NEBRASKA RETIREMENT SYSTEMS COMMITTEE

2021

LR 106

Report on Political Subdivision Underfunded Defined Benefit Retirement Plans

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2021 Summary of Underfunded Political Subdivision Defined Benefit Plan Reports

Background

In 2014, LB 759 was enacted to require reporting by political subdivisions with underfunded defined benefit plans in order to provide oversight of these entities by the Nebraska Retirement Systems Committee. The bill was codified at Neb. Rev. Stat. 13-2402. It requires any governing entity that offers a defined benefit plan which was open to new employees on January 2004, to file a report with the Nebraska Retirement Systems Committee if the most recent actuarial valuation report indicates that (1) the contributions do not equal the actuarial requirement for funding or (2) the funded ratio of the plan is less than eighty percent. The report must include, at a minimum, an analysis of the future benefit changes, contribution changes, or other proposed corrective action to improve the plan's funding condition.

Under Neb. Rev. Stat. 13-2402, the Nebraska Retirement Systems Committee may require the entity to present the report to the Committee at a public hearing. If a governmental entity fails to file the required information with the Committee, the State Auditor is authorized to audit the public pension system, or cause it to be audited at the political subdivision's own expense. The annual reporting requirement began November 1, 2014. In 2015, the reporting date was changed to October 15 of each year.

2021 Underfunded Pension Plans

During the past year, the number of defined benefit plans funded below the 80% funding level has remained the same as the number of underfunded plans in 2020. Below is a list of the eight underfunded political subdivisions and a summary of the 2019/2020 and 2020/2021 funding status for each plan:

- Douglas County Employees
- Eastern Nebraska Health Agency
- Lincoln Police and Fire
- Metro Area Transit Hourly Employees
- Omaha Civilian Employees
- Omaha Police and Fire
- Omaha Public Power District
- Omaha Public Schools – Omaha School Employees Retirement

POLITICAL SUBDIVISION	2020/2021 FUNDING STATUS*	2019/2020 FUNDING STATUS*
Douglas County Employees	70.9%	66.8%
Eastern Nebraska Health Agency	Not Available – biennial valuation	73.0%
Lincoln Police and Fire	77.6%	77.7%
Metro Area Transit Hourly Employees	68.5%	66.7%
Omaha Civilian Employees	52.4%	51.8%
Omaha Police and Fire	55.1%	54.3%
Omaha Public Power District	72.0%	68.9%
Omaha Public Schools (OSERS plan)	62.0%	63.0%

*Funding status year varies because some plans are based on calendar year or a September through August plan year so current plan year data is not yet available.

Required Reporting Information

The Committee created a Reporting Form which was forwarded to each political subdivision in September 2021. Each entity was asked to submit the information identified on the Form. Reporting materials provided by each governmental entity are included in the Appendices to this Report. A public hearing was conducted by the Committee on November 5, 2021. The following information was presented:

1. Please list the following information for <u>plan years 2017 through current plan year 2021</u>:
   a. Funding status
   b. Assumed rate of return
   c. Actual investment return
   d. Member and employer contribution rates -- <u>percentage</u>
   e. Normal cost – <u>percentage</u>
   f. Actuarially required contribution (ARC) – <u>percentage & dollar amount</u>
   g. ARC contribution – <u>dollar amount contributed & percentage of ARC actually contributed</u>

2. Please provide a brief narrative of the circumstances that led to the current underfunding of the retirement plan.

3. Have there been any changes in the actuarial methods and/or assumptions since the previous actuarial valuation report? If so, please describe.

4. In what year is the plan's funding ratio expected to reach 100%?

5. What is the method used to amortize the unfunded actuarial liability?

6. Please provide a description of corrective actions implemented to improve the funding status of the plan including, but not limited to, benefit changes, increased contribution rates and/or employer contributions. Please include any actuarial projections based on these changes and attach a copy of the actuarial projections.

7. Describe recent or ongoing negotiations with bargaining groups that may impact the plan's funding.

8. Please attach a copy of the most recent Actuarial Experience Study and year of next Study.

9. What is the current assumed rate of return? If the rate has been changed in the past year, or if there are plans to review the rate in the upcoming year, please describe.

10. Please attach the most recent actuarial valuation report. If the valuation report is completed biannually (or less often) please include an updated report for the interim year/s, if available.

Summaries of Plan Funding and Benefit Changes

Douglas County Employees:

The plan's funding ratio is currently 70.9% -- a significant increase from last year's ratio of 66.8%. The investment return was 13.6% following the previous year's investment return of 19.7%.

The Plan's funding level has fluctuated dramatically over the past 25 years. In 1996 the funding ratio was 97.8%. A number of benefit enhancements were then adopted and by 2004 the funding ratio had fallen to 64.8%. Despite an increase in member and employer contributions in 2005 to 8.5%, poor stock market performance during the Great Recession in 2008-2009 negatively impacted the plan's funded ratio, which reached a low point of 57.8% in 2010.

A number of substantive changes were made to the Plan in 2011 and during the past 6 years to reduce the plan's liability and reduce the funding ratio.

> In 2015, the Long-Term Disability (LTD) program was removed from the Pension Plan and put into a separate fully insured benefit plan.
> In 2016, the interest crediting rate on member contributions was changed from 5% to the 10-year Treasury Rates in effect on November 1st of the preceding plan year. The combined impact of these changes was a $3.6 million decrease in the AAL and a 0.6% increase in the Plan's funded ratio.
> In the 2017 Experience Study, actuarial updates were made to the mortality table, the amortization period of the unfunded liability was reduced, and the rates of early retirement and termination of employment were revised.
> Following a 2019 Experience Analysis, in January 2020, actuarial updates were made again to the mortality table and the salary scale used in the actuarial assumptions was increased. The net impact of these changes was a 1.0% decrease to the funding status.

Effective in 2021, Corrections guards were extended the same plan benefit provisions as Sheriff deputies and the guard's member contribution rate was increased by an additional 2% of pay. Douglas County reports that this benefit change had no impact on the plan's funding status or actuarial accrued liability.

Douglas County Employees Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	CNTY RATES	UAL	% OF ARC PAID
2021	70.9%	7.5%	13.6%	10.7%	17.3%	8.5%	8.5%	$159,200,000	97.3%
2020	66.8%	7.5%	19.7%	11.0%	18.2%	8.5%	8.5%	$173,600,000	94.3%
2019	65.6%	7.5%	-2.8%	10.8%	18.1%	8.5%	8.5%	$168,000,000	100.8%
2018	68.0%	7.5%	16.8%	11.2%	18.0%	8.5%	8.5%	$148,540,000	102.2%
2017	67.2%	7.5%	6.8%	10.9%	17.5%	8.5%	8.5%	$140,285,000	104.7%

Eastern Nebraska Human Services Agency:

Since an actuarial valuation report is conducted only every other year, there is no new funding level to report. The actual investment return for 2020 was 9.9% compared to the investment return of 14.0% in 2019. The assumed rate of 7.0% has not changed since the inception of the plan. Eastern Nebraska Human Services Agency has consistently paid over 100% of its ARC; last year it paid 103.1% of its ARC.

For the 2020 actuarial valuation, the mortality table was updated to the PubG-2010(B) mortality table projected with MP 2019 improvement scale. Early retirement rates were added for ages 55 to 61. There were no other changes in the actuarial assumptions or methods.

Based on forecasts as of 1/1/2020, the Plan is forecasted to attain a 100% funding ratio in 2047 based on the January 1, 2020 census data and assets and projected with assumptions as described in the January 1, 2020 valuation report. This reflects the Agency increasing employer contributions by 0.5% annually since 2010, reaching 9.5% in 2018. Beginning November 1, 2021, the employer contribution rate again increased to 10% and employee contributions from 2.75% to 3%.

The most recent forecast study was completed in October 2020 which includes two scenarios, 1) the current contribution schedule of 9.5% employer and 2.75% employee and 2) the expected increase to 10% employer and 3% employee. Each forecast shows steady future annual improvement in the funding status with the increased contribution schedule attaining a funding status exceeding 80% in 10 years, 4 years earlier than with no change to the contribution schedule. These forecasts of funded status would result in higher funded percentages if updated for investment gains subsequent to January 1, 2020.

The Eastern Nebraska Human Services Agency (ENHSA) was established in 1974 by Cass, Sarpy, Douglas, Dodge and Washington counties. The purpose of this cooperative agreement was to promote and administratively support ENOA (Eastern Nebraska Office of Aging), ENCOR and the Alpha School. The administrative structure is county government with one representative from each of the five county boards serving on the governing board. The Agency serves several thousand individuals including senior citizens and individuals who are intellectually and developmentally disabled.

Eastern Nebraska Human Services Agency Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	AGENCY RATES	UAL	% OF ARC PAID
2020	N.A.	7%	9.9%	N.A.	13.46%	2.75%^	9.5%^	N.A.	N.A.
2019	73%	7%	14.0%	7.4%	13.46%	2.75%	9.5%	$15,810,000	103.1%
2018	N.A.	7%	-2.4%	N.A.	12.19%	2.75%	9.5%	N.A.	104.1%
2017	74%	7%	11.7%	7.4%	12.19%	2.75%	9.5%	$14,245,604	107.0%
2016	N.A.	7%	6.8%	N.A.	11.55%	2.75%	9.0%	N.A.	108.7%

*Eastern Nebraska Human Services Agency Plan year ends December 31. Actuarial Valuations are conducted every other year.
^November, 2021 employee contribution rate increases to 3% and the agency/employer rate increases to 10%.

Lincoln Police and Fire

The Lincoln Police and Fire Plan is the only underfunded plan that has been able to rise above the 80% reporting threshold for any period of time since the reporting requirement was enacted in 2014. In 2017 and 2018 the Plan's funding levels were 81% and 82% respectfully.

In 2019, a 2.2% investment return and new actuarial assumptions were adopted from the new Experience Study. The investment return assumption was reduced from 7.5% to 7.25% over a five-year period in increments of 0.05% per year—with the ultimate rate attained in 2023. The investment return assumption in the August 31, 2020 valuation is 7.40% compared to 7.45% in the 2019 valuation. The decrease in the investment return assumption increased the unfunded actuarial accrued liability by $1.9 million and increased the actuarial contribution rate by 0.42%.

This combination of factors caused the funding level to decrease slightly from 77.7% in 2019 to 77.6% in 2020. The UAAL increased from $72.4 million in 2019 to $77 million in 2020.

The City of Lincoln continues to consistently contribute at least one hundred percent of the ARC each year as indicated in the chart below. In addition, the City of Lincoln has taken several major steps in the past six years to improve the Plan's funding. It commissioned a pension task force in 2015 with the charge to review the plan and make recommendations for improvements. This led to the adoption of two new ordinances. Ordinance #20343 was adopted in 2016, which merged the assets of the 13th Check COLA Pool Fund with the assets of the regular Police and Fire Pension Plan. Ordinance #20495 adopted in 2017, which implemented a new funding policy to improve the future funding of the Plan -- specifically to address the systematic funding of the Unfunded Accrued Liability.

If all current assumptions are met, the actuary projects the Plan will reach 80% funding level in 2027 and 100% funding in 2043.

Lincoln Police and Fire Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST. RATE	ACTUAL INVESTMENT. RETURN	NORMAL COST	TOTAL ARC %	EMPLOYEE RATES	CITY RATES	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	77.6%	7.40%	11.1%	15.86%	19.13%	7.5%	19.13%	N.A
2019	77.7%	7.45%**	2.2%	15.71%	18.76%	7.38%	18.76%	102.6%
2018	82.2%	7.5%	7.5%	16.52%	16.52%	7.23%	16.52%	100.8%
2017	80.8%	7.5%	11.2%	16.52%	17.08%	7.20%	17.08%	100.0%
2016	79.9%	7.5%	7.34%	16.47%	17.32%	7.06%	17.32%	100.9%

*Lincoln Fire & Police Plan year ends August 31 so the 2021 Valuation Report is not yet available.

**The assumed investment return was reduced to 7.25% -- lowered in increments of 0.05% per year until reaching the ultimate rate of 7.25% in the 2023 valuation

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Metro Area Transit Hourly Employees:

The most recent investment return was 14.24%. Since 2009, the assumed rate has been reduced numerous times. In 2009 it was reduced from 8% to 7.5%; in 2015 it was reduced to 7.0%; in 2016 it was reduced from to 6.75%, in 2020 it was reduced to 6.50%, and in 2021 it was reduced to 6.25% (which is currently the lowest assumed rate among all reporting underfunded plans). The current funded ratio is 68.5% which is almost a 2% increase from last year's funding ratio of 66.7%.

Since 2017, the Metro Area Hourly Pension Committee members have amended the plan document to increase the employer and employee contribution rates.

> The employer contribution rate increased from 6.5% to 7.75% and the employee contribution rate increased from 6% to 7.5% during that same period.

> In addition, a one-time lump sum contribution was made to the Plan in November of 2020 to increase the actual contribution as a percentage of payroll effectively to 11.1%.

For those employees hired on or after January 1, 2018, the Pension Committee also:

> changed the normal retirement date from age 65 to the age when the employee reaches full retirement for purposes of receiving Social Security benefits

> eliminated the early retirement option

> the benefit factor percentage used in the calculation of the monthly benefit was also changed to a tiered structure based on years of service in lieu of the current method of using the same benefit factor percentage regardless of years of service.

To reflect the increasing average age of the Plan participants, the asset allocation has been modified to reduce the volatility of returns and meet the actuarial assumed rate of return. To increase net investment returns, the entire portfolio has been indexed, reducing Plan investment management fees from 71 basis points to 9 basis points. An incremental change in the net asset allocation guidelines gradually reduces the bond investment while increasing the equity investment over a 5-year period beginning in 2021.

Metro Area Transit Hourly Employees Summary

YEAR	FUNDED RATIO	ASSUMED INVEST. RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	METRO RATES	UAL	% OF ARC PAID
2021	68.5%	6.25%	14.24%	8.81%	N.A.	7.5%	7.75%	$12,800,000	TBD
2020	66.7%	6.5%	20.06%	8.50%	N.A.	7.0%	7.5%*	$12,900,000	110.35%
2019	67.3%	6.75%	-4.84%	7.36%	N.A.	7.0%	7.5%	$11,700,000	93.84%
2018	77%	6.75%	13.35%	7.21%	N.A.	7.0%	7.5%	$11,400,000	102.35%
2017	71%	6.75%	5.80%	7.39%	N.A.	6.0%	6.5%	$11,500,000	94.42%

* A one-time lump sum contribution was made to the Plan in November of 2020 to increase the actual contribution as a percentage of payroll effectively to 11.1%.

Omaha Civilian Employees:

The funded ratio last year increased slightly from 52.4% to 53.3%. Last year's return on investment was 12.7%; this year's investment return is not yet available.

The percentage of the ARC that the City of Omaha has paid over the past 5 years has declined. In 2016, the City of Omaha paid 106.81%, in 2017 it paid 91.2%, in 2018 it paid 86.8%, and last year 87.4% of the ARC. No more recent data is available. Last year the Unfunded Actuarial Liability decreased slightly from $230.2 million to $229 million.

The unfunded actuarial liability (UAL) is funded on a "layered" basis, with the initial base funded as a level-percent of payroll over a 26-year closed period that began January 1, 2016. Each experience base is funded as a level percent of payroll over a 20-year closed period.

The City of Omaha reports that additional savings should be seen in future years as members covered by the provisions of the Cash Balance Plan for employees hired on or after March 1, 2015 continue to grow. The most recent projections show the system will reach fully funded status in 2048.

The City of Omaha has reached agreement with all its civilian bargaining groups for a period of either 2018 to 2021 or 2018 to 2020. None of these labor agreements addressed pension changes or reform, instead they focused on healthcare reform. The City of Omaha reports that parties will continue to evaluate the pension system and will continue to address it after allowing the recent changes to be in effect for a period of time. It further reports that it has been involved in negotiations with its largest civilian group whose Collective Bargaining Agreement expired at the end of 2020, and with the other groups whose agreements end at the end of 2021. The City of Omaha does not anticipate that additional pension changes/reform will be addressed in any of the agreements being negotiated.

Omaha Civilian Employees Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	CITY RATES	UAL	% OF ARC PAID
2020*	53.3%	7.5%	12.6%	10.34%	30.269%	10.075%	18.775%	$229,116,410	N.A.
2019	52.4%	7.5%	12.7%	9.74%	30.954%	10.075%	18.775%	$230,182,264	87.40%
2018	51.8%	7.5%	14.7%	9.818%	31.662%	10.075%	18.775%	$232,506,762	86.80%
2017	53.0%	7.5%	-.3%	9.923%	31.056%	10.075%	18.775%	$223,286,679	91.02%
2016	55.5%	8%	13.1%	9.721%	27.740%	10.075%	18.775%	$197,537,024	106.81%

*Omaha Civilian Plan Year ends December 31, therefore the valuation report based on the 2021 Plan year is not yet available.

Omaha Police and Fire:

The investment return last year was; 9.28%. The funded ratio last year increased from 54.3% to 55.1%. Though percentage of the ARC paid by the City of Omaha continues to decline. In 2018 and 2019 Omaha paid 96% of its ARC and in 2020 it paid 94% -- a continuing decline from the percent contributed in 2016 which was 101.46%. This year's ARC payment is pending. The Unfunded Actuarial Liability last year increased from $669 million to $693 million. The most recent projections have the system fully funded in in 2046 if all assumptions are met.

The employees who are part of the COPFRS Plan are from four bargaining groups. The Omaha Police Officers Association entered into a collective bargaining agreement for 2021 through 2025. As part of that agreement, the City of Omaha and the employees have agreed to contribute an additional 0.75% of wages into the system from 2021 to 2023. The Agreement also made another prospective change providing that COPFRS is no longer responsible for medical payments for those who receive service-connected disability pensions and whose bills are not covered under Workers Compensation.

Police Management has a collective bargaining agreement for 2021 which does not include any additional pension contributions.

The City entered into a new collective bargaining agreement with the Professional Firefighters' Association for a term of 2019 through 2023. This agreement did not include any additional pension contributions or any changes in the pension system.

In late 2019, the City entered into a new collective bargaining agreement with the Fire Management group for a term of 2018 through 2022. That agreement did not include any additional pension contributions or any changes to the pension system.

Omaha Police and Fire Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EMPLOYEE RATES	CITY RATES	UAL	% OF ARC PAID
2020*	55.1%	7.75%	9.23%	21.29%	53.87%	16.10%-17.15%	32.97%-34.44%	$693,166,515	N.A.
2019	54.3%	7.75%	9.28%	21.92%	52.955%	16.10%-17.23%	32.97%-34.44%	$663,894,041	94.15%
2018	52.4%	7.75%	17.24%	22.03%	53.447%	16.10%-17.23%	32.97%-34.44%	$669,449,659	96.06%
2017	52.1%	7.75%	-2.33%	22.21%	53.199%	16.10%-17.23%	32.97%-34.44%	$648,833,922	96.29%
2016	51.8%	8%	15.0%	21.99%	50.212%	15.35%-17.23%	32.97%-33.67%	$611,737,378	101.46%

*Omaha Police & Fire Plan Year ends December 31, therefore the valuation report based on the 2021 Plan year is not yet available.

Omaha Public Power District:

The Omaha Public Power District (OPPD) Plan year is based on the calendar year so the 2021 Valuation Report is not yet available. In 2020 the funding ratio increased to 72% from the previous year's funding ratio of 68.9%. The investment return in 2020 was 13.30%. OPPD has consistently paid 100% of its ARC in each of the previous five reporting years.

OPPD has been working to address funding and long-term sustainability of the plan. In 2012 the Board moved to a Cash Balance Plan for employees hired on and after January 1, 2013. In 2013, OPPD changed early retirement eligibility, which generally prevents employees from receiving early retirement benefits before age 55.

In 2017 negotiations with bargaining units resulted in an increase in employee contributions, which gradually increase beginning in 2018 at 6.7%, 7.2% in 2019, 7.7% in 2020, 8.3% in 2021, and 9.0% in 2022 where it will remain. Negotiations with bargaining groups occur on an ongoing basis.

The district again updated the mortality table in 2020 to the PUB-2010 General table projected using Scale MP-2020 with generational projection. The mortality table for disabled participants was updated from the PUB-2010 General Disabled Retiree table projected using the Scale MP-2019 with generational projection to the PUB-2010 General Disabled Retiree table projected using the Scale MP-2020 with generational projection. In addition, the following assumptions were changed:

- ➤ Active retirement rates
- ➤ Withdrawal rates
- ➤ Salary Scale
- ➤ Terminated vested (VDRA) commencement age

The actuarial value of assets method was also changed to a 5-year smoothing with a fresh start, (i.e. actuarial value equal to market value) as of January 1, 2021. The Plan's unfunded liability is amortized over 20 years as a level dollar amount. A new amortization base is established each year for unexpected changes in the unfunded liability such as plan amendments, assumption changes or gains/losses. Because of the 20-year amortization period, the plan is not projected to be fully funded until the end of the last amortization period, which is 2041, based on the new amortization bases that were effective January 1, 2021.

Omaha Public Power District Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	DISTRICT RATES	UAL	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	72.0%	7.0%	13.30%	12.2%	29.4%	8.3%	29.4%	$449,607,761	N.A.
2019	68.9%	7.0%	18.99%	12.1%	31.6%	7.7%	31.6%	$488,075,940	100%
2018	67.8%	7.0%	-6.34%	12.3%	33.0%	7.2%	33.0%	S495,772,429	100%
2017	70.0%	7.0%	16.49%	12.1%	29.8%	6.7%	29.8%	$442,395,055	100%

*Omaha Public Power District Plan year ends December 31 so the 2021 Valuation Report is not yet available.

Omaha Public School (OSERS):

The investment return was 6.0% following last year's investment return of 5.2%. For three consecutive years in 2019, 2020, and 2021 the Omaha Public School district (OPS) has exceeded its required contributions to the OSERS Plan. In 2019 it contributed $3.1 million more than the recommended ARC. In 2020, OPS contributed $1.8 million more than the recommended ARC, and in 2021 OPS contributed $1.945 million more than the recommended ARC.

Though the OSERS' Plan funding status decreased slightly from 63% to 62%, the unfunded actuarial liability increased from $848 million to $914 million.

The actuarial contribution rate is computed based on the Board of Trustees' funding policy. At the March 6, 2019 OSERS Board of Trustees meeting, the Trustees modified the system's funding policy to reset the legacy amortization base equal to the UAAL as of January 1, 2019 with payments calculated as a level percentage of payroll over a closed 30-year period. New layers of UAAL that occur in the future will be amortized over new 30-year periods.

The current projected actuarial required contributions (ARCs), if all assumptions are met, for the next five years are as follows:

Year	Amount of Projected ARC
2022	$22.2 million
2023	$23.5 million
2024	$24.6 million
2025	$25.6 million
2026	$26.6 million

A new Experience Study is currently being conducted. The draft Study recommends lowering the investment return assumption from 7.5% to 7.0%. One alternative presented by the actuary is to adopt the new investment rate incrementally. The Study has not yet been finalized.

Omaha School Employees Retirement System Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	OPS RATES	UAL in millions	**STATE 2% PAID in millions	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	62%	7.5%	6.0%	12.76%	N.A.	9.78%	9.878%	$914	$7.30	109%
2019	63%	7.5%	5.2%	12.88%	27.25%	9.78%	9.878%	$848	$7.42	108%
2018	63%	7.5%	-2.4%	12.96%	26.97%	9.78%	9.878%	$814	$7.11	107%
2017	64%	7.5%	13.5%	13.00%.	27.05%	9.78%	9.878%	$771	$6.90	100%

*Omaha School Employees Retirement Plan year ends December 31 so the 2021 Valuation Report is not yet available.

**The percent of ARC paid as noted in the actuarial valuation reports includes contributions by the State of Nebraska of the statutorily required 2% of total compensation of all OSERS members.

Summary Charts of 2016/17-2020/21
Actuarial and Investment Information

Douglas County Employees Plan

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	CNTY RATES	UAL	% OF ARC PAID
2021	70.9%	7.5%	13.6%	10.7%	17.3%	8.5%	8.5%	$159,200,000	97.3%
2020	66.8%	7.5%	19.7%	11.0%	18.2%	8.5%	8.5%	$173,600,000	94.3%
2019	65.6%	7.5%	-2.8%	10.8%	18.1%	8.5%	8.5%	$168,000,000	100.8%
2018	68.0%	7.5%	16.8%	11.2%	18.0%	8.5%	8.5%	$148,540,000	102.2%
2017	67.2%	7.5%	6.8%	10.9%	17.5%	8.5%	8.5%	$140,285,000	104.7%

Eastern Nebraska Health Agency Plan

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	AGENCY RATES	UAL	% OF ARC PAID
2020*	N.A.	7%	9.9%	N.A.	13.46%	2.75%^	9.5%^	N.A.	N.A.
2019	73%	7%	14.0%	7.4%	13.46%	2.75%	9.5%	$15,810,000	103.1%
2018	N.A.	7%	-2.4%	N.A.	12.19%	2.75%	9.5%	N.A.	104.1%
2017	74%	7%	11.7%	7.4%	12.19%	2.75%	9.5%	$14,245,604	107.0%
2016	N.A.	7%	6.8%	N.A.	11.55%	2.75%	9.0%	N.A.	108.7%

*Eastern Nebraska Human Services Agency Plan year ends December 31. Actuarial Valuations are conducted every other year.

Lincoln Police and Fire Plan Summary

YEAR	FUNDED RATIO	ASSUMED INVEST. RATE	ACTUAL INVESTMENT. RETURN	NORMAL COST	TOTAL ARC %	EMPLOYEE RATES	CITY RATES	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	77.6%	7.40%	11.1%	15.86%	19.13%	7.5%	19.13%	N.A
2019	77.7%	7.45%**	2.2%	15.71%	18.76%	7.38%	18.76%	102.6%
2018	82.2%	7.5%	7.5%	16.52%	16.52%	7.23%	16.52%	100.8%
2017	80.8%	7.5%	11.2%	16.52%	17.08%	7.20%	17.08%	100.0%
2016	79.9%	7.5%	7.34%	16.47%	17.32%	7.06%	17.32%	100.9%

*Lincoln Fire & Police Plan year ends August 31 so the 2021 Valuation Report is not yet available.
**The assumed investment return was reduced to 7.25% -- lowered in increments of 0.05% per year until reaching the ultimate rate of 7.25% in the 2023 valuation

Metro Area Transit Hourly Employees

YEAR	FUNDED RATIO	ASSUMED INVEST. RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	METRO RATES	UAL	% OF ARC PAID
2021	68.5%	6.25%	14.24%	8.81%	N.A.	7.5%	7.75%	$12,800,000	TBD
2020	66.7%	6.5%	20.06%	8.50%	N.A.	7.0%	7.5%*	$12,900,000	110.35%
2019	67.3%	6.75%	-4.84%	7.36%	N.A.	7.0%	7.5%	$11,700,000	93.84%
2018	77%	6.75%	13.35%	7.21%	N.A.	7.0%	7.5%	$11,400,000	102.35%
2017	71%	6.75%	5.80%	7.39%	N.A.	6.0%	6.5%	$11,500,000	94.42%

* A one-time lump sum contribution was made to the Plan in November of 2020 to increase the actual contribution as a percentage of payroll effectively to 11.1%.

Omaha Civilian Employees Plan

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	CITY RATES	UAL	% OF ARC PAID
2020*	53.3%	7.5%	12.6%.	10.34%	30.269%	10.075%	18.775%	$229,116,410	N.A.
2019	52.4%	7.5%	12.7%	9.74%	30.954%	10.075%	18.775%	$230,182,264	87.40%
2018	51.8%	7.5%	14.7%	9.818%	31.662%	10.075%	18.775%	$232,506,762	86.80%
2017	53.0%	7.5%	-.3%	9.923%	31.056%	10.075%	18.775%	$223,286,679	91.02%
2016	55.5%	8%	13.1%	9.721%	27.740%	10.075%	18.775%	$197,537,024	106.81%

*Omaha Civilian Plan Year ends December 31, therefore the valuation report based on the 2021 Plan year is not yet available.

Omaha Police and Fire Plan

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EMPLOYEE RATES	CITY RATES	UAL	% OF ARC PAID
2020*	55.1%	7.75%	9.23%	21.29%	53.87%	16.10%-17.15%	32.97%-34.44%	$693,166,515	N.A.
2019	54.3%	7.75%	9.28%	21.92%	52.955%	16.10%-17.23%	32.97%-34.44%	$663,894,041	94.15%
2018	52.4%	7.75%	17.24%	22.03%	53.447%	16.10%-17.23%	32.97%-34.44%	$669,449,659	96.06%
2017	52.1%	7.75%	-2.33%	22.21%	53.199%	16.10%-17.23%	32.97%-34.44%	$648,833,922	96.29%
2016	51.8%	8%	15.0%	21.99%	50.212%	15.35%-17.23%	32.97%-33.67%	$611,737,378	101.46%

*Omaha Police & Fire Plan Year ends December 31, therefore the valuation report based on the 2021 Plan year is not yet available.

Omaha Public Power District

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	DISTRICT RATES	UAL	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	72.0%	7.0%	13.30%	12.2%	29.4%	8.3%	29.4%	$449,607,761	100%
2019	68.9%	7.0%	18.99%	12.1%	31.6%	7.7%	31.6%	$488,075,940	100%
2018	67.8%	7.0%	-6.34%	12.3%	33.0%	7.2%	33.0%	$495,772,429	100%
2017	70.0%	7.0%	16.49%	12.1%	29.8%	6.7%	29.8%	$442,395,055	100%

*Omaha Public Power District Plan year ends December 31 so the 2021 Valuation Report is not yet available.

Omaha School Employees Retirement System Summary

YEAR	FUNDED RATIO	ASSUMED INVEST RATE	ACTUAL INVEST RETURN	NORMAL COST	TOTAL ARC %	EE RATES	OPS RATES	UAL in millions	**STATE 2% PAID in millions	% OF ARC PAID
2021	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
2020	62%	7.5%	6.0%	12.76%	N.A.	9.78%	9.878%	$914	$7.30	109%
2019	63%	7.5%	5.2%	12.88%	27.25%	9.78%	9.878%	$848	$7.42	108%
2018	63%	7.5%	-2.4%	12.96%	26.97%	9.78%	9.878%	$814	$7.11	107%
2017	64%	7.5%	13.5%	13.00%.	27.05%	9.78%	9.878%	$771	$6.90	100%

*Omaha School Employees Retirement Plan year ends December 31 so the 2021 Valuation Report is not yet available.

**The percent of ARC paid as noted in the actuarial valuation reports includes contributions by the State of Nebraska of the statutorily required 2% of total compensation of all OSERS members.

The following is a list of the contribution amounts contributed by the State of Nebraska to the OSERS Plan:

Year	Amount of State Contribution
2020	$7,301,786
2019	$7,420,302
2018	$7,110,567
2017	$6,896,530

Conclusion

Eight political subdivisions with underfunded defined benefit plans reported this year which is the same number of political subdivisions that reported the previous year.

Investment Returns

Seven of the eight plans reported strong investment returns again this year.

- Douglas County reported a return of 13.6% following last year's return of 19.7%
- Eastern Nebraska Human Services Agency reported a return of 9.9% following last year's return of 14.0%
- Lincoln Police and Fire reported a return of 11.1% which far exceeded the 2019 investment return of 2.2%
- Metro Area Transit Hourly reported a return of 14.24% following last year's return of 20.06%
- Omaha Civilian Employees reported a return of 12.6% similar to last year's return of 12.7%.
- Omaha Police and Fire reported a return of 9.23% similar to last year's return of 9.28%
- Omaha Public Power District reported a return of 13.30% following last year's return of 18.99%.

The Omaha School Employees Retirement System Plan (OSERS) was the exception. Omaha Public School district (OPS) reported that the investment return this past year was 6.0% following the previous year investment return of 5.2%. When the Nebraska Investment Council took over investment authority for the plan in 2017, it moved quickly to reposition the liquid portion of the OSERS portfolio, however, the OSERS investment portfolio continues to have over a third of its investments tied up in illiquid private investments.

Funding Levels

Of the seven plans that reported funding levels, six plans experienced an increase in funding level compared to the previous year. Increases ranged between .8% and 4.1%. Douglas County's funding level increased to 70.9% from 66.8% -- an increase of 4.1%; Metro Area Transit Hourly increased to 68.5% from 66.7% -- an increase of 1.8%; Omaha Public Power District increased to 72.0% from 68.9% -- a 3.1% increase; City of Omaha Civilian Employees funding level increased to 53.3% from 52.4% -- a .9% increase; and Omaha Police and Fire increased to 55.1% from 54.3% -- an increase of .8%.

The funding level for two plans decreased. Lincoln Police and Fire decreased slightly to 77.6% compared to the previous year's funding level of 77.7% -- a very slight .1% decrease. OSERS dropped slightly from 62% compared to the previous year funding level of 63% -- a 1.0% decrease.

Eastern Nebraska Human Services Agency only conducts biennial valuation reports so there is no new funding level reported for this year.

ARC Contributions

Four of the eight political subdivisions contributed at least 100% of its ARC payment – Eastern Nebraska Human Services Agency, Metro Area Transit Hourly, Omaha Public Power District and Omaha Public Schools. Lincoln Police and Fire most recent ARC contribution is not yet available; however, since 2016 the City of Lincoln has consistently contributed at least 100% of the ARC.

Douglas County paid 97.3% of its ARC.

The most recent reporting (last year) of ARC contributions indicates that the City of Omaha contributed 94.15% of the Omaha Police and Fire ARC and 87.4% of the Omaha Civilian Employees' ARC, which are the lowest percentages contributed by any of the reporting political subdivisions.

Investment Return Assumptions

In the past year and in the current year, two plans have conducted experience studies in which the plan's actuary has recommended lowering the investment return assumption for the plan.

- ➢ In the 2019 Lincoln Police and Fire Experience Study, the investment return assumption was reduced from 7.5% to 7.25% over a five-year period in increments of 0.05% per year—with the ultimate rate attained in 2023. The investment return assumption in the August 31, 2020 valuation is 7.40% compared to 7.45% in the 2019 valuation.

- ➢ Metro Are Transit Authority – Hourly has reduced the investment numerous times since 2009. In 2009 it was reduced from 8% to 7.5%; in 2015 it was reduced to 7.0%; in 2016 it was reduced from to 6.75%, in 2020 it was reduced to 6.50%, and in 2021 it was reduced to 6.25% (which is currently the lowest assumed rate among all reporting underfunded plans).

In three plans, the actuary has not recommended lowering the investment return assumption. Three plans are currently undergoing an Experience Study but the results are not yet available.

- ➢ The Omaha School Employees Retirement System (OSERS) is in the process of conducting an Experience Study. The actuary has recommended reducing the 7.5% investment rate to 7.0%. One of the options under consideration is to reduce the rate incrementally over the next four years.

- ➢ City of Omaha Civilian Employees and the City of Omaha Police and Fire Plans are each in the process of conducting an Experience Study but there is no preliminary information available regarding the investment assumption.

Douglas County conducted an Experience Study in 2021 and there was no recommendation to reduce the 7.5% investment return assumption.

Eastern Nebraska Human Services Agency conducted a Forecast Study in 2020 and there was no recommendation to reduce the 7.0% investment return assumption.

Omaha Public Power District (OPPD) reviewed assumptions in 2020 and did not recommend reducing the current investment rate assumption which has remained 7.0% for many years.

Contribution Increases

The most common changes recently to the plans to improve funding levels have been increases in the employee and employer contribution rates. Here is a summary of recent contribution increases:

- Douglas County -- effective in 2021, corrections guards were extended the same plan benefit provisions as sheriff deputies, and the guard's member contribution rate was increased by an additional 2% of pay.

- Eastern Nebraska Human Services Agency has been increasing employer contributions by one-half percent annually since 2010, reaching 9.5% in 2018. Beginning November 1, 2021, the employer contribution rate increased to 10% and employee contributions to 3%.

- Metro Area Transit Hourly increased employee contribution rates from 6% to 7% and employer contribution rates from 6.5% to 7.5% in 2018.

- In 2017 Omaha Public Power District negotiations with bargaining units resulted in an increase in employee contributions, which gradually increased beginning in 2018 from 6.2% to 6.7%, to 7.2% in 2019, to 7.7% in 2020, and will continue to increase to 8.3% in 2021, and 9.0% in 2022 where it will remain.

- As part of the Police Officers agreement, the City of Omaha and the police officers in the City of Omaha Police and Fire Plan agreed to contribute an additional 0.75% of wages into the system for 2018 to 2020.

Benefit Changes

Only one plan has increased benefits for any of its members in the past two years. In the Douglas County Plan, effective in 2021, corrections guards were extended the same plan benefit provisions as sheriff deputies and the guard's member contribution rate was increased by an additional 2% of pay. Douglas County reports that this benefit change had no impact on the plan's funding status or actuarial accrued liability.

Final Observations

Reviewing reporting data that goes back to 2011, all but two of the plans have increased their funding levels, which is a positive trend.

- In 2011, Douglas County was funded at 61%; it is currently funded at 70.9%.

- Eastern Nebraska Human Services Agency was funded at 62% in 2011; it is currently funded at 73%.

- Lincoln Police and Fire funding status decreased to a low of 66% in 2015. In 2017 the funding level increased to 81% and in 2018 the funding level reached 82.2%, and therefore was not required to report to the Retirement Committee in 2017 and 2018. In 2019, the Plan experienced 2.2% investment return and also adopted new actuarial assumptions including adopting a new mortality table and lowering the investment rate incrementally from 7.5% to 7.25%. The Plan is currently funded at 77.6%.

- Metro Area Transit Hourly was funded at 65% in 2012; it is currently funded at 68.5%.

- Omaha Police and Fire was 43% funded in 2011; the current funding level is 55.1%.

> Omaha Public Power District (OPPD) was funded at 69.7% in 2013; it is currently funded at 72%.

> The Omaha School Employees Retirement System (OSERS) Plan and Omaha Civilian Employees Plan are the exceptions.

  o Omaha Civilian Employees Plan was funded at 56% in 2011; it is currently funded at 53.3%.

  o In 2011, OSERS was funded at 73% and it is currently funded at 62%. As noted above, OSERS is in the process of conducting an Experience Study. The actuary has recommended reducing the 7.5% investment rate to 7.0% but no final assumption changes have been adopted as of the date of this Report.

Omaha Civilian Employees and Omaha Police and Fire Plans are in the process of conducting Experience Studies but they were not completed in time for this Report. If investment rate assumptions are lowered (as they have been in most plans that have recently conducted an Experience Study), it will most likely further reduce the funding levels for those plans.

The Committee will continue to monitor and report the funding progress and/or decline of each plan and each political subdivision's corrective actions and commitment to meet or exceed the funding needs as recommended by its actuary.

APPENDICES

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Appendix A

Douglas County Employees
Retirement Plan Information

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2021 Pension Plan Reporting Form

	2021	2020	2019	2018	2017	2016
Funding Status	70.9%	66.8%	65.6%	68.0%	67.2%	67.3%
Assumed Rate of Return	7.5%	7.5%	7.5%	7.5%	7.5%	7.5%
Actual Investment Return - Actuarial	12.7%	11.6%	4.1%	11.4%	6.2%	5.6%
Actual Investment Return - Market	13.6%	19.7%	(2.8%)	16.8%	6.8%	2.3%
Member & Employer Contribution Rates	8.5%	8.5%	8.5%	8.5%	8.5%	8.5%
Normal Cost	10.7%	11.0%	10.8%	11.2%	10.9%	10.7%
Actuarial Required Contribution (ARC)	$26.0MM (17.3%)	$26.4MM (18.2%)	$24.8MM (18.1%)	$23.1MM (18.0%)	$21.5MM (17.5%)	$19.4MM (16.4%)
ARC - Actual dollars contributed	$25.3MM (expected)	$25.4MM	$25.0MM	$23.6MM	$22.5MM	$21.5MM
ARC - Percentage of ARC contributed	97.3% (expected)	96.2%	100.8%	102.2%	104.7%	110.8%

2) See attached narrative.

3) In July 2015, the long-term disability benefit provision was removed from the Pension Plan and has been replaced by a separate fully-insured long-term disability plan. On January 1, 2016 the interest crediting rate on member contributions was changed from 5.0% to the 10-year treasury rate in effect on the 1st of November of the preceding plan year. The combined impact of these two changes was a $3.6 million decrease in the actuarial accrued liability and a 0.6% increase to the Plan's funded ratio.

In the January, 2020 Actuarial Valuation, the following actuarial assumptions were updated:

a) Pub G – 2010 Mortality Table with longer life expectancies was used.
b) Increased salary scales were implemented.

The net impact of these changes was a 1.0% decrease to the funding status and a $7.6 million increase in the actuarial unfunded liability.

Effective in 2021, Corrections guards were extended the same plan benefit provisions as Sheriff deputies and the guard's member contribution rate was increased by an additional 2% of pay. This benefit change had no impact on the plan's funding status or actuarial accrued liability.

4) Based on actuarial projections, the Douglas County Pension Plan is projected to reach 100% funding status in the year 2039.

5) The amortization method is a 25-year amortization of the unfunded actuarial liability based on a closed, layered level percent of pay.

6) See attached narrative.

1

7) There are no impacts on the Douglas County Pension Plan from any recent or ongoing labor negotiations.

8) The May, 2021 Actuarial Experience Analysis is attached.

9) The assumed rate of return of the plan is 7.5%. No changes have been made in the past year and none are contemplated in the near future.

10) The January 1, 2021 Interim Actuarial Review is attached.

Douglas County, Nebraska
Analytical Report on Defined Benefit Pension Plan

The most recent actuarial valuation was performed by the Silverstone Group for the Douglas County Employees' Defined Benefit Pension Plan as of January 1, 2021. The report showed the plan was 70.9% funded, had net assets on an actuarial basis of $386.9 million, and had an unfunded actuarial accrued liability of $159.2 million. The plan had 3,976 participants and an equal member and employer contribution rate of 8.5% of pay. The normal cost was $16.0 million and the actuarial required contribution was $26.0 million. The funded ratio has increased from 66.8% on January 1, 2020.

To understand why the Douglas County DB Plan is only 70.9% funded, it is important to look at the recent history of changes to the Plan. In 1996, the Plan was 97.8% funded. In 1996 for law enforcement and in 1997 for all other plan participants, the following changes were made:

- Unreduced benefit upon Rule of 75.
- Benefit formula increased from 1.5% of pay per year of service to 2% of pay per year of service.

In 1998 a 3% COLA was approved, in 2000 a 4% COLA was approved, and in 2002 a 3% COLA was approved. By 2004, the funding ratio had fallen to 64.8%. The Plan is a contributory plan with the County's contribution equal to the Member's contribution. The County and Member contributions each increased from 5.5% of pay in 2005 to the present level of 8.5% of pay by 2008. Poor stock market performance during the Great Recession also negatively impacted the Plan's funded ratio which reached a low point of 57.8% in 2010.

The members of the Pension Committee and the County Board of Commissioners recognized that substantive changes had to be made to the Plan rules to ensure the financial viability of the Plan for its current participants. Accordingly, effective for all employees hired after December 31, 2011, the following pension provisions were put in place:

- No rule of 75.
- Benefit formula was reduced from 2% of pay per year of service to 1.5% of pay per year of service.
- Maximum retirement income was reduced from 60% of participant's final average compensation to 45%.

Sheriff Deputies and Corrections Guards (who account for about 22% of total plan participants) have slightly different plan provisions which provide for increased benefits with early retirement.

These plan changes, along with no COLA increases being given since 2002, have increased the plan funding ratio by 13.1 percentage points from its low point in 2010 to 70.9% as of January 1, 2021. These plan changes have also materially impacted the Plan's forecast of funded percentage so that the forecast now projects the plan achieving acceptable funded levels in the future as shown in the following forecast developed by Silverstone in January, 2021:

Estimated Funded Percentage*

2021	70.9%
2026	79.1%
2031	85.1%
2036	93.2%
2041	104.6%

*Forecast based on current plan assumptions.

In July 2015, the Long-Term Disability (LTD) program was removed from the Pension Plan and put into a separate fully-insured benefit plan. On January 1, 2016 the interest crediting rate on member contributions was changed from 5.0% to the 10-year Treasury Rate in effect on November 1st of the preceding plan year. The combined impact of these two changes was a $3.6 million decrease in the actuarial accrued liability and a 0.6% increase to the Plan's funded ratio.

On January 1, 2020, actuarial valuation updates were made to the mortality table and the salary scale used in the actuarial assumptions was increased. The net impact of these changes was a 1.0% decrease to the funding status and a $7.6 million increase in the actuarial unfunded liability.

Effective in 2021, Corrections guards were extended the same plan benefit provisions as Sheriff deputies and the guard's member contribution rate was increased by an additional 2% of pay. This benefit change had no impact on the plan's funding status or actuarial accrued liability.

No recent or ongoing negotiations with any employee labor groups are expected to impact the funding of the pension plan.

The Douglas County Pension Committee, Board of Commissioners, and administrative staff believe the aforementioned combination of actions will significantly improve the financial condition of the Douglas County Employee Defined Benefit Pension Plan and ensure the financial viability and payment of benefits to participants going forward.

May 25, 2021

PERSONAL & CONFIDENTIAL

Mr. Joe Lorenz
Budget & Finance Director
Douglas County Employees' Retirement Plan
1819 Farnam Street
Omaha, NE 68183

RE: 2021 Interim Actuarial Review

Dear Joe:

Enclosed are fifteen copies of the January 1, 2021 interim actuarial review for the Douglas County Employees' Retirement Plan. The results contained in this review are consistent with our retirement committee presentation dated May 27, 2021.

If you have any questions about the information provided in the report, please give me a call.

Sincerely,

Glen C. Gahan, FSA
Principal

GCG/bk

Enclosures

DOUGLAS COUNTY
EMPLOYEES' RETIREMENT PLAN

Interim Actuarial Review

January 1, 2021

SilverStone GROUP | HUB

SilverStone GROUP | HUB

May 25, 2021

ACTUARIAL CERTIFICATION

Employees' Retirement Committee
Douglas County Employees' Retirement Plan
1819 Farnam Street
Omaha, NE 68183

Committee Members:

An actuarial valuation was performed for the Douglas County Employees' Retirement Plan as of January 1, 2021. The valuation was prepared to determine the value of accrued benefits and annual costs. The results of the valuation are contained in the accompanying interim actuarial review.

The valuation is based on eligible employees and summary of assets submitted by Douglas County and data concerning retired employees submitted by United of Omaha. Summaries of the data and the calculations contained in the valuation were performed by our firm from this data.

To the best of my knowledge, the information supplied in this report is complete and accurate and, in my opinion, the assumptions are reasonably related to the experience of the plan and to reasonable expectations and represent my best estimate of anticipated experience under the Plan. However, future measures may differ significantly from the current measurement. Due to the limited scope of our assignment, this report does not include an analysis of the potential range of such future measures. The undersigned meets the qualification standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Sincerely,

Glen C. Gahan, FSA
Principal
Member of American Academy of Actuaries
Enrolled Actuary No. 20-04875

GCG/bk

Enclosure

Table of Contents

Purpose - The interim Actuarial Review is prepared for the year between the biannual Actuarial Valuation of the Employees' Retirement Plan to provide:

- An update of the funding status
- An update of plan liabilities
- An update of contribution requirements
- Status of Plan Participants
- Value of Plan Assets

Determine Actuarial Accrued Liability and Annual Costs

Evaluate Unfunded Accrued Liability

Actuarial Review Based On:

- Existing Plan Provisions as of January 1, 2021
- Current Active and Non-Active Participant Data
- Actuarial Value of Plan Assets
- Actuarial Methods and Assumptions

Change in Plan Provisions

- See page 13 of the report for a summary of changes in plan provisions.

Change in Actuarial Assumptions

- An actuarial assumptions experience study was performed as of December 31, 2020.
- The mortality improvement scale was updated from MP-2019 to MP-2020.
- All other assumptions were deemed reasonably consistent with plan experience.
- Experience specific to COVID-19 was not identified and no change in assumptions were made due to COVID-19. Plan experience will continue to be monitored.

Participant Data

	Plan Year Beginning January 1	
	2020	**2021**
Active Participants:		
Under Age 65	2,184	2,154
Age 65 & Over	40	34
Total	2,224	2,188
Non-Active Participants:		
Retired		
39G 12795 (after 2/28/2003)	969	1,042
GDA 6148 (prior to 3/1/2003)	373	331
Vested Terminated	113	124
Terminated Non-Vested	155	268
Disabled	24	23
Total Non-Active	1,634	1,788
Total Participants	3,858	3,976
Annual Compensation:		
Total, Under Age 65	$145,035,946	$147,387,421
Average Per Participant	66,408	68,425
Annual Pension Benefit		
Current Retired	28,474,082	30,498,984
Immediate Disability Payments	26,017	0
Deferred to Age 65		
Vested Terminated	1,210,049	1,256,478
Disabled	590,345	615,816

Market Value of Plan Assets

Summary of Changes in Value of Plan Assets

Market Value of Plan Assets on January 1, 2020		$363,054,352
Plus Increases		
Employee Contributions	12,787,419	
County Contributions	12,574,426	
Investment Experience	48,935,660	
		74,297,505
Less Decreases		
Pensions Paid to Retirees	29,446,902	
Refunds to Terminated EEs	2,106,430	
Disability Premiums/Administration	0	
Administrative Expenses	975,846	
		32,529,178
Market Value of Plan Assets on January 1, 2021		$404,822,679
Approximate Rate of Return		13.6%

Plan Investments	% of Total	Market Value
US Bank		
Operating Account - Cash and Cash Equivalents	0.3%	$1,210,147
Aristotle	4.2%	16,913,793
Atlanta Capital	9.8%	39,853,709
State Street - Fixed Income Portfolio	2.4%	9,861,579
JP Morgan	6.4%	26,030,780
Winslow - Capital Management	5.4%	21,846,934
Sanderson International	3.1%	12,501,530
Harding Loevner	6.2%	25,020,515
Wells Cap Emerging	6.8%	27,346,262
Macquarie	9.2%	37,263,406
Total		217,848,655
United of Omaha Insurance Company		
General Asset Account GDA 6148	16.8%	67,863,036
Small Company Fund GDA 6148	4.0%	16,344,875
Institutional Index 500 GDA 6148	24.3%	98,453,467
General Asset Account 39G-12795	1.1%	4,312,646
Total		186,974,024
Grand Total	100.0%	$404,822,679

Description of Actuarial Value of Assets

Objective   Since January 1, 1986, an actuarial value of plan assets has been used to determine annual contribution requirements and to evaluate the funding status of the Retirement Plan. An actuarial value of plan assets is used to smooth fluctuations in market value from one valuation date to the next.

Description   Actuarial value is equal to:

- Adjusted value of plan assets
- Plus, one-half of the excess of market value over the adjusted value of plan assets

Where adjusted value of plan assets equal:

- Actuarial value of plan assets on the prior valuation date
- Plus contributions with expected interest
- Less pensions paid, refunds and other disbursements with expected interest

Actuarial Value of Plan Assets

Actuarial Value of Plan Assets on January 1, 2020		$350,081,173
Plus Increases		
Employee Contributions	12,787,419	
County Contributions	12,574,426	
Expected Interest	25,987,313	
		51,349,158
Less Decreases		
Pensions Paid to Retirees	29,446,902	
Refunds to Terminated EEs	2,106,430	
Disability Premiums/Administration	0	
Administrative Expenses	975,846	
		32,529,178
Adjusted Value on January 1, 2021		368,901,153
Market Value on January 1, 2021		404,822,679
One-Half Excess, Market Value Less Adjusted Value		17,960,763
Actuarial Value of Plan Assets on January 1, 2021		$386,861,916
Approximate Rate of Return		12.7%
Actuarial Value as a % of Market Value		95.6%

Unfunded Accrued Liability

	Plan Year Beginning January 1	
	2020	2021
Actuarial Accrued Liability		
1. Active	$235,727,894	$237,203,020
2. Vested Terminated Participants	6,693,827	7,032,554
3. Terminated Non-Vested*	1,208,361	1,508,681
4. Disabled Participants	2,702,126	3,088,618
5. Retirees	277,393,988	297,196,071
6. Total (1) + (2) + (3) + (4) + (5)	523,726,196	546,028,944
Actuarial Value of Plan Assets		
7. Actuarial Value of Plan Assets	350,081,173	386,861,916
Unfunded Accrued Liability		
8. Unfunded Accrued Liability (6) - (7)	173,645,023	159,167,028
9. Ratio of Assets to Accrued Benefits (7) / (6)	66.8%	70.9%

*Amount equal to expected refund of member contributions.

Annual Normal Cost

	Plan Year Beginning January 1	
	2020	**2021**
Annual Normal Cost		
Retirement, Death, Termination and Disability	$14,854,589	$14,827,931
Immediate Disability Benefit	0	0
Annual Administrative Expense	1,089,163	1,214,468
Total	15,943,752	16,042,399
Expected Plan Contributions		
From Employees	12,529,964	12,776,054
From County	12,328,055	12,527,931
Total	24,858,019	25,303,985

Actuarially Determined Contribution

The Members contribute 8.5% of covered payroll annually to the Plan, with Sheriff members hired after July 1, 2011 contributing less after 32 years of service and FOP #8 members hired after June 30, 2014 contributing 10.5% of covered payroll for the first 32 years of service and less after 32 years. In accordance with applicable State and County statutes, the County contributes an annual amount not greater than the Member contributions.

An actuarially determined contribution is the annual calculated contribution amount as determined by application of the plan's actuarial methods and assumptions. This contribution provides a measure of the amount of contributions needed to fund the benefits earned in the current year plus the 25-year amortization of the unfunded accrued liability. It is an illustrative amount useful as a benchmark comparison to the actual contributions into the plan and is also reported in the annual Governmental Accounting Standards Board (GASB) disclosures. The plan is not currently being funded on this basis, but is funded by the fixed contribution rates described above.

| | Plan Year Beginning January 1 | |
	2020	2021
1. Annual Normal Cost	$15,943,752	$16,042,399
2. Amortization of the Unfunded Accrued Liability	9,489,224	9,031,235
3. One-half Year Interest on (1) and (2)	953,737	940,261
4. Actuarially Determined Contribution	26,386,713	26,013,895

Actuarial Methodology

Actuarial Cost Method	Projected Unit Credit	Projected Unit Credit
Amortization Method	Level Percent of Pay	Level Percent of Pay
Amortization Period	Closed, Layered 25 Years	Closed, Layered 25 Years
Actuarial Assumptions	Same, as described in report	Same, as described in report

Amortization of Unfunded Accrued Liability

	Plan Year Beginning January 1	
	2020	2021
Unfunded Accrued Liability (UAL)	$173,645,023	$159,167,028
Annual Normal Cost	15,943,752	16,042,399
Actuarially Determined Contribution	26,386,713	26,013,895
Expected Plan Contributions		
From Employees	12,529,964	12,776,054
From County	12,328,055	12,527,931
Total	24,858,019 *	25,303,985
Amount Available to Reduce UAL	8,914,267	9,261,586
Years Required to Amortize the UAL		
as a level percent of pay	24.3	20.7
as a level dollar amount	Unable to Amortize	Unable to Amortize
Interest - only on the UAL	13,023,377	11,937,527

*Actual amount contributed was $25,361,845.

Accrued Liability Payments

One of the components included to determine the actuarially determined contribution is the Accrued Liability Payment. The Accrued Liability Payment is an annual amount that will amortize:

- The unfunded accrued liability established as of January 1, 2017.
- An increase or decrease in the unfunded accrued liability due to plan amendment.
- An increase or decrease in the unfunded accrued liability due to a change in actuarial assumptions.
- An increase or decrease in the unfunded accrued liability resulting from actuarial gains or losses due to plan experience more or less favorable than expected.

This section of the report documents the Amortization Bases established for the Plan and displays other values associated with minimum funding.

Amortization Base	Date Established	Source of Base
140,285,787	January 1, 2017	Initial Unfunded
5,714,314	January 1, 2018	Actuarial Loss
16,456,582	January 1, 2019	Actuarial Loss
2,033,084	January 1, 2020	Assumption Change, Amendment, Actuarial Gain
(19,340,431)	January 1, 2021	Assumption Change, Actuarial Gain

Minimum Funding

The Unamortized Balance is based on the methodology for the actuarially determined contribution and does not reflect actual past funding of the Amortization Bases. For each amortization base, the initial amortization period and the remaining term of the amortization period determined on the valuation date are displayed.

Charge Bases Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Minimum Payment
140,285,787	25	21	8,643,756
5,714,314	25	22	334,602
16,456,582	25	23	915,766
2,033,084	25	24	107,519
		Total	$ 10,001,643

Credit Bases Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Minimum Payment
19,340,431	25	25	970,408
		Total	$ 970,408

Total			$ 9,031,235

Risk Disclosures

The Actuarial Standards Board provides guidance to actuaries when performing certain actuarial services in the form of standards of practice. The Board has issued a standard of practice on risk disclosure that applies to actuaries when performing a funding valuation of a defined benefit pension plan. This standard of practice addresses assessment and disclosure of the risk that actual future measurements may differ significantly from expected future measurements of pension liabilities, funded status, and actuarially determined contributions.

Risk is defined as the potential of actual future measurements to deviate from expected future measurements. This deviation results when actual future experience is different from actuarially assumed experience. Sample sources of risk include: investment returns, asset/liability mismatch, interest rates, longevity and other demographic risks, and contribution risk. The following are certain significant measures of risk as they pertain to the plan.

	January 1, 2020	January 1, 2021
Retired Participant Liability	277,393,988	297,196,071
Total Plan Liability	523,726,196	546,028,944
Ratio	53.0%	54.4%

More risk related to investment returns is associated with plans whose retiree liability is a significant and growing proportion of the plan's total liability, since it is more difficult to restore a plan financially after losses occur due to a shorter duration of liability where significant retired liability exists.

	January 1, 2020	January 1, 2021
Contributions in prior year	24,956,737	25,361,845
Benefit Payments in prior year	(30,955,883)	(31,553,332)
Net Cash Flow	(5,999,146)	(6,191,487)

More risk related to investment volatility is associated with plans whose benefit payments are significant compared to the plan contributions. If, for example, a plan has negative cash flow and experiences investment returns below an assumed rate then there are fewer assets that can be reinvested to earn potentially higher returns that may follow.

	January 1, 2020	January 1, 2021
Duration of Plan Liability	12.2 years	12.1 years

Duration is a present value weighted average of the timing of future benefit payments. Plans with a higher duration have more risk related to future interest rates. Additionally, more risk related to asset/liability mismatch is associated with plans whose liability duration differs significantly from the duration of plan investments.

Risk Disclosures
(continued)

	January 1, 2020	January 1, 2021
Market Value of Assets	363,054,352	404,822,679
Annual Payroll	148,185,887	150,083,372
Asset Volatility Ratio	2.4	2.7

More risk related to investment return and future costs are associated with plans whose asset volatility ratio is high and growing; which is a characteristic of more mature plans.

	January 1, 2020	January 1, 2021
Market Value of Assets	363,054,352	404,822,679
Actuarial Accrued Liability	523,726,196	546,028,944
Ratio	69.3%	74.1%

More risk is associated with plans that have lower funded ratios.

	January 1, 2020	January 1, 2021
Actuarial Accrued Liability	523,726,196	546,028,944
Annual Payroll	148,185,887	150,083,372
Liability Volatility Ratio	3.5	3.6

More risk related to experience losses and future costs are associated with plans whose liability volatility ratio is high and growing; which is a characteristic of more mature plans.

The assumptions used to determine the risk measures above are identical to the assumptions used for recommended funding purposes on the respective valuation dates.

2020   FOP #8 members hired after June 30, 2014 benefit under the same plan provisions as Sheriff Deputies hired after June 30, 2011. The employee contribution rate is the same as the Sheriffs plus an additional 2% of pay.

2016   Long Term Disability provision for active members was eliminated from the Plan as of 7/1/2015. LTD is provided by insurance outside of the pension plan. The interest crediting rate on employee contributions was changed from 5% to the 10-Year Treasury rate for November prior to the valuation date as of 1/1/2016.

2012   Certain bargaining employees hired after June 30, 2011 and all non-bargaining employees hired after December 31, 2011. It is anticipated that all bargaining units will be under these same benefit provisions after their next contract is negotiated.
- 1.5% of pay per year of service (45% maximum)
- No Rule of 75
- 8.5% contribution rate
- Early Retirement at age 50 and 10 years of service or age 60 and 5 years of service
- Early Retirement reduction of 5% per year

Sheriff Deputies hired after June 30, 2011
- Benefit formula changed to the following:
  - 1.0% of pay for 1 to 10 years of service
  - 2.0% of pay for 11 to 20 years of service
  - 2.5% of pay for 21 to 32 years of service
- Contribution rate changed to the following:
  - 8.5% for 1-32 years of service
  - 7.5% at 33 years of service
  - 6.5% at 34 years of service
  - 5.5% at 35+ years of service
- Early Retirement at age 53
- Early Retirement reduction of 4.8% per year
- No Early Retirement reduction if 30 or more years of service

2008   Member and County contribution rate increased from 7.5% to 8.5%

2007   Member and County contribution rate increased from 6.5% to 7.5%

2006   Member and County contribution rate increased from 5.5% to 6.5%

2002   Increase retiree pension by 3%, but not less than $5 a month

2000   Increase retiree pension by 4%, but not less than $5 a month

1998   Increase retiree pension by 3%, but not less than $5 a month

1997
1. Rule of 75 for other than law enforcement
   Unreduced benefit upon Rule of 75
   2.0% benefit formula after January 1, 1962
   5.5% member contributions

1996
1. Rule of 75 for law enforcement
   Unreduced benefit upon Rule of 75
   2.0% benefit formula after January 1, 1962
   5.5% member contributions
2. Participation begins on first day of employment
3. Increase retiree pension by 4% but not less than $10 a month

1994
1. Benefit formula change to the following:
   1% of pay for service before January 1, 1962
   1.5% of pay for service after January 1, 1962
2. Decrease in interest rate on employee contributions to 5% effective July 1, 1994
3. Increase retiree pension by 3%

1992
1. Early Retirement Incentive Program (112 members elected benefit)
2. Early Termination of Employment Incentive Program (188 members elected benefit)
3. Increase retiree pension by 3%

1990
1. Benefit formula change to the following:
   1% of pay for service before January 1, 1962
   1.4625% of pay for service after January 1, 1962
2. Increase retiree pension by 4%
3. Vesting changed from 25% after 5 graded to 100% after 15 to 25% after 5 increased 15% a year up to 10
4. Maximum Disability Benefit increased from $36,000 to $57,600

1988
1. Benefit formula change to the following:
   1.425% of pay for service after January 1, 1962
   1% of pay for service before January 1, 1962
2. Increase retiree pension by 4%, but no less than $5 a month
3. Changed eligibility requirements to include participants hired after age 60

1986
1. Benefit formula change to the following:
    1% of pay for service before January 1, 1962
    1.2% of pay for service from January 1, 1962 to January 1, 1972
    1.4% of pay for service after January 1, 1972
2. Increase retiree pension by 6% but not less than $5 a month

1984
1. Increased benefit formula from 1.1% of pay to 1.2% for service after January 1, 1974
2. Increase retiree pension by 6%, but not less than $5 a month

1982
1. Added Special Early Retirement
2. Benefit formula change from 1% of pay to 1.1% of pay for service after January 1, 1972
3. Increase retiree pension by 6%, but not less than $10 a month
4. Changes in disability retirement provisions
5. Changes in actuarial assumptions
6. Special provisions for county employees change to state employees

1980
1. Special Early Retirement
2. Change in service definition – unlimited sick leave
3. $10/month increase in pension to retirees
4. Added Late Retirement Benefit

History of Plan Funding

Year	Actuarial Value Of Assets ($1,000s)	Actuarial Accrued Liability		Funded Ratio	
		Before Changes ($1,000s)	After Changes ($1,000s)	Before Changes	After Changes
2021	$386,862	$547,858	$546,029	70.6%	70.9%
2020	350,081	516,180	523,727	67.8%	66.8%
2019	320,394	488,372	488,372	65.6%	65.6%
2018	315,694	464,170	464,234	68.0%	68.0%
2017	287,478	428,146	427,763	67.1%	67.2%
2016	274,878	412,283	408,662	66.7%	67.3%
2015	263,790	394,847	394,847	66.8%	66.8%
2014	245,830	380,727	380,727	64.6%	64.6%
2013	219,494	362,117	362,117	60.6%	60.6%
2012	205,795	343,542	343,178	59.9%	60.0%
2011	196,119	321,700	321,700	61.0%	61.0%
2010	177,797	307,407	307,407	57.8%	57.8%
2009	167,994	290,127	290,127	57.9%	57.9%
2008	177,834	269,970	270,351	65.9%	65.8%
2007	165,309	253,386	248,986	65.2%	66.4%
2006	151,686	239,229	239,602	63.4%	63.3%
2005	142,403	221,642	221,642	64.2%	64.2%
2004	132,769	204,952	204,952	64.8%	64.8%
2003	125,238	188,697	188,697	66.4%	66.4%
2002	126,336	167,690	172,615	75.3%	73.2%
2000	117,626	124,906	127,011	94.2%	92.6%
1998	97,626	107,071	108,391	91.2%	90.1%
1996	81,626	78,202	83,472	104.4%	97.8%
1994	69,860	71,242	72,869	98.1%	95.9%
1992	60,912	59,747	66,161	101.9%	92.1%
1990	48,387	47,474	48,717	101.9%	99.3%
1988	37,662	36,212	37,390	104.0%	100.7%
1986	30,161	27,830	30,455	108.4%	99.0%
1984	21,752	20,912	22,203	104.0%	98.0%
1982	16,115	16,687	17,828	96.6%	90.4%
1980	11,468	15,229	15,597	75.3%	73.5%

Actuarial Cost Method

Annual costs were calculated using the Projected Unit Credit Actuarial Cost Method. Projected Unit Credit is one of the Accrued Benefit Actuarial Cost Methods. Using Projected Unit Credit, annual costs equal the sum of the normal cost and an amount to amortize the unfunded accrued liability. The normal cost is defined as the actuarial value of retirement and ancillary benefits that are allocated to the current year.

The unfunded accrued liability is equal to the accrued liability reduced by the actuarial value of plan assets. The accrued liability is defined as the actuarial value of retirement and ancillary benefits that have been allocated to years of service prior to the current year.

The method allocates an equal amount of a participant's projected retirement benefit to each year of service. The benefit at normal retirement is projected assuming salaries increase at the assumed rates. The projected retirement benefit is then divided by the participant's years of service to determine the portion of the retirement benefit allocated to each year. Service includes years following the later of the date of hire and July 1, 1952 (January 1, 1955 for former Board of Health participants) and prior to the assumed retirement age.

As experience develops under the Retirement Plan, actuarial gains and losses will result. Actuarial gains and losses indicate the extent to which actual experience is deviating from that expected on the basis of the actuarial assumptions. Actuarial gains result from experience more favorable than assumed and reduce the unfunded accrued liability. Actuarial losses result from experience less favorable than assumed and increase the unfunded accrued liability. All actuarial gains and losses are included in the determination of the unfunded accrued liability as of the valuation date.

The unfunded actuarial accrued liability is amortized over 25 years on a fixed percentage of pay, closed layered basis. This amortization method was adopted effective January 1, 2017.

Asset Valuation Method

The Actuarial Value of Plan Assets held in the pension trusts was calculated as the sum of the following:

- Adjusted Value of Plan Assets
- One-half of the excess of Market Value over the Adjusted Value of Plan Assets

The Adjusted Value of Plan Assets equals:

- Actuarial Value of Plan Assets on the prior valuation date, plus contributions and expected interest, less
- Pensions paid, refunds and other disbursements with expected interest

Actuarial Assumptions

Investment Return	7.5% compounded annually.
Salary Scale	Salaries were assumed to increase at an annual rate compounded annually following the valuation date varying by age, as illustrated below.

Age	Percentage Increase
18-29	6.50%
30-39	6.00%
40-44	5.50%
45-54	5.00%
55+	4.50%

Mortality Rates	PubG-2010 set forward 2-years for males and 1-year for females and projected with 75% of MP-2020 improvement scale.
Disability Rates	None.
Withdrawal Rates	Based on rates as illustrated below:

Age	Rate
22	28.3%
27	12.7%
32	10.0%
37	8.2%
42	5.9%
47	4.0%
52	2.3%
57	1.9%

Accrued Sick Leave	7 days per year.

Actuarial Assumptions
(continued)

Retirement Rates

Age	Rule of 75	Other
50	30%	5%
51-54	5%	2%
55-61	10%	5%
62-64	20%	10%
65-69	30%	30%
70	100%	100%

Retirement rate is 30% the first year a Member is eligible for Rule of 75.

Age	Sheriffs hired after June 30, 2011	and	FOP #8 members hired after June 30, 2014
53-54		5%	
55		25%	
56-57		15%	
58		20%	
59-61		25%	
62		30%	
63		35%	
64		40%	
65		100%	

Retirement rate is 100% at 30 years of service.

Interest Rate on Employee Contributions

0.84% per annum, based on the 10-year treasury rate as of November 30th preceding the valuation date.

Administrative Expenses

Annual administrative expenses have been estimated as 3/10 of 1% of plan assets.

Summary of Plan Provisions

Effective Date

January 1, 1963

Plan Year

January 1 through December 31.

Participation

First day of continuous employment.

Definitions

Member

Any employee who participates in the Plan as an active participant or a non-active participant entitled to a disability pension, a deferred vested retirement benefit or a current retirement benefit.

Benefit Service

Years of service following the later of July 1, 1952 and the date of hire and prior to the normal retirement date. Years of service prior to January 1, 1955 are not considered for members who were participants of the Omaha-Douglas County Board of Health Retirement Plan.

Final Average Compensation

Average monthly compensation paid during the 60 consecutive months of the last 120 months of service that produces the largest average monthly compensation. The average monthly compensation is limited for members who were participants of the Omaha-Douglas County Board of Health Retirement Plan prior to 1975.

Normal Retirement Date

First day of calendar month coinciding with or next following the 65th birthday (age 55 for sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014).

Rule of 75 Retirement

First day of calendar month coincident with or next following the attainment of age 50, and completion of a sufficient number of years of service so that when such years are added to the members attained age, the total equals or exceeds 75. Such service must be exclusive of accumulated sick leave.

There is no Rule of 75 Retirement for bargaining employees hired after June 30, 2011 (or later date based on applicable bargaining unit contract) and all non-bargaining employees hired after December 31, 2011.

Early Retirement

Following attainment of age 55 and 20 years of service, or age 60 and 5 years of service. Age 53 for sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014. Age 50 and 10 years of service or age 60 and 5 years of service for bargaining employees hired after June 30, 2011 (or later date based on applicable bargaining unit contract) and all non-bargaining employees hired after December 31, 2011.

Benefits

Normal Retirement

For participants who were actively employed on October 4, 1997 and retire thereafter, a monthly income equal to the sum of (1) and (2), not to exceed 60% of the participant's final Average Compensation:

(1) 1% of Final Average Compensation, multiplied by years of benefit service prior to January 1, 1962, plus

(2) 2.0% of Final Average Compensation multiplied by years of benefit service following January 1, 1962.

For bargaining employees hired after June 30, 2011 (or later date based on applicable bargaining unit contract) and all non-bargaining employees hired after December 31, 2011, a monthly income equal to 1.5% for each year of service not to exceed 45% of the participant's final Average Compensation.

For sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014, a monthly income equal to the sum of (1), (2) and (3), not to exceed 60% of the participant's final Average Compensation:

(1) 1.0% of Final Average Compensation multiplied by 1-10 years of benefit service.

(2) 2.0% of Final Average Compensation multiplied by 11-20 years of benefit service.

(3) 2.5% of Final Average Compensation multiplied by 21-32 years of benefit service.

Early Retirement	Monthly income computed in the same manner as normal retirement, based on benefit service and final average compensation at the early retirement date, and reduced by 1/4 of 1% for each full calendar month that the initial retirement payment precedes the normal retirement date.
	Reduced by .4167% for each full calendar month that the initial retirement payment precedes the normal retirement date for bargaining employees hired after June 30, 2011 (or later date based on applicable bargaining unit contract) and all non-bargaining employees hired after December 31, 2011.
	Reduced by .4% for each full calendar month that the initial retirement payment precedes the normal retirement date for sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014.
Rule of 75 Retirement	If the eligibility requirements for Rule of 75 Retirement are met, the early retirement benefit will not be reduced for the period that retirement precedes the normal retirement date.
Late Retirement	A member who attains the age of 65 after December 31, 1987, shall be entitled to the Normal Retirement Benefit based on Years of Service and Final Average Compensation determined as of the late Retirement Date.
Death	A benefit of 60% of earned pension is payable until death of the spouse if an employee has completed 8 years of service at the date of death. The earned pension is based on length of service and final average compensation to the date of death. The participant and spouse must be married for at least one year prior to date of death.
	If the employee is not survived by dependents or does not qualify for the spouse benefit, the employee's contributions, plus accumulated interest is paid to the beneficiary upon death.

Termination Benefit

Deferred monthly income equal to the earned benefit based on service and compensation to the date of termination and multiplied by a vesting factor:

Completed Years of Service on Date of Termination	Vesting Factor
Less than 5	0.00
5	0.25
6	0.40
7	0.55
8	0.70
9	0.85
10 Years and Over	1.00

If a member's employment is terminated due to a change in employment status as provided by the Nebraska Legislature to that of a state employee, such member's Vested Factor will be 1.00. The termination benefits to which he is entitled shall be based on the average monthly compensation of the member during Douglas County employment and/or state employment which immediately follows Douglas County employment.

Upon termination prior to qualifying for a vested pension or in lieu of the vested pension, the employee may withdraw his contributions increased by interest. Effective July 1, 1994, the interest rate credited is 5% compounded annually. This interest rate credit was changed to the 10-year treasury rate as of November 30th, preceding the plan year, as of January 1, 2016.

Form of Annuity

Normal Form

Joint life annuity, 60% continuing to spouse or dependent children.

Five years certain and life, if no eligible dependents.

Summary of Plan Provisions

(continued)

Contribution

Participant

Members contributed 5.5% of total earnings prior to January 1, 2006. The annual contribution rate increased to 6.5% as of January 1, 2006, 7.5% as of January 1, 2007 and 8.5% as of January 1, 2008 and thereafter.

Sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014 contribute according the following schedule:

Years of Service	Sheriff Percentage	FOP #8 Percentage
Less than 33	8.50%	10.50%
33	7.50%	9.50%
34	6.50%	8.50%
35 or more	5.50%	7.50%

Effective July 1, 1985, the Employee contribution is "picked up" and contributed to the Plan by Douglas County.

County

The County pays the balance of the cost of the plan. By law, the County cannot contribute more than the participants for pension benefits earned after the effective date of the plan. The County pays for all benefits earned for service before the plan was effective.

Participant Census Statistics

	Plan Year Beginning January 1		
	2019	**2020**	**2021**
Active Participants			
Number	2,159	2,224	2,188
Average Attained Age	45.0	44.8	44.7
Average Past Service	10.6	10.3	10.4
Total Annual Compensation	$139,337,047	$148,185,887	$150,083,372
Average Annual Compensation	64,538	66,630	68,594
Actives under old formula	1,245	1,181	1,076
Percent of Total Actives	57.7%	53.1%	49.2%
Actives under reduced formula	914	1,043	1,112
Percent of Total Actives	42.3%	46.9%	50.8%
Non-Active Participants			
Number	1,606	1,634	1,788
Average Attained Age	66.4	66.2	64.1
Total Annual Benefits	32,605,327	31,508,854	33,879,959
Average Annual Benefit	20,302	19,283	18,949
Retirees under Mutual Contract	402	373	331
Total Retirees	1,301	1,342	1,373
Percent of Total Retirees	30.9%	27.8%	24.1%

Active Participants Included in Valuation

Age at Valuation Date	Years of Service								Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+		
Under 20	2	0	0	0	0	0	0	0	2	37,488
20-24	73	1	0	0	0	0	0	0	74	45,762
25-29	186	16	0	0	0	0	0	0	202	51,383
30-34	153	79	17	0	0	0	0	0	249	59,306
35-39	121	83	65	21	0	0	0	0	290	66,189
40-44	78	52	53	62	22	0	0	0	267	74,153
45-49	75	43	50	55	63	8	1	0	295	74,971
50-54	52	28	46	49	72	29	8	0	284	75,533
55-59	44	39	47	44	30	20	13	3	240	75,241
60-64	34	24	37	27	20	9	9	10	170	71,214
65 & Over	15	20	25	13	21	9	2	10	115	76,086
Total	833	385	340	271	228	75	33	23	2,188 *	
Average Salary	53,041	67,738	79,223	80,026	84,813	87,263	90,406	97,267		68,594

Average Salary - based on Total Covered Payroll for 2021.

* 1112 actives (50.8% of all active participants) are under the reduced plan formula.

January 1, 2021
Non-Active Participants Included in Valuation

	Number	Total Annual Benefit	Average Annual Benefit	
Retired & Beneficiary				
39G-12795 (after 2/28/2003)	1,042	$26,014,340	$24,966	
GDA 6148 (prior to 3/1/2003)	331	4,484,644	13,549	
Vested Terminated	124	1,256,478	10,133	
Terminated Non-Vested	268	1,508,681	5,629	*
Disabled Participants	23	615,816	26,775	
Total	1,788	33,879,959	18,949	

* Amount equal to expected refund of member contributions.

Retired & Beneficiary Participants in Pay Status

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 50	9	$92,837	$10,315
50-54	40	1,592,555	39,814
55-59	117	4,257,348	36,388
60-64	181	5,248,900	28,999
65-69	305	7,184,856	23,557
70-74	273	5,952,300	21,803
75-79	192	3,228,453	16,815
Over 79	256	2,941,735	11,491
Total	1,373	30,498,984	22,213

Participant Census Statistics
(continued)

	Active	Deferred	Disabled	Retired	Beneficiary	Total
		Non-Active				
Number on January 1, 2020	2,224	268	24	1,144	198	3,858
Terminated						
Non-Vested	0	0	0	0	0	0
Vested - Lump Sum	-85	-28	0	0	0	-113
Vested - Deferred	-87	+87	0	0	0	0
Disabled	-4	-1	+5	0	0	0
Deceased						
Vested - Lump Sum	0	0	0	0	0	0
Vested - Beneficiary	-2	0	0	0	+2	0
No Additional Benefit	0	0	0	-41	-12	-53
Retired						
Monthly Benefit	-76	-5	-6	+87	0	0
Lump Sum	0	0	0	0	0	0
Certain Period Expired	0	0	0	0	-5	-5
Return to Active	+4	-4	0	0	0	0
New Entrants or Prior Omissions						
During Plan Year	+214	+75	0	0	0	+289
Number on January 1, 2021	2,188	392	23	1,190	183	3,976

Non-Active Participants	Number	Annual Benefit
Vested Deferred Participants	392	$1,256,478*
Retired & Beneficiary Participants	1,373	30,498,984

* Excludes $1,508,681 of expected refund of member contributions.

May 7, 2021

PERSONAL & CONFIDENTIAL

Mr. Joe Lorenz
Douglas County Employees' Retirement Plan
1819 Farnam Street
Omaha, NE 68183

RE: 2021 Experience Analysis

Dear Joe:

Enclosed are fifteen copies of the 2021 Experience Analysis for the Douglas County
Employees' Retirement Plan. Based on a comparison of actual to expected experience
we recommend updating the mortality improvement scale to MP-2020.

Impact of COVID-19 on Study
The results presented represent the plan's experience from all sources. Experience
specific to COVID-19 was not identified and no change in assumptions is recommended
due to the pandemic. However, we do recommend plan experience continue to be
monitored and we note a subsequent experience study is scheduled for 2023.

Please contact me with any questions.

Sincerely,

Glen C. Gahan, FSA
Principal

GCG/bk

Enclosures

Douglas County
Employees' Retirement Plan

2021 Experience Analysis

May 2021

Table of Contents

A Plan Experience Analysis was performed to compare actual plan experience to the expected experience based on the Plan's actuarial assumptions.

The assumptions analyzed were:

- Rates of Termination

- Rates of Retirement
    - Rule of 75
    - Other than Rule of 75

- Rates of Salary Increases

- Rates of Mortality

- Rates of Investment Return

Actuarial Assumptions Recommendation

Based on a review of actual and expected experience over the past five years, the following revisions to the actuarial assumptions are recommended.

Rates of Termination

No changes recommended

Rates of Retirement

Rule of 75

No changes recommended

Other than Rule of 75

No changes recommended

Rates of Salary Increases

No changes recommended

Rates of Mortality

We recommend updating the mortality improvement scale from 75% of the MP-2019 to 75% of MP-2020.

Rates of Investment Return

No changes recommended, based on direction of the County and investment advisor.

Impact of COVID-19 on Study

The results presented represent the plan's experience from all sources. Experience specific to COVID-19 was not identified and no change in assumptions is recommended due to the pandemic. However, we do recommend plan experience continue to be monitored and we note a subsequent experience study is scheduled for 2023.

Comparison of Actual and Expected Rates

Terminations

Age Group	2020 Actual	2020 Exp	2020 Ratio	2019 Actual	2019 Exp	2019 Ratio	2018 Actual	2018 Exp	2018 Ratio	2017 Actual	2017 Exp	2017 Ratio	2016 Actual	2016 Exp	2016 Ratio
20-24	17	14	120%	13	11	113%	21	17	123%	12	14	88%	16	14	112%
25-29	37	23	160%	24	20	122%	50	24	207%	29	22	133%	25	23	109%
30-34	24	24	101%	33	24	138%	32	24	134%	38	26	145%	26	25	104%
35-39	31	24	128%	18	24	76%	33	24	137%	17	22	77%	23	22	107%
40-44	21	16	133%	19	16	120%	23	15	154%	18	16	115%	17	16	105%
45-49	11	12	95%	13	12	112%	19	12	155%	17	13	135%	13	12	105%
50-54	8	7	110%	8	7	120%	12	7	178%	14	7	209%	6	7	88%
55-59	8	5	174%	3	5	64%	9	4	203%	7	5	153%	5	4	114%
60-62	4	3	134%	3	3	97%	4	3	131%	1	3	36%	2	3	76%
Total	161	127	126%	134	120	111%	203	131	155%	153	126	122%	133	126	105%

5-Year Summary

Age	Actual	Exp	Ratio
20-24	79	71	112%
25-29	165	112	148%
30-34	153	123	125%
35-39	122	115	106%
40-44	98	78	125%
45-49	73	60	121%
50-54	48	34	140%
55-59	32	23	141%
60-62	14	15	96%
Total	784	630	124%

Comparison of Actual and Expected Rates

(continued)

Rule of 75 Retirements

Age	5-Year Summary Actual	Exp	Ratio	2020 Actual	Exp	Ratio	2019 Actual	Exp	Ratio	2018 Actual	Exp	Ratio	2017 Actual	Exp	Ratio	2016 Actual	Exp	Ratio
50	14	12.30	114%	2	2.70	74%	0	2.40	0%	5	2.70	185%	3	2.70	111%	4	1.80	222%
51	9	6.55	137%	4	2.20	182%	1	1.15	87%	1	0.90	111%	2	0.75	267%	1	1.55	65%
52	3	7.65	39%	1	2.15	47%	0	1.30	0%	0	1.05	0%	2	2.30	87%	0	0.85	0%
53	7	12.15	58%	3	3.55	85%	2	4.25	47%	2	1.80	111%	0	1.25	0%	0	1.30	0%
54	12	8.60	140%	3	2.10	143%	3	1.90	158%	2	1.40	143%	2	1.40	143%	2	1.80	111%
55	19	13.30	143%	1	1.90	53%	7	3.60	194%	4	3.10	129%	6	3.30	182%	1	1.40	71%
56	16	11.10	144%	3	2.20	136%	1	1.30	77%	5	1.90	263%	5	3.00	167%	2	2.70	74%
57	11	8.30	133%	0	1.50	0%	3	2.30	130%	4	1.50	267%	2	2.00	100%	2	1.00	200%
58	8	12.80	63%	5	2.60	192%	1	2.90	34%	0	1.80	0%	0	1.00	0%	2	4.50	44%
59	15	15.30	98%	4	3.10	129%	4	3.40	118%	3	2.00	150%	2	3.40	59%	2	3.40	59%
60	21	14.60	144%	4	2.30	174%	3	2.70	111%	5	3.60	139%	4	3.10	129%	5	2.90	172%
61	11	12.60	87%	4	2.90	138%	2	2.20	91%	2	3.00	67%	1	2.00	50%	2	2.50	80%
62	13	21.60	60%	3	3.70	81%	2	6.60	30%	5	3.80	132%	2	4.80	42%	1	2.70	37%
63	28	25.10	112%	7	7.00	100%	7	6.60	106%	8	5.50	145%	5	3.30	152%	1	2.70	37%
64	23	20.70	111%	8	5.70	140%	5	5.40	93%	3	2.60	115%	1	3.00	33%	6	4.00	150%
65	0	0.00		0	0.00		0	0.00		0	0.00		0	0.00		0	0.00	
66	0	0.00		0	0.00		0	0.00		0	0.00		0	0.00		0	0.00	
67	0	0.00		0	0.00		0	0.00		0	0.00		0	0.00		0	0.00	
68	0	0.00		0	0.00		0	0.00		0	0.00		0	0.00		0	0.00	
69	0	0.00		0	0.00		0	0.00		0	0.00		0	0.00		0	0.00	
Total	210	202.65	104%	52	45.60	114%	41	48	85%	49	36.65	134%	37	37.3	99%	31	35.10	88%

Douglas County Employees' Retirement Plan

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Comparison of Actual and Expected Rates

(continued)

Early and Normal Retirements

Age	5-Year Summary			2020			2019			2018			2017			2016		
	Actual	Exp	Ratio	Actual	Exp	Ratio	Actual	Exp	Ratio	Actual	Exp	Ratio	Actual	Exp	Ratio	Actual	Exp	Ratio
<=60	4	5.00	80%	1	1.05	95%	1	1.25	80%	1	0.65	154%	1	0.95	105%	0	1.10	0%
61	3	3.70	81%	0	0.75	0%	0	0.40	0%	0	0.75	0%	3	1.10	273%	0	0.70	0%
62	3	5.80	52%	1	0.60	167%	0	1.20	0%	1	1.90	53%	0	1.10	0%	1	1.00	100%
63	6	4.55	132%	3	0.90	333%	0	1.15	0%	2	0.60	333%	1	0.80	125%	0	1.10	0%
64	5	4.00	125%	1	1.00	100%	1	0.80	125%	2	0.60	333%	1	0.90	111%	0	0.70	0%
65	22	29.70	74%	4	8.40	48%	3	6.60	45%	7	6.30	111%	5	6.30	79%	3	2.10	143%
66	15	19.20	78%	5	5.70	88%	2	4.20	48%	4	4.80	83%	0	1.20	0%	4	3.30	121%
67	13	16.80	77%	4	3.90	103%	2	4.80	42%	2	1.20	167%	1	2.40	42%	4	4.50	89%
68	7	15.30	46%	3	4.20	71%	1	3.60	28%	2	2.40	83%	1	3.30	30%	0	1.80	0%
69	5	12.00	42%	1	3.60	28%	0	1.20	0%	2	3.30	61%	0	1.50	0%	2	2.40	83%
Subtotal	83	116.05	72%	23	30.10	76%	10	25.20	40%	23	22.50	102%	13	19.55	66%	14	18.70	75%
70+	32	165.00	19%	9	39.00	23%	6	39.00	15%	5	28.00	18%	7	30.00	23%	5	29.00	17%
Total	115	281.05	41%	32	69.10	46%	16	64.2	25%	28	50.50	55%	20	49.55	40%	19	47.70	40%

Comparison of Actual and Expected Rates

(continued)

Salary Increases

Age Group	2020 Actual	2020 Exp	2020 Ratio	2019 Actual	2019 Exp	2019 Ratio	2018 Actual	2018 Exp	2018 Ratio	2017 Actual	2017 Exp	2017 Ratio	2016 Actual	2016 Exp	2016 Ratio
20-24	2.19%	6.50%	34%	3.45%	6.50%	53%	11.28%	6.50%	174%	7.07%	6.50%	109%	8.25%	6.50%	127%
25-29	5.53%	6.50%	85%	8.38%	6.50%	129%	9.78%	6.50%	150%	10.17%	6.50%	156%	4.33%	6.50%	67%
30-34	4.65%	6.00%	78%	8.60%	6.00%	143%	8.77%	6.00%	146%	5.48%	6.00%	91%	4.47%	6.00%	75%
35-39	4.87%	6.00%	81%	5.83%	6.00%	97%	7.96%	6.00%	133%	6.01%	6.00%	100%	2.20%	6.00%	37%
40-44	5.61%	5.50%	102%	6.34%	5.50%	115%	6.77%	5.50%	123%	5.49%	5.50%	100%	1.90%	5.50%	35%
45-49	3.86%	5.00%	77%	5.31%	5.00%	106%	5.42%	5.00%	108%	4.19%	5.00%	84%	1.33%	5.00%	27%
50-54	2.98%	5.00%	60%	3.87%	5.00%	77%	5.61%	5.00%	112%	4.44%	5.00%	89%	1.50%	5.00%	30%
55-59	3.84%	4.50%	85%	5.49%	4.50%	122%	4.38%	4.50%	97%	3.09%	4.50%	69%	1.03%	4.50%	23%
60-65	2.65%	4.50%	59%	5.84%	4.50%	130%	5.08%	4.50%	113%	5.53%	4.50%	123%	0.71%	4.50%	16%
65+	2.53%	4.50%	56%	3.81%	4.50%	85%	4.34%	4.50%	96%	4.44%	4.50%	99%	0.29%	4.50%	6%
Totals	4.05%	5.26%	77%	5.75%	5.23%	110%	6.46%	5.29%	122%	5.16%	5.29%	98%	2.03%	5.34%	38%

5-Year Summary

Age	Actual	Exp	Ratio
20-24	6.45%	6.50%	99%
25-29	7.64%	6.50%	118%
30-34	6.39%	6.00%	107%
35-39	5.37%	6.00%	90%
40-44	5.22%	5.50%	95%
45-49	4.02%	5.00%	80%
50-54	3.68%	5.00%	74%
55-59	3.57%	4.50%	79%
60-65	3.96%	4.50%	88%
65+	3.08%	4.50%	68%
Total	4.94%	5.40%	91%

Comparison of Actual and Expected Rates
(continued)
Mortality for Retired and Terminated Vested Participants

Male   PubG-2010 (+2) projected with 75% of MP-2020 from 2010 to applicable year

Age Group	2020 Actual	Exp	Ratio	2019 Actual	Exp	Ratio	2018 Actual	Exp	Ratio	2017 Actual	Exp	Ratio	2016 Actual	Exp	Ratio
<60	0	0.46	0%	1	0.48	206%	0	0.50	0%	0	0.53	0%	0	0.52	0%
60-64	2	0.78	257%	0	0.66	0%	0	0.69	0%	0	0.73	0%	1	0.83	121%
65-69	4	1.71	234%	1	1.80	56%	0	1.84	0%	0	1.79	0%	1	1.60	63%
70-74	3	2.90	104%	3	2.63	114%	1	2.00	50%	1	1.72	58%	1	1.64	61%
75-79	1	3.05	33%	4	3.00	134%	3	2.49	120%	3	2.38	126%	2	2.08	96%
80-84	5	2.83	176%	4	2.95	136%	1	2.45	41%	6	2.97	202%	3	2.93	102%
85-89	7	4.06	172%	1	4.33	23%	2	3.15	64%	2	3.18	63%	6	3.45	174%
90-94	6	3.45	174%	5	3.28	152%	1	2.60	38%	2	1.99	101%	2	2.03	99%
>=95	0	0.91	0%	3	1.50	199%	0	1.09	0%	1	0.84	120%	3	1.32	227%
Total	28	20.15	139%	22	20.64	107%	8	16.82	48%	15	16.11	93%	19	16.39	116%

5-Year Summary

Age	Actual	Exp	Ratio
<60	1	2.49	40%
60-64	3	3.68	81%
65-69	6	8.73	69%
70-74	9	10.90	83%
75-79	13	13.00	100%
80-84	19	14.13	134%
85-89	18	18.17	99%
90-94	16	13.35	120%
>=95	7	5.66	124%
Total	92	90.12	102%

Comparison of Actual and Expected Rates

Female PubG-2010 (+1) projected with 75% of MP-2020 from 2010 to applicable year
(continued)

Mortality for Retired and Terminated Vested Participants

Age Group	2020 Actual	2020 Exp	2020 Ratio	2019 Actual	2019 Exp	2019 Ratio	2018 Actual	2018 Exp	2018 Ratio	2017 Actual	2017 Exp	2017 Ratio	2016 Actual	2016 Exp	2016 Ratio
<60	0	0.34	0%	1	0.37	272%	1	0.38	265%	0	0.34	0%	0	0.34	0%
60-64	0	0.45	0%	0	0.48	0%	0	0.50	0%	1	0.51	198%	4	0.56	715%
65-69	4	1.30	308%	1	1.27	79%	1	1.31	77%	1	1.35	74%	2	1.29	155%
70-74	3	2.26	133%	3	2.01	150%	5	2.04	246%	1	1.96	51%	1	1.78	56%
75-79	1	3.09	32%	4	3.18	126%	4	2.32	173%	5	2.13	234%	3	2.19	137%
80-84	5	3.59	139%	4	3.62	111%	4	3.51	114%	1	3.76	27%	2	3.57	56%
85-89	5	5.89	85%	3	6.34	47%	3	6.07	49%	6	6.02	100%	6	6.05	99%
90-94	11	7.03	156%	6	6.98	86%	5	5.49	91%	7	5.23	134%	5	6.20	81%
>=95	7	5.61	125%	6	5.51	109%	5	4.28	117%	4	4.07	98%	2	2.60	77%
Total	36	29.56	122%	28	29.75	94%	28	25.88	108%	26	25.37	103%	25	24.57	102%

5-Year Summary

Age	Actual	Exp	Ratio
<60	2	1.76	114%
60-64	5	2.49	200%
65-69	9	6.52	138%
70-74	13	10.03	130%
75-79	17	12.92	132%
80-84	16	18.05	89%
85-89	23	30.36	76%
90-94	34	30.94	110%
>=95	24	22.06	109%
Total	143	135.13	106%

Historical Rates of Investment Return

Year	Annual Return on Market Value of Assets	Annual Return on Actuarial Value of Assets
1984	8.9%	N/A
1985	20.6%	N/A
1986	15.5%	N/A
1987	4.4%	N/A
1988	11.5%	N/A
1989	15.5%	N/A
1990	6.7%	N/A
1991	15.5%	N/A
1992	7.9%	N/A
1993	10.4%	N/A
1994	2.4%	N/A
1995	17.2%	N/A
1996	10.6%	N/A
1997	13.3%	N/A
1998	7.7%	N/A
1999	7.3%	N/A
2000	2.3%	6.2%
2001	1.3%	2.4%
2002	-4.6%	0.0%
2003	15.7%	7.3%
2004	10.0%	8.7%
2005	7.1%	7.8%
2006	12.1%	10.0%
2007	4.9%	7.2%
2008	-18.7%	-6.4%
2009	16.0%	3.8%
2010	11.0%	9.7%
2011	0.5%	5.0%
2012	10.3%	7.6%
2013	18.9%	13.2%
2014	5.2%	9.1%
2015	2.3%	5.6%
2016	6.8%	6.2%
2017	16.8%	11.4%
2018	-2.8%	4.1%
2019	19.7%	11.6%
2020	13.6%	12.7%
Average	8.8% (37 yrs)	
	7.1% (21 yrs)	6.8% (21 yrs)
	9.1% (10 yrs)	8.7% (10 yrs)
	10.8% (5 yrs)	9.2% (5 yrs)

Historical Market and Actuarial Value of Assets

Year	Market Value of Assets	Actuarial Value of Assets	AVA as % of MVA
2000	123,913,647	117,625,992	94.9%
2001	125,752,053	123,971,024	98.6%
2002	126,751,547	126,336,366	99.7%
2003	119,929,319	125,237,848	104.4%
2004	137,080,947	132,768,961	96.9%
2005	148,916,100	142,402,678	95.6%
2006	157,653,656	151,686,147	96.2%
2007	175,115,759	165,309,144	94.4%
2008	184,386,700	177,833,982	96.4%
2009	151,275,593	167,993,744	111.1%
2010	179,166,378	177,797,061	99.2%
2011	199,988,291	196,119,468	98.1%
2012	200,860,360	205,795,168	102.5%
2013	219,605,063	219,494,329	99.9%
2014	258,340,593	245,830,308	95.2%
2015	267,549,482	263,789,654	98.6%
2016	269,935,429	274,877,630	101.8%
2017	283,902,001	287,477,661	101.3%
2018	326,905,394	315,694,446	96.6%
2019	309,764,717	320,394,185	103.4%
2020	363,054,352	350,081,173	96.4%
2021	404,822,679	386,861,916	95.6%

Recommended Actuarial Assumptions

Investment Return	7.5% compounded annually.
Salary Scale	Salaries were assumed to increase at an annual rate compounded annually following the valuation date varying by age, as illustrated below.

Age	Percentage Increase
18-29	6.50%
30-39	6.00%
40-44	5.50%
45-54	5.00%
55+	4.50%

Mortality Rates	PubG-2010 set forward 2-years for males and 1-year for females and projected with 75% of the MP-2020 improvement scale.*
Disability Rates	None.
Withdrawal Rates	Based on rates as illustrated below:

Age	Percentage
22	28.3%
27	12.7%
32	10.0%
37	8.2%
42	5.9%
47	4.0%
52	2.3%
57	1.9%

Accrued Sick Leave	7 days per year.

* Recommend update of the mortality improvement scale from MP-2019 to MP-2020.

Recommended Actuarial Assumptions

(continued)

Retirement Rate

Age	Rule of 75	Other
50	30%	5%
51-54	5%	2%
55-61	10%	5%
62-64	20%	10%
65-69	30%	30%
70	100%	100%

Retirement rate is 30% the first year a Member is eligible for Rule of 75.

Age	Sheriffs Hired after June 30, 2011
53-54	5%
55	25%
56-57	15%
58	20%
59-61	25%
62	30%
63	35%
64	40%
65	100%

Retirement rate is 100% for sheriffs hired after June 30, 2011 at 30 years of service.

Interest Rate on Employee Contributions

0.84% per annum, based on November 30, 2020 10-year treasury rate.

Administrative Expenses

Annual administrative expenses have been estimated as 3/10 of 1% of plan assets.

Welcome.

Douglas County
Employees' Retirement Plan
Actuarial Review
as of January 1, 2021

May 27, 2021

Actuarial Valuation Overview

- An actuarial valuation is performed annually to report on the financial health of the Retirement Plan, including:
  - Funded Percentage
  - Summary of Plan Liabilities and Assets
  - Value of Earned Benefits
  - Actuarially Determined Contribution
  - Summary of County and Employee Contributions

1

Plan Provisions

- Monthly Annuity – the plan provides monthly benefits payable to the members and beneficiaries

- Amount of Benefit – determined by the member's pay, service and the plan's benefit formula. Pay is averaged over five years.

