JOINT COMMITTEE ON PUBLIC EMPLOYEE RETIREMENT
Second Quarter Meeting
December 1, 2022

The Joint Committee on Public Employee Retirement (JCPER) met on Tuesday, December 1, 2022 at 10:00am in the Joint Committee Hearing Room (Room 117) in the State Capitol. Chair Pike called the meeting to order.

Roll call did not established a quorum. JCPER members in attendance were: Representatives Paula Brown (070), Hovis, Pike, Reedy, and Senators Koenig and Beck. The following members were absent: Representatives Bosley, Richard Brown (027), Senators Rizzo, Moon, and Williams.

Following roll call, the Chair turned the meeting over to Dean Dohrman, Executive Director, to present the 4th Quarter 2022 report. Dohrman began with giving a detail showing of three plans that submitted actuarial cost statements. These cost statements related each plan design change. Each document also gave detail as to the financial change to the plan should the design change be adopted.

Director Dohrman then moved to a recap of the events surrounding the FTX Exchange collapse. The Director traced the rise of Sam Bankman-Freed's company FTX, its native token FTT, and Alameda Research through the insolvency that rocked markets during the last few weeks.

Director Dohrman continued with a brief investment overview of the past few months. The investment overview report revealed third quarter returns are down considerably compared to the previous quarter. He noted this resulted from a number of factors including high inflation, pending upward interest rates, and other macro world events.

The Director then turned to the watch list. For the year 2021 there were eight plans on the watch list, which is two less compared to the previous year. The director gave a brief description of each plan and why they are on the plan as well as what to expect going forward. MOSERS Executive Director Ronda Stegman answered committee member questions concerning the plan's funding ratio and the impact of the legislature's infusion of one-time cash during FY2023. Director Stegman explained how the money would be applied and when these investments will begin to show results on quarterly reports. A quorum was established during the Watch List segment when Senator Williams joined via phone call.

The final item to discuss was the expenses for Director to attend a conference of NCPERS in January. After a brief description of the event Senator Koenig asked if in the past previous directors attended events like this it was confirmed that indeed previous directors have attended events like this in the past. Then Chair Pike moved to go into executive session and the motioned was seconded by Representative

Hovis. Once in executive session Chair Pike moved to approve the expenses for the NCPERS conference with a second from Representative Hovis. With a vote of seven aye and zero nay the motion passed.

With no further business to attend to Chair Pike moved to adjourn the meeting. Representative Hovis seconded the motion and with a verbal vote all agreed and the meeting adjourned.

Dean A. Dohrman
Executive Director

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JOINT COMMITTEE ON PUBLIC EMPLOYEE RETIREMENT

4th QUARTER MEETING
December 1, 2022
10am— Joint Committee Room (Room 117), State Capitol

<u>AGENDA</u>

Roll Call

Office Update

Plan Updates

Market Overview

Quarterly Investment Reporting

Watch List

Action Items
DC Conference

Comments of the Chair

A vote may be taken to close the meeting pursuant to section 610.021(3), RSMo and section 610.021(13), RSMo relating to personnel matters.

JOINT COMMITTEE

on

PUBLIC EMPLOYEE RETIREMENT

4th QUARTER MEETING

December 1, 2022

10:00am— Joint Committee Room (Room 117), State Capitol

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YOUR TRUSTED PARTNER

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ACTUARIAL COST STATEMENT FOR PROPOSED CHANGES FOR THE RETIREMENT PLAN FOR EMPLOYEES OF BLACK JACK FIRE PROTECTION DISTRICT

Prepared October 11, 2022

This actuarial statement is to disclose the financial impact of the Substantial Proposed Changes to the Retirement Plan for Employees of Black Jack Fire Protection District which would become effective on the execution of the third amendment and following 45 days after the submission of this actuarial cost statement to the Joint Committee on Public Employee Retirement. This statement is prepared using the actuarial assumptions and methods employed in the last annual actuarial valuation in accordance with R.S.Mo. § 105.665.

Proposed Changes

Pension Benefit Formula

The current pension benefit for uniformed employees, the pension is $216 times credited service, and for non-uniformed employees the pension is $161 times credited service.

The proposed pension benefit change is to provide a $1,700 supplemental benefit from Normal Retirement to age 65. Participants that elect an early retirement are eligible for the supplemental benefit beginning at age 55, but pro-rated based on the following service schedule:

- 0% <10 years of service
- 50% 10-20 years of service
- 75% 20-25 years of service
- 100% 25+ years of service

In addition, for any Employee who was employed by the Employer on January 1, 2022, in calculating the number of full years of uninterrupted employment of an Employee with the Employer completed by the Participant from his date of employment to the earliest of his date of termination of employment, his death, his Early, Normal, or Late Retirement Date, or his Disability Retirement Date, a Participant will receive credit for a full month of Service for any portion of a calendar month of Service by the Employee. (previously had to work 7 months to receive 1 year of credited service).

Actuarial Analysis

1. The basis of the proposed change is to allow for retirement prior to Medicare eligibility by providing supplemental income.

2. Attached is a 10-year projection of the current plan and the proposed plan.

3. The District is currently contributing in excess of the amount determined by the Annual Cost in item 4 below.

4. The below table summarizes the January 1, 2023 impact of the Proposed Benefit:

	Current	**Proposed**
ACCRUED LIABILITY	$25,271,000	$27,861,000
ESTIMATED ASSETS	$25,680,000	$25,680,000
UNFUNDED ACCRUED LIABILITY	($409,000)	$2,181,000
ACCRUED LIABILITY FUNDED RATIO	101.6%	92.2%
NORMAL COST	$398,200	$525,700
NORMAL COST AS A % OF PAYROLL	8.4%	11.1%
AMORTIZATION OF UNFUNDED LIABILITY	($42,000)	$223,800
AMORTIZATION AS A % OF PAYROLL	-0.9%	4.7%
ANNUAL COST (beginning of year)	$356,200	$749,500
ANNUAL COST (end of year)	$381,100	$802,000
ANNUAL COST AS A % OF PAYROLL	8.0%	16.9%
EXPECTED CONTRIBUTION	$1,317,969	$1,317,969
ASSUMED PAYROLL	$4,735,000	$4,735,000
EXPECTED BENEFIT PAYMENTS	$1,282,000	$1,445,000

5. As shown in the projections, we do not believe that the proposed change would impair the ability of the plan to meet the obligations thereof in effect at the time the proposal is made.

6. The assumptions used for this analysis are listed in the cost projection exhibits and the 1/1/2022 actuarial report that has been attached. Assets and liabilities presented in the cost exhibits have been rolled forward from the 1/1/2022 valuation based on assumptions and provisions included in the 1/1/2022 valuation report.

