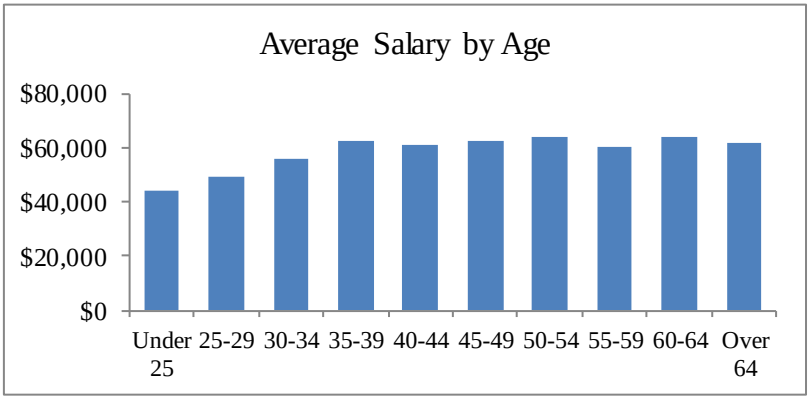


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Hired before March 1, 2015)

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	2	0	2	$ 88,779	$ 0	$ 88,779
25-29	29	12	41	1,406,953	616,417	2,023,370
30-34	48	33	81	2,599,295	1,930,435	4,529,730
35-39	65	32	97	4,104,002	1,957,331	6,061,333
40-44	69	30	99	4,155,293	1,868,471	6,023,764
45-49	108	30	138	7,040,374	1,566,105	8,606,479
50-54	106	35	141	6,788,327	2,203,935	8,992,262
55-59	104	45	149	6,459,166	2,568,260	9,027,426
60-64	62	41	103	4,057,082	2,497,173	6,554,255
Over 64	26	12	38	1,732,396	605,900	2,338,296
Total	619	270	889	$38,431,667	$15,814,027	$54,245,694

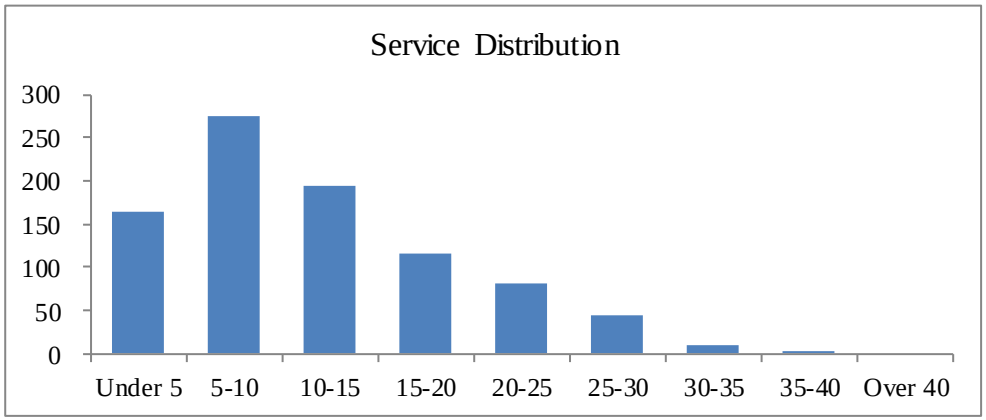




SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Hired before March 1, 2015)