- Benefit Formula – depends on the member's date of hire and classification:

  ○ All prior to June 30, 2011
    – 2% of Average Pay times Years of Service
    – Maximum of 60% of Average Pay
    – Eligible for Rule of 75 Retirement

  ○ Generally, those hired after December 31, 2011
    – 1.5% of Average Pay times Years of Service
    – Maximum of 45% of Average Pay
    – Not eligible for Rule of 75

  ○ Sheriff deputies hired after June 30, 2011 and FOP #8 members hired after June 30, 2014 have a service-graded benefit formula, with a maximum benefit of 60% of Average Pay
    – No Rule of 75
    – Unreduced benefit after 30 years of service
    – Unreduced benefit at age 55

Plan Provisions (cont'd)

- Full retirement benefits (unreduced) are payable:

	Hired Prior to 2012	Hired After 2011	Sheriff Deputies Hired After 2011	FOP #8 Hired After 2014
Normal Retirement Date	65	65	55	55
Rule of 75	50 with Age + Svc > 75	N/A	N/A	N/A

- Early Retirement – a reduced pension payable after:

Hired Prior to 2012	- Age 55 with 20 years of service - Age 60 with five years of service
Hired After 2012	- Age 50 with 10 years of service - Age 60 with five years of service
Sheriff Deputies Hired After 2011	- Age 53
FOP #8 Members Hired After 2014	- Age 53

- Other Benefits – may be payable upon death

Plan Provisions (cont'd)

- Vesting Schedule – a deferred pension is earned based on the vesting schedule

Years of Service	Vesting Percentage
Less than 5	0%
5	25%
6	40%
7	55%
8	70%
9	85%
10 +	100%

Plan Changes

- FOP #8 – The same benefit provisions in effect for sheriffs hired after June 30, 2011, were extended to FOP #8 members hired after June 30, 2014, and the member contributions were increased by 2%.

- Disability Benefits – The disability provision for active members was removed from the Plan as of July 1, 2015. Disabilities occurring after this date are covered under an insurance contract separate from the pension plan.

- Interest on Member Contributions – Effective January 1, 2016, the interest crediting rate on Member Contributions was changed from 5.0% to the 10-year Treasury rate for the November 30th preceding the Plan Year.

  ◦ 2021   0.84%
  ◦ 2020   1.78%
  ◦ 2019   3.01%
  ◦ 2018   2.42%
  ◦ 2017   2.37%
  ◦ 2016   2.21%

Plan Members

Number of Members	2020	2021
Actives		
• Prior Benefit Formula With Rule 75	1,181	1,076
• Newer, Reduced Benefit Formula [1]	1,043	1,112
• Total	2,224	2,188
Retirees and Beneficiaries		
• Contract 39G – 12795 (after 2/28/2003)	969	1,042
• Contract GDA – 6148 (prior to 3/1/2003)	373	331
• Total	1,342	1,373
Vested Terminated	113	124
Terminated Non-Vested	155	268
Disabled[2]	24	23
Total	3,858	3,976
Retirees and Beneficiaries as a Percent of Total	34.8%	34.5%

[1] Includes Sheriffs and FOP #8 members.
[2] Disability benefits provided by an insurance contract held outside of the pension plan effective July 1, 2015.

Actuarial Assumptions

- **Investment Return**   7.5% per year

- **Salary Increases**

Age	Annual Increase
18 – 29	6.5%
30 – 39	6.0%
40 – 44	5.5%
45 – 54	5.0%
55 +	4.5%

- **Mortality Table**   PubG-2010 set forward two years for males and one year for females and projected with 75% of MP-2020 improvement

- **Withdrawal Rates (Sample)**

Age	Annual Increase
22	28.3%
32	10.0%
42	5.9%
52	2.3%

- **Member Contributions**   8.5% of Pay (FOP #8 members hired after 6/30/2014 contribute 10.5% of Pay)
- **County Contributions**   8.5% of Pay

Actuarial Assumptions (cont'd)

Retirement Rates*

Age	Rule of 75	Other
50	30%	5%
51 – 54	5%	2%
55 – 61	10%	5%
62 – 64	20%	10%
65 – 69	30%	30%
70+	100%	100%

*30% assumed to retire upon eligibility for Rule of 75.

Actuarial Assumptions (cont'd)

Retirement Rates* – Sheriffs hired after June 30, 2011 and FOP #8 members hired after June 30, 2014

Age	Rate
53 – 54	5%
55	25%
56 – 57	15%
58	20%
59 – 61	25%
62	30%
63	35%
64	40%
65+	100%

*100% assumed to retire at 30 years of service

Actuarial Measurements (thousands)

	2020	2021
Actuarial Accrued Liability	$523,726	$546,029
Actuarial Value of Assets	$350,081	$386,862
Funded Percentage	66.8%	70.9%
Unfunded Liability	$173,645	$159,167

Market Value of Assets at 1/1/2021 was $404,823; resulting in a
Funded Percentage of 74.1%

Actuarial Determined Contribution

	2020	2021
Expected Member Contributions	$12,530	$12,776
Expected County Contributions	$12,328	$12,528
Total	$24,858*	$25,304

Actuarial Determined Contribution

		2020	2021
▪	Normal Cost (Value Of Benefits Earned In The Year)	$15,944	$16,042
▪	25-Year Amortization of Unfunded Liability	$9,489	$9,031
▪	½ year interest	$954	$940
Total		$26,387	$26,014

*Actual total for 2020 was $25,361,845

Amortization of Unfunded Liability

One of the components included to determine the actuarially determined contribution is the amortization of unfunded liability. The method adopted in 2017 amortizes the unfunded liability over 25 years. Subsequent amortization bases are established annually for changes in the unfunded liability due to experience, plan amendment and assumption changes.

Amortization Base	Date Established	Source of Base
140,285,787	January 1, 2017	Initial Unfunded
5,714,314	January 1, 2018	Actuarial Loss
16,456,582	January 1, 2019	Actuarial Loss
2,033,084	January 1, 2020	Assumption Change, Amendment, Actuarial Gain
(19,340,431)	January 1, 2021	Assumption Change, Actuarial Gain

Amortization of Unfunded Liability (con't)

Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Minimum Payment
Charge Bases			
140,285,787	25	21	8,643,756
5,714,314	25	22	334,602
16,456,582	25	23	915,766
2,033,084	25	24	107,519
Total			$10,001,643
Credit Bases			
(19,340,431)	25	25	970,408
Total			$9,031,235

Plan Asset History as of January 1

Year	Market Value of Assets	Rate of Return Prior Year
2021	$404,822,679	13.6%
2020	$363,054,352	19.7%
2019	$309,764,717	-2.8%
2018	$326,905,394	16.8%
2017	$283,902,001	6.8%
2016	$269,520,264	2.3%
2015	$267,549,482	5.2%
2014	$258,340,593	18.9%
2013	$219,605,063	10.3%
2012	$200,860,360	0.5%
2011	$199,988,291	11.0%
2010	$179,166,378	16.0%
2009	$151,275,593	-18.7%
2008	$184,386,700	4.9%
2007	$175,115,759	12.1%

Note: 15-year geometric average return of 7.3%

Historical Funded Percentage

Year	Actuarial Value of Assets ($1,000s)	Actuarial Accrued Liability ($1,000s)	Funded Ratio
2021	$386,862	$546,029	70.9%
2020	$350,081	$523,726	66.8%
2019	$320,394	$488,372	65.6%
2018	$315,694	$464,234	68.0%
2017	$287,478	$427,763	67.2%
2016	$274,878	$408,662	67.3%
2015	$263,790	$394,847	66.8%
2014	$245,830	$380,727	64.6%
2013	$219,494	$362,117	60.6%
2012	$205,795	$343,178	60.0%
2011	$196,119	$321,700	61.0%
2010	$177,797	$307,407	57.8%
2009	$167,994	$290,127	57.9%
2008	$177,834	$270,351	65.8%
2007	$165,309	$248,986	66.4%

Looking Forward

- Funding Policy
- Reporting of Risk Measures
- Forecasts of Funding Percentage

Funding Policy

- The County's funding policy is to contribute amounts to the plan necessary to fund benefits earned under the plan, along with members' contributions, based on the Contribution Rates below.

- Nebraska State statue limits the County's contribution to no more than the amounts contributed by the members.

- Member Contributions: 8.5% of Pay
  - For all members, regardless of date of hire or classification
    - Plus additional 2% of pay for FOP #8 members hired after 2014
    - Except for sheriff deputies hired after 2011 and FOP #8 members hired after 2014, reduced at 33 years of service

- County Contributions:
  - Same Amount as Members, excluding additional 2% of pay for FOP #8 members hired after 2014

Risk Measures

- The Actuarial Standards of Practice require the reporting of certain risk disclosures.

- Risk is defined as the potential of <u>actual</u> future measurements deviating from <u>expected</u> future measurements resulting from actual future experience deviating from actuarially assumed experience.

- Sample sources of risk include:
  - Investment Return
  - Asset/Liability Mismatch
  - Interest Rate Risk
  - Longevity and Other Demographic Risks
  - Contribution Risk

Risk Measures (cont'd)

	January 1, 2020	January 1, 2021
Market Value of Assets	$363,054,352	$404,822,679
Total Covered Payroll	$148,185,887	$150,083,372
Ratio	2.4	2.7
More risk is associated with plans whose size (assets and liabilities) are significantly larger than annual payroll.		
Market Value of Assets	$363,054,352	$404,822,679
Actuarial Accrued Liability	$523,726,196	$546,028,944
Ratio	69.3%	74.1%
More risk is associated with plans that have lower funded ratios.		
Retired Participant Liability	$277,393,988	$297,196,071
Total Actuarial Accrued Liability	$523,726,196	$546,028,944
Ratio	53.0%	54.4%
More risk is associated with plans whose retiree liability is a significant and growing proportion of the plan's total liability.		
Benefit Payments	$30,955,883	$31,553,332
Total Contributions	$24,956,737	$25,361,845
Ratio	124.0%	124.4%
More risk is associated with plans whose benefit payments are significantly larger than contributions.		

Forecast of Funded Percentage

Forecast Period	Year	Estimated Funded Percentage		
		6.5% Investment Return	7.5% Investment Return	8.5 % Investment Return
Current – Actual	2021	70.9%	70.9%	70.9%
5 Years	2026	76.0%	79.1%	82.3%
10 Years	2031	77.3%	85.1%	93.5%
15 Years	2036	79.4%	93.2%	108.8%
20 Years	2041	83.3%	104.6%	130.0%

Assumptions

- Investment Return — 7.5%, 6.5% or 8.5% per year
- Discount Rate — 7.5% for all scenarios
- Salary Scale — Graded 4.5% – 6.5%
- Mortality Table — PubG-2010 set forward two years for males and one year for females and projected with 75% of MP-2020 improvement scale
- Actuarial Cost Method — Projected Unit Credit
- Member Growth Rate — 0%
- Plan Provisions — Same as Current
- Other Assumptions and Data — Consistent with the January 1, 2021 Valuation

Forecasts are intended for illustrative purposes as an indication of future trends and risks. Actual future funded percentages will differ from these forecasts as actual plan experience differs from the assumptions.

Thank You.
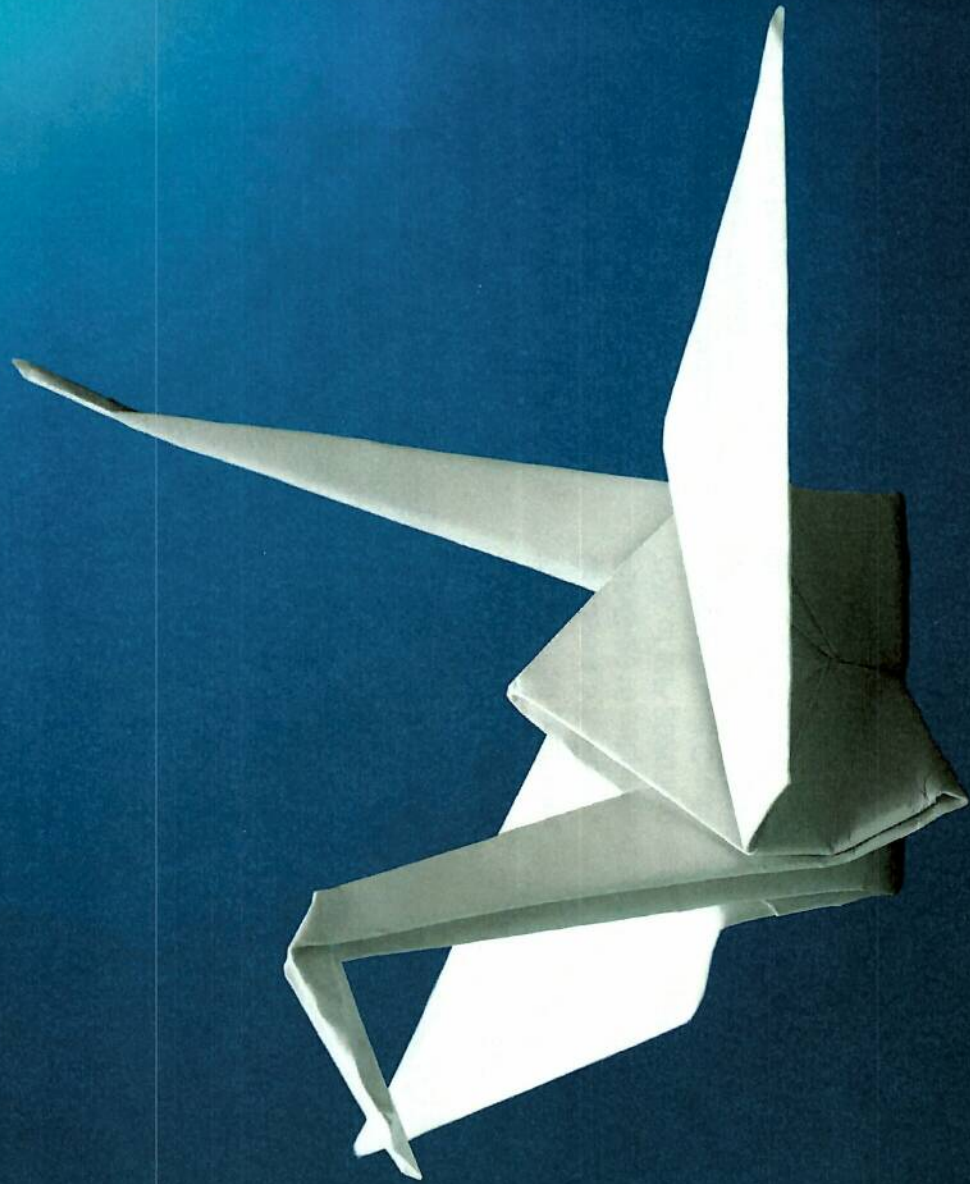
Appendix B

Eastern Nebraska Health Agency
Retirement Plan Information

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2021 Report
Eastern Nebraska Human Services Agency Employees Retirement Plan

1. **Information for plan years 2016 through 2021*:**

	2021	2020	2019	2018	2017	2016
Funding Status	N/A**	73%	N/A	74%	N/A	71%
Assumed rate of return	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Prior year actual return	9.9%	14.0%	-2.4%	11.7%	6.8%	0.2%
Member contribution rates: % of pay	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%
Employer contribution rates: % of pay	9.5%	9.5%	9.5%	9.5%	9.0%	8.5%
Normal cost: % of pay	N/A	7.4%	N/A	7.4%	N/A	7.0%
ARC: % of pay	13.46%	13.46%	12.19%	12.19%	11.55%	11.55%
ARC ($)	$3,202,721	$3,124,606	$2,996,916	$2,923,820	$2,668,776	$2,603,684
Contribution ($)	TBD	$3,221,931	$3,120,980	$3,127,775	$2,900,037	$2,783,724
Contribution: % of ARC	TBD	103.1%	104.1%	107.0%	108.7%	106.9%

* Actuarial Valuations are conducted every other year. Accordingly, the 2021 ARC as a percentage of pay is the same as for 2020.

** The 1/01/2020 forecast projected the 1/01/2021 plan assets to be $47,229,447 and a 73.4% funded percentage. Actual 1/01/2021 plan assets were $49,151,235 which would increase the estimated funded percentage to 76.4%.

2. **Circumstances that led to the current underfunding of the retirement plan:** Prior to 2014, actual contributions were significantly less than the ARC. Additionally, investment losses resulting from the financial crisis of 2008/09 significantly reduced the plan's funding status.

3. **Changes in the actuarial methods and/or assumptions since the previous actuarial valuation report:** For the 2020 actuarial valuation, the mortality table was updated to the PubG-2010(B) mortality table projected with MP 2019 improvement scale. Early retirement rates were added for ages 55 to 61. There were no other changes in the actuarial assumptions or methods. The impact of these changes was to increase the actuarial accrued liability by $1,183,891 or 1.9%.

4. **Year the plan funding ratio expected to reach 100%:** Based on forecasts as of 1/1/2020, the Plan is forecasted to attain a 100% funding ratio in 2047 based on the January 1, 2020 census data and assets and projected with assumptions as described in the January 1, 2020 valuation report. It is also based on an increase of employer contributions to 10% and employee contributions to 3% effective in 2021. This increase in contribution rates is scheduled to begin November 1, 2021.

5. **Method used to amortize the unfunded actuarial liability:** 25 years on fixed level dollar, closed layered basis.

6. **Corrective actions implemented to improve the funding status of the plan:** The agency has been increasing employer contributions by one-half percent annually since 2010, reaching 9.5% in 2018. Beginning November 1, 2021, the employer contribution rate increased to 10% and employee contributions to 3%. The most recent forecast study was completed in October 2020 (see attached). There are two scenarios, 1) the current contribution schedule of 9.5% employer and 2.75% employee and 2) the expected increase to 10% employer and 3% employee. Each forecast shows steady future annual improvement in the funding status with the increased contribution schedule attaining a funding status exceeding 80% in 10 years, 4 years earlier than with no change to the contribution schedule. These forecasts of funded status would result in higher funded percentages if updated for investment gains subsequent to January 1, 2020.

7. **Negotiations with bargaining groups:** Approximately 20% of the agency's employees are covered under a collective bargaining agreement. As of this report, the agency is not in negotiations for any plan changes.

8. **The most recent Actuarial Experience Study was completed in October 2020 and is attached.** An experience study is performed every four years on this plan. The next study will be performed in 2024.

9. **The current assumed rate of return is 7.0%.** This assumption has not been changed since inception of the Plan. The rate is reviewed in the Actuarial Experience Study conducted every four years.

10. **The report for the January 1, 2020 actuarial valuation is attached.**

SilverStone GROUP | O HUB

October 12, 2020

PERSONAL & CONFIDENTIAL

Ms. Debbie Herbel
Eastern Nebraska Human Services Agency
4715 South 132nd Street
Omaha, NE 68137

RE: Employees Retirement Plan

Dear Debbie:

We have completed our work on the actuarial valuation for the Eastern Nebraska Human Services Agency Employees Retirement Plan. Enclosed for your review are 15 copies of the Actuarial Valuation Report for the plan year beginning January 1, 2020.

The Report Highlights section summarizes the valuation results. The actuarial formula to determine the Recommend Employer Contribution is based on an amount equal to the excess of the plan's Normal Cost over the anticipated employee contributions, plus an amount to amortize the unfunded accrued liability over a 25-year period.

The valuation recognizes the updated participant and plan asset information as of January 1, 2020. The mortality table was updated from the IRS 2018 table to the PubG-2010(B) table projected with MP 2019 improvement scale. Retirement rates were added for ages 55 to 61. All other actuarial methods and assumptions are the same as those used for the prior valuation. In our opinion, these methods and assumptions are appropriate.

Please call if we can provide additional information.

Sincerely,

Glen Gahan, FSA, MAAA
Enrolled Actuary

Enclosures

EASTERN NEBRASKA HUMAN SERVICES AGENCY EMPLOYEES RETIREMENT PLAN

Actuarial Valuation Report

January 1, 2020

SilverStone GROUP | O HUB

October 12, 2020

ACTUARIAL CERTIFICATION

Pension Committee
Eastern Nebraska Human Services Agency
4715 South 132nd Street
Omaha, NE 68137

Committee Members:

An actuarial valuation was performed for the Eastern Nebraska Human Services Agency Employees Retirement Plan as of January 1, 2020. The valuation was prepared to determine the value of accrued benefits and annual costs. The results of the valuation are contained in the accompanying report.

The valuation is based on eligible employees submitted by your office. A statement of plan assets was furnished by United of Omaha, American Funds, and Stichler Wealth Management. We have not made an independent audit of this data, but have relied on the accuracy of the information that was supplied.

To the best of my knowledge, the information supplied in this report is complete and accurate and in my opinion the assumptions are reasonably related to the experience of the Plan and to reasonable expectations and represent my best estimate of anticipated experience under the Plan. However, future measures may differ significantly from the current measurement. Due to the limited scope of our assignment, this report does not include an analysis of the potential range of such future measures. The undersigned meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Sincerely,

Glen Gahan, FSA, MAAA
Enrolled Actuary

Renee A. Nolte, ASA, MAAA
Senior Consulting Actuary

Enclosure

Table of Contents

Financial Highlights

	2018	2019	2020
Annual Contributions			
Recommended	2,923,820	2,996,916 *	3,124,606
Actual	3,127,775	3,120,980	N/A
Plan Assets	40,879,777	39,948,715	45,131,959
Prior Year Investment Return	11.7%	-2.4%	14.0%
Funding Basis			
Actuarial Accrued Liability	55,125,381		62,126,732
Plan Assets	40,879,777		45,131,959
Unfunded Actuarial Accrued Liability	14,245,604		16,994,773
Accrued Benefit Basis			
Vested Benefit Value	50,842,736		57,991,394
Accrued Benefit Value	51,902,778		59,099,586
Funded Ratios**			
Funding Basis - AAL	74%		73%
Accrued Benefit Basis	79%		76%
Normal Cost	1,781,369		1,717,500
As a percent of covered payroll	7.4%		7.4%
Interest Rates			
Funding Basis	7.00%		7.00%
Accrued Benefit Basis	7.00%		7.00%
Annual Covered Payroll	23,985,346		23,206,547
Number of Participants			
Active and Disabled	668		620
Retired and Beneficiary	251		302
Vested Terminations and Transfers	76		96
Total	995		1,018

* Increased from prior year recommended contribution by 2.5% salary scale.
** Ratio of plan assets to applicable actuarial liability.

1

Comments on the Valuation

The results of the actuarial valuation prepared for the Eastern Nebraska Human Services Agency Employees Retirement Plan as of January 1, 2020 are summarized in this report. The following observations are provided regarding the report.

Plan Experience

Examining the overall plan experience since the last valuation on January 1, 2018, we note:

- Since the prior valuation, the number of active participants has decreased from 668 to 620. Annual covered payroll for participants under Normal Retirement Age decreased from $23,985,346 to $23,206,547, a 3.2% decrease. The average salary for participants under Normal Retirement Age increased from $37,951 to $39,333, a 3.6% increase.

- For active participants included in the valuation, average age increased from 45.2 to 46.3 years and average service increased from 10.9 to 11.6 years.

- The investment return on plan assets since the prior valuation was lower on average than the assumed 7.0% rate. The approximate investment return rate for 2018 was -2.4%, and for 2019 was 14.0%.

- On the same actuarial basis as used in 2018 and prior to any assumption changes, the Unfunded Accrued Liability (UAL) increased by $1,560,000, from $14,250,000 to $15,810,000. Contributing factors were:

  - Investment return rates less than expected increased the UAL by approximately $1,320,000.

  - Contributions more than the Normal Cost plus interest on the UAL subtracted about $500,000 from the UAL.

  - Net actuarial losses from other sources increased the UAL by approximately $740,000.

Comments on the Valuation

Actuarial Assumptions

Rates of retirement were assumed for ages 55-61 and rates from 62-65 are now assumed for all active participants. The mortality table was updated to the PubG-2010(B) mortality table projected with MP-2019 improvement scale. The effect of these changes increased the UAL by $1,183,891. The corresponding increase in the normal cost was $28,523.

All other assumptions are the same as those used in the 2018 valuation.

Recommended Contribution

The recommended contribution consists of the plan's normal cost plus a 25-year amortization payment of the unfunded accrued liability. This amortization period is closed for the initial unfunded actuarial accrued liability (UAAL) as of Janaury 1, 2018. New bases will be established in future years for changes in the UAAL due to changes in plan provisions, actuarial assumptions and experience (gains)/losses.

We recommend ENHSA increase the total contribution to the plan to at least $3,124,606 for 2020. Plan contributions include amounts contributed by the employees and by the employer. For 2020, the anticipated employee contributions at the current rate of 2.75% are $638,180 and the anticipated employer contributions at the current rate of 9.5% are $2,204,622 for a total of $2,842,802. The shortfall can be funded by increased contributions by the employees, ENHSA, or both.

Annual Contributions

Annual contributions to the Retirement Plan as illustrated herein are comprised of employee contributions equal to a percentage of expected compensation as of the valuation date and an amount payable by the employer.

		January 1, 2020	
	January 1, 2018	**Before Assumption Changes**	**After Assumption Changes***
Recommended Contribution			
Normal Cost	$1,781,369	$1,688,977	$1,717,500
Accrued Liability Payment	1,142,451	1,312,162	1,407,106
Total	2,923,820	3,001,139	3,124,606
Expected Employee Contribution			
Employee Contribution Rate	2.75%	2.75%	2.75%
Covered Payroll	23,985,346	23,206,547	23,206,547
Expected Employee Contribution	659,597	638,180	638,180
Recommended Employer Contribution			
Normal Cost less Employee Contribution	1,121,772	1,050,797	1,079,320
Employer Normal Cost as a Percent of Pay	4.68%	4.53%	4.65%
Total Contribution less Employee Contribution	2,264,223	2,362,959	2,486,426
Employer Contribution as a Percent of Pay	9.44%	10.18%	10.71%

*   The rate of retirement and the mortality table assumption was changed as shown in the Actuarial Assumptions section.

Valuation Results

A summary of the results of the actuarial valuations performed as of January 1, 2018 and January 1, 2020 is displayed below:

| | | January 1, 2020 | |
	January 1, 2018	Before Assumption Changes	After Assumption Changes*
Unfunded Accrued Liability			
Accrued Liability	$55,125,381	$60,942,841	$62,126,732
Less: Plan Assets	40,879,777	45,131,959	45,131,959
Unfunded Accrued Liability	$14,245,604	$15,810,882	$16,994,773
Ratio of Assets to Accrued Liability	74%	74%	73%
Annual Normal Cost			
Retirement, Death, Termination and Deferred Disability Benefits	$1,751,893	$1,653,341	$1,681,864
Administrative Expense Load	29,476	35,636	35,636
Total	$1,781,369	$1,688,977	$1,717,500

* The rate of retirement and the mortality table assumption was changed as shown in the Actuarial Assumptions section.

Plan Assets

All future plan benefits will be derived from plan assets on the valuation date, future contributions and investment income on these amounts. The changes in the value of plan assets since the last valuation and the value of plan assets on the current valuation date are displayed below.

Changes in Value of Plan Assets

Market Value of Assets on January 1, 2018	$40,879,777
Contribution Receivable	0
Adjusted Plan Assets on January 1, 2018	$40,879,777
Employer Contributions	2,385,984
Employee Contributions	741,791
Investment Income	(940,120)
Monthly Benefit Payments	(2,762,410)
Lump Sum Distributions	(324,087)
Administrative Charges	(32,220)
Market Value of Assets on January 1, 2019	$39,948,715
Contribution Receivable	0
Adjusted Plan Assets on January 1, 2019	$39,948,715
Employer Contributions	2,442,666
Employee Contributions	678,314
Investment Income	5,607,048
Monthly Benefit Payments	(2,977,912)
Lump Sum Distributions	(531,236)
Administrative Charges	(35,636)
Market Value of Assets on January 1, 2020	$45,131,959
Contribution Receivable	0
Adjusted Plan Assets on January 1, 2020	$45,131,959

Asset Allocation

Employee Funds - Annuity Contract	$3,889,772
Employee Funds - Equities	6,492,906
Employer Funds - Annuity Contract	8,485,764
Employer Funds - Equities	26,263,517
	$45,131,959

Plan Financial Information

Another objective of preparing the actuarial valuation is to evaluate the funding status of the Plan. The following display compares the funding status of the Plan for the two most recent actuarial valuations.

	January 1, 2018	January 1, 2020
1. Actuarial Present Value of Vested Accrued Benefits		
Retirees and Beneficiaries of Deceased Participants	$23,305,137	$30,601,278
Vested Terminated Participants	1,817,677	2,513,900
Active Participants	25,719,922	24,876,216
Total	$50,842,736	$57,991,394
2. Actuarial Present Value of Non-Vested Accrued Benefits for Active Participants	$1,060,042	$1,108,192
3. Actuarial Present Value of Accrued Benefits (1) + (2)	$51,902,778	$59,099,586
4. Value of Assets	$40,879,777	$45,131,959
5. Funded Ratio*		
Vested Accrued Benefits	80%	78%
Accrued Benefits	79%	76%
Interest Rate	7.00%	7.00%

The actuarial present value of vested and non-vested benefits has been determined based on the actuarial assumptions shown in the Actuarial Assumptions section.

* Ratio of plan assets to applicable actuarial present value.

Accrued Liability Payment

One of the components included to determine the actuarially determined contribution is the Accrued Liability Payment. The Accrued Liability Payment is an annual amount that will amortize:

- The unfunded accrued liability established as of January 1, 2018.
- An increase or decrease in the unfunded accrued liability due to plan amendment.
- An increase or decrease in the unfunded accrued liability due to a change in actuarial assumptions.
- An increase or decrease in the unfunded accrued liability resulting from actuarial gains or losses due to plan experience more or less favorable than expected.

This section of the report documents the Amortization Bases established for the Plan and displays other values associated with minimum funding.

Amortization Base	Date Established	Source of Base
14,245,604	January 1, 2018	Initial Unfunded
3,300,070	January 1, 2020	Assumption Change & Actuarial Loss

Minimum Funding

The Unamortized Balance is based on the methodology for the actuarially determined contribution and does not reflect actual past funding of the Amortization Bases. For each amortization base, the initial amortization period and the remaining term of the amortization period determined on the valuation date are displayed.

Charge Bases

Amortization Base	Initial Term-Years	Remaining Term on Valuation Date	Minimum Payment
14,245,604	25	23	1,142,451
3,300,070	25	25	264,655
		Total	$1,407,106

Risk Disclosures

The Actuarial Standards Board provides guidance to actuaries when performing certain actuarial services in the form of standards of practice. The Board has issued a standard of practice on risk disclosure that applies to actuaries when performing a funding valuation of a defined benefit pension plan. This standard of practice addresses assessment and disclosure of the risk that actual future measurements may differ significantly from expected future measurements of pension liabilities, funded status, and actuarially determined contributions.

Risk is defined as the potential of actual future measurements to deviate from expected future measurements. This deviation results when actual future experience is different from actuarially assumed experience. Sample sources of risk include: investment returns, asset/liability mismatch, interest rates, longevity and other demographic risks, and contribution risk. The following are certain significant measures of risk as they pertain to the plan.

	January 1, 2018	January 1, 2020
Retired Participant Liability	23,305,137	30,601,278
Total Plan Liability	55,125,381	62,126,732
Ratio	42.3%	49.3%

More risk related to investment returns is associated with plans whose retiree liability is a significant and growing proportion of the plan's total liability, since it is more difficult to restore a plan financially after losses occur due to a shorter duration of liability where significant retired liability exists.

	January 1, 2018	January 1, 2020
Contributions in prior year	2,900,037	3,120,980
Benefit Payments in prior year	(2,559,620)	(3,509,148)
Net Cash Flow	340,417	(388,168)

More risk related to investment volatility is associated with plans whose benefit payments are significant compared to the plan contributions. If, for example, a plan has negative cash flow and experiences investment returns below an assumed rate then there are fewer assets that can be reinvested to earn potentially higher returns that may follow.

	January 1, 2018	January 1, 2020
Duration of Plan Liability	12.2 years	11.8 years

Duration is a present value weighted average of the timing of future benefit payments. Plans with a higher duration have more risk related to future interest rates. Additionally, more risk related to asset/liability mismatch is associated with plans whose liability duration differs significantly from the duration of plan investments.

Risk Disclosures
(continued)

	January 1, 2018	January 1, 2020
Market Value of Assets	40,879,777	45,131,959
Total Covered Payroll	25,488,533	24,584,038
Asset Volatility Ratio	1.6	1.8

More risk related to investment return and future costs are associated with plans whose asset volatility ratio is high and growing; which is a characteristic of more mature plans.

	January 1, 2018	January 1, 2020
Market Value of Assets	40,879,777	45,131,959
Actuarial Accrued Liability	55,125,381	62,126,732
Ratio	74.2%	72.6%

More risk is associated with plans that have lower funded ratios.

	January 1, 2018	January 1, 2020
Actuarial Accrued Liability	55,125,381	62,126,732
Total Covered Payroll	25,488,533	24,584,038
Liability Volatility Ratio	2.2	2.5

More risk related to experience losses and future costs are associated with plans whose liability volatility ratio is high and growing; which is a characteristic of more mature plans.

The assumptions used to determine the risk measures above are identical to the assumptions used for recommended funding purposes on the respective valuation dates.

Actuarial Cost Method

Annual costs were calculated using the Projected Unit Credit Actuarial Cost Method. Projected Unit Credit is one of the Accrued Benefit Actuarial Cost Methods. Using Projected Unit Credit, annual costs equal the sum of the normal cost and an amount to amortize the unfunded accrued liability. The normal cost is defined as the actuarial value of retirement and ancillary benefits that are allocated to the current year.

The unfunded accrued liability is equal to the accrued liability reduced by the actuarial value of plan assets. The accrued liability is defined as the actuarial value of retirement and ancillary benefits that have been allocated to years of service prior to the current year.

The method allocates an equal amount of a participant's projected retirement benefit to each year of service. The benefit at normal retirement is projected assuming salaries increase at the assumed rates. The projected retirement benefit is then divided by the participant's years of service to determine the portion of the retirement benefit allocated to each year.

At the end of each year, a determination of actuarial gains and losses is made. Actuarial gains and losses indicate the extent to which actual experience is deviating from that expected on the basis of the actuarial assumptions. Actuarial gains result from experience more favorable than assumed and reduce the unfunded accrued liability. Actuarial losses result from experience less favorable than assumed and increase the unfunded accrued liability. All actuarial gains and losses are included in the determination of the unfunded accrued liability as of the valuation date.

The unfunded actuarial accrued liability is amortized over 25 years on a fixed level dollar, closed layered basis. This amortization method was adopted effective January 1, 2018.

Asset Valuation Method

The value of plan assets is based on the contract value of assets held at United of Omaha and the market value of assets held at American Funds and Stichler Wealth Management.

Actuarial Assumptions

Interest Rate   7.0% compounded annually.

Salary Scale   Salaries were assumed to increase at an annual
                            rate of 2.5% compounded annually following the
                            valuation date.

Mortality Rates   PubG-2010(B) / MP 2019 generational
                            improvement scale projected from 2010.

Turnover Rates   Based on years of service and age as follows:

Years of Service	Annual Rate
0	54.0%
1	25.5%
2	15.0%
3 or more	150% of Scale T-7 of the Actuary's Pension Handbook

Elected Form of Distribution

Age	Percent Electing	
	Deferred Annuity	Employee Contribution
Under 55	25%	75%
55 and over	100%	0%

Retirement Rate   Participants are assumed to retire in accordance
                            with the following schedule:

Age	Annual Rate of Retirement
55	5%
56	2%
57	2%
58	2%
59	3%
60	4%
61	5%
62	15%
63	5%
64	5%
65	100%

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Actuarial Assumptions
(continued)

Normal Retirement Age

Age 65 or Age 62 with 30 years of service earned as of the valuation date.

Marriage Rate

75% of the participants were assumed to be married at retirement. Female spouses are assumed to be 3 years younger than male spouses.

Administrative Expenses

Equal to prior plan year actual expense.

Summary of Plan Provisions

Effective Date

January 1, 1982.

Plan Year

January 1 through December 31.

Participation

Full-time employees are eligible to participate on January 1 or July 1 coinciding with or next following the completion of 6 months of service.

Definitions

Service

Any period of time the Employee is in the employ of the Employer as a full-time Employee.

Year of Service

A consecutive 12 month period during which 2,000 hours of service has been completed. For purposes of retirement benefits, a Year of Service shall include the fractional portion of the year from the most recent employment anniversary to date of termination.

Average Monthly Compensation

Average of monthly compensation during the five consecutive years of the last ten years of service which produces the highest average.

Normal Retirement Date

First day of the month coinciding with or next following the attainment of age 65, or age 62 with 30 years of service.

Early Retirement Date

First day of any month following the attainment of age 55 and completion of 10 years of service, or age 60 and 5 years of service.

Late Retirement Date

Anytime following Normal Retirement Date.

Disability Retirement

If a participant has completed five years of service and becomes disabled, they will remain active in the plan until their Normal Retirement Date. Mandatory employee contributions will be waived.

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Summary of Plan Provisions
(continued)

Benefits

Normal Retirement	Monthly annuity equal to 1.75% of Average Monthly Compensation multiplied by the number of Years of Service.
Early Retirement	Monthly annuity computed in the same manner as the Normal Retirement Benefit but based on the service and Average Monthly Compensation as of the Early Retirement Date and reduced by 0.25% for each full month that the Early Retirement Date precedes the Normal Retirement Date.
Late Retirement	Monthly annuity computed in the same manner as the Normal Retirement Benefit but based on the service and Average Monthly Compensation earned as of the Late Retirement Date.
Disability	Monthly annuity payable at Normal Retirement Age computed in the same manner as the Normal Retirement Benefit assuming that compensation as of the date of Disability and service continued to the Normal Retirement Date.

Preretirement Death Benefit

A benefit is payable at the death of an active participant.

Death Prior to Early Retirement Date - A lump sum equal to the participant's contributions plus accumulated interest is payable to a designated beneficiary.

Death After Early Retirement Date - A monthly income payable to a surviving spouse or dependent children equal to 60% of the earned benefit determined at the participant's death. This amount is payable beginning at the participant's Normal Retirement Date. A reduced monthly income may be selected by the surviving spouse or the dependent children to be payable beginning at any date following the participant's Early Retirement Date. The monthly income is payable for the life of the surviving spouse. If paid to the dependent children, the monthly income will continue until the youngest child attains age 21.

If the participant is not survived by an eligible spouse or dependent children a lump sum equal to the participant's contributions plus accumulated interest is payable to a designated beneficiary.

Summary of Plan Provisions
(continued)

Termination Benefit

Benefit upon termination equal to a vested interest in the earned pension as of the date of termination determined according to the following schedule:

Years of Service	Vesting %
Less than 5 years	0%
5	50%
6	60%
7	70%
8	80%
9	90%
10 or more years	100%

Normal Forms of Annuity

Married Participant

Joint and 60% Survivor annuity.

Single Participant

Five Year Certain & Life annuity.

Contributions

Participant

A monthly amount equal to 2.75% of monthly compensation. The contributions are picked up by the employer effective July 1, 2013.

Employer

An amount necessary to provide the benefits under the plan based upon the recommendations of periodic actuarial valuations. Currently, the employer is contributing 9.50% of payroll:

Participant Census Statistics

January 1, 2020

Active Participants Included in Valuation

Age at Valuation Date	Years of Service								Total	Average Salary
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35+		
Under 20	0	0	0	0	0	0	0	0	0	0
20-24	27	1	0	0	0	0	0	0	28	28,578
25-29	42	20	0	0	0	0	0	0	62	31,581
30-34	51	17	10	0	0	0	0	0	78	34,088
35-39	34	20	17	7	1	0	0	0	79	35,268
40-44	27	13	8	16	7	0	0	0	71	37,421
45-49	19	9	6	5	11	3	0	0	53	40,278
50-54	23	8	7	7	12	3	2	0	62	37,945
55-59	19	14	12	10	10	11	7	3	86	43,477
60-64	13	8	9	11	12	7	5	6	71	41,839
65 & Over	6	7	6	1	2	2	1	5	30	43,253
Total	261	117	75	57	55	26	15	14	620	
Average Salary	33,349	37,041	38,083	40,236	42,287	44,971	50,128	65,731		37,669

Average Salary - based on reported compensation for calendar 2019.

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Participant Census Statistics

(continued)

January 1, 2020
Non-Active Participants Included in Valuation

	Number	Total Annual Benefit	Average Annual Benefit
Retired & Beneficiary	302	$3,185,239	$10,547
Vested Terminated	96	546,517	5,693
Total	398	3,731,756	9,376

Retired & Beneficiary Participants in Pay Status

Age	Number	Total Annual Benefit	Average Annual Benefit
Under 55	3	$22,635	$7,545
55-59	5	38,435	7,687
60-64	30	230,531	7,684
65-69	86	1,177,468	13,691
70-74	75	820,492	10,940
75-79	50	539,333	10,787
80-84	32	197,164	6,161
85-89	13	109,043	8,388
Over 89	8	50,138	6,267
Total	302	3,185,239	10,547

Participant Census Statistics
(continued)

	Active	Non-Active Deferred	Non-Active Retired	Total
Number on January 1, 2018	668	76	251	995
Terminated				
Non-Vested	-25	0	0	-25
Vested - Lump Sum	-119	-6	0	-125
Vested - Deferred	-34	+34	0	0
Deceased				
Vested - Lump Sum	0	0	0	0
Vested - Beneficiary	-2	0	-6	-8
No Additional Benefit	-2	0	-12	-14
Retired				
Monthly Benefit	-54	-8	+62	0
Lump Sum	0	0	0	0
Certain Period Expired	0	0	-3	-3
Beneficiary	0	0	+9	+9
Return to Active	+1	-1	0	0
New Entrants or Prior Omissions During Plan Year	+187	+1	+1	+189
Number on January 1, 2020	620	96	302	1,018

<u>Non-Active Participants</u>	<u>Number</u>	<u>Annual Benefit</u>
Deferred Participants	96	$546,517
Retired & Beneficiary Participants	302	$3,185,239

LB 759 REPORTING FORM (HOURLY PLAN)
Metro Area Transit Hourly Employees' Pension Plan

1. Plan Information for Years 2016 through Current Plan Year 2021

	2016	2017	2018	2019	2020	2021
1a Funding Status*	72%	71%	77%	67.3%	66.7%	68.5%
1b Assumed Rate of Return***	6.75%	6.75%	6.75%	6.75%	6.5%	6.25%
1c Actual Investment Return	-1.50%	5.80%	13.35%	-4.84%	20.06%	14.24%
1d Member Contribution Rate	6.00%	6.00%	7.00%	7.00%	7.25%	7.50%
Employer Contribution Rate**	6.50%	6.50%	7.50%	7.50%	7.75%	7.75%
1e Normal Cost Percentage	7.35%	7.39%	7.21%	7.36%	8.58%	8.81%
1f Actuarially Determined Contribution (ADC)						
Percentage	78.3%	N/A	N/A	N/A	N/A	N/A
Dollar Amount	$ 901,256	$958,333	$835,474	$891,105	$1,165,834	$1,161,981
1g Actuarially Required Contribution (ARC)						
Dollar Amount Contributed	$ 705,467	$904,824	$855,109	$836,227	$1,286,538	TBD
Percentage of ARC Contributed	78.28%	94.20%	102.35%	93.84%	110.35%	TBD

* Funding Status for 2018 and prior is based on Market Value of Assets compared to Present Value of Accrued Benefits. Starting in 2019, Funding Status is based on Actuarial Value of Assets compared to Actuarial Accrued Liability in order to coincide with the basis for calculating the Actuarially Determined Contribution.

** Employer contribution rate increased to 7.5% effective 9/1/2017 and employer made a one-time lump-sum contribution to the Plan equal to 1% of the total of the active Plan participants' compensation for the period beginning on July 1, 2016 and ending on August 31, 2017, making the effective employer contribution rate 7.5% from July 1, 2016-2020. The contribution rate then increased to 7.75% to present.

2. Circumstances That Led to Underfunding the Plan

In prior periods, investment returns did not meet the return assumptions. In addition, due to lower capital market expectations, the interest rates used to value liabilities have been decreased several times in the last decade (see below).

2009 reduced from 8.00% to 7.50%
2015 reduced from 7.50% to 7.00%
2016 reduced from 7.00% to 6.75%
2020 reduced from 6.75% to 6.50%
2021 reduced from 6.50% to 6.25%

3. Changes in Actuarial Methods/Assumptions Since Previous Actuarial Valuation Report

Metro decreased the interest rate from 6.5% to 6.25% in the approved actuarial report. Impact of this change was an increase in the Unfunded Accrued Liability of about $985,000 and an increase in the Actuarial Determined Contribution of about $101,000.

4. In what year is the plan's funding ratio expected to reach 100%?

If the Metro pays the ADC each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions we project that the plan's funding ratio will reach 100% in 2041.

5. **What is the method used to amortize the unfunded actuarial liability?**
   Unfunded actuarial liability is amortized for 30 years starting in 2012, graded down for each successive year. The Individual Entry Age Normal Cost is the actuarial cost method used to value the liabilities. The amortization period will decrease each year until it reaches 10 years, after which it remains at 10 years.

6. **Description of Corrective Actions Implemented to Improve the Funding Status of the Plan:**
   The Hourly Pension Committee members have amended the plan document to increase the employer and employee contribution rates. The employer contribution rate increased from 6.5% to 7.75% since 2017. The employee contribution rate increased from 6% to 7.5% during that same period. For those employees hired on or after January 1, 2018, the Pension Committee also (i) changed the normal retirement date from age 65 to the age when the employee reaches full retirement for purposes of receiving Social Security benefits, and (ii) eliminated the early retirement option. The benefit factor percentage used in the calculation of the monthly benefit for those employees hired on or after January 1, 2018, was also changed by the Pension Committee to a tieredstructure based on years of service in lieu of the current method of using the same benefit factor percentage regardless ofyears of service. In addition, a one-time lump sum contribution was made to the Plan in November of 2020 to increase the actual contribution as a percentage of payroll effectively to 11.1%. The Pension Committee believes all these changes will address the funding issue. The Pension Committee is comprised of bargaining unit employees, management representatives and a Metro Transit Board member. The actuarial assumptions are reviewed annually to provide committee members with data regarding plan performance. The Committee meets a minimum of once per year to review plan performance, assumptions, asset allocations and potential plan changes.

   In addition, to reflect the increasing average age of the Plan participants, the asset allocation has been modified to reduce the volatility of returns and meet the actuarial assumed rate of return. To increase net investment returns, the entire portfolio has been indexed, reducing Plan investment management fees from 71 basis points to 9 basis points. An incremental change in the net asset allocation guidelines gradually reduces the bond investment while increasing the equity investment over a 5-year period beginning in 2021.

7. **Recent or Ongoing Negotiations**
   The collective bargaining agreement between Metro and the Transport Workers Union was ratified as of January 1, 2020. Pension funding, is one of the major components of these negotiations. Past and future negotiations include reopeners in each year in order to address required matters that might arise prior to expiration of the bargaining agreement. As previously mentioned, the primary changes to the Plan resulting from 2017 renegotiations of the collective bargaining agreement were increases in the employer and employee contribution rates, and, for those employees hired on or after January 1, 2018, the (i) changing the normal retirement date from age 65 to the age when the employee reaches full retirement age for purposesof receiving Social Security benefits, and (ii) eliminating the early retirement option. The primary changes to the Plan resulting from the 2020 negotiations were increases in the employer and employee contribution rates.

8. **Most Recent Actuarial Experience**
   There has not been an experience study done in recent years. Due to the very small size of the participant population, it has been felt that preparation of a formal experience study would not add credible insight in our demographic assumptions. Rather, from time to time we have prepared short analysis of prior termination and retirement rates, as well as anecdotal analysis of compensation increase assumptions and mortality table assumptions and have modified actuarial assumptions as was felt appropriate.

9. **Current Assumed Rate of Return**
   The current assumed rate of return is 6.25%.

10. **Most Recent Actuarial Valuation Report**
    Attached please find the most recent valuation dated January 1, 2021. The valuations are completed every year with the next one due January 1, 2022.

SilverStone GROUP | O HUB

October 8, 2020

Ms. Debbie Herbel
Eastern Nebraska Human Services Agency
4715 S 132nd Street
Omaha, NE 68137

RE: Actuarial Experience Review

Dear Debbie:

This report summarizes salary, turnover, mortality, benefit election and investment return experience of the Employees Retirement Plan.

After a thorough review of the experience contained in this report, the agency has determined to adopt the mortality table reflecting experience of the general population of public pension plans, and more closely reflecting below median pay of actives and below median benefits of annuitants, PubG-2010 (B). The table will advance each valuation with the most current mortality improvement scale, currently MP-2019.
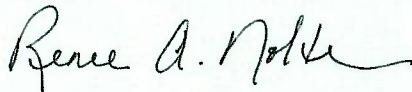
In addition, it was evident that early retirements have consistently exceeded expectations, necessitating an increase to the rates of retirement for ages 55 through 61 as follows:

55	5%
56	2%
57	2%
58	2%
59	3%
60	4%
61	5%

The agency has determined that no other assumptions had enough variance from expected rates to modify at this time. The assumptions will be applied to the funding valuation report and the GASB 67/68 report, as well as the basis for the funding forecast.

Please let me know if you would like paper copies of this experience review. Be sure to call with any questions.

Sincerely,

Renee A. Nolte, ASA, MAAA
Consulting Actuary

RAN/BK

Enclosures

EASTERN NEBRASKA HUMAN SERVICES AGENCY EMPLOYEES RETIREMENT PLAN

Actuarial Experience Review

September 29, 2020

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Table of Contents

Discussion of Results

SilverStone Group has conducted an actuarial study of the salary, turnover, mortality, benefit election and investment return experience for the Eastern Nebraska Human Services Agency (ENHSA) Employees Retirement Plan (Plan). The study includes data from the 2016 through 2019 plan years. In addition, the results from previous studies conducted on the 2010 through 2015 plan years have been included for comparison when available.

Experience has been analyzed on annual periods based on the census and asset data provided by ENHSA. An analysis of experience involves:
- Calculation of actual rates of increase (decrease).
- Calculation of expected rates of increase (decrease).
- Comparison of the actual rates to the expected rates (i.e., on absolute terms).
- Comparison of the actual rates divided by the expected rates (i.e., on relative terms).

Salary Experience
The salary change rate was calculated two ways. First, salaries were compared in the aggregate from one year to the next for the last 10 years. This comparison often forms the basis of the assumed rate of salary increase used in an actuarial valuation. These historical annual salary increases were then compared to the current assumed salary rate of 2.5%. Salary rates over the last three years were also analyzed by 5-year age brackets.

Experience indicates that an increase in the salary rate assumption may be considered. The average over the last 10 years is 3.1%; the average over the last five years is 4.2%. If 2018 is considered an unusual year for salary increases, one could consider the average of the most recent 10 years, with the exclusion of 2018. This average is 2.8%. The salary rate assumption was increased from 2.0% to 2.5% effective with the 2016 valuation.

The current state of the economy may decrease pay increases to less than expected for the next few years. The future long-range budget and expected funding of the agency should also be considered when selecting an assumption for expected future salary increases.

Turnover Experience
The current turnover assumption consists of rates that vary by age and service. The turnover rates do not depend on age during the first three years of service. After three years of service, the rates are a function of age only.

Because the turnover rate is dependent upon both years of service and age, the turnover rate was calculated two ways. First, turnover rates were calculated for employees who have less than three years of service with ENHSA. Second, employees were grouped in 5-year age brackets. The turnover rate was calculated based on the number of employees in each age group ending their employment with ENHSA.

The experience from 2014 through 2017 shows overall actual turnover experience less than expected. Experience in 2018 and 2019 shows turnover experience greater than expected. The average of the three grouped periods for all ages and years of service is 94% of expected.

The graphs on page 8 and 9 analyze turnover by years of service. The graphs on page 10 and 11 analyze turnover by five-year age brackets. For the most recent experience, the largest

variance from expected is for years of service equal to 2 (198% of expected). The most recent experience based on age groups resulted in turnover greater than expected in 8 of the 10 age groups. Experience showed less turnover for each of these 8 age segments over the prior two periods.

In May of 2019, 16 participants were terminated from the plan when their group transitioned to a private contractor with the State of Nebraska. Excluding these participants from the equation would decrease the total ratio of actual to expected turnover for 2018-2019 from 127% to 118%.

For turnovers with less than 1 year of service, our test results may be less than actual since our data does not track a new hire and termination that occurs within the same plan year, only those that cross over to the next plan year. Likewise, a turnover/retirement age assumption beyond age 65 would be atypical for this size and type of plan.

An increase to the early retirement assumption for retirements beginning at age 55 may be considered. Actual turnover exceeded expected in each of the three measurement periods, with an average combined turnover of 158% of expected. Opposing this view is the potential for the current state of the economy to deter participants from seeking other jobs or retiring over the next few years.

Mortality Experience
The chart displays mortality results of the most recent 4 periods. In each period, actual deaths of actives exceeded expectations. The practice of this plan has been to update the mortality table to the most current table required to be applied for small corporate pension plans with each biannual valuation. Recently, tables have been developed reflecting mortality experience of public pension plans. The recently available PubG-2010 set of tables is based on mortality experience of general employees and retirees of public plans, and is considered a part of the relevant "assumption universe" for such plans. The analysis in developing these tables indicated that salary (for Employees) and benefit amount (for Annuitants) were the most statistically significant predictors of mortality differences within individual gender/job classifications. As a result, the PubG-2010 table is also available for above-median (A) and below-median (B) income levels. For 2019, median pay in the plan is $35,200 and the median retirement benefit is $10,500. These amounts fit the below-median category. In addition, plan mortality experience is best suited to this table when compared to the other public employee mortality tables.

A current mortality improvement scale (MP-2019) is applied to account for expected mortality changes in future years.

This plan is not of sufficient size to reflect its own experience within a mortality table. This experience study only captures active participant data. A separate study would compare the PubG-2010 (B) mortality table to the retiree population.

Form of Benefit Election Experience
For those participants who terminated with a vested deferred annuity option, actual experience was tabulated to determine the percent who elected to forego the annuity option and elect a return of their contributions plus interest.

Actual experience for the most recent two-year periods has been less than the expectation that 75% of those under age 55 elect a return of contributions (60% elected a return of contributions in 2014-2015, 46% in 2016-2017 and 69% in 2018-2019). For those 55 and over, no retiring participant elected a return of contributions in the 2014-2015 period, 10% elected a return of

contributions in the 2016-2017 period and 2% made this election in the 2018-2019 period. The assumption for this age group is that no participants will elect the return of contributions.

Consideration may be given to reducing the 75% assumption for those under age 55. Bearing in mind the current economy, and assuming those terminating in the next few years may have an increased need for immediate spending resources, a decision to adjust this assumption may be deferred.

Investment Return Experience

The investment return rate was calculated on a simplified basis that assumes cash flow occurs evenly throughout each year. Use of a simplified basis is supported by the fact employee and ENHSA contributions are made bi-monthly. For this reason, the calculated rate may not agree with rates of return reported by the investment providers.

The investment return rate has averaged 6.7% on a compound basis over the 10-year period from 2010 through 2019. For the five-year period from 2015 through 2019, the average return rate is 5.9%. The investment return rate exceeded the 7% assumption during 4 of the 10 years displayed. The rate of investment return assumption has been 7.0% since prior to 1997. While the historical returns provide an objective and potentially reasonable level to which the mean return may revert, the future is likely to be different than the past. Considering the target investment mix of 50% equities, 45% fixed income and 5% real estate securities, 7.0% remains an acceptable assumption.

The value of assets is based on the market value. Consideration may be given to a change in the valuation method to an asset smoothing method, in order to cushion fluctuations in the equity market. The asset investments have not experienced significant negative annual returns in the past ten years, with only one year, 2018, experiencing a negative return of -2.4%. The fixed income investment target of 45% helps to minimize more severe fluctuations in the assets.

Overall Experience History

With each 2-year valuation period, we measure the actual liabilities and assets compared to the expected liabilities and assets. When liabilities increase more than expected or asset performance is less than expected, this is an experience loss. Likewise, a decrease in liabilities from expected or asset performance greater than expected is an experience gain. The impact of changes in assumptions on the liabilities is also measured as a gain or loss. Together, these variations from expected results make up the net (gain) or loss on the plan. A net (gain) is a decrease to the unfunded accrued liability whereas a net loss is an increase to the unfunded accrued liability. Changes in magnitude of these gains and losses from one valuation period to another are typical, especially with a relatively smaller plan size. Over time, if assumptions are appropriate, one would expect the cumulative (gain)/loss to converge to near $0.

The results in this report were prepared using information provided to us by other parties. The census information has been provided to us by you, the employer. Asset information has been provided to us by the trustee. We have reviewed the provided data for reasonableness, but have not made an independent audit of this data. We have relied on the accuracy of the information that was supplied.

Salary Experience from 2010 to 2019
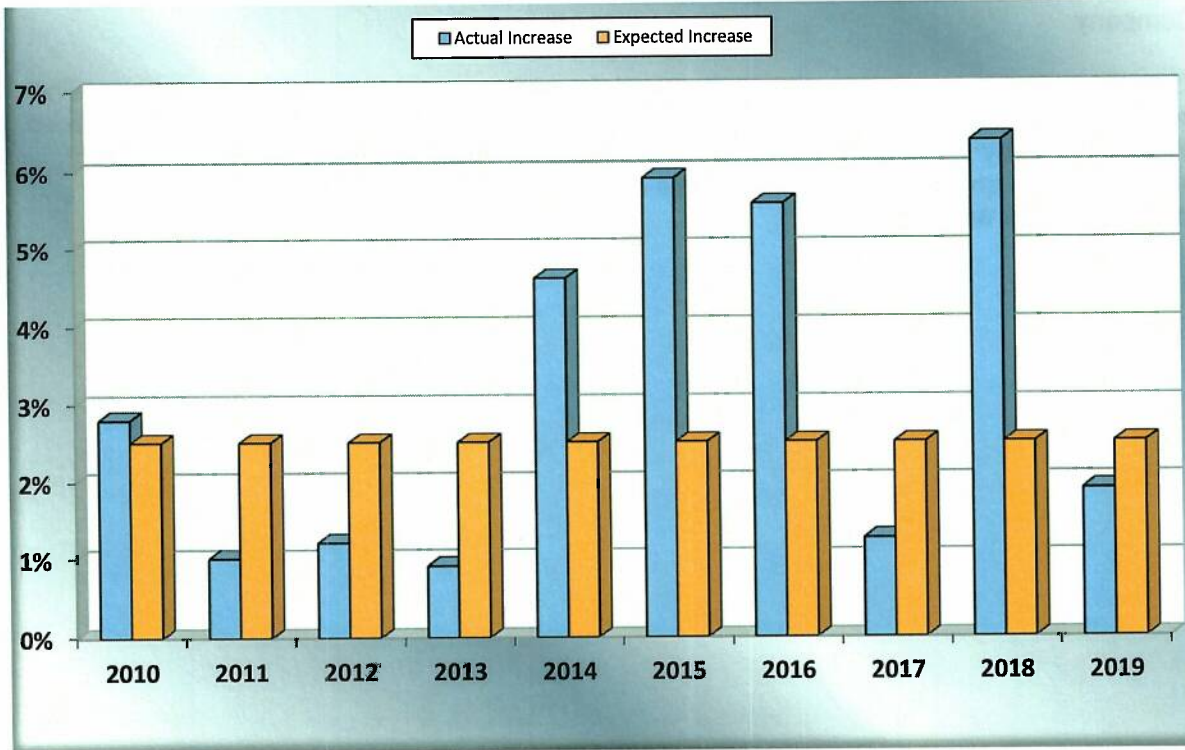
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Actual Increase	2.8%	1.0%	1.2%	0.9%	4.6%	5.9%	5.6%	1.2%	6.3%	1.9%
Expected Increase	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

Salary Experience from 2010 to 2019
Ratio of Actual vs. Expected Salary Increase
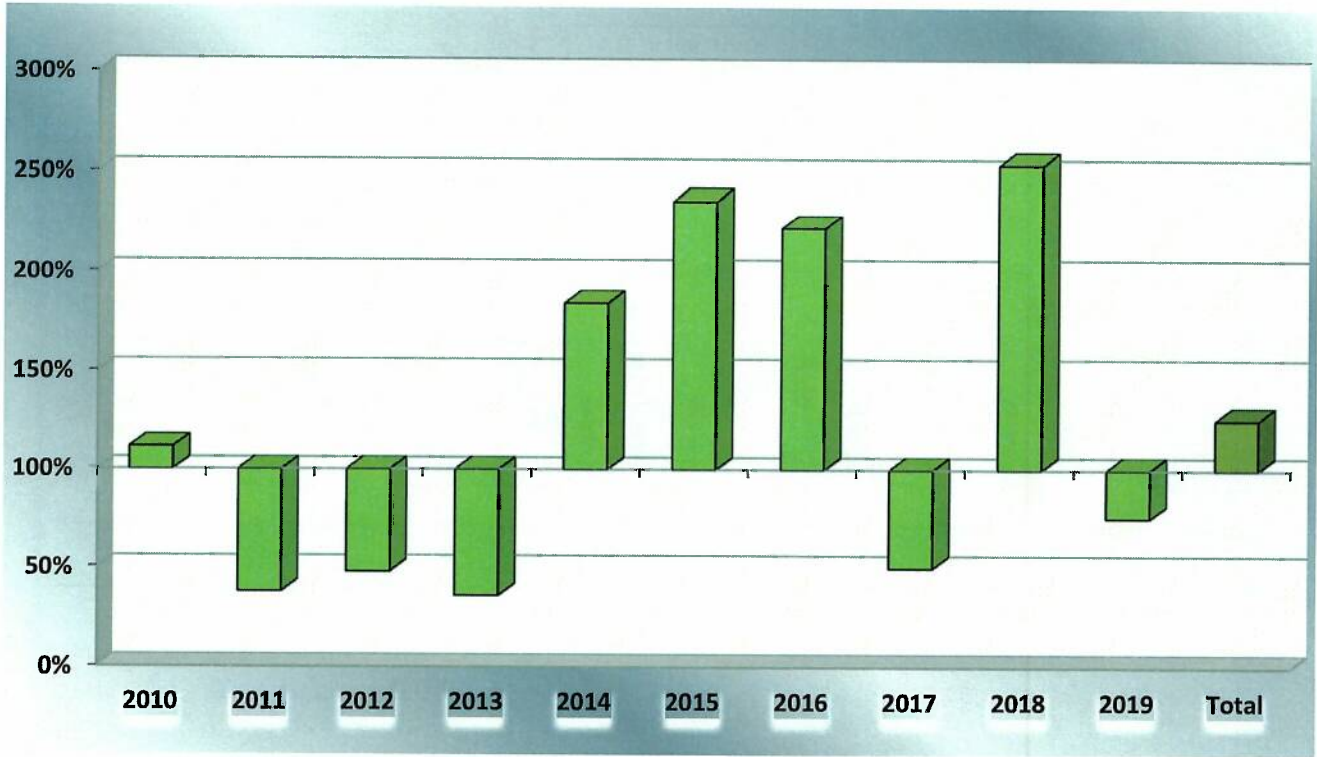
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Actual Increase	2.8%	1.0%	1.2%	0.9%	4.6%	5.9%	5.6%	1.2%	6.3%	1.9%	3.1%
Expected Increase	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Actual vs. Expected	111.6%	38.0%	48.0%	36.0%	184.0%	236.0%	222.6%	50.0%	253.4%	76.0%	125.6%

Salary Experience from 2017 to 2019
Ratio of Actual to Expected Salary Increase by Age Group
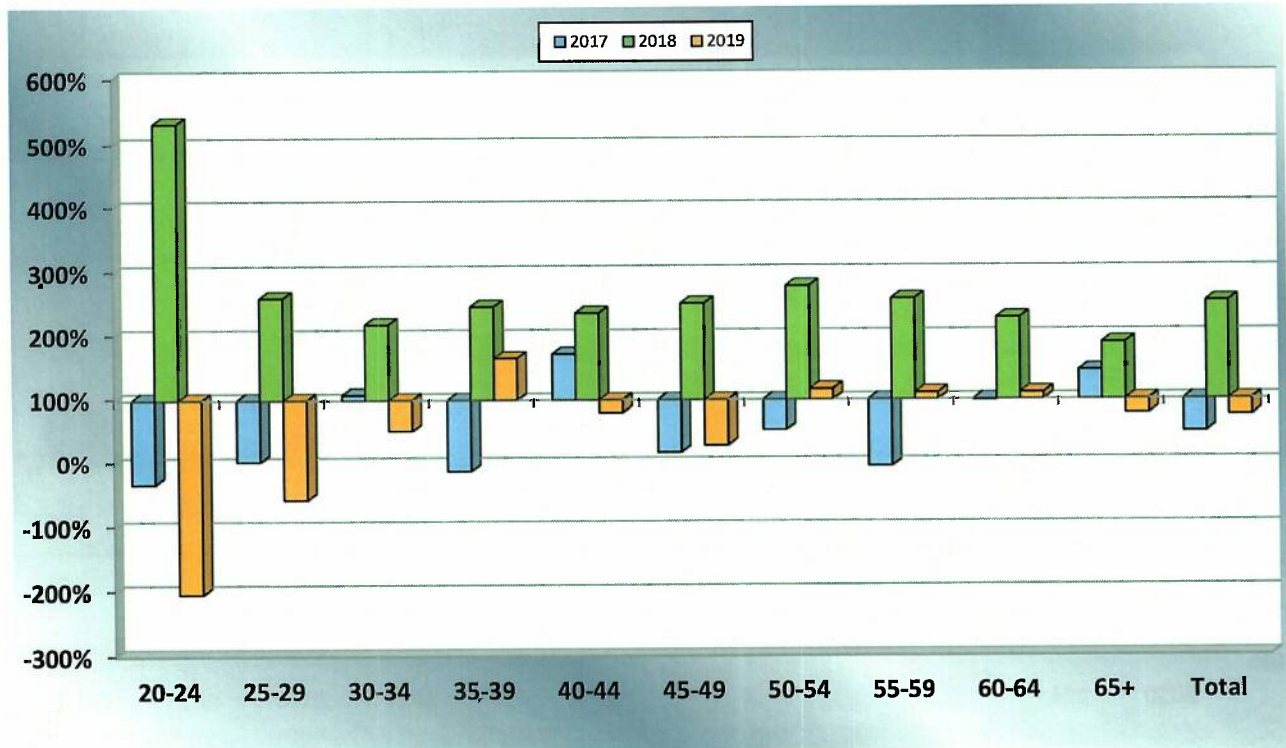
Age	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
Actual Increase vs. Expected Increase											
2017	-32%	4%	108%	-12%	172%	18%	53%	-4%	99%	145%	50%
2018	534%	260%	218%	246%	236%	251%	278%	258%	228%	189%	253%
2019	-204%	-56%	52%	165%	81%	29%	116%	110%	110%	79%	76%

Turnover Experience from 2014 to 2019
Ratio of Actual to Expected Turnover
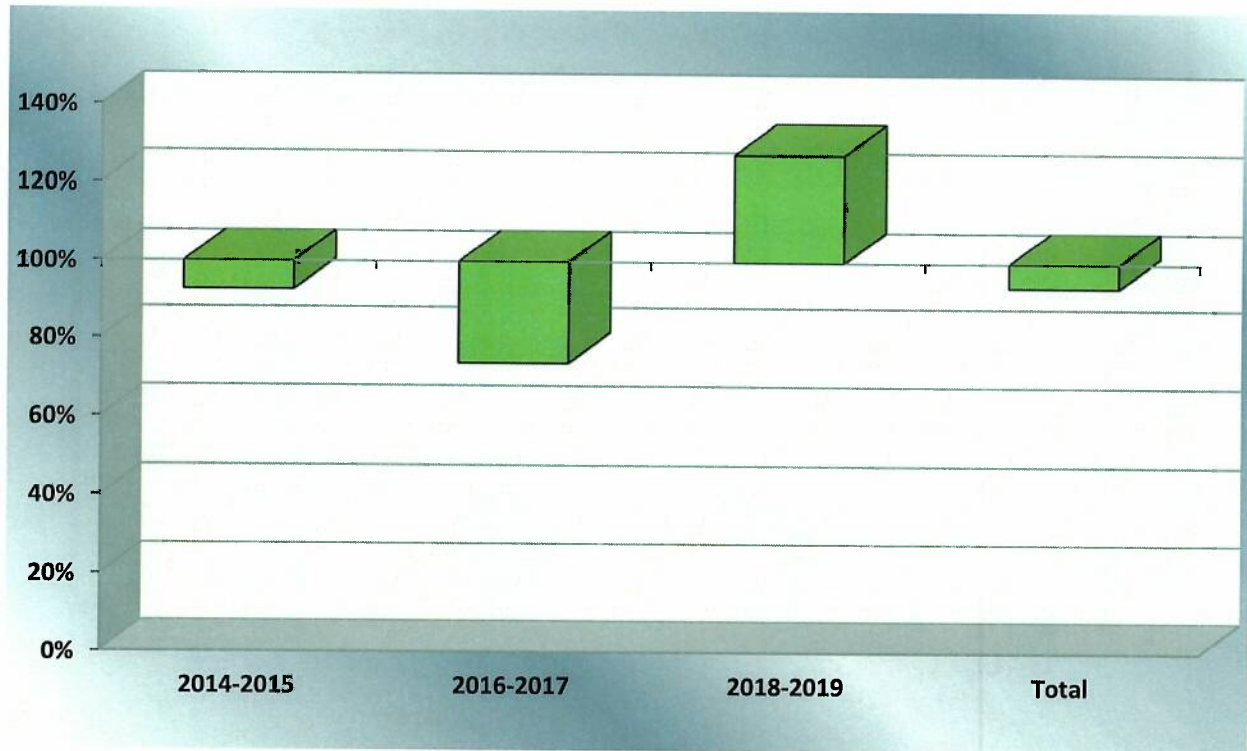
Year	2014-2015	2016-2017	2018-2019	Total
Actual Turnover	165	156	232	723
Expected Turnover	178	211	182	772
Actual vs. Expected	93%	74%	127%	94%

Turnover Experience for 2018 and 2019
Ratio of Actual to Expected Turnover by Years of Service
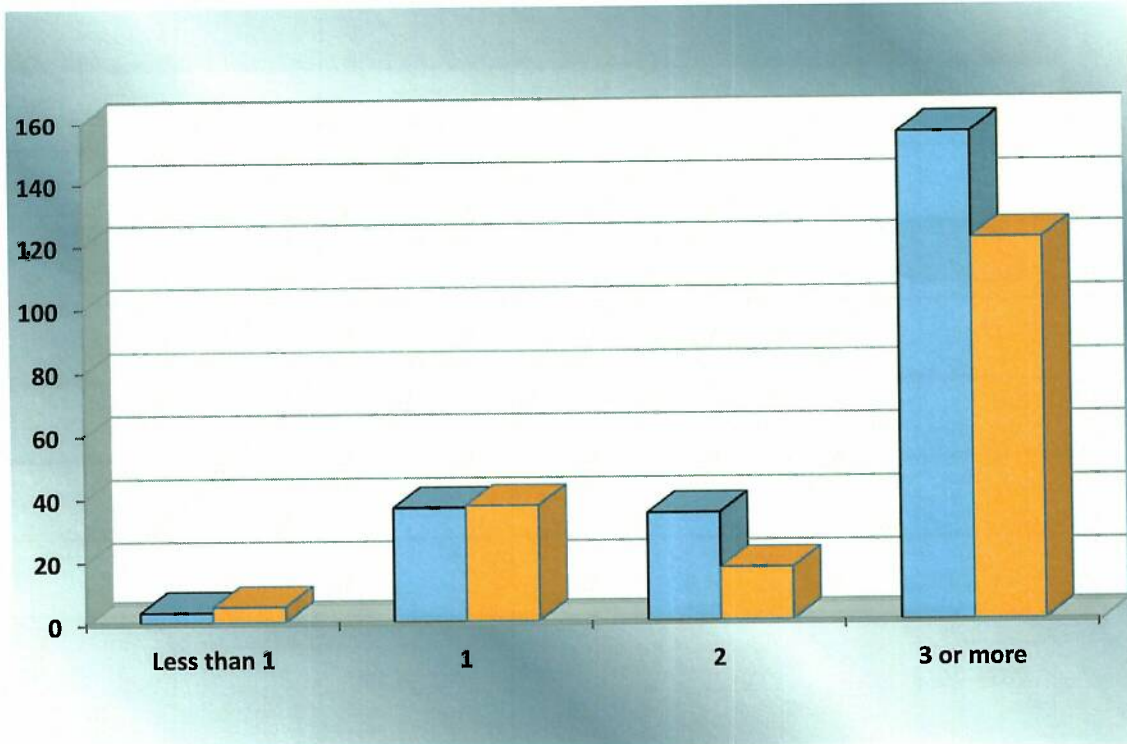
Years of Service	Less than 1	1	2	3 or more	Total
Actual Turnover	4	37	35	156	232
Expected Turnover	6	38	18	121	182
Actual vs. Expected	70%	98%	198%	129%	127%

Turnover Experience from 2014 to 2019
Ratio of Actual to Expected Turnover by Years of Service
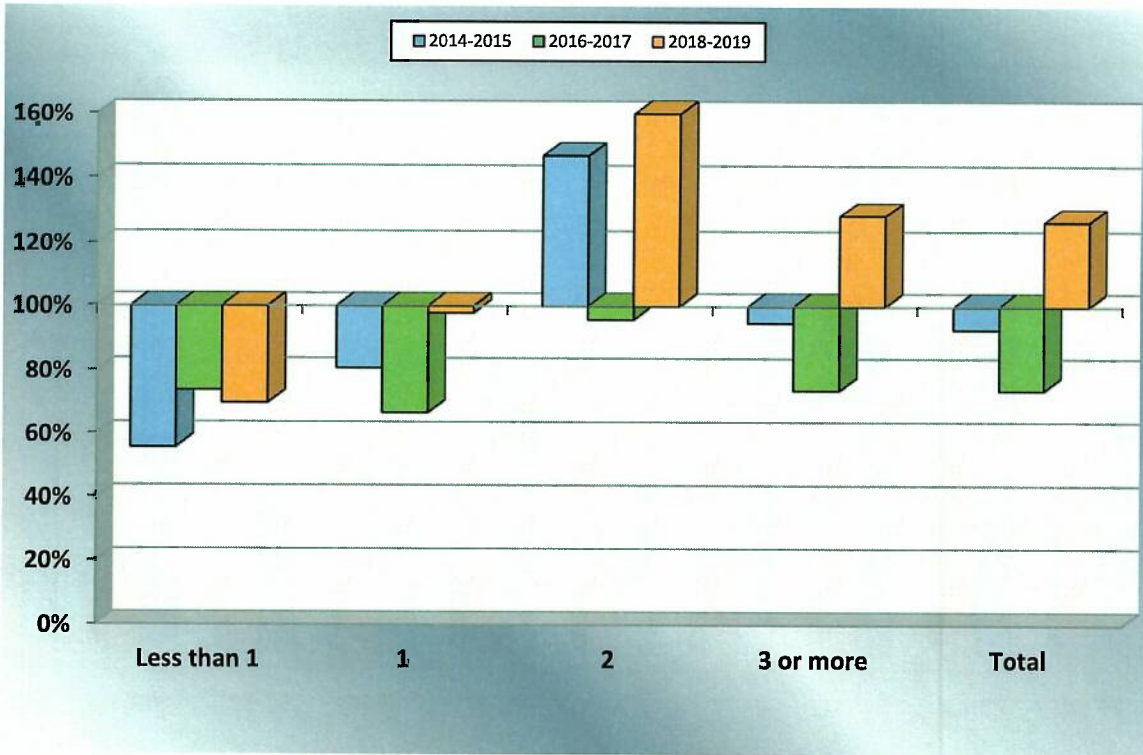
Years of Service	Less than 1	1	2	3 or more	Total
Actual Turnover vs. Expected Turnover					
2014-2015	56%	81%	147%	95%	93%
2016-2017	74%	67%	96%	74%	74%
2018-2019	70%	98%	198%	129%	127%

Turnover Experience for 2018 and 2019
Incidence of Turnover by Age Group
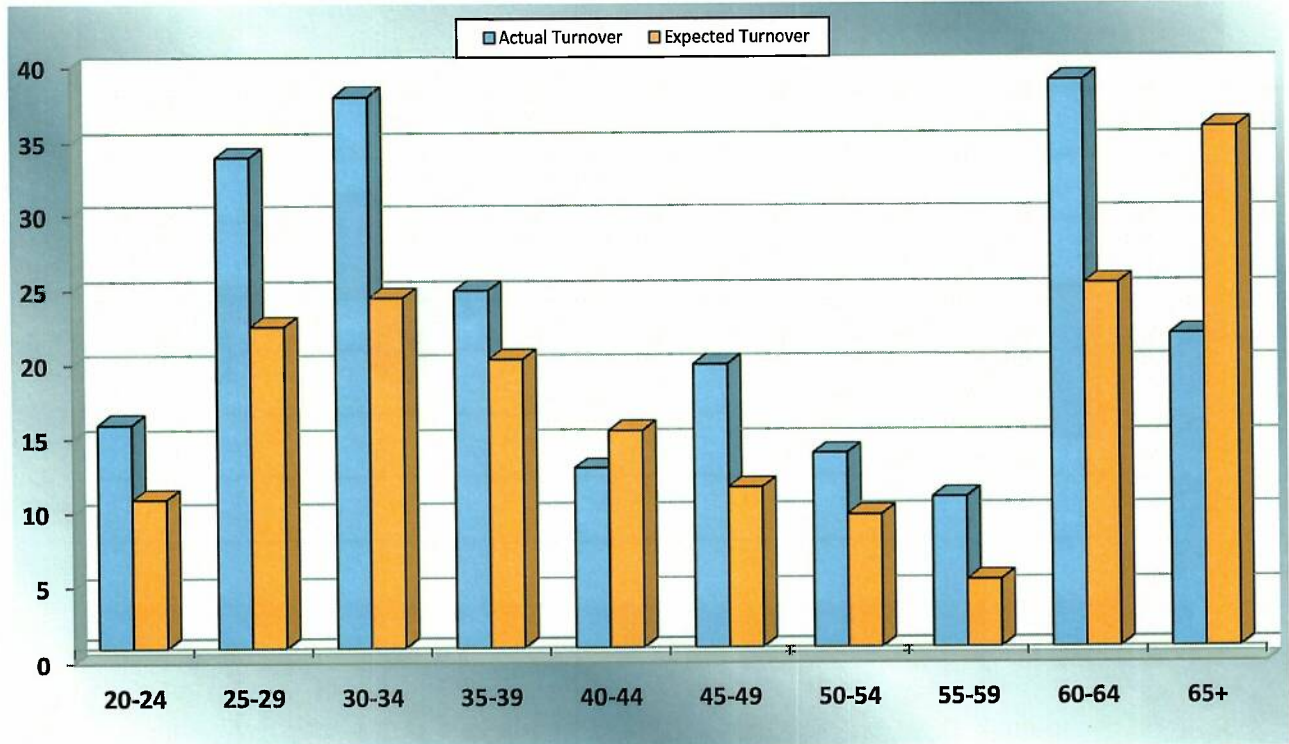
Age	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
Actual Turnover	16	34	38	25	13	20	14	11	39	22	232
Expected Turnover	11	23	25	20	16	12	10	5	25	36	182

Turnover Experience from 2014 to 2019
Ratio of Actual to Expected Turnover by Age Group
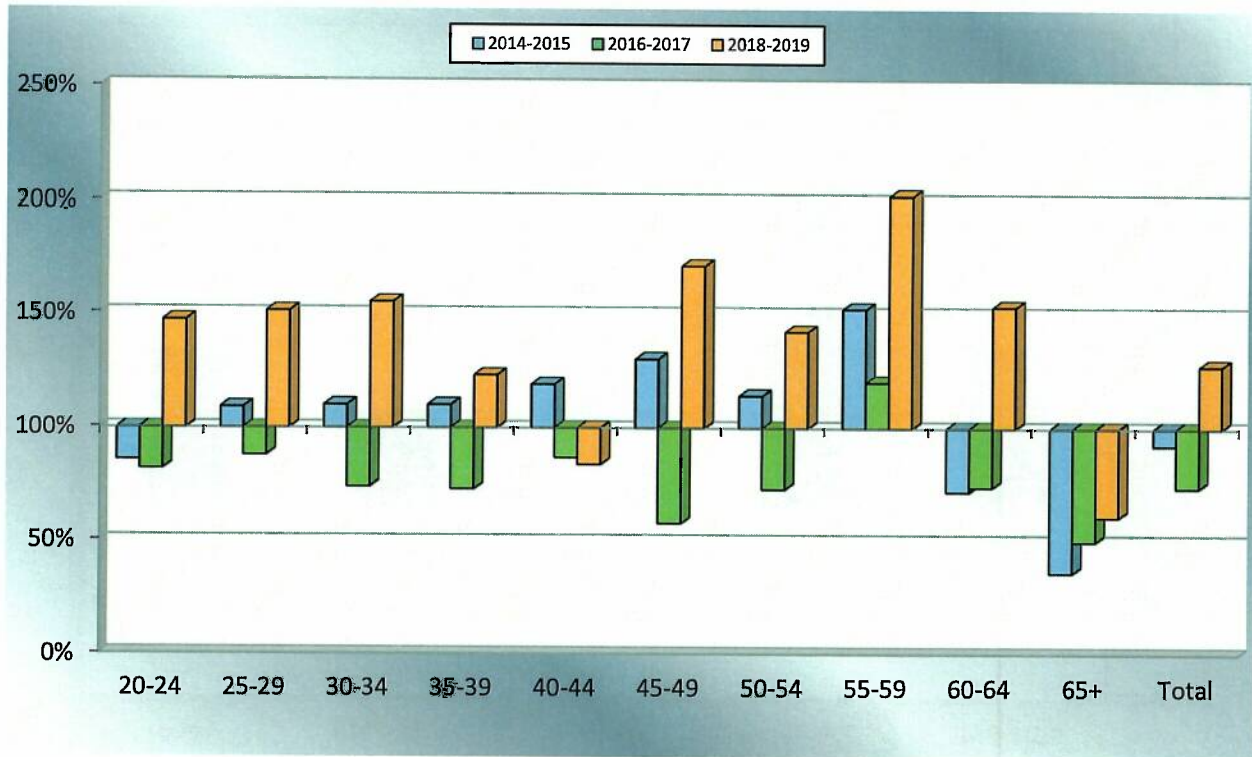
Age	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
Actual Turnover vs. Expected Turnover											
2014-2015	86%	109%	110%	110%	119%	130%	114%	152%	72%	36%	93%
2016-2017	82%	88%	74%	73%	87%	58%	73%	120%	74%	50%	74%
2018-2019	147%	151%	155%	123%	84%	171%	142%	202%	153%	61%	127%

Mortality Experience from 2012 to 2019
Ratio of Actual to Expected Deaths of Actives
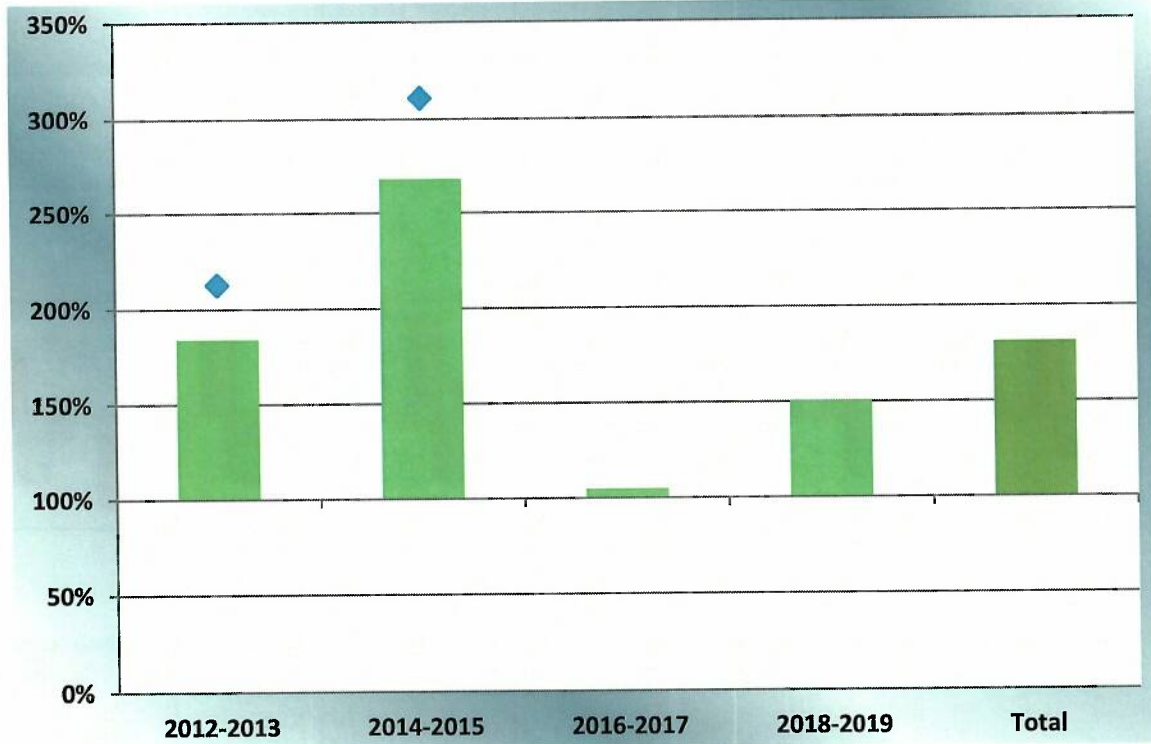
Year	2012-2013	2014-2015	2016-2017	2018-2019	Total
Actual Deaths	7	9	3	4	23
Expected Deaths	3.80	3.36	2.86	2.66	12.68
Actual vs. Expected	184%	268%	105%	150%	181%
Mortality Table Basis	PubG-2010(B)	PubG-2010(B)	PubG-2010(B)	PubG-2010(B)	PubG-2010(B)
Actual vs. Prior Table Expected	213%	310%	N/A	N/A	N/A
Prior Mortality Table Basis	IRS 2016	IRS 2016	N/A	N/A	N/A

In recent years, the mortality table has been advancing to the most current table applied for corporate plan valuation purposes. The recently available PubG-2010 table is based on mortality experience of general employees of public plans, and is considered a part of the relevant "assumption universe" for such plans. The PubG-2010(B) table reflects expected experience of employees and retirees with below-median pay and retirement benefits.

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Benefit Election Experience for 2018 and 2019
Incidence of Election to Return Contributions
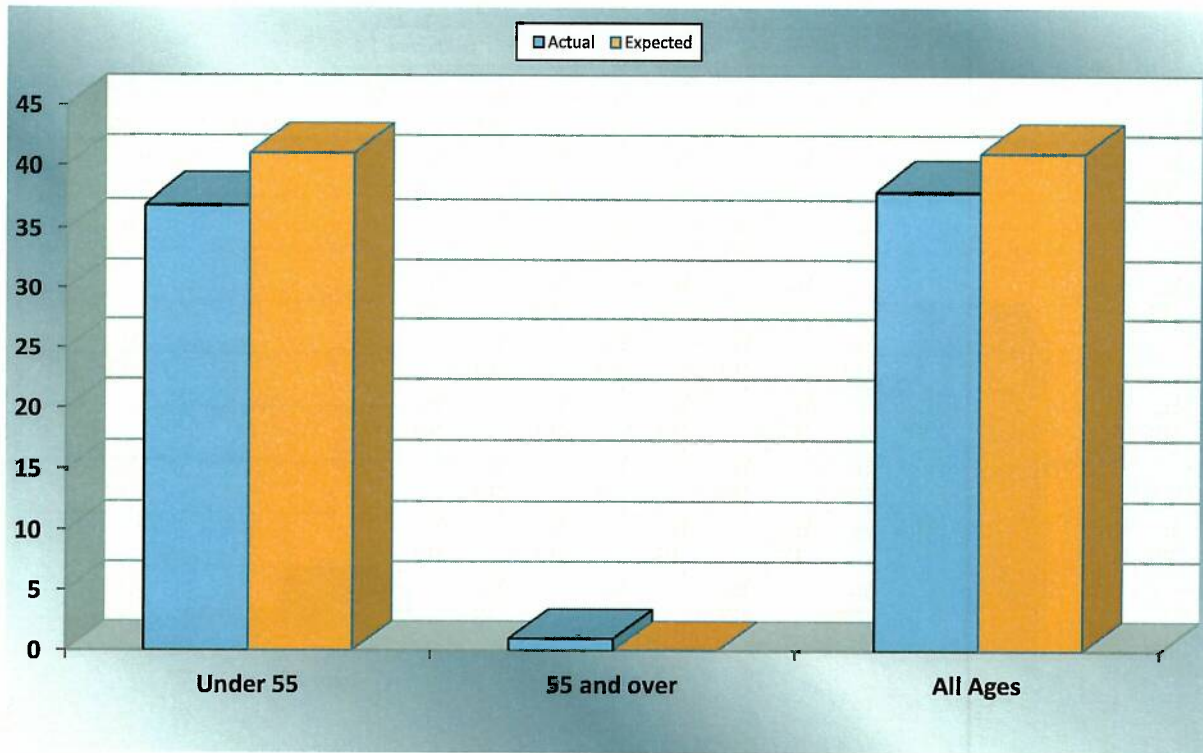
Age	Under 55	55 and over	All Ages
Number Electing Return of Contributions*			
Actual	37	1	38
Expected	41	0	41
Actual vs. Expected	90%	N/A	93%

* Excludes those withdrawing before the opportunity to vest in a deferred annuity.

Benefit Election Experience from 2014 to 2019
Percent Electing Return of Contributions
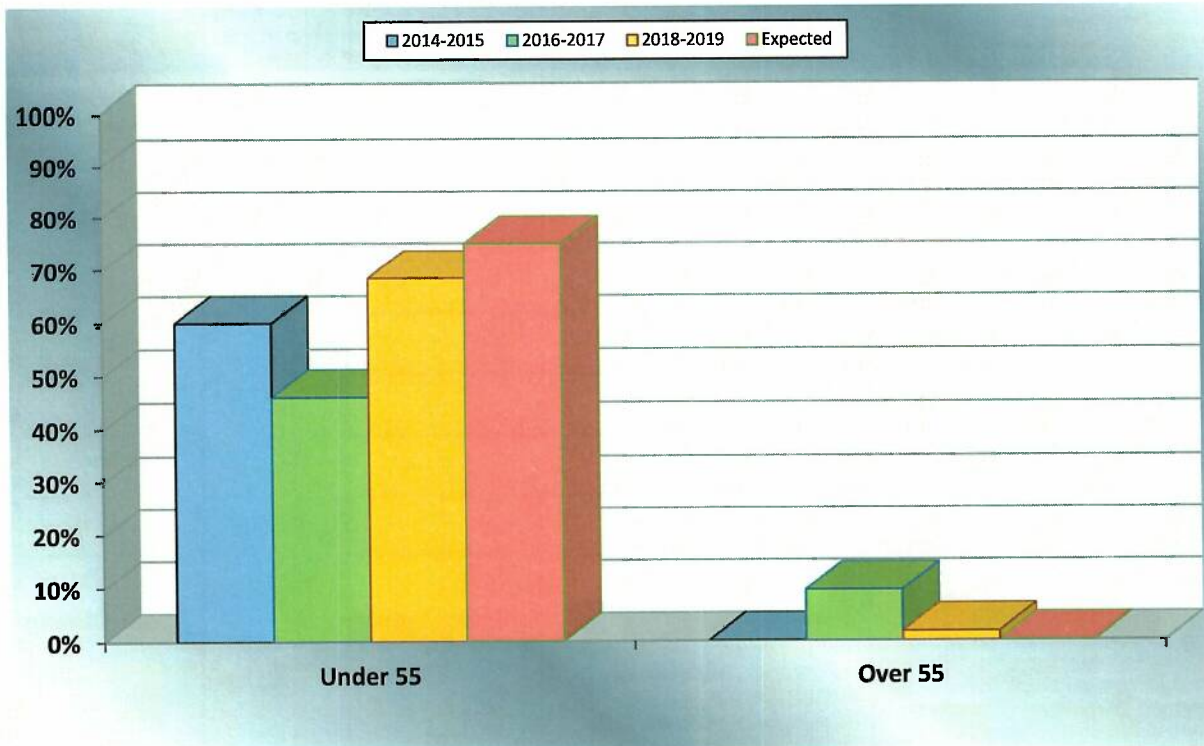
Age	Under 55	Over 55	All Ages
Percent Electing Return of Contributions*			
2014-2015	60%	0%	38%
2016-2017	46%	10%	24%
2018-2019	69%	2%	34%
Expected	75%	0%	N/A

* Excludes those withdrawing before the opportunity to vest in a deferred annuity.

Investment Experience from 2010 to 2019
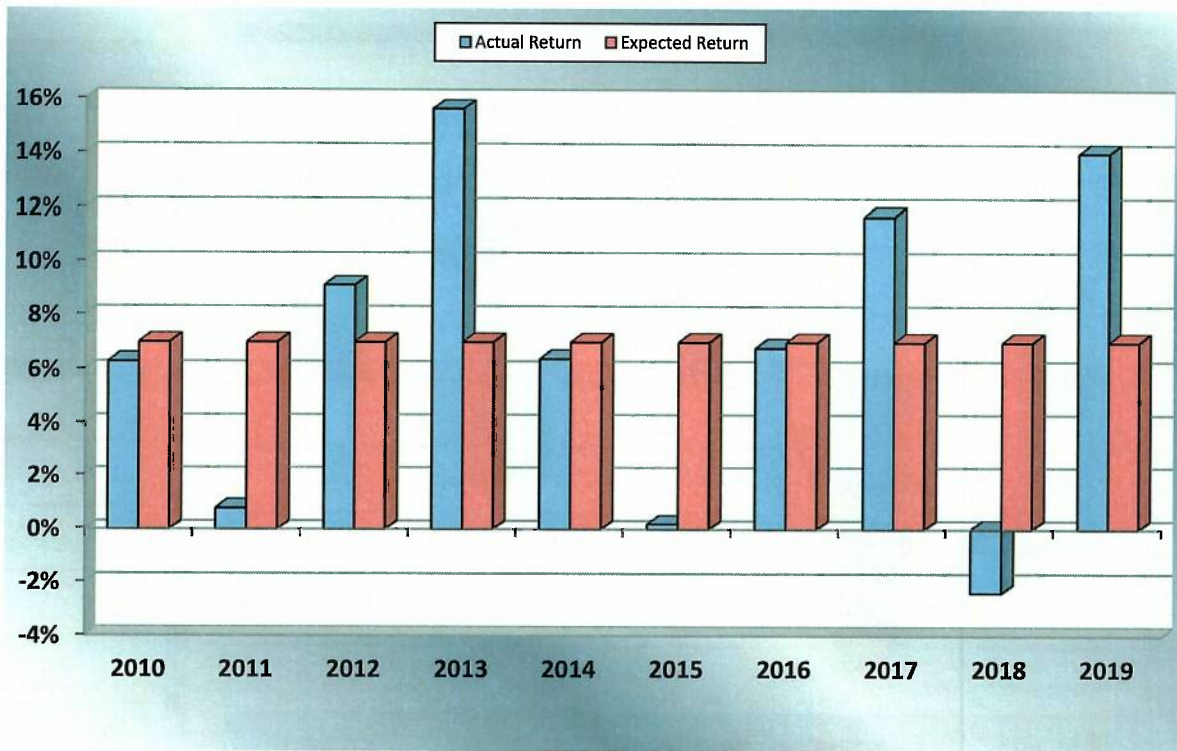
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Actual Return	6.3%	0.8%	9.1%	15.6%	6.4%	0.2%	6.8%	11.7%	-2.4%	14.0%
Expected Return	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%

Average returns from historical periods are not, by themselves, strong indicators of future returns.

Experience (Gain)/Loss History

Cumulative (G)/L
2010-2019
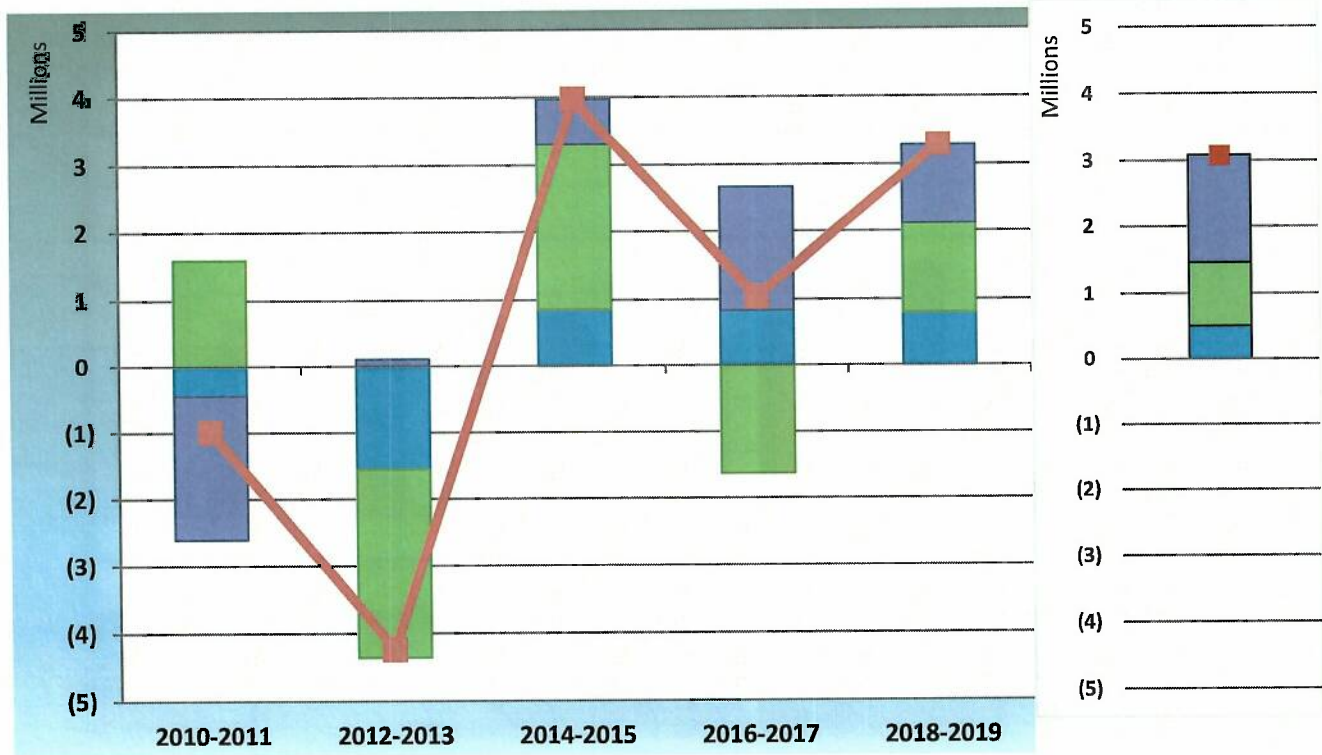
Year	2010-2011	2012-2013	2014-2015	2016-2017	2018-2019	Cumulative (G)/L
Liability (Gain)/Loss	(443,595)	(1,549,029)	859,422	838,735	800,922	506,455
Asset (Gain)/Loss	1,605,409	(2,798,830)	2,464,389	(1,626,017)	1,315,257	960,208
Assumption Changes	(2,153,992)	113,958	648,294	1,822,710	1,183,891	1,614,861
Net (Gain)/Loss	(992,178)	(4,233,901)	3,972,105	1,035,428	3,300,070	3,081,524

Assumption Changes:

2010-2011   Mortality table and decrease to salary scale from 4% to 2%
2012-2013   Mortality table.
2014-2015   Mortality table and increase to salary scale from 2% to 2.5%
2016-2017   Mortality table.
2018-2019   Mortality table and additional early retirement rates. Preliminary amount.