7. We believe the assumptions used for the actuarial valuation produce results which, in the aggregate, are reasonable.

8. The Recommended Contribution is based on the Entry Age Normal Cost Method with a 15 year amortization of the Unfunded Actuarial Accrued Liability. Under this method the actuarial present value of the projected benefits of each active participant is allocated on a level basis over the earnings of the individual between entry age and assumed exit age(s). The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the Actuarial Accrued Liability. The actuarial gains (losses) are reflected as they occur in a decrease (increase) in the Unfunded Actuarial Accrued Liability.

Ekon Benefits

Keith Kowalczyk

Keith Kowalczyk
President
Associate of the Society of Actuaries
Enrolled Actuary, No. 20-2812

RETIREMENT PLAN FOR EMPLOYEES OF BLACK JACK FIRE PROTECTION DISTRICT
10 YEAR COST PROJECTION UNDER CURRENT PLAN

	1/1/2022	1/1/2023	1/1/2024	1/1/2025	1/1/2026	1/1/2027	1/1/2028	1/1/2029	1/1/2030	1/1/2031	1/1/2032
ACCRUED LIABILITY*	$24,348,855	$25,271,000	$26,139,000	$27,090,000	$27,809,000	$28,443,000	$28,964,000	$29,460,000	$29,839,000	$30,064,000	$30,242,000
ACTUARIAL VALUE OF ASSETS*	$23,855,808	$25,680,000	$27,504,000	$29,496,000	$31,391,000	$33,330,000	$35,291,000	$37,359,000	$39,465,000	$41,600,000	$43,858,000
UNFUNDED ACCRUED LIABILITY	$493,047	($409,000)	($1,365,000)	($2,406,000)	($3,582,000)	($4,887,000)	($6,327,000)	($7,899,000)	($9,626,000)	($11,536,000)	($13,616,000)
ACCRUED LIABILITY FUNDED RAT	98.0%	101.6%	105.2%	108.9%	112.9%	117.2%	121.8%	126.8%	132.3%	138.4%	145.0%
NORMAL COST	$355,297	$398,200	$415,900	$394,000	$386,400	$384,100	$394,400	$391,900	$374,900	$382,300	$387,700
AMORTIZATION	$50,592	($42,000)	($140,100)	($246,900)	($367,600)	($501,500)	($649,200)	($810,500)	($987,700)	($1,183,700)	($1,397,200)
ANNUAL COST (beginning of year)	$405,889	$356,200	$275,800	$147,100	$18,800	($117,400)	($254,800)	($418,600)	($612,800)	($801,400)	($1,009,500)
ANNUAL COST (end of year)	$434,301	$381,100	$295,100	$157,400	$20,100	($125,600)	($272,600)	($447,900)	($655,700)	($857,500)	($1,080,200)
COST AS A % OF PAYROLL	9.4%	8.0%	6.0%	3.2%	0.4%	-2.5%	-5.3%	-8.6%	-12.0%	-15.4%	-18.9%
EXPECTED CONTRIBUTION	$1,282,695	$1,317,969	$1,354,213	$1,391,454	$1,429,719	$1,469,036	$1,509,435	$1,550,944	$1,593,595	$1,637,419	$1,682,448
ASSUMED PAYROLL	$4,618,000	$4,735,000	$4,948,000	$4,866,000	$4,946,000	$5,033,000	$5,184,000	$5,236,000	$5,442,000	$5,560,000	$5,730,000
EXPECTED BENEFIT PAYMENTS	1,123,165	1,282,000	1,279,000	1,545,000	1,668,000	1,817,000	1,887,000	2,031,000	2,188,000	2,257,000	2,293,000

Assumptions*
Assets and Liabilities are rolled forward from the 1/1/2022 valuation based on assumptions and provisions included in the 1/1/2022 valuation report.

Discount Rate	7.00%
Rate of Return	7.00%
Aggregate Payroll Growth	4.50%
Inflation	2.50%
Expected Contribution Increase Rate	2.75%

Assumes Level Population (New Hires Replace Retirements)

RETIREMENT PLAN FOR EMPLOYEES OF BLACK JACK FIRE PROTECTION DISTRICT
10 YEAR COST PROJECTION UNDER PROPOSED PLAN

	1/1/2022	1/1/2023	1/1/2024	1/1/2025	1/1/2026	1/1/2027	1/1/2028	1/1/2029	1/1/2030	1/1/2031	1/1/2032
ACCRUED LIABILITY*	$24,348,855	$27,861,000	$28,878,000	$29,988,000	$30,793,000	$31,476,000	$32,008,000	$32,517,000	$32,867,000	$33,019,000	$33,181,000
ACTUARIAL VALUE OF ASSETS*	$23,855,808	$25,680,000	$27,336,000	$29,148,000	$30,765,000	$32,364,000	$33,919,000	$35,553,000	$37,153,000	$38,704,000	$40,400,000
UNFUNDED ACCRUED LIABILITY	$493,047	$2,181,000	$1,542,000	$840,000	$28,000	($888,000)	($1,911,000)	($3,036,000)	($4,286,000)	($5,685,000)	($7,219,000)
ACCRUED LIABILITY FUNDED RAT	98.0%	92.2%	94.7%	97.2%	99.9%	102.8%	106.0%	109.3%	113.0%	117.2%	121.8%
NORMAL COST	$355,297	$525,700	$543,400	$521,500	$513,900	$511,700	$522,000	$519,400	$502,500	$509,800	$515,300
AMORTIZATION	$50,592	$223,800	$158,200	$86,200	$2,900	($91,100)	($196,100)	($311,500)	($439,800)	($583,300)	($740,800)
ANNUAL COST (beginning of year)	$405,889	$749,500	$701,600	$607,700	$516,800	$420,600	$325,900	$207,900	$62,700	($73,500)	($225,500)
ANNUAL COST (end of year)	$434,301	$802,000	$750,700	$650,200	$553,000	$450,000	$348,700	$222,500	$67,100	($78,600)	($241,300)
COST AS A % OF PAYROLL	9.4%	16.9%	15.2%	13.4%	11.2%	8.9%	6.7%	4.2%	1.2%	-1.4%	-4.2%
EXPECTED CONTRIBUTION	$1,282,695	$1,317,969	$1,354,213	$1,391,454	$1,429,719	$1,469,036	$1,509,435	$1,550,944	$1,593,595	$1,637,419	$1,682,448
ASSUMED PAYROLL	$4,618,000	$4,735,000	$4,948,000	$4,866,000	$4,946,000	$5,033,000	$5,184,000	$5,236,000	$5,442,000	$5,560,000	$5,730,000
EXPECTED BENEFIT PAYMENTS	1,123,165	1,445,000	1,442,000	1,790,000	1,954,000	2,144,000	2,213,000	2,398,000	2,596,000	2,604,000	2,599,000

Assumptions*

Assets and Liabilities are rolled forward from the 1/1/2022 valuation based on assumptions and provisions included in the 1/1/2022 valuation report.