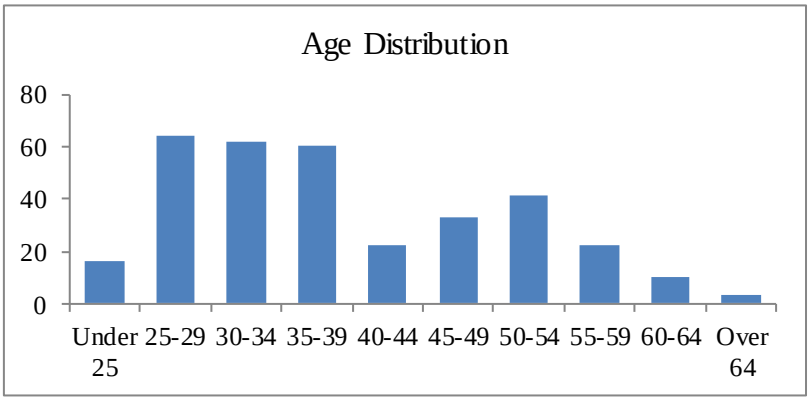
	Service									
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	2	0	0	0	0	0	0	0	0	2
25-29	27	14	0	0	0	0	0	0	0	41
30-34	32	43	6	0	0	0	0	0	0	81
35-39	26	40	28	3	0	0	0	0	0	97
40-44	22	40	25	12	0	0	0	0	0	99
45-49	17	45	27	31	15	3	0	0	0	138
50-54	10	25	40	27	24	15	0	0	0	141
55-59	14	32	41	25	16	15	5	1	0	149
60-64	11	26	19	15	21	8	3	0	0	103
Over 64	3	10	9	4	6	3	2	1	0	38
Total	164	275	195	117	82	44	10	2	0	889

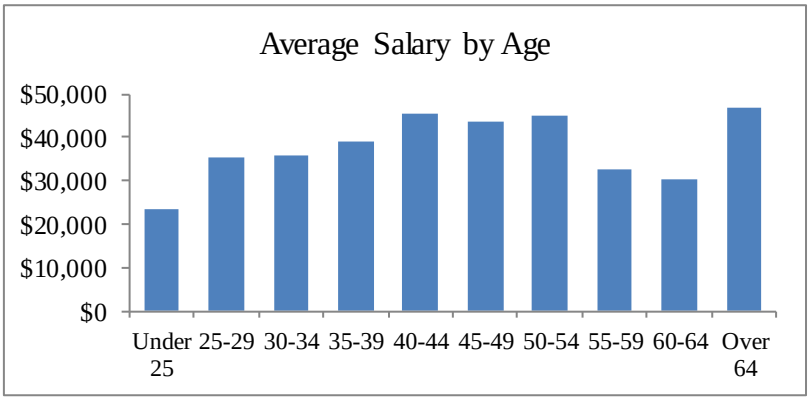


SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Hired on or after March 1, 2015)

	Count of Members			Valuation Salaries of Members		
Age	Males	Females	Total	Males	Females	Total
Under 25	11	5	16	$ 241,245	$ 136,636	$ 377,881
25-29	41	23	64	1,385,098	865,965	2,251,063
30-34	33	29	62	1,177,563	1,030,755	2,208,318
35-39	44	16	60	1,658,789	672,502	2,331,291
40-44	11	11	22	511,801	492,266	1,004,067
45-49	25	8	33	1,067,346	369,048	1,436,394
50-54	28	13	41	1,279,167	570,651	1,849,818
55-59	14	8	22	412,391	303,155	715,546
60-64	6	4	10	166,637	137,859	304,496
Over 64	2	1	3	91,363	49,787	141,150
Total	215	118	333	$7,991,400	$4,628,624	$12,620,024

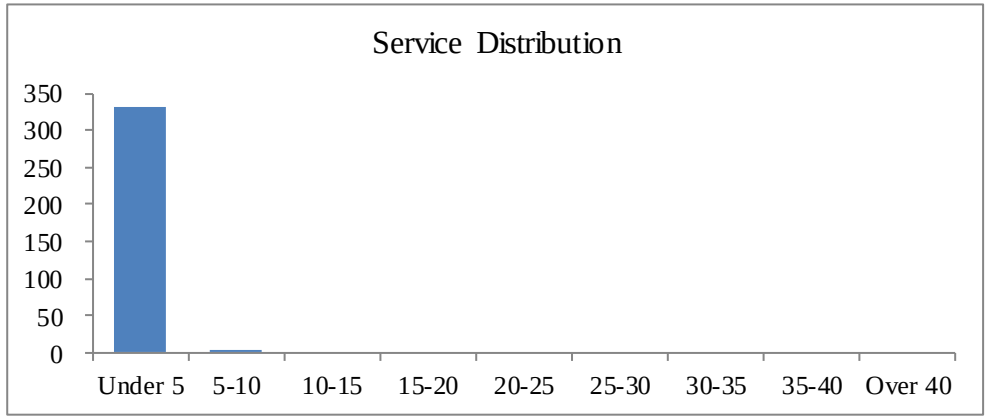




SCHEDULE I (continued)