Actuarial Assumptions

The actuarial assumptions included in the experience study are summarized below:

Salary Increase Rate   2.5% compounded annually

Turnover Rates   Rates in the first three years are:

Years of Service	Rate
0	54.0%
1	25.5
2	15.0

After three years, sample rates are as follows:

Age	Rate
25	14.5%
30	14.0
35	13.1
40	11.6
45	9.5
50	6.3
55	2.3
60	0.2

Mortality Table   PubG-2010 (B) / MP 2019 generational improvement scale projected from 2010.

Elected Form of Distribution   Under Age 55   75% Return of Contribution
                                                          25% Deferred Annuity

                                        Over age 55   100% Deferred Annuity

Retirement Rates

Age	Rate
62	15%
63	5%
64	5%
65+	100%

Investment Return Rate   7.0% compounded annually

Salary Experience Analysis from 2018 to 2019[3]

Age Group	2018 Salary	2019 Salary	Actual Increase[1]	Expected Increase[2]	Actual/ Expected
20-24	35,446	33,637	-5.10%	2.50%	-204%
25-29	34,561	34,075	-1.41%	2.50%	-56%
30-34	37,553	38,042	1.30%	2.50%	52%
35-39	38,612	40,203	4.12%	2.50%	165%
40-44	42,033	42,887	2.03%	2.50%	81%
45-49	40,994	41,290	0.72%	2.50%	29%
50-54	40,807	41,990	2.90%	2.50%	116%
55-59	45,485	46,736	2.75%	2.50%	110%
60-64	47,286	48,586	2.75%	2.50%	110%
65+	45,550	46,455	1.99%	2.50%	79%
Total	41,242	42,026	1.90%	2.50%	76%

Salary Experience Analysis from 2017 to 2018[3]

Age Group	2017 Salary	2018 Salary	Actual Increase[1]	Expected Increase[2]	Actual/ Expected
20-24	31,271	35,446	13.35%	2.50%	534%
25-29	32,450	34,561	6.50%	2.50%	260%
30-34	35,616	37,553	5.44%	2.50%	218%
35-39	36,375	38,612	6.15%	2.50%	246%
40-44	39,690	42,033	5.90%	2.50%	236%
45-49	38,571	40,994	6.28%	2.50%	251%
50-54	38,159	40,807	6.94%	2.50%	278%
55-59	42,725	45,485	6.46%	2.50%	258%
60-64	44,736	47,286	5.70%	2.50%	228%
65+	43,495	45,550	4.72%	2.50%	189%
Total	38,785	41,242	6.34%	2.50%	253%

[1] The percentage is based on the aggregate amounts.
[2] Rate used in actuarial valuations since 2016.
[3] Results derived from 2020 valuation census.

Salary Experience Analysis from 2016 to 2017[3]

Age Group	2016 Salary	2017 Salary	Actual Increase[1]	Expected Increase[2]	Actual/ Expected
20-24	30,401	30,157	-0.80%	2.50%	-32%
25-29	32,298	32,333	0.11%	2.50%	4%
30-34	35,144	36,092	2.70%	2.50%	108%
35-39	36,925	36,812	-0.31%	2.50%	-12%
40-44	39,783	41,494	4.30%	2.50%	172%
45-49	35,780	35,942	0.45%	2.50%	18%
50-54	40,783	41,323	1.32%	2.50%	53%
55-59	42,509	42,463	-0.11%	2.50%	-4%
60-64	40,132	41,130	2.49%	2.50%	99%
65+	35,999	37,307	3.63%	2.50%	145%
Total	37,853	38,327	1.25%	2.50%	50%

Salary Experience Analysis from 2015 to 2016[3]

Age Group	2015 Salary	2016 Salary	Actual Increase[1]	Expected Increase[2]	Actual/ Expected
20-24	29,190	30,401	4.15%	2.50%	166%
25-29	30,669	32,298	5.31%	2.50%	212%
30-34	32,667	35,144	7.58%	2.50%	303%
35-39	35,818	36,925	3.09%	2.50%	124%
40-44	38,041	39,783	4.58%	2.50%	183%
45-49	33,445	35,780	6.98%	2.50%	279%
50-54	38,635	40,783	5.56%	2.50%	222%
55-59	39,641	42,509	7.23%	2.50%	289%
60-64	38,646	40,132	3.84%	2.50%	154%
65+	34,000	35,999	5.88%	2.50%	235%
Total	35,858	37,853	5.56%	2.50%	223%

[1] The percentage is based on the aggregate amounts.
[2] Rate used in actuarial valuations since 2016.
[3] Results derived from 2018 valuation census.

Turnover and Early Retirement Experience

Turnover Experience for 2018 and 2019

Years of Service	Actual Turnover	Expected Turnover	Actual/ Expected
0	4	6	70%
1	37	38	98%
2	35	18	198%
3 or More	156	121	129%
Total	**232**	**182**	**127%**

Age Group	Actual Turnover	Expected Turnover	Actual/ Expected
20-24	16	11	147%
25-29	34	23	151%
30-34	38	25	155%
35-39	25	20	123%
40-44	13	16	84%
45-49	20	12	171%
50-54	14	10	142%
55-59	11	5	202%
60-64	39	25	153%
65+	22	36	61%
Total	**232**	**182**	**127%**

Early Retirement Experience for 2018 and 2019

Age Group	Actual Retirement	Expected Retirement	Actual/ Expected
61 and Under	11	4	306%
62	5	3	173%
63	7	2	449%
64	9	16	56%
65+	22	36	61%
Total	**54**	**60**	**90%**

Turnover and Early Retirement Experience
(continued)

Turnover Experience for 2016 and 2017

Years of Service	Actual Turnover	Expected Turnover	Actual/ Expected
0	24	33	74%
1	33	49	67%
2	13	14	96%
3 or More	86	116	74%
Total	**156**	**211**	**74%**

Age Group	Actual Turnover	Expected Turnover	Actual/ Expected
20-24	15	18	82%
25-29	28	32	88%
30-34	18	24	74%
35-39	17	23	73%
40-44	13	15	87%
45-49	7	12	58%
50-54	9	12	73%
55-59	11	9	120%
60-64	17	23	74%
65+	21	42	50%
Total	**156**	**211**	**74%**

Early Retirement Experience for 2016 and 2017

Age Group	Actual Retirement	Expected Retirement	Actual/ Expected
61 and Under	10	3	303%
62	1	3	32%
63	0	1	0%
64	6	14	43%
65+	20	42	48%
Total	**37**	**63**	**59%**

Mortality Experience

Mortality Experience for 2012 through 2019

Year of Death	Actual Deaths	Expected Deaths	Actual/ Expected	Mortality Table Basis
2018 - 2019	4	2.66	150%	PubG-2010(B)
2016 - 2017	3	2.86	105%	PubG-2010(B)
2014 - 2015	9	3.36	268%	PubG-2010(B)
2012 - 2013	7	3.80	184%	PubG-2010(B)
Total	**23**	**12.68**	**181%**	

Benefit Election Experience

Elected Form of Distribution for 2018 and 2019

Age Group	Participants with Annuity Option	Number Electing Return of Contributions	Expected	Actual/ Expected	Percent Electing Return of Contributions	Percent Expected
Under 55	54	37	41	90%	69%	75%
55 and over	58	1	0	N/A	2%	0%
Total	**112**	**38**	**41**	**93%**	**34%**	**37%**

Elected Form of Distribution for 2016 and 2017

Age Group	Participants with Annuity Option	Number Electing Return of Contributions	Expected	Actual/ Expected	Percent Electing Return of Contributions	Percent Expected
Under 55	26	12	20	60%	46%	75%
55 and over	42	4	0	N/A	10%	0%
Total	**68**	**16**	**20**	**80%**	**24%**	**29%**

SilverStone GROUP | O HUB

October 14, 2020

Ms. Debbie Herbel
Eastern Nebraska Human Services Agency
4715 South 132nd St
Omaha, NE 68137

Re: Employees Retirement Plan Forecast Study

Dear Debbie:

We have estimated future funded ratios for the Retirement Plan. Please note, the values presented are only estimates, as the actual amounts will be based on census data and plan experience, actual asset values and assumptions applied in future years, as well as other variables. Therefore, actual future measures will differ from these estimates as actual future experience differs from assumed experience.

The funded ratio is the ratio of the plan assets to the actuarial accrued liability. For active participants, the latter amount is the actuarial measure of benefits based on service to date and pay projected to retirement. For all other participants, it is the measure of their actual vested benefit.

Forecast Results
We have provided two sets of forecasts. The first forecast applies the current contribution schedule. This assumes the employer contribution of 9.50%, and the employee contribution of 2.75%, will continue each year following. Under the assumptions applied, a funded ratio greater than 100% will be attained in the year 2057. The second forecast applies an increase to the contribution rates for employers, to 10%, and employees, to 3%. A 100% funded ratio will be attained 10 years earlier under this scenario. The results are summarized in the tables on the following pages.
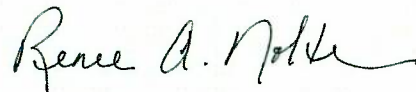
Assumptions
All methods and assumptions are consistent with those applied to complete the 2020 valuation. Please refer to pages 11 through 13 of the January 1, 2020 Actuarial Valuation Report for a complete description of these methods and assumptions. The forecast begins with the census and valuation results as of January 1, 2020. Assets are projected beginning with total assets as of December 31, 2019. Refer to the valuation report for a summary of the census, funding results and asset development.

Please call us at 402.964.5490 or 402.964.5439 to discuss the results or for any alternative assumptions or contribution rates.

Sincerely,

Glen C. Gahan, FSA
Principal

Renee A. Nolte, ASA
Senior Consulting Actuary

Enclosure

Eastern Nebraska Human Services Agency
Employees Retirement Plan
Estimated Funded Ratios

Scenario 1 - No Change to current Contribution Percentage

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057
Funding Basis	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Employer Contribution Percent	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%	9.50%
Employee Contribution Percent	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%
Total Contribution Percent	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%	12.25%
Employer Contribution (000's)	2,205	2,260	2,316	2,374	2,433	2,494	2,557	2,621	2,686	2,753	2,822	2,893	2,965	3,039	3,115	3,193	3,273	3,355	3,438	3,524	3,613	3,703	3,795	3,890	3,988	4,087	4,189	4,294	4,402	4,512	4,624	4,740	4,858	4,980	5,104	5,232	5,363	5,497
Funded Ratio	72.6%	73.4%	74.1%	74.6%	75.1%	75.7%	76.2%	76.6%	77.0%	77.4%	77.9%	78.4%	78.9%	79.4%	80.0%	80.6%	81.2%	81.9%	82.7%	83.5%	84.3%	85.1%	86.0%	87.0%	87.9%	88.9%	89.9%	90.9%	91.9%	92.9%	93.8%	94.8%	95.8%	96.7%	97.6%	98.5%	99.4%	100.2%

Assumptions
Mortality Table: PubG-2010(B) / MP 2019
Salary Scale: 2.50%
Other assumptions consistent with the 1/1/2020 valuation report.

Eastern Nebraska Human Services Agency
Employees Retirement Plan
Estimated Funded Ratios

Scenario 2 - Increased ER & EE Contribution Percentage Beginning 2021

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047
Funding Basis	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%
Employer Contribution Percent	9.50%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%
Employee Contribution Percent	2.75%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Total Contribution Percent	12.25%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%	13.00%
Employer Contribution (000's)	2,205	2,379	2,438	2,499	2,562	2,626	2,691	2,759	2,827	2,898	2,971	3,045	3,121	3,199	3,279	3,361	3,445	3,531	3,619	3,710	3,803	3,898	3,995	4,095	4,197	4,302	4,410	4,520
Funded Ratio	72.6%	73.4%	74.3%	75.2%	76.0%	76.8%	77.6%	78.4%	79.2%	79.9%	80.8%	81.6%	82.5%	83.5%	84.5%	85.6%	86.7%	87.8%	89.0%	90.3%	91.6%	92.9%	94.3%	95.6%	97.0%	98.4%	99.8%	101.2%

Assumptions
Mortality Table   PubG-2010(B) / MP 2019
Salary Scale   2.50%
Other assumptions consistent with the 1/1/2020 valuation report.

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Appendix C

City of Lincoln Police & Fire Retirement Plan Information

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CITY OF

LINCOLN
NEBRASKA

HUMAN RESOURCES
555 South 10th Street, Suite 302 | Lincoln, NE 68508
402-441-7597 | F: 402-441-8748 | jobs@lincoln.ne.gov

LANCASTER
C O U N T Y

October 15, 2021

Senator Mark Kolterman, Chairman
Nebraska Retirement Systems Committee
State Capitol
P.O. Box 94604
Lincoln, NE 68509-4604

Dear Senator Kolterman,

Thank you for your letter dated August 25, 2021 regarding defined benefit plan reporting to the Nebraska Retirement Systems Committee.

We have enclosed information requested per the Committee's Neb. Rev. Stat. 13-2402 Reporting Form. The information will be presented to the Committee, as requested, on Friday November 5, 2021 at 1:30 p.m. in Room 1525 of the Capitol. The presenters will be Pat Beckham, Consulting Actuary at Cavanaugh Macdonald Consulting and Paul D. Lutomski, Pension Officer for the City of Lincoln, Nebraska.

Respectfully,

Douglas J. McDaniel
Human Resource Director
Police and Fire Pension Administrator

Paul D. Lutomski
Pension Officer

2021 Reporting Form for Underfunded
Political Subdivision Pension Plans

1. Please list the following information for <u>plan years 2016 through current plan year 2020</u>:
   a. Funding status
   b. Assumed rate of return
   c. Actual investment return
   d. Member and employer contribution rates -- <u>percentage</u>
   e. Normal cost – <u>percentage</u>
   f. Actuarially required contribution (ARC) – <u>percentage & dollar amount</u>
   g. ARC contribution – <u>actual dollar amount contributed & percentage of ARC actually contributed</u>

Please see the attached Exhibit A for this information.

2. Please provide a brief narrative of the circumstances that led to the current underfunding of the retirement plan.

Many factors impact the funded ratio of a retirement system from year to year. A graph of the long term historical funded ratio, based on the actuarial value of assets, is shown below:
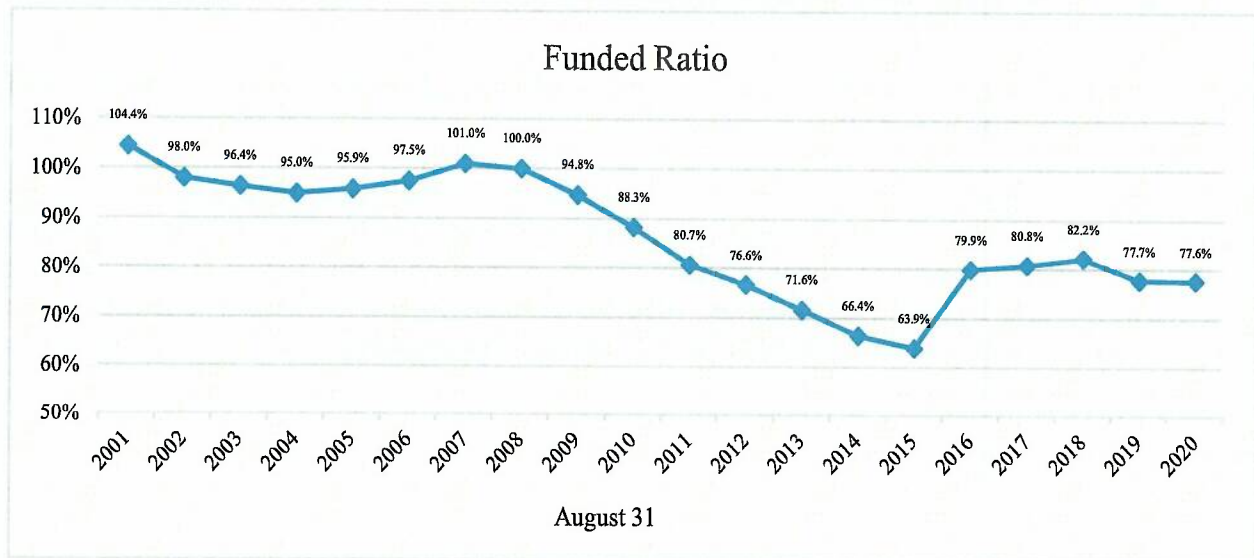
Note: impact of the Great Recession is reflected over the 2009 to 2013 valuations due to asset smoothing.

The key reason for the current underfunded status of the Plan is the impact of the financial crisis/Great Recession in 2008 and 2009. The actual rate of return on Plan assets was -6.6% for the fiscal year ending August 31, 2008 and -16.7% for the fiscal year ending August 31, 2009, compared to the assumed rate of return of 7.5% for those years. Over that two-year period, the value of plan assets declined by 22% instead of increasing with the expected return of 7.5% per year. Plan assets were nearly 40% lower than the expected value of assets (value if the actuarial assumption of 7.5% had been met from August 31, 2007 to August 31, 2009) and that was reflected in the funded ratio of 72% on a market value basis in the August 31, 2009 valuation report.

Due to the use of an asset smoothing method, the funded ratio on the actuarial value of assets as of August 31, 2009 was more than 20% higher than the funded ratio on the market value of assets (94.8% vs 72.0%). As the deferred investment experience was recognized in the asset smoothing method over the next four years (2009 to 2013), the funded ratio declined (see graph above). While the Plan assets have generally met the expected return of 7.5% since August 31, 2009 (compound return of 7.8% over the period from September 1, 2010 to August 31, 2020), the "lost earnings" from the Great Recession have not been recovered.

Note that the increase in the funded ratio due to assumption changes of 3.9% reflects the impact of the merger of the 13th Check COLA Pool Fund into the regular trust fund which resulted in a change in the investment return assumption from 6.40% to 7.50%. This is discussed in more detail in our response to later questions.

In recent years, the investment return assumption has been decreased which has also slowed the improvement in the funded ratio. See additional discussion in response to question 3.

3. **Have there been any changes in the actuarial methods and/or assumptions since the previous actuarial valuation report? If so, please describe.**

The last experience study was performed in 2019 and the recommended assumptions were first reflected in the August 31, 2019 valuation report. The reduction in the investment return assumption is being phased in over a five-year period. As a result, the investment return assumption in the August 31, 2020 valuation is 7.40% compared to 7.45% in the 2019 valuation. All other assumptions are unchanged. The decrease in the investment return assumption increased the unfunded actuarial accrued liability by $1.9 million and increased the actuarial contribution rate by 0.42%

4. In what year is the plan's funding ratio expected to reach 100%?

If all assumptions are met in the future, the Plan is projected to be 100% funded in the 2043 valuation.

5. What is the method used to amortize the unfunded actuarial liability?

The UAAL is amortized with payments determined as a level-percent of payroll, using a layered approach. The August 31, 2016 UAAL serves as the initial amortization base and is amortized over a closed 28-year period (ending August 31, 2044). For each valuation after August 31, 2016, the net annual experience gain/loss is amortized over a new, closed 20-year period. Subsequent plan amendments or changes to actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time the change is reflected in the annual actuarial valuation. The increase in the unfunded actuarial accrued liability due to the assumption changes in the most recent experience study was amortized over a closed 20-year period.

6. Please provide a description of corrective actions implemented to improve the funding status of the plan including, but not limited to, benefit changes, increased contribution rates and/or employer contributions. Please include any actuarial projections based on these changes and attach a copy of the actuarial projections.

Plan Changes: The expected return on plan assets was 7.5% from 1999 through 2017. However, the 13th Check COLA Pool Fund (created in 1991) was funded by a portion of actual investment returns that were above the actuarial assumed rate of return on the market value of assets. As a result, the Plan assets "lost" a portion of any returns above 7.5% but retained the full impact of returns below the expected return of 7.5%, lowering the effective rate of return on the assets to fund the regular plan benefits. In order to reflect the impact of the expected transfer of a portion of any favorable investment experience to the 13th Check COLA Pool Fund, the investment return assumption for the regular Pension Fund was lowered to 6.75% in the 2014 valuation and then to 6.40% in the 2015 valuation. The decrease in the assumed rate of return in those years significantly lowered the funded ratio which was 63.9% in the August 31, 2015 valuation.

The City of Lincoln commissioned a pension task force in the fall of 2015 with the charge to review the Police and Fire Pension Plan and make recommendations for improvements to the City. One of the recommendations resulted in City of Lincoln Ordinance #20343 [06/27/16]. This change merged the assets of the 13th Check COLA Pool Fund with the assets of the regular Police and Fire Pension Plan and provided for the 13th Check benefits to be paid directly from the Police and Fire Pension Plan (rather than from the separate 13th Check COLA Pool Fund), thereby eliminating future transfers of favorable investment experience (returns above the assumed rate) to the 13th Check COLA Pool Fund. As a result, the regular Pension Plan fund retains the entire return earned and the total expected return can be used as the actuarial assumed rate of return. As a result, the investment return assumption, which had been lowered to 6.40% to reflect the impact of the skimming of investment gains to the COLA Pool Fund, was returned to 7.50% in the August 31, 2016 valuation.

Changes to Funding Policy: In addition to the merger of the 13th Check COLA Pool Fund with the regular Pension Fund, additional action has been taken by the City of Lincoln to improve the future funding of the Plan and to specifically address the systematic funding of the Unfunded Accrued Liability. The City of Lincoln Ordinance #20495 [05/26/2017], modified the Plan's funding policy by providing for the amortization of the existing UAL at 08/31/2016 over a 28-year closed period. In each Actuarial Valuation subsequent to August 31, 2016, the annual net experience gains/losses (actual versus expected experience) is amortized over a new, closed 20-year period (referred to as a "layered" amortization approach). Subsequent plan amendments or

changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period, selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

The funding policy further provides that the Actuarially Determined Employer Contribution (ADEC) Rate shall be the greater of the Employer Normal Cost Rate or the sum of the Employer Normal Cost Rate and the UAL contribution rate. If actuarial assets exceed the actuarial accrued liability, a negative amortization payment shall only be applied if the plan has been at least 115 percent funded for the current and prior two years. Otherwise, the full employer normal cost rate will be contributed, thereby protecting the Plan's "surplus" assets. The dollar amount of the Actuarial Employer Contribution shall be the ADEC rate multiplied by the valuation payroll projected forward to the fiscal year under consideration, plus the actual administrative expenses for the fiscal year ending on the valuation date, projected forward one year with the inflation assumption used in the valuation.

Actuarial projections are not prepared every year, but a projection model was created in conjunction with the August 31, 2020 actuarial valuation. The projected funded ratio, underline assuming all assumptions are met, is shown below. A table of key valuation results for each year is attached as Exhibit B.
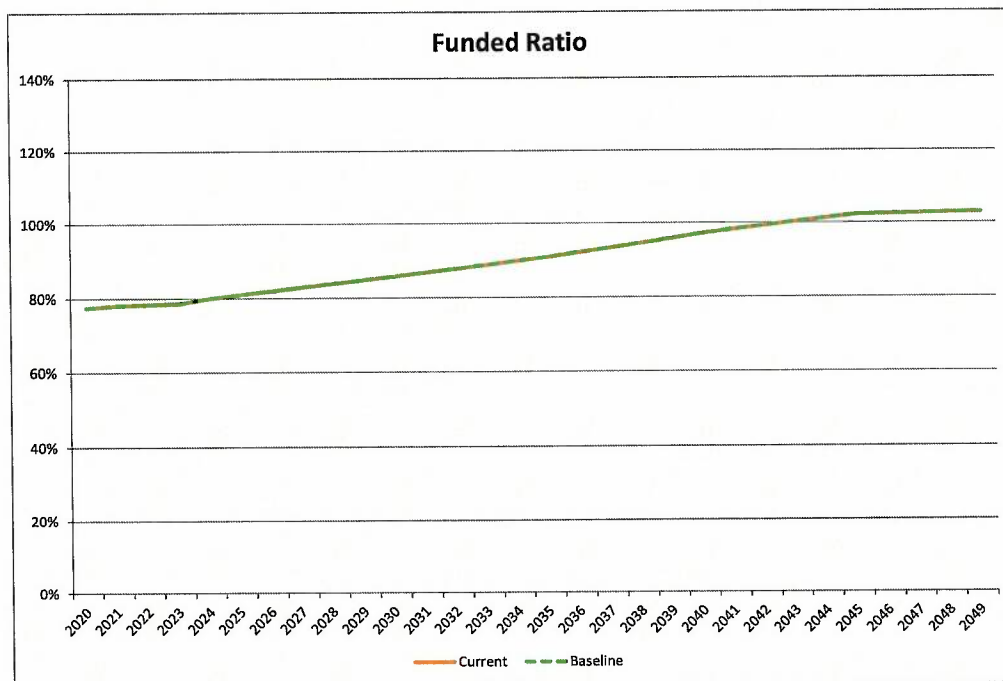
7. **Please describe recent or ongoing negotiations with bargaining groups that may impact the plan's funding.**

The current actuarial assumption for the Base (Economic) annual pay increase is 2.75%. This rate was set as a result of the latest Experience Study, completed for the four years ending August 2018.

The two-year Fire Union contact recently adopted included a 4.75% increase for FY 2021-22 and a 4.00% increase for FY 2022-23. The current Police Union contract is a three-year contract now in its last year, FY 2021-22. For FY 2021-22 the Base (Economic) increase was 3.25%.

It is expected that future annual Base (Economic) increases for both groups will continue to be a rates higher than 2.75% for an unknown duration.

8. **Please attach a copy of the most recent Actuarial Experience Study.** <u>When will the next Actuarial Experience Study be completed and available for review by the Committee?</u>

A copy of the most recent Experience Study Report is attached (dated June 1, 2019). The next experience study, covering the four years ending August 31, 2022, will be completed after the August 31, 2022 actuarial valuation report has been completed. We anticipate a draft report in May or June of 2023.

9. **What is the current assumed rate of return? If the rate has been changed in the past year, or if there are plans to review the rate in the upcoming year, please describe.**

In the last experience study, the actuary recommended reducing the investment return assumption from 7.50% to 7.25%. This change is being implemented incrementally with decreases of 0.05% in the assumption each year over five years. As a result, the investment return assumption in the August 31, 2020 actuarial valuation was 7.40%. The investment return assumption in the August 31, 2021 valuation will be 7.35%. Based on the current schedule, the investment return assumption will ultimately reach 7.25% in the August 31, 2023 valuation.

10. **Please attach the most recent actuarial valuation report. If the valuation report is completed biannually (or less often) please include an updated report for the interim year/s, if available.**

Actuarial valuations are prepared annually, as of August 31, for the Lincoln Police and Fire Retirement System. The most recent valuation report, prepared as of August 31, 2020, is attached.

Submit the information electronically by **October 15, 2020** to: Senator Mark Kolterman Chairman, Nebraska Retirement Systems Committee mkolterman@leg.ne.gov and Kate Allen, Committee Legal Counsel kallen@leg.ne.gov. If you have any questions, please contact Kate at kallen@leg.ne.gov.

2021 Reporting for Underfunded Political Subdivision Pension Plan
Exhibit A: Response to Question 1
Reporting Date: October 15, 2021

CITY OF LINCOLN POLICE AND FIRE PENSION PLAN

		(a)	(b)	(c)	(d)		(e)	(f)		(g)	
Valuation Date	Sets Contribution for FYE August 31	Funded status	Assumed Rate of Return	Actual Investment Return (prior year)	Effective Member Contribution Rate	City Contribution Rate	Normal Cost	Actuarially Required Employer Contribution Rate	Actuarially Required Employer Contribution ($)	Actual Employer Amount Contributed	Percent of ARC Actually Contributed
8/31/2015	2017	63.9%	6.40%	-2.8%	6.88%	17.42%	16.87%	17.42%	7,829,103	7,974,731	101.9%
8/31/2016	2018	79.9%	7.50%	7.3%	7.06%	17.32%	16.47%	17.32%	8,164,782	8,239,839	100.9%
8/31/2017	2019	80.8%	7.50%	11.2%	7.20%	17.08%	16.52%	17.08%	8,333,901	8,333,901	100.0%
8/31/2018	2020	82.2%	7.50%	7.5%	7.23%	16.52%	16.52%	16.52%	8,422,965	8,490,045	100.8%
8/31/2019	2021	77.7%	7.45%	2.2%	7.38%	18.76%	15.71%	18.76%	9,733,221	9,988,807	102.6%
8/31/2020	2022	77.6%	7.40%	11.1%	7.50%	19.13%	15.86%	19.13%	10,509,325		

Cavanaugh Macdonald
CONSULTING, LLC

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City of Lincoln Police and Fire Pension Fund

Actuarial Valuation Report as of August 31, 2020

www.CavMacConsulting.com

November 6, 2020

The City Council
City of Lincoln
555 South 10th Street, Room 111
Lincoln, NE 68508

Re: City of Lincoln Police and Fire Pension Fund

Dear Council Members:

At your request, we have performed an actuarial valuation of the City of Lincoln Police and Fire Pension Fund as of August 31, 2020 to determine the actuarial contribution for the fiscal year ending August 31, 2022. The major findings of the valuation are contained in this report. This report reflects the benefit provisions in effect as of August 31, 2020, which were unchanged from the prior valuation. There was one change to the actuarial assumptions since the prior valuation. The investment return assumption decreased from 7.45% to 7.40%. Continued decreases of 0.05% in the investment return assumption are expected to occur until an assumption of 7.25% is reached in the August 31, 2023 valuation.

In preparing this report, we relied, without audit, on information (some oral and some written) supplied by the Plan's staff. This information includes, but is not limited to, plan provisions, member data and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. 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.

The valuation results summarized in this report involve actuarial calculations that require the use of many assumptions about future events. The assumptions are adopted by the City after consultation with the actuary. We believe that the assumptions and methods used in this report are reasonable and appropriate for the purpose for which they have been used. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable, and valuation results based on those assumptions could result in valuation results that are materially different. No single set of assumptions is uniquely correct, but rather there is a range of reasonable assumptions. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of contributions.

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

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the Plan. The calculations have been made on a basis consistent with our understanding of the Plan's funding policy and goals and the plan provisions described in Appendix B of this report. 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. Actuarial computations for purposes of fulfilling financial accounting requirements for the Plan under Governmental Account Standards No. 67 and No. 68 are provided in a separate report.

We note that as we prepare this report, the world is in the midst of a pandemic. We have considered available information, but do not believe there is sufficient data yet to warrant the modification of any of our assumptions. We will continue to monitor the situation and advise of any adjustments that we believe would be appropriate.

This is to certify that the independent consulting actuaries have experience in performing valuations for public retirement systems, the valuation was prepared in accordance with Actuarial Standards 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 Plan.

We, Patrice A. Beckham, FSA, and Bryan K. Hoge, FSA, are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein. We are available to answer any questions on the material contained in this report or to provide explanations or further details as may be appropriate.

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

Respectfully Submitted,

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

Bryan K. Hoge, FSA, EA, FCA, MAAA
Consulting Actuary

OVERVIEW

This report presents the results of the August 31, 2020 actuarial valuation of the City of Lincoln Police and Fire Pension Fund (Plan). The primary purposes of performing a valuation are to:

- disclose asset and liability measures as of the valuation date,
- determine the actuarially determined employer contribution rate required to fund the Plan for the fiscal year ending two years from the valuation date,
- determine the experience of the Plan since the last valuation date, and
- assess and disclose the key risks associated with funding the Plan,
- analyze and report on trends in contributions, assets, and liabilities over the past several years.

The plan provisions, actuarial methods and actuarial assumptions remain unchanged from the prior valuation except for the investment return assumption, which decreased by 0.05% from 7.45% to 7.40%. It is expected to continue to decrease by 0.05% each year until an assumption of 7.25% is reached in the August 31, 2023. The actuarial accrued liability increased by $1.9 million and the actuarial required contribution rate increased by 0.42% of pay as a result of the change to the investment return assumption.

The valuation results provide a "snapshot" view of the Plan's financial condition on August 31, 2020. The unfunded actuarial accrued liability (UAAL) increased from $72.4 million last year to $77.0 million in this year's valuation while the funded ratio held steady at 78%. In addition, the Actuarial Determined Employer Contribution Rate increased by 0.37% from 18.76% in last year's valuation to 19.13% in this year's valuation. As a result, the dollar amount of the city's contribution for fiscal year 2022 is $10,509,325 compared to $9,733,221 for fiscal year 2021.

After recognizing the impact of the assumption change, the valuation results reflect net unfavorable experience for the past plan year as demonstrated by an UAAL that was higher than expected. The rate of return on the market value of assets for the year ending August 31, 2020 was 11.1%, as reported by the City, which is above the assumed return of 7.45% for FY 2019-20. Due to the actual experience in fiscal year 2020 and the scheduled recognition of the deferred investment experience from the prior four years, the return on the actuarial or smoothed value of assets was about 7.8%. Since this return is higher than the investment return assumption of 7.45%, it generated an experience gain of $0.8 million on the actuarial value of assets. The gain on assets was more than offset by an experience loss of $2.7 million on actuarial liabilities, primarily due to salary increases that were larger than expected and a greater number of disabilities than expected. The net experience loss was $1.9 million. A detailed analysis of the change in the unfunded actuarial accrued liability from August 31, 2019 to August 31, 2020 can be found on page 4.

ASSETS

As of the valuation date, the Plan had total assets of $267.2 million, when measured on a market value basis. This represents an increase of $20.9 million from the August 31, 2019 value of $246.3 million. The market value of assets is not used directly in the actuarial valuation. An asset valuation method, which smoothes the effect of market fluctuations, is used to determine the value of assets used in the valuation (called the "actuarial value of assets"). Differences between the actual and assumed return on the market value of assets are recognized equally over a five-year period.

See Table 3 for a detailed development of the actuarial value of assets. The components of the change in the market and actuarial value of assets for the Plan (in millions) are set forth in the following table.

	Market Value ($M)	Actuarial Value ($M)
Assets, August 31, 2019	$246.3	$252.7
• City and Member Contributions	12.1	12.1
• Benefit Payments and Refunds	(17.6)	(17.6)
• Administrative Expenses	(0.5)	(0.5)
• Investment Income, Net of Expenses	26.9	19.4
Assets, August 31, 2020	$267.2	$266.1
Estimated Rate of Return, Net of Expenses	11.1%	7.8%

The estimated rate of return, measured on the actuarial value of assets, was about 7.8% and, when measured on the market value of assets, was about 11.1%, as reported by the City. The actuarial value of assets as of August 31, 2020 was $266.1 million, which reflects an actuarial gain of $0.8 million resulting from the net impact of recognizing a portion of the actual versus expected return on the market value of assets in the current and preceding four years. Due to the asset smoothing method, the market value of assets exceeds the actuarial value of assets by $1.1 million. This differential of $1.1 million (a net deferred investment gain) will flow through the asset smoothing method and be recognized over the next four years.

System Net Assets

The actuarial value of assets has been both above and below the market value during this period. This is to be expected when using an asset smoothing method.

Note: Results for years before 2015 were prepared by the prior actuary.
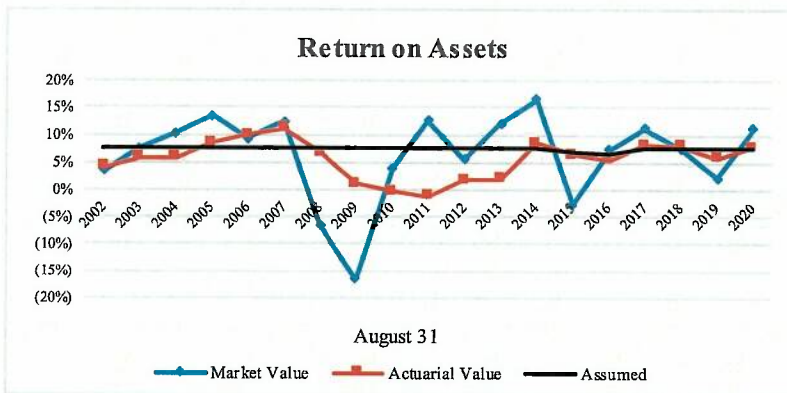
Return on Assets

The rate of return on the actuarial value of assets has been less volatile than the market value return, which is the main reason for using an asset smoothing method.

Note: Results for years before 2015 were prepared by the prior actuary.

LIABILITIES

The actuarial accrued liability is that portion of the present value of future benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the asset value at the same date is referred to as the unfunded actuarial accrued liability, or surplus if the asset value exceeds the actuarial accrued liability. The unfunded actuarial accrued liability will be reduced if the employer's contributions exceed the employer's normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial accrued liability. Benefit improvements, experience gains and losses, and changes in actuarial assumptions and procedures will also impact the total actuarial accrued liability and the unfunded portion thereof.

The Unfunded Actuarial Accrued Liability for the Plan as of August 31, 2020 is:

Actuarial Accrued Liability	$343,087,750
Actuarial Value of Assets	266,114,273
Unfunded Actuarial Accrued Liability	$76,973,477

Between August 31, 2019 and August 31, 2020, the components of the change in the UAAL for the Plan are shown in the following table:

	$ millions
Unfunded Actuarial Accrued Liability, August 31, 2019	$72.4
· Effect of contributions above the actuarial rate	(0.1)
· Expected increase due to amortization method	0.2
· Investment experience	(0.8)
· Liability experience*	2.7
· Assumption changes	1.9
· Other experience	0.7
Unfunded Actuarial Accrued Liability, August 31, 2020	$77.0

* Liability loss is about 0.8% of total actuarial accrued liability.

The overall experience loss for the last plan year of $1.9 million was the net result of an experience loss of $2.7 million on Plan liabilities and an experience gain of $0.8 million on Plan assets (actuarial value). The unfavorable experience on Plan liabilities was primarily due to salary increases that were larger than expected and more disabilities than anticipated by the actuarial assumption.

Analysis of the unfunded actuarial accrued liability strictly as a dollar amount can be misleading. Another way to evaluate the unfunded actuarial accrued liability and the progress made in its funding is to track the funded status, the ratio of the actuarial value of assets to the actuarial accrued liability. This information for recent years is shown in the following table (in millions). Historical information is shown in the graph on the following page. Note that the funded ratio does not indicate whether or not the Plan has sufficient funds to settle all current obligations, nor is it necessarily indicative of the need for future funding.

	8/31/16	8/31/17	8/31/18	8/31/19	8/31/20
Actuarial Accrued Liability ($M)	$271.6	$285.0	$296.4	$325.1	$343.1
Actuarial Value of Assets ($M)	$217.0	$230.2	$243.5	$252.7	$266.1
Unfunded AAL*	$54.6	$54.8	$52.9	$72.4	$77.0
Funded Ratio (Actuarial Assets/AAL)	79.9%	80.8%	82.2%	77.7%	77.6%
Actuarial Accrued Liability ($M)	$271.6	$285.0	$296.4	$325.1	$343.1
Market Value of Assets ($M)	$213.9	$233.1	$245.9	$246.3	$267.2
Unfunded AAL*	$57.7	$51.9	$50.6	$78.8	$75.9
Funded Ratio (MVA/AAL)	78.7%	81.8%	82.9%	75.8%	77.9%

* Numbers may not add due to rounding.
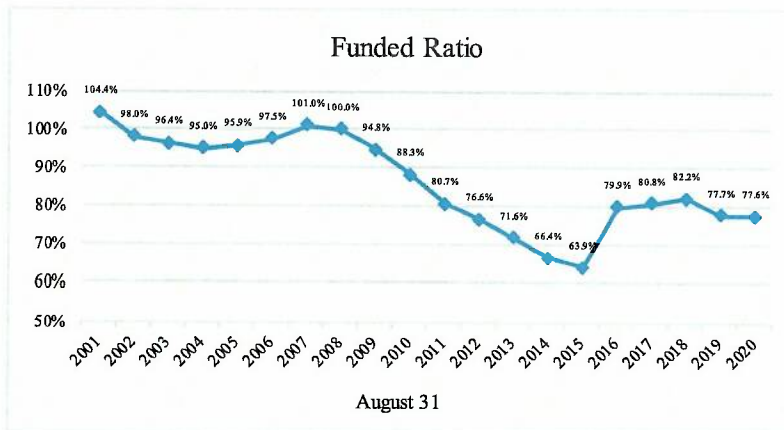
Funded Ratio

From 2007 to 2015, the funded ratio steadily declined due to changes in assumptions, adverse experience, and contributions less than the full actuarial rate. The large improvement in 2016 was due to the merger of the COLA Pool Fund with the general pension fund which resulted in an increase in the investment return assumption.

Note: Results for years prior to 2015 were prepared by prior actuaries.

As mentioned earlier, due to the asset smoothing method there is a $1.1 million difference between the market and actuarial value of assets. This deferred investment gain will flow through the asset smoothing method over the next four years. If all actuarial assumptions are met in the future and unfavorable investment experience does not occur, the funded ratio will increase as the asset smoothing method recognizes the deferred investment gain. The Plan's funded status will continue to be heavily dependent on future investment returns.

CONTRIBUTION RATES

Generally, contributions to the Plan consist of:

- a "normal cost" for the portion of projected liabilities allocated by the actuarial cost method to service of members during the current year; and

- an "unfunded actuarial accrued liability contribution" for the excess of the portion of projected liabilities allocated to service to date over the actuarial value of assets.

Contribution rates are computed with the objective of developing costs that are level as a percentage of covered payroll. As a result, even if all assumptions are met the dollar amount of contributions is expected to increase as covered payroll increases over time. The contribution rate computed in the August 31, 2020 valuation is used to set the city contribution for the fiscal year ending August 31, 2022.

By ordinance, the City is required to contribute the Actuarially Determined Employer Contribution (ADEC), which is the greater of the employer normal cost rate or the sum of the employer normal cost rate and UAAL contribution rate. The dollar amount of the city contribution is also required to include a component for administrative expenses. Due to a number of factors, the most significant of which was the change in actuarial assumptions, the actuarially determined employer contribution rate increased by 0.37% from the 2019 to the 2020 valuation, as shown in the following table:

		Actuarial Valuation	
Actuarially Determined Contribution Rate		**8/31/2020**	**8/31/2019**
1) a. Total Normal Cost		15.86%	15.71%
b. Member Financed		7.50%	7.38%
c. Employer Portion		8.36%	8.33%
(1a) - (1b)			
2) UAAL Contribution		10.77%	10.43%
3) Employer Contribution Rate		19.13%	18.76%
4) Projected Covered Payroll		$52,206,337	$49,454,779
5) Actuarial Employer Contribution*		10,509,325	9,733,221

* Includes administrative expenses. See Table 11 for details.

As the investment return is incrementally lowered over the next three valuations, the actuarial contribution rate, and therefore the City's contribution, is expected to increase. Based on the current valuation results, the estimated City contributions are shown below:

Employer Contribution Amount
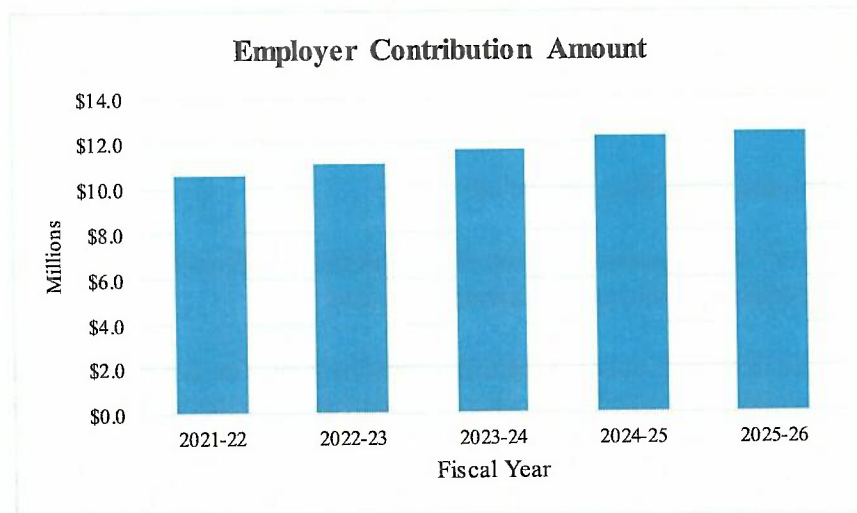
COMMENTS

The Lincoln City Council passed Lincoln City Ordinance #20495 in May 2017, strengthening the Plan's long-term funding by modifying the amortization of the unfunded actuarial accrued liability to use layered amortization with closed amortization periods. The ordinance also requires the City to contribution the full actuarially determined employer contribution (ADEC) as calculated in the annual actuarial valuation. These changes to the funding policy are intended to improve the Plan's long-term funding, with the goal of accumulating sufficient assets over time to fully finance the future benefits payable to members. If all assumptions are met, the funding policy will result in the Plan reaching fully funded status.

As of August 31, 2020, the actuarial accrued liability of the Plan was $343.1 million and the actuarial value of assets was $266.1 million, resulting in a funded ratio of 78%, unchanged from the funded ratio in last year's valuation. Using the market value of assets, the funded ratio is also 78%.

Retirement plans use several mechanisms to create more stability in the contribution levels. These include an asset valuation method, which smoothes out the volatility in the investment returns, and amortization of any actuarial gains or losses over a period of years. The unfunded actuarial accrued liability, which includes the experience loss in FY 2020, is amortized using a "layered" approach. Under the Plan's funding policy, a new amortization base equal to the difference between the actual and expected UAAL is created each year and amortized over a closed 20-year period. The intent of this methodology is to mitigate the impact of the actuarial experience on the actuarial contribution rate.

The Plan utilizes an asset smoothing method that spreads the difference between expected and actual return over a five-year period. The rate of return on the actuarial value of assets for the plan year ending in 2020 was 7.8% as compared to the 11.1% return on the market value of assets, as reported by the City. As of August 31, 2020, the deferred investment gain (market value less actuarial value of assets) is $1.1 million which will flow through the asset smoothing method over the next four years. If all actuarial assumptions are met in the future and unfavorable investment experience does not occur, the funded ratio will increase as the asset smoothing method recognizes the deferred investment gain.

While the use of an asset smoothing method is a common procedure for public retirement systems, it is important to identify the potential impact of the deferred investment experience. This is accomplished by comparing the key valuation results from the August 31, 2020 actuarial valuation using both the actuarial and market value of assets.

	Using Actuarial Value of Assets	Using Market Value of Assets
Actuarial Accrued Liability (AAL)	$343,087,750	$343,087,750
Asset Value	266,114,273	267,193,074
Unfunded Actuarial Accrued Liability (UAAL)	$76,973,477	$75,894,676
Funded Ratio	78%	78%
Normal Cost Rate	15.86%	15.86%
UAAL Contribution Rate	10.77%	10.61%
Total Actuarial Contribution Rate	26.63%	26.47%
Member Contribution Rate	(7.50%)	(7.50%)
Employer Actuarial Contribution Rate	19.13%	18.97%

A typical retirement plan faces many different risks. The term "risk" is typically 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 each year 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 VI of this report for an in-depth discussion of the specific risks facing the City of Lincoln Police and Fire Pension Fund.

We note that as we prepare this report, the world is in the midst of a pandemic. We have considered available information, but do not believe there is sufficient data yet to warrant the modification of any of our assumptions. We will continue to monitor the situation and advise of any adjustments that we believe would be appropriate.

A summary of key data elements and valuation results as of August 31, 2020 and August 31, 2019 are presented on the following page. More detail on each of these elements can be found in the following sections of this report.

	8/31/2020 Valuation	8/31/2019 Valuation	% Change
1. PARTICIPANT DATA			
Number of:			
Active Members	607	590	2.9%
DROP Members	45	42	7.1%
Retirees, Disabled Members and Beneficiaries	549	536	2.4%
Inactive Vested Members	25	24	4.2%
Refund Due	2	4	(50.0)%
Total Members	1,228	1,196	2.7%
Projected Valuation Salaries of Active Members	$ 50,809,087	$ 48,131,172	5.6%
Average Valuation Salary	$ 83,705	$ 81,578	2.6%
Annual Retirement Payments for DROP Members, Disabled Members, Retirees and Beneficiaries	$ 17,518,844	$ 16,635,457	5.3%
Average Annual Benefit	$ 29,493	$ 28,781	2.5%
2. ASSETS AND LIABILITIES			
a. Total Actuarial Accrued Liability	$343,087,750	$325,109,208	5.5%
b. Market Value of Assets	267,193,074	246,294,314	8.5%
c. Actuarial Value of Assets	266,114,273	252,739,770	5.3%
d. Unfunded Actuarial Accrued Liability (a) - (c)	$ 76,973,477	$ 72,369,438	6.4%
e. Funded Ratio - Actuarial Value (c) / (a)	77.56%	77.74%	(0.2)%
f. Funded Ratio - Market Value (b) / (a)	77.88%	75.76%	2.8%
3. ACTUARIAL CONTRIBUTION RATE			
a. Normal Cost	15.86%	15.71%	1.0%
b. UAAL Amortization	10.77%	10.43%	3.3%
c. Actuarial Determined Contribution Rate (a) + (b)	26.63%	26.14%	1.9%
d. Effective Employee Contribution Rate	(7.50%)	(7.38%)	1.6%
e. Employer Actuarial Contribution Rate (c) - (d)	19.13%	18.76%	2.0%
f. Employer Contribution Amount	$ 10,509,325	$ 9,733,221	8.0%

This report presents the results of the actuarial valuation of the City of Lincoln Police and Fire Pension Fund as of August 31, 2020. This valuation was prepared at the request of the City.

Please pay particular attention to our actuarial certification letter, where the guidelines employed in the preparation of this report are outlined. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings are based. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings which result from this valuation is presented in the previous section. Section III describes the assets and investment experience of the Plan. Sections IV and V describe how the obligations of the Plan are to be met under the actuarial cost method in use. Section VI discloses key maturity measurements and discusses the key risks facing the funding of the Plan. Section VII includes some historical funding and other information.

This report includes several appendices:

- Appendix A   Schedules of valuation data classified by various categories of members.

- Appendix B   A summary of the current benefit structure, as determined by the provisions of governing law on August 31, 2020.

- Appendix C   A summary of the actuarial methods and assumptions used to estimate liabilities and determine contribution rates.

- Appendix D   A glossary of actuarial terms.

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is August 31, 2020. On that date, the assets available for the payment of benefits are appraised. The assets are compared with the liabilities of the Plan, which are generally in excess of assets. The actuarial process then leads to a method of determining the contributions needed by members and the employer in the future to balance the Plan assets and liabilities.

Market Value of Assets

The current market value represents the "snapshot" or "cash-out" value of Plan assets as of the valuation date. In addition, the market value of assets provides a basis for measuring investment performance from time to time. Table 1 is a comparison, at market values, of Plan assets as of August 31, 2020 and August 31, 2019, in total and by investment category. Table 2 summarizes the change in the market value of assets from August 31, 2019 to August 31, 2020.

Actuarial Value of Assets

Neither the market value of assets, representing a "cash-out" value of Plan assets, nor the book value of assets, representing the cost of investments, may be the best measure of the Plan's ongoing ability to meet its obligations.

To arrive at a suitable value for the actuarial valuation, a technique for determining the actuarial value of assets is used which dampens swings in the market value while still indirectly recognizing market values. Under the asset smoothing methodology, the difference between the actual investment return on the market value of assets and assumed investment return on the market value of assets is recognized evenly over a five-year period.

Table 3 shows the development of the actuarial value of assets (AVA) as of the valuation date.

TABLE 1

STATEMENT OF NET PLAN ASSETS AT MARKET VALUE

	Market Value	
	August 31, 2020	**August 31, 2019**
Cash & Equivalents	$ 4,372,485	$ 4,253,714
Accrued Interest & Dividends	124	3,619
Fixed Income Investments	45,665,383	30,552,046
Equity Investments	137,607,708	122,433,340
Alternative Investments	79,547,374	88,725,241
Total Assets	$ 267,193,074	$ 245,967,960
Contributions Receivable	$ 0	$ 326,354
Net Assets Available for Benefits	$ 267,193,074	$ 246,294,314

TABLE 2

**STATEMENT OF CHANGES IN NET ASSETS
DURING YEAR ENDED AUGUST 31, 2020**
(Market value)

1. Market Value of Assets as of August 31, 2019	$	246,294,314
2. Contributions:		
a. Members	$	3,576,557
b. City		8,490,046
c. Total	$	12,066,603
3. Investment Income		
a. Interest and Dividends	$	2,760,432
b. Realized Gains/(Losses)		5,404,133
c. Short and Long Term Capital Gains		831,192
d. Unrealized Gains/(Losses)		18,093,641
e. Miscellaneous		273
f. Investment Expenses		(178,289)
g. Net Investment Income	$	26,911,382
4. Expenditures		
a. Refunds of Member Contributions	$	392,038
b. Benefits Paid:		
(1) Pension and Compensation Payments	$	14,699,357
(2) DROP Payments		2,477,069
(3) Temporary Total Disability		0
c. Administrative Expenses		510,761
d. Total	$	18,079,225
5. Changes and Adjustments	$	0
6. Net Change	$	20,898,760
(2c) + (3g) - (4d) + (5)		
7. Market Value of Assets as of August 31, 2020	$	267,193,074
8. Return on Market Value of Assets, Net of Investment Expenses*		11.1%

* Annual rate of return reported by the City.

TABLE 3

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	Year End			
	8/31/2017	8/31/2018	8/31/2019	8/31/2020
1. Asset Value, Beginning of Year	$ 217,003,707	$ 230,159,635	$ 243,538,925	$ 246,294,314
2. Contributions During Year				
a. Members	$ 3,112,583	$ 3,195,658	$ 3,366,841	$ 3,576,557
b. City	7,974,731	8,239,839	8,007,547	8,490,046
c. Contributions Receivable	0	0	326,354	0
d. Total	$ 11,087,314	$ 11,435,497	$ 11,700,742	$ 12,066,603
3. Benefit Payments and Expenses	$ 15,449,711	$ 16,103,135	$ 16,721,737	$ 18,079,225
4. Expected Investment Income on (1), (2) and (3)	$ 16,114,646	$ 17,090,101	$ 18,068,519	$ 18,128,979
5. Actual Return on Market Value, Net of Investment Expenses	$ 23,644,797	$ 17,407,833	$ 5,434,779	$ 26,911,382
6. Return to be Spread, End of Year (5) - (4)	$ 7,530,151	$ 317,732	$ (12,633,740)	$ 8,782,403

7. Return to be Spread

Plan Year Ending	Return to be Spread	Unrecognized Percent	Unrecognized Return
2020	$8,782,403	80%	$7,025,922
2019	(12,633,740)	60%	(7,580,244)
2018	317,732	40%	127,093
2017	7,530,151	20%	1,506,030
			$1,078,801

8. Total Market Value of Assets as of August 31, 2020 $267,193,074

9. Total Actuarial Value of Assets as of August 31, 2020 $266,114,273
   (8) - (7)

10. Asset Ratios
    (a) Actuarial Value to Market Value (9) / (8)   99.60%
    (b) Market Value to Actuarial Value (8) / (9)   100.41%

11. Return on Actuarial Value of Assets, Net of Expenses   7.8%

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the City of Lincoln Police and Fire Pension Fund as of the valuation date, August 31, 2020. In this section, the discussion will focus on the commitments (future benefit payments) of the Plan, which are referred to as its liabilities.

Table 4 contains an analysis of the actuarial present value of all future benefits (PVFB) for contributing members, inactive members, retirees and their beneficiaries.

The liabilities summarized in Table 4 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measurement of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and for the lives of the surviving beneficiaries.

All liabilities reflect the benefit provisions in place as of August 31, 2020.

Actuarial Accrued Liability

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. An actuarial cost method is a mathematical technique that allocates the present value of future benefits into annual costs. In order to do this allocation, it is necessary for the funding method to "breakdown" the present value of future benefits into two components:

(1) that which is attributable to the past, and

(2) that which is attributable to the future.

Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability". The portion allocated to the future is known as the present value of future normal costs, with the specific piece of it allocated to the current year being called the "normal cost". Table 5 contains the calculation of actuarial accrued liability for the Plan. The Entry Age Normal actuarial cost method is used to develop the actuarial accrued liability.

TABLE 4

PRESENT VALUE OF FUTURE BENEFITS (PVFB)
AS OF AUGUST 31, 2020

1. Active Employees
   a. Retirement Benefits $ 207,034,023
   b. Pre-Retirement Death Benefits   1,981,638
   c. Termination Benefits   7,030,656
   d. Disability Benefits   4,420,307
   e. Total $ 220,466,624

2. Inactive Vested Members $ 6,399,364

3. Refunds Due $ 13,449

4. In Pay Members
   a. Retirees $ 128,194,159
   b. Disabled Members   20,623,156
   c. DROP Members   30,235,977
   d. Beneficiaries   8,689,217
   e. Total $ 187,742,509

5. Total Present Value of Future Benefits $ 414,621,946
   (1e) + (2) + (3) + (4e)

TABLE 5

ACTUARIAL ACCRUED LIABILITY
AS OF AUGUST 31, 2020

1. Active Employees		
a. Present Value of Future Benefits	$	220,466,624
b. Present Value of Future Normal Costs		71,534,196
c. Actuarial Accrued Liability (1a) - (1b)	$	148,932,428
2. Inactive Members	$	6,412,813
3. In Pay Members		
a. Retirees	$	128,194,159
b. Disabled Members		20,623,156
c. DROP Members		30,235,977
d. Beneficiaries		8,689,217
e. Total	$	187,742,509
4. Total Actuarial Accrued Liability (1c) + (2) + (3e)	$	343,087,750
5. Actuarial Value of Assets	$	266,114,273
6. Unfunded Actuarial Accrued Liability (4) - (5)	$	76,973,477

TABLE 6

ACTUARIAL BALANCE SHEET
AS OF AUGUST 31, 2020

ASSETS

Actuarial Value of Assets	$ 266,114,273
Present Value of Future Normal Costs	$ 71,534,196
Present Value of Future Payments on the Unfunded Actuarial Accrued Liability	$ 76,973,477
Total Assets	$ 414,621,946

LIABILITIES

Active Employees:		
a. Retirement Benefits	$ 207,034,023	
b. Pre-Retirement Death Benefits	1,981,638	
c. Termination Benefits	7,030,656	
d. Disability Benefits	4,420,307	
e. Total		$ 220,466,624
Inactive Members		$ 6,412,813
In Pay Members		
a. Retirees	$ 128,194,159	
b. Disabled Members	20,623,156	
c. DROP Members	30,235,977	
d. Beneficiaries	8,689,217	
e. Total		$ 187,742,509
Total Liabilities		$ 414,621,946

TABLE 7

ACTUARIAL GAIN/(LOSS)

Liabilities

1. Actuarial Accrued Liability as of August 31, 2019	$	325,109,208
2. Normal Cost for Plan Year Ending August 31, 2020		6,849,214
3. Benefit Payments During Plan Year Ending August 31, 2020		(17,568,464)
4. Interest at 7.45%		24,088,232
5. Assumption Changes		1,916,405
6. Expected Actuarial Accrued Liability as of August 31, 2020	$	340,394,595
7. Actuarial Accrued Liability as of August 31, 2020	$	343,087,750

Assets

8. Actuarial Value of Assets as of August 31, 2019	$	252,739,770
9. Contributions During Plan Year Ending August 31, 2020		12,066,603
10. Benefit Payments and Expenses During Plan Year Ending August 31, 2020		(18,079,225)
11. Interest at 7.45%		18,609,166
12. Expected Actuarial Value of Assets as of August 31, 2020	$	265,336,314
13. Actuarial Value of Assets as of August 31, 2020	$	266,114,273

Gain / (Loss)

14. Expected Unfunded Actuarial Accrued Liability (6) – (12)	$	75,058,281
15. Unfunded Actuarial Accrued Liability (7) – (13)	$	76,973,477
16. Actuarial Gain / (Loss) (14) – (15)	$	(1,915,196)
17. Actuarial Gain / (Loss) on Actuarial Value of Assets (13) – (12)	$	777,959
18. Actuarial Gain / (Loss) on Actuarial Accrued Liability (6) – (7)	$	(2,693,155)

TABLE 8

GAIN/(LOSS) BY SOURCE

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 C of this report.

Since the overall results of the valuation will reflect the choice of assumptions made, periodic studies of the various components compromising the plan's experience are conducted in which the experience for each component is analyzed in relation to the assumption used for that component (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 Plan experienced a net actuarial loss on liabilities of $2,693,000 during the plan year ended August 31, 2020 and an actuarial gain on assets of $778,000. The net actuarial loss was $1,915,000. The major components of this net actuarial experience loss are shown below:

Liability Sources	Gain/(Loss)
Salary Increases	(1,093,000)
Mortality	(250,000)
Terminations	(283,000)
Retirements	562,000
Disability	(872,000)
New Entrants/Rehires	(314,000)
13th Check	(5,000)
Data (New DRO Records)	(179,000)
Miscellaneous	(259,000)
Total Liability Gain/(Loss)*	(2,693,000)
Asset Gain/(Loss)	778,000
Net Actuarial Gain/(Loss)	(1,915,000)

* Liability experience was 0.8% of expected actuarial accrued liability.

The previous two sections were devoted to a discussion of the assets and liabilities of the Plan. A comparison of Tables 3 and 4 indicates that current assets (actuarial value) fall short of meeting the present value of future benefits (total liability). This is expected in all but a completely closed fund, where no further contributions are anticipated. In an active Plan, there will almost always be a difference between the actuarial value of assets and total liabilities. This deficiency has to be made up by future contributions and investment returns. An actuarial valuation sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. Under an actuarial cost method, the contributions required to meet the difference between current assets and current liabilities are allocated each year between two elements: (1) the normal cost rate and (2) the unfunded actuarial accrued liability contribution rate.

The term "fully funded" is often applied to a Plan in which contributions at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, Plans are not fully funded, either because of past benefit improvements that have not been completely funded or because actuarial deficiencies have occurred when experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists. Likewise, when the actuarial value of assets is greater than the actuarial accrued liability, a surplus exists.

Description of Contribution Rate Components

The Entry Age Normal (EAN) actuarial cost method is used for the valuation. Under that method, the normal cost for each year from entry age to assumed exit age is a constant percentage of the member's year by year projected compensation. The portion of the present value of future benefits not provided by the present value of future normal costs in the actuarial accrued liability. The unfunded actuarial accrued liability represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.

In general, contributions are computed in accordance with a level percent-of-payroll funding objective. The funding policy for the Plan, which determines the City's contribution, can be found in Appendix B of Chapter 2.62 in the Lincoln Municipal Code. The contribution rate developed in the August 31, 2020 actuarial valuation will be used to determine the dollar amount of the actuarially determined employer contribution to the City of Lincoln Police and Fire Pension Fund for fiscal year end 2022. In this context, the term "contribution rate" means the percentage, which is applied to the estimated active member payroll for the applicable plan year to determine the actual employer contribution amount (i.e., in dollars) for the group.

As of August 31, 2020 the actuarial accrued liability was greater than the valuation assets so an unfunded actuarial accrued liability (UAAL) exists. The UAAL is amortized, as a level-percent of payroll, using a layered approach. The existing UAAL as of August 31, 2016 serves as the initial base and is amortized over a closed 30-year period beginning on August 31, 2014 (24 years

remaining in this valuation). For each valuation subsequent to August 31, 2016, annual net experience gains/losses are amortized over a new, closed 20-year period. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

Contribution Rate Summary

In Table 9, the amortization payment related to the unfunded actuarial accrued liability, as of August 31, 2020, is developed. Table 10 develops the actuarially determined employer contribution (ADEC) rate.

The actuarial contribution rates shown in this report are based on the actuarial assumptions and cost methods described in Appendix C.

TABLE 9

DEVELOPMENT OF UNFUNDED ACTUARIAL ACCRUED LIABILITY
CONTRIBUTION RATE

Amortization Bases	Original Amount	Remaining Payments	Base is Paid Off	Outstanding Balance as of August 31, 2020	Annual Contribution*
2016 UAAL Base	$ 54,590,515	24	8/31/2044	$ 56,382,224	$ 3,866,303
2017 Experience Base	(286,327)	17	8/31/2037	(280,724)	(23,820)
2018 Experience Base	(2,490,622)	18	8/31/2038	(2,463,584)	(201,279)
2019 Experience Base	5,276,186	19	8/31/2039	5,249,810	414,197
2019 Assumption Change Base	13,739,593	19	8/31/2039	13,670,909	1,078,600
2020 Experience Base	2,583,532	20	8/31/2040	2,583,532	197,354
2020 Assumption Change Base	1,831,310	20	8/31/2040	1,831,310	139,892
Total				$ 76,973,477	$ 5,471,247

* Amounts reflect mid-year timing. Based on level percentage of payroll, assuming payroll increases 2.75% per year.

1. Total UAAL Amortization Payment $ 5,471,247

2. Total Projected Payroll for FY 2020-21 $ 50,809,087

3. UAAL Amortization Payment as a Percent of Payroll   10.77%

TABLE 10

ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATE

	Valuation Date	
	8/31/2020	**8/31/2019**
Normal Cost		
Retirement benefits	13.23%	13.09%
Pre-retirement death benefits	0.32%	0.32%
Termination benefits	1.57%	1.57%
Disability benefits	0.74%	0.73%
Total Normal Cost	15.86%	15.71%
Total UAAL Amortization Payment	10.77%	10.43%
Actuarial Determined Contribution Rate	26.63%	26.14%
Member portion	7.50%	7.38%
City portion	19.13%	18.76%

TABLE 11

FIVE-YEAR BUDGET REQUEST ESTIMATE

The Employer Contribution Amount, per City Ordinance 20495, requires the City to contribute the Actuarially Determined Employer Contribution Amount plus Administrative Expenses to the Plan.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Actuarially Determined Employer	Actuarially Determined Employer		**Employer Contribution**
Fiscal Year	Total Payroll*	Employer Normal Cost Rate	UAAL Contribution Rate	Contribution Rate (2) + (3)	Contribution Amount (1) * (4)	Admin. Expenses**	**Amount (5) + (6)**
2021-22	52,206,337	8.36%	10.77%	19.13%	9,987,072	522,253	**10,509,325**
2022-23	53,642,011	8.44%	11.11%	19.55%	10,487,013	534,004	11,021,017
2023-24	55,117,166	8.53%	11.50%	20.03%	11,039,968	546,019	11,585,987
2024-25	56,632,888	8.64%	11.90%	20.54%	11,632,395	558,304	12,190,699
2025-26	58,190,292	8.57%	11.69%	20.26%	11,789,353	570,866	12,360,219

Note: Projected employer contribution amounts assume that all actuarial assumptions are met in the future and reflect the expectation that the investment return assumption will decrease 0.05% per year until reaching 7.25% in the August 31, 2023 valuation (which determines the City contribution for FY 2024-2025). Consequently, the assumed return in each year shown in this table varies in accordance with the investment return assumption for that year (so 7.40% for FY 2020-2021, 7.35% for FY 2021-2022, etc.).

* *Total payroll is projected to increase at 2.75% per year for future years.*
** *Administrative expenses are assumed to increase with price inflation of 2.25% per year.*

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, was first applicable for the August 31, 2019 actuarial valuation for the City of Lincoln Police and Fire Pension Fund.

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 higher than expected due to population changes or other factors (note ASOP 51 does not require the actuary to opine on the willingness or ability of the plan sponsor to pay the contribution rate);
- external risks, such as the regulatory and political environment (which are not included in the risks to be assessed under ASOP 51).

Funding Policy

One of the most important factors in the funding of a retirement system is consistently making contributions that are at least equal to the actuarial required contribution. There is a direct correlation between healthy, well-funded retirement plans and consistent contributions at the full actuarial contribution rate each year. For the Lincoln Police and Fire Pension Fund, members contribute a fixed percentage of pay that varies by benefit tier (plan), with most contributing 8.0% under Plan A. The resulting shortfall between the Actuarial Contribution Rate and the effective member contribution rate is the City's obligation. Actual City contributions have been less than the full actuarial contribution in 9 of the last 17 years, as shown in the following graph, with the greatest shortfall occurring during FY 2015-2016.

Actual Employer Contributions versus Actuarially Determined Contributions
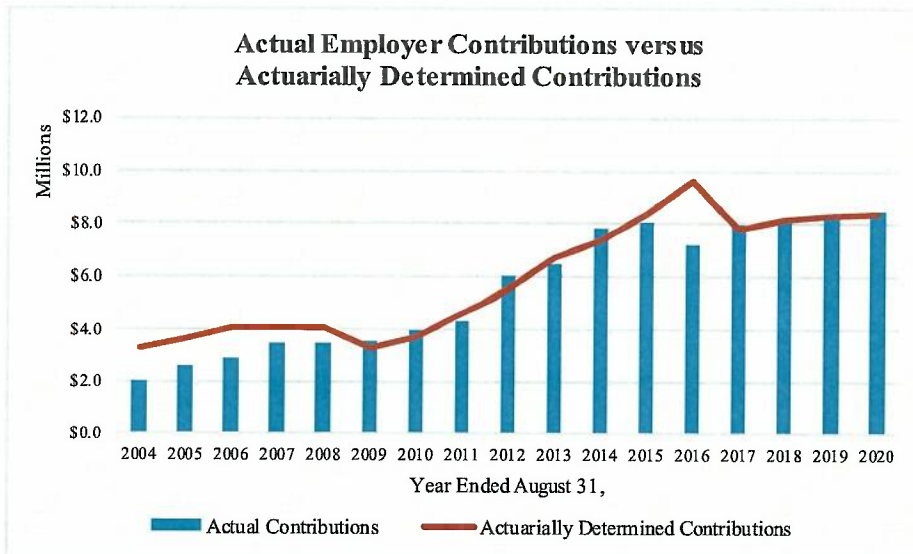
However, in May of 2017, the Plan's funding policy was modified by City ordinance to require the City to contribute the Actuarially Determined Employer Contribution (ADEC), which is defined as the greater of the employer normal cost rate or the sum of the employer normal cost rate and UAAL contribution rate. The dollar amount of the City contribution is also required to include a component for administrative expenses. Prior to this change, the ordinance only required the contribution to be at least the employer normal cost plus administrative expenses, i.e., the full actuarial contribution was not required to be made. The changes to the funding policy in 2017 were implemented to strengthen the Plan's long-term funding and are expected to do so if actual City contributions follow the Policy.

Investment Return Risk

Perhaps the most significant risk factor for most retirement systems, including the City of Lincoln Police and Fire Pension Fund, is investment return because of the volatility of returns associated with the asset allocations (see Table 12). Historically, actual returns in any given year have varied significantly from the assumed rate of return (see the graph following this paragraph). This is to be expected, given the Plan's asset allocation and the standard deviation of the portfolio, but it does create a high degree of uncertainty, or risk. The effective compound rate of return over the past 19 years, which includes the Great Recession, was 6.0%, but the range of returns varied from -17% to +16%. When actual investment returns are lower than the assumed rate of return, the actuarial contribution rate increases absent offsetting gains on liabilities. Over the past decade, the effective compound rate of return has been 8.2%.

Return on Assets

August 31

— Market Value   — Assumed
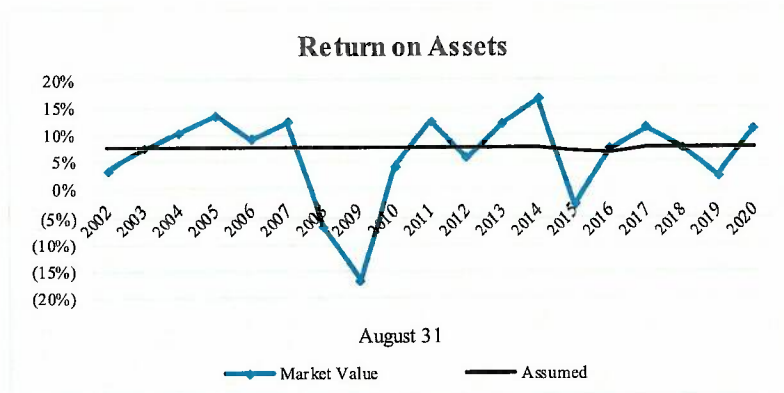
Demographic Risks

A key demographic risk for all retirement systems, including the City of Lincoln Police and Fire Pension Fund, 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 than the volatility associated with investment returns.

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

TABLE 12

HISTORICAL ASSET VOLATILITY RATIOS

As a retirement plan matures, the size of the market value of assets typically increases relative to the covered payroll of active members, on which the plan 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 plan. The higher this ratio, the more sensitive a plan's contribution rate is to investment return volatility. In other words, it will be harder to recover from investment losses with increased contributions due to the magnitude of the increase.

Actuarial Valuation Date	Market Value of Assets	Estimated Plan Year Payroll	Asset Volatility Ratio	Increase in ACR with a Return 10% Lower than Assumed*
8/31/2004	$137,781,079	$28,124,862	4.90	3.74%
8/31/2005	153,324,765	29,029,309	5.28	4.03%
8/31/2006	164,696,618	30,724,333	5.36	4.09%
8/31/2007	181,130,654	30,546,235	5.93	4.53%
8/31/2008	165,904,553	32,265,715	5.14	3.93%
8/31/2009	134,932,747	33,449,977	4.03	3.08%
8/31/2010	135,835,077	34,233,197	3.97	3.03%
8/31/2011	148,347,670	35,763,446	4.15	3.17%
8/31/2012	153,546,978	36,310,880	4.23	3.23%
8/31/2013	164,617,759	38,107,652	4.32	3.30%
8/31/2014	184,834,762	37,887,505	4.88	3.73%
8/31/2015	176,828,083	42,381,059	4.17	3.19%
8/31/2016	213,857,935	42,930,194	4.98	3.80%
8/31/2017	233,140,335	44,776,055	5.21	3.98%
8/31/2018	245,880,530	46,877,559	5.25	4.01%
8/31/2019	246,294,314	48,131,172	5.12	3.91%
8/31/2020	267,193,074	50,809,087	5.26	4.02%

Note: Years prior to 8/31/2015 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 amount of assets at August 31, 2020 is 5.26 times the covered payroll so underperforming the investment return assumption by 10.00% (i.e., earn -2.60% for one year) is equivalent to an actuarial loss of $26.7 million or 52.6% of payroll. While the actual impact in the first year is mitigated by the asset smoothing method and amortization of the UAAL, the magnitude of the ultimate contribution increase illustrates the risk associated with volatile investment returns.

TABLE 13

LIABILITY MATURITY MEASUREMENTS

Most public sector retirement systems have been in operation for many years. As a result, they 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. With more of the total liability residing with retirees, investment volatility has a greater impact on the funding of the system because 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 Accrued Liability (b)	Retiree Percentage (a) / (b)
8/31/2004	$63,567,028	$144,178,758	44.1%
8/31/2005	65,946,867	151,978,408	43.4%
8/31/2006	67,729,832	161,583,285	41.9%
8/31/2007	76,597,657	169,587,458	45.2%
8/31/2008	81,480,790	179,376,149	45.4%
8/31/2009	88,108,214	187,292,374	47.0%
8/31/2010	94,844,691	195,206,353	48.6%
8/31/2011	96,971,599	204,990,324	47.3%
8/31/2012	106,051,038	214,878,992	49.4%
8/31/2013	113,673,206	229,192,937	49.6%
8/31/2014	139,496,202	262,918,401	53.1%
8/31/2015	147,478,263	286,493,673	51.5%
8/31/2016	150,187,027	271,594,222	55.3%
8/31/2017	157,805,935	285,038,672	55.4%
8/31/2018	159,139,159	296,440,660	53.7%
8/31/2019	177,864,308	325,109,208	54.7%
8/31/2020	187,742,509	343,087,750	54.7%

Note: Years prior to 8/31/2015 were provided by the prior actuary.
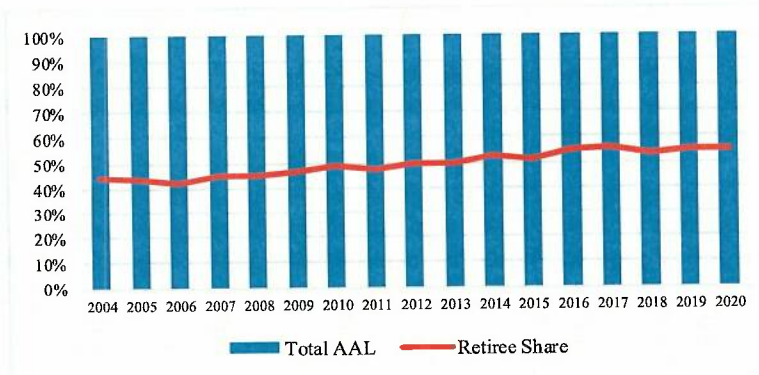
TABLE 14

HISTORICAL MEMBER STATISTICS

The decreasing ratio of active to in-pay members is to be expected as the System matures and the number of retirees grows. It does, however, create contribution risk to funding the System as deviations in actual experience are recovered by higher contributions, which are based on payroll.

Valuation Date August 31,	Number of Active Members	Number of Benefit Recipients*	Active / Benefit Recipients*
2006	558	395	1.41
2007	531	417	1.27
2008	549	428	1.28
2009	553	449	1.23
2010	561	463	1.21
2011	562	467	1.20
2012	559	487	1.15
2013	573	496	1.16
2014	555	517	1.07
2015	576	528	1.09
2016	573	546	1.05
2017	576	558	1.03
2018	587	558	1.05
2019	590	578	1.02
2020	607	594	1.02

*Includes members participating in DROP.
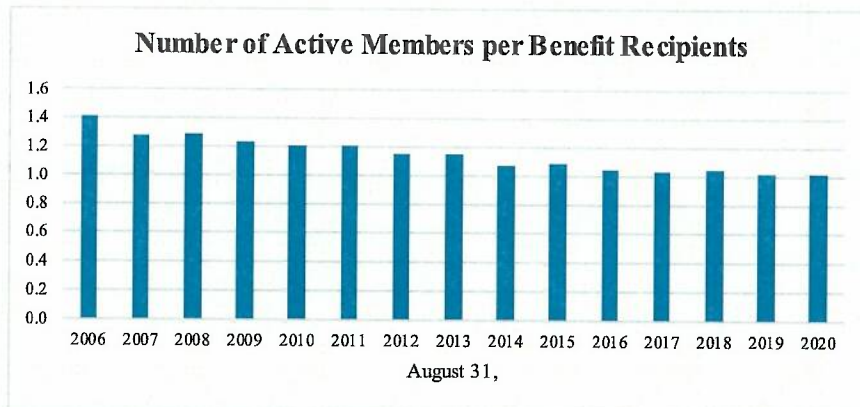
Number of Active Members per Benefit Recipients

TABLE 15

COMPARISON OF VALUATION RESULTS UNDER
ALTERNATE INVESTMENT RETURN ASSUMPTIONS

($ in thousands)

This exhibit compares the key August 31, 2020 valuation results under five (5) different investment return assumptions to illustrate the impact of different assumptions on the funding of the Plan. 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	6.90%	7.15%	7.40%	7.65%	7.90%
Contributions					
Normal Cost Rate	17.79%	16.79%	15.86%	14.98%	14.17%
UAAL Amortization Rate	13.22%	11.99%	10.77%	9.56%	8.36%
Actuarial Determined Contribution Rate	31.01%	28.78%	26.63%	24.54%	22.53%
Effective Employee Contribution Rate	(7.50%)	(7.50%)	(7.50%)	(7.50%)	(7.50%)
Employer Required Contribution Rate	23.51%	21.28%	19.13%	17.04%	15.03%
Employer Contribution Amount for FY 2021-2022	$12,796	$11,632	$10,509	$9,418	$8,369
Actuarial Accrued Liability	$363,278	$352,954	$343,088	$333,663	$324,646
Actuarial Value of Assets	266,114	266,114	266,114	266,114	266,114
Unfunded Actuarial Accrued Liability*	$97,164	$86,839	$76,974	$67,549	$58,532
Funded Ratio	73.25%	75.40%	77.56%	79.76%	81.97%

Note: All other assumptions are unchanged for purposes of this sensitivity analysis.
*May not add due to rounding.

HISTORICAL FUNDING AND OTHER INFORMATION

In this section, some historical information regarding the funding progress of the Plan is included. These exhibits retain some of the information that was previously required for accounting purposes and which are included because they assist in explaining the Plan's funding history. An exhibit showing the expected benefit payments for current members of the Plan is also included.

TABLE 16

SCHEDULE OF FUNDING PROGRESS

Two tests of funding progress based on the relationship between valuation assets and actuarial accrued liabilities are shown on the following pages. These tests are based upon the actuarial cost method used in the valuation.

The Ratio of Valuation Assets to Actuarial Accrued Liabilities is a traditional measure of a Plan's funding progress. Except in years when the benefit provisions are amended or actuarial assumptions are revised, the ratio can be expected to gradually tend toward 100%, assuming recommended contribution amounts are received by the plan.

The Ratio of Unfunded Actuarial Accrued Liabilities to Valuation Payroll is another relative index of condition. In an inflationary economy, the value of dollars is decreasing. This environment results in employee salaries increasing in dollar amounts, retirement benefits increasing in dollar amounts, and then, unfunded actuarial accrued liabilities increasing in dollar amounts – all at a time when the actual substance of these items may be decreasing. When looking at dollar amounts, the effects of inflation can hide the actual funding progress from year to year. Unfunded actuarial accrued liability dollars divided by active employee payroll dollars provides an index which attempts to eliminate the misleading effects of inflation. The smaller the ratio of unfunded liabilities to active member payroll, the stronger the Plan. Observation of this relative index over a period of years will provide an indication of whether the Plan is becoming financially stronger or weaker.

TABLE 16 (continued)

Actuarial Valuation Date	(1) Actuarial Value of Assets	(2) Actuarial Accrued Liability (AAL)	(3) Percent Funded (1) / (2)	(4) Unfunded AAL (2) - (1)	(5) Total Payroll*	(6) Unfunded AAL as a Percentage of Payroll (4) / (5)
8/31/1991	$68,390,000	$59,149,000	116.00%	($9,241,000)	$15,157,000	(61.00%)
8/31/1992	77,980,000	63,407,000	123.00%	(14,573,000)	15,365,000	(95.00%)
8/31/1993	86,583,000	67,910,000	127.00%	(18,673,000)	16,722,000	(112.00%)
8/31/1994	83,307,827	70,517,314	118.14%	(12,790,513)	17,698,377	(72.27%)
8/31/1995	92,235,349	79,202,449	116.46%	(13,032,900)	18,561,302	(70.22%)
8/31/1996	94,347,990	81,583,068	115.65%	(12,764,922)	19,224,719	(66.40%)
8/31/1997	101,475,648	91,022,617	111.48%	(10,453,031)	20,908,549	(49.99%)
8/31/1998	109,213,474	94,847,667	115.15%	(14,365,807)	21,860,493	(65.72%)
8/31/1999	113,902,477	104,691,766	108.80%	(9,210,711)	23,611,284	(39.01%)
8/31/2000	121,404,314	115,671,249	104.96%	(5,733,065)	25,808,088	(22.21%)
8/31/2001	128,069,831	122,660,542	104.41%	(5,409,289)	28,215,685	(19.17%)
8/31/2002	128,319,145	130,875,473	98.05%	2,556,328	26,606,881	9.61%
8/31/2003	132,577,506	137,507,824	96.41%	4,930,318	27,415,330	17.98%
8/31/2004	136,973,679	144,178,758	95.00%	7,205,079	28,124,862	25.62%
8/31/2005	145,730,474	151,978,408	95.89%	6,247,934	29,029,309	21.52%
8/31/2006	157,527,392	161,583,285	97.49%	4,055,893	30,724,333	13.20%
8/31/2007	171,263,791	169,587,458	100.99%	(1,676,333)	30,546,235	(5.49%)
8/31/2008	179,390,472	179,376,149	100.01%	(14,323)	32,265,715	(0.04%)
8/31/2009	177,526,641	187,292,374	94.79%	9,765,733	33,449,977	29.20%
8/31/2010	172,317,463	195,206,353	88.27%	22,888,890	34,233,197	66.86%
8/31/2011	165,436,361	204,990,324	80.70%	39,553,963	35,763,446	110.60%
8/31/2012	164,500,414	214,878,992	76.55%	50,378,578	36,310,880	138.74%
8/31/2013	164,189,914	229,192,937	71.64%	65,003,023	38,107,652	170.58%
8/31/2014	174,569,411	262,918,401	66.40%	88,348,990	37,887,505	233.19%
8/31/2015	183,011,274	286,493,673	63.88%	103,482,399	42,381,059	244.17%
8/31/2016	217,003,707	271,594,222	79.90%	54,590,515	42,930,194	127.16%
8/31/2017	230,159,635	285,038,672	80.75%	54,879,037	44,776,055	122.56%
8/31/2018	243,538,925	296,440,660	82.15%	52,901,735	46,877,559	112.85%
8/31/2019	252,739,770	325,109,208	77.74%	72,369,438	48,131,172	150.36%
8/31/2020	266,114,273	343,087,750	77.56%	76,973,477	50,809,087	151.50%

Note: For valuation dates prior to 2015, information shown is from the prior actuary's report.
* Non-DROP Payroll in 2002 and later.

TABLE 17

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year Beginning September 1	Actuarial Valuation Date	Actuarially Determined Employer Contribution*		Actual Contribution	Contribution Deficiency/ (Excess)
2003	8/31/2002	$3,297,577		$1,991,672	$1,305,905
2004	8/31/2003	3,684,264		2,562,850	1,121,414
2005	8/31/2004	4,077,037		2,892,711	1,184,326
2006	8/31/2005	4,056,195		3,494,590	561,605
2007	8/31/2006	4,076,536		3,456,424	620,112
2008	8/31/2007	3,316,464		3,521,858	(205,394)
2009	8/31/2008	3,752,124		4,014,414	(262,290)
2010	8/31/2009	4,651,872		4,333,811	318,061
2011	8/31/2010	5,574,482		6,052,020	(477,538)
2012	8/31/2011	6,718,467		6,446,472	271,995
2013	8/31/2012	7,377,763		7,865,929	(488,166)
2014	8/31/2013	8,418,199		8,045,293	372,906
2015	8/31/2014	9,666,852		7,170,104	2,496,748
2016	8/31/2015	7,829,103	**	7,974,731	(145,628)
2017	8/31/2016	8,164,782		8,239,839	(75,057)
2018	8/31/2017	8,333,901		8,333,901	0
2019	8/31/2018	8,422,965		8,490,046	(67,081)
2020	8/31/2019	9,733,221		N/A	N/A
2021	8/31/2020	10,509,325		N/A	N/A

* Actuarially Determined Employer Contribution is equal to the initial Budget Request amount shown in Table 11 for the appropriate fiscal year. The employer contribution rate from 8/31/02 to 8/31/08 is based on a 10-year amortization of the UAAL/(Surplus). The UAAL was amortized over 30 years from 8/31/09 to 8/31/13. The UAAL is currently amortized using a layered approach, where the initial base is amortized over a closed 30-year period effective 8/31/14. Bases established after 8/31/16 are amortized over closed 20-year periods.

** Actuarially Determined Employer Contribution was reduced from $12,065,465 in the 2015 valuation report due to the plan change merging the COLA Pool fund into the general pension fund.

Note: For valuation dates prior to 2015, information shown is from the prior actuary's report.

TABLE 18

PROJECTED BENEFIT PAYMENTS

The table below shows estimated benefits expected to be paid over the next twenty years, based on the assumptions used in this valuation. The "In-Pay" column shows benefits expected to be paid to members currently receiving benefit payments as of August 31, 2020. The "Not In-Pay" column shows benefits expected to be paid to all other members. This included those who, as of August 31, 2020, are active or have terminated employment and are entitled to a deferred vested benefit. No future members are reflected.

Year Ending August 31	Not In-Pay	In-Pay	Total
2021	$ 1,789,000	$ 17,846,000	$ 19,635,000
2022	2,756,000	17,730,000	20,486,000
2023	3,623,000	17,672,000	21,295,000
2024	4,595,000	17,537,000	22,132,000
2025	5,568,000	17,365,000	22,933,000
2026	6,898,000	17,181,000	24,079,000
2027	8,520,000	16,937,000	25,457,000
2028	10,078,000	16,693,000	26,771,000
2029	11,097,000	16,439,000	27,536,000
2030	12,165,000	16,121,000	28,286,000
2031	13,698,000	15,814,000	29,512,000
2032	15,061,000	15,481,000	30,542,000
2033	16,343,000	15,111,000	31,454,000
2034	17,856,000	14,721,000	32,577,000
2035	19,670,000	14,313,000	33,983,000
2036	21,573,000	13,886,000	35,459,000
2037	23,249,000	13,447,000	36,696,000
2038	25,002,000	13,001,000	38,003,000
2039	26,743,000	12,538,000	39,281,000
2040	28,265,000	12,057,000	40,322,000

Note: Cash flows are the expected future non-discounted payments to current members. These numbers exclude refund payouts to current nonvested inactives and assume future retirees elect the normal form of payment and future withdrawals elect refunds according to valuation assumptions.

APPENDIX A

SUMMARY OF MEMBERSHIP DATA

MEMBER DATA RECONCILIATION
August 31, 2019 to August 31, 2020

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

	Active Participants	DROP Members	Service Retirees	Disabled Retirees	Beneficiaries*	Inactive Vested	Refunds Due	Total
Members as of 08/31/19	590	42	430	52	54	24	4	1,196
New Participants	46	0	0	0	1	0	0	47
Terminations								
Refunded	(7)	0	0	0	0	0	(4)	(11)
Refund Due	(2)	0	0	0	0	0	2	0
Deferred Vested	(2)	0	0	0	0	2	0	0
Retirements								
Service	(3)	(8)	12	0	0	(1)	0	0
Disability	(3)	(1)	0	4	0	0	0	0
DROP	(12)	12	0	0	0	0	0	0
Deaths								
Cashed Out	0	0	0	0	0	0	0	0
Refund Due	0	0	0	0	0	0	0	0
With Beneficiary	0	0	(1)	0	1	0	0	0
Without Beneficiary	0	0	(8)	0	(2)	0	0	(10)
Data Adjustments	0	0	(1)	1	6	0	0	6
Members as of 08/31/20	607	45	432	57	60	25	2	1,228

* Includes alternate payees

RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

Year Ended	Added to Rolls			Removed from Rolls		Rolls End of Year		% Incr. Annual Benefits	Average Annual Benefit
	No.*	Annual Benefits**	Post-Ret. Increases	No.	Annual Benefits**	No.	Annual Benefits**		
Aug. 31, 1991	22#	308,940	42,470	2	7,200	142	1,460,670	30.8%	10,286
Aug. 31, 1992	16	221,944	0	1	3,816	157	1,678,798	14.9%	10,693
Aug. 31, 1993	17	219,974	0	1	10,698	173	1,888,074	12.5%	10,914
Aug. 31, 1994	16	218,777	0	4	17,829	185	2,089,022	10.6%	11,292
Aug. 31, 1995	16	211,219	0	4	37,158	197	2,263,083	8.3%	11,488
Aug. 31, 1996	8	149,099	0	2	16,566	203	2,395,616	5.9%	11,801
Aug. 31, 1997	73##	590,041	0	4	56,890	272	3,042,547	27.0%	11,186
Aug. 31, 1998	10	155,262	0	11	71,670	271	3,126,139	2.7%	11,536
Aug. 31, 1999	23	414,130	0	1	22,889	293	3,517,380	12.5%	12,005
Aug. 31, 2000	17	335,244	0	7	62,014	303	3,790,610	7.8%	12,510
Aug. 31, 2001	14	225,737	0	16	105,022	301	3,911,325	3.2%	12,994
Aug. 31, 2002	18	278,160	0	14	115,340	305	4,074,145	4.2%	13,358
Aug. 31, 2003	15	219,569	0	11	119,499	309	4,174,215	2.5%	13,509
Aug. 31, 2004	12	175,551	0	5	74,835	316	4,274,931	2.4%	13,528
Aug. 31, 2005	30	702,721	0	12	73,072	334	4,904,580	14.7%	14,684
Aug. 31, 2006	10	262,420	0	4	36,362	340	5,130,638	4.6%	15,090
Aug. 31, 2007	38	1,101,713	0	8	55,280	370	6,177,071	20.4%	16,695
Aug. 31, 2008	24	621,708	0	10	128,736	384	6,670,043	8.0%	17,370
Aug. 31, 2009	20	560,105	0	2	28,641	402	7,185,166	7.7%	17,874
Aug. 31, 2010	14	408,351	0	8	66,170	408	7,477,874	4.1%	18,328
Aug. 31, 2011	15	455,866	0	8	84,553	415	7,846,879	4.9%	18,908
Aug. 31, 2012	30	1,083,442	0	7	101,972	438	8,828,349	12.5%	20,156
Aug. 31, 2013	21	700,308	0	11	165,739	448	9,362,919	6.1%	20,899
Aug. 31, 2014	20	771,356	0	3	21,973	465	10,112,391	8.0%	21,747
Aug. 31, 2015	27	1,045,339	0	6	106,230	486	11,051,500	9.3%	22,740
Aug. 31, 2016	24	792,387	0	9	108,466	501	11,735,421	6.2%	23,424
Aug. 31, 2017	23	880,462	0	9	105,124	515	13,098,301	11.6%	25,434
Aug. 31, 2018	16	538,514	0	12	174,596	519	13,462,219	2.8%	25,939
Aug. 31, 2019	26	1,066,538	0	9	101,001	536	14,427,756	7.2%	26,917
Aug. 31, 2020	24	833,934	0	11	184,344	549	15,077,346	4.5%	27,463

* *Includes Retirements from DROP*
\# *Includes one member not previously reported*
Note: For valuation dates prior to 2015, information shown is from the prior actuary's report.

** *Beginning in 2017, includes 13th Check amounts. This increased Annual Benefits by $587,542 on Aug. 31, 2017.*
\#\# *Includes the addition of "Old Plan" members*

NOT-IN-PAY MEMBERS INCLUDED IN VALUATION

Valuation Date	Active Members	Inactive Vested Members	Total Payroll*	Average			% Increase
				Age	Service	Pay	
Aug. 31, 1991	490	36	$15,157,150	39.3	14.4	$30,933	5.1%
Aug. 31, 1992	471	37	15,364,976	40.0	15.0	32,622	5.5%
Aug. 31, 1993	516	38	16,721,658	39.3	14.5	32,406	(0.7%)
Aug. 31, 1994	521	42	17,698,377	39.0	13.4	33,970	4.8%
Aug. 31, 1995	526	41	18,561,302	39.1	14.5	35,288	3.9%
Aug. 31, 1996	545	42	19,224,719	39.1	14.3	35,275	0.0%
Aug. 31, 1997	549	43	20,908,549	38.9	13.3	38,085	8.0%
Aug. 31, 1998	561	47	21,860,493	38.8	13.2	38,967	2.3%
Aug. 31, 1999	545	48	23,611,284	39.1	13.5	43,323	11.2%
Aug. 31, 2000	543	45	25,808,088	39.5	13.8	47,529	9.7%
Aug. 31, 2001	584	41	28,215,685	39.3	13.3	48,315	1.7%
Aug. 31, 2002	536	36	26,606,881	38.4	12.3	49,640	2.7%
Aug. 31, 2003	535	31	27,415,330	38.7	12.5	51,244	3.2%
Aug. 31, 2004	533	25	28,124,862	38.8	12.5	52,767	3.0%
Aug. 31, 2005	533	25	29,029,309	39.1	12.9	54,464	3.2%
Aug. 31, 2006	558	25	30,724,333	39.2	12.8	55,062	1.1%
Aug. 31, 2007	531	28	30,546,235	39.5	13.0	57,526	4.5%
Aug. 31, 2008	549	30	32,265,715	39.3	12.7	58,772	2.2%
Aug. 31, 2009	553	27	33,449,977	39.3	12.6	60,488	2.9%
Aug. 31, 2010	561	26	34,233,197	39.4	12.4	61,022	0.9%
Aug. 31, 2011	562	28	35,763,446	39.6	12.7	63,636	4.3%
Aug. 31, 2012	559	26	36,310,880	39.5	12.6	64,957	2.1%
Aug. 31, 2013	573	24	38,107,652	39.4	12.4	66,506	2.4%
Aug. 31, 2014	555	27	37,887,505	39.6	12.5	68,266	2.6%
Aug. 31, 2015	576	28	42,381,059	39.4	12.3	73,578	7.8%
Aug. 31, 2016	573	27	42,930,194	39.5	12.3	74,922	1.8%
Aug. 31, 2017	576	24	44,776,055	39.7	12.4	77,736	3.8%
Aug. 31, 2018	587	25	46,877,559	40.0	12.7	79,860	2.7%
Aug. 31, 2019	590	24	48,131,172	39.7	12.4	81,578	2.2%
Aug. 31, 2020	607	25	50,809,087	39.5	12.2	83,705	2.6%

* Reflects Non-DROP projected payroll in 2002 and later
Note: For valuation dates prior to 2015, information shown is from the prior actuary's report.

MEMBERSHIP DATA – AUGUST 31, 2020

Active Members (Not Participating in DROP)

Group	Count	Employee Contribution Rate	Effective Employee Contribution Percentage	Projected Annual Payroll	Average Age	Average Service	Salary
Police							
- Old Plan**	2	7.60%	0.00%	$ 168,968	51.8	27.6	$ 84,484
- Plan A	308	8.00%	8.00%	24,251,040	37.0	10.8	78,737
- Plan B*	13	7.60%	0.00%	1,295,921	52.1	28.6	99,686
- Plan C*	2	7.00%	0.00%	196,170	67.5	43.7	98,085
Fire							
- Plan A	268	8.00%	8.00%	23,360,022	40.7	11.6	87,164
- Plan B*	14	7.60%	0.00%	1,536,966	53.8	29.1	109,783
Total	607	7.97%	7.50%	$ 50,809,087	39.5	12.2	$ 83,705

* Employee contributions stop after 21 years of service for this group.
** Employee contributions stop after 26 years of service for this group.