Discount Rate	7.00%
Rate of Return	7.00%
Aggregate Payroll Growth	4.50%
Inflation	2.50%
Expected Contribution Increase Rate	2.75%

Assumes Level Population (New Hires Replace Retirements)

231 South Bemiston
Suite 400
Clayton, MO 63105

November 11, 2022

Ms. Karen Dilber
City of Clayton
10 N. Bemiston Avenue
Clayton, MO 63105

RE: City of Clayton Uniformed Employees' Pension Plan – Section 105.665 Cost Statement

Dear Karen:

The purpose of this letter is to provide the City of Clayton Unifomed Employees' Pension Plan with a cost statement required under the Missouri Revised Statute Section 105.665 in connection with any proposed plan provisions containing the changes to plan funding described below.

A summary of the proposed changes in plan provisions are as follows:

The provisions for the Forward DROP enhancement are as follows:

- Under this proposal, if implemented, a participant may elect to join the forward DROP program any time after becoming eligible for normal retirement (i.e., at the earlier of age 50 with 25 years of service, age 55 with 10 years of service or age 65 with 5 years of service)
- Upon entering the DROP program, a participant must remain in the DROP program for at least 1 year but not to exceed 5 years
- While in DROP, participants do not accrue any additional benefits
  - COLA increases are not applied to the monthly benefits accumulating during the period in DROP.
  - COLA increases are applied to the monthly pension benefit after the DROP period has ended upon actual retirement. For example, if the DROP period was three years, the monthly pension benefit upon retirement is increased with three years of COLA increases applied going forward from actual retirement – but is not retroactively applied to monthly benefits accumulated in the DROP account during the DROP period.
- Upon actual retirement, participants will also receive their monthly pension benefit calculated upon entry into the DROP, adjusted for any applicable COLA increases occurring during the DROP period
- While in the DROP, participants do not pay employee contributions
- DROP balance interest crediting rate is 5.0%
- While in DROP, DROP balance will accumulate based on monthly accrued benefit the participant would have received if the participant had elected to retire, plus interest credited at the interest crediting rate
  - Monthly accrued benefit while in DROP will not be adjusted for any applicable COLA increases occurring during the DROP period
- When participants exit the DROP and retire, members receive a lump sum equal to the accumulated DROP balance at actual retirement

- Death benefit during the DROP period equal to the lump sum value of the account at time of death is payable to the surviving beneficiary. The surviving beneficiary would receive 50% of the Member's accrued benefit, including applicable COLAs, payable immediately for non-duty related death or 100% of the Member's accrued benefit, including applicable COLAs, if the death was duty related.

The provisions for the one-time Back DROP enhancement are as follows:

- Under this proposal, if implemented, a participant may elect to join the Back DROP program if eligible for normal retirement as of January 1, 2023 (i.e., at the earlier of age 50 with 25 years of service, age 55 with 10 years of service or age 65 with 5 years of service)
- The one-time election will allow a participant to elect a DROP retroactively during the election period
- Participants electing a Back DROP will be required to retire within six months of the election period
- Participant may elect up to 3 years retroactively to be included in the Back DROP as long as the participant was eligible for normal retirement during the period of applicable Back DROP (e.g., if participant became eligible for normal retirement two years ago, the Back DROP will be limited to two years)
- Participants electing the Back DROP will not be eligible to participate in a forward DROP in the future
- Participant's monthly accrued benefit will be calculated based on the service and earnings at the beginning of the Back DROP period
- While in DROP, participants do not accrue any additional benefits
- The Back DROP balance will be calculated based on the monthly accrued benefit the participant would have received if the participant had elected to retire at the beginning of the Back DROP period, plus interest credited at the interest crediting rate
    - Monthly accrued benefit while in DROP will not be adjusted for any applicable COLA increases that occurred during the DROP period
- Employee contributions made during the Back DROP period elected by a participant will be credited to the DROP balance and accumulated to retirement based on interest crediting rate
- DROP balance interest crediting rate is 5.0%
- Upon actual retirement, members receive a lump sum equal to the accumulated DROP balance based on the period elected
- Participants will also receive their monthly pension benefit calculated at the beginning of the DROP period, adjusted for any applicable COLA increases occurring during the DROP period
- Death benefit between electing the Back DROP and actual retirement will equal the lump sum value of the account at time of death is payable to the surviving beneficiary. The surviving beneficiary would receive 50% of the Member's accrued benefit, including applicable COLAs, payable immediately for non-duty related death or 100% of the Member's accrued benefit, including applicable COLAs, if the death was duty related.

The provisions for Purchase of Military Service are as follows:

- Vested employees can purchase up to 5 years of U.S. full-time military service if no pension benefits are received from the service being requested to purchase. The employee would pay the full cost of the service at the time of purchase at an actuarially equivalent amount. The employee could pay upfront or over a 2 year period.

For purposes of the cost statement, we have assumed that such plan provision changes described above were implemented retroactive to January 1, 2022. Proposed plan provisions will be implemented January 1, 2023. The projections use assets as of January 1, 2022 and do not take into account the adverse market conditions most likely seen in 2022. Actual results may differ as no gains or losses were assumed to occur on assets or liabilities after January 1, 2022.

In Exhibit I of the attached, current and proposed plan provisions assume that the actual return on assets is 7.0% in 2022 and 6.75% in 2023 and later years through the projection period. The 6.75% interest rate was approved by the Board of Trustees on August 8, 2022, and will be effective for the January 1, 2023, actuarial valuation.

Our cost statement, numbered to correspond with Section 105.665, follows below:

1. The level normal cost of plan benefits, less expected employee contributions, currently in effect is $916,792 or 12.59% of expected covered payroll, as calculated in our January 1, 2022 actuarial valuation.

2. The contribution amount for the Plan's Surplus is $(219,338) or (3.01)% of expected covered payroll. The amortization period used to determine this amount is 30 years.

3. The total required contribution amount from items one and two above is $697,454 or 9.58% of expected covered payroll.

4. The total contribution rate defined in item 3 is being contributed in a timely manner.

5. As of January 1, 2022, the plan's actuarial value of assets is $57,683,090, the market value of assets is $61,686,966, the actuarial accrued liability under the Entry Age Normal cost method is $53,450,058, and the funded ratio on that basis is 107.92%.

6. The total required post-change contribution amount is $688,729, or 10.14% of expected covered payroll under the proposed provisions. For cost purposes, we assumed the proposed plan provisisions were implemented retroactively to January 1, 2022.

7. A 10-year projection of annual plan costs and funded ratios is presented in Exhibit I. The projections under both current and proposed plan provisions assume that the actual return on assets is 7.0% in 2022 and 6.75% in 2023 and later years.