ACTIVE MEMBERS AS OF JANUARY 1, 2018
(Hired on or after March 1, 2015)

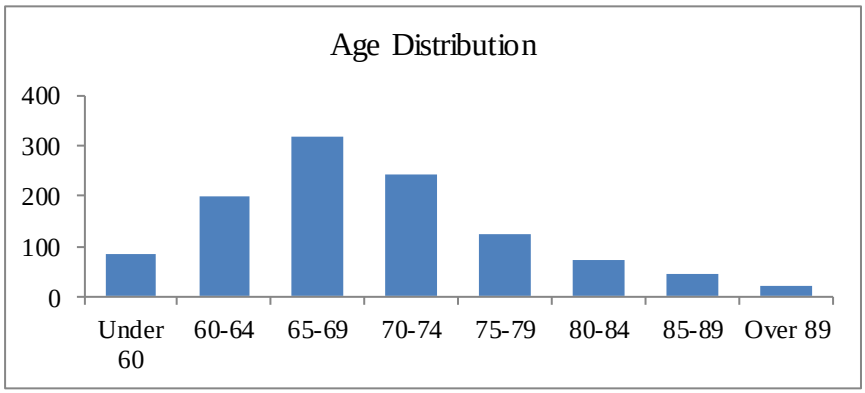
	Service								
Age	Under 5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	Over 40	Total
Under 25	16	0	0	0	0	0	0	0	0	16
25-29	64	0	0	0	0	0	0	0	0	64
30-34	62	0	0	0	0	0	0	0	0	62
35-39	60	0	0	0	0	0	0	0	0	60
40-44	22	0	0	0	0	0	0	0	0	22
45-49	33	0	0	0	0	0	0	0	0	33
50-54	41	0	0	0	0	0	0	0	0	41
55-59	21	1	0	0	0	0	0	0	0	22
60-64	10	0	0	0	0	0	0	0	0	10
Over 64	3	0	0	0	0	0	0	0	0	3
Total	332	1	0	0	0	0	0	0	0	333

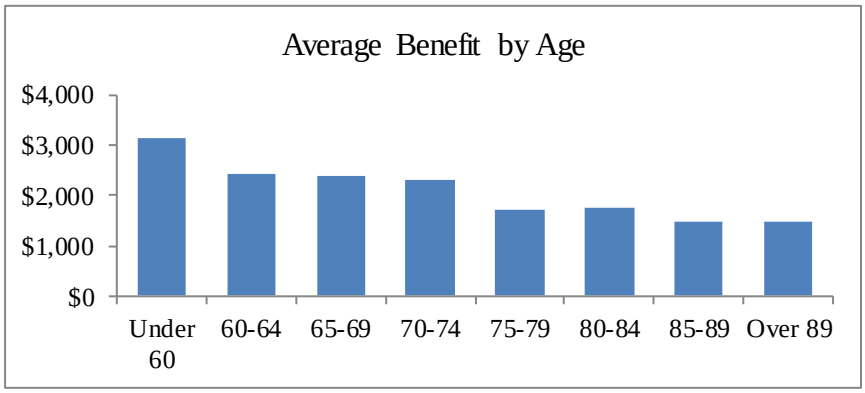


SCHEDULE II

RETIRED MEMBERS AS OF JANUARY 1, 2018

	Count of Retirees			Current Monthly Benefits		
Age	Males	Females	Total	Males	Females	Total
Under 60	53	30	83	$ 171,884	$87,043	$ 258,927
60-64	121	77	198	313,112	168,564	481,676
65-69	214	102	316	519,157	228,293	747,450
70-74	164	77	241	412,630	141,706	554,336
75-79	88	35	123	161,263	50,890	212,153
80-84	52	21	73	93,920	32,762	126,682
85-89	30	15	45	51,767	15,018	66,785
Over 89	13	9	22	23,501	9,302	32,803
Total	735	366	1,101	$1,747,234	$733,578	$2,480,812