SUMMARY OF ACTIVE MEMBERS
As of August 31, 2020

Fire

Age	Number			Annual Reported Compensation		
	Male	Female	Total	Male	Female	Total
Under 25	7	3	10	$ 425,954	$ 166,447	$ 592,401
25 to 29	19	7	26	1,296,344	450,591	1,746,935
30 to 34	28	4	32	2,166,631	288,398	2,455,029
35 to 39	56	8	64	4,451,130	687,870	5,139,000
40 to 44	49	1	50	4,282,279	87,907	4,370,186
45 to 49	43	4	47	4,052,766	330,188	4,382,954
50 to 54	29	1	30	2,846,505	89,109	2,935,614
55 to 59	15	1	16	1,471,111	97,891	1,569,002
60 & Up	7	0	7	714,985	0	714,985
Total	253	29	282	$ 21,707,705	$ 2,198,401	$ 23,906,106

Average Salary by Age
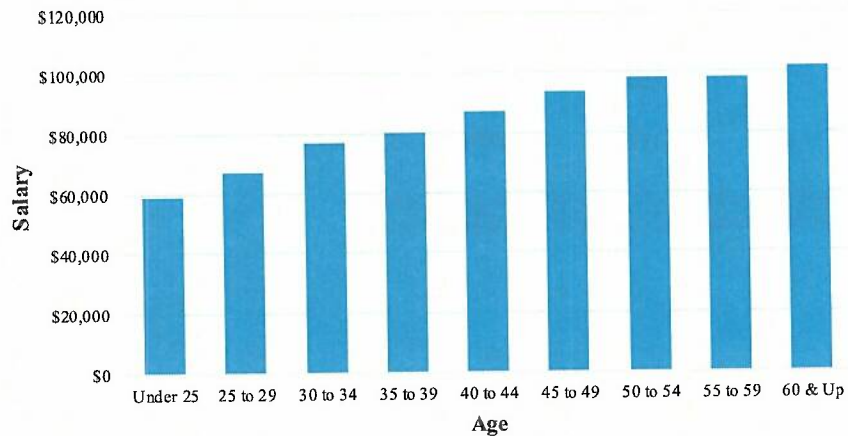
SUMMARY OF ACTIVE MEMBERS
As of August 31, 2020

Police

Age	Number			Annual Reported Compensation		
	Male	Female	Total	Male	Female	Total
Under 25	17	6	23	$ 978,221	$ 341,636	$ 1,319,857
25 to 29	47	8	55	2,953,144	512,209	3,465,353
30 to 34	46	14	60	3,311,954	943,591	4,255,545
35 to 39	49	7	56	4,007,522	559,637	4,567,159
40 to 44	38	7	45	3,101,315	579,751	3,681,066
45 to 49	44	9	53	3,734,412	818,375	4,552,787
50 to 54	25	2	27	2,305,664	163,264	2,468,928
55 to 59	3	0	3	259,946	0	259,946
60 & Up	2	1	3	190,919	81,632	272,551
Total	271	54	325	$ 20,843,097	$ 4,000,095	$ 24,843,192

Average Salary by Age
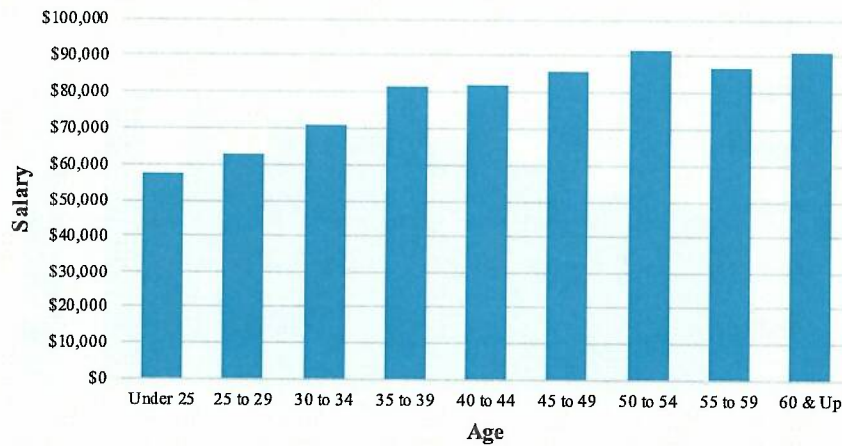
SUMMARY OF ACTIVE MEMBERS
As of August 31, 2020

Total

Age	Number			Annual Reported Compensation		
	Male	Female	Total	Male	Female	Total
Under 25	24	9	33	$ 1,404,175	$ 508,083	$ 1,912,258
25 to 29	66	15	81	4,249,488	962,800	5,212,288
30 to 34	74	18	92	5,478,585	1,231,989	6,710,574
35 to 39	105	15	120	8,458,652	1,247,507	9,706,159
40 to 44	87	8	95	7,383,594	667,658	8,051,252
45 to 49	87	13	100	7,787,178	1,148,563	8,935,741
50 to 54	54	3	57	5,152,169	252,373	5,404,542
55 to 59	18	1	19	1,731,057	97,891	1,828,948
60 & Up	9	1	10	905,904	81,632	987,536
Total	524	83	607	$ 42,550,802	$ 6,198,496	$ 48,749,298

Average Salary by Age
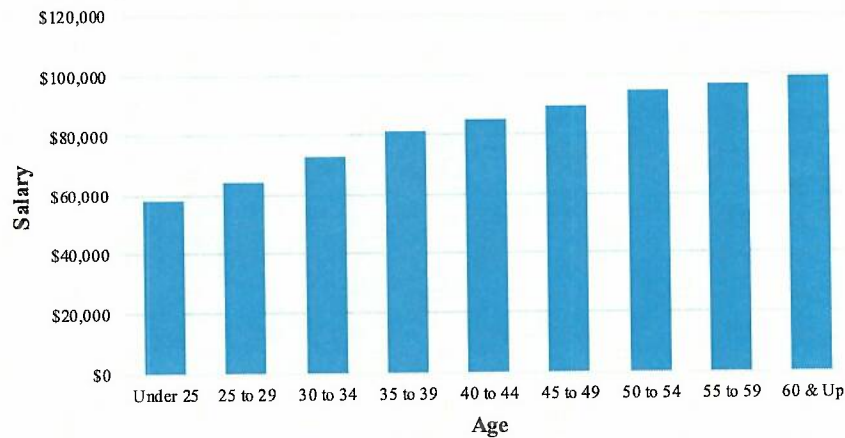
DISTRIBUTION OF ACTIVE MEMBERS
As of August 31, 2020

Fire

Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	10	0	0	0	0	0	0	10
25 to 29	19	7	0	0	0	0	0	26
30 to 34	13	17	2	0	0	0	0	32
35 to 39	12	28	22	2	0	0	0	64
40 to 44	3	12	17	17	1	0	0	50
45 to 49	1	2	12	12	17	3	0	47
50 to 54	0	2	3	5	11	7	2	30
55 to 59	0	0	1	6	5	1	3	16
60 & Up	0	0	1	1	3	1	1	7
Total	58	68	58	43	37	12	6	282

Age Distribution
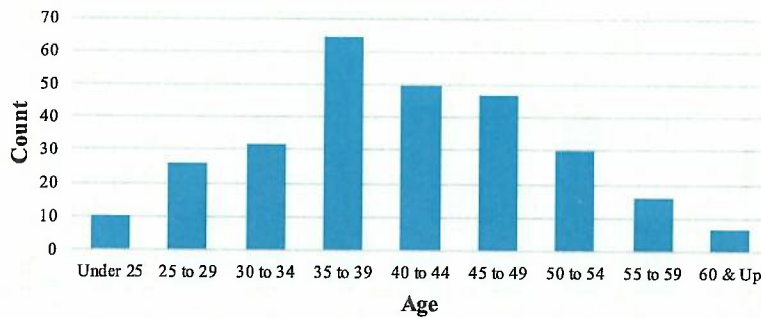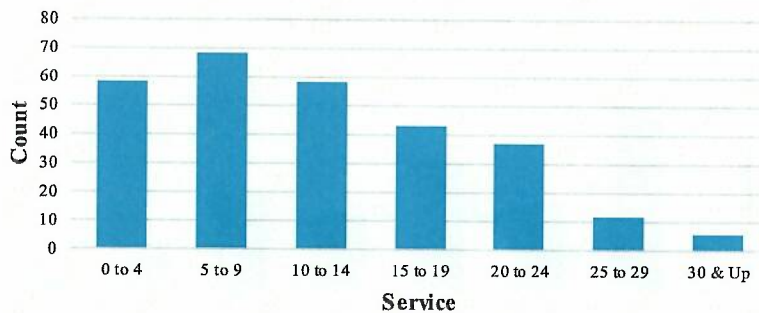
Service Distribution

DISTRIBUTION OF ACTIVE MEMBERS
As of August 31, 2020

Police

Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	23	0	0	0	0	0	0	23
25 to 29	48	7	0	0	0	0	0	55
30 to 34	21	30	9	0	0	0	0	60
35 to 39	4	5	41	6	0	0	0	56
40 to 44	1	4	14	16	10	0	0	45
45 to 49	2	0	2	16	29	4	0	53
50 to 54	0	0	1	1	9	12	4	27
55 to 59	0	0	0	1	1	0	1	3
60 & Up	0	0	0	0	0	1	2	3
Total	99	46	67	40	49	17	7	325

Age Distribution
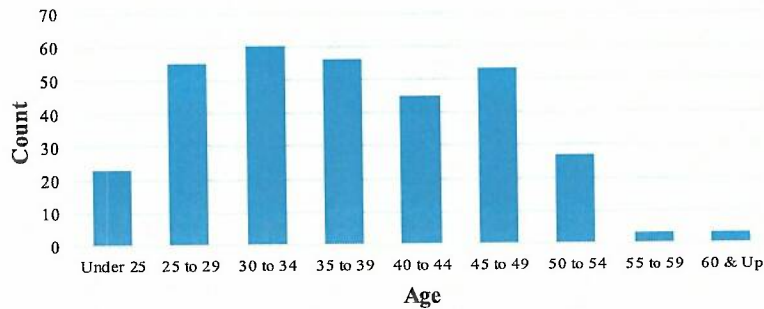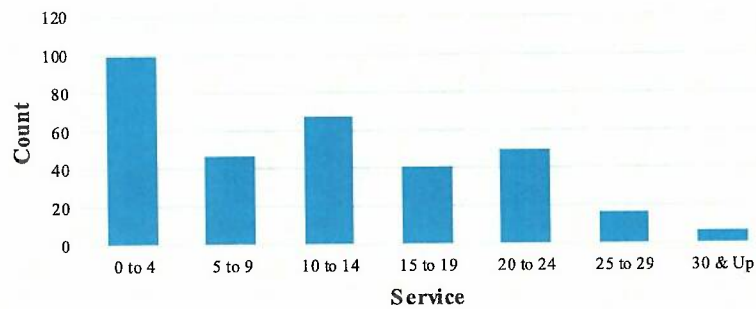
Service Distribution

DISTRIBUTION OF ACTIVE MEMBERS
As of August 31, 2020

Total

Age	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 & Up	Total
Under 25	33	0	0	0	0	0	0	33
25 to 29	67	14	0	0	0	0	0	81
30 to 34	34	47	11	0	0	0	0	92
35 to 39	16	33	63	8	0	0	0	120
40 to 44	4	16	31	33	11	0	0	95
45 to 49	3	2	14	28	46	7	0	100
50 to 54	0	2	4	6	20	19	6	57
55 to 59	0	0	1	7	6	1	4	19
60 & Up	0	0	1	1	3	2	3	10
Total	157	114	125	83	86	29	13	607

Age Distribution
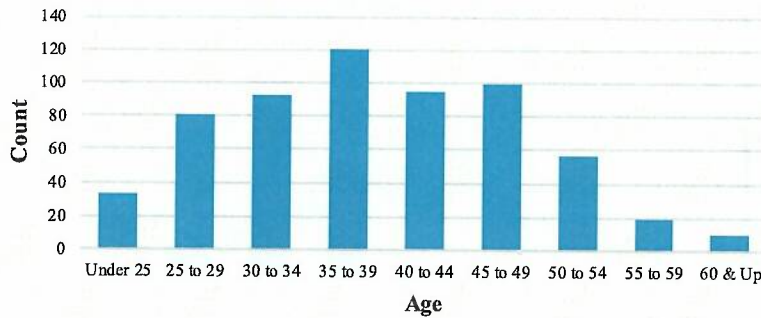
Service Distribution
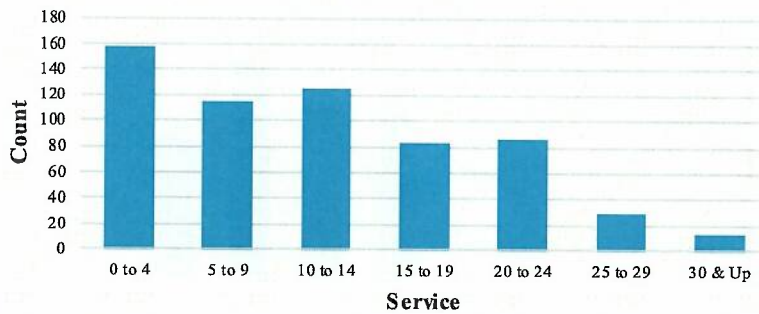
SUMMARY OF INACTIVE VESTED MEMBERS
As of August 31, 2020

Age	Number			Annual Benefit at Retirement*		
	Male	Female	Total	Male	Female	Total
Under 25	0	0	0	$ 0	$ 0	$ 0
25 to 29	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0
35 to 39	0	1	1	0	24,675	24,675
40 to 44	7	1	8	156,300	20,204	176,504
45 to 49	13	1	14	375,313	15,838	391,151
50 to 54	1	1	2	13,316	22,602	35,918
55 to 59	0	0	0	0	0	0
60 & Up	0	0	0	0	0	0
Total	21	4	25	$ 544,929	$ 83,319	$ 628,248

* Includes 13th Check amounts.
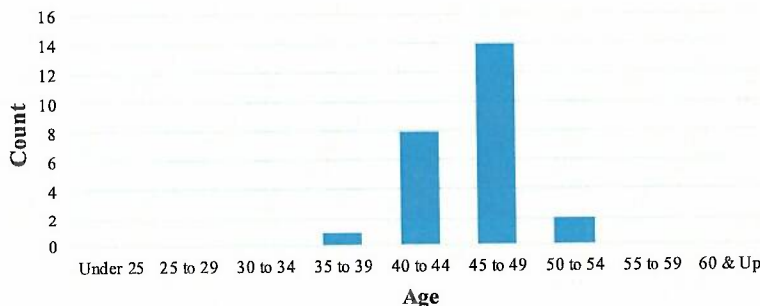
Age Distribution

Average Benefit
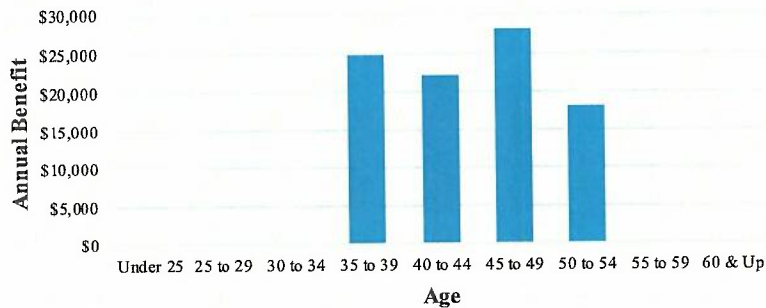
SUMMARY OF RETIRED MEMBERS
As of August 31, 2020

Service Retirees

Age	Number			Annual Benefit*		
	Male	Female	Total	Male	Female	Total
Under 50	0	0	0	$ 0	$ 0	$ 0
50 to 54	17	7	24	550,102	117,266	667,368
55 to 59	28	8	36	1,020,982	244,336	1,265,318
60 to 64	76	8	84	2,917,481	339,781	3,257,262
65 to 69	94	4	98	2,962,871	161,860	3,124,731
70 to 74	71	1	72	1,789,419	16,863	1,806,282
75 to 79	53	1	54	1,119,540	19,445	1,138,985
80 to 84	46	2	48	817,060	26,891	843,951
85 to 89	10	0	10	165,063	0	165,063
90 & Up	6	0	6	92,584	0	92,584
Total	401	31	432	$11,435,102	$ 926,442	$12,361,544

* Includes 13th Check amounts.

Age Distribution

Average Benefit
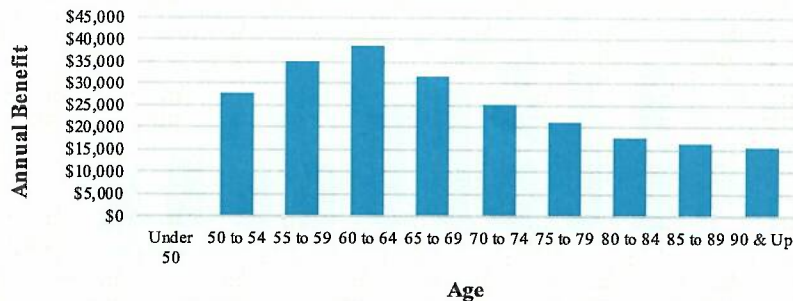
SUMMARY OF RETIRED MEMBERS
As of August 31, 2020

Disabled Retirees

Age	Number			Annual Benefit*		
	Male	Female	Total	Male	Female	Total
Under 50	13	4	17	$ 496,400	$ 135,030	$ 631,430
50 to 54	4	2	6	158,889	55,164	214,053
55 to 59	6	1	7	261,995	19,444	281,439
60 to 64	5	0	5	157,553	0	157,553
65 to 69	8	1	9	235,143	10,629	245,772
70 to 74	3	0	3	44,206	0	44,206
75 to 79	5	0	5	60,758	0	60,758
80 to 84	2	0	2	32,403	0	32,403
85 to 89	3	0	3	36,137	0	36,137
90 & Up	0	0	0	0	0	0
Total	49	8	57	$ 1,483,484	$ 220,267	$ 1,703,751

* Includes 13th Check amounts.

Age Distribution

Average Benefit
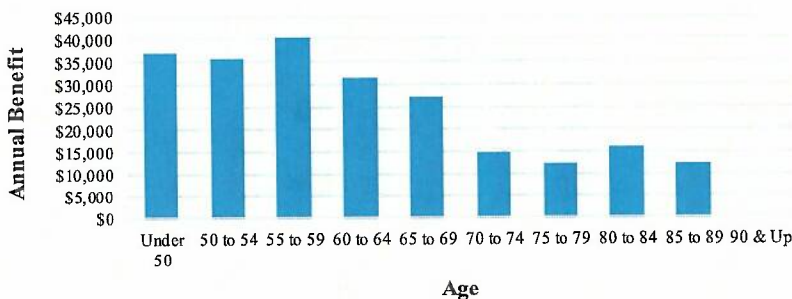
SUMMARY OF RETIRED MEMBERS
As of August 31, 2020
Beneficiaries**

Age	Number			Annual Benefit*		
	Male	Female	Total	Male	Female	Total
Under 50	1	3	4	$ 34,188	$ 113,577	$ 147,765
50 to 54	1	2	3	1,524	47,601	49,125
55 to 59	0	0	0	0	0	0
60 to 64	0	5	5	0	79,130	79,130
65 to 69	0	8	8	0	150,161	150,161
70 to 74	1	9	10	10,472	189,303	199,775
75 to 79	0	12	12	0	157,569	157,569
80 to 84	2	8	10	29,176	118,445	147,621
85 to 89	0	3	3	0	46,622	46,622
90 & Up	0	5	5	0	34,283	34,283
Total	5	55	60	$ 75,360	$ 936,691	$ 1,012,051

* Includes 13th Check amounts.

** Includes alternate payees

Age Distribution

Average Benefit
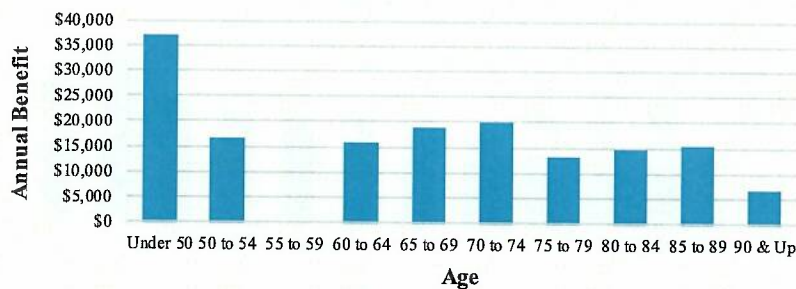
SUMMARY OF RETIRED MEMBERS
As of August 31, 2020

DROP Members

Age	Number			Annual Benefit*		
	Male	Female	Total	Male	Female	Total
Under 51	2	0	2	$ 115,285	$ 0	$ 115,285
51	2	0	2	127,973	0	127,973
52	5	0	5	272,504	0	272,504
53	2	1	3	82,094	49,886	131,980
54	10	1	11	533,253	56,560	589,813
55	4	1	5	198,819	46,506	245,325
56	4	0	4	196,611	0	196,611
57	6	0	6	317,076	0	317,076
58	5	0	5	285,434	0	285,434
59	1	0	1	83,858	0	83,858
60 & Up	0	1	1	0	75,639	75,639
Total	41	4	45	$ 2,212,907	$ 228,591	$ 2,441,498

* Includes 13th Check amounts.

Age Distribution
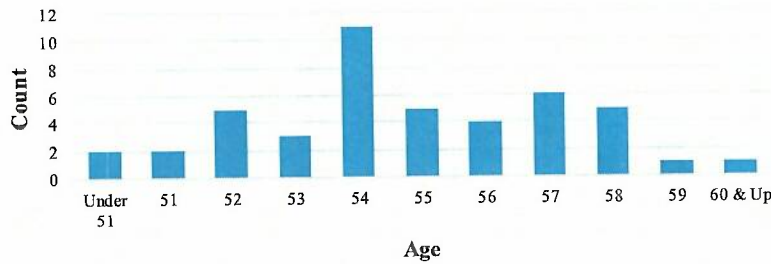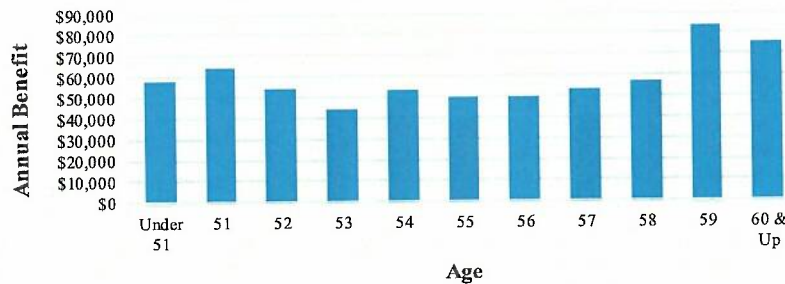
Average Benefit

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS

Plan A is applicable to members who were hired on/after April 1, 1995 or who were hired prior to that date, but elected Plan A coverage.

Plan B is applicable to members who were employed on/after April 11, 1984 or who, prior to April 11, 1984, elected Plan B coverage.

Plan C is applicable to members who were employed before April 11, 1984 and did not elect to move to Plan B or A.

Regular Pay

All plans: Member's base pay and City's contributions to the Post-Employment Health Plan for the last consecutive 26 bi-weekly pay periods. In case of a demotion, or out of class pay, it shall mean the highest consecutive 26 bi-weekly pay periods.

Normal Retirement Age

Plan A: Age 50
Plans B and C: Age 53

Normal Retirement
Eligibility – Plan A: Normal Retirement Age and 25 years of service.
  Plans B and C: Normal Retirement Age and 21 years of service.

Amount of Pension – Plan A: 2.56% of Regular Pay times years of service to a maximum of 64% of Regular Pay.

    Plan B: 58% of Regular Pay with 21 years of service plus 2% of Regular Pay for each year of service rendered after becoming eligible for retirement to a maximum increase of 10%.

    Plan C: 54% of Regular Pay with 21 years of service plus 2% of Regular Pay for each year of service rendered after becoming eligible for retirement to a maximum increase of 10%.

August 31, 2020 Actuarial Valuation   City of Lincoln Police and Fire Pension Fund

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Early Retirement

Eligibility – All Plans: Age 50 and 21 years of service.

Amount of Pension – Plan A: 2.56% of Regular Pay times years of service up to a maximum of 64% of Regular Pay.

Plan B: 52% of Regular Pay plus 2% of Regular Pay for each year of service rendered after becoming eligible to a maximum increase of 6%.

Plan C: 48% of Regular Pay plus 2% of Regular Pay for each year of service rendered after becoming eligible to a maximum increase of 6%.

Partial Annuity

Eligibility – all plans: Normal Retirement Age and 10 or more years of service.

Amount of Pension – Plan A: 2.56% of Regular Pay times years of service.

Plan B: 58% of Regular Pay with 21 years of service. Members with less than 21 years of service receive a ratio of years of service to 21 years of 58% of Regular Pay.

Plan C: 54% of Regular Pay with 21 years of service. Members with less than 21 years of service receive a ratio of years of service to 21 years of 54% of Regular Pay.

Deferred Annuity (Vested Termination)

Eligibility – all plans: Age less than Normal Retirement Age and 10, or more, years of service. Payments begin at age 50.

Amount of Pension – Plan A: 2.56% of Regular Pay times years of service.

Plan B: 58% of Regular Pay with 21 years of service. Members with less than 21 years of service receive a ratio of years of service to 21 years of 58% of Regular Pay.

Plan C: 54% of Regular Pay with 21 years of service. Members with less than 21 years of service receive a ratio of years of service to 21 years of 54% of Regular Pay.

Duty-Related Disability

Eligibility – all plans:	Permanent inability to perform the duties of position from a cause occurring while in line of duty.
Amount of Pension – Plan A:	58% of Regular Pay.
Plan B and C:	A pension equal to 58% or 54% of Regular Pay respectively, plus 2% of Regular Pay for each year of service rendered after becoming eligible for retirement, to a maximum increase of 10% of Regular Pay.

Such pension shall continue after the member's death to the member's surviving spouse, until death or remarriage, minor children or designated Option A beneficiary (a reduced amount in this case). The above amounts are subject to deduction of the amount received from worker's compensation.

Non-Duty Disability

Eligibility – all plans:	Permanent inability to perform duties of position from a cause not occurring in the line of duty
Amount of Pension:	A pension equal to the following percent of Regular Pay:

Years of Service (YOS)	Plan A	Plan B	Plan C
5 ≤ YOS < 10	23%	23%	21%
10 ≤ YOS < 15	39%	39%	36%
YOS ≥15	53%	53%	49%

Duty-Related Death

Eligibility – all plans:	Active member dies in the line of duty or as a result of injuries received while in the line of duty.
Amount of Pension:	Spouse beneficiary paid at Duty Related Disability rate until remarriage or death. Upon spouse's remarriage or death, dependent children paid prorate at the same rate until age 19. Non-spouse beneficiary paid at 100% survivor rate for lifetime.

The above amounts are subject to deduction of the amount received from worker's compensation.

Non-Duty Death

Eligibility – All Plans: 5 years of service.

Amount of Pension: Pension which would have been payable as a Non-Duty Disability awarded the day prior to death and elected Option A (Joint & 100% Survivor).

Death after Retirement – Remainder Refund

Eligibility – all plans: Employed on January 1, 1992 or hired between January 1, 1992 and March 31, 2010.

Amount of Benefit: Upon retirement, the member's balance of contributions plus accrued interest is reduced each month by a level amount equal to the member's balance divided by the expected number of payments. Once both the member and, if applicable, their joint annuitant have died, the remaining balance is paid as a lump sum to a designated beneficiary.

The expected number of monthly payments is established in the Internal Revenue Code in effect April 1, 2010 and depends on the age of the retiree at retirement, or the combined ages of the retiree and joint annuitant.

Non-Vested Termination

Eligibility – all plans: Termination of employment and no pension is or will become payable.

Amount of Benefit: Refund of member's contributions plus annual interest.

Employee Contributions

Plan A: 8.0% of pay.
Plan B: 7.6% of pay.
Plan C: 7.0% of pay.

Employee contributions are credited with regular interest, which is the rate of interest earned each calendar month in conformity with the actual earnings on investments of the Police and Fire Pension Fund.

Upon reaching 21 years of service, member contributions are discontinued for Plan B and Plan C members. Members participating in Old Plan B or Old Plan C contribute until reaching 26 years of service.

Deferred Retirement Option Plan (DROP)

Eligibility for the DROP:

Members of Plan B and C may join the DROP within 1 year of becoming eligible for normal retirement benefits as described earlier in this section.

Grandfather provision allows members of Plan B and C who were eligible to retire on the date of DROP implementation, a one-time opportunity to join the DROP.

Members of Plan A may join the DROP at any time after meeting the eligibility conditions for normal retirement.

DROP benefits:

100% of the member's accrued benefit at the time of DROP will be contributed to the member's DROP account.

If the member elects annuity withdrawal (available to members of Plans B and C) the lump sum payment and corresponding reduced annuity will be credited to the member's DROP account.

DROP funding Period:

Both the City and the employee will contribute (in accordance with the provisions of each Plan) until the employee enters the DROP. No contributions are made on the payroll of DROP members.

DROP Period:

Maximum of 5 years.

13th Check

For members who have been receiving a pension for at least 12 months, a lump sum payment will be made on each September 1. The base amount of the lump sum payment is $750 effective 9/1/1994. The base amount is increased each year by the lesser of 3.0% and the annual the percentage increase in the CPI-U. Members who retired with at least 21 years of service and members who were granted a duty disability pension will receive the full payment amount. All other members who have been receiving a pension for at least 12 months (and their beneficiaries) will receive a partial payment. The payment for these members is determined on a pro-rata basis according to their service.

APPENDIX C

ACTUARIAL ASSUMPTIONS AND METHODS

Investment Return: 7.40% compounded annually, net of investment expenses. While the City expects to decrease the assumption by 0.05% per year until reaching the ultimate rate of 7.25% in 2023, the decision to change the assumption must be confirmed each year and thus is not reflected in the current valuation results.

Inflation Rate: 2.25% compounded annually

Salary Increases: These assumptions are used to project current salaries to those upon which benefits will be based.

Years of Service	Annual Rate of Pay Increase for Sample		
	Base (Economic)	Merit and Longevity	Total
0	2.75%	5.50%	8.25%
1	2.75%	4.50%	7.25%
2	2.75%	3.50%	6.25%
3-7	2.75%	3.00%	5.75%
8	2.75%	2.00%	4.75%
9	2.75%	1.00%	3.75%
10-14	2.75%	0.50%	3.25%
15+	2.75%	0.00%	2.75%

Payroll Growth: 2.75% per year

Mortality:

Actives and Inactive
Vested Members: PubS-2010 Active Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale.

Healthy Retirees
and Beneficiaries: PubS-2010 Healthy Annuitant Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale.

Disabled Retirees: PubS-2010 Disabled Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale.

Termination:

	% Separating within Next Year	
Years of Service	Police	Fire
0	10.00%	4.00%
1	9.00%	3.50%
2	8.00%	3.50%
3	7.00%	3.50%
4	6.00%	3.50%
5	5.00%	3.50%
6	4.00%	2.50%
7	3.00%	1.50%
8	2.00%	1.50%
9-15	1.00%	1.50%
16-19	0.75%	1.50%
20+	0.00%	0.00%

Disability:

Sample Ages	% Becoming Disabled Within Next Year
20	0.05%
25	0.05%
30	0.06%
35	0.09%
40	0.14%
45	0.23%
50	0.40%
55	0.60%
60	0.80%

65% of assumed liabilities were assumed to be duty related and 35% were assumed to be non-duty related.

Retirement and DROP Entry:

	Rates of Retirement and/or DROP Entry			
	Plan A		Plan B, C & Old Plan	
Service	Police	Fire	Police	Fire
21	0%	0%	25%	33%
22	0%	0%	25%	33%
23	0%	0%	25%	33%
24	0%	0%	25%	33%
25	45%	60%	25%	33%
26	45%	25%	85%	40%
27	40%	25%	85%	50%
28	40%	25%	85%	50%
29	40%	25%	85%	50%
30	100%	100%	100%	100%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption: 90% of both males and females are assumed to be married for purposes of death-in-service benefits. Females are assumed to be three years younger than males.

Decrement Timing: All decrements are assumed to occur mid-year.

Eligibility Testing: Eligibility for benefits is determined based upon the age nearest birthday and years of service on the date the decrement is assumed to occur.

Benefit Service: Exact fractional service on the decrement date is used to determine the amount of benefit payable.

Normal Form of Benefit: The assumed normal form of benefit is the straight life form.

Incidence of Contributions: Contributions are assumed to be received continuously throughout the applicable fiscal year based upon the contribution rate shown in this report, and the actual payroll at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

Interest Credited on Member Contributions: 7.40% compounded annually.

Funding Period: Both the City and employee contribute (in accordance with the provisions of each plan) until the employee enters the DROP or otherwise exits the Plan.

13th Check: The 13th Check amount is assumed to increase 2.25% annually.

ACTUARIAL METHODS

Funding Method

Under the Entry Age Normal (EAN) cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability (UAAL) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.

The UAAL is amortized, as a level-percent of payroll, using a layered approach. The August 31, 2016 UAAL serves as the initial base and is amortized over a closed 28-year period (closed 30-year period beginning on August 31, 2014). For each valuation subsequent to August 31, 2016, annual net experience gains/losses will be amortized over a new, closed 20-year period. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

Asset Valuation Method

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Market Value of assets as of the valuation date is reduced by the sum of the following:

i.   80% of the return to be spread during the first year preceding the valuation date,

ii.   60% of the return to be spread during the second year preceding the valuation date,

iii.   40% of the return to be spread during the third year preceding the valuation date, and

iv.   20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Market Value and (2) the expected return on Market Value.

APPENDIX D

GLOSSARY OF TERMS

Actuarial Accrued Liability The difference between the actuarial present value of Plan benefits and the actuarial value of future normal costs. Also referred to as "accrued liability" or "actuarial liability".

Actuarial Assumptions Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Accrued Service Service credited under the Plan which was rendered before the date of the actuarial valuation.

Actuarial Equivalent A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate assumptions.

Actuarial Cost Method A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of retirement Plan benefits between future normal cost and actuarial accrued liability. Sometimes referred to as the "actuarial funding method".

Experience Gain (Loss) The difference between actual experience and actuarial assumptions anticipated experience during the period between two actuarial valuation dates.

Actuarial Present Value The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment.

Amortization Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with a lump sum payment.

Normal Cost	The portion of the actuarial present value of Plan benefits allocated to the current year by the actuarial cost method.
Unfunded Actuarial Accrued Liability	The difference between actuarial accrued liability and the valuation assets. Sometimes referred to as "unfunded actuarial liability" or "unfunded accrued liability".
	Most retirement Plans have an unfunded actuarial accrued liability. They arise each time new benefits are added and each time an actuarial loss is realized.

I. Introduction

This funding policy pertains to the City of Lincoln, Nebraska ("City") Police and Fire Pension ("Pension") as described in Lincoln Municipal Code § 2.62.010, 2.65.010 and 2.66.010. The Plan Administrator sets the following guiding principles in the development of a comprehensive funding plan to maintain long-term sustainability, if needed:

- Shared responsibility among members and employer;
- Intergenerational equity;
- Preservation of the defined benefit plan.

II. Funding Goals

The objective of funding the Plan is to accumulate sufficient assets during a member's employment with the City to fully finance the benefits the member receives throughout retirement. In meeting this objective, the Pension Plan will strive to meet the following funding goals:

- To maintain a pattern of stable contribution rates as a percentage of member's payroll;
- To maintain an increasing funded ratio absent the impact of any changes to the assumptions or benefit provisions;
- To maintain adequate assets so that benefit payments can be paid to members and their beneficiaries as they become due.

III. Benchmarks

To track progress in achieving the previously outlined funding goals, the following benchmarks will be measured annually as part of the actuarial valuation with recognition that a single year's results may not be indicative of long-term trends.

Funded Ratio: The funded ratio, defined as the actuarial value of assets divided by the actuarial accrued liability, should be increasing over time, before any adjustments for changes in benefits, actuarial methods, or actuarial assumptions.

City's Contribution: An Actuarial Valuation Report shall be prepared annually, as of the City's fiscal year-end date, to calculate the Actuarially Determined Employer Contribution for the fiscal year ending two years after the valuation date. For example, the Actuarially Determined Employer Contribution for the fiscal year September 1, 20XX+1 to August 31, 20XX+2 shall be based on metrics in the August 31, 20XX Actuarial Valuation Report. The Actuarial Valuation Report shall be based on the actuarial assumptions and methods, as approved by the Plan Administrator. The Actuarially Determined Employer Contribution Rate shall be the greater of the Employer Normal Cost Rate or the sum of the Employer Normal Cost rate and the UAAL contribution rate. A negative amortization payment shall only be applied if the plan has been at least 115 percent funded for the current and prior two years. The dollar amount of the Employer Contribution shall be the ADEC rate multiplied by the valuation payroll projected forward to the fiscal year under

consideration, plus the actual administrative expenses for the fiscal year ending on the valuation date projected forward one year with the valuation's inflation assumption.

IV. Actuarial Methods and Assumptions

Actuarial Cost Method: The actuarial cost method is a mathematical budgeting procedure for allocating how the total present value of future benefits for current active and inactive members is allocated to each year of service, including past years. Due to the goal of stable contribution rates, the Plan Administrator has adopted the Entry Age Normal actuarial cost method.

Asset Smoothing Method: The method of valuing assets is intended to recognize a "smoothed" value of assets that is market related. Asset smoothing methods reduce the effect of short term volatility on contributions while still tracking the overall movement of the market value of assets by recognizing the effects of investment gains and losses over a period of years. The asset valuation method used to develop the actuarial value of assets first calculates the expected earnings on the prior year's market value of assets plus net cash flow (contributions minus benefit payments for the year) and then compares it to the actual earnings on the market value of assets. The difference, positive or negative, is recognized equally over a five-year period.

Actuarial Assumptions: The actuarial assumptions used in the actuarial valuation shall be derived and proposed by the Plan's actuary in conformity with the applicable *Actuarial Standards of Practice* issued by the Actuarial Standards Board. The assumptions are intended to represent the best estimate of anticipated experience and are intended to be long-term in nature. In the development of actuarial assumptions, not only past experience but also trends, external economic forces, and future demographic and economic expectations shall be considered. A formal investigation into the actual experience of the Pension Plan shall be conducted by the actuary at least every five years and the results of the investigation used to form the basis of the actuary's recommendations for changes in the assumptions. In addition, the actual experience compared to the actuarial assumptions will be monitored each year in the annual actuarial valuation by including an analysis of the actuarial gain or loss.

Amortization Policy: For the Actuarial Valuation Report prepared as of August 31, 2016, the amortization period of the Unfunded Actuarial Accrued Liability (UAAL) shall be a 28-year closed term. This will be designated as the initial UAAL base for subsequent valuations and will be amortized over the remaining years of the 30-year closed period set on August 31, 2014. For each Actuarial Valuation Report subsequent to August 31, 2016, annual net experience gains/losses will be amortized over a new, closed 20-year period. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

If the valuation shows a surplus, i.e., funded ratio above 100%, the prior amortization bases will be eliminated and one base equal to the amount of surplus shall be established. The amortization period of a surplus shall be a 20-year open period.

The amortization payment on each UAAL base will be calculated as a level percent of valuation payroll using the actuarial assumption for future payroll growth. Such calculation is consistent with the development of the normal cost rate and is intended to serve as a method to provide stability to the actuarial contribution rate.

Risk Control: The Plan Administrator will carefully monitor the key risk measures of funding the system and shall consider steps to mitigate risk, particularly as the funded ratio increases. Risk mitigation may involve such things as a reduction in the assumed rate of investment return, review of asset allocation with a goal of reducing the standard deviation of the portfolio return, establishment of a contribution rate stabilization reserve, and other strategies identified by the Plan Administrator.

V. Funding Policy Review

The Plan Administrator may periodically conduct special studies to provide insight into whether the goals and objectives established in this Policy are being met. These special studies may include asset liability studies, projection modeling studies, and sensitivity analysis of key risk factors. These special studies may be performed at the Plan Administrator's discretion.

It is recognized that this funding policy may need to be amended in the future as the funding of the Plan is a dynamic process which is dependent on a number of variables. Therefore, the funding policy will be reviewed by the Plan Administrator not less frequently than every five years following the actuarial experience study. Proposed amendments to the funding policy shall be forwarded to the City Council for their consideration and approval. (Ord. 20495; May 15, 2017).

Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

CITY OF LINCOLN POLICE AND FIRE RETIREMENT SYSTEM

Four Year Experience Study
For Period Ending August 31, 2018

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Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

June 1, 2019

Mr. Doug McDaniel
Human Resources Director
City of Lincoln
555 South 10ᵗʰ Street
Lincoln, NE 68508

Dear Mr. McDaniel:

It is a pleasure to submit this report of our investigation of the experience of the City of Lincoln Police and Fire Retirement System (System) for the period of September 1, 2014 through August 31, 2018.

The purpose of this report is to communicate the results of our review of the actuarial methods and the economic and demographic assumptions to be used in the completion of the next actuarial valuation. We have recommend changes from the prior assumptions that are designed to better anticipate the emerging experience of the Plan. Actual future experience, however, may still differ from these assumptions.

In preparing this report, we relied without audit on information supplied by the City for the annual actuarial valuations. If any data or other information is inaccurate or incomplete, our analysis and recommendation may be impacted and a revised report may need to be issued.

We hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board (ASB) and the Code of Professional Conduct and Qualification Standards for Public Statements of Actuarial Opinion of the American Academy of Actuaries.

We further certify that the assumptions developed in this report satisfy ASB Standards of Practice, in particular, No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* and No. 35, *Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations*

We look forward to our discussions and the opportunity to respond to your questions and comments.

We, Patrice A. Beckham and Bryan K. Hoge, are members of the American Academy of Actuaries, Enrolled Actuaries and Fellows of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

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

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

The purpose of an actuarial valuation is to provide a timely best estimate of the ultimate costs of a retirement system. Actuarial valuations of the City of Lincoln Police and Fire Retirement System (LPF or the System) are prepared annually to determine the actuarial contribution rate to fund the System on an actuarial reserve basis, i.e. the current assets plus future contributions, along with investment earnings will be sufficient to provide the benefits promised by the System. The valuation requires the use of certain assumptions with respect to the occurrence of future events, such as rates of death, disability, termination of employment, retirement age and salary changes to estimate the obligations of the System.

The basic purpose of an experience study is to determine whether the actuarial assumptions currently in use have accurately anticipated actual emerging experience. This information, along with the professional judgment of the Board, its advisors, and the actuary, is used to evaluate the appropriateness of continued use of the current actuarial assumptions. When analyzing experience and assumptions, it is important to realize that actual experience is reported short term while assumptions are intended to be long term estimates of experience. Therefore, no single experience study period is usually given full credibility in setting actuarial assumptions. If significant differences exist between what is expected from our assumptions and actual experience, our strategy is usually to recommend a change in assumptions that would produce results somewhere between the actual and expected experience.

Our Philosophy

Similar to an actuarial valuation, the calculation of actual and expected experience is a fairly mechanical process. From one actuary to another, there should be very little difference in numerical results. However, the setting of assumptions is a different story, as it is more art than science. In this report, we have recommended a few changes to certain assumptions. To allow a better understanding of our thought process, we offer a brief summary of our philosophy:

- **Don't Overreact**: When we see significant differences in actual versus expected experience, we generally do not adjust our rates to reflect the entire difference. If the experience is credible and we believe it reflects future expectations, we will typically recommend rates somewhere between the old rates and the new experience. If the experience during the next study period shows the same result, we will probably recognize the trend at that point in time or at least move further in the direction of the observed experience. On the other hand, if actual experience in the next study is closer to its prior level, we will not have overreacted, possibly causing volatility in the actuarial contribution rates.

- **Anticipate Trends**: If there is an identified trend that is expected to continue, we believe that this should be recognized. An example is the retiree mortality assumption. It is an established trend that people are living longer. Therefore, we believe the best estimate of liabilities in the valuation should reflect the expected increase in life expectancy.

- **Simplify**: In general, we attempt to identify which factors are significant and eliminate or ignore the ones that do not materially improve the accuracy of the liability projections.

At the request of the city of Lincoln, Cavanaugh Macdonald Consulting, LLC performed a study of the experience of the City of Lincoln Police and Fire Retirement System for the four year study period, September 1, 2014 through August 31, 2018. This report presents the results and recommendations of our study which, if approved, will be implemented in the August 31, 2019 actuarial valuation of the System.

These assumptions have been developed in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries.

SCOPE OF THIS REPORT

The actuarial valuation utilizes various actuarial methods and two different types of assumptions: economic and demographic. Economic assumptions are related to the general economy and its impact on the System. Demographic assumptions are based on the emergence of the specific experience of the Systems' members.

All of the major actuarial assumptions that will be used in the next actuarial valuation have been reviewed in this study. The remainder of this report is divided as follows:

SECTION 2	EXECUTIVE SUMMARY
SECTION 3	ACTUARIAL METHODS
SECTION 4	ECONOMIC ASSUMPTIONS
SECTION 5	DEMOGRAPHIC ASSUMPTIONS
SECTION 6	MORTALITY
SECTION 7	RETIREMENT
SECTION 8	DISABILITY
SECTION 9	TERMINATION OF EMPLOYMENT (WITHDRAWAL)
SECTION 10	SALARY INCREASES
SECTIOM 11	MISCELLANEOUS ASSUMPTIONS

A brief summary of the results of our findings and recommendations is shown below:

Actuarial Methods

The following table summarizes the current and proposed actuarial methods. **Note that there is no recommended change to the actuarial methods.**

Actuarial Method	Current	Proposed
Actuarial Cost Method	Entry Age Normal	No Change
Asset Valuation Method	5-Year Smoothed Market	No Change
Amortization of Unfunded Actuarial Accrued Liability		
• Number of bases	Layers	No Change
• Amortization period	Legacy at 8/31/18 over 26 years. New bases of actuarial gains/losses are amortized over 20 years.	No Change
• Payment methodology	Level Percent of Payroll	No Change

Economic Assumptions

The following set of economic assumptions is recommended:

	Current	Proposed
• Price Inflation	2.50%	2.50%
• Investment Return	7.50%	7.25%*
• Interest on Member Contributions	7.50%	7.25%*
• General Wage Increase	3.00%	3.00%
• Payroll Growth	3.00%	3.00%

*To be phased in over a period of five years.

While the expected return, using forward-looking analysis, would support an assumption of 7.50% (2.50% inflation and 5.00% real return), we are recommending the City reduce the investment return assumption incrementally over the next five years, given the investment consultant's (Ellwood) expected return of 7.14% in the next ten years and the negative cash flows expected during that period. The impact of those factors will mute the growth of the plan assets so introducing some conservatism into the funding assumption seems prudent.

Demographic Assumptions

The demographic information in this experience study has limited credibility due to the size of the group. As a result, certain recommendations were based on our professional judgment and general trends observed in other public retirement systems. Our specific recommended changes are discussed briefly below:

- During the study period, all of the disabilities that occurred were duty-related. The current assumption is 50% of all disabilities are duty-related. We recommend the duty-related assumption be increased from 50% to 65% to partially reflect the observed experience.
- Given the benefit formula there is a strong incentive for members who reach the maximum benefit (varies by Plan A, B or C) to either retire or elect the DROP. Therefore, we recommend new retirement rates be adopted that are service-based rather than age-based assumptions.
- Separate termination of employment assumptions are currently used for Police and Fire to better reflect the differences observed in termination patterns in the two groups. We recommend separate assumptions continue to be used, but that the termination assumption be changed to a service-based assumption (currently a select (service based) and ultimate (age based) assumption is used). A very strong correlation exists between years of service and termination of employment, particularly for public safety members so a service-based assumption is expected to better model the actual experience.
- The current salary increase assumption is age-based. It is more common for salary increase assumptions to be service-based rather than age-based because there tends to be higher increases due to promotions and longevity increases in the earlier years of a career compared to smaller salary increases later. Therefore, we are recommending the assumption be changed to a service-based assumption.
- There is insufficient data to provide credible results for mortality experience. Because the actual data is so limited, the best approach is to use an "off-the-shelf" mortality table. In early 2019, the Society of Actuaries published a family of new mortality tables, based solely on public plan data, called the Pub-2010 Tables. The new set of tables includes a specific mortality table for public safety members, called the PubS-2010 Table. This table reflects the most current data regarding the mortality experience for retirees who retired from public safety jobs so we recommend it be adopted. In addition, we recommend future mortality improvements be modeled using the mortality improvement scale for the Nebraska Public Employees Retirement System (NPERS).

Financial Impact

The estimated financial impact of the proposed changes, based on results of the August 31, 2018 actuarial valuation, is summarized on the following page. The cost impact is shown assuming the increase in the UAL due to the proposed changes in assumptions is amortized over 20 years. The actual impact, which will be reflected in the August 31, 2019 actuarial valuation, will vary from the numbers shown on the exhibit on the following page, but is expected to be similar when considered as a percentage change.

Estimate of Financial Impact of Assumption Changes
Based on August 31, 2018 Valuation

	Baseline (Current Assumptions)	Demographic Assumptions Only	All Proposed Assumptions/Methods Investment Return Assumption	
			7.45%	7.25%
1. Present Value of Future Benefits	$368,900,408	$375,964,768	$378,704,462	$389,995,234
2. Present Value Future Normal Costs	72,459,748	65,614,529	66,598,256	70,704,155
3. Actuarial Liability (1) – (2)	296,440,660	310,350,239	312,106,206	319,291,079
4. Actuarial Value of Assets	243,538,925	243,538,925	243,538,925	243,538,925
5. Unfunded Actuarial Accrued Liability (UAAL) (3) – (4)	52,901,735	66,811,314	68,567,281	75,752,154
6. Funded Ratio (4) / (3)	82.15%	78.47%	78.03%	76.27%
7. Normal Cost Rate	16.52%	16.02%	16.20%	16.97%
8. UAAL Amortization Rate	7.23%	9.52%	9.76%	10.71%
9. Actuarial Determined Contribution Rate (7) + (8)	23.75%	25.54%	25.96%	27.68%
10. Effective Employee Contribution Rate	(7.23%)	(7.38%)	(7.38%)	(7.38%)
11. Employer Actuarial Contribution Rate (9) + (10)	16.52%	18.16%	18.58%	20.30%

Note: The actual impact of the assumption changes on the August 31, 2019 valuation results will vary from that shown in this table which are based on the August 31, 2018 actuarial valuation. Note that under the "All Proposed Assumptions/Methods" column there are two different investment return assumptions, 7.45%, the first step in the incremental move to and ultimate rate of 7.25%.

ACTUARIAL COST METHOD

The systematic financing of a pension plan requires that contributions be made in an orderly fashion while a member is actively employed, so that the accumulation of these contributions, together with investment earnings should be sufficient to provide promised benefits and cover administration expenses. The actuarial valuation is the process used to determine when money should be contributed; i.e., as part of the budgeting process.

The actuarial valuation will not impact the amount of benefits paid or the actual cost of those benefits. In the long run, actuaries cannot change the costs of the pension plan, regardless of the funding method used or the assumptions selected. However, actuaries will influence the incidence of costs by their choice of methods and assumptions.

The valuation or determination of the present value of all future benefits to be paid by the System reflects the assumptions that best seem to describe anticipated future experience. The choice of a funding method does not impact the determination of the present value of future benefits. The funding method, determines only the incidence of cost. In other words, the purpose of the funding method is to allocate the present value of future benefits determination into annual costs. In order to perform this allocation, it is necessary for the funding method to "break down" the present value of future benefits into two components: (1) that which is attributable to the past (2) and that which is attributable to the future. The excess of that portion attributable to the past over the plan assets is then amortized over a period of years. Actuarial terminology calls the part attributable to the past the "past service liability" or the "actuarial accrued liability". The portion of the present value of future benefits allocated to the future is commonly known as "the present value of future normal costs", with the specific piece of it allocated to the current year being called "the normal cost". The difference between the plan assets and actuarial liability is called the "unfunded actuarial accrued liability".

Two key points should be noted. First, there is no single "correct" funding method. Second, the allocation of the present value of future benefits, and hence cost, to the past for amortization and to the future for annual normal cost payments is not necessarily in a one-to-one relationship with service credits earned in the past and future service credits to be earned.

There are various actuarial cost methods, each of which has different characteristics, advantages and disadvantages. However, Governmental Accounting Standard Board (GASB) Statement Numbers 67 and 68 require that the Entry Age Normal cost method be used for financial reporting. Most systems do not want to use a different actuarial cost method for funding and financial reporting. In addition, the Entry Age Normal method has been the most common funding method for public systems for many years. This is the cost method currently used by LPF.

The rationale of the Entry Age Normal (EAN) cost method is that the cost of each member's benefit is determined to be a level percentage of his salary from date of hire to the end of his employment with the employer. This level percentage multiplied by the member's annual salary is referred to as the normal cost and is that portion of the total cost of the employee's benefit which is allocated to the current year. The portion of the present value of future benefits allocated to the future is determined by multiplying this percentage times the present value of the member's assumed earnings for all future years including the current year. The entry age normal actuarial accrued liability is then developed by subtracting from the present value of future benefits that portion of costs allocated to the future. To determine the unfunded actuarial accrued liability, the value of plan assets is subtracted from the Entry Age Normal actuarial accrued liability. The current year's cost to amortize the unfunded actuarial accrued liability is developed by applying an amortization factor.

It is to be expected that future events will not occur exactly as anticipated by the actuarial assumptions in each year. Actuarial gains/losses from experience under this actuarial cost method can be directly calculated and are reflected as a decrease/increase in the unfunded actuarial accrued liability. Consequently, the gain/loss results in a decrease/increase in the amortization payment, and therefore the contribution rate.

Considering that the Entry Age Normal cost method is the most commonly used cost method by public plans, develops a normal cost rate that tends to be stable and less volatile, and is the required cost method under calculations required by GASB Numbers 67 and 68, **we recommend the Entry Age Normal actuarial cost method be retained.**

ACTUARIAL VALUE OF ASSETS

In preparing an actuarial valuation, the actuary must assign a value to the assets of the fund. An adjusted market value is often used to smooth out the volatility that is reflected in the market value of assets. This is because most employers would rather have annual costs remain relatively smooth, as a percentage of payroll or in actual dollars, as opposed to a cost pattern that is extremely volatile.

The actuary does not have complete freedom in assigning this value. The Actuarial Standards Board also has basic principles regarding the calculation of a smoothed asset value, Actuarial Standard of Practice No. 44 (ASOP 44), *Selection and Use of Asset Valuation Methods for Pension Valuations.*

ASOP 44 provides that the asset valuation method should bear a reasonable relationship to the market value. Furthermore, the asset valuation method should be likely to satisfy both of the following:

- Produce values within a reasonable range around market value, AND
- Recognize differences from market value in a reasonable amount of time.

In lieu of both of the above, the standard will be met if <u>either</u> of the following requirements is satisfied:

- There is a sufficiently narrow range around the market value, OR
- The method recognizes differences from market value in a sufficiently short period.

These rules or principles prevent the asset valuation methodology from being used to distort annual funding patterns. No matter what asset valuation method is used, it is important to note that, like a cost method or actuarial assumptions, the asset valuation method does not affect the true cost of the plan; it only impacts the incidence of cost.

LPF values assets, for actuarial valuation purposes, based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year to year. This philosophy is consistent with the long-term nature of a retirement system. Under the current method, the difference between the actual investment return on the market value of assets and the assumed investment return on the market value of assets is recognized equally over a five-year period. This methodology is the asset smoothing method most commonly used by public plans and we believe that it meets actuarial standards under ASOP 44. **We recommend the current asset valuation method be retained**.

AMORTIZATION OF UAAL

As described earlier, actuarial accrued liability is the portion of the actuarial present value of future benefits that are not included in future normal costs. Thus it represents the liability that, in theory, should have been funded through normal costs for past service. Unfunded actuarial accrued liability (UAAL) exists when the actuarial accrued liability exceeds the actuarial value of plan assets. These deficiencies can result from:

(i) plan improvements that have not been completely paid for,
(ii) experience that is less favorable than expected,
(iii) assumption changes that increase liabilities, or
(iv) contributions that are less than the actuarial contribution rate.

There are a variety of different methods that can be used to amortize the UAAL. Each method results in a different payment stream and, therefore, has cost implications. For each methodology, there are three characteristics:

- The period over which the UAAL is amortized,
- The rate at which the amortization payment increases, and
- The number of components of UAAL (separate amortization bases).

Amortization Period: The amortization period can be either closed or open. If it is a closed amortization period, the number of years remaining in the amortization period declines by one in each future valuation. Alternatively, if the amortization period is an open or rolling period, the amortization period does not decline but is reset to the same number each year. This approach essentially "refinances" the System's debt (UAAL) every year.

Amortization Payment: The level dollar amortization method is similar to the method in which a home owner pays off a mortgage. The liability, once calculated, is financed by a constant fixed dollar amount, based on the amortization period until the liability is extinguished. This results in the liability steadily decreasing while the payments, though remaining level in dollar terms, in all probability decrease as a percentage of payroll. (Even if a plan sponsor's population is not growing, inflationary salary increases will usually be sufficient to increase the aggregate covered payroll).

The rationale behind the level percentage of payroll amortization method is that since normal costs are calculated to be a constant percentage of pay, the unfunded actuarial accrued liability should be paid off in the same manner. When this method of amortizing the unfunded actuarial accrued liability is adopted, the initial amortization payments are lower than they would be under a level dollar amortization payment method, but the payments increase at a fixed rate each year so that ultimately the annual payment far exceeds the level dollar payment. The expectation is that total payroll will increase at the same rate so that the amortization payments will remain constant, as a percentage of payroll. In the initial years, the level percentage of payroll amortization payment is often less than the interest accruing on the unfunded actuarial accrued liability meaning that even if there are no experience losses, the dollar amount of the unfunded actuarial accrued liability will grow (called negative amortization). This is particularly true if the plan sponsor is paying off the unfunded actuarial accrued liability over a long period, such as 20 or more years.

Amortization Bases: The UAAL can either be amortized as one single amount or as components or "layers", each with a separate amortization base, payment and period. If the UAAL is amortized as one amount, the UAAL is recalculated each year in the valuation and experience gains/losses or other changes in the UAAL are folded into the single UAAL amortization base. The amortization payment is then the total UAAL divided by an amortization factor for the applicable amortization period.

If separate amortization bases are maintained, the UAAL is composed of multiple amortization bases, each with its own payment schedule and remaining amortization period. In each valuation, the unexpected change in the UAAL is established as a new amortization base over the appropriate amortization period beginning on that valuation date. The UAAL is then the sum of all of the outstanding amortization bases on the valuation date and the UAAL payment is the sum of all of the amortization payments on the existing amortization bases. This approach provides transparency in that the current UAAL is paid off over a fixed period of time and the remaining components of the UAAL are clearly identified. Adjustments to the UAAL in future years are also separately identified in each future year. One downside of this approach is that it can create some discontinuities in contribution rates when UAAL layers/components are fully paid off. If this occurs, it likely would be far in the future, with adequate time to address any adjustments needed.

The amortization policy for LPF was changed to the layered approach with the August 31, 2016 valuation. The UAAL at August 31, 2016 serves as the initial (legacy) base and is amortized over a closed 30-year period beginning on August 31, 2014. For each valuation subsequent to August 31, 2016, annual net experience gains/losses are amortized over a new, closed 20-year period. Change in actuarial assumptions or methods that create a change in the UAAL are amortized over a demographically appropriate time period selected by the Plan Administrator at the time the change occurs. The same applies for any change in the UAAL resulting from plan amendments.

The layered amortization approach is quickly becoming the most commonly used method and it offers advantages that were discussed in 2016 when the current policy was adopted. **We recommend the current amortization policy be retained.**

ECONOMIC ASSUMPTIONS

The economic assumptions used in the LPF valuation include price inflation, long-term investment return, wage growth (the across-the-board portion of individual salary increases) and the increase in the covered payroll assumption. Unlike demographic assumptions, economic assumptions do not lend themselves to analysis merely on the basis of internal historical patterns because economic assumptions are influenced more by external forces in the economy which are difficult to accurately predict over the long term. The investment return and general wage increase assumptions are selected on the basis of expectations in an inflation-free environment and then increased by the long-term expectation for inflation, called the "building block" approach.

Sources of data considered in the analysis and selection of the economic assumptions included:
- 2019 Social Security Trustees Report
- Future expectations of LPF' investment consultant, Ellwood
- Future expectations of other investment consultants (2018 Horizon Survey)
- U.S. Department of the Treasury bond rates
- Assumptions used by other public retirement systems, based on the Public Fund Survey, published by the National Association of State Retirement Administrators (NASRA)
- Historical observations of price and wage inflation statistics and investment returns.

Actuarial Standard of Practice Number 27

Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standard of Practice (ASOP) No. 27, Selection of Economic Assumptions for Measuring Pension Obligations. Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment.

With respect to relevant data, the standard recommends the actuary review appropriate recent and long-term historical economic data, but advises the actuary not to give undue weight to recent experience. Furthermore, it advises the actuary to consider that some historical economic data may not be appropriate for use in developing assumptions for future periods due to changes in the underlying environment. In addition, with respect to any particular valuation, the standard requires that each economic assumption be consistent with all other economic assumptions over the measurement period.

ASOP 27 recognizes that economic data and analyses are available from a variety of sources, including representatives of the plan sponsor, investment advisors, economists, and other professionals. The actuary is permitted to incorporate the views of experts, but the selection or advice must reflect the actuary's professional judgment. ASOP 27 requires the actuary to select a "reasonable" assumption. For this purpose, an assumption is reasonable if it has the following characteristics:

- it is appropriate for the purpose of the measurement;

- it reflects the actuary's professional judgment;

- it takes into account historical and current economic data that is relevant as of the measurement date;

- it reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and

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- it has no significant bias (i.e., it is neither significantly optimistic nor pessimistic) except when provisions for adverse deviation or plan provisions that are difficult to measure are included.

The standard also discusses a "range of reasonable assumptions" which in part states "the actuary should also recognize that different actuaries will apply professional judgment and may choose different reasonable assumptions. As a result, a range of reasonable assumptions may develop both for an individual actuary and across actuarial practice."

The remaining section of this report will address the relevant types of economic assumptions used in the actuarial valuation to determine the obligations of the LPF. In our opinion, the economic assumptions recommended in this report have been developed in accordance with ASOP No. 27. The following table summarizes the recommendations for economic assumptions:

	Current Assumptions	Recommended Assumptions
A. Consumer Price Inflation	2.50%	2.50%
B. Investment Return	7.50%	7.25%*
C. General Wage Growth	3.00%	3.00%
D. Covered Payroll Increase	3.00%	3.00%

* To be phased in over five years.

Price Inflation

Use in the Valuation: Future price inflation has an indirect impact on the results of the actuarial valuation through the development of the assumptions for investment return, general wage growth (which then impacts individual salary increases), and payroll growth.

The long-term relationship between price inflation and investment return, recognized by economists, is that the investor demands a more or less level "real return" – the excess of actual investment return over price inflation. If inflation rates are expected to be high, investment return rates are also expected to be high, while lower inflation rates are expected to result in lower expected investment returns, at least in the long run.

The current assumption for price inflation is 2.50% per year which was recommended and adopted in the last experience study.

Past Experience: Although economic activities, in general, and inflation in particular, do not lend themselves to prediction solely on the basis of historical analysis, historical patterns and long-term trends are factors to be considered in developing the inflation assumption. The Consumer Price Index, All Urban Consumers, CPI (U), has been used as the basis for reviewing historical levels of price inflation. The

following table provides historical annualized rates and annual standard deviations of the CPI-U over periods ending December 31st.

Period	Number of Years	Annualized Rate of Inflation	Annual Standard Deviation
1928 – 2018	90	3.03%	3.79%
1958 – 2018	60	3.67	2.75
1968 – 2018	50	4.03	2.82
1978 – 2018	40	3.43	2.77
1988 – 2018	30	2.54	1.20
1998 – 2018	20	2.18	1.04
2008 - 2018	10	1.55	1.15

The following graph illustrates the historical annual change in price inflation, measured as of December 31 for each of the last 70 years, as well as the thirty year rolling average.
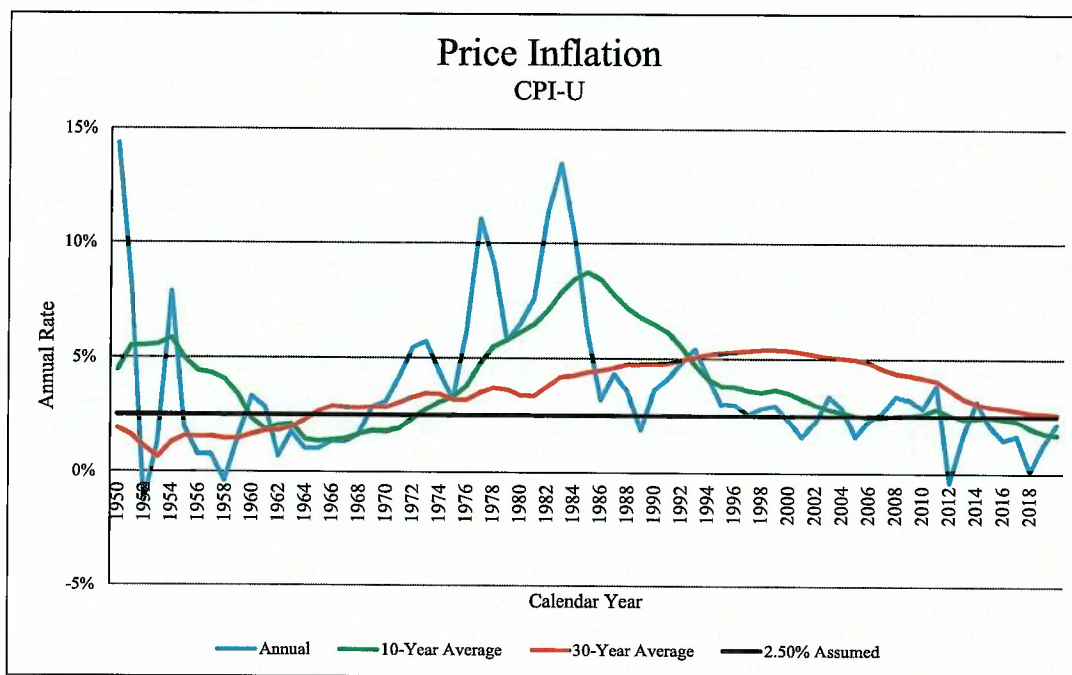
Over more recent periods, measured from December 31, 2018, the average annual rate of increase in the CPI-U has been 2.5% or lower. Over longer periods which include the period of high inflation from 1973 to 1982, inflation is higher. However, the decline in inflation over more recent periods is clear in the data above.

Forecasts from the Social Security Administration

Although many economists forecast lower inflation than the assumptions used by most retirement plans, they are generally looking at a shorter time horizon than is appropriate for a pension valuation. To consider a longer, similar time frame, we looked at the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the most recent report (April 2019), the projected average annual increase in the CPI over the next 75 years was estimated to be 2.6%, under the intermediate cost assumption. The range of inflation assumptions used in the Social Security 75-year modeling, which includes a low and high cost scenario, in addition to the intermediate cost projection, was 2.0% to 3.2%.

Forecasts from Investment Consulting Firms and Other Professionals

In setting their capital market assumptions, most investment consulting firms use an inflation assumption. Horizon Actuarial Services, LLC publishes a survey of capital market assumptions obtained from various investment consultants. The 2018 Horizon Survey includes the assumptions, including the expected rate of inflation, for thirteen advisors who develop longer-term assumptions (20 years or more). The Survey showed a range of expected inflation for the next 20 years, for these thirteen consultants, of 2.2% to 2.8%, with a median of 2.5%.

Ellwood's current inflation assumption is 2.0%.

Another source to consider in setting this assumption is a quarterly survey of the Society of Professional Forecasters that is conducted by the Philadelphia Federal Reserve of economists. Their most recent forecast (second quarter of 2019) was for inflation over the next ten years (2019 to 2028) to average 2.20%.

Peer System Comparison

While we do not recommend the selection of any assumption based on what other systems use, it does provide another set of relevant information to consider. Based on the Public Plan Database (a survey of over 125+ state and local retirement systems maintained by a collaboration between the Center for Retirement Research at Boston College, the Center for State and Local Government Excellence, and the National Association of State Retirement Administrators), the average inflation assumption for governmental plans has been steadily declining. Based on the current data, both the average and median inflation assumption is 2.75%. This data is largely based on actuarial valuations prepared with measurement dates in 2018. Based on our experience, we believe that further declines in the inflation assumption have occurred for some systems over the last year.

Public Plans Data,
St. Louis Federal Reserve
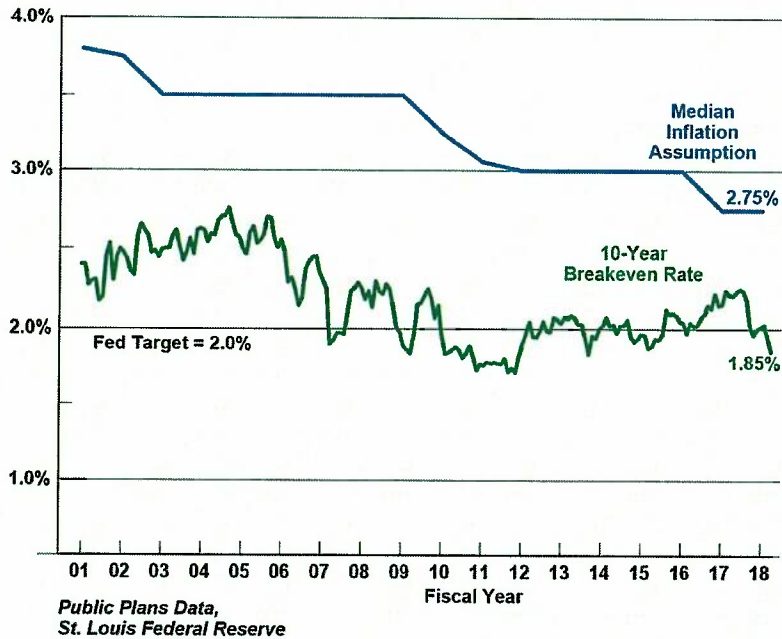
Comparison of Inflation Expectations

The following table provides a comparison of the current levels of expected inflation.

Source	Expected Inflation
LPF Investment Consultant	2.00%*
Horizon Survey (Median)	2.50%
Bond Market	2.10%
2019 Social Security Report	2.60%
Survey of Professional Forecasters	2.20%*

*Ten year outlook.

Conclusion

The lower inflation over the last 10, 20 and even 30 years, coupled with the low future inflation anticipated by the bond markets, investment consultants, and professional economic forecasters suggests that there may have been a fundamental change away from the longer term historical norms of inflation. Based on the information presented above, **we believe the current assumption of 2.50% is reasonable and we recommend it be retained.**

Consumer Price Inflation	
Current Assumption	2.50%
Recommended Assumption	2.50%

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INVESTMENT RETURN

Use In The Valuation: The investment return assumption reflects the anticipated returns on the current and future assets. It is one of the primary determinants in the allocation of the expected cost of the System's benefits, providing a discount of the estimated future benefit payments to reflect the time value of money. It is also the most powerful assumption used in the valuation process with small changes producing significant changes to the liabilities and contribution rates. Generally, the investment return assumption is set with consideration of the asset allocation policy, expected long-term real rates of return on the specific asset classes, the underlying inflation assumption and any expenses paid from plan assets.

The current investment return assumption is 7.50% per year, net of all investment-related expenses (administrative expenses are paid directly as part of the actuarial contribution). The 7.50% rate of return is referred to as the nominal rate of return and is composed of two components. The first component is price inflation (previously discussed). Any additional return over price inflation is referred to as the real rate of return. The real rate of return, based on the current set of assumptions, is 5.00% (7.50% nominal return less 2.50% inflation).

Because the economy is constantly changing, assumptions about what may occur in the near term are volatile. Asset managers and investment consultants usually focus on this near-term horizon in order to make prudent choices regarding the investment of the trust funds, i.e., asset allocation. For actuarial calculations, we typically consider very long periods of time as some current employees will be receiving benefit payments more than 65 years from now. For example, a newly-hired employee who is 25 years old may work for 30 years, to age 55, retire and live another 35 years, to age 90. The retirement system would receive contributions for the first 30 years and then pay out benefits for the next 35 years. During the entire 65-year period, the system is investing assets on behalf of the member's liability. For such a typical career employee, more than one-half of the investment income earned on assets accumulated to pay benefits is received after the employee retires. In addition, in an open plan like LPF, the stream of benefit payments is continually increasing as new hires replace current members who leave covered employment due to death, termination of employment, and retirement. This difference in time horizon between investment consultants and actuaries is frequently a source of debate and confusion when setting economic assumptions.

Actuarial Standards of Practice Number 27 (ASOP 27) provides guidance to actuaries on the selection of economic assumptions used for measuring pension obligations. The current version of ASOP 27 calls for the actuary to select a "reasonable" assumption. It goes on to say an assumption is "reasonable" if it has no significant bias (i.e. it is neither significantly optimistic nor pessimistic). The standard also describes a "range of reasonable assumptions". In part, this definition states, "the actuary should also recognize that different actuaries will apply different professional judgment and may choose different, reasonable assumptions". As a result, a range of reasonable assumptions may develop both for an individual actuary and across actuarial practice.

Historical Perspective: One of the inherent problems with analyzing historical data is that the results can look significantly different depending on the time frame used if the year-to-year results vary widely, as they do. Even though history provides a valuable perspective, the economy of the past is not necessarily the economy of the future. In addition, asset allocations may have changed over the period so returns are most likely not directly comparable.

The System's actual investment return on the market value of assets is shown in the graph below:

Return on Market Value of Assets
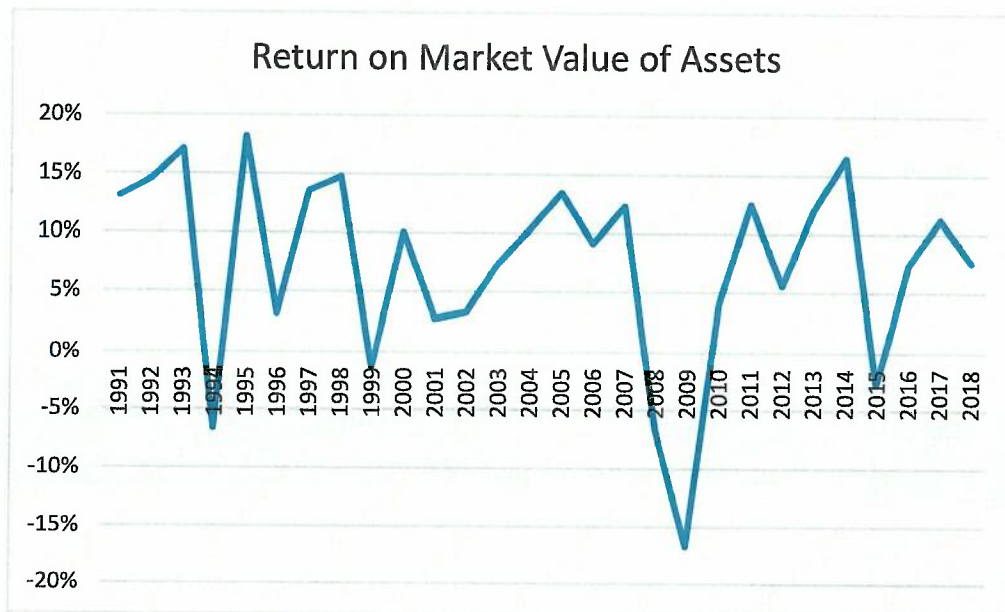
The compound return has varied significantly when viewed over different time periods. For example, the rate of return over the ten-year period ending August 31, 2018 was 5.3%%, over the 20-year period ending August 31, 2018 was 5.6% and over the full 28-year period ending August 31, 2018 was 7.0%.

However, past performance in the market is not necessarily indicative of future performance. The following graph shows the change in return expectations for various asset classes over the last nine years. The change in expected returns has contributed to the general trend of reductions in the investment return assumption for public retirement systems.

Horizon Actuarial Services

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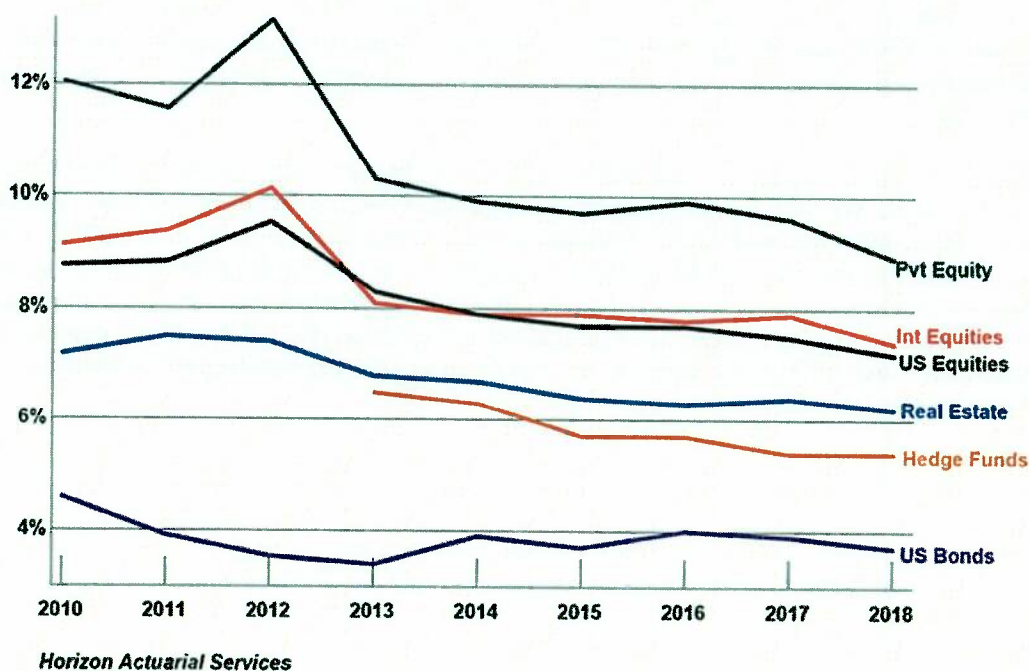
Forward Looking Analysis

We believe the most appropriate analysis to consider in setting the investment return assumption is to model the expected returns, given the system's target asset allocation and forward-looking capital market assumptions. However, we are trained as actuaries and not as investment professionals. Since ASOP 27 provides that the actuary may rely on outside experts, we believe it is appropriate to heavily weigh the market outlook and expectations provided by the LPF investment consultant, Ellwood Associates.

LPF's current target asset allocation, along with their investment consultant's (Ellwood Associates) capital market assumptions, are shown in the following table:

Asset Category	Asset Allocation	Expected Rate of Return (Geometric)	Standard Deviation
Developed Equity	40%	7.0%	17.4%
Emerging Markets Equity	5%	7.9	25.2
Private Equity	10%	10.0	22.9
Fixed Rate Debt (Intermediate)	10%	3.4	4.5
Floating Rate Public Debt	5%	5.3	5.6
Private Credit	5%	6.2	10.0
Low Volatility Hedge Funds	10%	4.9	6.0
Private Real Estate	15%	6.9	13.6
Total	100%		

Based on the Asset Allocation Study completed by Ellwood in May, 2019, the 10-year expected rate of return for the portfolio is 7.14% and the probability of earning 7.5% or more is about 46%. Based on conversations with Ellwood, the expected inflation assumption underlying the capital market assumptions used in this analysis is 2.0% which implies the asset allocation is expected to produce a real return of slightly more than 5.0%.

We performed our own independent, high level analysis of the expected return to verify the reasonableness of Ellwood's results. We used the "building block" approach that considers the target asset allocation and the median of the capital market forecasts from various investment professionals, as published in the 2018 Horizon Actuarial Survey. The median inflation assumption was subtracted from the nominal expected return developed to arrive at an estimate of the real rate of return, given the portfolio asset allocation. Our findings were consistent with Ellwood's, i.e., a real rate of return around 5.00%. When coupled with the recommendation to retain the price inflation assumption of 2.50%, the resulting nominal return is 7.50% (current investment return assumption).

Peer System Comparison

Public retirement systems have historically compared their investment performance to their peer group. While we believe there is some merit in assessing the general movement in the assumed rate of return for other systems, in our opinion this is not an appropriate basis for setting this assumption on its own. For example, different plans have different asset allocations which impact the assumed rate of return. In addition, the plan dynamics of each system may also impact the Board's choice of the assumed investment return. This peer group information merely provides another set of relevant data to consider, as long as we recognize that asset allocation and Board risk tolerance varies from system to system.

The graph below shows the change in the distribution of the investment return assumption from fiscal year 2001 through June, 2019 for the 120+ large public retirement systems included in the NASRA Public Fund Survey. As it indicates, the investment return assumptions used by public plans have decreased over the last fifteen years. It is worth noting that the median investment return assumption when the last experience study was performed was above 7.5%. In fiscal year 2012, the median dropped from 8.00% to 7.75% and has declined further to 7.25% in 2019. There were 58 systems that reduced their investment return assumption in 2018 and 44 that have reduced it so far in 2019. We believe some additional movement to lower investment return assumptions will continue to occur as future experience studies are completed in the next few years.

Public Fund Survey, NASRA June-19   **Fiscal Year**
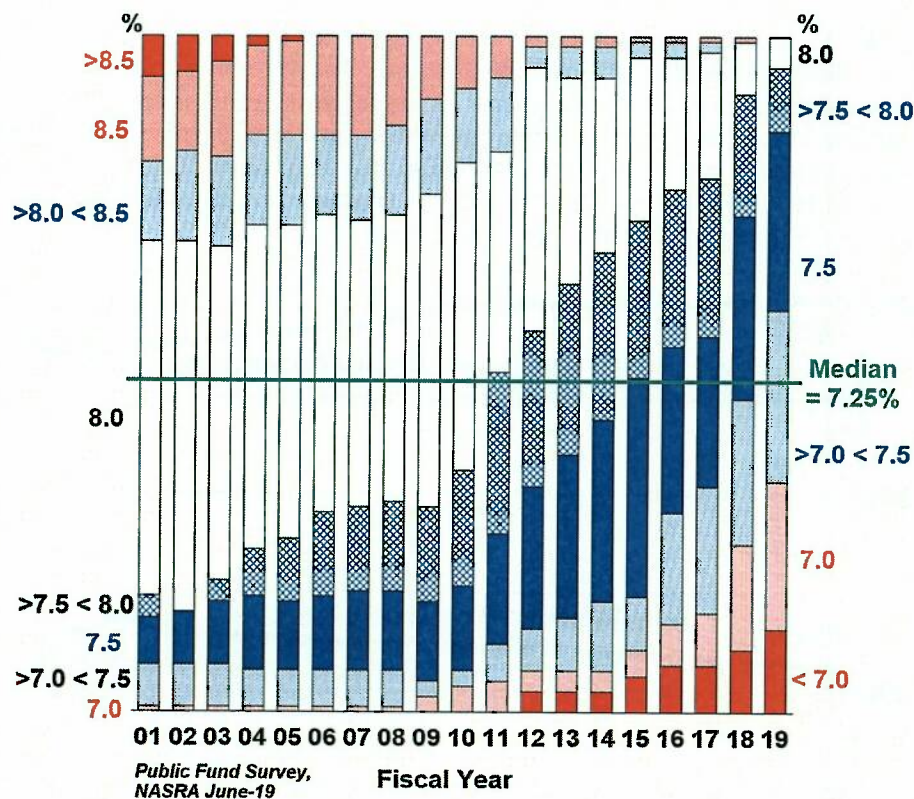
Another view of the same data is shown in the following graph, a comparison of both the average and median investment return assumption over the last 18 years. The downward trend is very evident.

19
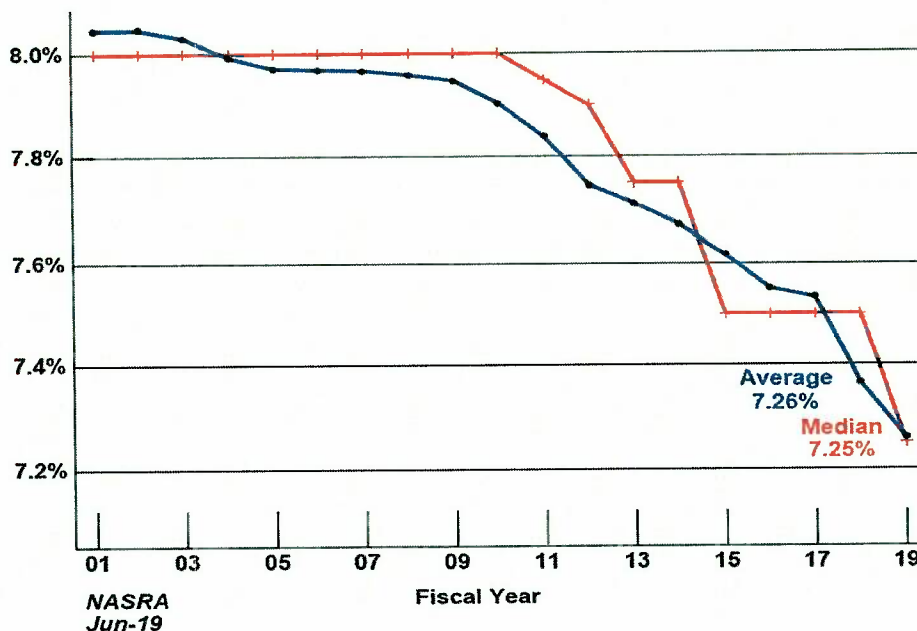
Additional insight can be obtained by observing the change in the components of the investment return assumption, i.e., inflation assumption and real rate of return. The real return reflects the return produced from the level of risk taken in the asset allocation. As the following chart shows, although the nominal investment return has been declining, the inflation assumption has declined more rapidly so the real rate of return has actually increased over this period. One factor that may contribute to the higher real rate of return is an increase in the asset allocation to alternative investments, particularly private equity, which generally has a higher expected return than other asset classes.
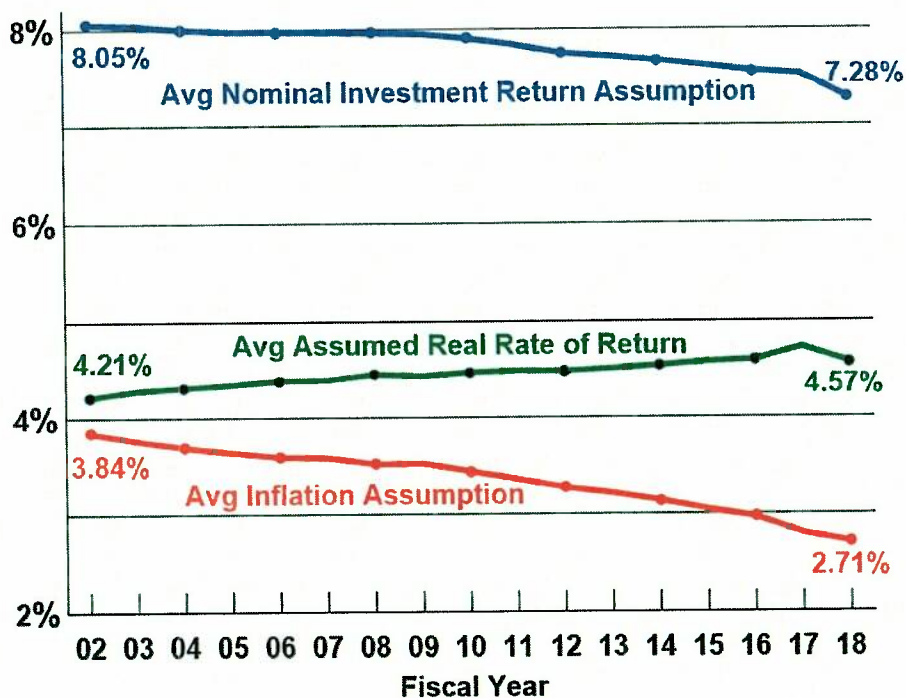
Administrative Expense Assumption

All administrative expenses are accounted for directly in the valuation. The current practice is to include a specific component for administrative expenses in the actuarial contribution that is equal to the actual expenses from the prior fiscal year increased with the assumed rate of price inflation. Therefore, the investment return assumption for LP&F does not need to be adjusted to reflect the impact of payment of administrative expenses from investment earnings. **This approach is very common and reasonable. We recommend it be retained.**

Considerations

While the System is expected to have an indefinite life span, it is a mature retirement system with a significant portion of its total liability attributable to current retirees and beneficiaries. The August 31, 2018 valuation indicated that 54% of the actuarial accrued liability of $296 million was attributable to members who are currently receiving a benefit from the System, including members in DROP. Due to the Plan's maturity, we believe the investment return assumption should not ignore the short-term forecast for investment returns.

LPF currently has a relatively small negative cash flow (benefit payments and expenses exceed the amount of contributions each year), but the amount is expected to increase over the next ten years. This is to be expected in a mature plan since the whole reason assets were accumulated in prior years was to pay benefits to retirees. For the year ended August 31, 2018, the negative cash flow was $4.7 million, about 2% of assets, and the gap between contributions (inflows) and benefit payments and expenses (outflows) over the next twenty years is expected to grow. This situation (negative cash flow) is more of a concern when the return expectations are considerably lower in the short term than the longer term, as is currently the case. Essentially, the negative cash flow means there are fewer assets to be reinvested to earn the higher returns that occur in later years. Thus, the impact on the accumulation of the trust fund assets can be significant, and the short-term assumptions need to be given more weight because of the plan demographics and funding dynamics.

Recommendation:

Because investment earnings account for the majority of revenue for most public plans (about 60%), the choice of an investment return assumption has a major impact on a system's financing and actuarial funded status. An investment return assumption that is too low will overstate liabilities and costs, causing current members/taxpayers to be overcharged and future members/taxpayers to be undercharged. An investment return assumption that is too high will understate liabilities and undercharge current members/taxpayers at the expense of future members/taxpayers. An assumption that is significantly wrong in either direction will cause a misallocation of resources and inequitable distribution of costs among generations of members/taxpayers. Because of this, setting the investment return assumption requires a balancing act with an attempt to not be overly conservative nor aggressive, although some margin for adverse deviation is acceptable under actuarial standards of practice.

After reviewing all of the available information and taking the factors discussed above into consideration, we think it would be prudent to lower the investment return assumption to 7.25%. This could be phased-in incrementally over a period of years, like five basis point per year, or the reduction could occur with the 2019 valuation and the contribution impact could be phased in, if necessary. **We recommend that an implementation plan be developed to reach an investment return of 7.25% (real return of 4.75%).**

The components of the nominal return are shown in the following table:

	Current Assumption	Proposed Assumption
Real rate of return	5.00%	4.75%*
Price inflation	2.50%	2.50%
Nominal return	7.50%	7.25%*

* Phased in over a five-year period.

GENERAL WAGE GROWTH

Background: General wage growth, thought of as the "across the board" rate of salary increases, is composed of the price inflation assumption and an assumption for the real rate of wage increases/real wage growth. The excess of wage growth over price inflation represents the increase in the standard of living, also called productivity growth.

In constructing the salary increase assumption used to project future salary increases for individual members, the wage growth assumption is combined with an assumption for service-based salary increases (called a merit scale). The service-based salary increase assumption will be addressed when the demographic assumptions are studied. Given the current price inflation assumption of 2.50%, the current wage growth assumption of 3.00% implies an assumed real rate of wage increase or real wage growth assumption of 0.50%.

Historical Perspective: Wage statistics are found in the Social Security System database on the National Average Wage data. This information goes back to 1955 and is the most comprehensive database available. Because the National Average Wage is based on all wage earners in the country who are covered by Social Security, it can be influenced by the mix of jobs (full-time vs. part-time, manufacturing vs. service, etc.) as well as by changes in some segments of the workforce that are not seen in all segments (e.g. regional changes or growth in computer technology). Furthermore, if compensation is shifted between wages and benefits, the wage index would not accurately reflect increases in total compensation.

The excess of wage growth over price inflation represents the real wage growth rate. We have used statistics from the Social Security System on the National Average Wage back to 1951. Because the National Average Wage is based on all wage earners in the country, it can be influenced by the mix of jobs (full-time vs. part-time, manufacturing vs. service, etc.) as well as by changes in some segments of the workforce that are not seen in all segments (e.g. regional changes or growth in computer technology). Further, if compensation is shifted between wages and benefits, the wage index would not accurately reflect increases in total compensation. LPF's membership is composed exclusively of public safety employees working in Lincoln, Nebraska, whose wages and benefits are linked as a result of the state and local economy, funding

allocations, and governing policies. Because the competition for workers can, in the long term, extend across industries and geography, the broad national earnings growth will have some impact on LPF members, however, less so than for general civilian employee jobs. In the shorter term, however, the wage growth of LPF and the nation may be less correlated.

There are numerous ways to review this data. For consistency with our observations of CPI, the table below shows the compound annual rates of wage growth for various 10-year periods, and for longer periods ended in 2017 (most recent available data).

Decade	Wages
2007-2017	2.2%
1997-2007	4.0%
1987-1997	4.1%
1977-1987	6.5%
1967-1977	6.5%
1957-1967	3.7%

Period	Years	Wages
2007-2017	10	2.2%
1997-2017	20	3.1%
1987-2017	30	3.4%
1977-2017	40	4.2%
1967-2017	50	4.6%
1957-2017	60	4.5%

The excess of wage growth over price inflation represents the real wage inflation rate. Although real wage inflation has been low in recent years, likely due to the recovery from the 2008 financial crisis, our focus must remain on the long term. The following table shows the compounded wage growth over various periods, along with the comparable price inflation rate for the same period. The differences represent the real wage inflation rate.

Decade	General Wage Growth	CPI Incr.	Real Wage Inflation
2007-2017	2.2%	1.7%	0.5%
1997-2007	4.0%	2.6%	1.4%
1987-1997	4.1%	3.5%	0.6%
1977-1987	6.5%	6.4%	0.1%
1967-1977	6.5%	6.1%	0.4%
1957-1967	3.7%	1.7%	2.0%

Period	General Wage Growth	CPI Incr.	Real Wage Inflation
2007-2017	2.2%	1.7%	0.5%
1997-2017	3.1%	2.1%	1.0%
1987-2017	3.4%	2.6%	0.8%
1977-2017	4.2%	3.6%	0.6%
1967-2017	4.6%	4.1%	0.5%
1957-2017	4.5%	3.7%	0.8%

Similar information over rolling thirty year periods is shown in the following graph:

Wage Inflation vs. CPI-U
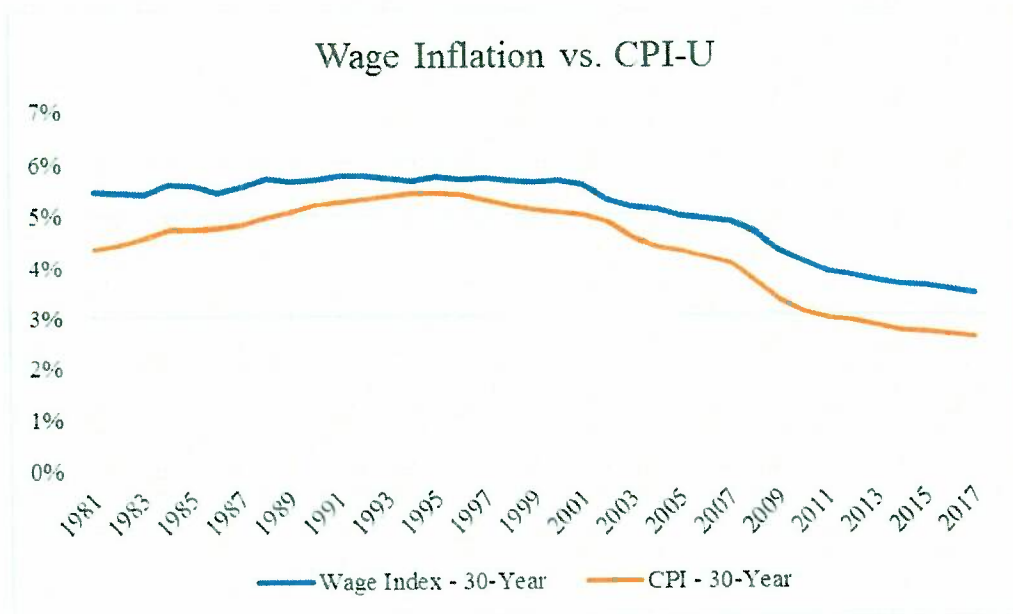
Over the last 30 years, the real wage increase, as measured by the increase in the National Average Wage Index, has been 0.8% per year on average. A somewhat similar, but slight different set of data is available from the Bureau of Labor Statistics, which reports the median weekly wage for full-time employees. Over the last 30 years, this amount (adjusted for inflation) has had an average increase of around 0.2% per year. Part of the difference in these results arises from the difference between using an average and a median. There are also technical differences arising from which workers are included in each measure. The applicability of this general wage data to public safety employees is uncertain. However, wages for public safety employees will generally have to increase at least as rapidly as the general economy if the City wishes to remain competitive in attracting new employees in the Lincoln job market.

The following graph compares the change in the Annualized Quarterly Change in Wage and Salary Costs for Private and State & Local Government Employees from 2001 to 2019. Since the Great Recession, wages for government employees have lagged those of private companies significantly. The real question is what the trend lines will look like in the future. Part of the lag in wages for governmental employees could be due to higher benefit costs over the last ten year along with budgets that have not fully recovered from the recession. Over the longer term, governmental employers will have to increase wages to compete for resources in the labor market.