8. The proposed provisions would result in additional contributions in the year of implementation.

9. Though the changes increase required employer contributions, the proposed provisions still ensures the Pension Plan is soundly financed and able to meet the obligation to pay benefits to its members, retirees and beneficiaries. Under the current provisions, cumulative contributions received through 2032 is approximately $8.09 million compared to $9.13 million under the proposed provisions.

10. The actuarial assumptions used in the January 1, 2022 actuarial valuation are presented in Exhibit II. Any assumptions used for the projections that are not listed in Exhibit II are included in Exhibit III.

11. The Actuary's certification is below.

12. The actuarial funding method used in preparing the valuation along with the method applied in amortizing the Unfunded Actuarial Accrued Liability and Surplus is described in Exhibit II.

Assumptions and Methods

In preparing the January 1, 2022, actuarial valuation, which is the basis for this cost statement, we have employed generally accepted actuarial methods and assumptions, in conjunction with employee data and financial information provided to us by the Plan, to determine a sound value for the Plan liability. The employee data has not been audited, but it has been reviewed and found to be consistent, both internally and with prior years' data. The validity of the funding analysis results is dependent upon the accuracy of the data and financial information provided.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the Plan. The actuary performs an analysis of Plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. A summary of all assumptions and methods used are as described in Exhibit II. Unless otherwise specified in this study, all data, methods, assumptions, and provisions were provided in the January 1, 2022 Valuation dated May 2022.

With any change to the provisions of a Plan, experience must be monitored to adjust the new assumptions. Assumptions would be studied within a reasonable time of three to five years to evaluate the reasonableness when compared to the actual demographic experience. Retirement rates with a DROP option were increased from the current Retirement Rates reflecting the fact that more participants are likely to elect the DROP option. The DROP period length of three years was estimated by City of Clayton.

In selecting economic assumptions, the interest rate of 7.00% and 6.75% are based upon a review of the existing portfolio structure, a review of recent experience, and information provided by the Plan's investment consultant regarding anticipated rates of return. The salary increase assumption is based on actual experience and future expectations of inflation, merit, and productivity components. COLA increases are capped at 2.00% annually, and the expectation is that actual inflation will be such that the annual increase will be 2.00%.

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

Future actuarial measurements and contribution requirements may differ from those determined in the valuation because of:

(1) differences between actual experience and anticipated experience based on the assumptions;

(2) changes in actuarial assumptions or methods;

(3) changes in statutory provisions;

(4) differences between actuarially required contributions and actual contributions.

Buck prepared this cost statement for use by the Plan in reviewing the financial condition of the Plan, including the determination of implementing the proposed provisions. Use of this cost statement by other parties or for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or the inapplicability of the cost statement for that purpose. Because of the risk of misinterpretation of actuarial results, Buck recommends requesting its advance review of any statement, document, or filing to be based on information contained in this cost statement. Buck will accept no liability for any such statement, document or filing made without its prior review.

The actuarial assumptions and methods used to value the plan are individually and in the aggregate reasonable and, in combination, represent a reasonable estimate of anticipated experience under the plan. The cost and actuarial exhibits presented in this cost statement were determined in accordance with actuarial procedures consistent with the Actuarial Standards of Practice (ASOPs) and appropriately disclose the actuarial position of the plan.

Actuarial Standards of Practice ("ASOPs") 27 and 35 ask the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the Board do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement. In the case of the Board's selection of expected return on assets ("EROA"), the signing actuaries have used economic information and tools provided by Buck's Financial Risk Management ("FRM") practice. A spreadsheet tool created by the FRM team converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions ("CMA") that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. It is intended to suggest possible reasonable ranges for EROA without attempting to predict or select a specific best estimate rate of return. It takes into account the duration (horizon) of investment and the target allocation of assets in the portfolio to various asset classes. Based on the actuary's analysis, including consistency with other assumptions used in the valuation and the percentiles generated by the spreadsheet described above, the actuary believes the EROA does not significantly conflict with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement.

Use of Models

Actuarial Standard of Practice No. 56 provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Due to limitation of model as defined by ASOP 56, simplified costing techniques due to complexity and lack of significant costs were implemented to analyze the impact of implementing the DROP of ancillary benefits. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding rules specified in this memorandum. The output from the third-party vendor software is used as input to an internally developed model that applies applicable funding rules to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this memorandum. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal model are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding rules, as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Assessment of Risks

Information about current plan risk can be found in the 2022 Actuarial Valuation Report for the City of Clayton Uniformed Employee's Pension Plan dated May 2022. However, providing the benefit enhancements may increase risk to the plan beyond what is stated in such report. Below is a list of risks to consider with the addition of the benefit enhancements:

- Investment return risk will have higher magnitude with a DROP when the return is less than 5% in any given year. When the investment return in a given year is less than 5%, the difference between the investment return and the 5% guaranteed interest will be incurred by the plan and increase costs.
- Behavioral risk may increase with a DROP option being implemented. This could create more uncertainty in retirement patterns and options selected by participants until actual experience can be examined.
- Liquidity risk may increase if participants elect to enter or exit the DROP at similar dates or if the plan sees a large number of eligible participants elect the one-time back DROP.

Actuarial Certification

The undersigned are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this memorandum. This memorandum has been prepared in accordance with all Applicable Actuarial Standards of Practice and we are available to answer any questions on the material contained in the memorandum, or to provide explanations or further details as may be appropriate.

Sincerely,

Matthew Staback, FSA, EA, MAAA, FCA
Senior Consultant, Wealth Consulting

Michael A. Ribble, FSA, EA, MAAA, FCA
Principal, Wealth Consulting

Buck Global, LLC (Buck)

Exhibit I

City Of Clayton Uniformed Employees' Pension Plan
January 1, 2022 Projections
Current Plan Provisions