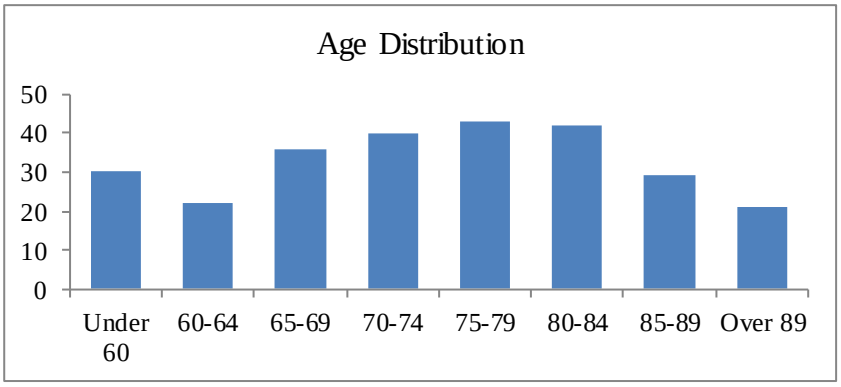


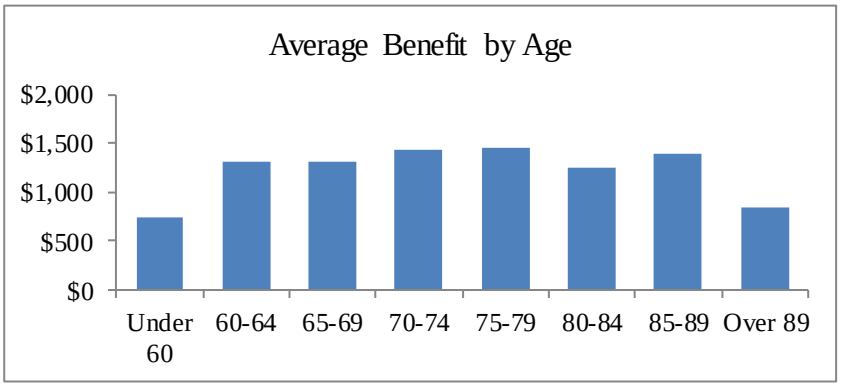


SCHEDULE III

BENEFICIARIES RECEIVING BENEFITS AS OF JANUARY 1, 2018

	Count of Beneficiaries			Current Monthly Benefits		
Age	Males	Females	Total	Males	Females	Total
Under 60	5	25	30	$ 1,912	$ 20,222	$ 22,134
60-64	2	20	22	2,417	26,243	28,660
65-69	7	29	36	5,740	41,170	46,910
70-74	4	36	40	3,680	53,667	57,347
75-79	2	41	43	3,179	59,360	62,539
80-84	2	40	42	2,807	49,428	52,235
85-89	1	28	29	348	40,007	40,355
Over 89	1	20	21	1,477	16,050	17,527
Total	24	239	263	$21,560	$306,147	$327,707





SCHEDULE IV
DEFERRED VESTED MEMBERS AS OF JANUARY 1, 2018

	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	3	3	6	2,582	1,599	4,181
35-39	2	3	5	1,462	1,934	3,396
40-44	7	5	12	10,142	4,662	14,804
45-49	9	8	17	8,759	7,942	16,701
50-54	13	7	20	17,867	7,249	25,116
55-59	9	10	19	9,252	13,829	23,081
Over 59	2	0	2	2,890	0	2,890
Total	45	36	81	$52,954	$37,215	$90,169

SCHEDULE V

DISABLED MEMBERS RECEIVING BENEFITS AS OF JANUARY 1, 2018

	Count of Members			Current 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	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	1	1	2	2,205	2,052	4,257
45-49	3	0	3	5,303	0	5,303
50-54	8	0	8	13,757	0	13,757
55-59	20	2	22	38,736	3,358	42,094
Over 59	52	14	66	75,570	19,580	95,150
Total	84	17	101	$135,571	$24,990	$160,561