Data final as of Q2 2019
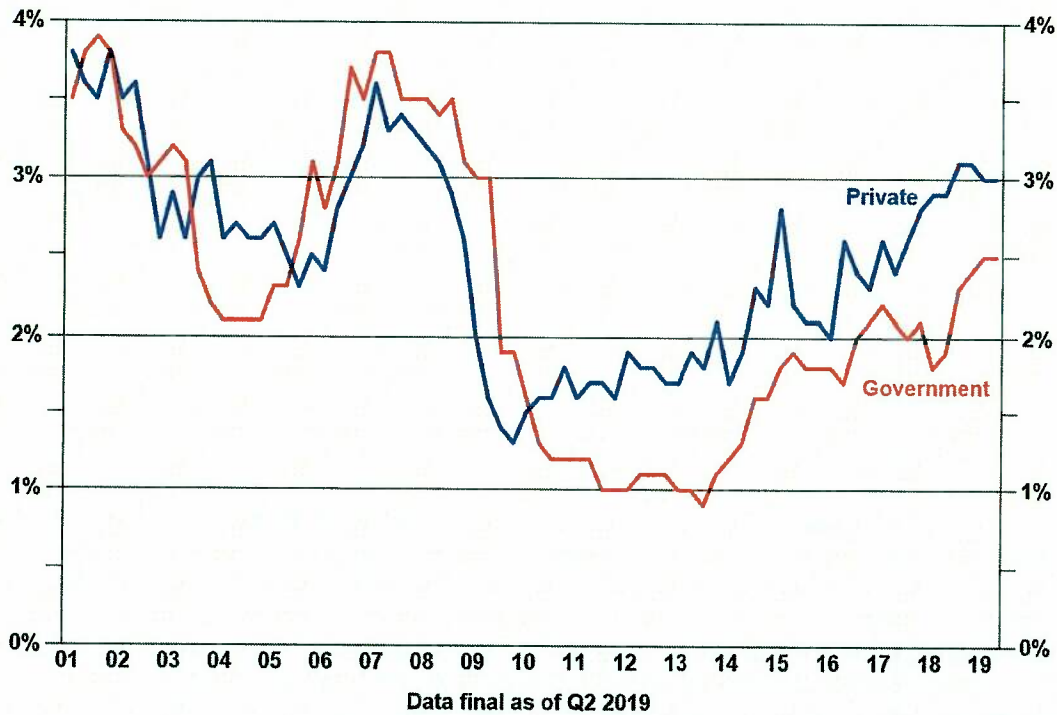
Social Security Forecast

The wage index we used for the historical analysis is projected forward by the Office of the Chief Actuary of the Social Security Administration in their projection analysis. In a report in 2019, the annual increase in the National Average Wage Index over the next 30 years under the intermediate cost assumption was 1.2% over price inflation. The range of the assumed real wage inflation in the 2019 Trustees report was 0.58% to 1.82% per year. While we give this some consideration, we also recognize that the Index reflects not only wage growth, but also such things as increased hours worked (which would not be applicable to public safety employees) and changes in the types of jobs worked in the United States (again, not applicable to public safety members). In our opinion, the Social Security assumptions are less applicable to the specific increases in the wages of public safety members.

Analysis and Conclusion: Over the last 30 years, the actual experience on a national basis has been higher than the current assumption and over the last 10 years, actual experience has been about the same as the current assumption. However, this is based on Social Security data which uses the average wages of all U.S. workers. As mentioned earlier, the median real wage increase has been significantly lower. We believe that wages will continue to grow at a greater rate than prices over the long term, although not necessarily at the level projected by Social Security.

Based on the available data and our professional judgment, **we recommend that the long-term assumed real wage growth remain 0.50% per year. When coupled with the price inflation assumption of 2.50%, the resulting general wage growth assumption remains at 3.00%.**

PAYROLL GROWTH ASSUMPTION

Amortization payments on the unfunded actuarial accrued liability are currently determined as a level percent of payroll. Therefore, the valuation requires an assumption regarding future annual increases in covered payroll in order to determine the payment on the unfunded actuarial accrued liability. The wage growth assumption is typically used for this purpose. The current payroll growth assumption is 3.00%, the same as the current wage growth assumption.

For purposes of this assumption, a longer term historical analysis is preferable. Total covered payroll over the last 10 years has grown at an annual rate of 3.8%. However, an important part of that increase is due to an increase in the number of actives over this period. There were 549 active members in the August 31, 2008 valuation and 587 in the 2018 valuation, an increase of nearly 7%. Due to the change in the number of active members, we reviewed the increase in the average salary which adjusts for the number of active members. On that basis, the increase in average pay over this period has been 3.1%.

Historically, LPF has experienced a stable or growing number of active members so, in our opinion, no adjustment to the payroll growth assumption is needed to anticipate a future decrease in the number of active members. We propose continuing the current assumption that no future increase or decrease in the number of active members will occur. With a stable active population, the covered payroll is expected to increase with the general wage growth assumption. If increases should occur not only because of wage increases, but also because of additional active members, there will be a larger pool of salaries over which to spread the payment on the unfunded actuarial accrued liability, which would result in lower UAAL payments, as a percent of payroll.

Based on our analysis and the recommended general wage increase assumption of 3.00%, **we recommend the payroll growth assumption remain at 3.00%.**

DEMOGRAPHIC ASSUMPTIONS

Actuarial Standard of Practice (ASOP) No. 35 provides guidance to actuaries regarding the selection of demographic and other non-economic assumptions for measuring pension obligations.

ASOP 35 General Considerations and Application

Each individual demographic assumption should satisfy the criteria of ASOP 35. In selecting demographic assumptions the actuary should also consider: the internal consistency between the assumptions, materiality, cost effectiveness, and the combined effect of all assumptions. At each measurement date the actuary should consider whether the selected assumptions continue to be reasonable, but the actuary is not required to do a complete assumption study at each measurement date. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP 35.

Overview of Analysis

The purpose of a study of demographic experience is to compare what actually happened to the individual members of the System during the study period (September 1, 2014 through August 31, 2018) with what was expected to happen based on the actuarial assumptions. A single four-year period is a relatively short observation period, particularly given the size of the group. Therefore, some of the experience observed in the study may not be representative of long term trends. In addition, the System's size limits the credibility of the findings. Our recommendations were made after taking these factors into account.

Studies of demographic experience generally involve three steps:

- First, the number of members changing membership status, called decrements, during the study is tabulated by age, duration, gender, group, and membership class (active, retired, etc.).

- Next, the number of members expected to change status is calculated by multiplying certain membership statistics, called exposures, by the expected rates of decrement.

- Finally, the number of actual decrements is compared with the number of expected decrements. The comparison is called the actual to expected ratio (A/E Ratio), and is expressed as a percentage.

In general, if the actual experience differs significantly from the overall expected results, or if the pattern of actual decrements, or rates of decrement, by age, sex, or duration deviates significantly from the expected pattern, new assumptions are considered. Recommended revisions are normally not an exact representation of the experience during the observation period. Judgment is required to anticipate future experience from past trends and current evidence, including a determination of the amount of weight to assign to the most recent experience.

It takes a fair amount of data to provide experience study results that are fully credible for demographic assumptions. Because the LPF membership or certain subsets of the membership are relatively small, some assumptions have been selected based more on our professional judgment of reasonable future outcomes than actual experience.

ASOP 35 states that the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement. A reasonable assumption is one that is expected to appropriately model the contingency being measured and is not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Pursuant to ASOP 35 the actuary should follow the following steps in selecting the demographic assumptions:

1. Identify the types of assumptions. Types of demographic assumptions include, but are not limited to, retirement, mortality, termination of employment, disability, election of optional forms of payment, administrative expenses, family composition, and treatment of missing or incomplete data. The actuary should consider the purpose and nature of the measurement, the materiality of each assumption, and the characteristics of the covered group in determining which types of assumptions should be incorporated into the actuarial model.

2. Consider the relevant assumption universe. The relevant assumption universe includes experience studies or published tables based on the experience of other representative populations, the experience of the plan sponsor, the effects of plan design, and general trends.

3. Consider the assumption format. The assumption format includes whether assumptions are based on parameters such as gender, age or service. The actuary should consider the impact the format may have on the results, the availability of relevant information, the potential to model anticipated plan experience, and the size of the covered population.

4. Select the specific assumptions. In selecting an assumption the actuary should consider the potential impact of future plan design as well as the factors listed above.

5. Evaluate the reasonableness of the selected assumption. The assumption should be expected to appropriately model the contingency being measured. The assumption should not be anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

MORTALITY

One of the most important demographic assumptions in the valuation is mortality because it projects the duration of retirement benefit payments. Because benefit payments are made for the members' lifetime, if members live longer than expected the true cost of future benefit obligations will be understated.

Rates of mortality declined throughout the 20th century and have continued to decline, which means that, in general, people are living longer. Consequently, we anticipate that mortality tables will need to be updated periodically to reflect actual mortality trends, even if we are anticipating some increase in longevity. Because of potential differences in mortality, we break down our study by gender (males and females) and by status (healthy retirees, disabled retirees, and active members).

Because of the substantial amount of data required to construct a mortality table, actuaries usually rely on standard tables published by the Society of Actuaries. Actuaries then use various adjustments to these standard, published mortality tables in order to better match the observed mortality rates of a specific group, including:

        (1) Age adjustments
        (2) Scaling of rates

The first of these adjustments is an age adjustment that can be either a "set back" or a "set forward". A one-year age set forward treats members as if they were one year older than they truly are when applying the rates in the mortality table. So, a one year set forward would treat a 61 year old retiree as if he will exhibit the mortality of a 62 year old in the standard mortality table.

A second adjustment, which requires a significant amount of data, that can be used to adjust the mortality rates in a standard table to better fit actual experience is to "scale" a mortality table by multiplying the probabilities of death by factors less than one (to reflect better mortality) or factors greater than one (to reflect poorer mortality). Scaling factors can be applied to an entire table or a portion of the table. Of course, if needed, actuaries may use two or even all three of these methods to develop an appropriate table to model the mortality of the specific plan population.

The issue of future mortality improvement is one that the actuarial profession is very focused on and continues to study and monitor trends. This has resulted in changes to the relevant Actuarial Standard of Practice, ASOP 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This ASOP requires the pension actuary to make and disclose a specific recommendation with respect to future improvements in mortality after the valuation date, although it does not require that an actuary assume there will be future improvements. There have been significant improvements in longevity in the past, although there are different opinions about future expectations, and thus there is a subjective component in the estimation of future mortality improvements.

There are two widely-used ways to reflect future improvements in mortality:
(1) Static table with "margin"
(2) Generational mortality

Static Tables with Margin

The first approach to reflect mortality improvements is through the use of a static mortality table with "margin." Under this approach, the Actual to Expected Ratio is intentionally targeted to be over 100% so that mortality can improve without creating actuarial losses. This approach is mandated by the Internal Revenue Service for determining minimum funding amounts for corporate pension plans as mortality improvements are projected seven years for retirees and 15 years for actives. While there is no formal guideline for the amount of margin required (how far above 100% is appropriate for the Actual to Expected Ratio), typically actuaries prefer to have a margin of around 10% at the core retirement ages. The goal is still for the general shape of the curve to be a reasonable fit to the observed experience. Depending on the magnitude and duration of mortality improvement, the margin would decrease and eventually may become insufficient. When that occurs, the assumption would need to be updated.

Generational Mortality

Another approach, referred to as generational mortality (currently used in the LPF valuation), directly anticipates future improvements in mortality by using a different set of mortality rates based on each year of birth, with the rates for later years of birth generally assuming lower mortality than the rates for earlier years of birth. The varying mortality rates by year of birth create a series of mortality tables that contain "built-in" mortality improvements, e.g., a member who turns age 65 in 2050 has a longer life expectancy than a member who turns age 65 in 2020. When using generational mortality, the Actual to Expected Ratios for the observed experience are set near 100% as future mortality improvements will be taken into account directly in the actuarial valuation process by applying lower probabilities of death in future years. The generational approach is our preferred method for recognizing future mortality improvements in the valuation process because it is more direct and results in longer life expectancy for members who are younger, consistent with what we believe is more likely to occur. **This is the method currently used in the LPF valuation and we recommend it continue to be used.**

Healthy Retirees: The valuation currently uses separate mortality assumptions for male and female members. The RP-2000 Healthy Annuitant Mortality Table for Males and Females, with generational mortality using Projection Scale AA to anticipate mortality improvements in future years is currently used to predict the post-retirement probability of death.

In examining the results of the Experience Study, if the A/E Ratio is greater than 100%, the assumptions have predicted fewer deaths than actually occurred and with an A/E Ratio less than 100%, the assumptions have predicted more deaths than have actually occurred.

Due to the size of the group, there is insufficient data to provide reliably consistent and credible experience. For example, there were 3 deaths for male retirees below age 65 and only 5 more deaths between ages 65 and 74 in the five year study period. Including this data in any analysis of retiree mortality will distort the results (A/E ratio was 71% for ages 55 to 85 on a count basis) and could potentially lead to a recommended mortality assumption that is overly conservative. In order to better evaluate the current mortality assumption, given the limited data, we considered only the actual and expected deaths from ages 75 to 85 where there was more data. Even this data is quite limited and cannot be relied upon totally in setting the mortality assumption. The aggregate observed experience for healthy (not disabled) male retirees, ages 75 to 85, during the study period indicated 12 deaths compared to 15 expected using the current assumption.

Because the actual data is so limited, the best approach is to use an "off-the-shelf" mortality table. In early 2019, the Society of Actuaries published a new family of mortality tables, based solely on public plan data, called the Pub-2010 Tables. (The RP-2000 and RP-2014 tables intentionally excluded public plan data when they were created). We examined the PubS-2010 mortality table, the table produced specifically for use by public safety retirement systems. This table produced a better fit for the actual experience from ages 75 to 85 (A/E ratio of 92%) and reflects the most current information regarding the mortality experience for retirees who retired from public safety jobs. In order to use generational mortality, a projection scale must be used to anticipate future mortality improvements. We recommend LPF use the same mortality improvement scale as is used for the Nebraska Public Employees Retirement System (NPERS). Given the mortality assumption is moving from the RP-2000 Mortality Table to the PubS-2010 Table, and a newer projection scale is being used, the cost implications of the change are significant. **However, we believe moving to the PubS-2010 mortality table, with the NPERS mortality improvement scale, will provide a better estimate of the System's future liabilities.**

Beneficiaries: The mortality of beneficiaries applies to the survivors of members who received benefits under a joint and survivor form of payment. There is typically little data on the mortality experience of beneficiaries prior to the death of the member because there is no requirement that the death be reported. **Therefore, we recommend that standard convention be followed and mortality for beneficiaries be set on the same basis as is used for retired members.**

Disabled Members: The valuation assumes that disabled members, in general, will not live as long as retired members who met the regular service retirement eligibility. The current assumption is the RP-2000 Disabled Retiree Mortality Tables for males and females, with generational mortality improvements anticipated by Projection Scale AA. There is an insufficient number of disabled retirees to provide fully credible results, therefore, **we recommend the mortality table for disabled members from the same family of mortality tables, PubS-2010, be adopted so the disabled mortality assumption is on a consistent basis with the healthy retiree assumption. To be consistent with the mortality assumption for healthy retirees, we recommend the NPERS mortality improvement scale be used to project future improvements.**

Active Members: This assumption predicts eligibility for active member death benefits prior to retirement, rather than the expected lifetime for pension payments. In smaller groups, the mortality rates for active members are often set based on the same assumption as is used for healthy retirees. Given the low probability of death while active, the results cannot be credible on their own without much larger numbers of active employees than are in LPF. We prefer to keep the mortality assumption for active and retired members on a consistent basis. **Therefore, we recommend the PubS-2010 mortality table for active members be adopted with the NPERS mortality improvement scale.**

SERVICE RETIREMENT

Service retirement measures the change in status from active membership directly to retirement. This assumption does not include the retirement patterns of members who terminated from active membership years prior to their retirement. A separate assumption addresses that situation.

There are currently three different benefit structures for current active members, although more than 90% of the current actives are now covered by Plan A. A summary of the retirement eligibility and benefit formulas for current Police members are summarized below:

	Plan A	Plan B	Plan C
Normal Retirement Age (NRA)	Age 50	Age 53	Age 53
Eligibility	NRA and 25 YOS	NRA and 21 YOS	NRA and 21 YOS
Benefit formula	2.56% of Regular Pay times YOS, max 64%	58% of Regular Pay with 21 YOS plus 2% for each additional year, max 68%	54% of Regular Pay with 21 YOS plus 2% for each additional YOS, max 64%

Essentially, Plan A members hit the maximum benefit with 25 years of service. Plans B and C hit the maximum benefit with 26 years of service, but the accrual of additional benefits is lower after 21 years. In addition, active members of Plan A are eligible to participate in a Deferred Retirement Option Plan (DROP) any time after meeting the eligibility conditions for normal retirement. Members of Plan B and C may join the DROP within one year of becoming eligible for normal retirement benefits. Both the City and the member stop contributions to the Plan when the member enters the DROP, so for funding purposes, a member electing into DROP has the same impact as a member who retires, i.e., the benefit must be fully funded at that point in time. Therefore, the "retirement" assumption reflects the combined probability of retiring (leaving employment) and entering DROP. There are currently separate retirement assumptions for each Plan, as well as for Police members and Fire members.

In the August 31, 2018 valuation, there were only 41 active members in Plan B and 5 in Plan C. Due to the small number of remaining exposure for Plan C, the retirement experience was not studied. The number of exposures for Plan B over the five year study period was also very small, only 61. While the actual experience is limited and subject to volatility, it does provide some insight that is helpful as we develop a service-based assumption for this group.

The current assumption is age-based, but given the plan design which includes a maximum benefit based on years of service and the availability of the DROP, we expect the actual retirement pattern to be strongly correlated to years of service. The following graphs show the actual service retirement/DROP experience for the study period, separately for Plans A and B as well as for Police and Fire members.
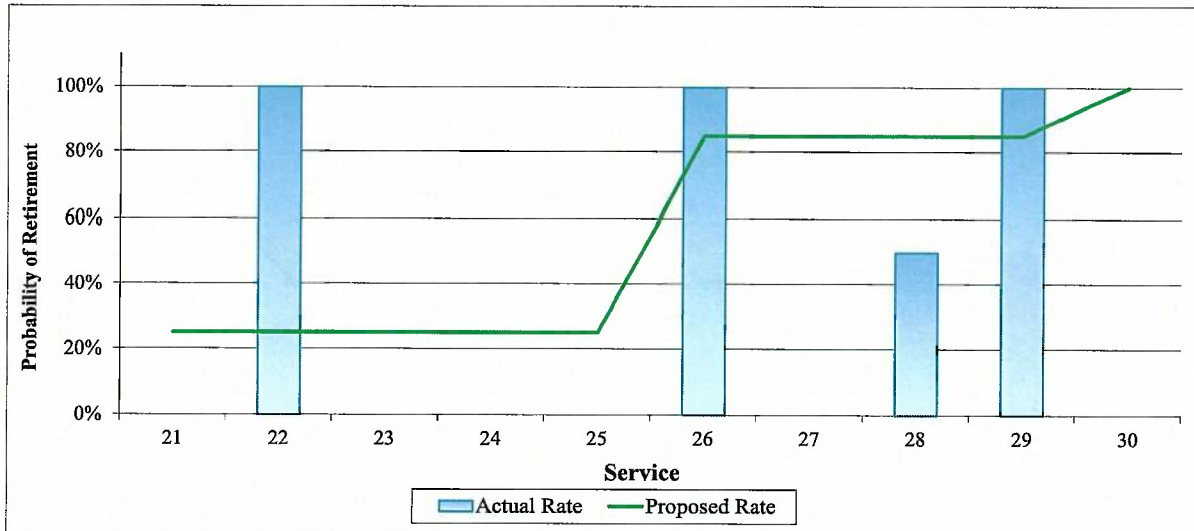
Plan B Retirement Experience
Police

Plan B Retirement Experience
Fire

33
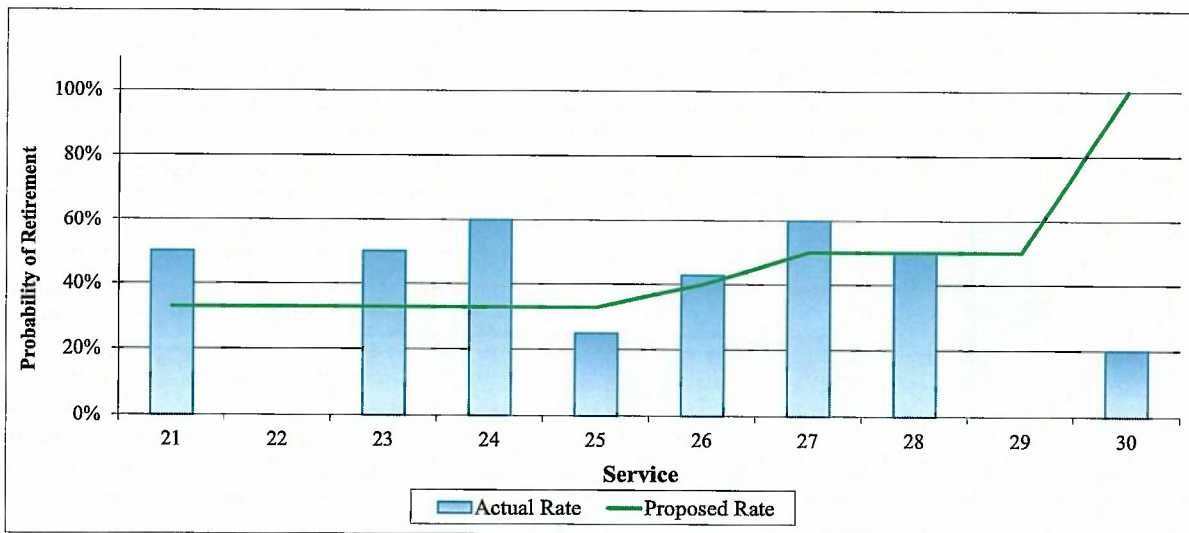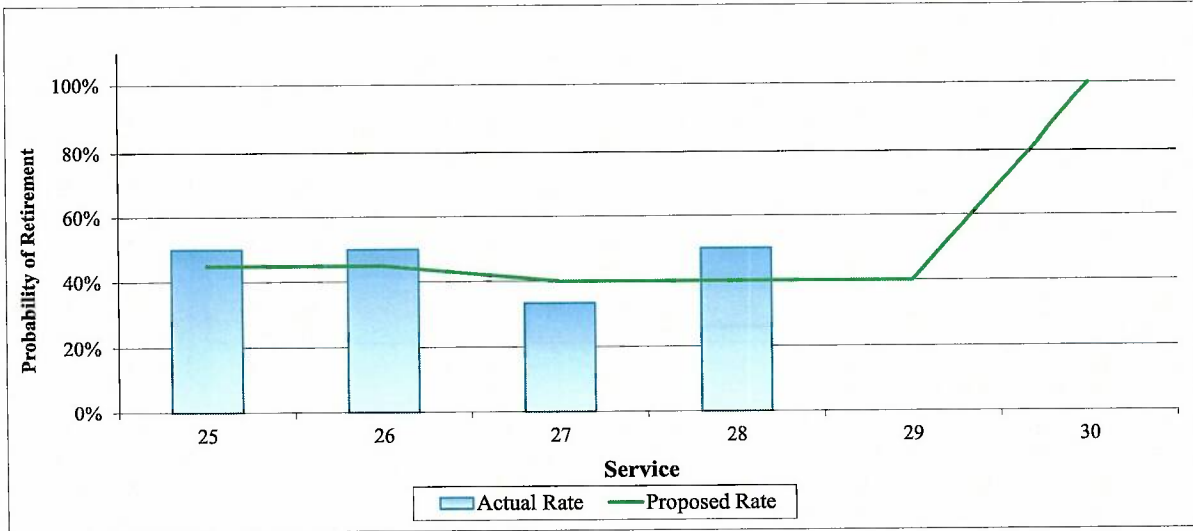
Plan A Retirement Experience
Police

Plan A Retirement Experience
Fire
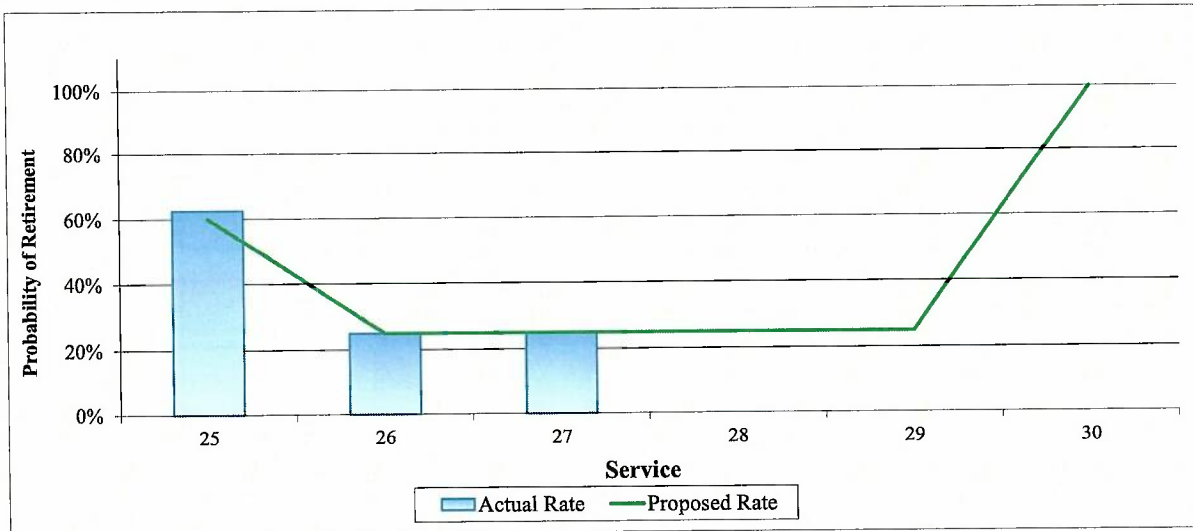
Given the plan design, we believe the retirement assumption should be service-based rather than the current age-based assumption. The experience indicates that not all members wait to reach the maximum benefit percentage and not all members leave once the maximum is attained. Based on the data available, we recommend the retirement rates shown in the earlier graphs be adopted, with Plan C rates matching Plan B rates. Since this is the first experience study to develop a retirement assumption based on service, we expect additional refinement may be needed in future studies.

Inactive Vested Members: The current assumption is that inactive vested members will retire at their first eligible retirement date, age 50 for all Plans. There are few such members so no reliable data is available to evaluate this assumption. However, it is reasonable to expect most, if not all, of these members to retire at their earliest retirement date. **We recommend keeping the current assumption that benefits for inactive vested members will commencement at the earliest retirement date. It is a reasonable assumption and provides a conservative estimate of the liability for inactive vested members.**

DISABILITY

The size of the System, coupled with the small probability of disablement at most ages, does not permit credible derivation of disability rates based solely on the System's experience. There were six disabilities in the five year study period and the expected number was four. There was no analysis of the disability assumption in the last experience study so we do not know if a similar pattern existed in past years. **We recommend the current disability assumption be retained but closely reviewed in the next experience study to see if there continue to be more disabilities than anticipated by the assumption.**

Based on data reported to us by the City, all disabilities (6) that occurred in the study period were service related. This information was not analyzed in the prior study. Given the small number of disabilities, some variability in the percentage that are service-related is not unusual. We believe the current assumption of 50% of liabilities are assumed to be duty related should be increased. **We recommend the duty disability assumption be increased from 50% to 65%.**

TERMINATION OF EMPLOYMENT

This section of the report summarizes the results of our study of terminations of employment for reasons other than death, retirement, or disability. Rates of termination can vary by both age and years of service. In general, rates of termination tend to have a stronger correlation to service than age, particularly for police and fire employment.

The current termination of employment assumption is age-based. The prior experience study did not include an analysis of actual and expected termination experience so our analysis is limited to data observed in the current study period. As illustrated by the following graphs, while the total actual versus expected experience (33 actual and 30 expected for Police and 12 actual versus 8 expected for Fire) indicates the current assumption might be a reasonable fit, the pattern of actual versus expected indicates some improvement is possible.

Police Termination Experience
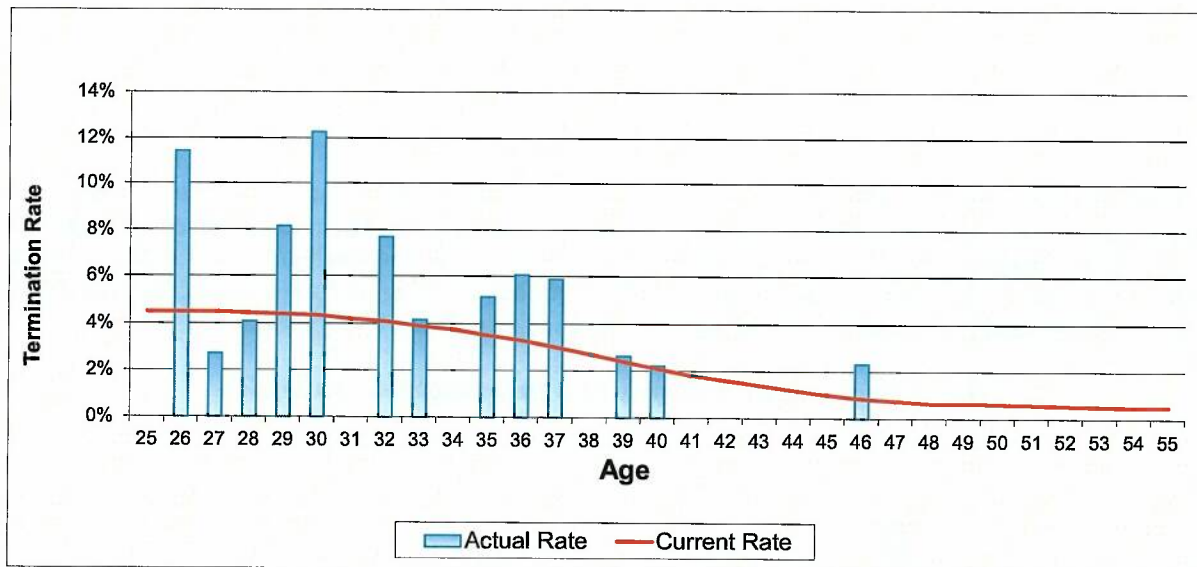
Fire Termination Experience
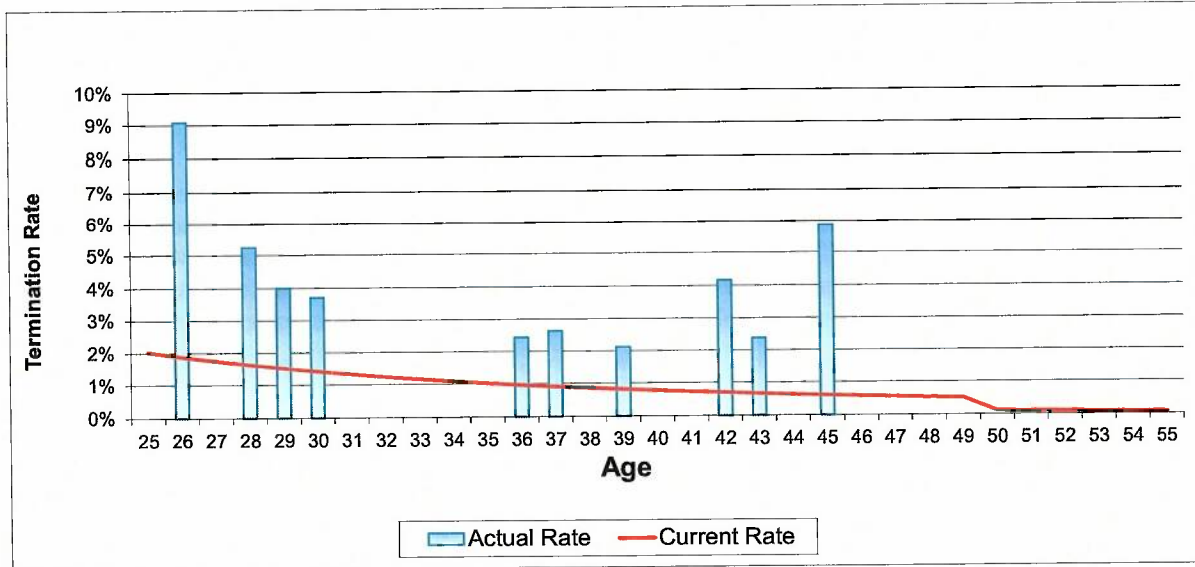
Given some change to the assumption is necessary, we also studied the actual experience on a duration basis (years of service). As stated earlier, there tends to be a strong correlation to continued employment and years of service, particularly for public safety employees. Given the small amount of data, a smooth pattern is not expected. However, the low probability of termination at higher durations of service is evident and we recommend the service-based assumption shown in these graphs be adopted.

Police - Termination of Employment Recommended Assumption
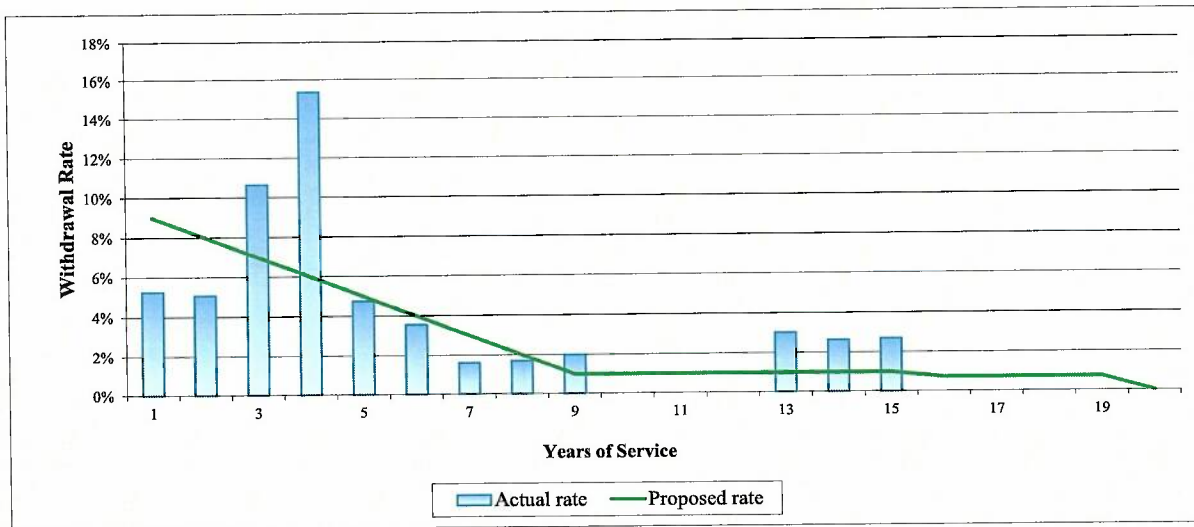
Overall, the recommended assumption produces an A/E ratio of 102% indicating a close fit to the actual experience. For durations one through nine, the recommended assumption anticipated 27 terminations and there were 26 actual terminations. For durations 10 through 20, the actual and expected terminations were both three with a resulting A/E ratio of 100%.

Fire - Termination of Employment Recommended Assumption
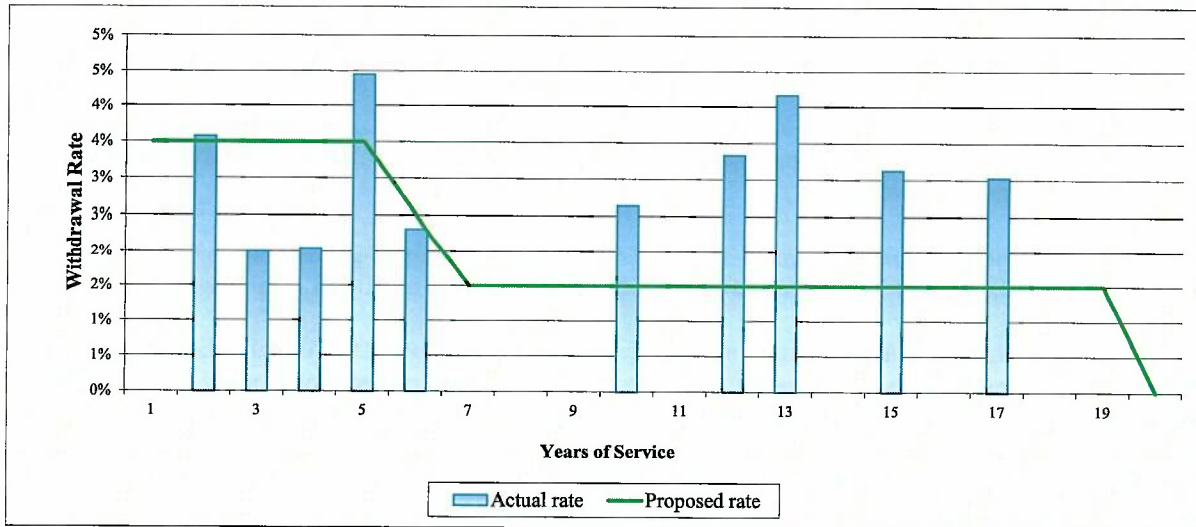
There is less data for Fire members so there tends to be more volatility in the rates and less of an obvious pattern. Although the recommended service-based assumption for Fire members reflects an overall A/E ratio of 73% from 1 to 20 years of service, the A/E ratio at durations one through nine was 59% (7 actual versus 12 expected – just 5 different over 5 years). For durations 10 through 20, the proposed assumption anticipated 5 terminations and actual terminations were also 5. The actuarial liability we are attempting to model with this assumption is higher for members with more years of service so it is important to closely model the behavior of that group, particularly given the limited data.

As additional experience studies are performed in the future and more data becomes available, it is likely these assumptions will need to be refined. This should be expected as the recommended assumptions are a reasonable fit to the actual experience observed in this study period, but no data was available about the experience in the prior study period. With such limited data, the findings of new experience studies may reflect somewhat different patterns and require some modifications to the recommended assumptions.

Our recommendation is to adopt the recommended termination of employment assumptions which are service-based and vary by group (Police vs Fire). The revised A/E ratios using the recommended assumptions are 102% for Police and 73% for Fire.

SALARY INCREASE ASSUMPTION

Estimates of future salaries are based on assumptions for two types of increases:

1.   Increases in each individual's salary due to promotion or longevity (often called merit scale), and

2.   Increases in the general wage level of the membership, which are directly related to price and wage inflation.

Earlier in this report, we recommended that the second of these rates, general wage inflation remain unchanged from the current 3.00% assumption (2.50% price inflation and 0.50% real wage growth).

As noted above, future salary increases are the result of two components. Actual salary experience is reported in total, rather than by components, so the experience study reviews total salary increases during the study period. The economic environment during this study period continued to exhibit considerable pressure on government budgets to reduce expenses as revenues have not totally rebounded from the Great Recession. As a result, salary increases for many public employees have continued to be very low. In our study, we compared individual salary increases for any members active in any two consecutive periods (e.g. FY 2014 and FY 2015, FY 2015 and FY 2016, etc.).

The current merit salary increase assumption is age-based. The assumption was developed in the last experience study, based on the experience at that time (FY 2010 through FY 2014), and resulted in a relatively large reduction in the salary increase assumption. Most of the decrease was the result of a lower general wage growth assumption, but the merit scale was also modified. The actual increase over the current study period was 4.68% compared to an expected increase of 4.78%. Note, however, that the fit of the current assumption to the actual experience is not very close. As a result, we believe some adjustment is necessary.
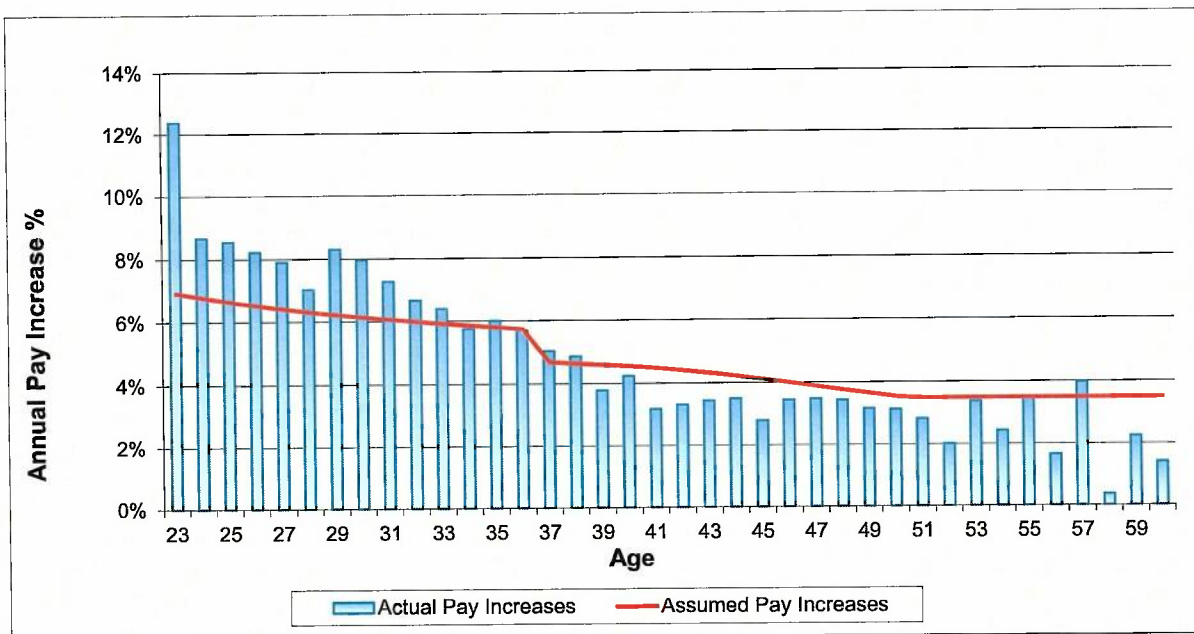
It is more common for salary increase assumptions to be service-based instead of age-based because there tends to be higher increases due to promotions and longevity increases in the earlier years of a career compared to smaller salary increases later. In order to evaluate the use of a service-based assumption, we studied the pattern exhibited during this study period (shown below).
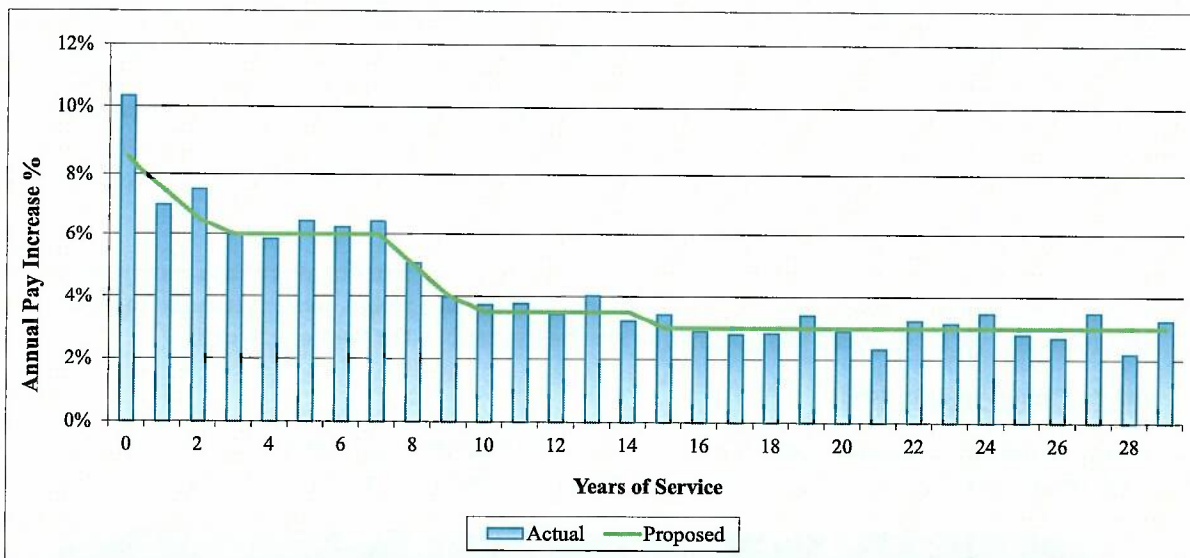
We believe the use of a service-based salary increase assumption will produce better estimated liabilities and we recommend the proposed assumption, shown in the graph above, be adopted. This assumption reflects the current general wage increase assumption of 3.00% and a service-based merit salary scale.

MISCELLANEOUS ASSUMPTIONS

Interest Credited on Member Contributions

The plan provision regarding the crediting of interest on members' accumulated contributions states that *"the rate of interest earned each calendar month, as determined by the City in conformity with the actual earnings on investments of the Police and Fire Pension Fund. Whenever such interest is required to be credited to any member under the provision of this title, such interest during any calendar month shall be based on upon his or her accumulated contributions, plus regular interest thereon, on the first day of the month."* Essentially, the actual rate of return for the Fund is credited to the members' account balances.

The current assumption regarding the interest rate credited on member contributions each year is 7.50%, the expected investment return. If the investment return assumption is lowered incrementally, we recommend this assumption also be lowered so the two remain equal.

Other Minor Assumptions

While we did not specifically collect data to review the following assumptions, we believe some small tweaks to the current assumptions should be made. These would not have a material impact.

	Current Assumption	Proposed Assumption
• % married at death	100%	90%
• Age difference, if unknown	Females are assumed to be same age as males	Females are assumed to be 3 years younger than males

13th Check

The 13th check amount is assumed to increase 2.50% annually, consistent with the inflation assumption. **Given there is no recommendation to lower the inflation assumption, we recommend the assumption regarding the increase in the 13th check amount remain 2.50%.**

To the extent there are other minor assumptions used in the valuation that were not included in our review of actual experience in the study period, we believe the current assumptions are reasonable and should continue to be used. Changes in these assumptions would have a relatively minor impact of the liabilities and costs of the System.

Investment Return: 7.50% compounded annually, net of investment expenses.
(effective August 31, 2016)

Inflation Rate: 2.50% compounded annually

Salary Increases: These assumptions are used to project current salaries to those upon which benefits will be based.

	Annual Rate of Pay Increase for Sample		
Sample Ages	Base (Economic)	Merit and Longevity	Total
20	3.0%	4.3%	7.3%
25	3.0%	3.6%	6.6%
30	3.0%	3.1%	6.1%
35	3.0%	2.8%	5.8%
40	3.0%	1.5%	4.5%
45	3.0%	1.1%	4.1%
50	3.0%	0.5%	3.5%
55	3.0%	0.5%	3.5%

Payroll Growth: 3.0% per year

Mortality:

Actives and Inactive
Vested Members: RP-2000 Employees mortality table with generational mortality improvement using Scale AA.

Healthy Retirees
and Beneficiaries: RP-2000 Healthy Annuitant mortality table with generational mortality improvement using Scale AA.

Disabled Retirees: RP-2000 Disabled Retiree mortality table with generational mortality improvement using Scale AA.

Termination:

Sample Ages	Years of Service	% Separating within Next Year	
		Police	Fire
ALL	0	12.00%	8.00%
	1	8.00%	6.00%
	2	7.00%	4.50%
	3	6.00%	3.00%
	4	5.00%	2.00%
25	5 & Over	4.50%	2.00%
30		4.35%	1.40%
35		3.50%	1.00%
40		2.10%	0.80%
45		1.00%	0.60%
50		0.62%	0.10%
55		0.50%	0.10%

Disability:

Sample Ages	% Becoming Disabled Within Next Year
20	0.05%
25	0.05%
30	0.06%
35	0.09%
40	0.14%
45	0.23%
50	0.40%
55	0.60%
60	0.80%

50% of assumed liabilities were assumed to be duty related and 50% were assumed to be non-duty related.

Retirement and DROP Entry:

Ages	Old Plan	Rates of Retirement and/or DROP Entry			
		Plan A		Plan B & C	
		Police	Fire	Police	Fire
50	35%	15%	10%	5%	6%
51	15%	15%	10%	5%	6%
52	15%	15%	10%	5%	6%
53	15%	25%	20%	25%	24%
54	15%	35%	20%	35%	35%
55	40%	35%	20%	35%	35%
56	15%	25%	20%	25%	18%
57	15%	10%	20%	10%	30%
58	15%	10%	20%	10%	42%
59	15%	10%	15%	10%	15%
60	100%	10%	15%	10%	15%
61	100%	10%	15%	10%	15%
62	100%	35%	35%	35%	35%
63	100%	20%	25%	20%	15%
64	100%	20%	25%	20%	15%
65	100%	100%	100%	100%	100%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption:	100% of both males and females are assumed to be married for purposes of death-in-service benefits.
Decrement Timing:	All decrements are assumed to occur mid-year.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and years of service on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service on the decrement date is used to determine the amount of benefit payable.
Decrement Operation:	Disability decrements to not operate during the first five years of service. They also do not operate during retirement eligibility.
Normal Form of Benefit:	The assumed normal form of benefit is the straight life form.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the applicable fiscal year based upon the contribution rate shown in this report, and the actual payroll at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
Interest Credited on Member Contributions:	7.50% compounded annually.
Funding Period:	Both the City and employee contribute (in accordance with the provisions of each plan) until the employee enters the DROP or otherwise exits the Plan.
DROP Period:	Members are assumed to remain in DROP for five years.
13th Check:	The 13th Check amount is assumed to increase 2.50% annually.

ACTUARIAL METHODS

Funding Method

Under the Entry Age Normal (EAN) cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability (UAAL) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.

The UAAL is amortized, as a level-percent of payroll, using a layered approach. The August 31, 2016 UAAL serves as the initial base and is amortized over a closed 28-year period (closed 30-year period beginning on August 31, 2014). For each valuation subsequent to August 31, 2016, annual net experience gains/losses will be amortized over a new, closed 20-year period. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

Asset Valuation Method

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Market Value of assets as of the valuation date is reduced by the sum of the following:

i.   80% of the return to be spread during the first year preceding the valuation date,

ii.   60% of the return to be spread during the second year preceding the valuation date,

iii. 40% of the return to be spread during the third year preceding the valuation date, and

iv.   20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Market Value and (2) the expected return on Actuarial Value.

Investment Return: 7.45% compounded annually, net of investment expenses.
(Phased in 0.05% per year, beginning with August 31, 2019 valuation)

Inflation Rate: 2.50% compounded annually

Salary Increases: These assumptions are used to project current salaries to those upon which benefits will be based.

Years of Service	Sample Annual Rate of Pay Increase		
	Base (Economic)	Merit and Longevity	Total
0	3.0%	5.5%	8.5%
1	3.0%	4.5%	7.5%
2	3.0%	3.5%	6.5%
3-7	3.0%	3.0%	6.0%
8	3.0%	2.0%	5.0%
9	3.0%	1.0%	4.0%
10-14	3.0%	0.5%	3.5%
15+	3.0%	0.0%	3.0%

Payroll Growth: 3.0% per year

Mortality:

Actives and Inactive
Vested Members: PubS-2010 Active Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale.

Healthy Retirees
and Beneficiaries: PubS-2010 Healthy Annuitant Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale

Disabled Retirees: PubS-2010 Disabled Mortality Table with generational mortality improvement using the Nebraska Public Retirement System Mortality Improvement Scale.

Termination:

| | % Separating within Next Year | |
Years of Service	Police	Fire
0	10.00%	4.00%
1	9.00%	3.50%
2	8.00%	3.50%
3	7.00%	3.50%
4	6.00%	3.50%
5	5.00%	3.50%
6	4.00%	2.50%
7	3.00%	1.50%
8	2.00%	1.50%
9-15	1.00%	1.50%
16-19	0.75%	1.50%
20+	0.00%	0.00%

Disability:

Sample Ages	% Becoming Disabled Within Next Year
20	0.05%
25	0.05%
30	0.06%
35	0.09%
40	0.14%
45	0.23%
50	0.40%
55	0.60%
60	0.80%

65% of assumed liabilities were assumed to be duty related and 35% were assumed to be non-duty related.

Retirement and DROP Entry:

| | | Rates of Retirement and/or DROP Entry | | |
| | Plan A | | Plan B, C & Old Plan | |
Service	Police	Fire	Police	Fire
21	0%	0%	25%	33%
22	0%	0%	25%	33%
23	0%	0%	25%	33%
24	0%	0%	25%	33%
25	45%	60%	25%	33%
26	45%	25%	85%	40%
27	40%	25%	85%	50%
28	40%	25%	85%	50%
29	40%	25%	85%	50%
30	100%	100%	100%	100%

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption: 90% of both males and females are assumed to be married for purposes of death-in-service benefits. Females are assumed to be three years younger than males.

Decrement Timing: All decrements are assumed to occur mid-year.

Eligibility Testing: Eligibility for benefits is determined based upon the age nearest birthday and years of service on the date the decrement is assumed to occur.

Benefit Service: Exact fractional service on the decrement date is used to determine the amount of benefit payable.

Normal Form of Benefit: The assumed normal form of benefit is a straight life form.

Incidence of Contributions: Contributions are assumed to be received continuously throughout the applicable fiscal year based upon the contribution rate shown in this report, and the actual payroll at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

Interest Credited on Member Contributions: 7.25% compounded annually, phased-in from 7.50% over five years with a 0.05% decrease each year.

Funding Period: Both the City and employee contribute (in accordance with the provisions of each plan) until the employee enters the DROP or otherwise exits the Plan.

13th Check: The 13th Check amount is assumed to increase 2.50% annually.

ACTUARIAL METHODS

Funding Method

Under the Entry Age Normal (EAN) cost method, the actuarial present value of each member's projected benefits is allocated on a level basis over the member's compensation between the entry age of the member and the assumed exit ages. The portion of the actuarial present value allocated to the valuation year is called the normal cost. The actuarial present value of benefits allocated to prior years of service is called the actuarial accrued liability. The unfunded actuarial accrued liability (UAAL) represents the difference between the actuarial accrued liability and the actuarial value of assets as of the valuation date. The unfunded actuarial accrued liability is calculated each year and reflects experience gains/losses.

The UAAL is amortized, as a level-percent of payroll, using a layered approach. The August 31, 2016 UAAL serves as the initial base and is amortized over a closed 28-year period (closed 30-year period beginning on August 31, 2014). For each valuation subsequent to August 31, 2016, annual net experience gains/losses will be amortized over a new, closed 20-year period. Subsequent plan amendments or changes in actuarial assumptions or methods that create a change in the UAAL will be amortized over a demographically appropriate time period selected by the Plan Administrator at the time that the change is reflected in the annual actuarial valuation.

Asset Valuation Method

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Market Value of assets as of the valuation date is reduced by the sum of the following:

i. 80% of the return to be spread during the first year preceding the valuation date,

ii. 60% of the return to be spread during the second year preceding the valuation date,

iii. 40% of the return to be spread during the third year preceding the valuation date, and

iv. 20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Market Value and (2) the expected return on Actuarial Value.

	Baseline (Current Assumptions)	All Demographic Assumptions	Investment Return Assumption (7.25%)
1. Present Value of Future Benefits	$368,900,408	$375,964,768	$389,995,234
2. Present Value Future Normal Costs	72,459,748	65,614,529	70,704,155
3. Actuarial Liability (1) – (2)	296,440,660	310,350,239	319,291,079
4. Actuarial Value of Assets	243,538,925	243,538,925	243,538,925
5. Unfunded Actuarial Accrued Liability (UAAL) (3) – (4)	52,901,735	66,811,314	75,752,154
6. Funded Ratio (4) / (3)	82.15%	78.47%	76.27%
7. Normal Cost Rate	16.52%	16.02%	16.97%
8. UAAL Amortization Rate	7.23%	9.52%	10.71%
9. Actuarial Determined Contribution Rate (7) + (8)	23.75%	25.54%	27.68%
10. Effective Employee Contribution Rate	(7.23%)	(7.38%)	(7.38%)
11. Employer Actuarial Contribution Rate (9) + (10)	16.52%	18.16%	20.30%

Notes: Financial impact is based on the August 31, 2018 actuarial valuation results. Actual impact on the August 31, 2019 actuarial valuation will be different than shown above, but should be comparable on a percent change basis.

Impact of assumption changes amortized over 20 years.

Lowering of investment return assumption can be phased-in, if desired.

EXHIBIT D-1
Retiree Mortality – Males
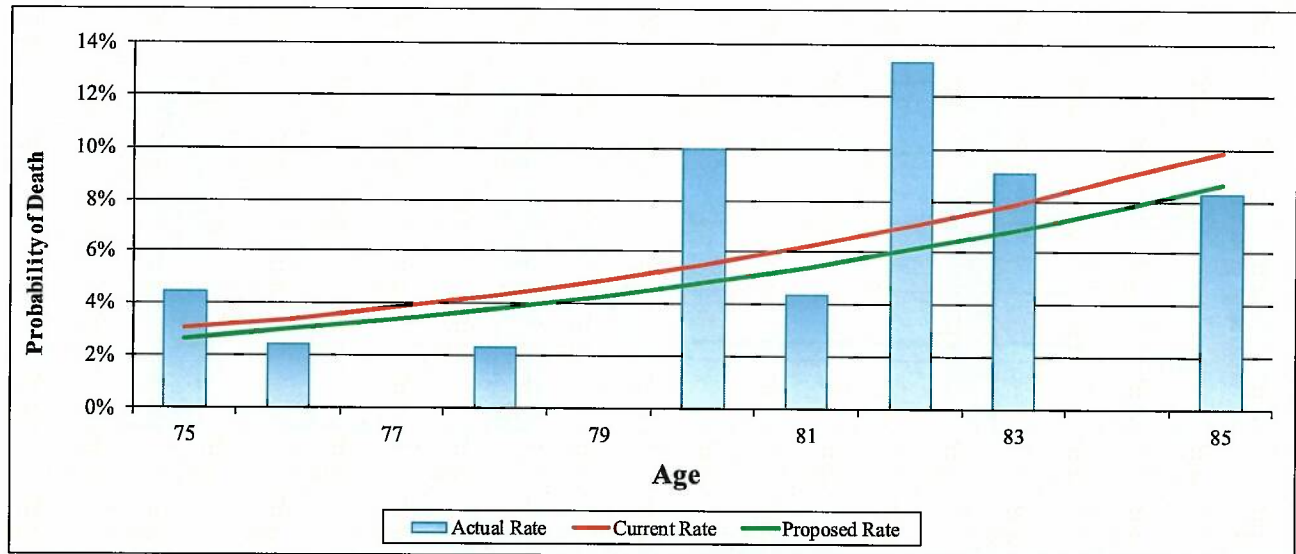
	Actual	Expected - Current Assumptions	Expected - Proposed Assumptions
Weighted Count	12	15	13
Actual/Expected		80%	92%

EXHIBIT D-2
Retirement – Plan B Police
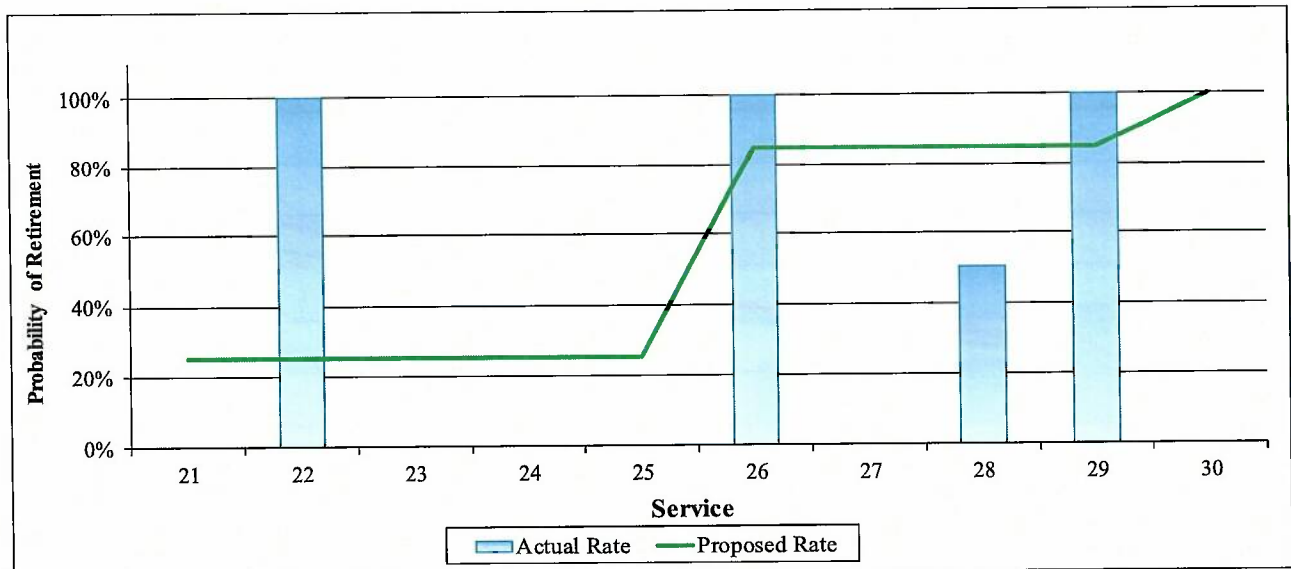
	Actual	Expected - Proposed Assumptions
Total Count	6	6
Actual/Expected		100%

EXHIBIT D-3
Retirement – Plan B Fire
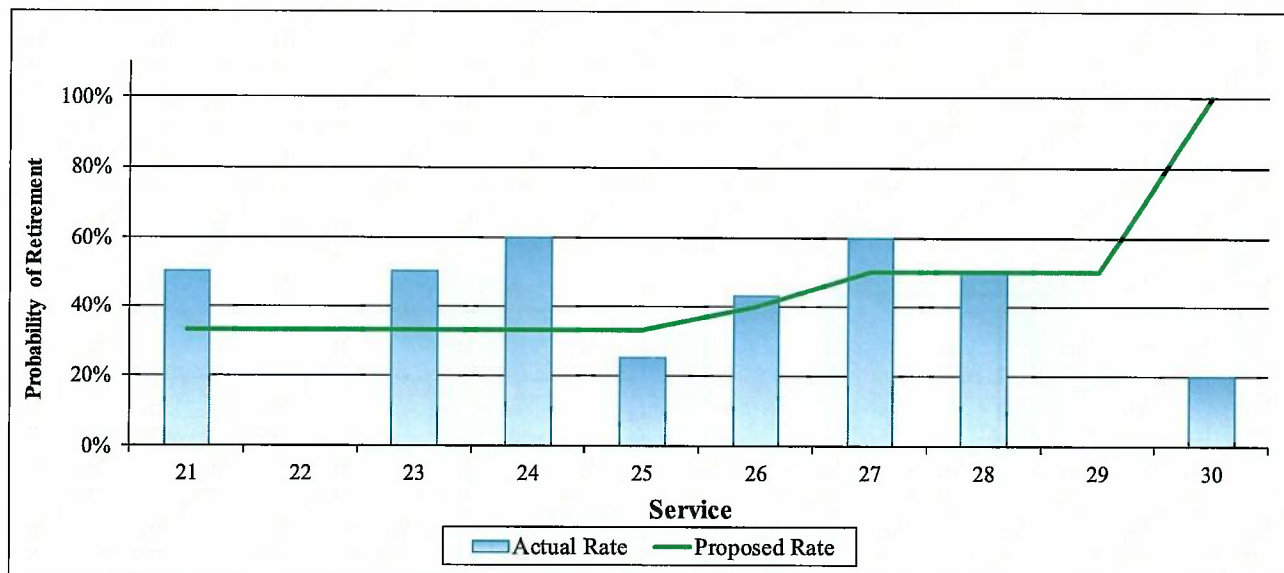
	Actual	Expected - Proposed Assumptions
Total Count	15	17
Actual/Expected		88%

EXHIBIT D-4
Retirement – Plan A Police

	Actual	Expected - Proposed Assumptions
Total Count	10	12
Actual/Expected		83%

EXHIBIT D-5
Retirement – Plan A Fire

	Actual	Expected - Proposed Assumptions
Total Count	7	9
Actual/Expected		78%

EXHIBIT D-6
Termination of Employment – Police
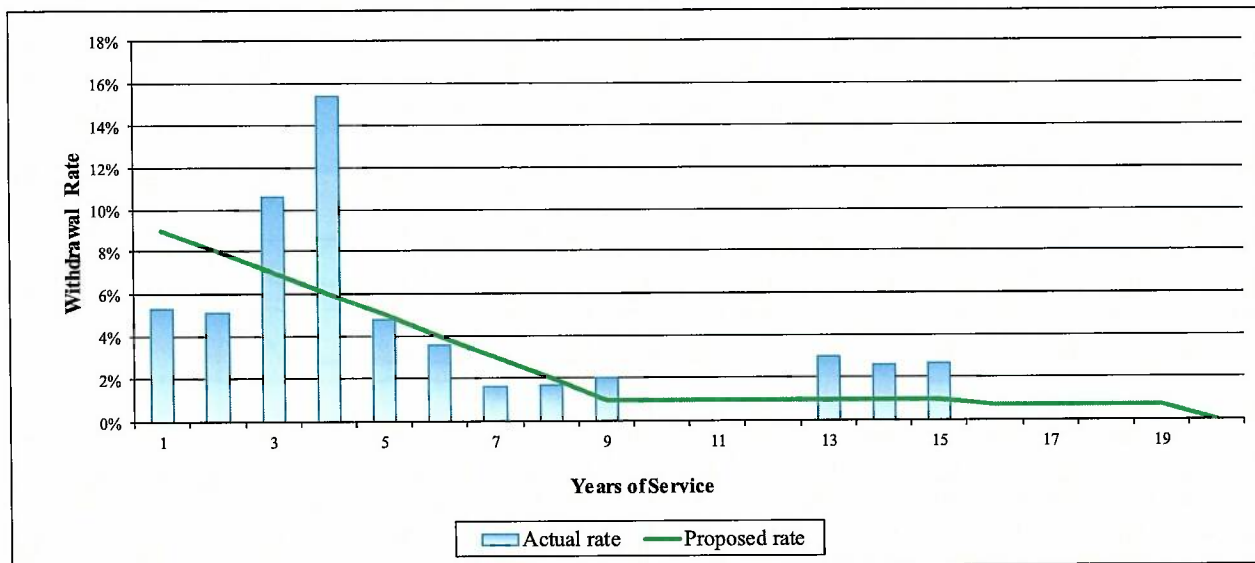
	Actual	Expected - Proposed Assumptions
Total Count	30	29
Actual/Expected		102%

EXHIBIT D-7
Termination of Employment – Fire
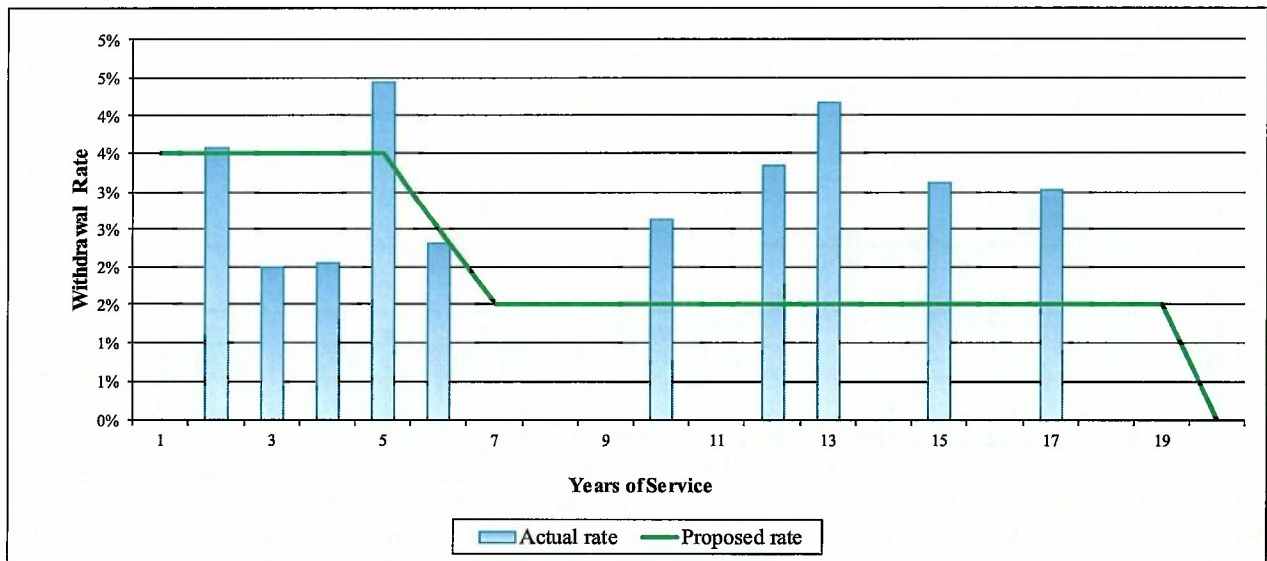
	Actual	Expected - Proposed Assumptions
Total Count	12	16
Actual/Expected		73%

EXHIBIT D-8
Salary Scale
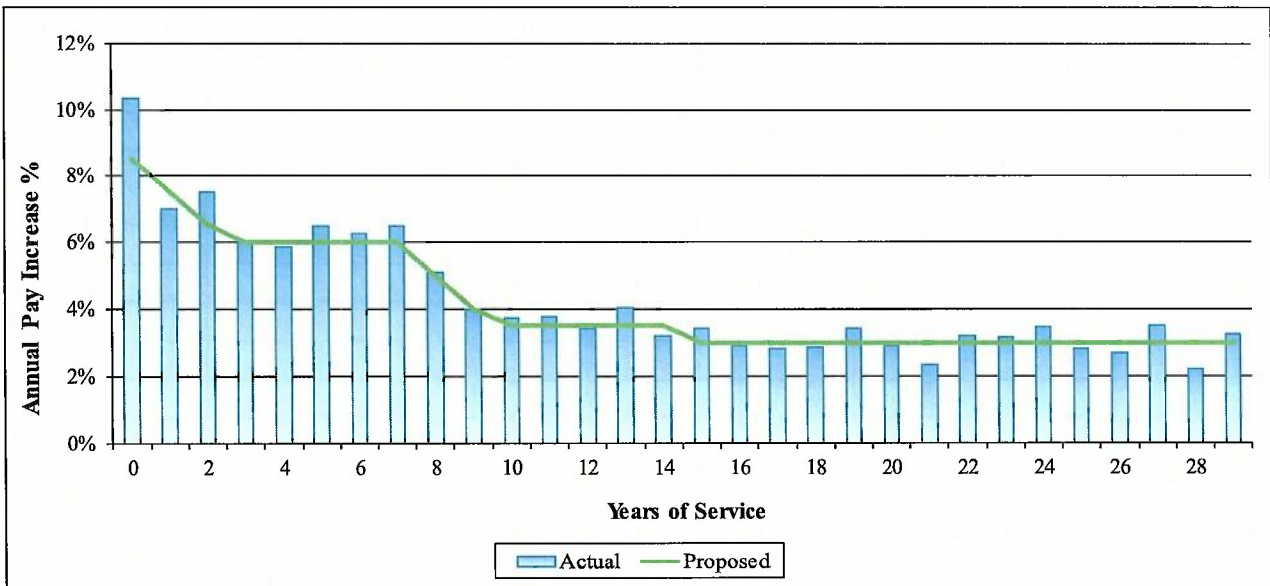
	Actual	Expected - Proposed Assumptions
Average Increase	4.70%	4.23%
Actual/Expected		111%

EXHIBIT E-1
Retiree Mortality - Males

Age	Exposure	Actual Deaths	Actual Rate	Current Expected	Current Rate	Proposed Expected	Proposed Rate
75	45	2	4.444%	1.4	3.019%	1.2	2.647%
76	41	1	2.439%	1.4	3.365%	1.2	2.979%
77	40	–	0.000%	1.5	3.805%	1.3	3.353%
78	43	1	2.326%	1.8	4.297%	1.6	3.777%
79	36	–	0.000%	1.7	4.853%	1.5	4.257%
80	30	3	10.000%	1.6	5.481%	1.4	4.799%
81	23	1	4.348%	1.4	6.234%	1.2	5.410%
82	15	2	13.333%	1.1	7.078%	0.9	6.097%
83	11	1	9.091%	0.9	7.890%	0.8	6.863%
84	11	–	0.000%	1.0	8.917%	0.8	7.720%
85	12	1	8.333%	1.2	9.898%	1.0	8.671%
	307	12	3.909%	15.0	4.896%	13.2	4.285%

EXHIBIT E-2
Retirement – Plan B Police

Duration	Exposure	Actual Retirements	Actual Rate	Proposed Expected	Proposed Rate
21	-	-	0.000%	-	25.000%
22	1	1	100.000%	0.3	25.000%
23	-	-	0.000%	-	25.000%
24	-	-	0.000%	-	25.000%
25	-	-	0.000%	-	25.000%
26	2	2	100.000%	1.7	85.000%
27	1	-	0.000%	0.9	85.000%
28	2	1	50.000%	1.7	85.000%
29	2	2	100.000%	1.7	85.000%
30	-	-	0.000%	-	100.000%
	8	6	75.000%	6.2	77.500%

EXHIBIT E-3
Retirement – Plan B Fire

Duration	Exposure	Actual Retirements	Actual Rate	Proposed Expected	Proposed Rate
21	2	1	50.000%	0.7	33.000%
22	2	-	0.000%	0.7	33.000%
23	4	2	50.000%	1.3	33.000%
24	5	3	60.000%	1.7	33.000%
25	4	1	25.000%	1.3	33.000%
26	7	3	42.857%	2.8	40.000%
27	5	3	60.000%	2.5	50.000%
28	2	1	50.000%	1.0	50.000%
29	1	-	0.000%	0.5	50.000%
30	5	1	20.000%	5.0	100.000%
	37	15	40.541%	17.4	47.054%

EXHIBIT E-4
Retirement – Plan A Police

Duration	Exposure	Actual Retirements	Actual Rate	Proposed Expected	Proposed Rate
25	2	1	50.000%	0.9	45.000%
26	6	3	50.000%	2.7	45.000%
27	6	2	33.333%	2.4	40.000%
28	8	4	50.000%	3.2	40.000%
29	2	-	0.000%	0.8	40.000%
30	2	-	0.000%	2.0	100.000%
	26	10	38.462%	12.0	46.154%

EXHIBIT E-5
Retirement – Plan A Fire

Duration	Exposure	Actual Retirements	Actual Rate	Proposed Expected	Proposed Rate
25	8	5	62.500%	4.8	60.000%
26	4	1	25.000%	1.0	25.000%
27	4	1	25.000%	1.0	25.000%
28	3	-	0.000%	0.8	25.000%
29	1	-	0.000%	0.3	25.000%
30	1	-	0.000%	1.0	100.000%
	21	7	33.333%	8.8	41.905%

EXHIBIT E-6
Termination of Employment – Police

Duration	Exposure	Actual Terminations	Actual Rate	Proposed Expected	Proposed Rate
1	76	4	5.263%	6.8	9.000%
2	59	3	5.085%	4.7	8.000%
3	47	5	10.638%	3.3	7.000%
4	52	8	15.385%	3.1	6.000%
5	42	2	4.762%	2.1	5.000%
6	56	2	3.571%	2.2	4.000%
7	62	1	1.613%	1.9	3.000%
8	59	1	1.695%	1.2	2.000%
9	50	1	2.000%	0.5	1.000%
10	45	-	0.000%	0.5	1.000%
11	34	-	0.000%	0.3	1.000%
12	30	-	0.000%	0.3	1.000%
13	33	1	3.030%	0.3	1.000%
14	38	1	2.632%	0.4	1.000%
15	37	1	2.703%	0.4	1.000%
16	40	-	0.000%	0.3	0.750%
17	52	-	0.000%	0.4	0.750%
18	41	-	0.000%	0.3	0.750%
19	39	-	0.000%	0.3	0.750%
20	31	-	0.000%	-	0.000%
	923	30	3.250%	29.3	3.176%

EXHIBIT E-7
Termination of Employment – Fire

Duration	Exposure	Actual Terminations	Actual Rate	Proposed Expected	Proposed Rate
1	50	-	0.000%	1.8	3.500%
2	56	2	3.571%	2.0	3.500%
3	50	1	2.000%	1.8	3.500%
4	49	1	2.041%	1.7	3.500%
5	45	2	4.444%	1.6	3.500%
6	43	1	2.326%	1.1	2.500%
7	41	-	0.000%	0.6	1.500%
8	43	-	0.000%	0.6	1.500%
9	48	-	0.000%	0.7	1.500%
10	38	1	2.632%	0.6	1.500%
11	34	-	0.000%	0.5	1.500%
12	30	1	3.333%	0.5	1.500%
13	24	1	4.167%	0.4	1.500%
14	35	-	0.000%	0.5	1.500%
15	32	1	3.125%	0.5	1.500%
16	25	-	0.000%	0.4	1.500%
17	33	1	3.030%	0.5	1.500%
18	26	-	0.000%	0.4	1.500%
19	27	-	0.000%	0.4	1.500%
20	25	-	0.000%	-	0.000%
	754	12	1.592%	16.4	2.170%

EXHIBIT E-8
Salary Scale

Duration	Initial Salary (Millions)	Subsequent Salary (Millions)	Actual Rate	Proposed Expected (Millions)	Proposed Rate
0	3.5	3.9	12.2%	3.7	8.5%
1	6.3	6.9	10.3%	6.8	7.5%
2	6.0	6.5	7.0%	6.4	6.5%
3	5.2	5.6	7.5%	5.5	6.0%
4	5.5	5.8	6.0%	5.8	6.0%
5	5.2	5.5	5.8%	5.5	6.0%
6	6.1	6.5	6.4%	6.5	6.0%
7	6.6	7.0	6.2%	7.0	6.0%
8	6.8	7.3	6.4%	7.2	5.0%
9	7.0	7.4	5.1%	7.3	4.0%
10	6.0	6.2	4.0%	6.2	3.5%
11	5.2	5.4	3.7%	5.4	3.5%
12	4.6	4.8	3.8%	4.8	3.5%
13	4.4	4.6	3.4%	4.6	3.5%
14	6.1	6.4	4.0%	6.3	3.5%
15	6.0	6.2	3.2%	6.2	3.0%
16	6.5	6.7	3.4%	6.7	3.0%
17	7.7	7.9	2.9%	7.9	3.0%
18	6.2	6.3	2.8%	6.4	3.0%
19	6.4	6.6	2.8%	6.6	3.0%
20	6.0	6.2	3.4%	6.1	3.0%
21	4.1	4.2	2.9%	4.2	3.0%
22	3.6	3.7	2.3%	3.7	3.0%
23	3.5	3.6	3.2%	3.6	3.0%
24	4.0	4.1	3.1%	4.1	3.0%
25	3.8	3.9	3.5%	3.9	3.0%
26	3.2	3.3	2.8%	3.3	3.0%
27	2.3	2.4	2.7%	2.4	3.0%
28	1.7	1.7	3.5%	1.7	3.0%
29	0.9	0.9	2.2%	0.9	3.0%
30	0.7	0.7	3.2%	0.7	3.0%
	151.0	158.1	4.7%	157.4	4.2%

Appendix D

Metro Area Transit Hourly Employees Retirement Plan Information

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LB 759 REPORTING FORM (HOURLY PLAN)
Metro Area Transit Hourly Employees' Pension Plan

1. Plan Information for Years 2016 through Current Plan Year 2021

	2016	2017	2018	2019	2020	2021
1a Funding Status*	72%	71%	77%	67.3%	66.7%	68.5%
1b Assumed Rate of Return***	6.75%	6.75%	6.75%	6.75%	6.5%	6.25%
1c Actual Investment Return	-1.50%	5.80%	13.35%	-4.84%	20.06%	14.24%
1d Member Contribution Rate	6.00%	6.00%	7.00%	7.00%	7.25%	7.50%
Employer Contribution Rate**	6.50%	6.50%	7.50%	7.50%	7.75%	7.75%
1e Normal Cost Percentage	7.35%	7.39%	7.21%	7.36%	8.58%	8.81%
1f Actuarially Determined Contribution (ADC)						
Percentage	78.3%	N/A	N/A	N/A	N/A	N/A
Dollar Amount	$ 901,256	$958,333	$835,474	$891,105	$1,165,834	$1,161,981
1g Actuarially Required Contribution (ARC)						
Dollar Amount Contributed	$ 705,467	$904,824	$855,109	$836,227	$1,286,538	TBD
Percentage of ARC Contributed	78.28%	94.20%	102.35%	93.84%	110.35%	TBD

* Funding Status for 2018 and prior is based on Market Value of Assets compared to Present Value of Accrued Benefits. Starting in 2019, Funding Status is based on Actuarial Value of Assets compared to Actuarial Accrued Liability in order to coincide with the basis for calculating the Actuarially Determined Contribution.

** Employer contribution rate increased to 7.5% effective 9/1/2017 and employer made a one-time lump-sum contribution to the Plan equal to 1% of the total of the active Plan participants' compensation for the period beginning on July 1, 2016 and ending on August 31, 2017, making the effective employer contribution rate 7.5% from July 1, 2016-2020. The contribution rate then increased to 7.75% to present.

2. Circumstances That Led to Underfunding the Plan
In prior periods, investment returns did not meet the return assumptions. In addition, due to lower capital market expectations, the interest rates used to value liabilities have been decreased several times in the last decade (see below).

2009 reduced from 8.00% to 7.50%
2015 reduced from 7.50% to 7.00%
2016 reduced from 7.00% to 6.75%
2020 reduced from 6.75% to 6.50%
2021 reduced from 6.50% to 6.25%

3. Changes in Actuarial Methods/Assumptions Since Previous Actuarial Valuation Report
Metro decreased the interest rate from 6.5% to 6.25% in the approved actuarial report. Impact of this change was an increase in the Unfunded Accrued Liability of about $985,000 and an increase in the Actuarial Determined Contribution of about $101,000.

4. In what year is the plan's funding ratio expected to reach 100%?
If the Metro pays the ADC each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions we project that the plan's funding ratio will reach 100% in 2041.

5. **What is the method used to amortize the unfunded actuarial liability?**
Unfunded actuarial liability is amortized for 30 years starting in 2012, graded down for each successive year. The Individual Entry Age Normal Cost is the actuarial cost method used to value the liabilities. The amortization period will decrease each year until it reaches 10 years, after which it remains at 10 years.

6. **Description of Corrective Actions Implemented to Improve the Funding Status of the Plan:**
The Hourly Pension Committee members have amended the plan document to increase the employer and employee contribution rates. The employer contribution rate increased from 6.5% to 7.75% since 2017. The employee contribution rate increased from 6% to 7.5% during that same period. For those employees hired on or after January 1, 2018, the Pension Committee also (i) changed the normal retirement date from age 65 to the age when the employee reaches full retirement for purposes of receiving Social Security benefits, and (ii) eliminated the early retirement option. The benefit factor percentage used in the calculation of the monthly benefit for those employees hired on or after January 1, 2018, was also changed by the Pension Committee to a tiered structure based on years of service in lieu of the current method of using the same benefit factor percentage regardless of years of service. In addition, a one-time lump sum contribution was made to the Plan in November of 2020 to increase the actual contribution as a percentage of payroll effectively to 11.1%. The Pension Committee believes all these changes will address the funding issue. The Pension Committee is comprised of bargaining unit employees, management representatives and a Metro Transit Board member. The actuarial assumptions are reviewed annually to provide committee members with data regarding plan performance. The Committee meets a minimum of once per year to review plan performance, assumptions, asset allocations and potential plan changes.

In addition, to reflect the increasing average age of the Plan participants, the asset allocation has been modified to reduce the volatility of returns and meet the actuarial assumed rate of return. To increase net investment returns, the entire portfolio has been indexed, reducing Plan investment management fees from 71 basis points to 9 basis points. An incremental change in the net asset allocation guidelines gradually reduces the bond investment while increasing the equity investment over a 5-year period beginning in 2021.

7. **Recent or Ongoing Negotiations**
The collective bargaining agreement between Metro and the Transport Workers Union was ratified as of January 1, 2020. Pension funding, is one of the major components of these negotiations. Past and future negotiations include reopeners in each year in order to address required matters that might arise prior to expiration of the bargaining agreement. As previously mentioned, the primary changes to the Plan resulting from 2017 renegotiations of the collective bargaining agreement were increases in the employer and employee contribution rates, and, for those employees hired on or after January 1, 2018, the (i) changing the normal retirement date from age 65 to the age when the employee reaches full retirement age for purposes of receiving Social Security benefits, and (ii) eliminating the early retirement option. The primary changes to the Plan resulting from the 2020 negotiations were increases in the employer and employee contribution rates.

8. **Most Recent Actuarial Experience**
There has not been an experience study done in recent years. Due to the very small size of the participant population, it has been felt that preparation of a formal experience study would not add credible insight in our demographic assumptions. Rather, from time to time we have prepared short analysis of prior termination and retirement rates, as well as anecdotal analysis of compensation increase assumptions and mortality table assumptions and have modified actuarial assumptions as was felt appropriate.

9. **Current Assumed Rate of Return**
The current assumed rate of return is 6.25%.

10. **Most Recent Actuarial Valuation Report**
Attached please find the most recent valuation dated January 1, 2021. The valuations are completed every year with the next one due January 1, 2022.

Milliman

METRO AREA TRANSIT
HOURLY EMPLOYEES' PENSION PLAN

Actuarial Valuation as of January 1, 2021
To Determine Funding for Fiscal Year 2021

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Kerry Forrester, FSA
Consulting Actuary

Table of Contents

Certification

We have performed an actuarial valuation of the Plan as of January 1, 2021 to determine funding for fiscal year 2021. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable government regulations. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.

- Information needed to meet disclosure requirements.

- Review of plan experience for the previous year to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.

- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.

- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of Metro Area Transit ("Metro"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) Metro may provide a copy of Milliman's work, in its entirety, to Metro's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit Metro; and (b) Metro may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by Metro. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

The calculations reported herein have been made on a basis consistent with our understanding of ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.

The valuation results were developed using models intended for valuations that use standard actuarial techniques. In addition to the models described previously, Milliman has developed certain models to develop the expected long term rate of return on assets used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOP). The models, including all input, calculations, and output may not be appropriate for any other purpose.
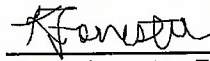
We further certify that, in our opinion, each actuarial assumption, method and technique used is reasonable taking into account the experience of the Plan and reasonable expectations. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as, but not limited to, the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of the actuarial assignment, we did notperform an analysis of the potential range of such future measurement.

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

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Kerry Forrester, FSA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

The employee contribution rate was increased from 7.25% to 7.50%. This change increased the Unfunded Accrued Liability by about $4,000 and decreased the Actuarially Determined Contribution by about $55,000.

Changes in Actuarial Methods and Assumptions

We decreased the interest rate from 6.50% to 6.25%. The impact of this change was an increase in the Unfunded Accrued Liability of about $985,000 and an increase in the Actuarially Determined Contribution of about $101,000.

Other Significant Changes

None.

Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses non-asymptotically over five years.

	Market	Actuarial
Value as of January 1, 2020	$25,950,904	$25,950,904
Metro and Member Contributions	2,162,675	2,162,675
Investment Income	3,680,422	2,080,059
Benefit Payments and Administrative Expenses	(2,370,089)	(2,370,089)
Value as of January 1, 2021	29,423,912	27,823,549

For fiscal year 2020, the plan's assets earned 14.24% on a Market Value basis and 8.05% on an Actuarial Value basis. The actuarial assumption for this period was 6.50%; the result is an asset gain of about $2.0 million on a Market Value basis and a gain of about $0.4 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.

■ Market Value
■ Actuarial Value

Year	Market Value	Actuarial Value
2016	5.79%	5.66%
2017	13.35%	7.31%
2018	-4.84%	4.23%
2019	20.06%	11.08%
2020	14.24%	8.05%
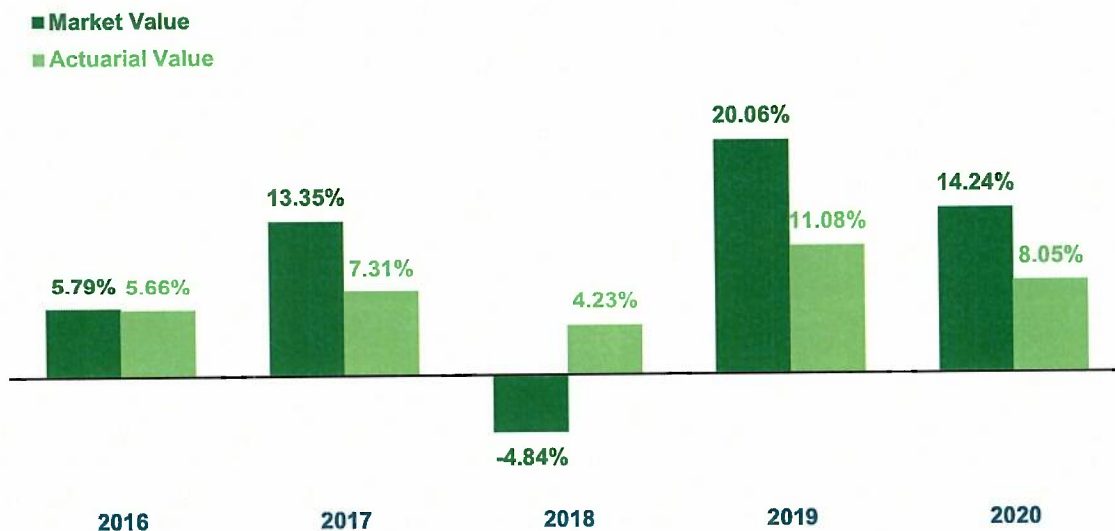
Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 20 years. For purposes of this projection, we have assumed that Metro always contributes the Actuarially Determined Contribution and the investments always earn the assumed interest rate each year.

□ **Market Value ($ millions)**
□ **Actuarial Value ($ millions)**
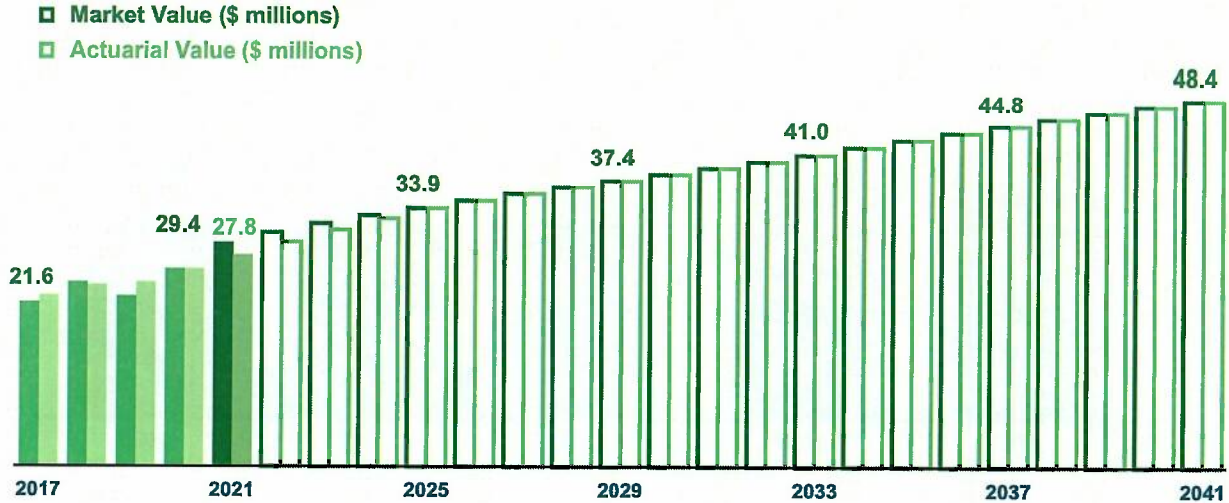
In 2020, the plan paid out $2,324,928 in benefits to members. Over the next 20 years, the plan is projected to pay out a total of $65.9 million in benefits to members.

Benefit Payments ($ millions)
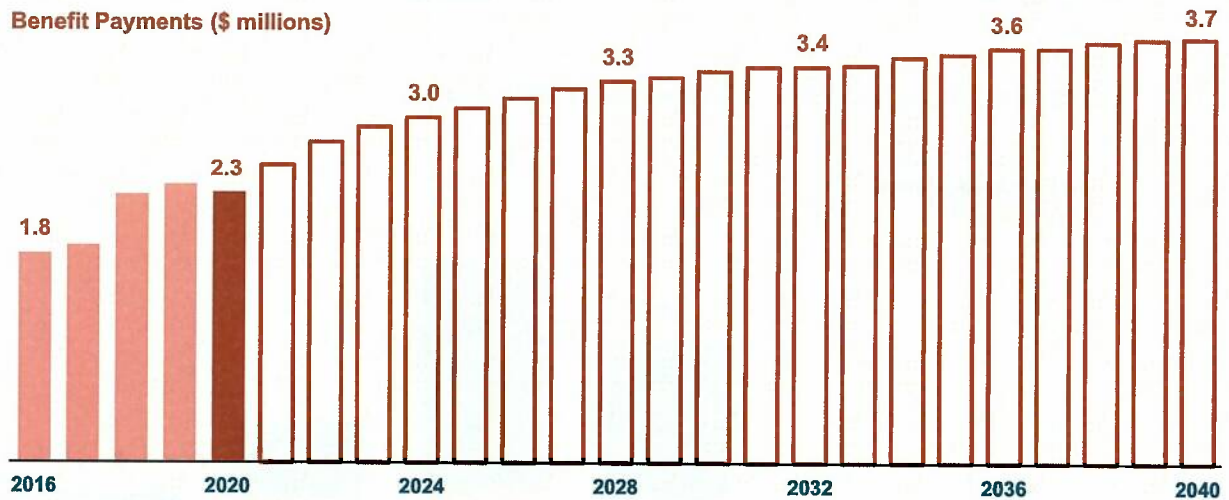
Section I - Executive Summary
Membership

There are three basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a vested right to benefits but have not yet started collecting, and (3) active employees who have met the eligibility requirements for membership.

- ■ Members in Pay Status
- ■ Terminated Members
- ■ Active Members

	2017	2018	2019	2020	2021
Total	432	426	421	435	433
Members in Pay Status	181	185	197	201	194
Terminated Members	43	41	40	39	48
Active Members	208	200	184	195	191
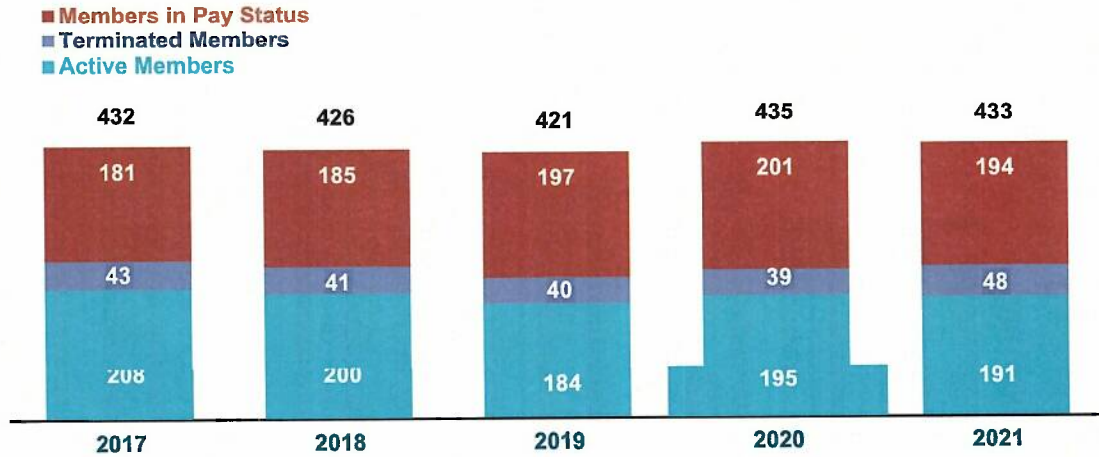
Members in Pay Status on January 1, 2021

Service Retirees	161	Average Age	74.4
Disabled Retirees	0	Total Annual Benefit	$2,093,374
Beneficiaries	33	Average Annual Benefit	10,791
Total	194		

The members in pay status fall across a wide distribution of ages:
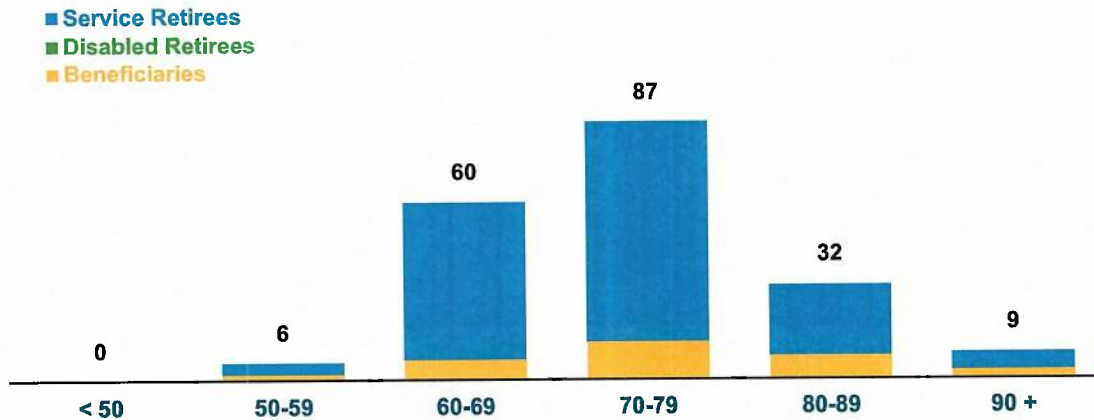
- ■ Service Retirees
- ■ Disabled Retirees
- ■ Beneficiaries

< 50	50-59	60-69	70-79	80-89	90 +
0	6	60	87	32	9

This work product was prepared solely for Metro for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Section I - Executive Summary
Membership (continued)

Terminated Vested Members on January 1, 2021

Count	47
Average Age	58.6
Total Annual Benefit	$213,715
Average Annual Benefit	4,547

Deferred Beneficiaries on January 1, 2021

Count	1

Active Members on January 1, 2021

Count	191
Average Age	54.0
Average Service	10.7
Payroll	$12,376,694
Average Payroll	64,799

The table below illustrates the age and years of service of the active membership:

Age	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
< 25								0
25-29	2							2
30-34	5	1	1					7
35-39	2	2	2	1				7
40-44	11	3	4	1				19
45-49	13	10	3	2	1			29
50-54	15	5	9	1	2			32
55-59	12	7	6	6	5		1	37
60-64	4	8	8	3	8	1	2	34
65+		3	5	7	4	1	4	24
Total	64	39	38	21	20	2	7	191

Years of Service (column group header spanning 0-4 through 30+)

Section I - Executive Summary
Accrued Liability

The Accrued Liability as of January 1, 2021 equals $40,642,312, which consists of the following pieces (in $ millions):

Active Members	Terminated Vested Members	Service Retirees	Disabled Retirees	Beneficiaries
18.5	2.0	17.7	0.0	2.4

The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

Termination	Retirement	Disability	Preretirement Death
0.2	17.6	0.6	0.1

Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

Accrued Liability ($ millions)

2017	2018	2019	2020	2021
33.9	35.2	35.9	38.9	40.6

Unfunded Accrued Liability ($ millions)

2017	2018	2019	2020	2021
11.5	11.4	11.7	12.9	12.8

Funded Ratio

2017	2018	2019	2020	2021
66.2%	67.6%	67.3%	66.7%	68.5%

(100% and 50% reference lines shown)

Section I - Executive Summary
Actuarially Determined Contribution

The Actuarially Determined Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a Past Service Cost to gradually reduce any unfunded or surplus liability, and Interest. The Actuarially Determined Contribution for fiscal year 2021 is $1,161,981. This is shown below, along with the comparable figures for the prior four years.