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
A.	Number of Participants											
	Active	88	88	88	88	88	88	88	88	88	88	88
	Retired & Beneficiaries	73	80	82	84	88	89	90	91	92	93	92
	Vested Terminations	13	14	15	15	16	16	17	18	18	19	19
	Total	174	182	185	187	192	193	195	197	198	200	199
B.	Covered Payroll	$7,281,418	$7,505,331	$7,595,221	$7,796,840	$7,794,890	$7,984,568	$8,122,485	$8,288,928	$8,384,229	$8,623,735	$8,893,805
C.	Annual Benefits Payable to Retired Participants and Beneficiaries	$2,480,960	$2,807,660	$3,061,798	$3,175,951	$3,515,296	$3,646,730	$3,799,653	$3,963,488	$4,071,737	$4,187,217	$4,246,542
D.	Actuarial Liability - Entry Age Normal											
	Active	$23,795,453	$22,849,267	$22,201,848	$23,514,519	$21,587,117	$22,256,920	$22,627,939	$22,740,076	$23,653,686	$24,422,973	$26,506,501
	Retired & Beneficiaries	27,566,077	31,934,283	34,442,818	34,973,167	38,716,150	39,738,689	41,067,807	42,630,651	43,394,849	44,347,643	44,065,515
	Vested Terminations	2,088,528	2,467,678	2,763,572	3,058,320	3,337,681	3,609,307	3,879,727	4,162,327	4,469,747	4,793,090	5,136,358
	Total	$53,450,058	$57,251,228	$59,408,238	$61,546,006	$63,640,948	$65,604,916	$67,575,473	$69,533,054	$71,518,282	$73,563,706	$75,708,374
E.	Plan Assets - Actuarial Value	$57,683,090	$62,729,739	$66,433,916	$68,627,593	$70,772,944	$72,803,156	$74,835,833	$76,860,128	$78,904,561	$81,000,347	$83,200,078
F.	Unfunded Actuarial Liability	($4,233,032)	($5,478,511)	($7,025,678)	($7,081,587)	($7,131,996)	($7,198,240)	($7,260,360)	($7,327,074)	($7,386,279)	($7,436,641)	($7,491,704)
G.	Funded Ratio (E. / D.)	107.92%	109.57%	111.83%	111.51%	111.21%	110.97%	110.74%	110.54%	110.33%	110.11%	109.90%
H.	Total Normal Cost	$1,097,114	$1,206,266	$1,223,777	$1,256,937	$1,262,219	$1,293,333	$1,318,395	$1,346,373	$1,378,394	$1,420,356	$1,466,221
I.	Expected Employee Contributions	$364,071	$375,267	$379,761	$389,842	$389,745	$399,228	$406,124	$414,446	$419,211	$431,187	$444,690
	As a Percentage of Covered Payroll	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
J.	Administrative Expenses	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749
K.	Employer Normal Cost (H. - I. + J.)	$916,792	$1,014,748	$1,027,765	$1,050,844	$1,056,223	$1,077,854	$1,096,020	$1,115,676	$1,142,932	$1,172,918	$1,205,280
	As a Percentage of Covered Payroll	12.59%	13.52%	13.53%	13.48%	13.55%	13.50%	13.49%	13.46%	13.63%	13.60%	13.55%
L.	Amortization of Surplus (30 years open)	($219,338)	($275,930)	($353,855)	($356,671)	($359,210)	($362,546)	($365,675)	($369,035)	($372,017)	($374,554)	($377,327)
M.	Total Employer Cost as of January 1st (K. + L.)	$697,454	$738,818	$673,910	$694,173	$697,013	$715,308	$730,345	$746,641	$770,915	$798,364	$827,953
N.	Total Employer Cost As a Percentage of Covered Payroll	9.58%	9.84%	8.87%	8.90%	8.94%	8.96%	8.99%	9.01%	9.19%	9.26%	9.31%

BUCK

Exhibit I

City Of Clayton Uniformed Employees' Pension Plan
January 1, 2022 Projections
Proposed Plan Provisions

		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
A.	Number of Participants											
	Active	88	88	88	88	88	88	88	88	88	88	88
	Retired & Beneficiaries	73	86	91	93	99	97	101	101	103	103	99
	Vested Terminations	13	14	15	15	16	16	17	18	18	19	19
	Total	174	188	194	196	203	201	206	207	209	210	206
B.	Covered Payroll	$6,790,639	$7,172,767	$7,484,576	$7,479,253	$7,686,286	$7,954,293	$7,922,656	$8,128,341	$8,226,474	$8,490,982	$8,637,862
C.	Annual Benefits Payable to Retired Participants and Beneficiaries	$2,841,179	$2,888,992	$2,966,158	$3,031,997	$3,223,838	$3,337,150	$3,465,883	$3,607,893	$3,707,022	$3,836,027	$3,958,393
D.	One-Time Back DROP Lump Sum	$1,137,352	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
E.	Actuarial Liability - Entry Age Normal											
	Active	$18,354,719	$20,318,615	$20,869,801	$22,889,069	$22,044,927	$23,009,162	$23,549,485	$23,785,978	$24,872,696	$25,659,272	$27,894,109
	Retired & Beneficiaries	33,794,157	33,810,406	35,088,775	35,043,211	37,766,920	38,539,137	40,018,969	41,357,410	42,205,091	43,252,351	42,854,254
	Vested Terminations	2,088,528	2,467,678	2,763,572	3,058,320	3,337,681	3,609,307	3,879,727	4,162,327	4,469,747	4,793,090	5,136,358
	Total	$54,237,404	$56,596,699	$58,722,148	$60,990,600	$63,149,528	$65,157,606	$67,448,181	$69,305,715	$71,547,534	$73,704,713	$75,884,721
F.	Plan Assets - Actuarial Value	$57,683,090	$61,345,901	$65,007,664	$67,329,919	$69,527,056	$71,614,185	$73,978,514	$75,949,689	$78,255,715	$80,494,844	$82,763,559
G.	Unfunded Actuarial Liability	($3,445,686)	($4,749,202)	($6,285,516)	($6,339,319)	($6,377,528)	($6,456,579)	($6,530,333)	($6,643,974)	($6,708,181)	($6,790,131)	($6,878,838)
H.	Funded Ratio (F. / E.)	106.35%	108.39%	110.70%	110.39%	110.10%	109.91%	109.68%	109.59%	109.38%	109.21%	109.06%
I.	Total Normal Cost	$1,023,053	$1,214,141	$1,271,695	$1,276,060	$1,321,414	$1,373,858	$1,378,574	$1,424,762	$1,458,263	$1,515,330	$1,542,424
J.	Expected Employee Contributions	$339,532	$358,638	$374,229	$373,963	$384,314	$397,715	$396,133	$406,417	$411,324	$424,549	$431,893
	As a Percentage of Covered Payroll	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
K.	Administrative Expenses	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749	$183,749
L.	Employer Normal Cost (I. - J. + K.)	$867,270	$1,039,252	$1,081,215	$1,085,846	$1,120,849	$1,159,892	$1,166,190	$1,202,094	$1,230,688	$1,274,530	$1,294,280
	As a Percentage of Covered Payroll	12.77%	14.49%	14.45%	14.52%	14.58%	14.58%	14.72%	14.79%	14.96%	15.01%	14.98%
M.	Amortization of Surplus (30 years open)	($178,541)	($239,198)	($316,576)	($319,286)	($321,210)	($325,192)	($328,907)	($334,630)	($337,864)	($341,991)	($346,459)
N.	Total Employer Cost as of January 1st (L. + M.)	$688,729	$800,054	$764,639	$766,560	$799,639	$834,700	$837,283	$867,464	$892,824	$932,539	$947,821
O.	Total Employer Cost As a Percentage of Covered Payroll	10.14%	11.15%	10.22%	10.25%	10.40%	10.49%	10.57%	10.67%	10.85%	10.98%	10.97%

*Back DROP participants are treated as retirees for cost purpose. These participants are replaced with new entrants with lower salaries which cause the decrease in covered payroll in 2022.