- ■ Interest
- ■ Past Service Cost
- ■ Normal Cost

Year	Total	Past Service Cost	Normal Cost
2017	958,333	714,879	212,166
2018	835,474	730,260	77,938
2019	891,105	769,692	92,320
2020	1,165,834	853,686	
2021	1,161,981	853,977	
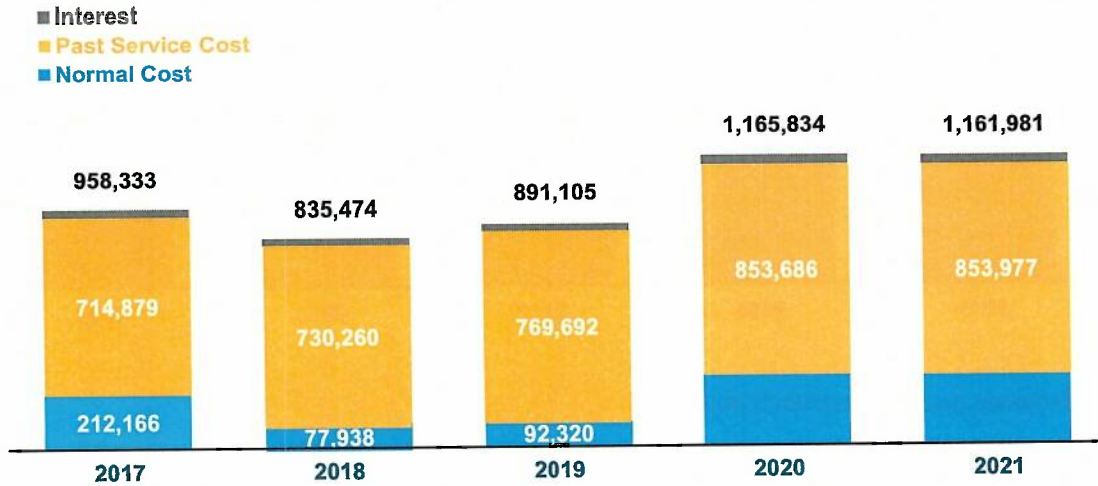
Section I - Executive Summary
Long-Range Forecast

If Metro pays the Actuarially Determined Contribution each year, the investments earn exactly the assumed interest rate each year, and there are no changes in the plan provisions or in the actuarial methods and assumptions, then we project the following changes in the plan's funded status and the long-range contribution levels:

Funded Ratio

Actuarially Determined Contribution ($ millions)
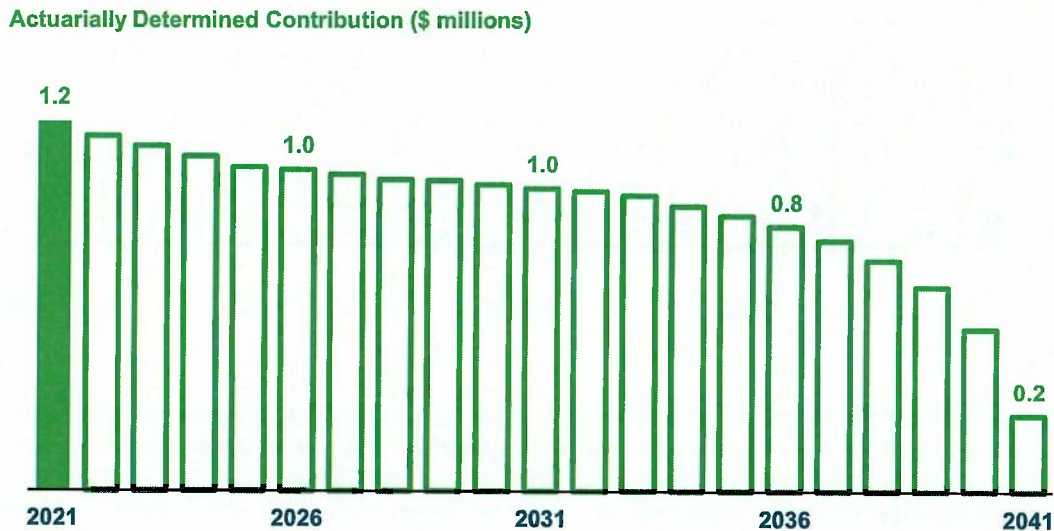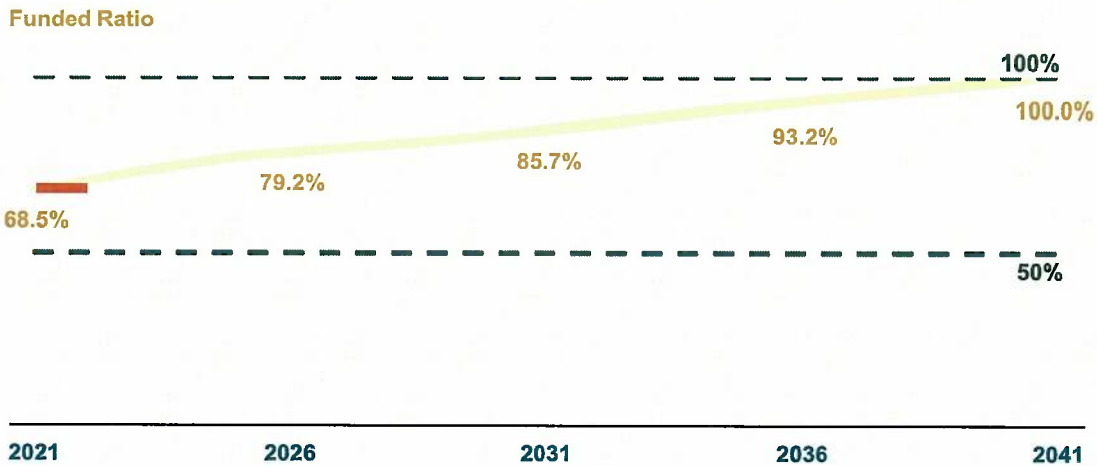
To the extent that there are future investment or liability gains or losses, changes in the actuarial assumptions or methods, or plan changes, the actual valuation results will differ from these forecasts. Please see Section III C for more details of the long range forecast.

Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from Metro and from employees, and from investment income. If Metro pays less than the Actuarially Determined Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer, and to compensate, Metro's contribution levels would be pushed higher. The risks of underfunding and underearning are illustrated in the hypothetical scenarios below:
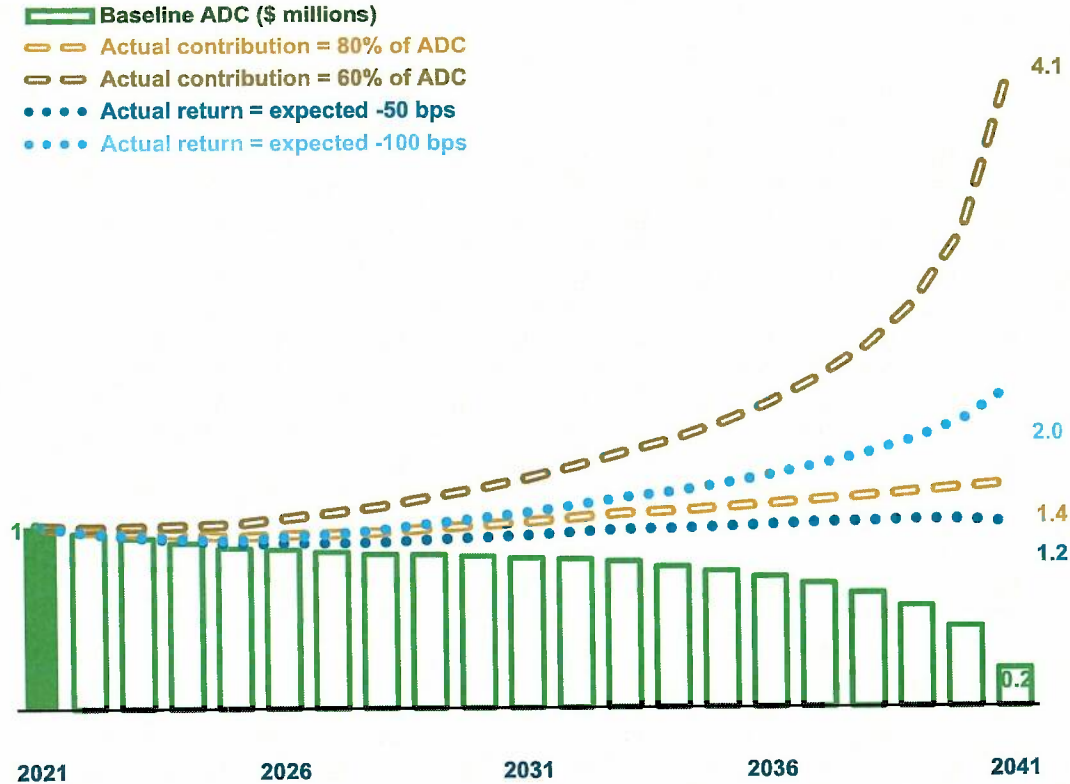
The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and Metro's future contribution levels. Stochastic projections could be prepared that would enable Metro to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	January 1, 2020	January 1, 2021
Active Members	195	191
Terminated Members	39	48
Members in Pay Status	<u>201</u>	<u>194</u>
Total Count	435	433
Payroll	$11,605,482	$12,376,694

Assets and Liabilities as of	January 1, 2020	January 1, 2021
Market Value of Assets	$25,950,904	$29,423,912
Actuarial Value of Assets	25,950,904	27,823,549
Accrued Liabiilty for Active Members	16,745,748	18,510,780
Accrued Liabiilty for Terminated Members	1,778,322	2,001,619
Accrued Liabiilty for Members in Pay Status	<u>20,365,346</u>	<u>20,129,913</u>
Total Accrued Liability	38,889,416	40,642,312
Unfunded Accrued Liability	12,938,512	12,818,763
Funded Ratio	66.7%	68.5%

Actuarially Determined Contribution for Fiscal Year	2020	2021
Normal Cost	$275,451	$272,792
Past Service Cost	853,686	853,977
Interest	<u>36,697</u>	<u>35,212</u>
Actuarially Determined Contribution	1,165,834	1,161,981

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of January 1, 2020	$25,950,904
Metro Contributions	1,286,538
Member Contributions	876,137
Net Investment Income	3,680,422
Benefit Payments	(2,324,928)
Administrative Expenses	(45,161)
Market Value as of December 31, 2020	29,423,912
Expected Return on Market Value of Assets	1,679,968
Market Value (Gain)/Loss	(2,000,454)
Approximate Rate of Return *	14.24%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of December 31, 2020

- Equity
- Fixed Income
- Cash
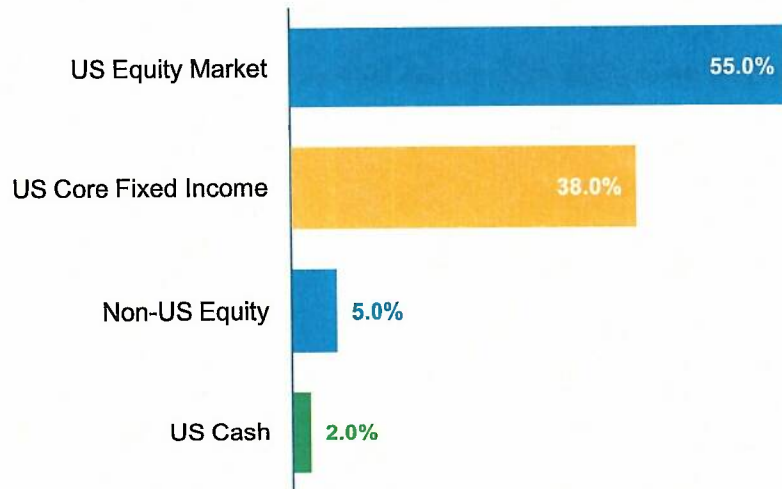
US Equity Market	55.0%
US Core Fixed Income	38.0%
Non-US Equity	5.0%
US Cash	2.0%

Section II - Plan Assets
B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses in equal installments ('non-asymptotically') over a five year period. The Actuarial Value of Asets as of January 1, 2021 is determined below.

1. Expected Market Value of Assets:
   a. Market Value of Assets as of January 1, 2020 $25,950,904
   b. Metro and Member Contributions   2,162,675
   c. Benefit Payments and Administrative Expenses   (2,370,089)
   d. Expected Earnings Based on 6.50% Interest   1,679,968
   e. Expected Market Value of Assets as of January 1, 2021   27,423,458

2. Actual Market Value of Assets as of January 1, 2021   29,423,912

3. Market Value (Gain)/Loss: (1e) - (2)   (2,000,454)

4. Delayed Recognition of Market (Gains)/Losses

Plan Year End	(Gain)/Loss	Percent Not Recognized	Amount Not Recognized	
12/31/2020	($2,000,454)	80%	($1,600,363)	
				(1,600,363)

5. Actuarial Value of Assets as of January 1, 2021: (2) + (4)   27,823,549

6. Return on Actuarial Value of Assets   2,080,059

7. Approximate Rate of Return on Actuarial Value of Assets   8.05%

8. Actuarial Value (Gain)/Loss   (400,508)

Section III - Development of Contribution
A. Past Service Cost

In determining the Past Service Cost, the Unfunded Accrued Liability is amortized as a level percent over 30 years from January 1, 2012.

		January 1, 2020	January 1, 2021
1.	Accrued Liability		
	Active Members	$16,745,748	$18,510,780
	Terminated Members	1,778,322	2,001,619
	Service Retirees	18,629,536	17,694,789
	Disabled Retirees	0	0
	Beneficiaries	1,735,810	2,435,124
	Total Accrued Liability	38,889,416	40,642,312
2.	Actuarial Value of Assets (see Section IIB)	25,950,904	27,823,549
3.	Unfunded Accrued Liability: (1) - (2)	12,938,512	12,818,763
4.	Funded Ratio: (2) / (1)	66.7%	68.5%
5.	Amortization Period	22	21
6.	Amortization Growth Rate	2.50%	2.50%
7.	Past Service Cost: (3) amortized over (5)	853,686	853,977

Section III - Development of Contribution
B. Actuarially Determined Contribution

		2020	2021
1.	Total Normal Cost	$996,316	$1,090,360
2.	Expected Member Contributions	774,031	873,165
3.	Expected Administrative Expenses	35,000	35,000
4.	Expected Investment Expenses	18,166	20,597
5.	Net Normal Cost: (1) - (2) + (3) +(4)	275,451	272,792
6.	Past Service Cost (see Section IIIA)	853,686	853,977
7.	Interest on (5) + (6) Reflecting Payment on Average Halfway Through the Year	36,697	35,212
8.	Actuarially Determined Contribution: (5) + (6) + (7)	1,165,834	1,161,981

Section III - Development of Contribution
C. Long Range Forecast

This forecast is based on the results of the January 1, 2021 actuarial valuation and assumes that Metro will pay the Actuarially Determined Contribution each year, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. For purposes of this forecast the amortization period declines to 1 year to illustrate the progress of the plan towards becoming fully funded; in actual practice the amortization period will not be less than 10 years in order to shield Metro from contribution volatility. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets.

| Valuation Date | Values as of the Valuation Date | | | | Fiscal Year | Cash Flows Projected to the Following Fiscal Year | | | |
	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio		Metro Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2021	$40,642,312	$27,823,549	$12,818,763	68.5%	2021	$1,161,981	$873,165	($2,563,216)	($528,070)
1/1/2022	41,531,000	29,482,000	12,049,000	71.0%	2022	1,117,000	921,000	(2,765,000)	(727,000)
1/1/2023	42,242,000	31,015,000	11,227,000	73.4%	2023	1,087,000	924,000	(2,894,000)	(883,000)
1/1/2024	42,861,000	32,457,000	10,404,000	75.7%	2024	1,056,000	934,000	(2,977,000)	(987,000)
1/1/2025	43,432,000	33,858,000	9,574,000	78.0%	2025	1,021,000	933,000	(3,054,000)	(1,100,000)
1/1/2026	43,953,000	34,804,000	9,149,000	79.2%	2026	1,014,000	934,000	(3,138,000)	(1,190,000)
1/1/2027	44,420,000	35,717,000	8,703,000	80.4%	2027	998,000	938,000	(3,220,000)	(1,284,000)
1/1/2028	44,806,000	36,590,000	8,216,000	81.7%	2028	983,000	937,000	(3,285,000)	(1,365,000)
1/1/2029	45,125,000	37,434,000	7,691,000	83.0%	2029	980,000	953,000	(3,318,000)	(1,385,000)
1/1/2030	45,440,000	38,310,000	7,130,000	84.3%	2030	968,000	953,000	(3,371,000)	(1,450,000)
1/1/2031	45,706,000	39,172,000	6,534,000	85.7%	2031	955,000	965,000	(3,407,000)	(1,487,000)
1/1/2032	45,964,000	40,052,000	5,912,000	87.1%	2032	946,000	981,000	(3,409,000)	(1,482,000)
1/1/2033	46,258,000	40,992,000	5,266,000	88.6%	2033	933,000	997,000	(3,423,000)	(1,493,000)
1/1/2034	46,576,000	41,979,000	4,597,000	90.1%	2034	900,000	982,000	(3,491,000)	(1,609,000)
1/1/2035	46,822,000	42,908,000	3,914,000	91.6%	2035	871,000	1,000,000	(3,516,000)	(1,645,000)
1/1/2036	47,074,000	43,857,000	3,217,000	93.2%	2036	837,000	1,014,000	(3,567,000)	(1,716,000)
1/1/2037	47,309,000	44,793,000	2,516,000	94.7%	2037	793,000	1,035,000	(3,570,000)	(1,742,000)
1/1/2038	47,578,000	45,761,000	1,817,000	96.2%	2038	730,000	1,036,000	(3,618,000)	(1,852,000)
1/1/2039	47,819,000	46,675,000	1,144,000	97.6%	2039	646,000	1,056,000	(3,643,000)	(1,941,000)
1/1/2040	48,077,000	47,555,000	522,000	98.9%	2040	514,000	1,075,000	(3,654,000)	(2,065,000)

January 1, 2021 Actuarial Valuation
Metro Area Transit Hourly Employees' Pension Plan

Section III - Development of Contribution
D. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
January 1, 2013	$18,335,855	$30,577,378	$12,241,523	60.0%
January 1, 2014	19,886,881	31,038,929	11,152,048	64.1%
January 1, 2015	20,939,210	31,851,815	10,912,605	65.7%
January 1, 2016	21,663,121	32,548,681	10,885,560	66.6%
January 1, 2017	22,443,739	33,896,866	11,453,127	66.2%
January 1, 2018	23,825,275	35,249,385	11,424,110	67.6%
January 1, 2019	24,167,487	35,906,116	11,738,629	67.3%
January 1, 2020	25,950,904	38,889,416	12,938,512	66.7%
January 1, 2021	27,823,549	40,642,312	12,818,763	68.5%

Section III - Development of Contribution
E. History of Metro Contributions

Fiscal Year	Actuarially Determined Contribution	Actual Metro Contribution	Payroll	Actual Contribution as a Percent of Payroll
2013	$847,072	$726,238	$11,350,348	6.4%
2014	833,212	702,245	11,362,603	6.2%
2015	847,243	748,129	11,514,912	6.5%
2016	901,256	705,467	11,390,621	6.2%
2017	958,333	904,824	11,497,480	7.9%
2018	835,474	855,109	12,169,930	7.0%
2019	891,105	836,227	11,485,056	7.3%
2020	1,165,834	1,286,538	11,605,482	11.1%
2021	1,161,981	TBD	12,376,694	TBD

Section IV - Membership Data
A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members	Terminated Vested Members	Deferred Beneficiaries	Service Retirees	Disabled Retirees	Beneficiaries	Total
January 1, 2020	195	38	1	175	0	26	435
Terminated							
- no benefits due	-	-	-	-	-	-	0
- paid refund	(3)	-	-	-	-	-	(3)
- vested benefits due	(4)	4	-	-	-	-	0
- due contributions	(4)	4					0
Retired	(3)	-	-	3	-	-	0
Died							
- with beneficiary	(1)	-	-	(7)	-	8	0
- no beneficiary	-	(1)	-	(10)	-	(1)	(12)
Benefits expired	-	-	-	-	-	-	0
New member	14	-	-	-	-		14
Rehired/ Eligible	-	-	-	-	-	-	0
Transfer to Salaried Plan	(3)	2	-	-	-	-	(1)
Correction	-	-	-	-	-	-	0
January 1, 2021	191	47	1	161	0	33	433

This work product was prepared solely for Metro for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

Section IV - Membership Data
B. Statistics of Active Membership

	As of January 1, 2020	As of January 1, 2021
Number of Active Members	195	191
Average Age	53.6	54.0
Average Service	10.4	10.7
Total Payroll	$11,605,482	$12,376,694
Average Payroll	59,515	64,799

Section IV - Membership Data
C. Statistics of Inactive Membership

	As of January 1, 2020	As of January 1, 2021
Terminated Vested Members		
Number	38	41
Total Annual Benefit	$204,601	$213,715
Average Annual Benefit	5,384	5,213
Average Age	59.4	58.6
Deferred Beneficiaries		
Number	1	1
Service Retirees		
Number	175	161
Total Annual Benefit	$1,954,968	$1,836,442
Average Annual Benefit	11,171	11,406
Average Age	74.0	74.1
Disabled Retirees		
Number	0	0
Total Annual Benefit	$0	$0
Average Annual Benefit	0	0
Average Age	0.0	0.0
Beneficiaries		
Number	26	33
Total Annual Benefit	$194,115	$256,932
Average Annual Benefit	7,466	7,786
Average Age	75.4	75.7

Section IV - Membership Data
D. Distribution of Inactive Members as of January 1, 2021

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	0	$0
	50 - 59	18	68,793
	60 - 69	23	144,922
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	41	213,715
Service Retirees	< 50	0	$0
	50 - 59	4	70,037
	60 - 69	53	717,015
	70 - 79	74	759,023
	80 - 89	24	233,628
	90 +	6	56,739
	Total	161	1,836,442
Disabled Retirees	< 50	0	$0
	50 - 59	0	0
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	0	0
Beneficiaries	< 50	0	$0
	50 - 59	2	9,523
	60 - 69	7	43,901
	70 - 79	13	141,509
	80 - 89	8	57,828
	90 +	3	4,171
	Total	33	256,932

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.

- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.

- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

Please see Section III C for more information on the basis for the projected results shown on the following pages.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future Actuarially Determined Contribution levels are illustrated below:
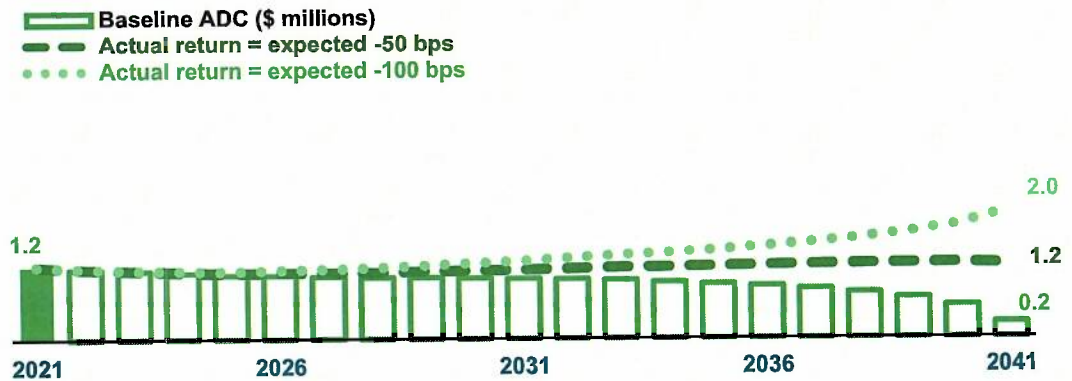
Contribution Risk

Definition: This is the potential that actual future contributions will be less than the Actuarially Determined Contribution.

Identification: Over the past 8 years, actual contributions have been 92.9% of the Actuarially Determined Contribution in total. The consequences of persistent underfunding on future Actuarially Determined Contribution levels are illustrated below:
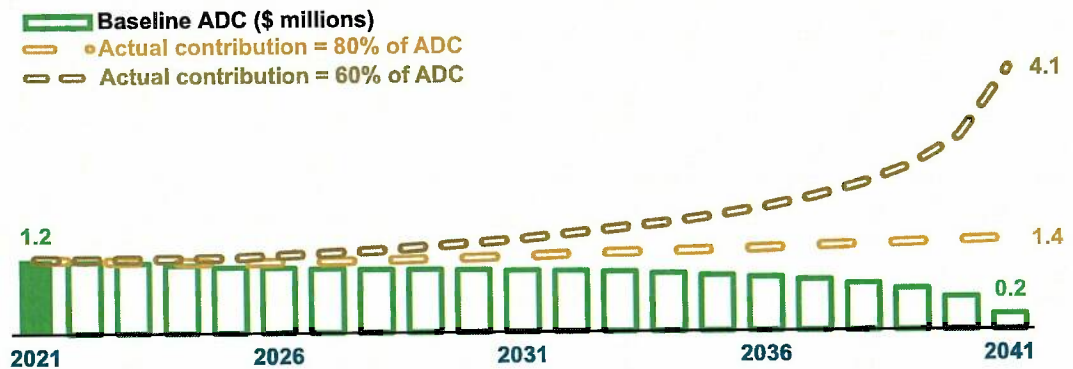
Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

Identification: In 2020, the plan had negative cash flow, with Metro and member contributions to the plan of $2,162,675 compared to $2,370,089 of benefit payments and administrative expenses paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger.

Assessment: As of January 1, 2021, the plan's Asset Voliatility Ratio (the ratio of the market value of plan assets to payroll) is 2.4. According to Milliman's 2020 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:

Range	Count
Under 2.0	3
2.0-3.0	8
3.0-4.0	20
4.0-5.0	24
5.0-6.0	14
6.0-7.0	18
7.0 and above	13
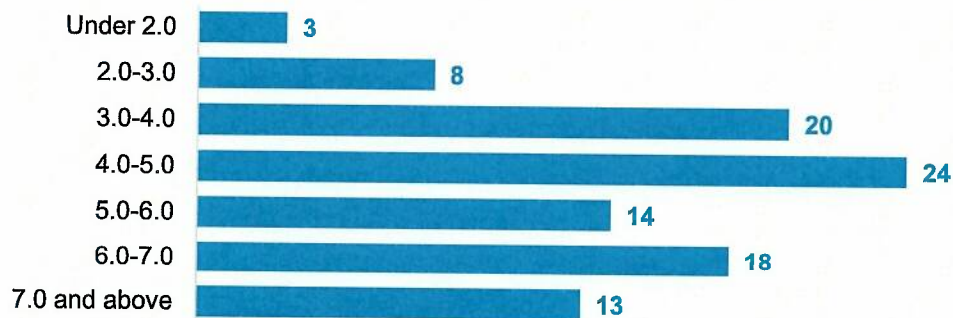
Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan does not contain a mechanism to regularly increase benefits after retirement, so members bear all of the inflation risk.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

Asset Volatility Ratio: Market Value of Assets compared to Payroll

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1.9	2.0	1.9	2.2	2.4	2.5	2.6	2.7	2.8	2.9

Accrued Liability for members in pay status compared to total Accrued Liability

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
50%	48%	53%	52%	50%	58%	60%	61%	60%	60%

Benefit Payments compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
8.3%	7.7%	10.3%	9.2%	7.9%	8.4%	8.7%	8.8%	8.8%	8.8%

Net Cash Flows compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
3.6%	1.3%	2.9%	3.3%	0.7%	1.8%	2.4%	2.8%	3.0%	3.3%
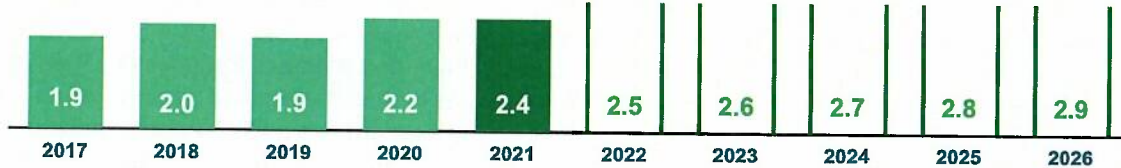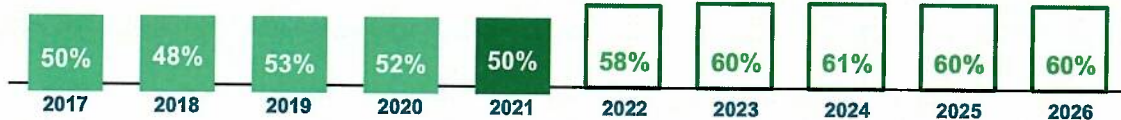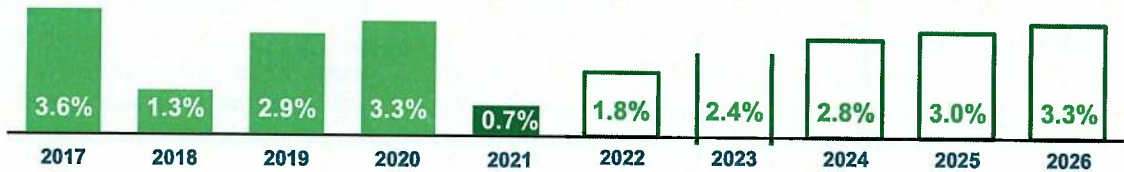
Benefit Payments compared to Metro Contributions
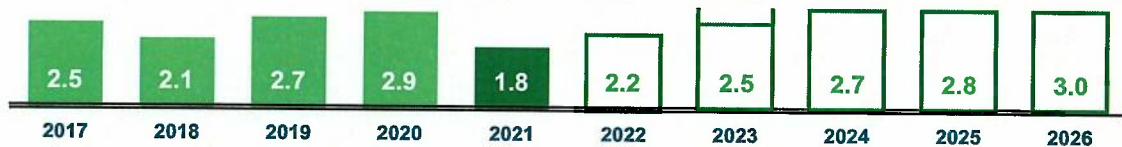
2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
2.5	2.1	2.7	2.9	1.8	2.2	2.5	2.7	2.8	3.0

Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
9.4	9.7	9.5	9.7	9.9	9.8	9.7	9.6	9.5	9.5

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Contribution consists of three pieces: Normal Cost plus a Past Service Cost payment to gradually eliminate the Unfunded Accrued Liability plus Interest.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. This Unfunded Accrued Liability is amortized as a level percent over 30 years from January 1, 2012. The amortization period will decrease each year until it reaches 10 years, after which it remains at 10 years.

The Actuarial Value of Assets is determined by recognizing market gains and losses non-asymptotically over a five year period.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those employee groups whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

Each of the assumptions used in this valuation was set based on industry standard published tables and data, the particular characteristics of the plan, relevant information from the plan sponsor or other sources about future expectations, and our professional judgment regarding future plan experience. We believe the assumptions are reasonable for the contingencies they are measuring, and are not anticipated to produce significant cumulative actuarial gains or losses over the measurement period.

Interest Rate	Current: 6.25% (net of all expenses) Prior: 6.50% (net of all expenses)
Inflation	2.50%
Amortization Growth Rate	2.50%
Expenses	$35,000 for administrative expenses, plus 0.07% of Market Value of Assets for investment expenses.
Salary Scale	4.00%
Turnover	Based on a table of annual withdrawal rates below:

Age	Year 1 & 2	Years 3+
20	15.0%	12.0%
25	15.0%	12.0%
30	12.0%	11.0%
35	10.0%	10.0%
40	8.0%	8.0%
45	8.0%	6.0%
50	8.0%	4.0%
55	8.0%	3.0%

Disability — Based on Table 5, Period 2 of the Society of Actuaries 1942 Disability Study.

Retirement

Age	<30 Years	>30 Years
58	5%	20%
59	5%	20%
60	5%	20%
61	5%	20%
62	25%	25%
63-64	25%	25%
65-66	50%	50%
67	100%	100%

Appendix B - Actuarial Assumptions

Mortality
PubG-2010 Mortality Table with generational mortality improvement per the MP Ultimate Scale. This assumption includes a margin for mortality improvements after the valuation date.

Marital Status
80% of active participants are assumed to be married. Female spouses are assumed to be 3 years younger than male spouses.

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Original Effective Date July 1, 1979

Plan Year January 1, through December 31.

Eligibility First of the month following completion of 120 days of service.

Compensation Regular compensation plus overtime but excluding reimbursed expenses, bonuses, commissions, deferred compensation and other extra or unusual compensation.

Final Average Compensation Average of the Compensation paid during the five highest consecutive paid years out of the last ten years of employment.

Year of Service Twelve consecutive month period beginning with the person's employment date during which the member works 1,000 hours.

Vesting

Years of Service	Vesting %
0-4	0%
5	50%
6	60%
7	70%
8	80%
9	90%
10+	100%

Normal Retirement Eligibility For members hired prior to January 1, 2018, age 65. For members hired after January 1, 2018, social security normal retirement age.

Normal Retirement Benefit For members hired prior to January 1, 2018, 1.40% of Final Average Compensation multiplied by Years of Service. For members hired after January 1, 2018, 1.20% of Final Average Compensation for years 1 through 10, 1.30% of Final Average Compensation for years 11 through 20, and 1.40% thereafter.

Early Retirement Eligibility Age 58 with 20 years of service, or any age with 30 years of service.

Early Retirement Benefit Accrued benefit based on service and compensation to date with a 0.50% reduction for each month by which early retirement precedes normal retirement. No reduction applies if a member has 30 or more years of service.

Appendix C - Summary of Plan Provisions

Preretirement Death Benefit	Surviving spouses of members with at least 10 years of service are eligible to receive a benefit equal to the accrued benefit the member would have received if they terminated employment, deferred their benefit to their earliest retirement date, and elected the 100% joint and survivor annuity option.
	Surviving spouses of members with less than 10 years of service are entitled to a refund of the member's employee contributions with interest.
Employee Contributions	Active members contribute 7.50% of payroll (7.25% in the prior year).
Normal Form of Payment	Modified Cash Refund Annuity.
Optional Forms of Payment	10 year certain and life, 100%/66.7%/50% joint and survivor annuity. The 100% joint and survivor annuity is automatic for married members unless another option is elected.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Contribution ("ADC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

Appendix E

Omaha Civilian Employees
Retirement Plan Information

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Human Resources Department

Omaha/Douglas Civic Center
1819 Farnam Street, Suite 506
Omaha, Nebraska 68183-0506
(402) 444-5300
FAX (402) 444-5314
FAX (402) 444-5317

City of Omaha
Jean Stothert, Mayor

Deborah K. Sander
Director

October 8, 2021

Senator Mark Kolterman, Chairperson
Nebraska Retirement Systems Committee
State Capitol
PO BOX 94604
Lincoln, NE 68509-4604

Dear Senator Kolterman:

Neb. Rev. Stat § 13-2402(3) requires a governing entity that offers a defined benefit retirement plan to file a report if the funded ratio is less than eighty percent. The City of Omaha is submitting this report regarding the City of Omaha Employees Retirement System (COERS) because the funded ratio is less than eighty percent.

The City, through its negotiations with the bargaining groups, has made efforts to address the funding shortfall in COERS. Some of those efforts are addressed below. The attached table compares the actuarial data for plan years 2016 through current plan year 2021. The actuarial report for December 31, 2021 is in the process of being prepared and will be provided once it is accepted by the system. It is anticipated that will occur within the next 45 days. Once that report is complete, we will update the table with the revised information.

COERS has been underfunded for a number of years and the circumstances leading to it being underfunded are varied. When the system was fully funded in the late 1990s, benefits were increased and even though the actuarial cost was calculated, the benefits appear to have exceeded those costs. There also have been some years where the investment loss was historically large. Other factors include reduction in the number of civilian employees over the past 20 years, lack of wage increases in some instances, and the delay in replacing retired personnel.

As a result of an Experience Study for 2012-2015, which was accepted in February, 2018, a number of changes to the actuarial assumptions were adopted by the Board. A copy of the Experience Study is included with this report. The following changes were made to the economic assumptions which changes were made in the January 1, 2018 actuarial valuation:

	Current	Recommended
Price inflation	3.25%	2.50%
Investment return	8.00%	7.50%
General wage growth	4.00%	3.10%
Payroll growth	4.00%	3.00%
Cash Balance Interest Crediting Rate	6.25%	6.00%

There were also some changes to the Demographic assumption, the most significant of which was a change to the mortality assumption. An Experience Study is in the process of being completed which we anticipate being before the Board for consideration late in 2021 or early in 2022.

In an effort to improve the condition of the system, the City entered into new labor agreements with all its civilian bargaining groups at the end of 2014/beginning of 2015. These bargaining agreements addressed payroll years 2013 through 2017 and included increased contributions by the City for wages paid 2013 until the contracts became effective. An actuarial projection was done as part of the Actuarial Valuation as of January 1, 2020 and it is enclosed. It shows that the system will be fully funded in 2048.

The summary of some of the changes made for the 2013 to 2017 agreements addressing civilian employees are:

- Contributions by the City increased 7% over the four years of the agreements from 11.775% to 18.775%.
- Existing employees will receive 1.9% per year for future years of service instead of 2.25%.
- The City went from the Rule of 80 to the Rule of 85 and raised the minimum retirement age with some grandfathering of these provisions. The retirement age went from 60 to 65 over the course of the agreements.
- The smoothing of the salary on which a person's pension was calculated from a highest one year in your last five years to the average of your last five years of employment.
- Dramatically decreased the disability benefit for the existing employees.
- Implementing a Cash Balance Plan for employees hired on or after 3/1/2015. A cash balance plan is a type of defined benefit plan which allows for the employer and employee to share some of the risk of poor investment returns. The pay credit for the plan starts at 13% and goes up 1% for each 8 years of service. The interest credit is guaranteed at 4% with an additional amount being three quarters of the amount earned by the Plan over 7% on a 5 year rolling average, with the interest credit being capped at 7%. One has to have 10 years of service to vest.

The City has agreements with all its civilian bargaining groups for a period of either 2018 to 2021 or 2018 to 2020. None of these labor agreements addressed pension changes/reform; instead they focused on healthcare reform. The parties will continue to evaluate the pension system and will continue to address it after allowing the recent changes to be in effect for a period of time. The City has been involved in negotiations with its largest civilian group – Collective Bargaining Agreement expired at the end of 2020 – and with the other groups whose agreements end at the end of 2021. It is not anticipated that additional pension changes/reform will be addressed in any of the agreements being negotiated.
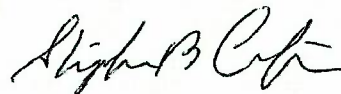
As of January 1, 2020, the system had a market value of $255 million in assets and a funded ratio of 52%. It had a funded ratio of 52% in 2019 and 53% in 2018. The actuarial contribution to the system had improved for a number of years, but as a result of the change in assumptions in 2018, there is a shortfall in the actuarial required contribution of 2.104%. This is a slight improvement from 2019. This is still far better than shortfalls in excess of 15% that occurred in 2013 and 2014. Additional savings should be seen in the future years as members covered by the provisions of the Cash Balance Plan continues to grow. The most recent projections show the system will reach fully funded status in 28 years. The assumed rate of return for the system is 7.5%,. a 1/2% decrease from years prior to 2018.

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 changed 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.

As requested, we enclose the most recent Actuarial Experience Study which was submitted in February, 2018 and the most recent Actuarial Valuation Report effective January 1, 2020. As indicated above, we anticipate having an Actuarial Valuation Report effective January 1, 2021 in the next 30 to 45 days and an Actuarial Experience Study by early 2022.

If you or the Committee should have any questions regarding this report please let me know.

Sincerely,

Stephen B. Curtiss
Acting City Comptroller

Enclosures

c: Bernard J. in den Bosch, Deputy City Attorney

COERS EXHIBIT 1

ITEM	2015	2016	2017	2018	2019	2020	2021
Net Assets (actuarial value)	1/1/15 $242,248,074	1/1/16 $244,543,841	1/1/17 $246,234,597	1/1/18 $251,320,837	1/1/19 $249,518,547	1/1/20 $253,722,439	1/1/21 $260,980,355
Unfunded Actuarial Accrued Liability	1/1/15 $188,911,964	1/1/16 $192,589,171	1/1/17 $197,537,024	1/1/18 $223,286,679	1/1/19 $232,506,762	1/1/20 $230,182,264	1/1/21 $229,116,410
1a Funding Status	1/1/15 56.2%	1/1/16 55.9%	1/1/17 55.5%	1/1/18 53.0%	1/1/19 51.76%	1/1/20 52.43%	1/1/21 53.30%
1b Assumed Rate of Return	1/1/15 8.0%	1/1/16 8.0%	1/1/17 8.0%	1/1/18 7.5%	1/1/19 7.5%	1/1/20 7.5%	1/1/21 7.5%
1c Actual Investment Return	FYE 12/31/15 3.5%	FYE 12/31/16 10.2%	FYE 12/31/17 13.1%	FYE 12/31/18 -0.3%	FYE 12/31/19 14.720%	FYE 12/31/20 12.674%	FYE 12/31/21 Pending
1e Normal Cost ($)	1/1/15 5,822,238	1/1/16 6,149,062	1/1/17 6,229,103	1/1/18 6,578,160	1/1/19 6,749,691	1/1/20 7,014,480	1/1/21 8,175,376
1e Normal Cost (%)	1/1/15 9.881%	1/1/16 9.843%	1/1/17 9.721%	1/1/18 9.923%	1/1/19 9.818%	1/1/20 9.747%	1/1/21 10.35%
1f Actuarial Rate of Contribution (ARC)	1/1/15 33.724%	1/1/16 27.526%	1/1/17 27.740%	1/1/18 31.056%	1/1/19 31.662%	1/1/20 30.954%	1/1/21 30.269%
1d Member Contribution Rate	1/1/15 10.075%	1/1/16 10.075%	1/1/17 10.075%	1/1/18 10.075%	1/1/19 10.075%	1/1/20 10.075%	1/1/21 10.075%
1d Employer Contribution Rate	1/1/15 18.775%	1/1/16 18.775%	1/1/17 18.775%	1/1/18 18.775%	1/1/19 18.775%	1/1/20 18.775%	1/1/21 18.775%
Contribution Margin (Shortfall)	1/1/15 -4.874%	1/1/16 1.324%	1/1/17 1.110%	1/1/18 -2.206%	1/1/19 -2.812%	1/1/20 -2.104%	1/1/21 -1.419%
1f Actuarial Required Contribution	FYE 12/31/15 14,676,786	FYE 12/31/16 11,794,456	FYE 12/31/17 12,383,422	FYE 12/31/18 14,990,504	FYE 12/31/19 17,313,632	FYE 12/31/20 17,297,752	FYE 12/31/21 Pending
1g Employer Actual Dollars Contributed	FYE 12/31/15 12,401,231	FYE 12/31/16 12,779,968	FYE 12/31/17 13,227,230	FYE 12/31/18 13,645,009	FYE 12/31/19 15,028,329	FYE 12/31/20 15,120,763	FYE 12/31/21 Pending
1g % of ARC by Employer Contribution	FYE 12/31/15 84.50%	FYE 12/31/16 108.36%	FYE 12/31/17 106.81%	FYE 12/31/18 91.02%	FYE 12/31/19 86.80%	FYE 12/31/20 87.40%	FYE 12/31/21 Pending

⊏⌐ Milliman

CITY OF OMAHA EMPLOYEES' RETIREMENT SYSTEM

Actuarial Valuation as of January 1, 2021
To Determine Funding for Fiscal Year 2021

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

Table of Contents

Certification

We have performed an actuarial valuation of the Plan as of January 1, 2021 to determine funding for fiscal year 2021. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable government regulations. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.

- Information needed to meet disclosure requirements.

- Review of plan experience for the previous year to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.

- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.

- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of the City of Omaha ("City") and the City of Omaha Employees Retirement System ("System"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the City and System may provide a copy of Milliman's work, in its entirety, to the City and System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the City and System; and (b) the City and System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the City and System. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

Figures for periods prior to January 1, 2021 have been obtained from actuarial valuation reports prepared by Cavanaugh Macdonald Consulting LLC and from the City's Comprehensive Annual Financial Reports. The actuarial assumptions used herein were adopted by the Board based on an experience study prepared by Cavanaugh Macdonald Consulting LLC for the period ending December 31, 2015. We are unable to judge the reasonableness of the assumptions or methods without performing a substantial amount of additional work beyond the scope of the assignment, and have not done so. We will perform an experience study in the near future and will report the results of that analysis when it is complete.

The valuation results were developed using models employing standard actuarial techniques. In addition, Milliman has developed certain models to develop the expected long term rate of return on assets. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. The models, including all input, calculations, and output, may not be appropriate for any other purpose.

The calculations reported herein have been made on a basis consistent with our understanding of ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.

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

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

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

None.

Other Significant Changes

None.

Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses asymptotically over four years.

	Market	Actuarial
Value as of January 1, 2020	$255,460,062	$253,722,439
City and Member Contributions	23,244,261	23,244,261
Investment Income	31,262,191	22,111,632
Benefit Payments	(38,097,977)	(38,097,977)
Value as of January 1, 2021	271,868,537	260,980,355

For fiscal year 2020, the plan's assets earned 12.60% on a Market Value basis and 8.98% on an Actuarial Value basis. The actuarial assumption for this period was 7.50%; the result is an asset gain of about $12.7 million on a Market Value basis and a gain of about $3.6 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.
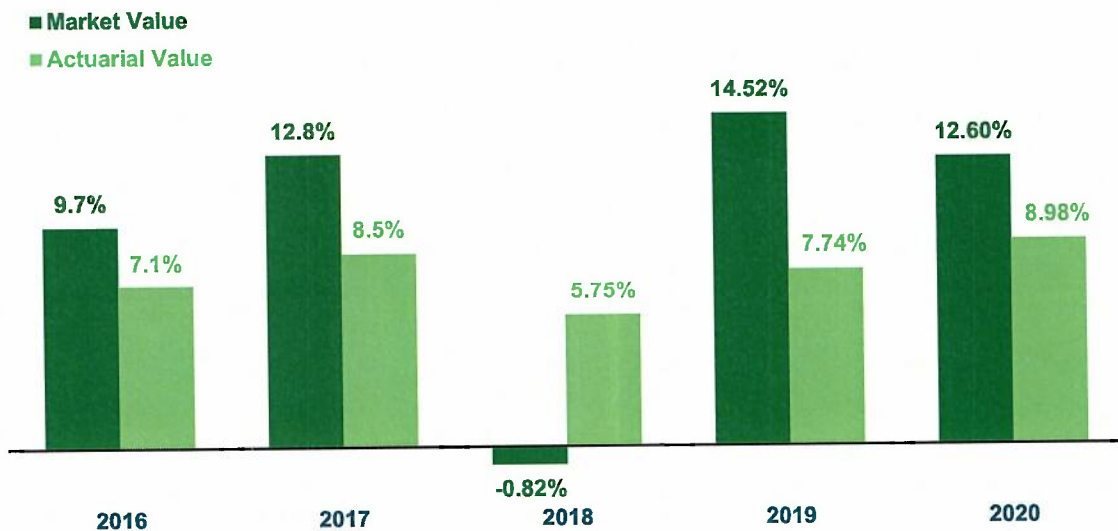
Please note that the Actuarial Value currently is less than the Market Value by $10.9 million. This figure represents investment gains that will be gradually recognized in future years. This process will exert downward pressure on the City's Actuarially Determined Contribution, unless there are offsetting market losses.

Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 30 years. For purposes of this projection, we have assumed that the City always contributes the 2021 City Ordinance Rate and the investments always earn the assumed interest rate each year.

□ **Market Value**
□ **Actuarial Value**
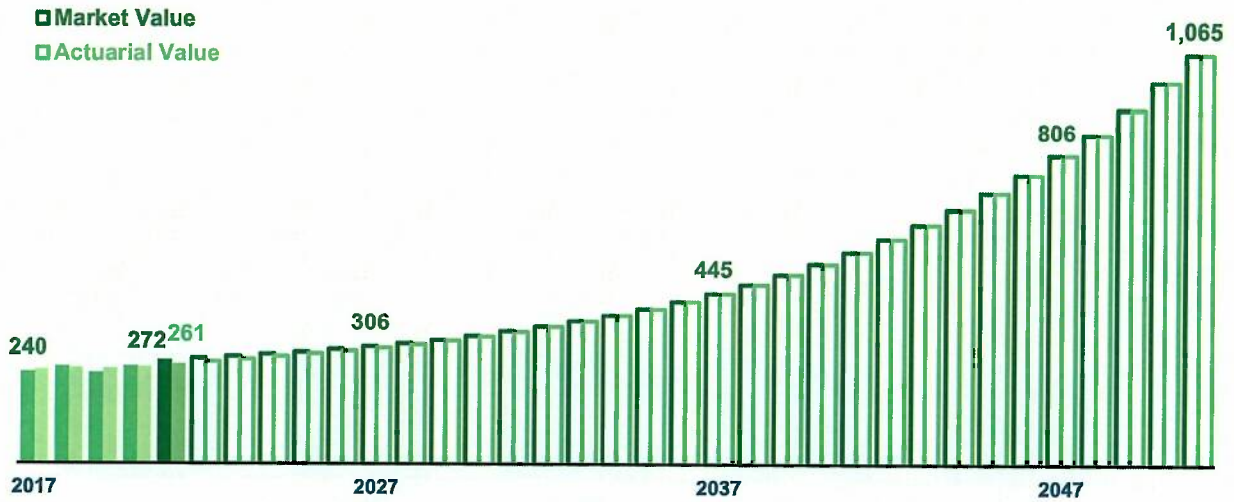
In 2020, the plan paid out $38.1 million in benefits to members. Over the next 30 years, the plan is projected to pay out a total of $1,361 million in benefits to members.
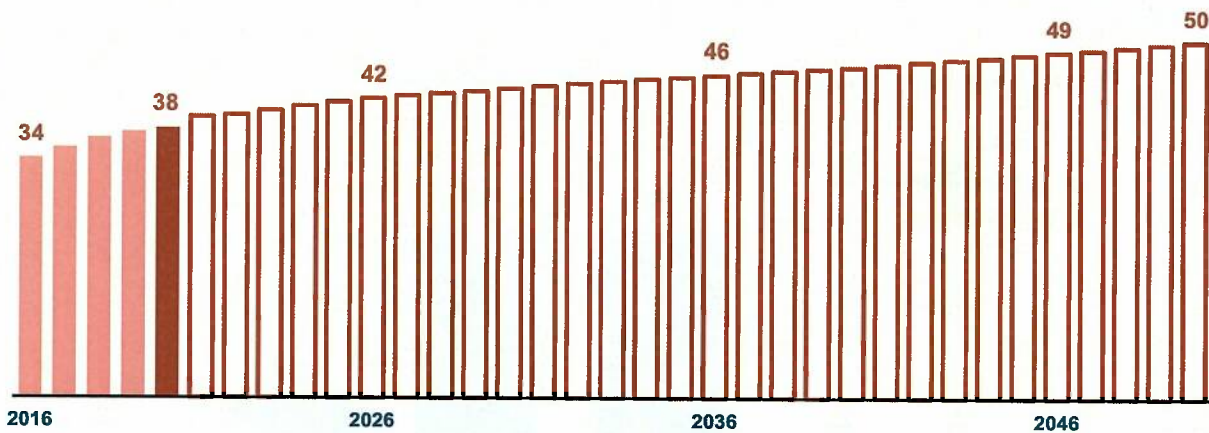
Benefit Payments

Section I - Executive Summary
Membership

There are four basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a right to benefits but have not yet started collecting, (3) Final Pay active employees who have met the eligibility requirements for membership, and (4) Cash Balance active employees who have met the eligibility requirements for membership.

- ■ **Members in Pay Status**
- ■ **Terminated Members**
- ■ **Cash Balance Active Members**
- ■ **Final Pay Active Members**
- **Total**

	2017	2018	2019	2020	2021
Total	2,703	2,768	2,846	2,869	2,845
Members in Pay Status	1,430	1,465	1,487	1,473	1,467
Terminated Members	76	81	158	157	149
Cash Balance Active Members	212	333	404	478	531
Final Pay Active Members	985	889	797	761	698
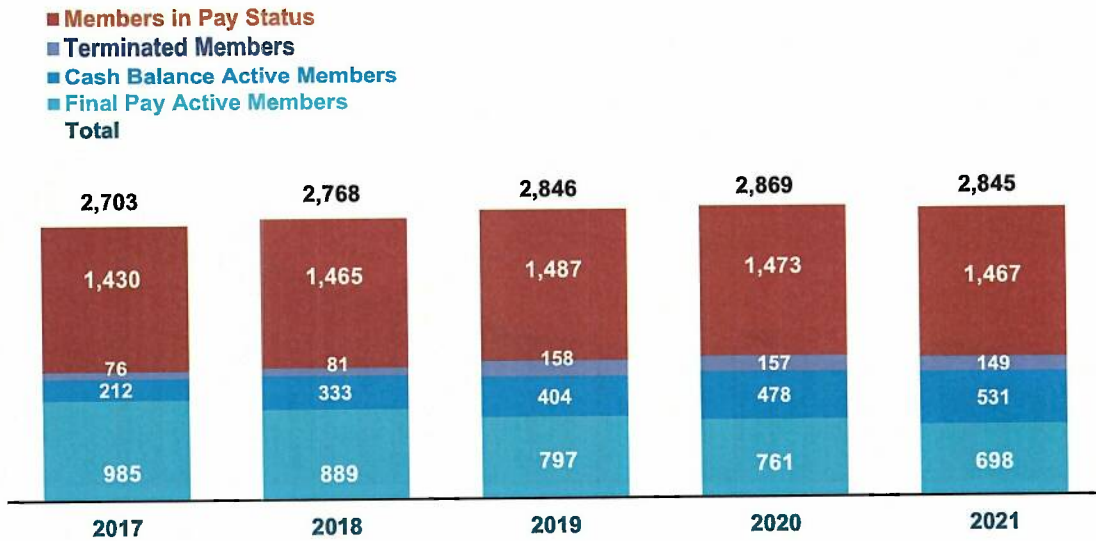
Members in Pay Status on January 1, 2021

Retirees	1,118	Average Age	71.4
Disabled Retirees	78	Total Annual Benefit	$39,740,495
Beneficiaries	271	Average Annual Benefit	27,090
Total	1,467		

The members in pay status fall across a wide distribution of ages:
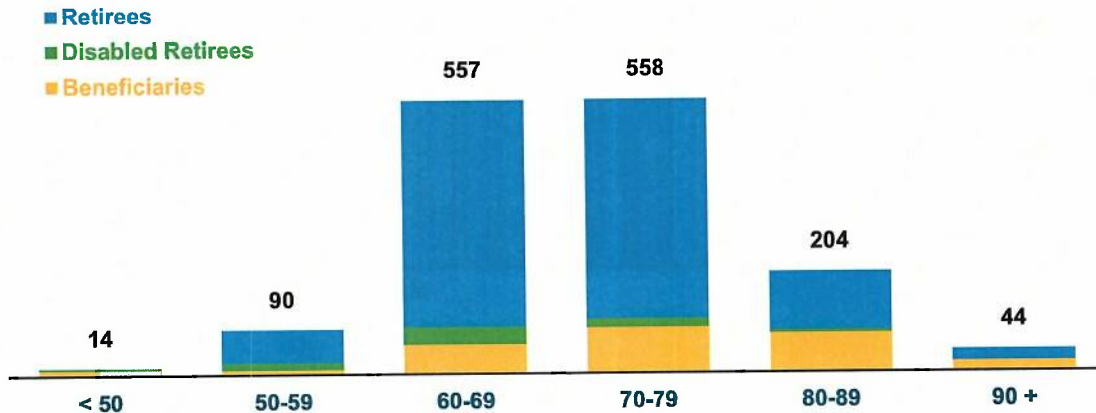
- ■ **Retirees**
- ■ **Disabled Retirees**
- ■ **Beneficiaries**

< 50	50-59	60-69	70-79	80-89	90 +
14	90	557	558	204	44

Section I - Executive Summary
Membership (continued)

Terminated Vested Members on January 1, 2021

Count	100
Average Age	48.3
Total Annual Benefit	$1,401,365
Average Annual Benefit	14,014

Nonvested Members Due Refunds on January 1, 2021

Count	49

Active Members on January 1, 2021

	Final Pay	Cash Balance	Total
Count	698	531	1,229
Average Age	49.9	40.1	45.7
Average Service	13.9	2.8	9.1
Covered Payroll ($ millions)	$52.8	$33.5	$86.3
Average Payroll	75,649	63,001	70,185

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	28							28
25-29	72	15						87
30-34	88	51	11					150
35-39	83	58	32	8				181
40-44	62	47	38	15	3			165
45-49	25	33	35	15	11	5		124
50-54	38	32	47	22	28	11	1	179
55-59	33	28	31	20	27	9	10	158
60-64	17	23	35	15	2	4	3	99
65+	8	10	13	7	12	5	3	58
Total	454	297	242	102	83	34	17	1,229

Section I - Executive Summary
Accrued Liability

The total Accrued Liability as of January 1, 2021 equals $490,096,765, which consists of the following pieces:

Active Members	124,849,713
Terminated Vested Members	7,615,790
Nonvested Members Due Refunds	411,671
Retirees	306,010,894
Disabled Retirees	15,437,894
Beneficiaries	35,770,803

The Accrued Liability for active members can be broken down further by the different types of benefits provided by the plan:

Termination	971,428
Retirement	113,692,078
Disability	7,809,663
Preretirement Death	2,376,544

Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

Accrued Liability ($ millions)

2017	2018	2019	2020	2021
444	475	482	484	490

Unfunded Accrued Liability ($ millions)

2017	2018	2019	2020	2021
198	223	233	230	229

Funded Ratio

2017	2018	2019	2020	2021
55.5%	53.0%	51.8%	52.4%	53.3%

75%

25%

Section I - Executive Summary
Actuarially Determined Total Contribution

The Actuarially Determined Total Contribution consists of two pieces: a Normal Cost payment to fund the benefits earned each year and an amortization payment to gradually fund the remainder of the Unfunded Accrued Liability (UAL) over a period of years. These figures are first calculated as dollar amounts. The dollar amounts are then divided by the expected payroll for active members to arrive at a contribution rate. The Actuarially Determined Total Contribution Rate for the current valuation and the prior four valuations are shown below.

■ UAL Amortization Rate

■ Total Normal Cost Rate

	2017	2018	2019	2020	2021
Total	27.740%	31.056%	31.662%	30.954%	30.269%
UAL Amortization Rate	18.019%	21.133%	21.844%	21.207%	19.934%
Total Normal Cost Rate	9.721%	9.923%	9.818%	9.747%	10.335%

The Actuarially Determined Employer Contribution is equal to the Actuarially Determined Total Contribution less the amounts that are contributed by the active members. Per Ordinance Section 22-26(b), the City contributes a specified percentage of each active member's pensionable earnings. In any given year, these fixed City contributions may be more or less than the Actuarially Determined Employer Contribution:

	2020	2021
Total Normal Cost Rate	9.747%	10.335%
UAL Amortization Rate	21.207%	19.934%
Actuarially Determined Total Contribution Rate	30.954%	30.269%
Less Employee Contribution Rate	-10.075%	-10.075%
Actuarially Determined Employer Contribution Rate	20.879%	20.194%
City Ordinance Contribution Rate	18.775%	18.775%
Contribution Rate (Shortfall)/Margin	-2.104%	-1.419%

Section I - Executive Summary
Long-Range Forecast

For purposes of our long-range forecast, we assume that the overall number of active members remains constant. However, over time the composition of the active membership will change, as terminating and retiring Final Pay members are replaced with employees who are covered by the lower cost Cash Balance. This shift is illustrated in the graph below.
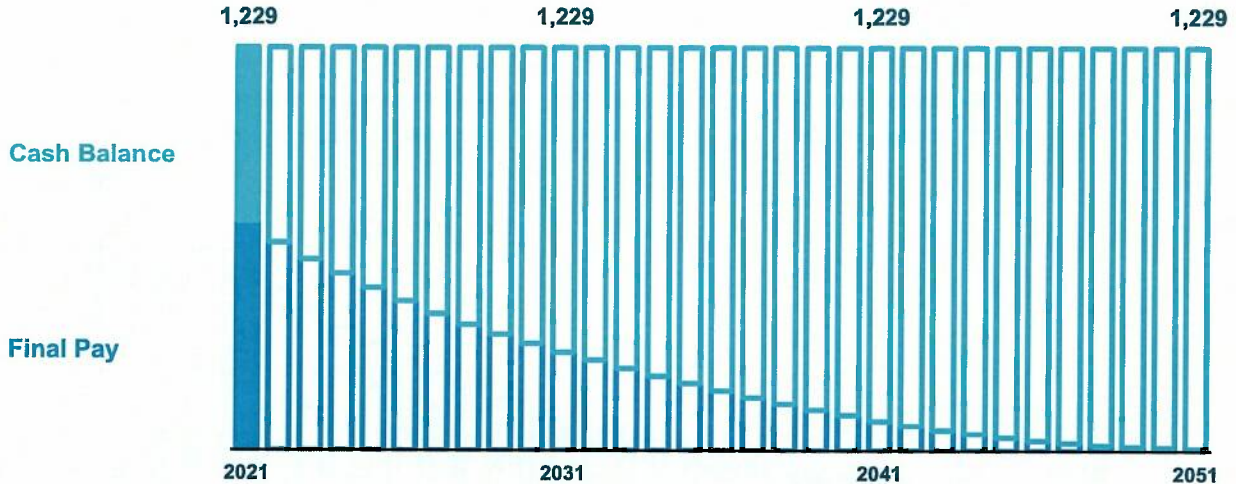
Projected Active Member Count

The Normal Cost Rate component of the Actuarially Determined Contribution will reflect this shift, as Final Pay active members with higher Normal Costs are gradually replaced by Cash Balance active members with lower Normal Costs. Note that each individual active member's Normal Cost (in dollars) is expected to go up over time with salary growth, so for the plan as a whole the Normal Cost (in dollars) is projected to increase over the long term while the Normal Cost Rate (the purple line below) is expected to decline.

Projected Normal Cost ($ millions)

Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the City and from employees, and from investment income. If the City pays less than the Actuarially Determined Employer Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer. The impact on the plan's funded ratio of contributing an amount different than the ADC and underearning are illustrated in the hypothetical scenarios below:

The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the City's future contribution levels. Stochastic projections could be prepared that would enable the City to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	January 1, 2020	January 1, 2021
Active Members	1,239	1,229
Terminated Members	157	149
Members in Pay Status	1,473	1,467
Total Count	2,869	2,845

Assets and Liabilities as of	January 1, 2020	January 1, 2021
Market Value of Assets	$255,460,062	$271,868,537
Actuarial Value of Assets	253,722,439	260,980,355
Accrued Liability for Active Members	120,858,908	124,849,713
Accrued Liability for Terminated Members	8,360,327	8,027,461
Accrued Liability for Members in Pay Status	354,685,468	357,219,591
Total Accrued Liability	483,904,703	490,096,765
Unfunded Accrued Liability	230,182,264	229,116,410
Funded Ratio	52.4%	53.3%

Contribution Rate for Fiscal Year	2020	2021
Total Normal Cost Rate	9.747%	10.335%
UAL Amortization Rate	21.207%	19.934%
Actuarially Determined Total Contribution Rate	30.954%	30.269%
Employee Contribution Rate	-10.075%	-10.075%
Actuarially Determined Employer Contribution Rate	20.879%	20.194%
City Ordinance Contribution Rate	18.775%	18.775%
Contribution Rate (Shortfall)/Margin	-2.104%	-1.419%

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of January 1, 2020	$255,460,062
City Contributions	15,120,763
Member Contributions	8,123,498
Net Investment Income	31,262,191
Benefit Payments	(38,097,977)
Market Value as of December 31, 2020	271,868,537
Expected Return on Market Value of Assets	18,608,447
Market Value (Gain)/Loss	(12,653,744)
Approximate Rate of Return *	12.60%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of December 31, 2020

- ■ Equity
- ■ Fixed Income
- ■ Other

Private Real Estate	24.5%
Private Equity	15.0%
US Large Cap Equities	10.0%
International Equity - Emerging Markets	10.0%
US Small Cap Equities	8.0%
US Short Fixed Income	7.5%
US High Yield Bonds	5.0%
US Interm Fixed Income	5.0%
US Mid Cap Equities	5.0%
International Equity - Developed Markets	5.0%
Farmland	5.0%

Section II - Plan Assets
B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses asymptotically over a four year period. The Actuarial Value of Assets as of January 1, 2021 is determined below.

1.	Expected Actuarial Value of Assets:	
	a. Actuarial Value of Assets as of January 1, 2020	$253,722,439
	b. City and Member Contributions	23,244,261
	c. Benefit Payments	(38,097,977)
	d. Expected Earnings Based on 7.50% Interest	18,482,238
	e. Expected Actuarial Value of Assets as of January 1, 2021	257,350,961
2.	Market Value of Assets as of January 1, 2021	271,868,537
3.	Unrecognized Gains/(Losses): (2) - (1e)	14,517,576
4.	Amount Recognized as of January 1, 2021: 25% of (3)	3,629,394
5.	Preliminary Actuarial Value of Assets as of January 1, 2021: (1e) + (4)	260,980,355
6.	Preliminary Actuarial Value of Assets as a % of Market Value: (5) / (2)	96.0%
7.	Actuarial Value of Assets as of January 1, 2021: (5), within +/- 20% of (2)	260,980,355
8.	Actual Earnings on Actuarial Value of Assets: (7) - [(1a) + (1b) + (1c)]	22,111,632
9.	Approximate Rate of Return on Actuarial Value of Assets	8.98%
10.	Actuarial Value (Gain)/Loss: (1d) - (8)	(3,629,394)

Section III - Development of Contribution
A. Actuarial Balance Sheet

The Actuarial Balance Sheet sets forth the value in today's dollars of all benefits that are expected to be paid from the Plan over the course of the current members' combined lifetimes. It also identifies the sources of assets that are available or will be required in future years in order to fully fund all of the benefits.

	January 1, 2020	January 1, 2021
Liabilities: Present Value of Future Benefits		
Active Members	$181,084,918	$192,500,457
Terminated Vested Members	7,955,765	7,615,790
Nonvested Members Due Refunds	404,562	411,671
Retirees	336,186,265	306,010,894
Disabled Retirees	18,499,203	15,437,894
Beneficiaries	incl. with retirees	35,770,803
Total Liabilities	544,130,713	557,747,509
Assets		
Actuarial Value of Current Assets (see Section II B)	$253,722,439	$260,980,355
Present value of future employer normal costs	**	(3,255,932)
Present value of future employee contributions	**	70,906,676
Present value of future UAL amortization payments	230,182,264	229,116,410
Total Assets	544,130,713	557,747,509

*** breakdown not available;
total is $60,226,010*

Per Ordinance Section 22-26(b), the City contributes a specified percentage of each active member's pensionable earnings, which is designed to fund the employer portion of the normal cost plus the UAL amortization payments. If the present value of future City contributions per these specified rates is lower than the present value of future UAL amortization payments plus the present value of future employer normal costs shown above, then the Plan may experience a shortfall of Assets relative to Liabilities. Based on the January 1, 2021 valuation, the City's Ordinance Contribution Rate is lower than the Actuarially Determined Employer Contribution Rate by 1.419%, indicating that such a shortfall may occur.

Section III - Development of Contribution
B. Unfunded Accrued Liability

Section III A set forth the Plan's Present Value of Future Benefits. The actuarial cost method used to calculate the Actuarially Determined Contribution is the Entry Age Normal Cost Method. Under this method, the Present Value of Future Benefits for each active member is allocated as a level percentage of earnings to past years of service (the Accrued Liability), the current year (the Normal Cost), and future years. That is, the Accrued Liability for active members is equal to the portion of the Present Value of Future Benefits that will not be funded through future Normal Cost payments. For each non-active member, the Accrued Liability is equal to the Present Value of Future Benefits. The Actuarial Value of Assets is subtracted from the Accrued Liability to determine the Unfunded Accrued Liability.

		January 1, 2020	January 1, 2021
1.	Present Value of Future Benefits (see Section III A)	$544,130,713	$557,747,509
2.	Present Value of Future Normal Costs	60,226,010	67,650,744
3.	Accrued Liability		
	Active Members	120,858,908	124,849,713
	Terminated Vested Members	7,955,765	7,615,790
	Nonvested Members Due Refunds	404,562	411,671
	Retirees	336,186,265	306,010,894
	Disabled Retirees	18,499,203	15,437,894
	Beneficiaries	incl. with retirees	35,770,803
	Total = (1) - (2)	483,904,703	490,096,765
4.	Actuarial Value of Assets (see Section II B)	253,722,439	260,980,355
5.	Unfunded Accrued Liability: (3) - (4)	230,182,264	229,116,410
6.	Funded Ratio: (4) / (3)	52.4%	53.3%

Section III - Development of Contribution
C. UAL Amortization Payments

The Unfunded Accrued Liability that is developed in Section III B is amortized as as follows. The initial base was funded as a level percent of payroll over a 25-year closed period that began January 1, 2016. A new base is created in each subsequent year based on any change in the Unfunded Accrued Liability that arises from actual experience being different than is expected based on the actuarial method and assumptions; this amount is amortized as a level percent over a closed 20-year period. If assumption changes are made, a separate base is established based on the resulting change in the Unfunded Accrued Liability; this amount is amortized as a level percent over a closed period selected by the Board.

1. Amortization Bases Established in Prior Years

Date Established	(a) Outstanding Balance January 1, 2021	Years Remaining January 1, 2021	(b) Annual Amortization Payment
January 1, 2016	$199,621,700	20	$15,072,522
January 1, 2017	1,087,233	16	95,233
January 1, 2018	27,869,159	22	1,983,982
January 1, 2018	(4,175,392)	17	(350,780)
January 1, 2019	8,337,853	18	674,072
January 1, 2020	(2,675,266)	19	(208,743)
Total	230,065,287		17,266,286

2. Unfunded Accrued Liability as of January 1, 2021 (see Section III B)   229,116,410

3. New Amortization Base Established January 1, 2021: (2) - (1a Total)   (948,877)

4. Amortization Period for New Amortization Base   20

5. Amortization Growth Rate   3.00%

6. Amortization Payment for January 1, 2021: (3) amortized over (4)   (71,645)

7. Total UAL Amortization Payments: (1b Total) + (6)   17,194,641

8. Expected Payroll for Active Members   86,257,017

9. UAL Amortization Payment Rate: (7) ÷ (8)   19.934%

Section III - Development of Contribution
D. Normal Cost

The Normal Cost is the portion of the Present Value of Future Benefits that is allocated to the current year for active members.

		2020	2021
1.	**Total Normal Cost by Type of Benefit - Final Pay Actives**		
	Retirement		$3,688,173
	Termination		965,111
	Preretirement Death		118,319
	Disability		523,689
	Total	not available	5,295,292
2.	**Total Normal Cost by Type of Benefit - Cash Balance Actives**		
	Retirement		$1,702,725
	Termination		848,892
	Preretirement Death		76,395
	Disability		252,072
	Total	not available	2,880,084
3.	**Total Normal Cost by Type of Benefit - All Actives**		
	Retirement		$5,390,898
	Termination		1,814,003
	Preretirement Death		194,714
	Disability		775,761
	Total	$7,014,480	8,175,376
4.	**Expected Payroll for Active Members**		
	Final Pay		$48,399,839
	Cash Balance		30,701,027
	Total	71,962,791	79,100,866
5.	**Total Normal Cost Rate: Total Normal Cost ÷ Expected Payroll**		
	Final Pay		10.941%
	Cash Balance		9.381%
	Total	9.747%	10.335%

Section III - Development of Contribution
E. Employee Contributions

A portion of the Normal Cost is funded through employee contributions from active members.

		2020	2021
1.	Employee Contribution Rate		
	Final Pay	10.075%	10.075%
	Cash Balance	10.075%	10.075%
2.	Expected Payroll for Active Members		
	Final Pay		48,399,839
	Cash Balance		30,701,027
	Total		79,100,866
3.	Expected Employee Contributions in Current Year: (1) x (2)		
	Final Pay		4,876,284
	Cash Balance		3,093,128
	Total		7,969,412

Section III - Development of Contribution
F. City Contributions Per Ordinance

Per Ordinance Section 22-26(b), the City contributes a specified percentage of each active member's pensionable earnings, which is designed to fund the employer portion of the Normal Cost plus the UAL amortization payments.

		2020	2021
1.	City Contribution Rate Per Ordinance		
	Final Pay	18.775%	18.775%
	Cash Balance	18.775%	18.775%
2.	Covered Payroll for Active Members		
	Final Pay		52,803,285
	Cash Balance		33,453,732
	Total		86,257,017
3.	Expected City Contribution Dollars: (1) x (2)		
	Final Pay		9,913,817
	Cash Balance		6,280,938
	Total		16,194,755

Section III - Development of Contribution
G. Actuarially Determined Contribution

		2020	2021
In Dollars			
1.	Actuarially Determined Total Contribution		
	a. Total Normal Cost (see Section III D)		$8,175,376
	b. UAL Amortization Payment (see Section III C)		17,194,641
	c. Total		25,370,017
2.	Expected Employee Contributions (see Section III E)		7,969,412
3.	Actuarially Determined Employer Contributions: (1) - (2)	$17,297,752	17,400,605
4.	City Contributions per Ordinance (see Section III F)	15,120,763	16,194,755
5.	Contribution (Shortfall) / Margin: (4) - (3)	(2,176,989)	(1,205,850)
As a Percentage of Expected Payroll			
1.	Actuarially Determined Total Contribution Rate		
	a. Total Normal Cost Rate (see Section III D)	9.747%	10.335%
	b. UAL Amortization Rate (see Section III C)	21.207%	19.934%
	c. Total	30.954%	30.269%
2.	Expected Employee Contribution Rate (see Section III E)	10.075%	10.075%
3.	Actuarially Determined Employer Contribution Rate: (1) - (2)	20.879%	20.194%
4.	City Contribution Rate per Ordinance (see Section III F)	18.775%	18.775%
5.	Contribution Rate (Shortfall) / Margin: (4) - (3)	-2.104%	-1.419%

Section III - Development of Contribution
H. Long Range Forecast

This forecast is based on the results of the January 1, 2021 actuarial valuation and assumes that the City will pay the City Ordinance Rate, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets. Amounts are shown in millions.

Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2021	$490.1	$261.0	$229.1	53.3%	2021	$16.6	$8.2	($40.0)	($15.2)
1/1/2022	494.4	267.4	226.9	54.1%	2022	17.0	8.5	(40.6)	(15.1)
1/1/2023	498.7	274.1	224.6	55.0%	2023	17.5	8.7	(41.2)	(15.0)
1/1/2024	502.8	280.9	221.8	55.9%	2024	18.0	8.9	(41.8)	(14.9)
1/1/2025	506.6	288.0	218.6	56.8%	2025	18.4	9.1	(42.3)	(14.7)
1/1/2026	510.3	295.4	214.9	57.9%	2026	18.9	9.4	(42.7)	(14.4)
1/1/2027	513.8	303.3	210.5	59.0%	2027	19.4	9.7	(43.1)	(13.9)
1/1/2028	517.4	311.9	205.5	60.3%	2028	20.0	9.9	(43.3)	(13.4)
1/1/2029	521.1	321.5	199.6	61.7%	2029	20.5	10.2	(43.7)	(13.1)
1/1/2030	525.0	332.2	192.7	63.3%	2030	21.0	10.4	(44.1)	(12.7)
1/1/2031	528.9	344.0	184.9	65.0%	2031	21.5	10.7	(44.4)	(12.2)
1/1/2032	533.0	357.0	176.0	67.0%	2032	22.0	10.9	(44.8)	(11.8)
1/1/2033	537.2	371.3	165.9	69.1%	2033	22.6	11.2	(45.1)	(11.4)
1/1/2034	541.6	387.1	154.5	71.5%	2034	23.1	11.5	(45.3)	(10.8)
1/1/2035	546.3	404.5	141.7	74.1%	2035	23.6	11.7	(45.7)	(10.3)
1/1/2036	551.2	423.8	127.4	76.9%	2036	24.2	12.0	(46.0)	(9.9)
1/1/2037	556.5	445.0	111.4	80.0%	2037	24.7	12.2	(46.3)	(9.3)
1/1/2038	562.0	468.3	93.7	83.3%	2038	25.3	12.5	(46.5)	(8.7)
1/1/2039	567.9	493.8	74.1	87.0%	2039	25.9	12.8	(46.8)	(8.1)
1/1/2040	574.2	521.9	52.4	90.9%	2040	26.5	13.1	(47.1)	(7.6)

Section III - Development of Contribution
H. Long Range Forecast

This forecast is based on the results of the January 1, 2021 actuarial valuation and assumes that the City will pay the City Ordinance Rate, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets. Amounts are shown in millions.

Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2041	$581.0	$552.6	$28.4	95.1%	2041	$27.1	$13.4	($47.5)	($7.1)
1/1/2042	588.2	586.3	2.0	99.7%	2042	27.7	13.7	(47.8)	(6.4)
1/1/2043	595.9	622.9	(27.1)	104.5%	2043	28.3	14.0	(48.1)	(5.8)
1/1/2044	604.1	663.0	(58.9)	109.8%	2044	29.0	14.4	(48.5)	(5.2)
1/1/2045	612.9	706.7	(93.9)	115.3%	2045	29.7	14.7	(48.9)	(4.5)
1/1/2046	622.2	754.4	(132.2)	121.2%	2046	30.4	15.1	(49.2)	(3.7)
1/1/2047	632.3	806.4	(174.1)	127.5%	2047	31.2	15.5	(49.6)	(3.0)
1/1/2048	643.1	863.0	(219.9)	134.2%	2048	31.9	15.8	(50.0)	(2.2)
1/1/2049	654.7	924.7	(270.0)	141.2%	2049	32.7	16.2	(50.4)	(1.4)
1/1/2050	667.1	991.8	(324.7)	148.7%	2050	33.6	16.7	(50.9)	(0.7)
1/1/2051	680.3	1,064.6	(384.3)	156.5%	2051	34.4	17.1	(51.5)	(0.1)

This forecast has been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years. The forecasts assume the current blended member and City contribution rates remain fixed during the projection period.

Section III - Development of Contribution
I. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
January 1, 2011	$240,291,310	$409,442,601	$169,151,291	58.69%
January 1, 2012	236,741,347	420,810,359	184,069,012	56.26%
January 1, 2013	235,591,941	436,270,409	200,678,468	54.00%
January 1, 2014	237,579,690	442,754,113	205,174,423	53.66%
January 1, 2015	242,248,074	431,160,038	188,911,964	56.19%
January 1, 2016	244,543,841	437,133,012	192,589,171	55.94%
January 1, 2017	246,234,597	443,771,621	197,537,024	55.49%
January 1, 2018	251,320,837	474,607,516	223,286,679	52.95%
January 1, 2019	249,518,547	482,025,309	232,506,762	51.76%
January 1, 2020	253,722,439	483,904,703	230,182,264	52.43%
January 1, 2021	260,980,355	490,096,765	229,116,410	53.25%

Section III - Development of Contribution
J. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Payroll	Actual Contribution as a Percent of Payroll
2011	$14,564,847	$6,618,110	$59,235,591	11.2%
2012	15,658,045	7,216,050	62,825,685	11.5%
2013	17,406,168	7,194,482	63,327,394	11.4%
2014	17,162,883	12,326,643	63,413,206	19.4%
2015	14,676,786	12,401,231	64,876,227	19.1%
2016	11,794,456	12,779,968	69,005,865	18.5%
2017	12,383,422	13,227,230	70,873,306	18.7%
2018	14,990,504	13,645,009	72,754,142	18.8%
2019	17,313,632	15,028,329	75,407,531	19.9%
2020	17,297,752	15,120,763	79,047,555	TBD
2021	17,400,605	TBD	86,257,017	TBD

Section IV - Membership Data

A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Actives Final Pay	Actives Cash Balance	Terminated Vested Members	Nonvested Members Due Refunds	Retirees	Disabled Retirees	Beneficiaries	Total
Count on January 1, 2020	761	478	96	61	1,118	91	264	2,869
Terminated, return of contribution due	-	(14)	-	14	-	-	-	0
Terminated, paid refund	(16)	(31)	(4)	(24)	-	-	-	(75)
Terminated, vested benefits due	(12)	-	12	-	-	-	-	0
Normal retirement	(34)	-	(4)	-	38	-	-	0
Disability retirement	-	-	-	-	-	-	-	0
Died with beneficiary	(1)	-	-	-	(13)	(1)	-	(15)
Died with no beneficiary	-	-	-	-	(25)	(12)	(8)	(45)
Benefits expired	-	-	-	-	-	-	-	0
New member	-	96	-	-	-	-	16	112
Rehired	-	2	-	(2)	-	-	-	0
Expired Payment	-	-	-	-	-	-	(1)	(1)
Correction	-	-	-	-	-	-	-	0
Count on January 1, 2021	698	531	100	49	1,118	78	271	2,845

Section IV - Membership Data
B. Statistics of Active Membership

		As of January 1, 2020	As of January 1, 2021
Count	Final Pay	761	698
	Cash Balance	<u>478</u>	<u>531</u>
	Total	1,239	1,229
Average Age	Final Pay		49.9
	Cash Balance		40.1
	Total	45.6	45.7
Average Service	Final Pay		13.9
	Cash Balance		2.8
	Total	9.1	9.1
Covered Payroll	Final Pay		$48,399,839
	Cash Balance		<u>30,701,027</u>
	Total	$71,962,791	79,100,866
Average Covered Payroll	Final Pay		$69,341
	Cash Balance		57,817
	Total	$58,081	64,362

Section IV - Membership Data
C. Distribution of Active Members as of January 1, 2021

Final Pay

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29		9						9
30-34		37	11					48
35-39		46	32	8				86
40-44		37	38	15	3			93
45-49		26	35	15	11	5		92
50-54		18	47	22	28	11	1	127
55-59		22	31	20	27	9	10	119
60-64		16	35	15	2	4	3	75
65+		9	13	7	12	5	3	49
Total	0	220	242	102	83	34	17	698

Cash Balance

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	28							28
25-29	72	6						78
30-34	88	14						102
35-39	83	12						95
40-44	62	10						72
45-49	25	7						32
50-54	38	14						52
55-59	33	6						39
60-64	17	7						24
65+	8	1						9
Total	454	77	0	0	0	0	0	531

Section IV - Membership Data
F. Statistics of Inactive Membership

	As of January 1, 2020	As of January 1, 2021
Terminated Vested Members		
Number	96	100
Total Annual Benefit	$1,374,528	$1,813,036
Average Annual Benefit	14,318	18,130
Average Age	49.1	48.3
Nonvested Members Due Refunds		
Number	61	49
Retirees		
Number	1,118	1,118
Total Annual Benefit	$30,676,728	$31,126,021
Average Annual Benefit	27,439	27,841
Average Age	66.5	71.0
Disabled Retirees		
Number	91	78
Total Annual Benefit	$1,753,236	$2,299,863
Average Annual Benefit	19,266	29,485
Average Age	67.9	66.6
Beneficiaries		
Number	264	271
Total Annual Benefit	$4,386,708	$4,501,575
Average Annual Benefit	16,616	16,611
Average Age	72.6	74.4

Section IV - Membership Data
G. Distribution of Inactive Members as of January 1, 2021

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	52	$51,621
	50 - 59	48	65,159
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	0	0
	Total	100	116,780
Retirees	< 50	0	$0
	50 - 59	66	212,251
	60 - 69	462	1,154,747
	70 - 79	448	985,983
	80 - 89	119	205,120
	90 +	23	35,735
	Total	1,118	2,593,835
Disabled Retirees	< 50	3	$5,486
	50 - 59	15	28,755
	60 - 69	36	65,607
	70 - 79	18	21,974
	80 - 89	6	6,924
	90 +	0	0
	Total	78	128,746
Beneficiaries	< 50	11	$3,032
	50 - 59	9	11,011
	60 - 69	59	78,049
	70 - 79	92	136,120
	80 - 89	79	121,078
	90 +	21	25,841
	Total	271	375,131

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.

- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.

- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

Please see Section III H for more information on the basis for the projected results shown on the following pages.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future funded ratio levels are illustrated below:

Contribution Risk

Definition: This is the potential that actual future contributions will be less than or greater than the Actuarially Determined Contribution.

Identification: Over the past 10 years, actual City contributions (in dollars) have been 75.4% of the Actuarially Determined Contribution in total. The consequences of contributing an amount different than the ADC on future funded ratio levels are illustrated below:
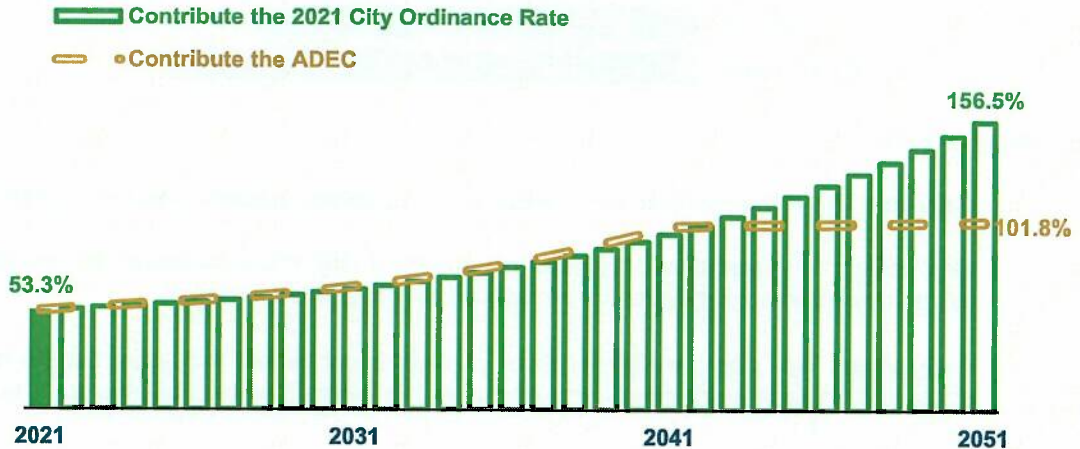
Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.

Identification: In 2020, the plan had negative cash flow, with city and member contributions to the plan of $23,244,261 compared to $38,097,977 of benefit payments paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger.

Assessment: As of January 1, 2021, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to Covered Payroll) is 3.2. According to Milliman's 2020 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:

Range	Value
Under 2.0	3
2.0-3.0	7
3.0-4.0	15
4.0-5.0	26
5.0-6.0	16
6.0-7.0	15
7.0 and above	18

Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan provides for some postretirement benefit increases, but the increases are not directly tied to each year's rate of actual inflation; this leaves members bearing some inflation risk.
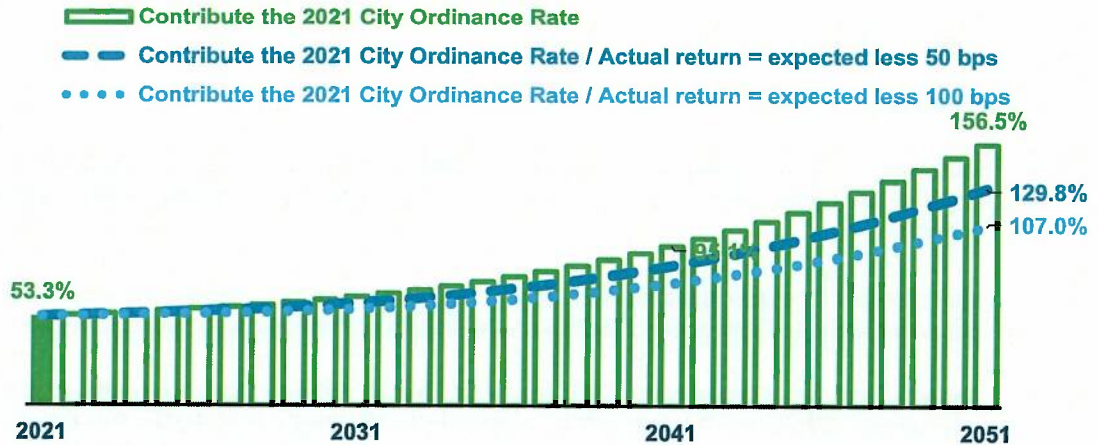
Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

Retirement Risk

Definition: This is the potential for members to retire and receive subsidized benefits that are more valuable than expected.

Identification: This plan permits members with long service to retire at relatively young ages. If members retire at earlier ages than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

Pensionable Earnings Risk

Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.

Identification: This plan allows for some overtime pay for some members to be included in pensionable earnings. If members retire with higher pensionable earnings than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.

Asset Volatility Ratio: Market Value of Assets compared to Payroll

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
3.4	3.5	3.1	3.2	3.2	3.1	3.1	3.1	3.1	3.0

Accrued Liability for members in pay status compared to total Accrued Liability

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
72%	74%	74%	73%	73%	74%	74%	73%	72%	72%

Benefit Payments compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
14.1%	13.9%	15.5%	14.7%	14.0%	14.4%	14.2%	14.2%	14.1%	14.0%

Net Cash Flows compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
5.9%	5.9%	6.7%	5.7%	5.5%	5.6%	5.4%	5.3%	5.1%	5.0%

Benefit Payments compared to City Contributions

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
2.5	2.6	2.4	2.5	2.5	2.4	2.4	2.4	2.4	2.3

Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
9.3	9.6	9.9	9.8	9.5	9.5	9.5	9.5	9.5	9.5

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Total Contribution consists of two pieces: a Normal Cost plus an amortization payment to gradually eliminate the Unfunded Accrued Liability (UAL) over a period of years. Amounts contributed by active members are netted out of this amount to arrive at the Actuarially Determined Employer Contribution (ADEC).

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. The initial base was funded as a level percent of payroll over a 25-year closed period that began January 1, 2016. A new base is created in each subsequent year based on any change in the Unfunded Accrued Liability that arises from actual experience being different than is expected based on the actuarial method and assumptions; this amount is amortized as a level percent over a closed 20-year period. If assumption changes are made, a separate base is established based on the resulting change in the Unfunded Accrued Liability; this amount is amortized as a level percent over a closed period selected by the Board.

The Actuarial Value of Assets is determined by recognizing market gains and losses asymptotically over a four year period, with the result constrained to within +/- 20% of the Market Value of Assets.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years.

Appendix B - Actuarial Assumptions

The actuarial assumptions used herein were adopted by the Board based on an experience study prepared by Cavanaugh Macdonald Consulting LLC for the period ending December 31, 2015. We are unable to judge the reasonableness of the assumptions or methods without performing a substantial amount of additional work beyond the scope of the assignment, and have not done so. We will perform an experience study in the near future and will report the results of that analysis when it is complete.

Interest Rate   7.50%

Inflation   2.50%

Amortization Growth Rate   3.00%

Salary Increases   Annual increases consisting of 2.50% inflation, 0.60% productivity, and merit/longevity that reflect length of service; combined impact of these factors are per the table below:

Service	Increase
0	9.00%
1	8.00%
2	7.00%
3	6.00%
4	5.50%
5	4.50%
6	4.50%
7	4.00%
8	4.00%
9	4.00%
10	4.00%
11	4.00%
12	3.75%
13	3.75%
14	3.75%
15	3.75%
16-34	3.25%
35 or more	3.10%

Interest Credited to Cash Balance Accounts   6.00%

Decrement Timing   Middle of year.

Spouse Age Difference Males are assumed to be 3 years older than Females.

Percent Married   75% of members are assumed to be married at death or retirement.

Children   0 children are assumed per member.

Appendix B - Actuarial Assumptions

Regular Mortality

RP-2014 Mortality Table, adjusted to 2006, with generational projection using the Ultimate Scale used by the Nebraska Public Employees Retirement System. For active members, none of the deaths are assumed to be service connected. This assumption includes a margin for future improvements in longevity.

Disabled Mortality

RP-2014 Disabled Mortality Table, adjusted to 2006, with generational projection using the MP-2016 Scale. This assumption includes a margin for future improvements in longevity.

Termination

Service	Male	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 hired prior to March 1, 2015 are assumed to elect a refund of contributions.

Members hired on or after March 1, 2015 are assumed to elect the more valuable of a refund of contributions or the present value of an annuity at age 60. The basis for comparing the value of the two benefits is the valuation interest rate and regular mortality assumption.

Disability

Age	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. No Social Security offset is assumed.

Appendix B - Actuarial Assumptions

Retirement

Members who were within 5 years of Unreduced Retirement Eligibility as of March 1, 2015:

Rates for members who are eligible for Unreduced Retirement

Age	1st Year	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 the rate of 3.50% per year from ages 55-59.

Members who were within 6-10 years of Unreduced Retirement Eligibility as of March 1, 2015:

Rates for members who are eligible for Unreduced Retirement

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

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

Appendix B - Actuarial Assumptions

Retirement (continued)

Members who were more than 10 years from Unreduced Retirement Eligibility as of March 1, 2015:

Rates for members who are eligible for Unreduced Retirement

Age	1st Year	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%	30%
70	100%	100%

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

Members who were hired on or after March 1, 2015:

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

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

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Eligibility

All full-time city employees except police, fire and contract employees are eligible at date of hire.

Compensation

Included pay types for pensionable pay are defined in the Omaha City Ordinance and listed in an Appendix of the latest collective bargaining agreements. Certain overtime pay is excluded.

Final Average Compensation (FAC)

Members who were within 5 years of normal retirement as of March 1, 2015: Compensation during the highest 78 of the employee's last 130 pay periods divided by 3.

All others: Compensation during the last 130 pay periods divided by 5.

The minimum FAC for all employees is the FAC as of 2/29/2015 (Compensation during the highest 26 consecutive of the last 130 pay periods as of February 28, 2015 divided by 5).

Member Contributions

10.075% of Compenstion.

Interest on Member Contributions

For members who were hired prior to March 1, 2015, the interest rate on member contributions is set annually for the Board with a minimum of 1% and a maximum of 5%. For members who were hired after March 1, 2015, 4%.

City Contributions

Beginning January 1, 2015 the City contributes 18.775% of each employee's total compensation.

Service

Members receive service for each full pay period of employment. Military service is included if the member returns to work within 90 days of honorable discharge. Service continues to accrue for members receiving disability retirement; however total service will not exceed 30 years unless more than 30 years was earned as an active member prior to disability.

Service Retirement Eligibility

For members who were within 5 years of normal retirement as of March 1, 2015, the earlier of:

(a) Age 60 with 5 years of service
(b) The date at which the sum of a member's age and Service is equal to 80 (Rule of 80) with minimum age 50
(c) Age 55 with 5 years of service. Benefits are reduced by 8% per year prior to age 60

Appendix C - Summary of Plan Provisions

Service Retirement Eligibility (continued)

For members who were more than 5 but less than 10 years away from normal retirement as of March 1, 2015, the earlier of:

(a) Age 62 with 5 years of service
(b) The date at which the sum of a member's age and Service is equal to 85 (Rule of 85) with minimum age 55
(c) Age 57 with 5 years of service. Benefits are reduced by 8% per year prior to age 62

For members who were hired before March 1, 2015 and were more than 10 years away from normal retirement as of March 1, 2015, the earlier of:

(a) Age 65 with 5 years of service
(b) The date at which the sum of a member's age and Service is equal to 85 (Rule of 85) with minimum age 55
(c) Age 60 with 5 years of service. Benefits are reduced by 8% per year prior to age 65.

For members who were hired on or after March 1, 2015: age 55 with 10 years of service.

Service Retirement

Members who were hired prior to March 1, 2015: 2.25% of FAC multiplied by years of service prior to March 1, 2015 plus 1.90% FAC multiplied by years of service after March 1, 2015.

Members who were hired after March 1, 2015: A notional cash balance account is established for each employee equal to the sum of the employee's pay credits, interest credits and dividends as described below:

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 of 75% of the System's investment return in excess of 7.0% on a rolling 5-year market value basis . This dividend is capped at 3.0% until January 1, 2020. There is no dividend cap after January 1, 2020.

Pay credits are credited at the end of each plan year as follows:

Years of Service	Percentage
Less than 8	13.00%
8 - 15	14.00%
16 - 23	15.00%
24 and more	16.00%

Appendix C - Summary of Plan Provisions

Service Retirement (continued)

A member may receive benefit payments from their cash balance account in one of the following forms: single life annuity, life annuity with 10 or 15 years certain, or 50%, 75% or 100% Joint and Survivor annuity. The annuity conversion factor shall be based on 5% interest and the RP 2000 Mortality Table projected to 2034 using Scale AA with a 67%/33% male/female blend.

Non-Service Disability

Members who were hired prior to March 1, 2015 are eligible after 5 years of service. Members who were hired after March 1, 2015 are eligible after 10 years of service.

The benefit is 1.50% of FAC multiplied by years of service. This benefit is reduced for Social Security disability retirement benefits. This benefit is payable until age 65, at which point the service retirement pension starts. Service credits accrue while receiving a disability pension.

Service-Related Disability

Members are eligible after 6 months of service.

The benefit is 1.75% of FAC multiplied by years of service. This benefit is reduced for worker's compensation and/or social security disability retirement benefits. This benefit is payable until age 65, at which point the service retirement pension starts. Service credits accrue while receiving a disability pension.

Preretirement Surviving Spouse's Benefit

Members who were hired before March 1, 2015:
75% of the member's accrued pension paid to the surviving spouse until death or remarriage if the member had completed 5 years of service or suffered a service-connected death and had completed 6 months of service.

If the surviving spouse was married to the member for at least one year, and the member was eligible for retirement or retired on their date of death, the surviving spouse is eligible to receive 75% of the benefit that the member was receiving or entitled to receive. All spousal benefits cease upon remarriage.

Members who were hired after March 1, 2015:
For death of a member prior to retirement a lump sum of the member's cash balance account will be paid to the surviving spouse if the member had completed 10 years of service or suffered a service-connected death and had completed 6 months of service. If the member had completed fewer than 10 years of service the surviving spouse will receive a lump sum equal to the member's contributions with 4.0% interest. For death of a member post retirement, the spouse's benefit depends on the optional form of payment elected.

Appendix C - Summary of Plan Provisions

Children's Benefit

Members who were hired before March 1, 2015:

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

*until age 18

If the member was eligible for retirement on their date of death and there is no eligible survivng spouse, surviving children (in total) are also eligible to receive 75% of the benefit that the member was receiving or entitled to receive until age 18.

Members who were hired after March 1, 2015:

For death of a member prior to retirement a lump sum of the member's cash balance account will be paid to member's surviving children if the member had completed 10 years of service or suffered a service-connected death and had completed 6 months of service and there is no eligible surviving spouse. If the member had completed fewer than 10 years of service the children will receive a lump sum equal to the member's contributions with 4.0% interest.

Lump Sum Death Benefits

$5,000

The beneficiary of an active or retired member without eligible dependents will also receive the accumulated member's contributions less any previous pension payments made.

Vesting

Members who were hired before March 1, 2015: 5 Years

Members who were hired after March 1, 2015: 10 Years

Termination Benefit

Members who were hired before March 1, 2015:
A member that severs employment with less than 5 years of service will receive a refund of the employee's employee contributions with interest.

A member that severs employment with more than 5 years of service but prior to service retirement eligibility may elect a deferred retirement, reduced for early retiement if applicable.