Exhibit II

Actuarial Assumptions and Methods

Actuarial Standards of Practice ("ASOPs") 27 and 35 ask the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the Board:

- are reasonable, if selected with our advice, or
- do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement, if selected without our advice.

The assumptions below have a significant effect on the measurement.

The following assumption was selected by the Board and the information and analysis used to determine the assumption does not significantly conflict with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement as described in the cover letter of this report.

Interest Rate: 7.00%, net of investment expenses in 2022 and 6.75%, net of investment expenses in 2023 and later years

The following assumptions were selected by the Board with the actuary's advice. Buck believes the assumptions are reasonable for the purpose of the measurement. The information and analysis supporting these assumptions are as follows:

- Review of assumptions each year thoroughly while analyzing the plan's gain/(loss) and considering any future trends to determine the reasonability of each assumption
- Consultation with the Board and/or plan sponsor
- Buck reviews other public sector clients with similar size, location, and characteristics to help determine if adjustments should be made in addition to the plan's gain/(loss) review.

Pre-Retirement Mortality: Pub-2010 Safety Employees table, amount-weighted, projected generationally with scale MP-2021

Post-Retirement Mortality:

- Retired members: Pub-2010 Safety Retirees table, amount-weighted, projected generationally with scale MP-2021
- Disabled members: Pub-2010 Safety Disabled table, amount-weighted, projected generationally with scale MP-2021
- Beneficiary members: Pub-2010 Contingent Survivor table, amount-weighted, projected generationally with scale MP-2021

Salary Increase: 3.50% per annum.

Future COLA Increase: 2.00% per annum.

Actuarial Assumptions and Methods (continued)

Turnover:

Sample rates are as follows:

Police Officers						
	Years of Service					
Age	0	1	2	3	4	5+
25	15.00%	10.00%	8.00%	7.00%	6.00%	4.83%
30	15.00%	10.00%	8.00%	7.00%	6.00%	3.62%
35	15.00%	10.00%	8.00%	7.00%	6.00%	3.22%
40	15.00%	10.00%	8.00%	7.00%	6.00%	2.82%
45	15.00%	10.00%	8.00%	7.00%	6.00%	3.33%
50	15.00%	10.00%	8.00%	7.00%	6.00%	3.83%

Firefighters						
	Years of Service					
Age	**0**	**1**	**2**	**3**	**4**	**5+**
25	7.50%	5.00%	4.50%	4.00%	3.50%	2.62%
30	7.50%	5.00%	4.50%	4.00%	3.50%	2.37%
35	7.50%	5.00%	4.50%	4.00%	3.50%	2.23%
40	7.50%	5.00%	4.50%	4.00%	3.50%	2.09%
45	7.50%	5.00%	4.50%	4.00%	3.50%	2.33%
50	7.50%	5.00%	4.50%	4.00%	3.50%	2.57%

Disability:

Sample rates are as follows (0% after age 55):

Age	Rate
30	0.08%
35	0.08%
40	0.20%

Age	Rate
45	0.26%
50	0.49%
55	0.89%

Actuarial Assumptions and Methods (continued)

Retirement:

For persons age 50 through 59 with less than 10 years of credited service, the rate is 0%. For persons age 51 through 54 with exactly 25 years of credited service, the rate is 50%. For persons age 45 through 50, with exactly 25 years of credited service, the rate is 30%. For all others, the rates are as follows:

Age	Rate
45 - 50	15%
51 - 54	10%
55	90%
56	30%

Age	Rate
57	40%
58	50%
59	60%
60+	100%

Asset Valuation:

The Actuarial Value of Assets is Market Value as of the valuation date reduced by 2/3 and 1/3 of the gain/(loss) in each of the prior years, respectively. The gain/(loss) for each period is determined as the actual return on Market Value during the period less the expected return on Market Value based on an assumed earnings rate.

This method was adopted for the 2015 valuation smoothing the 2014 plan year experience.

Administrative Expense:

The total normal cost is increased by the expected administrative expenses based on actual administrative expenses in the prior year. For 2022, the total contribution increase was $183,749.

Pre-Retirement Death Assumption:

All deaths occurred are assumed to be duty related deaths.

Marital Percentage:

100% of participants are assumed to be married at death. Married men are assumed to be 3 years older than married women.

Valuation Method:

Entry Age Normal. Benefits are projected and spread so that the total normal cost will be a level percentage of salaries from date of hire to date of termination. The normal cost assigned to the City reflects a reduction due to mandatory employee contributions.

The Plan exceeded 100% as of January 1, 2022. The Plan implemented a valuation method for surplus to adjust total employer contribution based on a 30-year level percent of pay, opened amortization in years in which a surplus occurs.

Forward DROP Proposed Assumptions

- Retirement rates were adjusted, to reflect the fact that participants are more likely to elect to enter the DROP program upon eligibility for normal retirement.
- Proposed Retirement rates shown are the assumed rate at which participants either elect to enter the DROP or retire
- For those that enter the DROP, actual retirement will occur at the end of the DROP period
- Proposed Retirement rates for eligible participants during first year of implementation
    - 100% retirement rate for those with 30 or more years of service
    - 75% retirement rate for those under age 55 (with less than 30 years of service)
    - 100% retirement rate for those age 55 and older
- See below for the Proposed Retirement Rates after the first year of implementation
- DROP period is assumed to be 3 years
- DROP election rate – percentage of eligible participants assumed to retire who elect to enter DROP
    - 75% election rate
- All deaths occurred are assumed to be duty related deaths and occur 18 months into the DROP period
- Calculation uses the 6.75% interest rate recently approved by the Board of Trustees on August 8, 2022
- Participants who enter the DROP will no longer receive disability benefits and will exit the DROP to commence retirement benefits if a disability occurs

Proposed Retirement Rates after the first year of implementation (including participants who elect DROP rather than true retirement)

Less than 25 years of Service

- For persons age 50 through 59 with less than 10 years of credited service, the rate is 0%. For persons age 55 through age 64 with 10 or more years of credit service, the rate is 100%. For all others, members are assumed to retire at the rate of 100% at age 65 with 5+ years of service.