Appendix C - Summary of Plan Provisions

Termination Benefit (continued)

Members who were hired after March 1, 2015:
A member that severs employment with less than 10 years of service will receive a refund of the employee's employee contributions with 4.0% interest.

A member that severs employment with more than 10 years of service but prior to service retirement eligibility may elect a deferred reirement.

Cost of Living Adjustments

Cost of living adjustments (COLAs) begin five years after benefit commencement for all retirees and beneficiaries who retired prior to January 28, 1998. COLAs are equal to the lesser of 3% or $50 per month.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Employer Contribution ("ADEC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Covered Payroll - This is the total projected pensionable earnings for all active members.

Expected Payroll - This is the total projected pensionable earnings for active members who have not yet reached the age where 100% are assumed to retire.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

Appendix F

Omaha Police & Fire
Retirement Plan Information

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Human Resources Department

Omaha/Douglas Civic Center
1819 Farnam Street, Suite 506
Omaha, Nebraska 68183-0506
(402) 444-5300
FAX (402) 444-5314
FAX (402) 444-5317

City of Omaha
Jean Stothert, Mayor

October 8, 2021

Deborah K. Sander
Director

Senator Mark Kolterman, Chairperson
Nebraska Retirement Systems Committee
State Capitol
PO BOX 94604
Lincoln, NE 68509-4604

Dear Senator Kolterman:

Neb. Rev. Stat § 13-2402(3) requires a governing entity that offers a defined benefit retirement plan to file a report if the funded ratio is less than eighty percent. The City of Omaha is submitting this report regarding the City of Omaha Police & Fire Retirement System (COPFRS) because the funded ratio is less than eighty percent.

The City, through its negotiations with the public safety bargaining groups, has made efforts to address the funding shortfall in COPFRS. Some of those efforts are addressed below. The attached table compares the actuarial data for plan years 2016 through current plan year 2021. The actuarial report for December 31, 2021 is in the process of being prepared and will be provided once it is accepted by the system. It is anticipated that will occur within the next 45 days. Once that report is complete, we will update the table with the revised information.

In 2015, the Actuarial Committee of COPFRS elected to change the valuation methodology for the members who were participating or were expected to participate in the Deferred Retirement Option Plan (DROP). Under the methodology, the Entry Age Normal Cost calculation spreads the cost of benefits over the member's entire career. As part of the change in methodology, certain actuarial assumptions related to the DROP were developed. These include the percentage of eligible members assumed to elect to participate in the DROP, the DROP period, and the interest rate assumed to be credited to the DROP account.

An Experience Study for 2012-2015 was completed and presented to the Board in March, 2018. The Experience Study suggested a number of assumption changes which the Board accepted and agreed to at the August 16, 2018 meeting. The following changes were made to the economic assumptions which changes were made effective and starting with the January 1, 2018 actuarial valuation:

	Current	Recommended
Price inflation	3.25%	2.50%
Investment return	8.00%	7.75%
General wage growth	4.00%	3.25%
Payroll growth	4.00%	3.25%

In addition, there were some changes to Demographic Assumptions which are also described in the Experience Study that is attached to this report. An Experience Study is in the process of being completed which we anticipate being before the Board for consideration late in 2021 or early in 2022.

There are numerous circumstances that led to the current underfunding. When the system was fully funded in the late 1990s, benefits were increased and even though the actuarial cost was calculated, the benefits appear to have exceeded those costs. There also have been some years where the investment loss was historically large. During the economic downturn of the early 2000s, there were some additional benefits (compensatory time paid at end of career) negotiated as part of wage and other compensation deferments. It was anticipated that people would take advantage of the additional time off, but many did not, resulting in an increase in the compensation amount upon which the pension was calculated. Another factor has been that wages have not increased at the rate in the actuarial assumptions.

Significant efforts were made to address the funding status of COPFRS starting in 2008. In 2008, then Mayor Mike Fahey established the Bates Commission to examine the issue. The Bates Commission, made up of business leaders, union leaders, and City leaders, made a number of recommendations in their final report. The report was the impetus for collaborative efforts between the City and its unions to address the funding issue in labor negotiations. In an effort to improve the funding status, the City increased contributions and modified pension benefits through labor agreements with the police union in October, 2010 and with the fire union in December, 2012. The changes in contributions and benefits included:

- Changing minimum retirement age from 45 to 50
- Requiring 30 years of service instead of 25 years to get the maximum benefit
- Implementing a Career Overtime Average (COTA) so that employees could not artificially enhance their pension by working a lot of overtime or selling comp time in their last year of employment
- Smoothing the salary on which a pension calculation was based from highest 1 year to highest 3 years
- Pensions for new hires was based only on base salary
- For all groups excluding the police union, capping pension for new hires at 65% and requiring 30 years of service
- Increased City contributions to the system by 13% to 14%

The employees who are part of the COPFRS are from four (4) bargaining groups. The Omaha Police Officers Association entered into a collective bargaining agreement for 2021 through 2025. As part of that collective bargaining agreement, the City and the employees have agreed to contribute an additional 0.75% of wages into the system from 2021 to 2025. The Agreement also made another prospective change providing that COPFRS is no longer responsible for medical payments for those who receive service connected disability pensions

and whose bills are not covered under worker's compensation. Police Management has a collective bargaining agreement for 2021 which does not include any additional pension contributions.

The City entered into a new collective bargaining agreements with the Professional Firefighters' Association for a term of 2019 through 2023. That agreement did not include any additional pension contributions or any changes to the pension system. The City entered into a new collective bargaining agreement with the Fire Management group for a term of 2019 through 2022 late in 2019. That agreement did not include any additional pension contributions or any changes to the pension system.

The Trustees of the System and the City believe some of the changes described above are starting to see a positive effect. As of January 1, 2020, the system had market assets of approximately $801 million and a funded ratio of 54%. The system had a funded ratio of 52% in 2019. The actuarial contribution rate needed for the system on 1/1/2020 was 52.955% and the total amount being contributed was 51.236%. This contribution shortfall was a change from recent years, not surprising due to the change of assumptions effective in 2018. The unfunded actuarial liability is amortized, as a level percentage of payroll, over a closed 30-year period that began on January 1, 2014.

The most recent projection included in the Actuarial Report effective January 1, 2020 shows the system fully funded in 2046.

As requested, we enclose the most recent Actuarial Experience Study which was submitted in March, 2018 and the Actuarial Valuation Report effective January 1, 2020. As indicated above, we anticipate having an Actuarial Valuation Report effective January 1, 2021 in the next 30 to 45 days and an Actuarial Experience Study by early 2022.

If you or the Committee should have any questions regarding this report please let me know.

Sincerely,

Stephen B. Curtiss
Finance Director

Enclosures

c: Bernard J. in den Bosch, Deputy City Attorney

COPFRS EXHIBIT 1

ITEM	2015		2016		2017		2018		2019		2020		2021	
Net Assets (actuarial value)	1/1/15	$ 590,191,585	1/1/16	$ 621,403,975	1/1/17	$ 656,171,797	1/1/18	$ 706,595,615	1/1/19	$ 737,383,005	1/1/20	$ 787,558,791	1/1/21	$ 849,308,716
Unfunded Actuarial Accrued Liability	1/1/15	$ 598,810,636	1/1/16	$ 602,562,135	1/1/17	$ 611,737,378	1/1/18	$ 648,833,922	1/1/19	$ 669,449,659	1/1/20	$ 663,894,041	1/1/21	$ 693,166,515
1a Funding Status	1/1/15	49.6%	1/1/16	50.8%	1/1/17	51.8%	1/1/18	52.1%	1/1/19	52.41%	1/1/20	54.26%	1/1/21	55.10%
1b Assumed Rate of Return	1/1/15	8.00%	1/1/16	8.00%	1/1/17	8.00%	1/1/18	7.75%	1/1/19	7.75%	1/1/20	7.75%	1/1/21	7.75%
1c Actual Investment Return	FYE 12/31/15	0.70%	FYE 12/31/16	9.10%	FYE 12/31/17	15.00%	FYE 12/31/18	-2.33%	FYE 12/31/19	17.236%	FYE 12/31/20	9.277%	FYE 12/31/21	Pending
Normal Cost ($)	1/1/15	$ 26,946,719	1/1/16	$ 27,426,921	1/1/17	$ 27,892,194	1/1/18	$ 28,859,311	1/1/19	$ 29,894,631	1/1/20	$ 30,643,540	1/1/21	$ 29,426,765
1e Normal Cost (%)	1/1/15	22.191%	1/1/16	22.146%	1/1/17	21.991%	1/1/18	22.11%	1/1/19	22.034%	1/1/20	21.915%	1/1/21	21.291%
1f Actuarial Rate of Contribution (ARC)	1/1/15	50.031%	1/1/16	50.097%	1/1/17	50.212%	1/1/18	53.199%	1/1/19	53.447%	1/1/20	52.955%	1/1/21	53.874%
1d Member Contribution Rate	1/1/15	15.35%-17.23%	1/1/16	15.35%-17.23%	1/1/17	15.35%-17.23%	1/1/18	16.10%-17.23%	1/1/19	16.10%-17.23%	1/1/20	16.10%-17.23%	1/1/21	16.10%-17.15%
1d Employer Contribution Rate	1/1/15	32.97%-33.67%	1/1/16	32.97%-33.67%	1/1/17	32.97%-33.67%	1/1/18	32.97%-34.42%	1/1/19	32.97%-34.42%	1/1/20	32.97%-34.42%	1/1/21	32.97%-34.42%
1d Contribution Margin (Shortfall)	1/1/15	0.550%	1/1/16	0.446%	1/1/17	0.297%	1/1/18	-1.912%	1/1/19	-2.190%	1/1/20	-1.719%	1/1/21	-2.649%
1f Actuarial Required Contribution	FYE 12/31/15	$ 41,910,737	FYE 12/31/16	$ 42,468,180	FYE 12/31/17	$ 45,939,660	FYE 12/31/18	$ 50,677,368	FYE 12/31/19	$ 51,822,865	FYE 12/31/20	$ 55,078,027	FYE 12/31/21	Pending
1g Employer Actual Dollars Contributed	FYE 12/31/15	$ 42,138,403	FYE 12/31/16	$ 43,235,242	FYE 12/31/17	$ 46,608,741	FYE 12/31/18	$ 48,796,603	FYE 12/31/19	$ 49,779,284	FYE 12/31/20	$ 51,858,647	FYE 12/31/21	Pending
1g % of ARC by Employer Contribution	FYE 12/31/15	100.54%	FYE 12/31/16	101.81%	FYE 12/31/17	101.46%	FYE 12/31/18	96.29%	FYE 12/31/19	96.06%	FYE 12/31/20	94.15%	FYE 12/31/21	Pending

Milliman

THE CITY OF OMAHA
POLICE & FIRE RETIREMENT SYSTEM

Actuarial Valuation as of January 1, 2021
To Determine Funding for Fiscal Year 2021

Prepared by

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

October 29, 2021

Table of Contents

Certification

We have performed an actuarial valuation of the Plan as of January 1, 2021 to determine funding for fiscal year 2021. This report presents the results of our valuation.

The ultimate cost of a pension plan is the total amount needed to provide benefits for plan members and beneficiaries and to pay the expenses of administering the plan. Pension costs are met by contributions and by investment return on plan assets. The principal purpose of this report is to set forth an actuarial recommendation of the contribution, or range of contributions, which will properly fund the plan, in accordance with applicable government regulations. In addition, this report provides:

- A valuation of plan assets and liabilities to review the year-to-year progress of funding.

- Information needed to meet disclosure requirements.

- Review of plan experience for the previous year to ascertain whether the assumptions and methods employed for valuation purposes are reflective of actual events and remain appropriate for prospective application.

- Assessment of the relative funded position of the plan, i.e., through a comparison of plan assets and projected plan liabilities.

- Comments on any other matters which may be of assistance in the funding and operation of the plan.

This report may not be used for purposes other than those listed above without Milliman's prior written consent. If this report is distributed to other parties, it must be copied in its entirety, including this certification section.

Milliman's work is prepared solely for the internal business use of the City of Omaha ("City") and the City of Omaha Police and Fire Retirement System ("System"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions: (a) the City and System may provide a copy of Milliman's work, in its entirety, to the City and System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the City and System; and (b) the City and System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law. No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

In preparing this report, we relied on employee census data and financial information as of the valuation date, furnished by the City and System. We performed a limited review of the data used directly in our analysis for reasonableness and consistency and have found them to be reasonably consistent and comparable with data used for other purposes. If the underlying data or information is inaccurate or incomplete, the results of our analysis may likewise be inaccurate or incomplete and our calculations may need to be revised. If there are material defects in the data, it is possible that they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or for relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

Certification

Figures for periods prior to January 1, 2021 have been obtained from actuarial valuation reports prepared by Cavanaugh Macdonald Consulting LLC and from the City's Comprehensive Annual Financial Reports. The actuarial assumptions used herein were adopted by the Board based on an experience study prepared by Cavanaugh Macdonald Consulting LLC for the period ending December 31, 2015. We are unable to judge the reasonableness of the assumptions or methods without performing a substantial amount of additional work beyond the scope of the assignment, and have not done so. We will perform an experience study in the near future and will report the results of that analysis when it is complete.

The valuation results were developed using models employing standard actuarial techniques. In addition, Milliman has developed certain models to develop the expected long term rate of return on assets. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. The models, including all input, calculations, and output, may not be appropriate for any other purpose.

The calculations reported herein have been made on a basis consistent with our understanding of ERISA and the related sections of the tax code. Additional determinations may be needed for purposes other than meeting funding requirements, such as judging benefit security at plan termination or meeting employer accounting requirements. On the basis of the foregoing, we hereby certify that, to the best of our knowledge, this report is complete and accurate and all costs and liabilities were determined in conformance with generally accepted actuarial principles and practices.

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

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

We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Rebecca A. Sielman, FSA
Consulting Actuary

Yelena Pelletier, ASA
Consulting Actuary

Section I - Executive Summary
Changes Since the Prior Valuation

Plan Changes

None.

Changes in Actuarial Methods and Assumptions

None.

Other Significant Changes

None.

Section I - Executive Summary
Assets

There are two different measures of the plan's assets that are used throughout this report. The Market Value is a snapshot of the plan's investments as of the valuation date. The Actuarial Value is a smoothed asset value designed to temper the volatile fluctuations in the market by recognizing investment gains or losses asymptotically over four years.

	Market	Actuarial
Value as of January 1, 2020	$800,871,242	$787,558,791
City and Member Contributions	76,176,798	76,176,798
Investment Income	73,649,012	67,357,297
Benefit Payments	(81,784,170)	(81,784,170)
Value as of January 1, 2021	868,912,882	849,308,716

For fiscal year 2020, the plan's assets earned 9.23% on a Market Value basis and 8.58% on an Actuarial Value basis. The actuarial assumption for this period was 7.75%; the result is an asset gain of about $11.8 million on a Market Value basis and a gain of about $6.5 million on an Actuarial Value basis. Historical rates of return are shown in the graph below.

- Market Value
- Actuarial Value

	2016	2017	2018	2019	2020
Market Value	8.5%	14.9%	-2.8%	17.1%	9.23%
Actuarial Value	6.9%	8.9%	5.7%	8.4%	8.58%

Please note that the Actuarial Value currently is less than the Market Value by $19.6 million. This figure represents investment gains that will be gradually recognized in future years. This process will exert downward pressure on the City's Actuarially Determined Contribution, unless there are offsetting market losses.

Section I - Executive Summary
Assets (continued)

The graph below shows how this year's asset values compare to where the plan's assets have been over the past several years and how they are projected to change over the next 30 years. For purposes of this projection, we have assumed that the City always contributes the 2021 City Ordinance Rate and the investments always earn the assumed interest rate each year.

◻ **Market Value**
◻ **Actuarial Value**

In 2020, the plan paid out $81.8 million in benefits to members. Over the next 30 years, the plan is projected to pay out a total of $4,683 million in benefits to members.
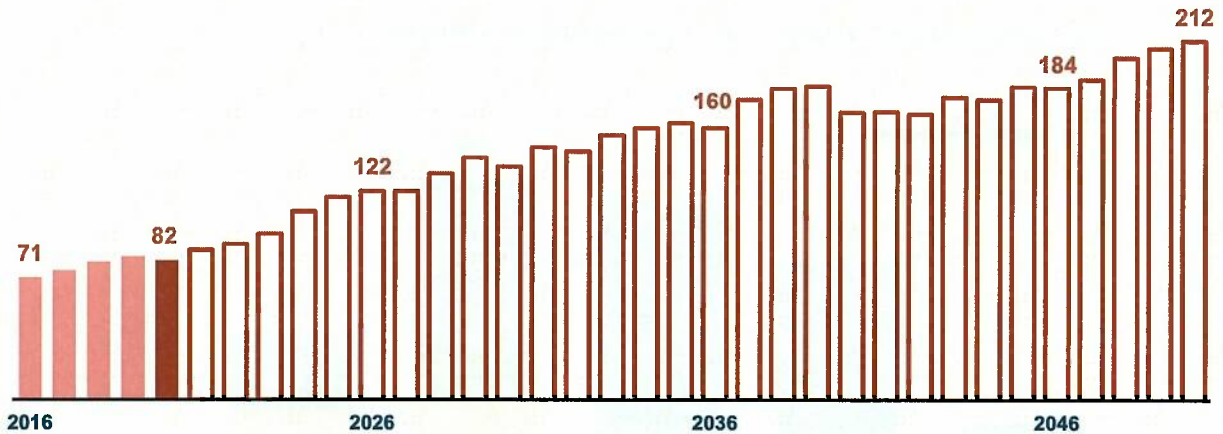
Benefit Payments

Section I - Executive Summary
Membership

There are four basic categories of plan members included in the valuation: (1) members who are receiving monthly pension benefits, (2) former employees who have a right to benefits but have not yet started collecting, (3) active employees who have met the eligibility requirements for membership, and (4) members who have elected to participate in the DROP but have not yet retired.

- Terminated Members
- Members in Pay Status
- Active Members in DROP Program
- Active Members Not In DROP Program

	2017	2018	2019	2020	2021
Total	2,989	3,016	3,055	3,100	3,085
Terminated Members	20	22	17	14	15
Members in Pay Status	1,488	1,485	1,515	1,536	1,537
Active Members in DROP Program	57	63	69	70	94
Active Members Not In DROP Program	1,424	1,446	1,454	1,480	1,439
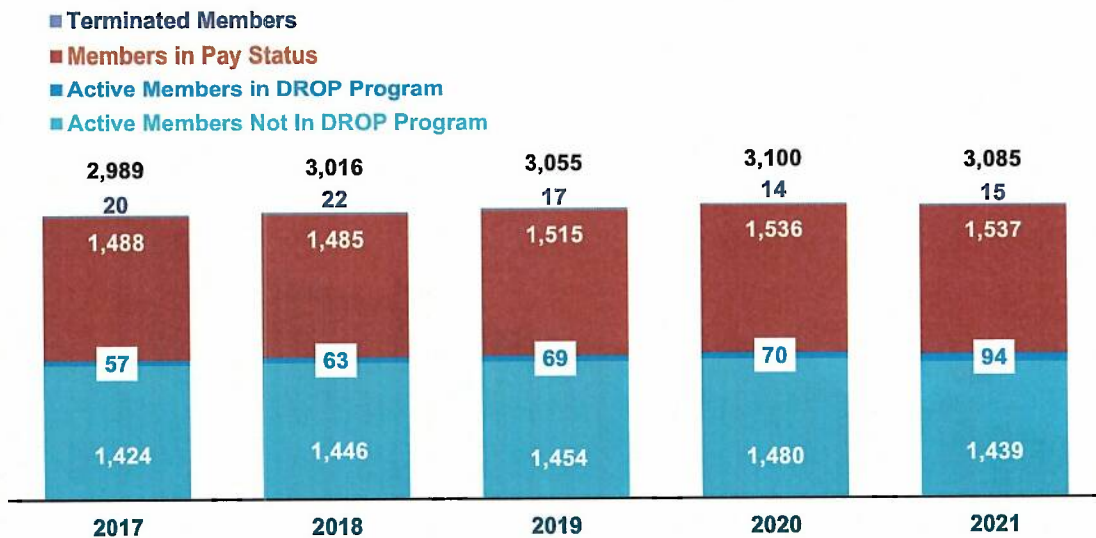
Members in Pay Status on January 1, 2021

Retirees	1,047	Average Age	68.2
Disabled Retirees	221	Total Annual Benefit	$81,463,846
Beneficiaries	269	Average Annual Benefit	53,002
Total	1,537		

The members in pay status fall across a wide distribution of ages:
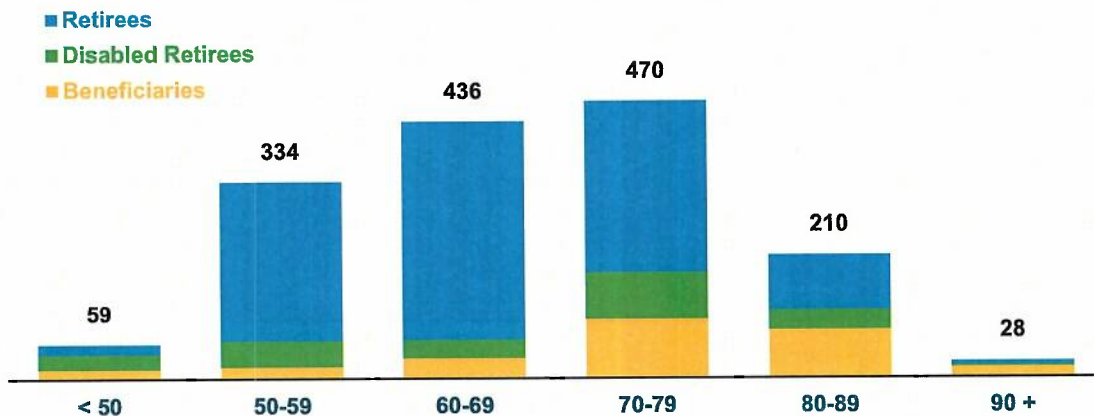
- Retirees
- Disabled Retirees
- Beneficiaries

< 50	50-59	60-69	70-79	80-89	90 +
59	334	436	470	210	28

Section I - Executive Summary
Membership (continued)

Terminated Vested Members on January 1, 2021

Count	8
Average Age	47.2
Total Annual Benefit	$324,478
Average Annual Benefit	25,291

Nonvested Members Due Refunds on January 1, 2021

Count	7

Active Members Not In DROP Program on January 1, 2021

	Police		Fire		Total
	Tier I & II	Tier III	Tier I & II	Tier III	
Count	464	340	465	170	1,439
Average Age	45.6	34.6	46.2	32.9	41.7
Average Service	17.4	4.9	17.2	3.9	12.8
Covered Payroll ($ millions)	$47.5	$29.3	$49.4	$14.4	$140.6
Average Payroll	102,450	86,115	106,234	84,508	97,694

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	15							15
25-29	110	23						133
30-34	108	64	24					196
35-39	50	48	141	21				260
40-44	26	20	113	87	38			284
45-49	8	13	58	90	117	2		288
50-54	6	3	23	49	109	4		194
55-59			7	12	35			54
60-64			2	2	11			15
65+								0
Total	323	171	368	261	310	6	0	1,439

Active Members in DROP Program on January 1, 2021

Count	94
Average Age	53.6
Average Service	27.4
Covered Payroll ($ millions)	$10.028
Average Payroll	106,681
Total DROP Account Balance ($ millions)	$15.664
Average Account Balance	166,640

Section I - Executive Summary
Accrued Liability

The total Accrued Liability as of January 1, 2021 equals $1,542,475,231, which consists of the following pieces:

- Beneficiaries = $61.3 million
- Disabled Retirees = $97.3 million
- Retirees = $731.2 million
- Terminated Members = $2.0 million
- Active Members in DROP Program = $109.6 million
- Active Members Not In DROP Program = $541.0 million
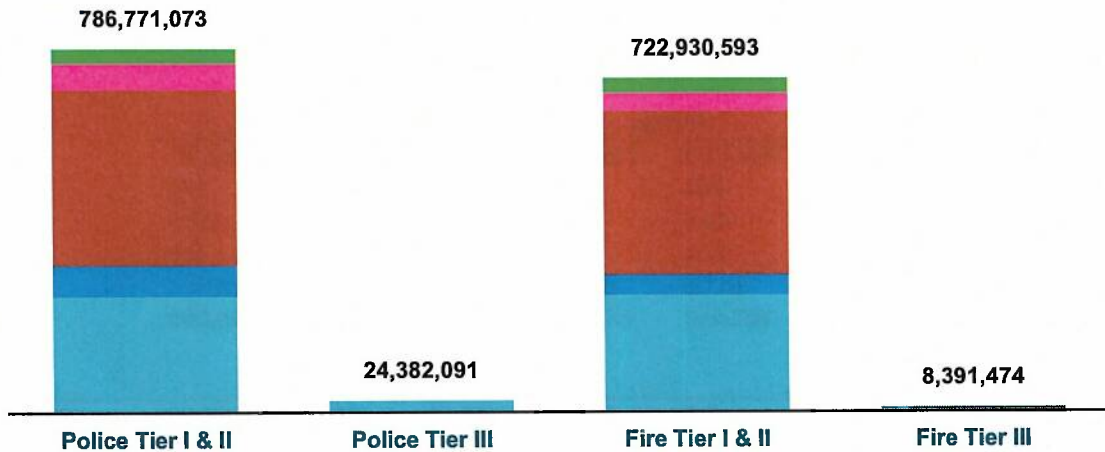
The Accrued Liability for active members who are not in the DROP program can be broken down further by the different types of benefits provided by the plan:

- Preretirement Death = $1.9 million
- Disability = $11.6 million
- Retirement = $527.4 million
- Termination = $0.0 million
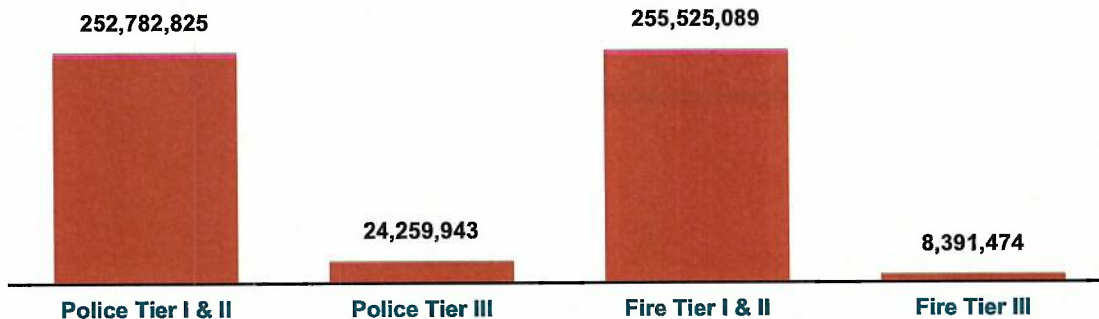
Section I - Executive Summary
Funded Status

The Accrued Liability grows over time as active members earn additional benefits, and goes down over time as members receive benefits; it may also change when there are changes to the plan provisions or changes in the actuarial assumptions. The Unfunded Accrued Liability is the dollar difference between the Accrued Liability and the Actuarial Value of Assets; the Funded Ratio is the ratio of the two.

Accrued Liability ($ millions)

2017	2018	2019	2020	2021
1,268	1,355	1,407	1,451	1,542

Unfunded Accrued Liability ($ millions)

2017	2018	2019	2020	2021
612	649	669	664	693

Funded Ratio

75%

2017	2018	2019	2020	2021
51.8%	52.1%	52.4%	54.3%	55.1%

25%

Section I - Executive Summary
Actuarially Determined Total Contribution

The Actuarially Determined Total Contribution consists of three pieces: a Normal Cost payment to fund the benefits earned each year, a special fixed series of small "prior service" City payments through 2028, and an amortization payment to gradually fund the remainder of the Unfunded Accrued Liability (UAL) over a period of years. These figures are first calculated as dollar amounts. The dollar amounts are then divided by the expected payroll for active members to arrive at a contribution rate. The Actuarially Determined Total Contribution Rate for the current valuation and the prior four valuations are shown below.

Legend:
- UAL Amortization Rate
- Prior Service Rate
- Total Normal Cost Rate

Year	Total	UAL Amortization Rate	Prior Service Rate	Total Normal Cost Rate
2017	50.212%	27.223%	0.998%	21.991%
2018	53.199%	30.024%	0.964%	22.211%
2019	53.447%	30.488%	0.925%	22.034%
2020	52.955%	30.139%	0.901%	21.915%
2021	53.874%	31.702%	0.881%	21.291%

The Actuarially Determined Employer Contribution is equal to the Actuarially Determined Total Contribution less the amounts that are contributed by the active members. Per Ordinance Section 22-73(b), the City contributes a specified percentage of each active member's pensionable earnings plus the Prior Service Payments. In any given year, these fixed City contributions may be more or less than the Actuarially Determined Employer Contribution:

	2020	2021
Total Normal Cost Rate	21.915%	21.291%
Prior Service Rate	0.901%	0.881%
UAL Amortization Rate	30.139%	31.702%
Actuarially Determined Total Contribution Rate	52.955%	53.874%
Less Employee Contribution Rate	-16.554%	-16.576%
Actuarially Determined Employer Contribution Rate	36.401%	37.298%
City Ordinance Contribution Rate	33.781%	33.768%
Prior Service Rate	0.901%	0.881%
Bargained City Contribution Rate	34.682%	34.649%
Contribution Rate (Shortfall)/Margin	-1.719%	-2.649%

Section I - Executive Summary
Long-Range Forecast

For purposes of our long-range forecast, we assume that the overall number of active members remains constant. However, over time the composition of the active membership will change, as terminating and retiring Tier I and Tier II members are replaced with employees who are covered by the lower cost Tier III. This shift is illustrated in the graph below.
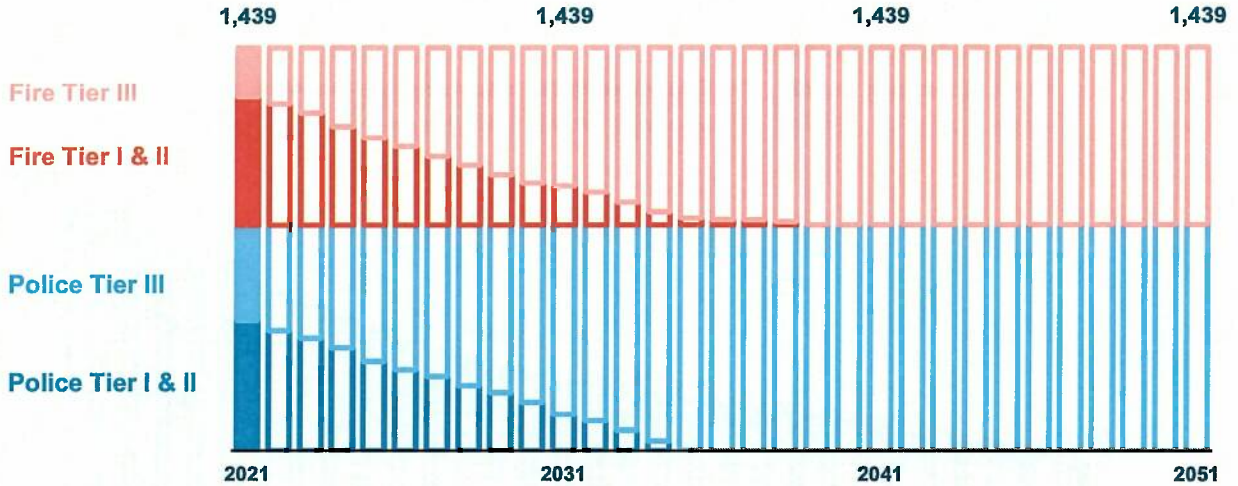
Projected Active Member Count

The Normal Cost Rate component of the Actuarially Determined Contribution will reflect this shift, as Tier I & II active members with higher Normal Costs are gradually replaced by Tier III active members with lower Normal Costs. Note that each individual active member's Normal Cost (in dollars) is expected to go up over time with salary growth, so for the plan as a whole the Normal Cost (in dollars) is projected to increase over the long term while the Normal Cost Rate (the purple line below) is expected to decline.

Projected Normal Cost ($ millions)

Section I - Executive Summary
Long-Range Forecast (continued)

Pension benefits are paid for through a combination of contributions from the City and from employees, and from investment income. If the City pays less than the Actuarially Determined Employer Contribution each year, or if the investments persistently earn less than the assumed interest rate, then the plan's funded status would suffer. The impact on the plan's funded ratio of contributing an amount different than the ADC and underearning are illustrated in the hypothetical scenarios below:

The scenarios illustrated above are based on deterministic projections that assume emerging plan experience always exactly matches the actuarial assumptions; in particular that actual asset returns will be constant in every year of the projection period. Variation in asset returns, contribution amounts, and many other factors may have a significant impact on the long-term financial health of the plan, the liquidity constraints on plan assets, and the City's future contribution levels. Stochastic projections could be prepared that would enable the City to understand the potential range of future results based on the expected variability in asset returns and other factors. Such analysis was beyond the scope of this engagement.

Section I - Executive Summary
Summary of Principal Results

Membership as of	January 1, 2020	January 1, 2021
Active Members Not In DROP Program	1,480	1,439
Active Members in DROP Program	70	94
Terminated Members	14	15
Members in Pay Status	<u>1,536</u>	<u>1,537</u>
Total Count	3,100	3,085

Assets and Liabilities as of	January 1, 2020	January 1, 2021
Market Value of Assets	$800,871,242	$868,912,882
Actuarial Value of Assets	787,558,791	849,308,716
Accrued Liability for Active Members Not In DROP Program	505,971,211	540,959,331
Accrued Liability for Active Members in DROP Program	79,323,797	109,575,871
Accrued Liability for Terminated Members	2,068,140	2,079,256
Accrued Liability for Members in Pay Status	<u>864,089,684</u>	<u>889,860,773</u>
Total Accrued Liability	1,451,452,832	1,542,475,231
Unfunded Accrued Liability	663,894,041	693,166,515
Funded Ratio	54.3%	55.1%

Contribution Rate for Fiscal Year	2020	2021
Total Normal Cost Rate	21.915%	21.291%
Prior Service Rate	0.901%	0.881%
UAL Amortization Rate	<u>30.139%</u>	<u>31.702%</u>
Actuarially Determined Total Contribution Rate	52.955%	53.874%
Employee Contribution Rate	<u>-16.554%</u>	<u>-16.576%</u>
Actuarially Determined Employer Contribution Rate	36.401%	37.298%
City Ordinance Contribution Rate	33.781%	33.768%
Prior Service Rate	<u>0.901%</u>	<u>0.881%</u>
Bargained City Contribution Rate	34.682%	34.649%
Contribution Rate (Shortfall)/Margin	-1.719%	-2.649%

Section II - Plan Assets
A. Summary of Fund Transactions

Market Value as of January 1, 2020	$800,871,242
City Contributions	51,858,647
Member Contributions	24,318,151
Net Investment Income	73,649,012
Benefit Payments	(81,784,170)
Market Value as of December 31, 2020	868,912,882
Expected Return on Market Value of Assets	61,839,636
Market Value (Gain)/Loss	(11,809,376)
Approximate Rate of Return *	9.23%

* The rate shown here is not the dollar or time weighted investment yield rate which measures investment performance. It is an approximate net return assuming all activity occurred on average midway through the fiscal year.

Target Asset Allocation as of December 31, 2020

■ Equity
■ Fixed Income
■ Other

Private Real Estate	20.0%
International Equity - Emerging Markets	15.0%
Private Equity	14.0%
US Large Cap Equities	10.0%
US Small Cap Equities	10.0%
International Equity - Developed Markets	5.0%
International Equity - Small Cap	5.0%
US Intermediate Fixed Income	5.0%
US High Yield Bonds	5.0%
Farmland	5.0%
Timberland	3.0%
Hedge Funds	3.0%

Section II - Plan Assets
B. Development of Actuarial Value of Assets

In order to minimize the impact of market fluctuations on the contribution level, we use an Actuarial Value of Assets that recognizes gains and losses asymptotically over a four year period. The Actuarial Value of Assets as of January 1, 2021 is determined below.

1.	Expected Actuarial Value of Assets:	
	a. Actuarial Value of Assets as of January 1, 2020	$787,558,791
	b. City and Member Contributions	76,176,798
	c. Benefit Payments	(81,784,170)
	d. Expected Earnings Based on 7.75% Interest	60,822,575
	e. Expected Actuarial Value of Assets as of January 1, 2021	842,773,994
2.	Market Value of Assets as of January 1, 2021	868,912,882
3.	Unrecognized Gains/(Losses): (2) - (1e)	26,138,888
4.	Amount Recognized as of January 1, 2021: 25% of (3)	6,534,722
5.	Preliminary Actuarial Value of Assets as of January 1, 2021: (1e) + (4)	849,308,716
6.	Preliminary Actuarial Value of Assets as a % of Market Value: (5) / (2)	97.7%
7.	Actuarial Value of Assets as of January 1, 2021: (5), within +/- 20% of (2)	849,308,716
8.	Actual Earnings on Actuarial Value of Assets: (7) - [(1a) + (1b) + (1c)]	67,357,297
9.	Approximate Rate of Return on Actuarial Value of Assets	8.58%
10.	Actuarial Value (Gain)/Loss: (1d) - (8)	(6,534,722)

Section III - Development of Contribution
A. Actuarial Balance Sheet

The Actuarial Balance Sheet sets forth the value in today's dollars of all benefits that are expected to be paid from the Plan over the course of the current members' combined lifetimes. It also identifies the sources of assets that are available or will be required in future years in order to fully fund all of the benefits.

	January 1, 2020	January 1, 2021
Liabilities: Present Value of Future Benefits		
Active Members Not In DROP Program	$776,129,464	$777,417,105
Active Members in DROP Program	79,323,797	109,575,871
Terminated Vested Members	2,035,463	1,957,108
Nonvested Members Due Refunds	32,677	122,148
Retirees	770,988,001	731,247,014
Disabled Retirees	93,101,683	97,348,375
Beneficiaries	incl. with retirees	61,265,384
Total Liabilities	1,721,611,085	1,778,933,005
Assets		
Actuarial Value of Current Assets (see Section II B)	$787,558,791	$849,308,716
Present value of future employer normal costs	**	48,139,853
Present value of future employee contributions	**	188,317,921
Present value of future prior service payments	8,698,960	7,995,044
Present value of future UAL amortization payments	655,195,081	685,171,471
Total Assets	1,721,611,085	1,778,933,005

** breakdown not available; total is $270,158,253

Per Ordinance Section 22-73(b), the City contributes a specified percentage of each active member's pensionable earnings, which is designed to fund the employer portion of the normal cost plus the UAL amortization payments. If the present value of future City contributions per these specified rates is lower than the present value of future UAL amortization payments plus the present value of future employer normal costs shown above, then the Plan may experience a shortfall of Assets relative to Liabilities. Based on the January 1, 2021 valuation, the City's Ordinance Contribution Rate is lower than the Actuarially Determined Employer Contribution Rate by 2.649%, indicating that such a shortfall may occur.

Section III - Development of Contribution
B. Unfunded Accrued Liability

Section III A set forth the Plan's Present Value of Future Benefits. The actuarial cost method used to calculate the Actuarially Determined Contribution is the Entry Age Normal Cost Method. Under this method, the Present Value of Future Benefits for each active member is allocated as a level percentage of earnings to past years of service (the Accrued Liability), the current year (the Normal Cost), and future years. That is, the Accrued Liability for active members is equal to the portion of the Present Value of Future Benefits that will not be funded through future Normal Cost payments. For each non-active member, the Accrued Liability is equal to the Present Value of Future Benefits. The Actuarial Value of Assets is subtracted from the Accrued Liability to determine the Unfunded Accrued Liability. And as a final step, the present value of future Prior Service payments is subtracted to arrive at the amount that must be funded through future UAL amortization payments.

		January 1, 2020	January 1, 2021
1.	Present Value of Future Benefits (see Section III A)	$1,721,611,085	$1,778,933,005
2.	Present Value of Future Normal Costs	270,158,253	236,457,774
3.	Accrued Liability		
	Active Members Not In DROP Program	505,971,211	540,959,331
	Active Members in DROP Program	79,323,797	109,575,871
	Terminated Vested Members	2,035,463	1,957,108
	Nonvested Members Due Refunds	32,677	122,148
	Retirees	770,988,001	731,247,014
	Disabled Retirees	93,101,683	97,348,375
	Beneficiaries	incl. with retirees	61,265,384
	Total = (1) - (2)	1,451,452,832	1,542,475,231
4.	Actuarial Value of Assets (see Section II B)	787,558,791	849,308,716
5.	Unfunded Accrued Liability: (3) - (4)	663,894,041	693,166,515
6.	Funded Ratio: (4) / (3)	54.3%	55.1%
7.	Prior Service Payments	1,327,600	1,327,600
8.	Remaining Years of Prior Service Payments	9	8
9.	Present Value of Prior Service Payments	8,698,960	7,995,044
10.	Adjusted Unfunded Accrued Liability to be funded with UAL Amortization Payments: (5) - (9)	655,195,081	685,171,471

Section III - Development of Contribution
C. UAL Amortization Payments

The Unfunded Accrued Liability developed in Section III B (UAL) is amortized as follows. An initial base with the UAL as of January 1, 2018 is amortized over a closed period of 26 years. A new base is created in each subsequent year based on any change in the Unfunded Accrued Liability that arises from actual experience being different than is expected based on the actuarial method and assumtions; this amount is amortized as a level percent over a closed 20-year period. If assumption changes are made, a separate base is established based on the resulting change in the Unfunded Accrued Liability; this amount is amortized as a level percent over a closed period selected by the Board.

1. Amortization Bases Established in Prior Years

	(a)		(b)
	Outstanding	**Years**	**Annual**
	Balance	**Remaining**	**Amortization**
Date Established	**January 1, 2021**	**January 1, 2021**	**Payment**
January 1, 2018	$655,959,130	23	$45,488,990
January 1, 2019	14,543,315	18	1,176,239
January 1, 2020	(10,612,003)	19	(828,335)
Total	659,890,442		45,836,894

2. Unfunded Accrued Liability as of January 1, 2021 (see Section III B)   685,171,471

3. New Amortization Base Established January 1, 2021: (2) - (1a Total)   25,281,029

4. Amortization Period for New Amortization Base   20

5. Amortization Growth Rate   3.25%

6. Amortization Payment for January 1, 2021: (3) amortized over (4)   1,909,505

7. Total UAL Amortization Payments: (1b Total) + (6)   47,746,399

8. Covered Payroll for Active and DROP Members   150,609,022

9. UAL Amortization Payment Rate: (7) ÷ (8)   31.702%

10. Prior Service Payments (see Section III B)   1,327,600

11. Prior Service Payment Rate: (10) ÷ (8)   0.881%

Section III - Development of Contribution
D. Normal Cost

The Normal Cost is the portion of the Present Value of Future Benefits that is allocated to the current year for active members.

		2020	2021
1.	**Total Normal Cost by Type of Benefit**		
	Retirement		$25,078,453
	Termination		898,178
	Preretirement Death		565,189
	Disability		2,884,946
	Total	30,643,540	29,426,766
2.	**Total Normal Cost by Group and Tier**		
	Police Tier I & II		10,608,896
	Police Tier III		5,254,516
	Fire Tier I & II		11,320,304
	Fire Tier III		2,243,050
	Total	30,643,540	29,426,766
3.	**Expected Payroll for Active and DROP Members**		
	Police Tier I & II		47,648,611
	Police Tier III		27,914,162
	Fire Tier I & II		48,899,400
	Fire Tier III		13,752,225
	Total	139,827,256	138,214,398
4.	**Total Normal Cost Rate: (2) ÷ (3)**		
	Police Tier I & II		22.265%
	Police Tier III		18.824%
	Fire Tier I & II		23.150%
	Fire Tier III		16.310%
	Total	21.915%	21.291%

Section III - Development of Contribution
E. Employee Contributions

A portion of the Normal Cost is funded through employee contributions from active members, including members in the DROP Program.

		2020	2021
1.	Employee Contribution Rate		
	Police Tier I & II	16.100%	16.100%
	Police Tier III	16.100%	16.100%
	Fire Tier I & II	17.150%	17.150%
	Fire Tier III	17.150%	17.150%
2.	Expected Payroll for Active and DROP Members		
	Police Tier I & II		$47,648,611
	Police Tier III		27,914,162
	Fire Tier I & II		48,899,400
	Fire Tier III		13,752,225
	Total		138,214,398
3.	Expected Employee Contributions in Current Year: (1) x (2)		
	Police Tier I & II		7,671,426
	Police Tier III		4,494,180
	Fire Tier I & II		8,386,247
	Fire Tier III		2,358,507
	Total		22,910,360
4.	Blended Employee Contribution Rate: (3 Total) ÷ (2 Total)	16.554%	16.576%

Section III - Development of Contribution
F. City Contributions Per Ordinance

Per Ordinance Section 22-73(b), the City contributes a specified percentage of each active member's pensionable earnings (including members in the DROP Program), which is designed to fund the employer portion of the Normal Cost plus the UAL amortization payments.

		2020	2021
1.	City Contribution Rate Per Ordinance		
	Police Tier I & II	34.420%	34.420%
	Police Tier III	34.420%	34.420%
	Fire Tier I & II	32.965%	32.965%
	Fire Tier III	32.965%	32.965%
2.	Covered Payroll for Active and DROP Members		
	Police Tier I & II		53,864,683
	Police Tier III		29,279,130
	Fire Tier I & II		53,098,873
	Fire Tier III		14,366,336
	Total		150,609,022
3.	Expected City Contribution Dollars: (1) x (2)		
	Police Tier I & II		18,540,224
	Police Tier III		10,077,877
	Fire Tier I & II		17,504,043
	Fire Tier III		4,735,863
	Total		50,858,007
4.	City Contribution Rate Per Ordinance: (3 Total) ÷ (2 Total)	33.781%	33.768%

Section III - Development of Contribution
G. Actuarially Determined Contribution

		2020	2021
In Dollars			
1.	Actuarially Determined Total Contribution		
	a. Total Normal Cost (see Section III D)		$29,426,766
	b. Prior Service Payment (see Section III C)		1,327,600
	c. UAL Amortization Payment (see Section III C)		47,746,399
	d. Total		78,500,765
2.	Expected Employee Contributions (see Section III E)		22,910,360
3.	Actuarially Determined Employer Contributions: (1) - (2)	$55,078,027	55,590,405
4.	City Contributions per Ordinance (see Section III F)	49,759,893	50,858,007
5.	Total City Contributions: (4) + (1b)	51,087,493	52,185,607
6.	Contribution (Shortfall) / Margin: (5) - (3)	(3,990,534)	(3,404,798)
As a Percentage of Payroll			
1.	Actuarially Determined Total Contribution Rate		
	a. Total Normal Cost Rate (see Section III D)	21.915%	21.291%
	b. Prior Service Payment Rate (see Section III C)	0.901%	0.881%
	c. UAL Amortization Rate (see Section III C)	30.139%	31.702%
	d. Total	52.955%	53.874%
2.	Expected Employee Contribution Rate (see Section III E)	16.554%	16.576%
3.	Actuarially Determined Employer Contribution Rate: (1) - (2)	36.401%	37.298%
4.	City Contribution Rate per Ordinance (see Section III F)	33.781%	33.768%
5.	Total City Contribution Rate: (4) + (1b)	34.682%	34.649%
6.	Contribution Rate (Shortfall) / Margin: (5) - (3)	-1.719%	-2.649%

Section III - Development of Contribution
H. Long Range Forecast

This forecast is based on the results of the January 1, 2021 actuarial valuation and assumes that the City will pay the City Ordinance Rate plus the Prior Service Payments, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets. Amounts are shown in millions.

Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2021	$1,542.5	$849.3	$693.2	55.1%	2021	$52.2	$22.9	($88.0)	($12.9)
1/1/2022	1,602.7	907.0	695.7	56.6%	2022	53.5	24.0	(91.3)	(13.8)
1/1/2023	1,664.3	967.2	697.1	58.1%	2023	54.9	24.5	(97.5)	(18.1)
1/1/2024	1,723.8	1,026.9	696.9	59.6%	2024	56.1	24.8	(110.5)	(29.5)
1/1/2025	1,773.6	1,078.6	695.1	60.8%	2025	56.8	24.9	(118.7)	(37.0)
1/1/2026	1,818.9	1,126.0	692.9	61.9%	2026	57.1	25.3	(122.4)	(40.0)
1/1/2027	1,864.0	1,173.5	690.4	63.0%	2027	58.2	25.8	(122.3)	(38.3)
1/1/2028	1,913.4	1,226.2	687.2	64.1%	2028	59.6	26.2	(132.8)	(47.1)
1/1/2029	1,955.7	1,273.6	682.2	65.1%	2029	59.4	26.4	(142.1)	(56.3)
1/1/2030	1,991.7	1,314.8	677.0	66.0%	2030	60.4	27.4	(136.9)	(49.2)
1/1/2031	2,036.9	1,366.4	670.5	67.1%	2031	61.9	27.8	(148.3)	(58.5)
1/1/2032	2,074.3	1,412.1	662.2	68.1%	2032	63.3	28.5	(145.7)	(53.8)
1/1/2033	2,117.1	1,466.1	651.0	69.3%	2033	64.9	29.2	(155.6)	(61.5)
1/1/2034	2,152.2	1,516.3	636.0	70.5%	2034	66.5	29.9	(159.9)	(63.5)
1/1/2035	2,185.2	1,568.1	617.1	71.8%	2035	68.3	31.0	(162.9)	(63.7)
1/1/2036	2,219.3	1,623.8	595.6	73.2%	2036	70.5	32.2	(160.0)	(57.3)
1/1/2037	2,260.9	1,690.3	570.6	74.8%	2037	73.1	33.3	(177.1)	(70.7)
1/1/2038	2,289.0	1,748.1	540.9	76.4%	2038	75.4	34.4	(183.8)	(74.0)
1/1/2039	2,313.6	1,806.8	506.8	78.1%	2039	78.0	35.8	(185.2)	(71.4)
1/1/2040	2,340.2	1,872.8	467.4	80.0%	2040	80.8	36.8	(169.2)	(51.5)

Section III - Development of Contribution
H. Long Range Forecast (continued)

This forecast is based on the results of the January 1, 2021 actuarial valuation and assumes that the City will pay the City Ordinance Rate plus the Prior Service Payments, the assets will return the assumed interest rate on a market value basis each year, and there are no future changes in the actuarial methods or assumptions or in the plan provisions. Actual results at each point in time will yield different values, reflecting the actual experience of the plan membership and assets. Amounts are shown in millions.

Valuation Date	Accrued Liability	Actuarial Value of Assets	Unfunded Accrued Liability	Funded Ratio	Fiscal Year	City Contributions	Member Contributions	Benefit Payments	Net Cash Flows
1/1/2041	$2,387.3	$1,964.4	$422.9	82.3%	2041	$83.2	$38.2	($169.5)	($48.1)
1/1/2042	2,439.0	2,066.8	372.2	84.7%	2042	86.0	39.4	(168.2)	(42.7)
1/1/2043	2,497.3	2,182.7	314.6	87.4%	2043	88.7	39.7	(178.3)	(49.8)
1/1/2044	2,549.2	2,300.1	249.1	90.2%	2044	90.1	41.0	(176.8)	(45.7)
1/1/2045	2,607.1	2,430.9	176.2	93.2%	2045	92.6	41.8	(184.8)	(50.5)
1/1/2046	2,660.9	2,566.9	94.0	96.5%	2046	94.8	43.1	(184.1)	(46.3)
1/1/2047	2,719.5	2,717.8	1.7	99.9%	2047	97.3	44.2	(189.4)	(47.8)
1/1/2048	2,777.9	2,878.8	(100.9)	103.6%	2048	100.0	44.8	(202.4)	(57.6)
1/1/2049	2,827.7	3,042.0	(214.3)	107.6%	2049	102.0	45.6	(207.8)	(60.3)
1/1/2050	2,876.3	3,215.2	(338.9)	111.8%	2050	103.9	46.3	(212.2)	(62.0)

This forecast has been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years. The forecasts assume the current blended member and City contribution rates remain fixed during the projection period.

Section III - Development of Contribution
I. History of Funded Status

Valuation Date	Actuarial Value of Assets	Accrued Liability	Unfunded Accrued Liability	Funded Ratio
January 1, 2011	$456,158,774	$1,028,866,353	$572,707,579	44.3%
January 1, 2012	467,375,458	1,077,607,299	610,231,841	43.4%
January 1, 2013	495,847,234	1,108,874,778	613,027,544	44.7%
January 1, 2014	548,360,223	1,170,967,753	622,607,530	46.8%
January 1, 2015	590,191,585	1,189,002,221	598,810,636	49.6%
January 1, 2016	621,403,975	1,223,966,110	602,562,135	50.8%
January 1, 2017	656,171,797	1,267,909,175	611,737,378	51.8%
January 1, 2018	706,595,615	1,355,429,537	648,833,922	52.1%
January 1, 2019	737,383,005	1,406,832,664	669,449,659	52.4%
January 1, 2020	787,558,791	1,451,452,832	663,894,041	54.3%
January 1, 2021	849,308,716	1,542,475,231	693,166,515	55.1%

Section III - Development of Contribution
J. History of City Contributions

Fiscal Year	Actuarially Determined Contribution	Actual City Contribution	Covered Payroll	Actual Contribution as a Percent of Covered Payroll
2011	$49,945,979	$30,775,568	$105,025,610	29.3%
2012	54,310,693	35,302,037	110,027,537	32.1%
2013	52,895,180	43,838,750	116,056,740	37.8%
2014	43,524,890	41,851,986	124,051,668	33.7%
2015	41,910,737	42,138,403	126,843,763	33.2%
2016	42,468,180	43,235,242	129,633,658	33.4%
2017	45,939,660	46,608,741	133,044,481	35.0%
2018	50,677,368	48,796,603	137,647,929	35.5%
2019	51,822,865	49,779,284	143,575,171	34.7%
2020	55,078,027	51,858,647	147,301,421	35.2%
2021	55,590,405	TBD	150,609,022	TBD

Section IV - Membership Data

A. Reconciliation of Membership from Prior Valuation

Details of the changes in the Plan membership since the last valuation are shown below. Additional details on the Plan membership are provided in the remainder of Section IV.

	Active Members Not in DROP Program	Active Members in DROP Program	Terminated Vested Members	Nonvested Members Due Refunds	Retirees	Disabled Retirees	Beneficiaries	Total
Count on January 1, 2020	1,480	70	8	6	1,027	224	285	3,100
Terminated, return of contributions due	(4)	-	-	4	-	-	-	-
Terminated, paid refund	(8)	-	-	(1)	-	-	-	(9)
Terminated, vested benefits due	(3)	-	3	-	-	-	-	-
Entered DROP program	(31)	31	-	-	-	-	-	-
Normal retirement	(27)	(7)	(2)	-	36	-	-	-
Disability retirement	(7)	-	(1)	-	-	8	-	-
Died with beneficiary	-	-	-	-	(6)	(8)	14	-
Died with no beneficiary	-	-	-	-	(10)	(3)	(27)	(40)
Benefits expired	-	-	-	-	-	-	-	-
New member	37	-	-	-	-	-	-	37
Rehired	2	-	-	(2)	-	-	-	-
New Alternate Payee	-	-	-	-	-	-	-	-
Correction	-	-	-	-	-	-	(3)	(3)
Count on January 1, 2021	1,439	94	8	7	1,047	221	269	3,085

Section IV - Membership Data
B. Statistics of Active Membership Not in DROP Program

		As of January 1, 2020	As of January 1, 2021
Count	Police Tier I & II	497	464
	Police Tier III	351	340
	Fire Tier I & II	500	465
	Fire Tier III	132	170
	Total	1,480	1,439
Average Age	Police Tier I & II		45.6
	Police Tier III		34.6
	Fire Tier I & II		46.2
	Fire Tier III		32.9
	Total	41.4	41.7
Average Service	Police Tier I & II		17.4
	Police Tier III		4.9
	Fire Tier I & II		17.2
	Fire Tier III		3.9
	Total	12.6	12.8
Covered Payroll	Police Tier I & II		$47,536,657
	Police Tier III		29,279,130
	Fire Tier I & II		49,398,890
	Fire Tier III		14,366,336
	Total	N/A	140,581,013
Average Covered Payroll	Police Tier I & II		$91,411
	Police Tier III		82,100
	Fire Tier I & II		98,147
	Fire Tier III		80,895
	Total	N/A	90,146

Section IV - Membership Data
C. Distribution of Active Police Members as of January 1, 2021

Police Tier I & II

Age	|	Years of Service						Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29								0
30-34			6					6
35-39			78	21				99
40-44			43	57	19			119
45-49			23	34	60	2		119
50-54			10	27	50	2		89
55-59			3	5	19			27
60-64			2	1	2			5
65+								0
Total	0	0	165	145	150	4	0	464

Police Tier III

Age	|	Years of Service						Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	8							8
25-29	60	15						75
30-34	71	37	12					120
35-39	31	27	10					68
40-44	18	10	16					44
45-49	5	7	5					17
50-54	4	2	2					8
55-59								0
60-64								0
65+								0
Total	197	98	45	0	0	0	0	340

Section IV - Membership Data
D. Distribution of Active Fire Members as of January 1, 2021

Fire Tier I & II

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25								0
25-29		3						3
30-34		11	6					17
35-39		10	53					63
40-44		2	54	30	19			105
45-49		3	30	56	57			146
50-54			11	22	59	2		94
55-59			4	7	16			27
60-64				1	9			10
65+								0
Total	0	29	158	116	160	2	0	465

Fire Tier III

Age	Years of Service							Total
	0-4	5-9	10-14	15-19	20-24	25-29	30+	
< 25	7							7
25-29	50	5						55
30-34	37	16						53
35-39	19	11						30
40-44	8	8						16
45-49	3	3						6
50-54	2	1						3
55-59								0
60-64								0
65+								0
Total	126	44	0	0	0	0	0	170

Section IV - Membership Data
E. Statistics of Active Membership in DROP Program

		As of January 1, 2020	As of January 1, 2021
Count	Police Tier I & II		61
	Police Tier III		0
	Fire Tier I & II		33
	Fire Tier III		0
	Total	70	94
Average Age	Police Tier I & II		53.7
	Police Tier III		0.0
	Fire Tier I & II		53.4
	Fire Tier III		0.0
	Total	53.7	53.6
Average Service	Police Tier I & II		27.8
	Police Tier III		0.0
	Fire Tier I & II		26.7
	Fire Tier III		0.0
	Total	N/A	27.4
Covered Payroll	Police Tier I & II		$6,328,026
	Police Tier III		0
	Fire Tier I & II		3,699,983
	Fire Tier III		0
	Total	N/A	10,028,009
DROP Account Balances*	Police Tier I & II		$10,578,388
	Police Tier III		0
	Fire Tier I & II		5,085,799
	Fire Tier III		0
	Total	N/A	15,664,187

*Balances are as of the valuation date and do not include interest for the prior calendar year that may have been credited after the valuation date.

Section IV - Membership Data
F. Statistics of Inactive Membership

	As of January 1, 2020	As of January 1, 2021
Terminated Vested Members		
Number	8	8
Total Annual Benefit	$172,044	$324,478
Average Annual Benefit	21,506	40,560
Average Age	49.1	47.2
Nonvested Members Due Refunds		
Number	6	7
Retirees		
Number	1,027	1,047
Total Annual Benefit	$62,761,356	$65,146,136
Average Annual Benefit	61,111	62,222
Average Age	66.5	66.9
Disabled Retirees		
Number	224	221
Total Annual Benefit	$8,489,664	$9,203,941
Average Annual Benefit	37,900	41,647
Average Age	67.9	67.6
Beneficiaries		
Number	285	269
Total Annual Benefit	$6,930,480	$7,113,769
Average Annual Benefit	24,317	26,445
Average Age	72.6	73.5

Section IV - Membership Data
G. Distribution of Inactive Members as of January 1, 2021

	Age	Number	Annual Benefits
Terminated Vested Members	< 50	6	$162,245
	50 - 59	2	40,084
	60 - 69	0	0
	70 - 79	0	0
	80 - 89	0	0
	90 +	<u>0</u>	<u>0</u>
	Total	8	202,329
Retirees	< 50	16	$1,016,736
	50 - 59	269	19,383,133
	60 - 69	370	25,887,578
	70 - 79	290	15,030,088
	80 - 89	95	3,614,534
	90 +	<u>7</u>	<u>214,067</u>
	Total	1,047	65,146,136
Disabled Retirees	< 50	27	$1,172,929
	50 - 59	45	2,201,258
	60 - 69	31	1,381,627
	70 - 79	81	3,011,547
	80 - 89	34	955,518
	90 +	<u>3</u>	<u>42,778</u>
	Total	221	8,765,658
Beneficiaries	< 50	16	$387,070
	50 - 59	20	747,398
	60 - 69	35	1,448,881
	70 - 79	99	2,723,345
	80 - 89	81	1,587,000
	90 +	<u>18</u>	<u>220,075</u>
	Total	269	7,113,769

Section V - Analysis of Risk
A. Introduction

The results of this actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match these assumptions. As an example, the plan's investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the plan, or of the plan's members.

In addition, as plans mature they accumulate larger pools of assets and liabilities. The increase in size in turn increases the potential magnitude of adverse experience. As an example, the dollar impact of a 10% investment loss on a plan with $1 billion in assets and liabilities is much greater than the dollar impact for a plan with $1 million in assets and liabilities. Since pension plans make long-term promises and rely on long-term funding, it is important to consider how mature the plan is today, and how mature it may become in the future.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to provide pension plan sponsors with information concerning the risks associated with the plan:

- Identify risks that may be significant to the plan.

- Assess the risks identified as significant to the plan. The assessment does not need to include numerical calculations.

- Disclose plan maturity measures and historical information that are significant to understanding the plan's risks.

This section of the report uses the framework of ASOP 51 to communicate important information about significant risks to the plan, the plan's maturity, and relevant historical plan data.

Please see Section III H for more information on the basis for the projected results shown on the following pages.
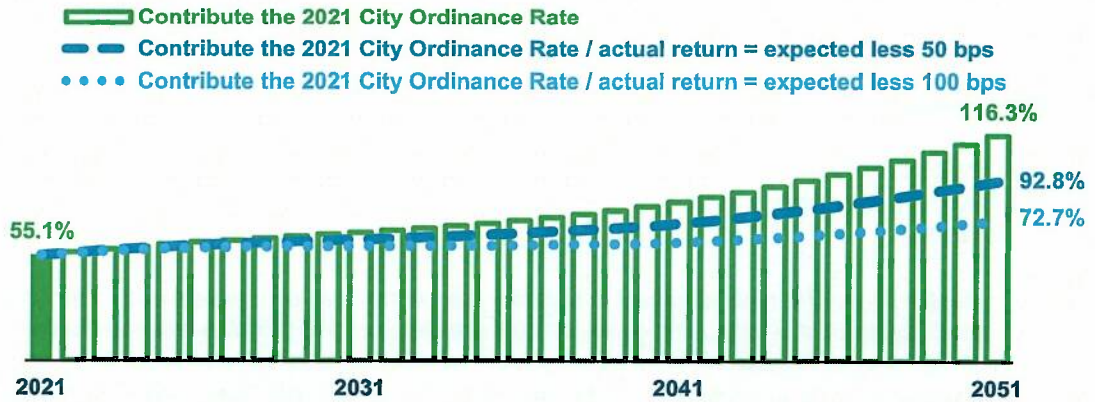
Section V - Analysis of Risk
B. Risk Identification and Assessment

Investment Risk

Definition: This is the potential that investment returns will be different than expected.

Identification: To the extent that actual investment returns differ from the assumed investment return, the plan's future assets, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. The consequences of persistent underperformance on future funded ratio levels are illustrated below:

Contribution Risk

Definition: This is the potential that actual future contributions will be less than or greater than the Actuarially Determined Contribution.

Identification: Over the past 10 years, actual City contributions (in dollars) have been 88.9% of the Actuarially Determined Contribution in total. The consequences of contributing an amount different than the Actuarially Determined Contribution on future funded ratio levels are illustrated below:
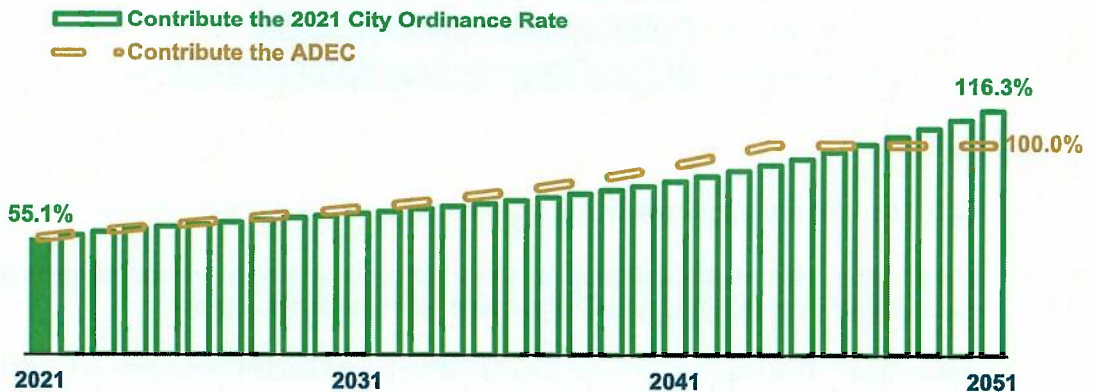
Section V - Analysis of Risk
B. Risk Identification and Assessment

Liquidity Risk

Definition: This is the potential that assets must be liquidated at a loss earlier than planned in order to pay for the plan's benefits and operating costs. This risk is heightened for plans with negative cash flows, in which contributions are not sufficient to cover benefit payments plus expenses.
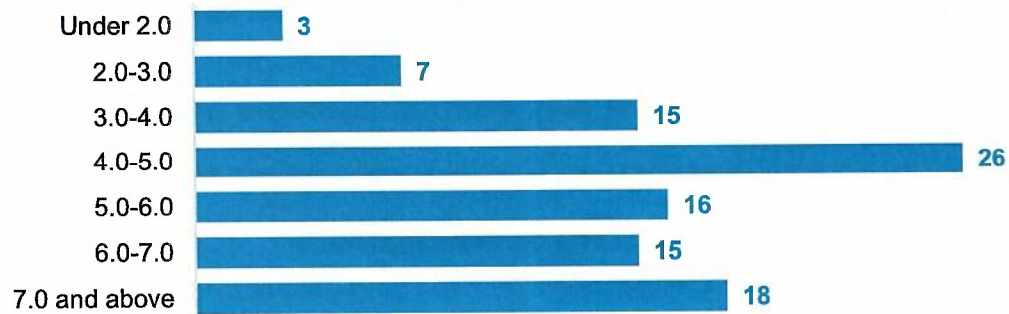
Identification: In 2020, the plan had negative cash flow, with city and member contributions to the plan of $76,176,798 compared to $81,784,170 of benefit payments paid out of the plan. We suggest that you consult with your investment advisors with respect to the liquidity characteristics of the plan's investment holdings.

Maturity Risk

Definition: This is the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time, and for plan assets and/or liabilities to become larger relative to the active member liability.

Identification: The plan is subject to maturity risk because as plan assets and liabilities continue to grow, the dollar impact of any gains or losses on the assets or liabilities also becomes larger.

Assessment: As of January 1, 2021, the plan's Asset Volatility Ratio (the ratio of the market value of plan assets to Covered Payroll) is 5.8. According to Milliman's 2020 Public Pension Funding Study, the 100 largest US public pension plans have the following range of Asset Volatility Ratios:

Range	Count
Under 2.0	3
2.0-3.0	7
3.0-4.0	15
4.0-5.0	26
5.0-6.0	16
6.0-7.0	15
7.0 and above	18

Inflation Risk

Definition: This is the potential for a pension to lose purchasing power over time due to inflation.

Identification: The members of pension plans without fully inflation-indexed benefits are subject to the risk that their purchasing power will be reduced over time due to inflation.

Assessment: This plan provides for some postretirement benefit increases, but the increases are not directly tied to each year's rate of actual inflation; this leaves members bearing some inflation risk.

Section V - Analysis of Risk
B. Risk Identification and Assessment

Insolvency Risk

Definition: This is the potential that a plan will become insolvent; that is, assets will be fully depleted.

Identification: If a plan becomes insolvent, contractually required benefits must be paid from the plan sponsor's other remaining assets.

Assessment: Under the GASB 68 depletion date methodology, the plan is not projected to become insolvent. Please see the GASB 68 report for more details on the underlying analysis.

Demographic Risks

Definition: This is the potential that mortality, turnover, retirement, or other demographic experience will be different than expected.

Identification: The pension liabilities reported herein have been calculated by assuming that members will follow patterns of demographic experience as described in Appendix B. If actual demographic experience or future demographic assumptions are different from what is assumed to occur in this valuation, future pension liabilities, Actuarially Determined Contributions, and funded status may differ significantly from those presented in this valuation. Formal Experience Studies performed on a regular basis are helpful in ensuring that the demographic assumptions reflect emerging plan experience.

Retirement Risk

Definition: This is the potential for members to retire and receive subsidized benefits that are more valuable than expected.

Identification: This plan permits members with long service to retire at relatively young ages. If members retire at earlier ages than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions. This plan also permits members to elect to participate in a DROP program. If usage of the DROP program is different than is anticipated by the actuarial assumptions, this may put upward pressure on subsequent Actuarially Determined Contributions.

Pensionable Earnings Risk

Definition: This is the potential for active members to add items to their pensionable earnings and receive pension benefits that are higher than expected.
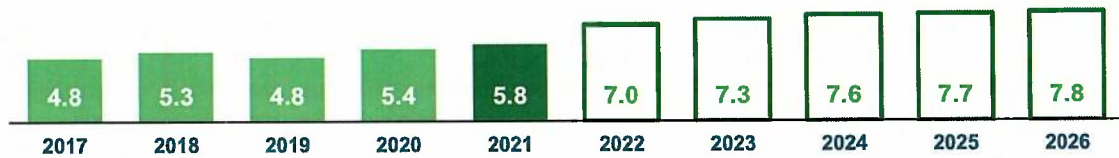
Identification: This plan allows for some overtime pay for some members to be included in pensionable earnings. If members retire with higher pensionable earnings than are anticipated by the actuarial assumptions, this will put upward pressure on subsequent Actuarially Determined Contributions.

Section V - Analysis of Risk
C. Maturity Measures

The metrics presented below are different ways of understanding the plan's maturity level, both in the past and as it is expected to change in the coming years.
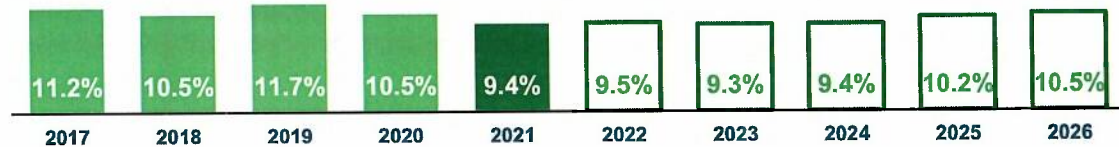
Asset Volatility Ratio: Market Value of Assets compared to Payroll

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
4.8	5.3	4.8	5.4	5.8	7.0	7.3	7.6	7.7	7.8

Accrued Liability for members in pay status compared to total Accrued Liability

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
61%	59%	60%	60%	58%	58%	59%	61%	64%	65%

Benefit Payments compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
11.2%	10.5%	11.7%	10.5%	9.4%	9.5%	9.3%	9.4%	10.2%	10.5%

Net Cash Flows compared to Market Value of Assets

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1.3%	1.0%	1.3%	1.4%	0.6%	1.4%	1.4%	1.7%	2.7%	3.3%

Benefit Payments compared to City Contributions

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1.7	1.6	1.7	1.7	1.6	1.7	1.7	1.8	2.0	2.1

Duration of Accrued Liability (based on GASB 68 sensitivity disclosures)

2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
10.6	10.7	11.0	10.8	10.5	10.4	10.2	10.1	10.0	9.9

Appendix A - Actuarial Funding Method

The actuarial funding method used in the valuation of this Plan is known as the Entry Age Normal Method. The Actuarially Determined Employer Contribution consists of three pieces: a Normal Cost, plus a special fixed series of "prior service" City payments through 2028, plus an amortization payment to gradually eliminate the Unfunded Accrued Liability (UAL) over a period of years. Amounts contributed by active members are netted out of this amount.

The Normal Cost is determined by calculating the present value of future benefits for present active Members that will become payable as the result of death, disability, retirement or termination. This cost is then spread as a level percentage of earnings from entry age to termination as an Active Member. If Normal Costs had been paid at this level for all prior years, a fund would have accumulated. Because this fund represents the portion of benefits that would have been funded to date, it is termed the Accrued Liability. In fact, it is calculated by adding the present value of benefits for Retired Members and Terminated Vested Members to the present value of benefits for Active Members and subtracting the present value of future Normal Cost contributions.

The funding cost of the Plan is derived by making certain specific assumptions as to rates of interest, mortality, turnover, etc. which are assumed to hold for many years into the future. Since actual experience may differ somewhat from the assumptions, the costs determined by the valuation must be regarded as estimates of the true costs of the Plan.

The Unfunded Accrued Liability is the excess of the Accrued Liability over the assets which have been accumulated for the plan. The initial base was funded as a level percent over a 26-year closed period that began January 1, 2018. A new base is created in each subsequent year based on any change in the Unfunded Accrued Liability that arises from actual experience being different than is expected based on the actuarial method and assumtions; this amount is amortized as a level percent over a closed 20-year period. If assumption changes are made, a separate base is established based on the resulting change in the Unfunded Accrued Liability; this amount is amortized as a level percent over a closed period selected by the Board.

The Actuarial Value of Assets is determined by recognizing market gains and losses asymptotically over a four year period, with the result constrained to within +/- 20% of the Market Value of Assets.

The long-range forecasts included in this report have been developed by assuming that members will terminate, retire, become disabled, and die according to the actuarial assumptions with respect to these causes of decrement, and that pay increases, cost of living adjustments, and so forth will likewise occur according to the actuarial assumptions. For those unions whose new employees are eligible to participate in this plan, members who are projected to leave active employment are assumed to be replaced by new active members with the same age, service, gender, and pay characteristics as those hired in the past few years. The forecasts assume the current blended member and City contribution rates remain fixed during the projection period.

Appendix B - Actuarial Assumptions

The actuarial assumptions used herein were adopted by the Board based on an experience study prepared by Cavanaugh Macdonald Consulting LLC for the period ending December 31, 2015. We are unable to judge the reasonableness of the assumptions or methods without performing a substantial amount of additional work beyond the scope of the assignment, and have not done so. We will perform an experience study in the near future and will report the results of that analysis when it is complete.

Interest Rate	7.75%
Inflation	2.50%
Amortization Growth Rate	3.25%
Salary Increases	Annual increases consisting of 2.50% inflation, 0.75% productivity, and merit/longevity that reflect length of service; combined impact of these factors are per the table below:

Service	Police	Fire
0	15.25%	8.25%
1	13.25%	8.25%
2	12.25%	8.25%
3	9.25%	8.25%
4	8.25%	8.00%
5	7.25%	7.75%
6	6.50%	7.50%
7	6.50%	7.25%
8	6.50%	6.25%
9	5.25%	5.25%
10	4.45%	4.25%
11	4.21%	4.25%
12	4.00%	4.25%
13	3.75%	4.25%
14	3.75%	4.25%
15	3.75%	4.25%
16	3.75%	4.25%
17	3.75%	3.25%
18	3.75%	3.25%
19	3.75%	3.25%
20	3.75%	3.25%
21	3.50%	3.25%
22	3.50%	3.25%
23	3.50%	3.25%
24 or more	3.25%	3.25%

COTA Adjustment	Members are assumed to retire with their current COTA.

Appendix B - Actuarial Assumptions

Decrement Timing Middle of year.

Mortality RP-2000 Tables with generational projection per Scale AA. Employee Table and Healthy Annuitant Table are set forward one year. Disabled Annuitant Table is set forward five years. This assumption includes a margin for future improvements in longevity.

85% of active deaths are assumed to occur in the line of duty.

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

Percent Married 75% of members are assumed to be married at death or retirement.

Turnover Rates based on length of service per the following table:

Service	Police	Fire
0-1	3.0%	1.5%
2-3	1.8%	1.5%
4-9	1.8%	0.5%
10-15	0.8%	0.5%
16-19	0.3%	0.3%
20 or more	0.0%	0.0%

Disability Rates based on age; sample rates are shown in the following table:

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

85% of disabilities are assumed to occur in the line of duty.

The liability for current and future disabled members is increased by 5% to reflect medical expenses for disabilities that are incurred in the line of duty.

Appendix B - Actuarial Assumptions

Retirement

Police Tier I & II

			Service				
Age	**19**	**20**	**21**	**22**	**23**	**24**	**25+**
45	0%	0%	0%	0%	0%	0%	0%
45	0%	3%	3%	10%	10%	10%	100%
46	0%	3%	3%	10%	10%	10%	100%
47	0%	3%	3%	10%	10%	10%	100%
48	0%	3%	3%	10%	10%	10%	100%
49	0%	3%	3%	10%	10%	10%	100%
50	0%	3%	3%	10%	10%	10%	100%
51	0%	3%	3%	10%	10%	10%	100%
52	0%	3%	3%	10%	10%	10%	100%
53	0%	3%	3%	10%	10%	10%	100%
54	0%	3%	3%	10%	10%	10%	100%
55	0%	3%	3%	10%	10%	10%	100%
56	0%	3%	3%	10%	10%	10%	100%
57	0%	3%	3%	10%	10%	10%	100%
58	0%	3%	3%	10%	10%	10%	100%
59	0%	3%	3%	10%	10%	10%	100%
60	0%	3%	3%	10%	10%	10%	100%
61	0%	3%	3%	10%	10%	10%	100%
62+	0%	100%	100%	100%	100%	100%	100%

Fire Tier I & II

			Service				
Age	**19**	**20**	**21**	**22**	**23**	**24**	**25+**
45	0%	0%	0%	0%	0%	0%	100%
46	0%	0%	0%	0%	0%	0%	100%
47	0%	0%	0%	0%	0%	0%	100%
48	0%	0%	0%	0%	0%	0%	100%
49	0%	0%	0%	0%	0%	0%	100%
50	0%	15%	15%	15%	15%	15%	100%
51	0%	15%	15%	15%	15%	15%	100%
52	0%	15%	15%	15%	15%	15%	100%
53	0%	15%	15%	15%	15%	15%	100%
54	0%	15%	15%	15%	15%	15%	100%
55	0%	15%	15%	15%	15%	15%	100%
56	0%	15%	15%	15%	15%	15%	100%
57	0%	15%	15%	15%	15%	15%	100%
58	0%	15%	15%	15%	15%	15%	100%
59	0%	15%	15%	15%	15%	15%	100%
60	0%	15%	15%	15%	15%	15%	100%
61	0%	15%	15%	15%	15%	15%	100%
62+	0%	100%	100%	100%	100%	100%	100%

Appendix B - Actuarial Assumptions

Retirement (continued)	**Police Tier III and Fire Tier III**
	100% are assumed to retire at the earlier of age 50 with 30 years of service or age 55 with 10 years of service.
DROP Participation	75% of retirement-eligible members are assumed to enter DROP.
DROP Period	5 years but not beyond age 60.
DROP Interest	4% per year
Interest on Member Contributions	4% per year

Appendix C - Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan. It is not intended to be, nor should it be interpreted as a complete statement of all plan provisions. All eligibility requirements and benefit amounts shall be determined in strict accordance with the plan document itself. To the extent that this summary does not accurately reflect the plan provisions, then the results of this valuation may not be accurate.

Effective Date of the Plan	7/1/1961
Eligibility	All current, probationary, and regular uniformed personnel of the police and fire departments of the City are eligible at date of hire.
Tier I	**Police** members hired prior to 1/1/2010 with 20+ years of service as of 9/19/2010 **Fire** members hired prior to 1/1/2013 with 15+ years of service as of 1/1/2013
Tier II	**Police** members hired prior to 1/1/2010 with less than 20 years of service as of 9/19/2010 **Fire** members hired prior to 1/1/2013 with less than 15 years of service as of 1/1/2013
Tier III	**Police** members hired on or after 1/1/2010 **Fire** members hired on or after 1/1/2013
Compensation	Included pay types for pensionable pay are defined in the Omaha City Ordinance and listed in an Appendix of the latest collective bargaining agreements. Certain overtime pay is excluded.
Final Average Compensation	**Police** Highest 26 pay periods out last 130 pay periods of service for members hired prior to 1/1/2010 who were at least age 45 with at least 20 years of service as of 9/19/2010. Highest 78 pay periods out of last 130 pay periods divided by 3 for all others. **Fire** Highest 26 pay periods out last 130 pay periods of service for members hired prior to 1/1/2013 who were at least age 45 with at least 25 years of service (or age 50 with at least 20 years of service) as of 1/2/2013. Highest 78 pay periods out of last 130 pay periods divided by 3 for all others. An additional amount, the **Career Overtime Average (COTA)**, is included in the Final Average Compensation for Tier I & II members. COTA is calculated by adding up all hours a member earns for overtime from their date of hire or 1/1/1991 (whichever is later) and dividing by the number of years the employee worked after 12/31/1990 and multiplying that balance by the member's average hourly rate.

Appendix C - Summary of Plan Provisions

Service

Elapsed time from date of hire or appointment (in qualifying position) to last date of employment. Breaks greater than 2 pay periods will reduce service unless for authorized military leave.

Member Contributions

Police
16.10% of each member's pensionable earnings.

Fire
17.15% of each member's pensionable earnings.

Interest on Member Contributions

The interest rate on member contributions is set annually by the Board with a minimum of 1% and a maximum of 5%. Interest is calculated annually and member's that terminate and receive a refund with a half year's worth of interest on current contributions.

Interest on DROP Accounts

The interest rate on member contributions is set annually by the Board between 0% and 7%. The rate chosen can be no more than 50% of the annual return on the trust's assets for the prior year (i.e. if the trust earns 8%, the max rate to credit interest would be 4%).

City Contributions

Police
34.420% of each member's pensionable earnings.

Fire
33.965% of each member's pensionable earnings.

In addition, the City shall make contributions of $1,327,600 annually through the year 2028.

Service Retirement Eligibility

Police
Tier I & II members are eligible to retire at the earlier of age 55 with 10 years of service or age 45 with 20 years of service.

Tier III members are eligible to retire at the earlier of age 50 with 20 years of service or age 55 with 10 years of service.

Fire
Tier I & II members are eligible to retire at the earlier of age 55 with 10 years of service or age 45 with 25 years of service.

Tier III members are eligible to retire at the earlier of age 50 with 20 years of service or age 55 with 10 years of service.

Appendix C - Summary of Plan Provisions

Service Retirement Benefit

A percentage of Final Average Compensation based on years of service per the table below:

Years of Service	Tier I Police/ Fire	Tier II Police/ Fire	Tier III Police	Tier III Fire
10-14	20.0%	20.0%	20.0%	20.0%
15-19	30.0%	30.0%	30.0%	30.0%
20	55.0%	50.0%	50.0%	45.0%
21	59.0%	54.0%	53.0%	45.0%
22	63.0%	58.0%	56.0%	45.0%
23	67.0%	62.0%	59.0%	45.0%
24	71.0%	66.0%	62.0%	45.0%
25	75.0%	70.0%	65.0%	55.0%
26	75.0%	72.0%	67.0%	57.0%
27	75.0%	74.0%	69.0%	59.0%
28	75.0%	74.0%	71.0%	61.0%
29	75.0%	74.5%	73.0%	63.0%
30 or more	75.0%	75.0%	75.0%	65.0%

Members earn a pro-rata percentage towards the total multiplier for each additional six months of service as follows:

Tier I Police/Fire - after 20 years up to 25 years.
Tier II Police/Fire - after 20 years up to 27 years.
Tier II Police - after 20 years up to 30 years.

Tier III members retiring with less than 30 years of service have a 7% benefit reduction applied for each year prior to age 55.

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. A member continues to make contributions during the DROP period. During the DROP period, a member account 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 accrued at the end of each year. At the end of the DROP period, the member ends employment, receives the DROP account balance, and begins to receive monthly benefits that would have been paid if the member had retired at the start of the DROP period.

Disability Benefits (Service Related)

Less than 20 years of service: 50% of Final Average Compensation.

20 or more years of service: service retirement benefit calculated as of the disability date without reduction for early commencement.

Appendix C - Summary of Plan Provisions

Disability Benefits (Non-Service Related)

A percentage of Final Average Compensation based on years of service per the table below:

Years of Service	Benefit	
0-9	10%	
10-14	20%	
15-19	30%	or a service retirement benefit without
20 or more	45%	reduction for early commencement, if greater

Preretirement Surviving Spouse's Benefit (Service Related; Pre-Retirement Eligible)

Less than 25 years of service: 49% of Final Average Compensation (52% for certain Fire* members).

25 or more years of service: 69% of Final Average Compensation (72% for certain Fire* members).

Preretirement Surviving Spouse's Benefit (Non-Service Related; Pre-Retirement Eligible)

A percentage of Final Average Compensation based on years of service per the table below:

Years of Service	Certain Members*	All Others
3-10	38.0%	35.0%
11	39.4%	36.4%
12	40.8%	37.8%
13	42.2%	39.2%
14	43.6%	40.6%
15	45.0%	42.0%
16	46.4%	43.4%
17	47.8%	44.8%
18	49.2%	46.2%
19	50.6%	47.6%
20-25	52.0%	49.0%
25+	72.0%	69.0%

*Fire members who were age 45 with 25 years of service or age 50 with 20 years of service as of most recent contract date.

Surviving Spouse's Benefit (Retirement Eligible Or After Retirement)

A percentage of the benefit the member was eligible to receive at the time of death per the table below:

Police Tier I & II	75%
Police Tier III	50%
Fire Tier I & II retired before 7/1/2007	75%
Fire Tier I & II retired after 7/1/2007	90%
Fire Tier III	50%

Benefits cease upon remarriage.

Appendix C - Summary of Plan Provisions

Children's Benefits

Upon the death of an active or retired member, the following benefits are due to surviving children until they reach age 18:

Number of Dependents	% of Final Average Compensation
1	15%
2	30%
3	45%
4 or more	50%

Lump Sum Death Benefits

For active members who are eligible for retirement, with a surviving spouse or child(ren), a lump sum equal to one year's salary.

For retired members with a surviving spouse or child(ren), $1,000 ($5,000 for Fire members who retired after 6/30/2005) or remaining contributions with interest, whichever is greater.

For active or retired members with no surviving spouse or child(ren), $500 or remaining contributions with interest, whichever is greater.

Vesting

10 years of service.

Termination Benefit

Members with less than 10 years of service receive a refund of their accumulated contributions.

Members with at least 10 years of service who have not met the requirements for service retirement may elect a monthly benefit commencing at age 55 equal to a percentage of Final Average Compensation per the table below:

Years of Service	Benefit
10-14	20%
15-19	30%
20-24	55%
25 or more	75%

The schedules shown under service retirement apply to all Tier II and III Police and Fire members.

Cost of Living Adjustments

Monthly pension benefits shall be increased by the lesser of 3% or $50 ($65 for Fire retirements after 6/30/2007). The increase will be made annually, beginning in the 13th month of retirement.

Appendix D - Glossary

Actuarial Cost Method - This is a procedure for determining the Actuarial Present Value of Benefits and allocating it to time periods to produce the Actuarial Accrued Liability and the Normal Cost.

Accrued Liability - This is the portion of the Actuarial Present Value of Benefits attributable to periods prior to the valuation date by the Actuarial Cost Method (i.e., that portion not provided by future Normal Costs).

Actuarial Assumptions - With any valuation of future benefits, assumptions of anticipated future events are required. If actual events differ from the assumptions made, the actual cost of the plan will vary as well. Some examples of key assumptions include the interest rate, salary scale, and rates of mortality, turnover and retirement.

Actuarial Present Value of Benefits - This is the present value, as of the valuation date, of future payments for benefits and expenses under the Plan, where each payment is: a) multiplied by the probability of the event occurring on which the payment is conditioned, such as the probability of survival, death, disability, termination of employment, etc.; and b) discounted at the assumed interest rate.

Actuarial Value of Assets - This is the value of cash, investments and other property belonging to the plan, typically adjusted to recognize investment gains or losses over a period of years to dampen the impact of market volatility on the Actuarially Determined Contribution.

Actuarially Determined Employer Contribution ("ADEC") - This is the employer's periodic contributions to a defined benefit plan, calculated in accordance with actuarial standards of practice.

Attribution Period - The period of an employee's service to which the expected benefit obligation for that employee is assigned. The beginning of the attribution period is the employee's date of hire and costs are spread across all employment.

Covered Payroll - This is the total projected pensionable earnings for all active members.

Expected Payroll - This is the total projected pensionable earnings for active members who have not yet reached the age where 100% are assumed to retire.

Interest Rate - This is the long-term expected rate of return on any investments set aside to pay for the benefits. In a financial reporting context (e.g., GASB 68) this is termed the Discount Rate.

Normal Cost - This is the portion of the Actuarial Present Value of Benefits allocated to a valuation year by the Actuarial Cost Method.

Past Service Cost - This is a catch-up payment to fund the Unfunded Accrued Liability over time (generally 10 to 30 years). A closed amortization period is a specific number of years counted from one date and reducing to zero with the passage of time; an open amortization period is one that begins again or is recalculated at each valuation date. Also known as the Amortization Payment.

Return on Plan Assets - This is the actual investment return on plan assets during the fiscal year.

Unfunded Accrued Liability - This is the excess of the Accrued Liability over the Actuarial Value of Assets.

Appendix G

Omaha Public Power District
Retirement Plan Information

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Appendix H

Omaha Public School District for
Omaha School Employees Retirement (OSERS)
Retirement Plan Information

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October 15, 2021

Senator Mark Kolterman, Chairperson
Nebraska Retirement Systems Committee
Nebraska Legislature
State Capitol
P. O. Box 94604
Lincoln, NE 68509-4604

RE: Neb. Rev. Stat. § 13-2402 - Reporting Requirements - Defined Benefit Plans
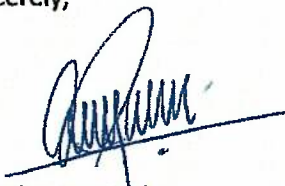
Dear Senator Kolterman:

I am responding on behalf of the Omaha Public Power District ("OPPD") to your letter of August 25th, 2021 regarding reporting requirements pursuant to Section 13-2402 of the Nebraska Revised Statutes. This letter, and the enclosed attachments, provide the information requested in your August 25th letter.

OPPD has provided and will continue to disclose information describing the organization's defined benefit Retirement Plan to the Board of Directors, in annual reports, in bond offering documents, and in annual newsletters provided to plan participants. We are pleased to provide similar information to the Nebraska Retirement Systems Committee.

As requested, OPPD's Interim Chief Financial Officer, John W. Thurber, will appear before the Committee on November 5th to present the information requested by the Committee and answer questions about OPPD's defined benefit plan status.

If you have any further questions, or need additional information, please do not hesitate to contact me. Thank you for the opportunity to present this information to the Committee.

Sincerely,

L. Javier Fernandez,
President and Chief Executive Officer

2021 Reporting Form for Underfunded

Political Subdivision Pension Plans

Omaha Public Power District

1. Please list the following information for plan years 2016 through current plan year 2020:

   a. Funding Status – There are currently multiple ways to identify and value funded status. For your consideration, the district is aware of two and they are as follows:

      i. **Present Value of Accrued Plan Benefits**: present value of benefits based on compensation and service to the date of the actuarial valuation.

Funded Ratio	2016	2017	2018	2019	2020	2021
PVAPB (%)	76.4	76.0	76.7	74.0	75.1	78.6

      ii. **Actuarial Accrued Liability**: present value of retirement benefits adjusted for assumptions for future increases in compensation and service attributable to past accounting periods.

Funded Ratio	2016	2017	2018	2019	2020	2021
AAL (%)	69.2	69.0	70.0	67.8	68.9	72.0

   b. Assumed rate of return – The discount rate of return is itemized in the table below:

	2016	2017	2018	2019	2020	2021
Discount Return %	7.0	7.0	7.0	7.0	7.0	7.0

   c. Actual investment return – The actual return is itemized in the table below:

	2016	2017	2018	2019	2020	2021
Actual Return %	6.74	16.49	-6.34	18.99	13.30	Not Yet Available

d. Member and employer contributions rates - percentage

	2016	2017	2018	2019	2020	2021
Employee Contributions (%)	6.2	6.2	6.7	7.2	7.7	8.3

The OPPD percentage rate is calculated by dividing the Annual Required Contribution into the Valuation Compensation as follows:

	2016	2017	2018	2019	2020	2021
Employer Contributions (%)	25.2	28.3	29.8	33.0	31.6	29.4

e. Normal cost – percentage

	2016	2017	2018	2019	2020	2021
Covered Compensation (%)	11.1	11.4	12.1	12.3	12.1	12.2

f. Actuarial required contribution – percentage & dollar amount

Assumed percentage of covered compensation

	2016	2017	2018	2019	2020	2021
ARC (%)	25.2	28.3	29.8	33.0	31.6	29.4

Dollar amount in millions

	2016	2017	2018	2019	2020	2021
ARC ($)	50.7	53.1	53.6	59.2	59.1	56.5

g. Actuarially required contribution - actual dollars contributed and percentage of actuarial required contribution actually contributed

	2016	2017	2018	2019	2020	2021
ARC ($) actually made	50.7	53.1	53.6	59.2	59.1	56.5
ARC Made (%)	100	100	100	100	100	Not Yet Available

2. Please provide a brief narrative of the circumstances that led to the current underfunding of the retirement plan.

> The primary reasons for the pension's present funding level are lower investment performance from 2000-2008, increase in mortality tables due to longer life expectancy, and reduction of the plan's projected earnings rate (discount rate). All of these items have impacted the funding status for the universe of defined benefit plans.

3. Have there been any changes in the actuarial methods and/or assumptions since the previous actuarial valuation report? If so, please describe.

> The District adopted an updated mortality table, active retirement rates, withdrawal rates, salary scale, and the terminated vested commencement age in 2021.

4. In what year is the plan's future funding ratio expected to reach 100%?

> The plan's funding ratio is expected to reach 100% in 2041.

5. What is the method used to amortize the unfunded actuarial liability?

> The unfunded liability is amortized over 20 years as a level dollar amount. A new amortization base is established each year for unexpected changes in the unfunded liability (i.e., plan amendments, assumption changes, or gains/losses). Because of the 20-year amortization period, the plan is not projected to be fully funded until the end of the last amortization period, which is 2041 based on the new amortization bases that were effective January 1, 2021.

6. Please provide a description of corrective actions implemented to improve the funding status of the plan including, but not limited to, benefit changes, increased contribution rates and/or employer contributions. Please include any actuarial projections based on these changes and attach a copy of the actuarial projections.

   a. In 2012, the OPPD Board of Directors approved a change in the retirement benefit for employees hired after December 31, 2012. Employees hired on January 1, 2013 and later are no longer eligible for the monthly annuity benefit and are only eligible for a cash balance payment at retirement. In addition to providing more convenience to future employees, there was a decrease in actuarially projected plan costs which is expected to reduce future pension costs.

   b. In 2013, the District changed early retirement eligibility, which generally prevents employees from receiving early retirement benefits before the age of 55.

c. The employee contribution rate increased from 6.2% to 6.7% in 2018, 7.2% in 2019, 7.7% in 2020, 8.3% in 2021 and 9.0% in 2022 and later.

7. Please describe any recent or ongoing negotiations with bargaining groups that may impact the funding of the plan.

   Negotiations occur on an ongoing basis. The current negotiations with the District's unions were completed in 2017. As a result of the negotiations, employee contributions to the retirement plan will gradually increase beginning in 2018 at 6.7% through 2022 at 9.0%.

8. Please attach a copy of the most recent Actuarial Experience Study. <u>When will the next Actuarial Experience Study be completed and available for review by the Committee?</u>

   The most recent Actuarial Experience Study was completed in 2021 and is attached.

9. What is the current assumed rate of return? If the rate has been changed in the past year, or if there are plans to review the rate for the upcoming year, please describe.

   The discount rate is currently 7.0%. The District is currently undergoing an asset/liability study and as a part of that study the discount rate is being reviewed.

10. Please attach the most recent actuarial valuation report. If the valuation report is completed biannually (or less often) please include an updated report for the interim year/s, if available.

    The January 1, 2021 actuarial valuation report is attached.

Actuarial Report

Omaha Public Power District

Retirement Plan

As of January 1, 2021

AON

Empower Results®

Contents

Introduction

This report documents the results of the January 1, 2021 actuarial valuation of the
Omaha Public Power District Retirement Plan for the plan sponsor and for Omaha Public Power District
(OPPD). The information provided in this report is intended strictly for documenting information relating to
contribution and funding requirements for the 2021 plan year.

Determinations for purposes other than the funding valuation may be significantly different from the
results in this report. Thus, the use of this report for purposes other than those expressed here may not
be appropriate.

This valuation has been conducted in accordance with generally accepted actuarial principles and
practices, including the applicable Actuarial Standards of Practice as issued by the Actuarial Standards
Board. This plan is a governmental plan as defined in IRC section 414(d), and as such the plan is not
subject to the ERISA minimum funding requirements.

A valuation model was used to develop the liabilities for the January 1, 2021 valuation. The valuation
model relies on ProVal software, which was developed by Winklevoss Technologies, LLC. Experts within
Aon selected this software and determined it is appropriate for performing valuations. The valuation team
coded and reviewed the software for the provisions, assumptions, methods, and data of the OPPD
Retirement Plan. The valuation team relied on experts at Aon for the development of the capital market
assumptions models underlying the interest rate.

Future actuarial measurements may differ significantly from the current measurements presented in this
report due (but not limited to) to such factors as the following:

- Plan experience differing from that anticipated by the economic or demographic assumptions;

- Changes in actuarial methods or in 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); and

- Changes in plan provisions or applicable law;

- Issuance of additional regulatory guidance.

Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such
future measurements.

Funded status measurements shown in this report are determined based on various measures of plan
assets and liabilities. Plan assets are measured based on the asset valuation method described in the
Actuarial Assumptions and Methods section of this report. Plan liabilities are measured based on the
interest rates and other assumptions summarized in the Actuarial Assumptions and Methods section of
this report. These funded status measurements may not be appropriate for assessing the sufficiency of
plan assets to cover the estimated cost of settling the plan's benefit obligations.