25 years of Service or more

- For persons age 45 through 50, with exactly 25 years of credited service, the rate is 30%. For persons age 51 through 54, with exactly 25 years of service, the rate is 75%. For persons age 55, with exactly 25 years of service, the rate is 100%. For persons at least age 51 with 30 or more years of service, the rate is 100%. For all others, the rates are as follows:

Age	Rate
45 - 50	15%
51	75%
52-54	50%
55	90%
56	30%

Age	Rate
57	40%
58	50%
59	60%
60+	100%

Exhibit II

One-time Back DROP Assumptions

- Back DROP eligibility determined as of January 1, 2023
- 100% of participants elect the Back DROP if they have been eligible for 18 months or more
- Participants who have not been eligible for normal retirement for at least 18 months will not elect the Back DROP
- Participants assumed to elect the one-time back DROP option based on eligibility as of January 1, 2023 will not be eligible for the forward DROP
- Participants who are assumed to elect a Back DROP will be treated as a retiree for calculation purposes
- Participant will elect the maximum period of Back DROP based on the number of months the participant has been eligible for normal retirement, up to the maximum of 3 years for the Back DROP lump sum
- Employee contributions occur mid-year
- 2.00% per annum COLA increase occurs as of January 1st each year
- Benefits and employee contributions will receive 5% annual interest crediting rate
- 100% of participants are assumed to be married and elect a 50% Joint & Survivor Option

Projection Assumptions

(1) New Entrants:	Active membership assumed to stay at the January 1, 2022 level throughout projection (88 active members). New active members entering the Plan are based on the average characteristics of new active members over the last five years and the proposed 2022 STEP salary structure. The expected salary in 2022 for a new entrant is $65,000 and 90% of new entrants are males and 10% females.
(2) Expenses:	Plan administrative expenses in 2022 ($183,749) are assumed level.
(3) Actual Return on Assets:	Under current and proposed provisions, the actual return on assets is 7.0% in 2022 and 6.75% in 2023 and later years through the projection.
(4) Employee Contributions:	Employee contributions are assumed to be 5% per year.
(5) Employer Contributions:	Employer contributions are assumed to be paid mid-year with a half year interest adjustment applied by the City of Clayton at the time of payment.
(6) Interest Rate	7.00%, net of investment expenses for 2022 and 6.75%, net of investment expense for 2023 and later years.

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Retirement Plan for the Employees of Rock Community Fire Protection District

Cost Statement of Proposed Plan Changes

November 4, 2022

Statement Outline

- Certification
- Proposed Changes
- Reasons and Requirements
- Current and Projected Financial Impacts
- Assumptions
- Required Statements

Certification

This cost statement was prepared for Rock Community Fire Protection District to document impacts of implementing proposed pension plan changes under current consideration. The information contained in this document was prepared in order to meet the requirements of Missouri Statute 105.665 and 105.684.

Except where indicated otherwise, the results included in this cost statement are based on the same data, assumptions, methods, and provisions as the 1/1/2022 valuation. This cost statement has been prepared in accordance with generally accepted actuarial principles and practice using methods and assumptions we believe to be reasonable.

Future actuarial measurements may differ significantly from the current measurements 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); and
- Changes in plan provisions or applicable law.

We did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

Neither Nyhart nor any of its employees have any relationship with the plan or its sponsor which could impair or appear to impair the objectivity of this report.

The consultants indicated below are compliant with the continuing education requirements of the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States.

Nick H. Meggos

Rebecca Brown

Nick H. Meggos, EA, FCA

Rebecca Brown, FSA, EA

November 4, 2022

www.nyhart.com

Proposed Change

Current Structure

- Supplemental Benefit: Participants retiring under Normal or Early Retirement receive a supplemental benefit of $500 per month until the earlier of the participant's eligibility for Medicare or the participant's death.

Proposed Structure

The only changes to the above that is being proposed is as follows, costed as if effective on January 1, 2022, and anticipated to become effective retroactively as of January 1, 2022:

- Supplemental Benefit: Active participants, and terminated participants with at least 30 years of service, retiring under Normal or Early Retirement receive a supplemental benefit of $1000 per month until the earlier of the participant's eligibility for Medicare or the participant's death. In addition, the supplemental benefits currently being paid to retired participants will be increased to a total of $1000 per month.

Reasons and Requirements

Reasons for the Statement

- Required by law (Missouri statute 105.665)
- Document various impacts of making changes to plan benefits
- Uniform information for every legislative body/committee before approving and implementing plan changes

Requirements of the Statement

- Immediate impacts to liabilities, normal costs, contributions and funded levels
- Must use the methods of the most recent valuation
- 10-year projections of similar information
- Assumptions and methods used to calculate the impacts
- Specific statements about the plan's ability to make necessary contributions before and after the proposed changes
- The cost statement must be available as public information for 45 days prior to implementing the changes
- The cost statement must be kept on file by the legislative body/ committee and filed with the joint committee on public employee retirement

Important Comments About Projections

The cost projections contained in this report are based on the January 1, 2022 valuation results. Census data and asset information were provided by the plan sponsor and asset advisor and are summarized in the January 1, 2022 actuarial valuation report. Reasonable actuarial techniques and assumptions were used to produce the cost projections.

The following pages show cost projections under different economic scenarios. Actual results will vary from projections shown in this report, perhaps significantly, due to changes in the assumptions, plan provisions, participant demographics, interest rate movement, actual asset performance, and other actual experience of the plan. Depending on the use of this information, additional cost projections may be necessary to quantify the sensitivity of results.