In determining contribution requirement for the Plan, Aon may be assisting the appropriate plan fiduciary
as it performs tasks that are required for the administration for an employee benefit plan. Aon may be
consulting with the employer/plan sponsor (OPPD) as it considers alternative strategies for funding the
plan. Thus, Aon potentially will be providing assistance to OPPD (and/or certain of its employees) acting
in a fiduciary capacity (for the benefit of plan participants and beneficiaries) and to OPPD (and/or its
executives) acting in a settlor capacity (for the benefit of the employer sponsoring the Plan).
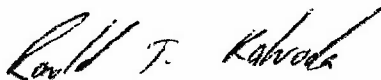
In conducting the valuation, we have relied on personnel, plan design, and asset information supplied by OPPD as of the valuation date. While we cannot verify the accuracy of all the information, the supplied information was reviewed for consistency and reasonableness. As a result of this review, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it has produced appropriate results.

The actuarial assumptions and methods used in this valuation are described in the Actuarial Assumptions and Methods section of this report. OPPD selected the economic and demographic assumptions. With the exception of the assumed active management premium reflected in the interest rate (i.e., expected return on assets), Aon provided guidance with respect to these assumptions, and it is our belief that the assumptions represent reasonable expectations of anticipated plan experience. The interest rate is based on an underlying expected passive return and assumed active management premium. The underlying expected passive return is within the range we would consider to be reasonable based on Aon's forward-looking capital market assumptions. The active management premium was selected by OPPD. We are unable to assess the reasonability of the assumed active management premium; as such an assessment would require a substantial amount of additional work beyond the scope of our assignment.

The undersigned are familiar with the near-term and long-term aspects of pension valuations and collectively meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained herein. The information provided in this report is dependent upon various factors as documented throughout this report, which may be subject to change. Each section of this report is considered to be an integral part of the actuarial opinions.

Certain aspects of the funding results included in this report are subject to Actuarial Standard of Practice No. 51 (ASOP 51) on risk assessments for pension funding calculations. The January 1, 2021 ASOP 51 risk assessment analysis for the OPPD Retirement Plan is contained in a separate report.

To our knowledge, no colleague of Aon providing services to OPPD has any material direct or indirect financial interest in OPPD. Thus, we believe there is no relationship existing that might affect our capacity to prepare and certify this actuarial report for OPPD.

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October 2021

Summary

The following page summarizes the results of the January 1, 2021 actuarial valuation. For comparison purposes, the results of the January 1, 2020 and January 1, 2019 actuarial valuations are also shown.

This plan is a governmental plan as defined in IRC section 414(d), and as such the Plan is not subject to the ERISA minimum funding requirements.

Plan Changes

There have been no plan changes since the prior valuation.

Assumption Changes

The January 1, 2021 valuation results reflect the following assumption changes:

- The mortality table for healthy participants was updated from the PUB-2010 General table projected using Scale MP-2019 with generational projection to the PUB-2010 General table projected using Scale MP-2020 with generational projection.

- The mortality table for disabled participants was updated from the PUB-2010 General Disabled Retiree table projected using Scale MP-2019 with generational projection to the PUB-2010 General Disabled Retiree table projected using Scale MP-2020 with generational projection.

- The following assumptions were changed as a result of an assumption study performed in 2021:
    - Active retirement rates
    - Withdrawal rates
    - Salary scale
    - Terminated vested (VDRA) commencement age

  In conjunction with the assumption study, the use of separate active retirement rates and withdrawal rates for Fort Calhoun participants was eliminated. The new active retirement rates and withdrawal rates will apply to all active participants, including Fort Calhoun participants.

Method Changes

The January 1, 2021 valuation results reflect the following method changes:

- The actuarial value of assets method was changed to a 5-year smoothing with a fresh start (i.e., actuarial value equal to market value) as of January 1, 2021.

Summary

	January 1, 2019	January 1, 2020	January 1, 2021
Interest Rate	7.00%	7.00%	7.00%
Present Value of Future Benefits (PVB)	$ 1,736,377,868	$ 1,777,229,220	$ 1,833,861,686
Accrued Liability (EAN)	$ 1,537,959,944	$ 1,567,265,214	$ 1,607,360,663
Actuarial Value of Assets	1,042,187,515	1,079,189,274	1,157,752,902
Unfunded Accrued Liability	$ 495,772,429	$ 488,075,940	$ 449,607,761
Gross Normal Cost	$ 22,036,419	$ 22,596,426	$ 23,440,427
As Percentage of Covered Compensation	12.29%	12.08%	12.19%
Annual Required Contribution (ARC)[1]	$ 59,201,071	$ 59,093,356	$ 56,547,072
As Percentage of Covered Compensation	33.01%	31.58%	29.41%
Number of Participants			
Retired and Beneficiaries	2,219	2,258	2,296
Terminated and Vested	482	490	501
Disabled	34	32	26
Active	1,762	1,796	1,788
Total	4,497	4,576	4,611
Valuation Compensation[2]	$ 179,363,501	$ 187,099,498	$ 192,252,415

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[1] Adjusted to reflect timing of contributions.
[2] Expected compensation during the plan year for active participants under the 100% assumed retirement age.

Funding Requirements

The Funding Requirements section presents the results of the ongoing plan valuation, which determines the contribution levels.

Included in the Funding Requirements are the following sections:

- *Assets and Liabilities*—This section develops the basic quantities upon which the actual contributions are based.
- *Contributions*—This section shows the development of the contribution amount for the year.
- *Experience*—This section develops and analyzes the actuarial gain or loss during the past year.

This plan is a governmental plan as defined in IRC section 414(d), and as such the plan is not subject to the ERISA minimum funding requirements.

Assets and Liabilities

The Asset and Liabilities section includes the following:

- Unfunded Accrued Liability and Normal Cost—The actuarial valuation determines the unfunded accrued liability and the normal cost of the plan for the current year. The contribution then consists of the normal cost plus a payment on the unfunded accrued liability, if any.

- For employees already retired or terminated with a vested pension, the benefits to be paid have been determined. For other employees, future benefit payments based on service and projected pay must be estimated. As of the current valuation date, these liabilities have been valued as shown on the following pages.

- Development of the Actuarial Value of Assets—The actuarial valuation determines an actuarial value of assets, which has been adjusted to smooth out any significant annual changes in the market value of assets.

Valuation Results

The following table shows the basic valuation results as of January 1, 2021, both before and after changes.

	Before Changes	After Changes
Accrued Liability		
Retirees and Beneficiaries	$ 1,065,473,019	$ 1,062,658,612
Terminated Vested	40,869,039	40,193,407
Active and Disabled Employees	496,590,248	504,508,644
Total	$ 1,602,932,306	$ 1,607,360,663
Actuarial Value of Assets	1,157,752,902	1,157,752,902
Unfunded Accrued Liability	$ 445,179,404	$ 449,607,761
Funded Ratio	72.2%	72.0%
Gross Normal Cost	$ 22,973,378	$ 23,440,427
Number of Participants		
Retired and Beneficiaries		2,296
Terminated Vested		501
Disabled		26
Active		1,788
Total		4,611
Valuation Compensation[1]		$ 192,252,415

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[1] Expected compensation during the plan year for active participants under the 100% assumed retirement age.

Market Value of Assets

Market Value, 12/31/2020	$ 1,157,752,902
Receivable for 2020 Plan Year	0
Market Value of Assets, 1/1/2021	$ 1, 157,752,902

Actuarial Value of Assets

Effective January 1, 2021, the actuarial value of assets method was changed to a 5-year smoothing with a fresh start (i.e., actuarial value equal to market value) as of the effective date of the method change.

Actuarial Value, 1/1/2020	$ 1,079,189,274
OPPD Contributions for 2020	59,093,356
Employee Contributions for 2020	13,971,037
Benefit Payments in 2020	(102,514,928)
Interest on Above at 7.00% to 12/31/2020	74,707,178
Expected Actuarial Value of Assets, 1/1/2021	$ 1,124,445,917
Adjustment 20% Toward Market Value	6,661,397
Actuarial Value of Assets Before Method Change, 1/1/2021	$ 1,131,107,314
Impact of Method Change	26,645,588
Actuarial Value of Assets After Method Change, 1/1/2021	$ 1,157,752,902

The return on the market value of assets during the 2020 Plan Year was approximately 12.67%.

Contributions

This section includes the calculation of the Annual Required Contribution (ARC) applicable to the 2021 Plan Year. The ARC is determined based on OPPD's funding policy. The funding policy is based on the following:

- Entry age normal cost method
- 20-year fresh start of the unfunded accrued liability as of January 1, 2015
- One-year amortization of the increase in accrued liability due to certain plan amendments, including single-year ad hoc retiree cost-of-living adjustments
- 20-year amortization of other plan or assumption changes and actual gains or losses
- Amortizations are closed group amortizations based on level amounts

Annual Required Contribution for 2021

Gross Normal Cost, 1/1/2021	$	23,440,427
Expected Employee Contributions during 2021		(15,956,950)
Net Amortization Charges, 1/1/2021		46,846,107
Interest at 7.00% to 12/31/2021		4,361,564
Total Charges at 12/31/2021	$	58,691,148
Discount for Monthly Contributions		(2,144,076)
Annual Required Contribution for 2021 Plan Year— Adjusted for Assumed Monthly Contributions	$	56,547,072

Schedule of Amortization Payments to be Recognized in the Annual Required Contribution

OPPD has elected to amortize all future gains/losses and plan amendments over a period of 20 years.

Source	Date Established	Original Amount	Remaining Years	Present Value 1/1/2021	Payment Due 1/1/2021
2015 Fresh Start	01/01/2015	$361,570,248	14	$299,069,886	$31,959,933
2016 Plan Amendment	01/01/2016	1,268,369	15	1,090,444	111,892
2016 Assumption Changes	01/01/2016	50,292,679	15	43,237,754	4,436,704
2016 (Gain)/Loss	01/01/2016	28,105,800	15	24,163,192	2,479,429
2017 Assumption Changes	01/01/2017	(1,501,900)	16	(1,339,240)	(132,494)
2017 (Gain)/Loss	01/01/2017	27,887,279	16	24,866,998	2,460,151
2018 Plan Amendment	01/01/2018	949,609	17	875,141	83,772
2018 Assumption Changes	01/01/2018	(14,359,293)	17	(13,233,224)	(1,266,743)
2018 (Gain)/Loss	01/01/2018	20,544,594	17	18,933,469	1,812,396
2019 Assumption Changes	01/01/2019	33,164,231	18	31,489,657	2,925,672
2019 (Gain)/Loss	01/01/2019	34,126,681	18	32,403,510	3,010,577
2020 Assumption Changes	01/01/2020	(5,488,202)	19	(5,354,329)	(484,157)
2020 (Gain)/Loss	01/01/2020	14,320,622	19	13,971,301	1,263,332
2021 Assumption Changes	01/01/2021	4,428,357	20	4,428,357	390,659
2021 (Gain)/Loss	01/01/2021	(24,995,155)	20	(24,995,155)	(2,205,015)
Total				$449,607,761	$46,846,107

Experience

This section presents the development and analysis of the actuarial gain/loss during the past year. Gains or losses result when actual plan experience over the prior year differs from the Actuarial Assumptions.

Development of Actuarial Gain or Loss for 2020

Unfunded Accrued Liability (Surplus), 1/1/2020	$	488,075,940
Plus:	Interest to 12/31/2020 at 7.00%	34,165,316
Plus:	2020 Total Normal Cost	22,596,426
Plus:	Interest to 12/31/2020 at 7.00%	1,581,750
Less:	2020 OPPD Contributions	(59,093,356)
Less:	Interest to 12/31/2020 at 7.00%	(2,262,965)
Less:	2020 Employee Contributions	(13,971,037)
Less:	Interest to 12/31/2020 at 7.00%	(488,986)
Equals: Expected Unfunded Accrued Liability (Surplus), 1/1/2021	$	470,603,088
Less:	Actual Unfunded Accrued Liability (Surplus) Before Changes, 1/1/2021	445,179,404
Equals: Actuarial Gain (Loss) for 2021 plan year	$	(25,423,684)

Reconciliation of Unfunded Accrued Liability (Surplus)

Unfunded Accrued Liability (Surplus) Before Changes, 1/1/2021	$	445,179,404
Change in Unfunded Due to Plan Amendment		0
Change in Unfunded Due to Assumption Change		4,428,357
Change Due to Retiree Cost of Living Adjustment (COLA)		0
Actual Unfunded Accrued Liability (Surplus), 1/1/2021	$	449,607,761

Accrued Benefit Values

This section presents the results of a separate valuation of the plan's obligations, based only on benefits accrued as of the valuation date of January 1, 2021. The focus of this valuation differs from the calculation of ongoing funding requirements, which anticipates benefits to be earned by future service and salary increases. This accrued benefit valuation assumes an ongoing plan and, therefore, differs from a calculation of termination liabilities which would be based on the benefits and assumptions appropriate for a terminating plan.

The American Academy of Actuaries, in Actuarial Standards of Practice Number 4, has provided recommended procedures for the calculation of the Present Value of Vested Accrued Benefits and the Present Value of Accrued Benefits. The results under both illustrations include the sum of the present value of:

- All benefits expected to be paid to former participants and their beneficiaries; and
- Benefits expected to be paid at a future date to present active participants, based on only service and pay prior to the date of calculation.

The *Present Value of Vested Accrued Benefits* recognizes only the benefits in which an active participant retains a right, independent of continuation of employment, beyond the calculation date. It does not include any additional benefits which might arise because of future death or disability that would not become payable if the participant had terminated employment before the occurrence of the death or disability.

The *Present Value of All Accrued Benefits* recognizes All Accrued Benefits expected to become payable at future dates, including the accrued portion of disability and preretirement death benefits. Thus, the accrued benefit of a non-vested participant is included in this calculation to the extent it will become payable (i.e., vest) upon the occurrence of a future event such as termination, death, disability, or retirement.

The accrued benefit used in these calculations is based on the personnel data supplied by OPPD.

The interest rate used in these calculations is the same as the funding interest rate.

Vested Accrued Benefits, 1/1/2021

Retired and Beneficiaries	$	1,062,658,612
Terminated Vested		40,193,407
Active and Disabled Employees		285,944,944
Total Vested	$	1,388,796,963
Non-vested Benefits, 1/1/2021		84.863.162
Total Accrued Benefits, 1/1/2021	$	1,473,660,125
Interest Rate Used for These Calculations		7.00%

Historical Accrued Benefit Values and Funded Ratios

Valuation Date	Interest Rate		Accrued Benefit Value	Actuarial Assets	Funded Ratio		Market Assets	Funded Ratio
1/1/2021	7.00%	$	1,473,660,125	$1,157,752,902	78.6%	$	1,157,752,902	78.6%
1/1/2020	7.00%	$	1,436,730,837	$1,079,189,274	75.1%	$	1,055,344,216	73.5%
1/1/2019	7.00%	$	1,408,802,678	$1,042,187,515	74.0%	$	919,804,594	65.3%
1/1/2018	7.00%	$	1,347,839,267	$1,033,752,901	76.7%	$	1,020,385,607	75.7%
1/1/2017	7.00%	$	1,309,514,839	$ 995,616,705	76.0%	$	904,819,988	69.1%
1/1/2016	7.00%	$	1,274,917,795	$ 973,844,079	76.4%	$	869,489,088	68.2%
1/1/2015	7.75%	$	1,147,857,404	$ 949,166,647	82.7%	$	903,563,000	78.7%
1/1/2014	7.75%	$	1,063,458,429	$ 905,699,590	85.2%	$	886,689,000	83.4%
1/1/2013	7.75%	$	1,027,634,931	$ 852,552,291	83.0%	$	800,941,000	77.9%
1/1/2012	7.75%	$	985,638,320	$ 805,762,548	81.8%	$	711,973,000	72.2%
1/1/2011	7.75%	$	929,439,034	$ 771,588,331	83.0%	$	707,943,000	76.2%
1/1/2010	8.00%	$	854,121,013	$ 733,227,289	85.8%	$	636,262,350	74.5%
1/1/2009	8.00%	$	782,059,197	$ 698,111,470	89.3%	$	505,449,000	64.6%
1/1/2008	8.20%	$	702,387,775	$ 695,741,868	99.1%	$	659,737,600	93.9%
1/1/2007	8.20%	$	653,802,476	$ 656,473,880	100.4%	$	635,020,300	97.1%
1/1/2006	8.20%	$	609,284,807	$ 611,924,676	100.4%	$	574,286,900	94.3%
1/1/2005	8.40%	$	553,591,549	$ 577,885,164	104.4%	$	549,264,200	99.2%
1/1/2004	8.40%	$	515,350,617	$ 545,565,278	105.9%	$	508,132,200	98.6%
1/1/2003	8.50%	$	476,951,308	$ 519,723,240	109.0%	$	433,102,700	90.8%
1/1/2002	8.75%	$	425,266,689	$ 544,184,070	128.0%	$	494,471,300	116.3%

Historical Actuarial Accrued Liabilities and Funded Ratios

Valuation Date	Interest Rate	Actuarial Accrued Liability	Actuarial Assets	Funded Ratio	Market Assets	Funded Ratio
1/1/2021	7.00%	$ 1,607,360,663	$ 1,157,752,902	72.0%	$ 1,157,752,902	72.0%
1/1/2020	7.00%	$ 1,567,265,214	$ 1,079,189,274	68.9%	$ 1,055,344,216	67.3%
1/1/2019	7.00%	$ 1,537,959,944	$ 1,042,187,515	67.8%	$ 919,804,594	59.8%
1/1/2018	7.00%	$ 1,476,147,956	$ 1,033,752,901	70.0%	$ 1,020,385,607	69.1%
1/1/2017	7.00%	$ 1,443,717,502	$ 995,616,705	69.0%	$ 904,819,988	62.7%
1/1/2016	7.00%	$ 1,406,958,596	$ 973,844,079	69.2%	$ 869,489,088	61.8%
1/1/2015	7.75%	$ 1,310,736,895	$ 949,166,647	72.4%	$ 903,563,000	68.9%
1/1/2014	7.75%	$ 1,224,899,093	$ 905,699,590	73.9%	$ 886,689,000	72.4%
1/1/2013	7.75%	$ 1,184,996,831	$ 852,552,291	71.9%	$ 800,941,000	67.6%
1/1/2012	7.75%	$ 1,155,410,379	$ 805,762,548	69.7%	$ 711,973,000	61.6%
1/1/2011	7.75%	$ 1,094,908,920	$ 771,588,331	70.5%	$ 707,943,000	64.7%
1/1/2010	8.00%	$ 1,018,913,896	$ 733,227,289	72.0%	$ 636,262,350	62.4%
1/1/2009	8.00%	$ 963,324,892	$ 698,111,470	72.5%	$ 505,449,000	52.5%
1/1/2008	8.20%	$ 868,897,940	$ 695,741,868	80.1%	$ 659,737,600	75.9%
1/1/2007	8.20%	$ 819,314,262	$ 656,473,880	80.1%	$ 635,020,300	77.5%
1/1/2006	8.20%	$ 771,906,685	$ 611,924,676	79.3%	$ 574,286,900	74.4%
1/1/2005	8.40%	$ 702,300,052	$ 577,885,164	82.3%	$ 549,264,200	78.2%
1/1/2004	8.40%	$ 658,260,260	$ 545,565,278	82.9%	$ 508,132,200	77.2%
1/1/2003	8.50%	$ 614,382,408	$ 519,723,240	84.6%	$ 433,102,700	70.5%
1/1/2002	8.75%	$ 548,292,461	$ 544,184,070	99.3%	$ 494,471,300	90.2%

Personnel Information

The actuarial valuation was based on personnel data supplied by OPPD. The first of the following tables contains a summary of the total participant group as of January 1, 2021. For comparison purposes, the January 1, 2020 figures are also shown.

Age and service have been determined for each participant in years and completed months as of the valuation date.

Number of Participants

	January 1, 2020	January 1, 2021
Retired and Beneficiaries	2,258	2,296
Terminated Vested	490	501
Disabled	32	26
Active	1,796	1,788
Total	4,576	4,611

Personnel Characteristics of Active Participants as of January 1, 2021

	Number	Average Age	Average Years of Service	Average Entry Age	Average Pay
Male	1,408	45.3	13.7	31.6	—
Female	380	47.0	12.3	34.7	—
Total	1,788	45.6	13.4	32.2	$ 102,122

Characteristics for Inactive Participants

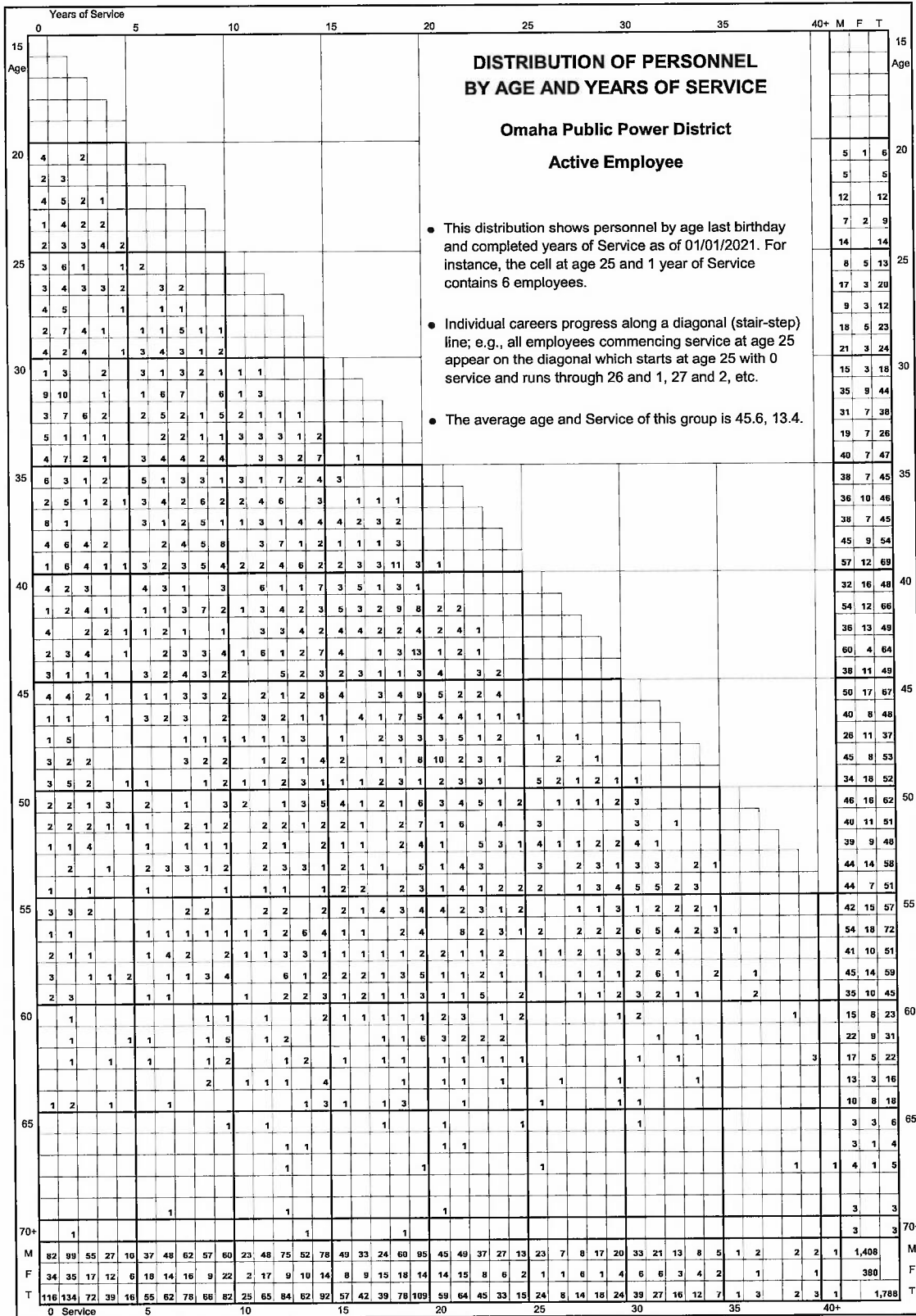|	Number	Average Age	Average Annual Benefit[1]
Retired and Beneficiaries	2,296	71.0	$ 45,037
Terminated Vested	501	50.8	$ 17,663

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[1] Does not include terminated vested participants under the cash balance formula.

Distribution of Personnel

The following pages provide graphical and statistical summaries of the personnel data. Included are the following:

- A grid which presents the distribution of active participants by age and service.
- A bar chart which presents the distribution of active participants by five-year age groupings.
- A bar chart which presents the distribution of active participants currently age 55 or older by five-year groupings of expected service at age 65.

These charts and graphs are useful tools for analyzing many different characteristics of the current participants of the plan. When compared to prior years' valuations, trends in the active participant population can also be observed.

DISTRIBUTION OF PERSONNEL BY AGE AND YEARS OF SERVICE

Omaha Public Power District

Active Employee

- This distribution shows personnel by age last birthday and completed years of Service as of 01/01/2021. For instance, the cell at age 25 and 1 year of Service contains 6 employees.

- Individual careers progress along a diagonal (stair-step) line; e.g., all employees commencing service at age 25 appear on the diagonal which starts at age 25 with 0 service and runs through 26 and 1, 27 and 2, etc.

- The average age and Service of this group is 45.6, 13.4.

(Grid: Distribution of personnel by Age (vertical axis, 15 to 70+) and Years of Service (horizontal axis, 0 to 40+). The per-cell counts of the grid are not reproduced here. Marginal M/F/T totals follow.)

Totals by Age (Male, Female, Total)

Age band	M	F	T
20	5	1	6
	5		5
	12		12
	7	2	9
	14		14
25	8	5	13
	17	3	20
	9	3	12
	18	5	23
	21	3	24
30	15	3	18
	35	9	44
	31	7	38
	19	7	26
	40	7	47
35	38	7	45
	36	10	46
	38	7	45
	45	9	54
	57	12	69
40	32	16	48
	54	12	66
	36	13	49
	60	4	64
	38	11	49
45	50	17	67
	40	8	48
	26	11	37
	45	8	53
	34	18	52
50	46	16	62
	40	11	51
	39	9	48
	44	14	58
	44	7	51
55	42	15	57
	54	18	72
	41	10	51
	45	14	59
	35	10	45
60	15	8	23
	22	9	31
	17	5	22
	13	3	16
	10	8	18
65	3	3	6
	3	1	4
	4	1	5
	3		3
70+	3		3

Column totals by Years of Service

	M	F	T
0	82	34	116
	99	35	134
	55	17	72
	27	12	39
	10	6	16
5	37	18	55
	48	14	62
	62	16	78
	57	9	66
	60	22	82
10	23	2	25
	48	17	65
	75	9	84
	52	10	62
	78	14	92
15	49	8	57
	33	9	42
	24	15	39
	60	18	78
	95	14	109
20	45	14	59
	49	15	64
	37	8	45
	27	6	33
	13	2	15
25	23	1	24
	7	1	8
	8	6	14
	17	1	18
	20	4	24
30	33	6	39
	21	6	27
	13	3	16
	8	4	12
	5	2	7
35	1		1
	2	1	3
	2		2
40+	2	1	3
	1		1
Total	**1,408**	**380**	**1,788**

Distribution of Personnel by Age

**Omaha Public Power District
Active Employee**

Age:
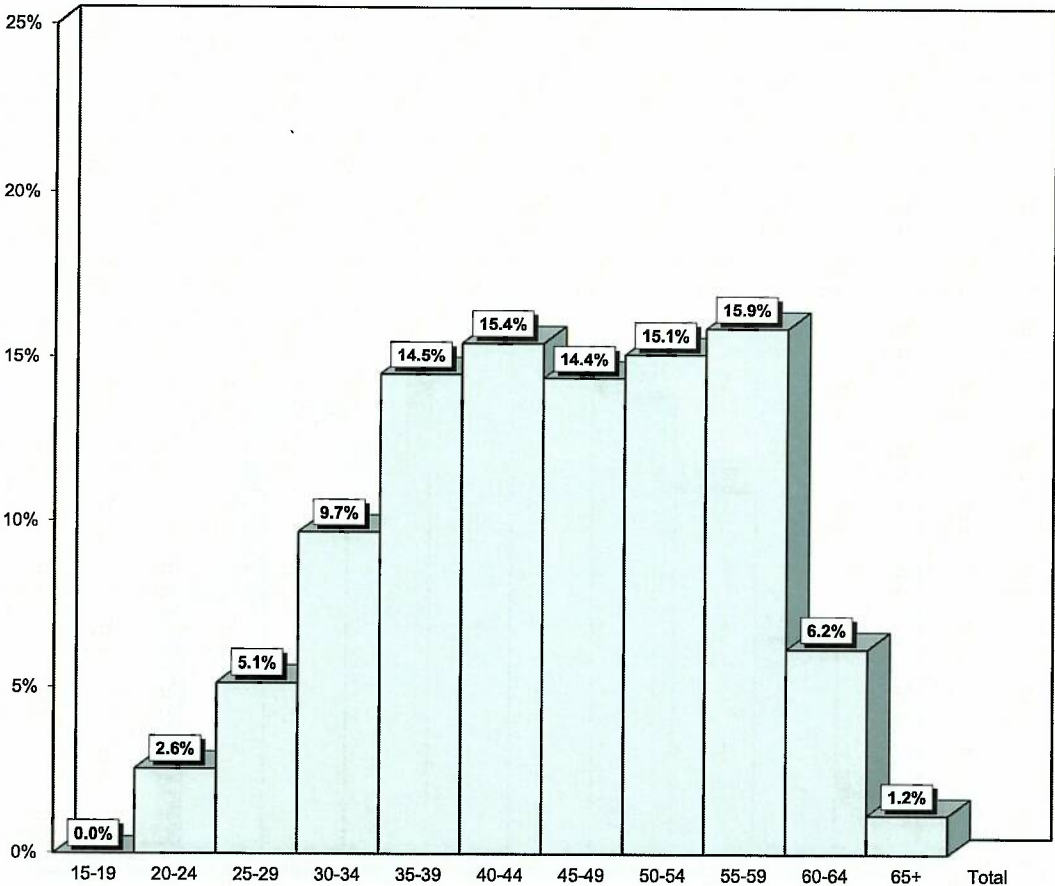
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+	Total
Number	0	46	92	173	259	276	257	270	284	110	21	1,788
Average Service	0.0	1.7	3.5	6.4	9.4	12.4	14.9	18.6	19.3	17.6	18.8	13.4

					Detail of Employees 55 & Over							
Age	55	56	57	58	59	60	61	62	63	64	65	66+
Number	57	72	51	59	45	23	31	22	16	18	6	15
Average Service	18.2	22.0	18.3	17.9	19.4	19.7	16.7	19.1	17.6	14.7	18.9	18.8

Distribution of Personnel
By Expected Service At Age 65
(Based Upon Personnel Age 55 And Over)

Omaha Public Power District
Active Employee

Service:
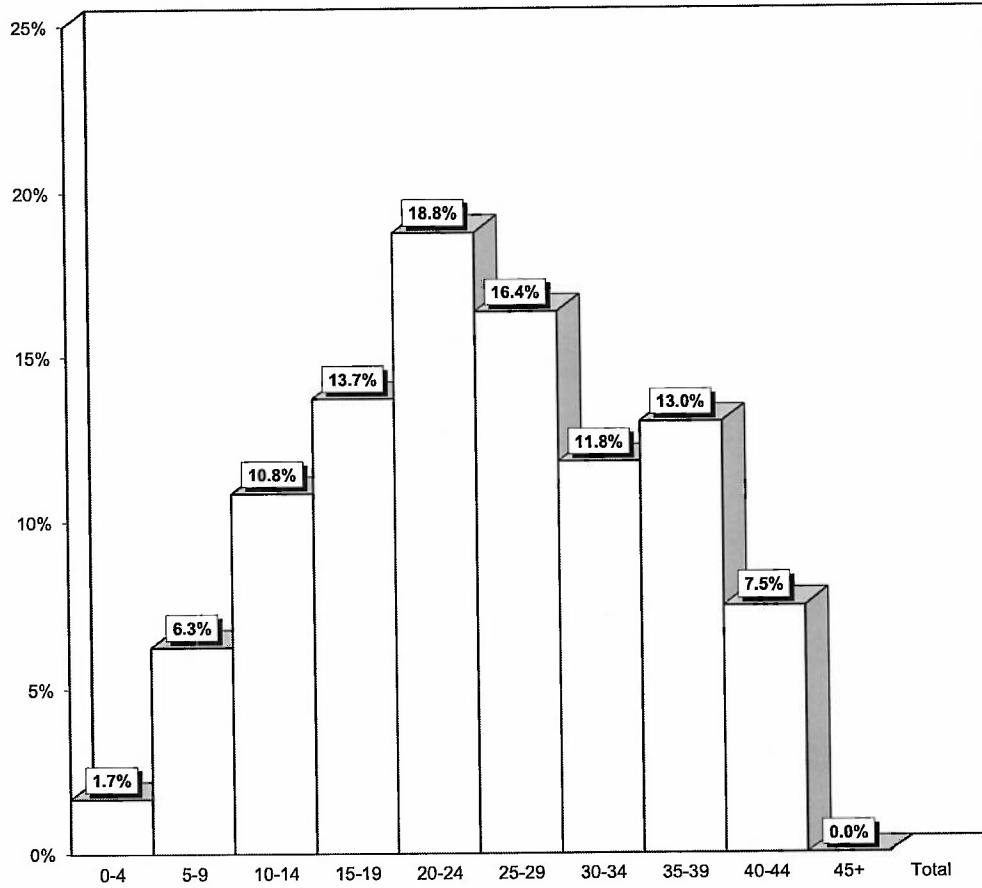
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45+	Total
Number	7	26	45	57	78	68	49	54	31	0	415
Average Service At Age 65*	2.5	7.8	12.6	17.4	22.4	27.1	32.1	37.9	41.8	0.0	24.8

* Or Current
Age if Older

Plan Provisions

Plan Name Omaha Public Power District Retirement Plan.

Effective Date The original Plan became effective December 31, 1945. The plan was restated effective January 1, 1997, and last amended during 2017.

Plan Year Calendar year.

Eligibility Full-time employees become eligible upon date of employment.

Participation Each eligible employee shall immediately become a participant. A part-time employee may elect not to become a member. As of January 1, 2013 for non-union 763 employees and May 31, 2013 for union 763 employees, all new hires receive cash balance benefits.

Final Average Pay Formula Provisions

Normal Retirement

Eligibility Age 65.

Benefit A normal retiree shall receive a monthly benefit equal to 2.25% of the participant's average monthly compensation per year of credited service. Participants who were participants in certain other prior pension plans will have their benefits reduced by prior plan benefits. Certain participants may have additional accrual rates apply by special provisions. A minimum benefit of the actuarial equivalent of a participant's contributions accumulated with interest at 5.5% to date of retirement exists for all participants.

Unreduced Early Retirement

Eligibility Ninety age/service points.

Benefit An early retiree shall receive a monthly benefit computed in the same manner as a normal retirement benefit but based on the participant's average monthly compensation and credited service at the time of termination. This benefit is unreduced for early commencement.

Early Retirement

Eligibility | Some grandfathered at age 50 with 10 years of service and 70 age/service points. Else, Union 763 is age 50 with 25 years of service, and all others are age 55 with 20 years of service, or age 62 with 10 years of service.

Benefit | An early retiree shall receive a monthly benefit computed in the same manner as a normal retirement benefit but based on the participant's average monthly compensation and credited service at the time of termination. Further, this benefit will be reduced by the lesser of 3% per year from age 62, or 3% per point from 90 age/service points.

Deferred With Vesting

Eligibility | Five years of continuous service.

Benefit | A vested participant who terminates shall be entitled to receive an accrued benefit computed in the same manner as a normal retirement benefit, but based on the participant's average monthly compensation and credited service at the time of termination. Benefits may commence for early retirement. This benefit will be reduced 6% for each year the commencement date precedes age 65.

Preretirement Surviving Spouse Benefit

Eligibility | Five years of continuous service.

Benefit | A spouse who survives a vested participant who has not yet retired shall receive one-half of the benefit to which the participant would have been entitled had the participant retired on the day immediately preceding death. The benefit is reduced by 2% for each year that the surviving spouse is more than five years younger than the participant. The benefit continues during the lifetime of the spouse and begins upon the participant's death.

Preretirement Dependent Survivor Benefit

Eligibility | Actively employed full-time district employees.

Benefit | The percent of base pay at time of death paid as a survivor benefit will be 20% for one dependent, 40% for two dependents, and 50% for three or more dependents. The survivor benefit is offset by amounts payable from the preretirement surviving spouse benefit, workers' compensation survivor payments, and payments from other district-sponsored sources.

Return of Contributions

Eligibility | Plan participants not eligible for vested, death, early or normal retirement benefits. Terminated vested participants have the option to receive this benefit in lieu of their accrued benefit.

Benefit | Participant contributions accumulated with 5.5% interest will be returned.

Normal Form of Benefits

An unmarried participant shall receive a Life Annuity. Married participants will receive an unreduced 50% Joint and Survivor Annuity.

Definitions

Continuous Service	Years of employment with the district during which an employee is compensated for 1,000 or more hours.
Credited Service	One-twelfth of a year of credited service for each calendar month of Service to the district as a full-time employee or as a member by a part-time employee. For union 763 employees attaining 90 points after May 31, 2013, credited service is frozen upon attaining 90 points.
Compensation	Regular wages for services rendered to the District, including base pay, shift differentials and pay for service as an acting crew leader, but excluding any bonuses, pay for overtime and special pay.
Average Monthly Compensation	Average of compensation for the highest 18 consecutive months.
Employee Contributions	See table below. Rate may be adjusted based on the plan's funded status. For union 763 employees attaining 90 points after May 31, 2013, contributions are stopped upon attaining 90 points.

Year	Rate
2017	6.2%
2018	6.7%
2019	7.2%
2020	7.7%
2021	8.3%
2022	9.0%

Cash Balance Formula Provisions

Accrued Benefit

Pay Credits — A participant shall receive annual pay credits equal to a percentage of salary based on points (age plus service) as shown in the table below:

Points	2017	2018	2019	2020	2021	2022
<30	7.0%	8.0%	9.0%	10.0%	10.0%	10.0%
30–39	8.0%	9.0%	10.0%	10.5%	10.5%	10.5%
40–49	9.0%	10.0%	11.0%	11.5%	11.5%	11.5%
50-59	10.0%	10.5%	11.0%	11.5%	11.5%	12.0%
60-69	11.0%	11.5%	12.0%	12.5%	12.5%	12.5%
70-79	13.0%	13.0%	13.0%	13.0%	13.0%	13.0%
80+	16.0%	16.0%	16.0%	16.0%	16.0%	16.0%

Interest Credits — A participant's account will increase annually at an interest crediting rate of 6.00%.

Normal Retirement
Eligibility   Age 65.

Benefit   Lump sum or an actuarial equivalent monthly benefit of their cash
                                         balance account.

Early Retirement
Eligibility   Some grandfathered at age 50 with 10 years of service and 70
                                         age/service points. Else, Union 763 is age 50 with 25 years of service,
                                         and all others are age 55 with 20 years of service, or age 62 with
                                         10 years of service.

Benefit   Lump sum or an actuarial equivalent monthly benefit of their cash
                                         balance account.

Deferred With Vesting
Eligibility   Five years of continuous service.

Benefit   Lump sum or an actuarial equivalent monthly benefit of their cash
                                         balance account.

Preretirement Surviving Spouse Benefit
Eligibility   Five years of continuous service.

Benefit   Lump sum or an actuarial equivalent monthly benefit of their cash
                                         balance account.

Preretirement Dependent Survivor Benefit
Eligibility   Actively employed full-time district employees.

Benefit   The percent of base pay at time of death paid as a survivor benefit will
                                         be 20% for one dependent, 40% for two dependents, and 50% for
                                         three or more dependents. The survivor benefit is offset by amounts
                                         payable from the preretirement surviving spouse benefit, workers'
                                         compensation survivor payments, and payments from other
                                         district-sponsored sources.

Return of Contributions
Eligibility   Plan participants not eligible for vested, death, early, or normal
                                         retirement benefits.

Benefit   Participant contributions accumulated with 5.5% interest will
                                         be returned.

Definitions

Continuous Service	Years of employment with the district during which an employee is compensated for 1,000 or more hours.
Credited Service	One-twelfth of a year of credited service for each calendar month of Service to the district as a full-time employee or as a member by a part-time employee.
Compensation	Regular wages for services rendered to the District, including base pay, shift differentials and pay for service as an acting crew leader, but excluding any bonuses, pay for overtime and special pay.
Employee Contributions	See table below. Rate may be adjusted based on the plans funded status.

Year	Rate
2017	6.2%
2018	6.7%
2019	7.2%
2020	7.7%
2021	8.3%
2022	9.0%

Actuarial Assumptions and Methods

The actuarial assumptions and methods used in the January 1, 2021 valuation are stated below.

Interest Rate	7.00%, based on the following factors:

—Passive Return	6.00%
—Active Management Premium	1.00%
—Plan Expenses	0.00%

(immaterial based on recent history and future expectations)

Inflation	2.50%
Salary Scale	Rates based on age. Sample rates below.

Age	Annual Increase
25	12.00%
30	6.80%
35	5.80%
40	4.90%
45	4.40%
50	4.00%
55	3.80%
60	3.50%
64	2.50%

Retirement Rates	
Actives	See Table A.
Terminated Vesteds	Age 64.
Healthy Mortality	PUB-2010 General table projected using Scale MP-2020 with generational projection.
Disabled Mortality	PUB-2010 General Disabled Retiree table projected using Scale MP-2020 with generational projection.
Withdrawal Rates	Select and ultimate table (see Table B).
Disability Rates	See Table C.
Spousal Benefits	80% of males and 80% of females are assumed to be married. Males are assumed to be two years older than their spouses; females two years younger.
Form of Payment	
Final Average Pay Formula	50% Joint and Survivor if married, else Single Life Annuity. 60% of terminated vested participants are assumed to elect the lump sum return of their contributions with interest.
Cash Balance Formula	100% lump sum.
Asset Valuation Method	Each year's asset gain or loss is spread evenly over five years. Assets were restated to market value January 1, 2021.
Actuarial Method	Entry Age Normal (Level Percent of Pay) Cost Method.
Section 415 Limits	All applicable IRC section 415 limits have been taken into account.

Table A

Retirement Rates[1]

Age	Service							
	<20	21	22	23	24	25	26	27
50	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
51	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
52	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
53	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
54	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
55	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
56	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
57	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
58	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
59	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075
60	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
61	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
62	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
63	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600
64	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600
65	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450
66	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
68	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
69	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300

Age	Service							
	28	29	30	31	32	33	34	35+
50	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
51	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
52	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
53	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
54	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
55	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600
56	0.075	0.075	0.075	0.075	0.075	0.075	0.600	0.600
57	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400
58	0.200	0.200	0.200	0.200	0.600	0.600	0.400	0.400
59	0.075	0.075	0.075	0.600	0.600	0.400	0.400	0.400
60	0.150	0.150	0.600	0.600	0.400	0.400	0.400	0.400
61	0.150	0.600	0.600	0.400	0.400	0.400	0.400	0.400
62	0.600	0.600	0.400	0.400	0.400	0.400	0.400	0.400
63	0.600	0.400	0.400	0.400	0.400	0.400	0.400	0.400
64	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
65	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450
66	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
68	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
69	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300

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[1] Rates assume early retirement eligibility requirement is met.

Table B

Withdrawal Rates (prior to Eligibility for Early Retirement)

Age	Total		Age	Total
20	.0625		45	.0190
21	.0575		46	.0190
22	.0525		47	.0190
23	.0475		48	.0190
24	.0425		49	.0190
25	.0375		50	.0190
26	.0370		51	.0190
27	.0365		52	.0190
28	.0360		53	.0190
29	.0355		54	.0190
30	.0350		55	.0190
31	.0345		56	.0190
32	.0340		57	.0190
33	.0310		58	.0190
34	.0280		59	.0190
35	.0250		60	.0190
36	.0220		61	.0190
37	.0190		62	.0190
38	.0190		63	.0190
39	.0190		64	.0190
40	.0190			
41	.0190			
42	.0190			
43	.0190			
44	.0190			

Select turnover rates shown below are used for the first three years of employment.

	Service		
	1	2	3
All	.0750	.0750	.0750

Table C

Disability Rates

Age	Male	Female		Age	Male	Female
20	.00030	.00030		45	.00160	.00240
21	.00030	.00030		46	.00180	.00270
22	.00030	.00030		47	.00210	.00300
23	.00030	.00030		48	.00250	.00330
24	.00030	.00030		49	.00280	.00360
25	.00030	.00030		50	.00330	.00400
26	.00030	.00030		51	.00390	.00440
27	.00030	.00040		52	.00460	.00490
28	.00030	.00040		53	.00530	.00540
29	.00030	.00040		54	.00610	.00590
30	.00030	.00040		55	.00690	.00640
31	.00030	.00050		56	.00770	.00690
32	.00030	.00050		57	.00860	.00740
33	.00030	.00060		58	.00950	.00800
34	.00030	.00060		59	.01050	.00850
35	.00040	.00070		60	.01150	.00900
36	.00040	.00080		61	.01260	.00960
37	.00050	.00090		62	.01380	.01010
38	.00060	.00100		63	.01510	.01050
39	.00070	.00120		64	.01640	.01090
40	.00080	.00130				
41	.00090	.00150				
42	.00100	.00170				
43	.00120	.00190				
44	.00140	.00220				

2021 Actuarial Assumption Study for OPPD

August 30, 2021

Presentation to Omaha Public Power District

Framework for Assumption Setting

Data and Background from Various Sources

- OPPD
- Documented plan provisions
- Past plan experience
- Industry practice
- The economy
- Expectations for the future

Individually Reasonable

Each assumption must be "individually reasonable"

Guidance in Multiple Forms

- IRS
- GASB
- Actuarial Standards Board
- Society of Actuaries
- Auditors
- Aon

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Purpose of Assumption Study

- Ultimate cost of retirement benefits depends on future experience
- Valuation assumptions do not affect ultimate cost, only the pace the liabilities are recognized for funding and accounting
- Complete assumption study has not been performed since 2016
  - Gains and losses by source are reviewed annually
  - Review of actual versus expected experience may indicate whether assumptions are appropriate
- Increasing scrutiny on actuarial assumptions, plan costs, and overall financial controls
- In addition, assumptions should take into account any anticipated change in plan experience that is not reflected in past experience (e.g., pay philosophy changes)
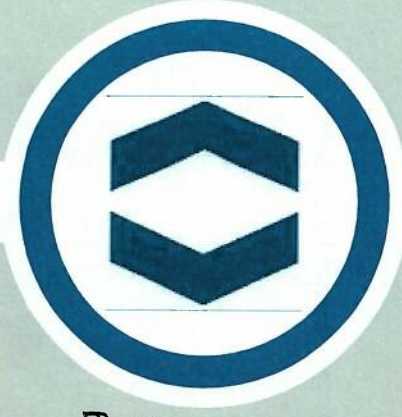
Assumptions Study Process

- Review based on actual experience for the prior four calendar years (2017 through 2020)
- Recommended assumption changes would be first reflected in
  - 2021 cash contribution
  - 2022 GAS 68 expense (i.e., 12/31/2022)
  - 12/31/2021 for GAS 67
- Assumptions included in the study
  - Retirement rates for both active and terminated participants
  - Withdrawal rates
  - Salary scale
  - Percent married and spouse age differential
  - Optional forms of payment
- Analysis excludes Fort Calhoun participants

Active Retirement Rates

Description/Purpose	• Rates at which active participants retire from active service
Selection Criteria	• Generally based on recent experience • Future expectations should be reflected if different from past experience • Subsidized benefits and/or eligibility milestones should be reflected, if appropriate
Current Valuation Assumption	• Rates that vary by age and plan

Retirement Experience
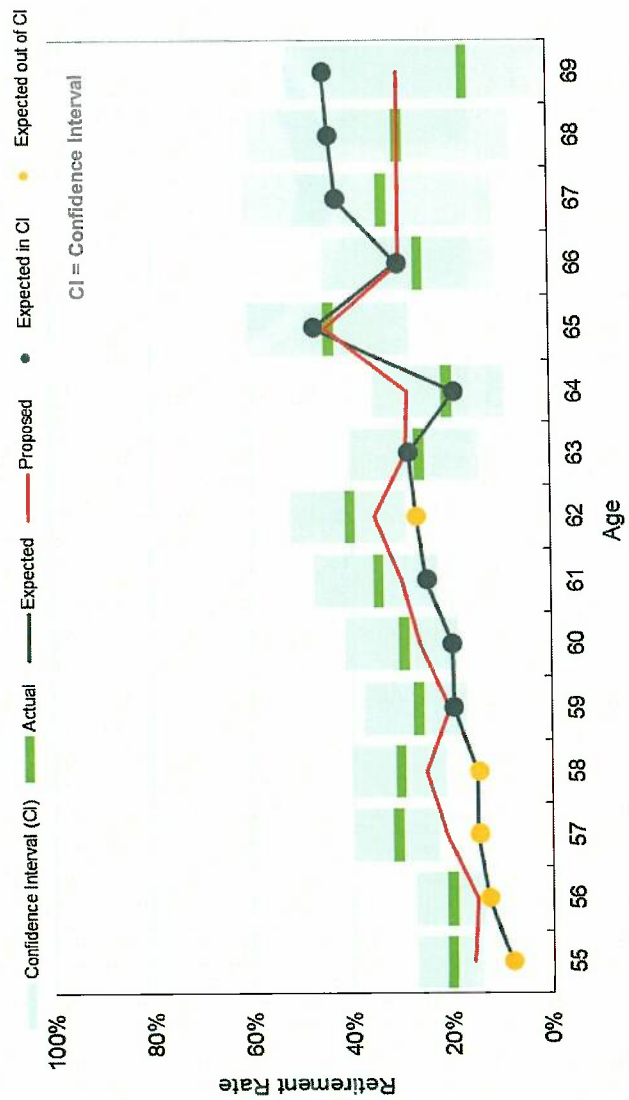
- Recent experience higher than expected
  - 247 actual retirements compared to 170 expected
  - Largest difference due to "Rule of 90" participants
- Recommend increasing rates for "Rule of 90" participants from 50% to 60% in initial year of eligibility
  - Years after initial eligibility increase from 30%/35% to 40%
- Recommend adjusting remaining rates to reflect actual experience

Active Retirement Rates—Current

Age	<20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35+
								Service								
50	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
51	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
52	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
53	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
54	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
55	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.500
56	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.500	0.500
57	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.500	0.500	0.300
58	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.500	0.500	0.300	0.300
59	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.500	0.500	0.300	0.300	0.300
60	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.125	0.500	0.500	0.300	0.300	0.300	0.300
61	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.500	0.500	0.350	0.350	0.350	0.350	0.350
62	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.500	0.500	0.350	0.350	0.350	0.350	0.350	0.350
63	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.500	0.500	0.350	0.350	0.350	0.350	0.350	0.350	0.350
64	0.150	0.150	0.150	0.150	0.150	0.150	0.500	0.500	0.350	0.350	0.350	0.350	0.350	0.350	0.350	0.350
65	0.400	0.400	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
66	0.200	0.200	0.200	0.200	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
67	0.400	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
68	0.400	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
69	0.400	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500

Active Retirement Rates—Proposed

Age		Service															
	<20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35+
50	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
51	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
52	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
53	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
54	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
55	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600
56	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.600	0.600
57	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400
58	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.600	0.600	0.400	0.400
59	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.075	0.600	0.600	0.400	0.400	0.400
60	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400	0.400	0.400	0.400
61	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400	0.400	0.400	0.400	0.400
62	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.600	0.600	0.400	0.400	0.400	0.400	0.400	0.400
63	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400	0.400	0.400	0.400	0.400	0.400	0.400
64	0.150	0.150	0.150	0.150	0.150	0.150	0.600	0.600	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.450
65	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450	0.450
66	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
67	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
68	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
69	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300

Withdrawal Rates

Description/Purpose	
	▪ Rates at which active participants terminate before retirement

Selection Criteria	
	▪ Generally based on recent experience
	▪ Future expectations should be reflected if different from past experience
	▪ Consider use of select period if supported by experience and future expectations

Current Valuation Assumption	
	▪ Ultimate rates that vary by age with three-year select period
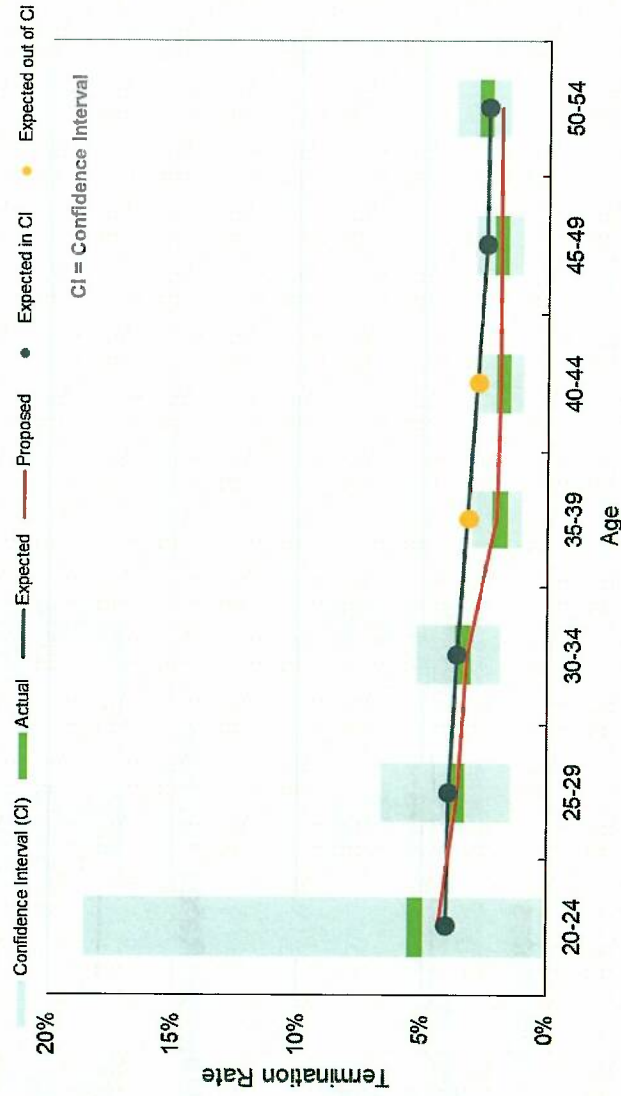
- ▪ Table depicts "ultimate" experience
- ▪ Recent "select" experience consistent with expectations
  - – 40 actual terminations compared to 39 expected
  - – Recommend no change
- ▪ Recent "ultimate" experience lower than expected
  - – 88 actual terminations compared to 111 expected
  - – Recommend decreasing rates for all ages except under age 25

Termination Experience

Legend: Confidence Interval (CI) — Actual — Expected — Proposed • Expected in CI • Expected out of CI

CI = Confidence Interval

Withdrawal Rates

Select Rates

Service	Current	Proposed
0	0.075	0.075
1	0.075	0.075
2	0.075	0.075

Ultimate Rates (Sample Rates)

Age	Current	Proposed
20	0.0435	0.0625
25	0.0410	0.0375
30	0.0378	0.0350
35	0.0340	0.0250
40	0.0303	0.0190
45	0.0265	0.0190
50	0.0250	0.0190
55	0.0250	0.0190
60	0.0250	0.0190
65	0.0250	0.0190

Salary Scale

Description/Purpose	▪ Rates at which pensionable pay increases annually
Selection Criteria	▪ Generally based on recent experience
	▪ Future expectations should be reflected if different from past experience
	▪ Assumption should reflect inflation, productivity, seniority, promotion, and other factors as appropriate
Current Valuation Assumption	▪ Age-graded scale

Age Range	Current	Average for Age Range		
		Proposed	2017-2021	2018-2021
20-24	17.0%	14.5%	14.8%	14.0%
25-29	11.3%	9.2%	9.0%	8.9%
30-34	8.5%	6.4%	6.8%	6.5%
35-39	6.1%	5.4%	5.7%	5.3%
40-44	5.1%	4.7%	5.0%	4.9%
45-49	4.6%	4.2%	4.5%	4.2%
50-54	4.3%	3.9%	4.2%	3.8%
55-59	4.0%	3.7%	4.0%	3.7%
60-64	3.0%	3.5%	3.9%	3.6%

▪ Recent experience slightly lower than expected
- Average increase of 5.0% compared to 5.5% expected increase
- Consistent with valuation experience for each of the last three years

▪ Recommend slight decreases for all ages except over age 60

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Other Assumptions

Assumption	Current Assumption	Comments
Retirement Age for Terminated Participants	• Age 63	• Average retirement age increased from 63.2 to 64.3 • Recommend increasing to age 64
Optional Payment Form —Final Average Pay	• 50% Joint & Survivor, if married • Single Life Annuity, if single	• Experience consistent with expectations • No changes recommended
Optional Payment Form —Cash Balance	• 100% Lump Sum	• Experience consistent with expectations • No changes recommended
Percent Married	• 80% married at retirement	• Experience consistent with expectations • No changes recommended
Spouse Age Differential	• Males 2 years older than females	• Experience consistent with expectations • No changes recommended

Appendix I

Transcript of November 5, 2021 Hearing

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KOLTERMAN: Think it's 1:30. Senator Lindstrom, it's 1:30, we're going to get this started. We're under a strict timeline here today so we're going to get started. I appreciate everybody being here. Welcome to the Retirement Committee annual hearing. My name is Senator Mark Kolterman. I'm from Seward, represent District 24, and I serve as Chair of this committee. We ask that you abide by the following recommendations. If you, if you prefer to wear a face covering, do so. You can remove it when you're sitting up here. Please silence your cell phones. If you will be testifying, move to the front of the room as, as you're getting close. Thought I had a list-- yeah. The order that we'll go in today will be OPS will be first up, Lincoln Police and Fire, Douglas County, Eastern Nebraska Health Agency, Metro Area Transit, OPPD, Omaha Civilian, and Omaha Police and Fire. Sorry, Bernard, but we've got you last. Please-- this is invited testimony only, so there won't be any proponents, opponents, or neutral. Testifiers, please bring your blue sign-in sheet and give it to the committee clerk as you approach. Spell your name for the record. Be concise. We will ask questions and then if you have handouts, make sure that you have copies for all of us. I would like to introduce my committee starting at my far left over here.

SLAMA: Oh, hi. Julie Slama, District 1: Otoe, Nemaha, Johnson, Pawnee, and Richardson Counties in southeast Nebraska.

LINDSTROM: Brett Lindstrom, District 18.

KATE ALLEN: Kate Allen, committee legal counsel.

McDONNELL: Mike McDonnell, LD5, south Omaha.

CLEMENTS: Rob Clements, District 2, Cass and part of Lancaster.

KOLTERMAN: And we have Katie Quintero, our committee clerk. We have no pages today?

KATIE QUINTERO: Apparently, not.

KOLTERMAN: So that's all right. With that, I think we're going to move right into the OPS will be testifying for OSERS. Dr. Logan. Before you start, Dr. Logan, I will make the announcement that Metro Area will move up to number three right after Lincoln Police and Fire. Welcome.

CHERYL LOGAN: Thank you for having me this, this afternoon. Good evening--good afternoon, Senator Kolterman, members of the Retirement

Systems Committee. My name is Cheryl Logan, C-h-e-r-y-l Logan. I am the superintendent of Omaha Public Schools. We are a growing district that educates approximately 53,000 students. I want to start my testimony by thanking the members and staff of this committee. In my time as superintendent, I have had the opportunity, the opportunity to work with all of you as we continue to do everything that we can to solidify the Omaha School Employees' Retirement System. As you know, this has been a transformational year for OSERS. I want to thank each of you publicly for your support of OSERS and your efforts to ensure the passage of LB147, which will transfer the management of OSERS to the Public Employee Retirement Board. The Board of Education and I are incredibly grateful for Senator Kolterman's leadership and commitment for getting the pivotal legislation passed. Since the passage of LB147, the Board of Education has worked closely with the OSERS trustees to effectuate a smooth transition of operating responsibility back to the Board of Education. The Board of Education has adopted a new set of operating rules and regulations for OSERS. These rules and regulations largely mirror those of NPERS, which we believe should facilitate transition of management to the PERB in 2024. The compliance audit called for in LB147 is essentially complete, and you will be receiving a copy of that report in the coming days. Following the PERB's review of the compliance audit, we will work with the PERB to determine next steps, including the possible submission of an IRS determination letter. We will continue to work closely with the PERB as the preparation for the transition of management really starts to ramp up in 2022. I am pleased to report that the district once again was able to budget for and contribute to OSERS an amount in excess of the actuarially required contribution. The district made an ARC payment of $24.1 million in August, which included $1.9 million in excess of what was actually required-- actuarially required. This is the third consecutive year that the Board of Education has transferred more funds to the plan than was actuarially required. That said, and to be completely transparent, we anticipate it will become more difficult for the district to contribute amounts in excess of what is actuarially required. The plan actuary, Cavanaugh Macdonald, is currently working to finalize the five-year actuarial experience study, which may result in possible changes to the current actuarial assumptions. Moreover, as you can see from the report, the district submitted for today's hearing, OSERS has experienced a lower actual rate of return on investments than the assumed rate of 7.5 percent. Any change in the actuarial assumption, when coupled by the lower rates of return, will likely result in a potentially significant increase in the actuarially required contribution. The district is

reviewing the draft report and will carefully consider the actuary's final recommendations. We all understand that each decision the district makes affects every employee in our workforce and every student in our care. Our commitment to sound financial management and fiscal prudence is essential to our ability to manage both our, our responsibility to educate students and our duty to OSERS. As the transfer of management of OSERS to the PERB continues, we will keep Senator Kolterman and this committee apprised of the transition of progress. Thank you for the opportunity to speak with you today. I would be happy to answer any questions you might have.

KOLTERMAN: OK, any questions? I would, I would just like to say thank you as well, because you've worked with us very closely. And during the transition as we move forward, I know you've got some tough decisions to make and we know that if you lower the expected rate of return, it'll just increase your ARCs and your contribution amounts. But over the last three years, as you indicated, you have made significant strides. And in fact, you know, when you, when you start looking at the last three years, you paid 107 seven percent more, 108 percent and 109 percent the last three years above the ARC. That's, that's impressive. And it's a-- it just shows that your commitment to getting the job done is there. And I'd like to thank you for that and, and encourage you to continue to work with Randy Gerke and his team and the PERB board. And so thank you.

CHERYL LOGAN: Thank you, Senator. I appreciate it very much. The only way out is through.

KOLTERMAN: Exactly.

CHERYL LOGAN: OK. Thank you.

KOLTERMAN: Thank you.

CHERYL LOGAN: Appreciate it.

KOLTERMAN: OK, our next testifier will be Lincoln Police and Fire.

PAUL LUTOMSKI: Paul Lutomski. It's L-u-t-o-m-s-k-i.

KOLTERMAN: I'll get you another chair.

PATRICE BECKHAM: [INAUDIBLE]. Sorry.

KOLTERMAN: I'll get that. Welcome, Paul and Pat.

PAUL LUTOMSKI: OK. Paul Lutomski, L-u-t-o-m-s-k-i. City of Lincoln Police and Fire Pension, and I'm happy to be here with Pat Beckham, our actuary from Cavanaugh Macdonald. Pat's going to present the report, and if there's any questions that I need to answer, I will be happy to try to do.

PATRICE BECKHAM: Paul will answer all the hard questions. Patrice Beckham, P-a-t-r-i-c-e, Beckham, B-e-c-k-h-a-m, with Cavanaugh Macdonald, the actuary for Lincoln Police and Fire Pension Fund. So good afternoon. It is a pleasure to be back with you again this year, although we would be happy if we were 80 percent funded and we weren't here also. It's good to see you. Just going to spend a few minutes, very, very high level. You have all of our reporting information. If you have questions on that, I'd be happy to talk to those at the, at the end of my comments. Just a reminder, the valuation date for this plan is August 31. OK. So the most recent report is August 31 of 2020. We're working on the 2021 report. Will not be completed until December. The 2020 valuation reflects the funded ratio of 78 percent and that held constant from the 2019 valuation. The most recent experience study was performed in 2019. Several changes to assumptions were adopted at that point in time that included updating the mortality table to the Pub-2010 mortality table and adopting a step down in the investment return assumption from 7.5 percent to 7.25 percent over five years. The 2020 valuation use and investment return assumption of 7.4 percent, which will change to 7.35 in the 2021 valuation. As that-- this assumption is decreased, as you know, it increases the actuarial accrued liability and lowers the funded ratio. That's creating some headwind and making progress to move to 80 percent. But with returns for fiscal year '21, we get a little bit of a boost there. We'll see where, where the numbers end up. One of the most important factors in the health of any retirement system is regular contributions equal to or greater than the full actuarial determined amount. The Lincoln city ordinance was changed in 2017 to provide that the unfunded actuarial accrued liability would be paid off over a closed 28-year period that began in 2016. It also requires the city to make a full actuarial required contribution each year. If you look at Exhibit A that was submitted with our information, the city has actually contributed somewhat more than the actuarial contribution and for the last five years. So continuing to follow the, the funding policy will move the plan towards full funding if all assumptions are met. A projection model was prepared in conjunction with the 2020 valuation. It indicates that the plan is expected to reach full funding in 2043, again, if, if the assumptions are met.

It's a very high-level look. You have all the detail. Be happy to answer any specific questions you might have.

KOLTERMAN: Thank you. Are there any questions? I, I would like compliment you as well. I know several years ago you made some very tough decisions. You dumped a lot of money into this plan and you are working in the right direction to get it taken care of. I have no concerns about you getting to where you need to be. So thank you again for your efforts and appreciate it.

PAUL LUTOMSKI: Thank you. Thank you, Pat.

PATRICE BECKHAM: Yeah.

KOLTERMAN: OK, thank you.

PATRICE BECKHAM: Thank you.

KOLTERMAN: We'll now move to the Metro Area Transit hourly. Lauren, welcome. Thank you, Pat.

LAUREN CENCIC: Good afternoon, Senator Kolterman, committee members. My name is Lauren Cencic, L-a-u-r-e-n C-e-n-c-i-c. And I'm the CEO for the Transit Authority of the City of Omaha, doing business as Metro or Metro Area Transit for our pension plan. Metro is the public transit provider for the Omaha metropolitan area, providing fixed, paratransit, and express services. We also provide service to the cities of Council Bluffs, Bellevue, La Vista, Papillion, and Ralston by virtue of agreed upon service contracts. I want to start by thanking you for the opportunity to address the committee today regarding our hourly employee pension plan and also talk about the corrective actions that we have taken to improve the funding status of the plan. I am happy to report that we have continually and consistently increased both, both employer and employee contribution rates, reduced our assumed rate of return, and improved our overall funding status of the plan. Going back a little bit since 2016, we have increased the employee contribution from 6 percent to 7.5, and the employer contribution from 6.5 to 7.75 percent, as well as changing the normal retirement age from 65 to the age when the employee reaches full retirement for the purposes of Social Security. We've eliminated an early retirement option and also changed the benefit factor for those hired after January 2018. In addition, during the last five years, we've made two lump sum contributions. The first was in 2016 in an amount equal to 1 percent of the total wages of the

plan participants. And a second one-time contribution was made last year in the amount of $350,000. This $350,000 amount represented the estimated difference in the calculated employer contribution compared to the anticipated contribution that we were expecting. And that difference was really due to a reduction in overall work hours due to COVID. So we made up the difference and made sure that, that Metro still completed our full anticipated amount for last year. Last year, our lump sum contribution actually brought our overall contribution to 11.1 percent of our payroll for last year. Additionally, in our 2021 actuarial valuation report, we have yet again reduced our assumed rate of return from 6.5 to 6.25. These assumptions were reviewed and adopted both by our pension committee and our board of directors. We have 191 active members in our plan, 194 members in pay status, and 48 terminated members as of January 1 of this year. Our overall funding status of the plan is 68.5 percent, which is an improvement from our 2020 funding status of 66.7 percent. Even though we lowered the assumed rate of return during that period. If we had not lowered the assumed rate of return, our funding status this year would have been 70.2 percent. However, we feel that adopting this more conservative rate of return is both prudent and realistic. Thank you again for the opportunity to address the committee. I'd be happy to answer any questions you have.

KOLTERMAN: Thank you for your presentation. Any questions? Seeing none, appreciate it.

LAUREN CENCIC: Thank you.

KOLTERMAN: Next, we have Douglas County. Welcome back, Joseph.

JOE LORENZ: Good afternoon, committee members, I'm Joe Lorenz, L-o-r-e-n-z. I am the Douglas County finance director. So I'd like to just take you through the highlights of our performance for the year ending December 31, 2020. The plan funding status increased 4.1 points to 70.9 percent. The plan carries an assumed rate of return of 7.5 percent. And on all metrics one, three, five and ten years, the plan has exceeded that 7.5 percent return. So I'm very comfortable with keeping that as our assumed rate of return. Investment results over the past couple of years have been very strong and it's continuing this year as through the first ten months of the year, we have a return of over 10 percent on the plan. Our normal cost is about 11 percent a year. Our ARC this year is going to be $26 million. And I think the interesting thing that occurred with our ARC this year is that it actually went down. It went from 26.4 to 26, which is, you

know, the first time I've seen it go down and really, I think,
indicates the plan is gaining, you know, health. And, and, and I'm
very comfortable that by the time the year ends in December, we will
make that-- we will at least make, if not exceed, that contribution of
$26 million of the ARC payment. Some other highlights as we go through
the plans, actuarial accrued liability of $159.2 million was $14.4
million lower than a year ago. The plan has about 4,000 participants,
about 55 percent of which are active, which means that, you know, a
healthy plan from that point of view. We've talked about the history
of the plan, and I think the only point I really want to make about
that is that it's really going on ten years now since the Douglas
County Commissioners on the Pension Committee made the changes of
reducing so that we eliminated the rule of 75, the benefit formula was
reduced from 2 percent of pay-- per pay year-- for your of service to
1.5 of pay per year of service, and the maximum retirement income was
reduced from 60 percent of a participant's final average to 45
percent. So that was ten years ago, and now we're seeing the results.
But you know, I make this point a lot is that, you know, a mature
pension plan like ours, it takes a long time for the results to show
up. And so ours are finally showing up. As the plan is funding ratio
is now up 13.1 percentage points since, since its low point in 2010.
So the results are, are, are showing up. And at this rate based on the
actuarial projections performed by SilverStone HUB by within five
years in 2026, we should be about 80 percent funded, which means I
won't have to come here to see you all, which is always a nice
experience. But it's-- that, that really is our goal that within those
five years we have this plan 80 percent funded. In terms of changes to
the plan, we didn't do much this past year, except for one thing, the
corrections guards at the Douglas County Jail were extended the same
plan benefit provisions as the sheriff deputies. And but in
negotiating with them, they agreed to increase their contribution rate
by an additional 2 percent of pay, of which they're paying that whole
2 percent. Because we had worked with our actuaries to determine what
would it take to make a change like this that would have no impact on
the plan's funding status. So they kicked in an extra 2 percent. They
get it, but the plan funding status was not impacted. And those are
kind of my highlights, and I'd be glad to take any questions from you.

KOLTERMAN: Are there any questions? Go ahead, Senator Clements.

CLEMENTS: Thank you, Mr. Chairman. Thank you, Mr. Lorenz. I want to
thank you for telling me that the one, three, five, and ten year
actual history is 7.5 percent or more. I would like to hear that from

each plan as to how their actual is compared historically to their assumed rates, real important to me.

JOE LORENZ: Sure.

CLEMENTS: I'm wondering sometimes if people of plans are telling or looking at how much they can afford to pay, and then they set the assumed rate to equal that, which is the opposite of what we should do. A question I had is, you said ten years ago you changed the retirement benefits. Was that for existing employees or just for new employees?

JOE LORENZ: For new employees. But it's, it's interesting in those ten years now, based on the latest records of total active employees, more than 50 percent now are qualifying under the new rules. So-- but yeah, under pension law and things like that, when you change it, you can-- it only can apply to new employees.

CLEMENTS: And you said you had 4,000 people in the plan. Is that retirees and active employees?

JOE LORENZ: Yeah, so that-- and of that 4,000, 55 percent are active.

CLEMENTS: OK. All right. Thank you.

KOLTERMAN: Any additional questions? I just have one.

JOE LORENZ: Sure.

KOLTERMAN: According to the information we've received, the last couple of years you haven't paid 100 percent of your ARC.

JOE LORENZ: One year. I mean, if you look at the expected, last year was the first year that it didn't because, you know, this year is an expected number. But as I said, especially since it's, you know, the ARC actually went down, I'm comfortable we're going to do it this year. So last year was the only year. If you go to the bottom line, the previous four years were over 100 percent, and I think this year will be over 100 percent.

KOLTERMAN: OK, thank you. Any additional questions? By the way, about half of us will be gone in five years.

JOE LORENZ: Yeah, me too. [LAUGHTER]

KOLTERMAN: So you won't have to put up with us anymore. Some of us. OK, Eastern Nebraska Health Agency.

JOE LORENZ: Thank you.

KOLTERMAN: Mr. Gahan.

GLEN GAHAN: It's pleased to be here, Senator Kolterman and rest of the Retirement Committee. My name is Glen Gahan, G-l-e-n G-a-h-a-n. I'm the actuary for the Eastern Nebraska Health Services Agency Pension Plan. I'm employed with SilverStone Group, a HUB International Company. I'm going to-- I don't have any additional handouts. I believe you have the complete information provided with the information request from the committee, as well as the actuarial reports and experience analysis. Some of the highlights that I'd just like to, to mention. First, the actuarial assumptions and methods used by this plan that we've been assuming a 7 percent investment return I think from the inception of the plan. And I did a quick look at the last six years, it was just based on information provided in the form, and the average return had been about 6.7 percent. Just taking a simple average of the annual returns. The most recent two years for the year ending 2020 and 2019 was a 9.9 percent return and a 14 percent return. I don't have a year-to-date return for 2021. I would imagine that it would be at least in line with the actuarial assumption, hopefully it'd be better than that given the, the markets that we've been observing. As far as the history of the contributions that ENHSA has been making to the plan, they've been increasing those historically a half a percent per year from the year 2010 through 2018 where it got to 9.5 percent and then it stayed at 9.5 percent for 2019, 2020. Pleased to report that as of November of this year, that was increased to 10 percent from the employer and employee contributions were increased from 2.75 percent to 3 percent. And I believe that's the first employee contribution increase for, for quite some time. And when we took those into account in the forecast, we, we, we do our actuarial work every other year. So 2020 was the most recent year we did that work, but we did anticipate this increase and we forecasted the plan would get from its current 73 percent funded in 2020 to 100 percent funded in the year 2047 to 80 percent funded in the year 2030. Given the gains in, in 2020 and hopefully 2021, we think that, you know, if we updated the forecast today that would-- we'd see some improvement there as well. Other assumptions and methods used in the most recent evaluation, we updated the mortality table to the Pub-2010 with mortality improvement scale. The ARC has been determined based on a amortization of a level of dollar amount, which

is somewhat conservative perhaps at least compared to as a percent of pay and a 25-year layered amortization method as well. So you would think that the, the assumptions are, are reasonable and we would not consider them as being aggressive looking at those. And historically, the contribution actually made to the plan has slightly exceeded the calculated ARC. So, you know, we, we feel that the plan is, is in a, in a sound position or at least getting better funded. You know, we obviously wish it was more funded than it is today, but the trajectory looks positive. So those kind of are my prepared remarks and I'd be pleased to address any questions the committee might have.

KOLTERMAN: Any questions? Senator Clements.

CLEMENTS: Thank you. Thank you, sir. You mentioned a 100 percent estimated by 2047 using a, a closed amortization formula.

GLEN GAHAN: Yes. Yes, it is, it is a closed amortization, a 25-year closed. Yes.

CLEMENTS: Twenty-five year. OK. And the where you're talking about the 6.7 percent average rate, are you still comfortable with the 7 percent assumption? You don't plan to change it?

GLEN GAHAN: Yeah, we're, we're comfortable with it at this point, but it's something that gets monitored and analyzed, you know, annually.

CLEMENTS: Thank you.

KOLTERMAN: Any additional questions? I just have one question.

GLEN GAHAN: Yes.

KOLTERMAN: How many people are in the plan?

GLEN GAHAN: There's a total of about a thousand participants. And I think it's upwards of between 650-ish actives.

KOLTERMAN: Active--

GLEN GAHAN: Active, yeah.

KOLTERMAN: --650 out of-- because the plan's relatively new yet, really. I mean,--

GLEN GAHAN: Yeah, it's, it's not--

KOLTERMAN: --1974.

GLEN GAHAN: --not overly mature yet.

KOLTERMAN: OK, thank you. Any additional questions?

CLEMENTS: '74 is new. News to me.

KOLTERMAN: I think it is and I'm older than you are Clements. All right. Hey, thank you.

GLEN GAHAN: Thank you.

KOLTERMAN: Not much, but I am. OK, next will be OPPD. Welcome, John.

JOHN THURBER: Hello, I'm John Thurber, the interim CFO of Omaha Public Power District, that's T-h-u-r-b-e-r. We submitted information, and I'm just going to highlight a few areas of interest since our submittal or in our submittal. The funded ratio for our pension plan increased from 68.9 percent to 72 percent in 2021. We continue with a 7 percent discount rate and to answer Senator Clements' questions, we've exceeded 7 percent for the last five, seven, ten. And since inception would be '79. In fact, since 1979, our plan has been averaging 8.9 percent annual returns. Our employee contributions went up from 7.7 to 8.3 percent of salary in 2021, and they will end up with 9 percent as a percent of salary in 2022. That was part of an earlier union negotiation with our employees. Our funded ARC was, or is in 2021, $56.5 million. As we've continued to do, we fund all of our ARC payments all the way through since the plan has been in existence. So we've always fully funded our ARC payments. A couple of items of note we do, or we are in the process of an asset liability study right now where we're looking at the 7 percent discount rate. Even though we have exceeded it, there is a possibility that we might reduce that rate in the future. We do have a reserve account of $115 million that can be used for only two purposes, either improving our funded status of our pension plan or to meet our decommissioning liability for Fort Calhoun Station. And we are looking at potentially making a substantial reduction from that reserve this year to help improve the funded status of our pension plan, and it would certainly help offset any impacts if we do decide to reduce the discount rate. So with that, that's all the remarks that I have, if anyone has any questions.

KOLTERMAN: Are there any questions from the committee? Thank you.

JOHN THURBER: Thank you.

KOLTERMAN: Appreciate you being here.

JOHN THURBER: You bet.

KOLTERMAN: OK, now we move to Omaha civilian plan. Bernard in den Bosch. Bernard, we're going to get you out of here quicker than you expected even though you're last. Right?

BERNARD in den BOSCH: Exactly. Usually you have another bill before us before we get to talk, so we get to listen to some other things.

McDONNELL: Save the best for last, Bernard.

BERNARD in den BOSCH: Or, or, or worse depending on your perspective, so. Members of the committee, Senator Kolterman, my name is Bernard in den Bosch, spelled-- first name Bernard, B-e-r-n-a-r-d, last name in den Bosch, three words, first word is lowercase i-n, second word is lowercase d as in David -e-n, and third word is capital B as in boy -o-s-c-h. And I am deputy city attorney and I represent both the City of Omaha Employees Retirement System, which is the pension plan for civilian employees of the city of Omaha, as well as the city of Omaha Police and Fire Retirement System. So we're a little bit behind where we normally are as you noticed from the submittals. If you read the submittals, you'll notice it was last year's submittals. The city did-- the city and the pension systems did put out a request for proposals for new-- for actuarial services. We went through that process and a new system actuary was selected. Milliman is now the system actuary. They are not permitted to travel. Apparently, that's a corporate policy. Our chief actuary is in Connecticut. I did ask if there was a possibility of, of, of her participating remotely, but that, that was not an option that was available. Unfortunately, there is also with having a new actuary, it's taken her some time to build the model. We've had a few discussions. The report-- I'm happy to say the reports are final now, but they haven't gone to the pension boards yet for approval. And as until that occurs that we're able to release them, I would accept-- expect that on November 17 and 18, which are the days and this month of the pension systems that they would be approved and then I'd obviously be able to-- I'll provide them to Senator Kolterman and to, to Miss Allen. And then also I will update the table that was attached to the report and provide that as well so that you have that. Again, because of the delay, most of the information in the, in the study in the report is similar to what it

was last year. The city is also in the process of doing an experienced study this year. We anticipate we'll have that experience study done and January is the latest estimate and that will be for a period of time. And then obviously there'll be potential adjustments made or recommendations made as to changes in assumptions. The most recent experience study in 2018 did result in some change of assumptions, which I've laid out in, in obviously the reports that I filed, but the change of assumptions including that in the, the rate of return. I also don't have the benefit of Miss Beckham, who usually sits on my left or my right when at the table. Quite frankly, it's a, a big loss and, and I, I, I wish I could say that she was with, with, with me. And because the report isn't there, I don't, I don't have this year's report. I'm still happy to talk about the things that are there, but I do want to touch on a few of the things in the report. Obviously, the Civilian System, which is before us, it funded at of very pedestrian 52.4 percent in, in 2020. We know that that's going to increase in 2021. We did have a good rate of return and the actuarial analysis from 2020 indicated the system would be fully funded in 2048. And I'll talk about why that's, that's the case in, in a moment. The rate of return for 2020 was 9.74 percent. The rate of return, I did check with our money managers, the rate of return after three quarters in 2021 for the Police and for the Civilian System is 9.5 percent. So obviously we'll hope that we'll have additional returns and that number will be in excess of 10. We have exceeded 8 percent in both the, the 10- and 30-year investment returns, though our assumption is 7.5 percent for the Civilian System, which is a little higher than some of the other folks. But it was moved from 8 to 7.5 percent as a result of the 2018 experience study and based on the recommendation of the actuary at that time. So there is no question that this pension system still has a long way to go. There is no question that we are in a far better place than we were five years ago, when we-- or in March of 2015, when we instituted a, a substantial round of pension reform. And I'll talk about that in a second. But as of the time that we entered into those revisions with the various bargaining groups that are part of the Civilian System, there was a cash flow problem in that the Civilian System was going to run out of cash and not be able to pay people in a relatively short period of time. That has changed as a result of the change. And one of the things that we did is we, we made changes for both those employees who are new employees by having a cash balance plan for new employees. And we also made changes, not for past benefits for existing employees, but for future benefits for existing employees. And so when it comes to the cash balance plan, it's, it's, it's quite amazing at the turnover that we've had. I think

last year we reported that as of 2020, January 1 of 2020, 38 percent of our workforce was in the cash balance plan, meaning they'd been hired since March of 2015. As we sit here today, as of January 1 of 2021, it's over 43 percent of our civilian workforce has been hired since March of, of 2020. As far as the changes for existing employees, obviously there were increases in contributions. The city of Omaha employees contribute 10.08 percent of their income to the pension plan, and the city contributes about 18 percent to the pension plan. The difference-- and, and the city increased its contributions roughly 7 percent, and employees contributed to those changes by a reduction in benefits. Existing employees, the retirement age was raised. We-- used to be by the rule of 80, now it's the rule of 85. Used to be 60 was the age you could retire, now it's 65. We've done some salary smoothing, it used to be your highest 26 pay periods in your last 5 years. It's now the average of your three-- of three years in your last five years. So there were a number of benefits. And then also the rate accrual per year went for 2.25 percent per year of service for those in, in employment prior to March of 2015 to 1.9 percent for every year thereafter. So there were a number of changes that were made. And I appreciate you look at our funded percentage and obviously we still have a long way to go. But, but I'll say-- reiterate what I said last year, and that is we put a plan in place in 2015 and that plan appears to be working. The projections still indicate that we're going to be fully funded in 2048. And frankly, my sneak preview of the projections that we saw in the current report may indicate that that might be-- it might actually be moved up a year or two. I know the next question you're going to ask me is about ARC. We-- the city-- this system has not met its ARC since in the last couple of years since we changed the assumptions prior to the time that that was done. And, and I know Miss Beckham has explained it in the past, and I will make a statement and then please appreciate that I'm a lawyer and not, and not an actuary. But, but some of the, the normal costs for the employees that are for the benefits for the active employees is frankly less than 10 percent. Most of our ARC is for the-- for basically for the-- to pay off those that are already retired. We obviously would like to come closer to meeting ARC. We'll see what occurs. I think we're going to be a little bit better as, as I anticipate next year's report. The difficulty that we have in, in doing it is we have a charter provision that does require that, that we roughly equal contributions. And I know you'll say, well, there was a disparity in your contributions and what you told me a couple of minutes ago. What occurred in 2015 was at that point they were roughly equal contributions, but the city put in more money and the employees

put in a reduction in benefits for current as well as future employees. So I, I, I pass that information along. Obviously, I'm happy to answer any questions as best I can. I will also offer that once we get the new reports and I'm able to mail them to you, I know there isn't going to be a committee meeting, but if, if any senator would like to have a discussion with either me or with the actuary, be happy to arrange that one on one or in a small group, whatever is most convenient for you, for any of you. I, I-- and if you want to wait till the experience study is in so you have the whole, the whole package, we're perfectly willing to do that at any point in time. I, I, I wish I, wish I had those documents to give you so we could be talking about them today. So with that, I'm happy to answer any questions.

KOLTERMAN: Are there any questions? Senator Clements.

CLEMENTS: Thank you, Mr. Chairman. Thank you, Mr. in den Bosch. The-- you did mention changing contribution amounts and other plans have talked about changing the percentage of employees, employers contribution. When I see the 52 percent, it looks to me like an adjustment in contribution percentages needed, are you, are you able to negotiate that and work on those changes?

BERNARD in den BOSCH: So we obviously can't do it unilaterally because with the exception of a very small portion of our employees, everybody is represented by a bargaining group. The, the, the practical answer is this, and that is we made these changes in 20-- that went into effect in March of 2015, and we're, we're five years from-- this is year six of those and we're seeing some positive stuff. But obviously, as you look back, you know, and, and, and, and, and the question may be what's a reasonable period of time to look to see whether those changes are, are having a positive effect? I think with those changes being in 2015 and with healthcare kind of being the focus in the most recent contract negotiations, it is going to have to be revisited as to whether those contributions are sufficient. We already-- it-- not something that was addressed in this round of negotiations, and I'll be frank, we have an unemployment rate that's incredibly low. We have to compete, our wages are based on comparable cities, and we have to compete in the hiring arena. And when you're already having your employees paying, paying 10.08 percent of their income into this pension system, and then, of course, everybody pays into Social Security, it's difficult to compete in the market because people take home 10 percent less. Now I appreciate they have the benefit of a cash balance plan at some point in the future, but, but a lot of our

employees, particularly the blue-collar employees, are really focused on I need to have enough money to be able to live. And so tried to go to the unions and say, look, we, we haven't given, maybe we haven't-- I'm not sure there's enough time for these changes to be in effect, but we really need to get that funding percentage up quickly. The response, particularly now with unemployment where it is, is that's a really hard sell to get the unions to consider it. That's not to say that won't change in a couple of years. I think once the, the changes have been in effect for ten years and you see where you are, it's easier to go back to the unions and say, now it's time we need to, we need to bump this up and address it. I'm trying to give you a practical answer, because that's, that's really the, the discussion that's occurring.

CLEMENTS: Well, getting the ARC up to 100 percent, you talk about being fully funded in 2048, is that assuming 100 percent ARC payments?

BERNARD in den BOSCH: No, that's assuming with the current, with the current system. And part of the reason we're under the ARC is because of the amortization schedule. And again, this is I'm, I'm dangerous because I'm starting to talk about things that actuaries understand and I don't. But as I understand it, that's the amortization of the unfunded actuarial liability. But the discussion that we've had with Miss Beckham in the past is, is that you don't have to, you don't have to meet your ARC in order to do it. But obviously it would be better and you would get there faster if you did. But a lot of it is because we have-- so, so much of our liability, so much of the money that's put in is not for the active employees, it's for the, the legacy people. And that's, that's a big part of the problem that we have because like I said, the normal rate's under 10 percent. Well, we're putting in 28 percent, 29 percent when, when everything-- and obviously a huge chunk of that is going for the sins of the past. And obviously we have to address the sins of the past.

CLEMENTS: Yeah, I can see where a, a new employee with a cash balance plan would resist paying in for retirees that they're not benefiting from. Yes.

BERNARD in den BOSCH: Yeah, there's--

CLEMENTS: Thank you.

BERNARD in den BOSCH: Yeah.

KOLTERMAN: Any additional questions? I'll have some, but I'll wait till we get both of them done.

BERNARD in den BOSCH: Oh, OK.

KOLTERMAN: So Bernard, why don't we just move right into--

BERNARD in den BOSCH: Sure.

KOLTERMAN: --Omaha Police and Fire. You don't have to reintroduce yourself. We know who you are, and let's just go from there.

BERNARD in den BOSCH: Appreciate it. Thank you. And I'll try not to reiterate and, obviously, the Police and Fire plan is going through the same issues with changing actuaries. We don't have the report yet. We do anticipate having that in the next couple of weeks. We're also going through an experience study with our Police and Fire Retirement System, and, and we'll obviously see what those particular things are. There's obviously different assumptions in the Police and Fire System, as, as with people on this committee know, because unfortunately seen me too many years in a row, the expected rate of return for our system is 7.75 percent. That's the assumption. I do know from having some discussions with the actuary-- our, our new actuary, that's obviously one of the things that they're going to be evaluating. I will tell you that our investment manager, DeMarche, which is out of, out of Kansas City, felt comfortable with 8 percent and, and, and pushed back at the reduction in 2018, but there was a reduction in that particular assumption. And I'll say-- make the same comment that I made previously, and that is if you look at our 30- year average or our 10-year average we're in excess of, of eight and, eight and a half to eight and three quarters percent. The rate of return for 2020 for the Police and Fire System was 9.27 percent. And through the first three quarters of 2021, we were at 9.6 percent, slightly higher than what it is for the Civilian System. Obviously, the Police and Fire System is still-- is funded at 54.3 percent, which is nothing to, to brag about. The numbers are a little lower because of some of the changes in assumptions that we made a few years back. I'll, I'll only note and reiterate what I said last year and what I've-- in 2008, it was funded at 38.6 percent. So again, even worse, even worse and we anticipate the funding ratio based on the preliminary information will increase in 2021, and the projection is still to be fully funded in, in 2046. I do want to talk a little bit about the history of the changes that were made to try to address the, the pension system. In 2008, the Bates commission was formed. The Bates commission was formed by then

Mayor Mike Fahey to look at the pension system and it committed-- it consisted of many, many people from the private sector and then also representatives of the bargaining groups and, and, and the city. And the reason the bargaining groups needed to be part of that process is they needed to understand how bad a place the pension system was in, in, in order to be able to, to sell it to their members. In the negotiations that happened in that became in-- went into effect in October of 2010 for Police bargaining and then December of 2012 for Fire retirees, there were a number of changes that were made to both contributions, as, as well as benefits for existing and for new hires. The first thing as far as contributions, the city contribution kicked from about 20 percent to 33 or-- to 33 or 34 percent, depending on the, the system and the employees contribution was about 17 percent. Their contribution to the increase was through reduction in benefits, which, which was actuarially similar to what was done with the, the system. So there was obviously a dramatic increase in contributions. We did for new hires included-- did some things, removed overtime from the equation. It lowered the top benefit, lowered the tiers, raised the minimum retirement age, increased the years to get to the top. It went from 75 percent being the highest to 65. It went from 25 years to 30 years and raised the ages that people could retire. We also created tiers for existing employees, and, and the tiers were for those employees that were within, depending on the system, either five or ten years before retirement, they would see some of the changes, some of the smoothing, and some of the reduction in the overtime implications to their pension. But for employees that were not within five to ten years of retirement, their retirement ages would raise and the years to get to the top benefit would increase and some of those other things. We also-- one of the favorite words I see in the media is smoothing that means two different things depending on who you're talking about. But one of the things that we used to see in the Police and Fire System as people could spike their pension because they would work a lot of overtime in the last year of their employment, which would ultimately increase their, their pension. What occurred there is we went with something called a career overtime average, which meant that you looked at somebody's overtime over their career and they made pension contributions based on that overtime. But if I worked 30, 30, 30 and then 150 hours my last year, my pension was going to be based on an average of 30, 30, 30 and 150 over the course of my career, as opposed to what existed before was this 150 so that your pension was not in any way related necessarily to what you had traditionally been earning over the course of your income. And then the other thing we did as far as smoothing, it used to be your highest 26 pay periods in

your last 5 years. It went to a highest average 78 pay periods or 3 years, which has an effect-- affects most people the time period for which they were eligible for a pension. So a lot of those things have occurred, and, and we're ten years into that particular solution. And I appreciate you still look at the funded ratio and there are still concerns. But as far as the, the, the feedback that we get from not only the city and the systems actuary but other actuaries used by the union is that, that we're on the path to where we're getting. The problem is we have a lot of legacy people who are already retired, and that's kind of a similar thing to what we've already talked about. The new hires are a lot sounder for as far as pension, and we have some of the same issue, I think, that Senator Clements was recognizing is that new hires to some extent might be concerned that they might be subsidizing some of the old and to, to some extent, that's-- every employee has to contribute to the unfunded liability. And the reality is that that's, that's what occurs. And so you have to balance those things. So those are some of the changes that we made. They've had a positive effect in that we're slowly and steadily moving up. The projections are still there. I mean, there's obviously risk, you know, if you have another 2008 or two or three bad investment years in a row, it'll be a lot more. This seat will be even more uncomfortable to sit in than it already is. And that's just the reality of it. Fortunately, you know, we've had decent returns and fortunately things have been moving as projected, and, and we hope that continues. So anyway, that-- that's, you know, I don't want to get-- the report is one you've already seen so I hate to spend a lot of time on it, but I'm happy to answer any, any questions about the Police and Fire Retirement System if you'd like.

KOLTERMAN: Any questions? I, I just have a, a couple of observations,--

BERNARD in den BOSCH: Sure.

KOLTERMAN: --or I guess the first one would be a question. Have you given any more thought to, you know, you talk about how new employees are helping pay for the liabilities of the past. Has any more thought being given to looking at your charter with the idea that it would allow the city to make additional contributions on behalf of the pension years?

BERNARD in den BOSCH: A fortuitous question, because the, the-- our charter requires us to have a charter convention every ten years. They're actually, at this point, there's-- the mayor is intending, I

think, on calling for a charter sometime in the next six months. So we will have a charter convention. I will, I will make sure that that gets included in the discussion items. Appreciate that the, the charter committee ultimately votes things out of the committee. They go to the council. The council has to vote by ordinance to put them on for a ballot. And ultimately our charter only gets changed by, by a vote of the people. But I will, I will make sure that that at least gets put on the discussion.

KOLTERMAN: Well, I-- my, my concern is I would hope that the people of Omaha are aware of the fact that you're asking new employees to accept the blunt of the past [INAUDIBLE].

BERNARD in den BOSCH: Yeah, and I don't, yeah, and I don't know that I would say, I mean, there was obviously a lot of discussion about pensions and what was going on in the pension systems 12, 13 years ago, up through maybe 10 years ago or 8 years ago. There hasn't really been much public discussion, as you know. I mean, you, you-- you're more attuned to that than, frankly, I am. But you know, I do think there, there is a realization amongst some people within the city now that maybe didn't occur in the last couple, couple years ago because of some of the difficulty we have in retaining and, and hiring and retaining employees that maybe one of the impediments is the relatively large contribution that you have to make. And in, in many ways, that makes-- though your top-- your wage may be competitive, your take-home wage may not be.

KOLTERMAN: Right.

BERNARD in den BOSCH: And I, I know that there's been-- there's more realization of that because I used to be kind of the sole person that would make that comment. And I-- and in the last couple years because of, I mean, we're having a, a, a really difficult time hiring people to drive, to drive snowplows and those things. And some of that is, is, you know, it's a product of an unemployment rate that's incredibly low. There's plenty of other jobs, but it's also a product of, you know, my take-home pay is substantially below what I think it should be. And I don't have that issue if I go work for some of my competition.

KOLTERMAN: Right. The other, the other question, and this is just a question, I don't know if you have an-- you probably can't answer it, but I'm going to ask it anyway.

BERNARD in den BOSCH: I'll try.

KOLTERMAN: When you get, you know, the city goes out and gets classified, they get bond-- your bond ratings-- does, does a pension plan and, and the fact that your pension plans only funded at 52 percent, does that affect your bond ratings, are you concerned about that at all?

BERNARD in den BOSCH: It certain--

KOLTERMAN: It's a huge liability that's hanging out there.

BERNARD in den BOSCH: It certainly affects the bond rating. I mean, we went from being the very top. But the reality is we're still, I think, at the, the third tier down, which is still really, really high. And I know, Senator Lindstrom, you understand that area more than I do. But yeah, it has affected our bond rating and that the rating agencies have, you know, we're not AAA, but we're still double A-plus and we'll still have a fairly high rating because of the management of some of the other bonding things. But there is no question that every time a rating agency looks at us, the pension system and the funded, you know, the fact that the pension systems are funded at 54 percent or whatever it is, it is problematic. There, there is no question that, that it does have, have an effect. Probably, you know, to be honest and I don't know-- I know that over the last ten years, with interest rates being relatively low and, and you could still borrow money at a very low rate, it probably hasn't had as big an impact as it might if we would get into a time where inflation was a little bit higher and you start to see interest rates go up and then maybe your, your rating will have more of an impact. I mean, at this point, the city is still able to get historically very competitive rates on all its, on all its bonds. But again, I think that's, again, way out of my-- even worse than me being an actuary trying to be a finance guy, but, but I mean, we've had historically low inflation rates--

KOLTERMAN: I understand. I, I just--

BERNARD in den BOSCH: --for a long, long time.

KOLTERMAN: --you know, I just look at it and know that you guys have to do some bonding and it--

BERNARD in den BOSCH: We do. We do.

KOLTERMAN: --would make a difference.

BERNARD in den BOSCH: And I think--

KOLTERMAN: Especially, you know, I-- you're right, interest rates are low right now.

BERNARD in den BOSCH: --we've been fortunate because of the investment of interest rates. Yeah.

KOLTERMAN: But if inflation continues to decline and--

BERNARD in den BOSCH: They're going to go up.

KOLTERMAN: --interest rates go up, that-- it makes that spread even worse, so.

BERNARD in den BOSCH: It does.

KOLTERMAN: I just was curious.

BERNARD in den BOSCH: No, I-- and I'm, and I'm happy--

KOLTERMAN: I appreciate it.

BERNARD in den BOSCH: --to speculate.

KOLTERMAN: Any, any additional questions?

BERNARD in den BOSCH: I will get those additional things to you.

KOLTERMAN: I'd appreciate that.

BERNARD in den BOSCH: And, again, please, if anybody wants to have a discussion, don't hesitate.

KOLTERMAN: Well, we'll get those out to the committee once we get them.

BERNARD in den BOSCH: I'll get them into Kate as soon as--

KOLTERMAN: We get the, we get the information out, so.

BERNARD in den BOSCH: I appreciate your time. Thank you.

KOLTERMAN: With that, appreciate it. I don't think we have anybody else. Do we have a-- I guess we don't need to adjourn. We're adjourned.

BERNARD in den BOSCH: Thank you.