Financial Impacts: 7.00% return all years

Current Provisions	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Liability	29,193,935	30,818,971	32,353,981	33,918,861	35,297,572	36,692,150	38,059,678	39,499,818	40,708,824	41,815,398	42,813,979
Assets	24,083,157	26,282,813	28,870,668	31,007,109	32,655,340	34,025,276	35,357,535	36,791,857	37,936,758	39,023,480	40,008,814
Unfunded Accrued Liability	5,110,778	4,536,158	3,483,313	2,911,752	2,642,232	2,666,874	2,702,143	2,707,961	2,772,066	2,791,918	2,805,165
Funded Percentage	82.5%	85.3%	89.2%	91.4%	92.5%	92.7%	92.9%	93.1%	93.2%	93.3%	93.4%
Normal Cost	718,732	729,119	741,912	690,765	735,904	731,037	781,763	701,502	705,316	699,185	709,871
% of Payroll	13.5%	13.7%	13.9%	12.6%	13.3%	12.8%	13.4%	11.8%	11.6%	11.4%	11.3%
Payment on Unfunded	303,919	276,082	217,304	186,491	174,050	181,031	189,426	196,514	208,798	218,921	229,752
% of Payroll	5.7%	5.2%	4.1%	3.4%	3.1%	3.2%	3.3%	3.3%	3.4%	3.6%	3.7%
Contribution BOY	1,022,651	1,005,201	959,216	877,256	909,954	912,068	971,189	898,016	914,114	918,106	939,623
Contribution MOY	1,057,838	1,039,788	992,221	907,441	941,264	943,450	1,004,606	928,915	945,567	949,696	971,954
% of Payroll	19.9%	19.6%	18.5%	16.6%	17.0%	16.5%	17.3%	15.6%	15.6%	15.4%	15.5%
Payroll	5,315,891	5,310,432	5,354,369	5,469,928	5,537,570	5,716,061	5,814,013	5,962,443	6,056,151	6,147,065	6,268,302
Proposed Provisions											
Liability	30,108,544	31,746,648	33,288,536	34,850,406	36,189,573	37,552,960	38,900,538	40,329,701	41,490,482	42,581,061	43,556,213
Assets	24,083,157	26,289,060	28,878,957	31,009,041	32,615,537	33,954,607	35,268,929	36,696,854	37,799,603	38,879,511	39,853,503
Unfunded Accrued Liability	6,025,387	5,457,588	4,409,579	3,841,365	3,574,036	3,598,353	3,631,609	3,632,847	3,690,879	3,701,550	3,702,710
Funded Percentage	80.0%	82.8%	86.8%	89.0%	90.1%	90.4%	90.7%	91.0%	91.1%	91.3%	91.5%
Normal Cost	749,755	760,583	770,564	715,968	762,036	756,524	808,720	722,752	725,754	718,824	729,408
% of Payroll	14.1%	14.3%	14.4%	13.1%	13.8%	13.2%	13.9%	12.1%	12.0%	11.7%	11.6%
Payment on Unfunded	358,308	332,163	275,088	246,030	235,430	244,261	254,584	263,631	278,004	290,247	303,264
% of Payroll	6.7%	6.3%	5.1%	4.5%	4.3%	4.3%	4.4%	4.4%	4.6%	4.7%	4.8%
Contribution BOY	1,108,063	1,092,746	1,045,652	961,998	997,466	1,000,785	1,063,304	986,383	1,003,758	1,009,071	1,032,672
Contribution MOY	1,146,189	1,130,345	1,081,631	995,098	1,031,787	1,035,220	1,099,890	1,020,323	1,038,295	1,043,791	1,068,204
% of Payroll	21.6%	21.3%	20.2%	18.2%	18.6%	18.1%	18.9%	17.1%	17.1%	17.0%	17.0%
Payroll	5,315,891	5,310,432	5,354,369	5,469,928	5,537,570	5,716,061	5,814,013	5,962,443	6,056,151	6,147,065	6,268,302
Change in Contribution											
Contribution MOY	88,351	90,557	89,410	87,657	90,523	91,770	95,284	91,408	92,728	94,095	96,250
% of Payroll	1.7%	1.7%	1.7%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.5%	1.5%

- Funded percentages as 1/1/2022 satisfy 105.684 (above 80% currently above 75% after proposed changes)
- Impacts measured starting with data as of 1/1/2022, with a steady flat active population
- Accrued Liability (AL) is calculated using the projected unit credit cost method at 7.00%
- Assets are assumed to grow at **7.00% per annum**
- The unfunded liability was amortized over 30 years beginning in 1/1/2018. The amortization period decreases by 1 each year until reaching 15 years in 2033 at which time new sources of gains and losses will be amortized in a separate amortization base over 15 years. Amortizations are determined as a level percent of pay assuming a 3% annual growth in total payroll.
- Actual contributions are assumed to be equal to the recommended contributions shown above, interest has been added to reflect anticipated middle of year (MOY) timing.

Financial Impacts: -15% return in 2022 and 7.00% thereafter

Current Provisions	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Liability	29,193,935	30,818,971	32,353,981	33,918,861	35,297,572	36,692,150	38,059,678	39,499,818	40,708,824	41,815,398	42,813,979
Assets	24,083,157	25,146,782	26,274,978	27,028,388	27,375,699	27,532,634	28,881,987	30,348,749	31,542,931	32,697,393	33,770,669
Unfunded Accrued Liability	5,110,778	5,672,189	6,079,003	6,890,473	7,921,873	9,159,516	9,177,691	9,151,069	9,165,893	9,118,005	9,043,310
Funded Percentage	82.5%	81.6%	81.2%	79.7%	77.6%	75.0%	75.9%	76.8%	77.5%	78.2%	78.9%
Normal Cost	718,732	729,119	741,912	690,765	735,904	731,037	781,763	701,502	705,316	699,185	709,871
% of Payroll	13.5%	13.7%	13.9%	12.6%	13.3%	12.8%	13.4%	11.8%	11.6%	11.4%	11.3%
Payment on Unfunded	303,919	345,224	379,233	441,318	521,832	621,759	643,377	664,082	690,393	714,965	740,677
% of Payroll	5.7%	6.5%	7.1%	8.1%	9.4%	10.9%	11.1%	11.1%	11.4%	11.6%	11.8%
Contribution BOY	1,022,651	1,074,343	1,121,145	1,132,083	1,257,736	1,352,796	1,425,140	1,365,584	1,395,709	1,414,150	1,450,548
Contribution MOY	1,057,838	1,111,309	1,159,721	1,171,036	1,301,012	1,399,343	1,474,176	1,412,571	1,443,733	1,462,808	1,500,459
% of Payroll	19.9%	20.9%	21.7%	21.4%	23.5%	24.5%	25.4%	23.7%	23.8%	23.8%	23.9%
Payroll	5,315,891	5,310,432	5,354,369	5,469,928	5,537,570	5,716,061	5,814,013	5,962,443	6,056,151	6,147,065	6,268,302
Proposed Provisions											
Liability	30,108,544	31,746,648	33,288,536	34,850,406	36,189,573	37,552,960	38,900,538	40,329,701	41,490,482	42,581,061	43,556,213
Assets	24,083,157	25,154,880	26,287,496	27,036,802	27,344,499	27,472,544	28,803,933	30,264,244	31,416,193	32,563,731	33,625,520
Unfunded Accrued Liability	6,025,387	6,591,768	7,001,040	7,813,604	8,845,074	10,080,416	10,096,605	10,065,457	10,074,289	10,017,330	9,930,693
Funded Percentage	80.0%	79.2%	79.0%	77.6%	75.6%	73.2%	74.0%	75.0%	75.7%	76.5%	77.2%
Normal Cost	749,755	760,583	770,564	715,968	762,036	756,524	808,720	722,752	725,754	718,824	729,408
% of Payroll	14.1%	14.3%	14.4%	13.1%	13.8%	13.2%	13.9%	12.1%	12.0%	11.7%	11.6%
Payment on Unfunded	358,308	401,192	436,754	500,443	582,645	684,271	707,795	730,438	758,816	785,483	813,357
% of Payroll	6.7%	7.6%	8.2%	9.1%	10.5%	12.0%	12.2%	12.3%	12.5%	12.8%	13.0%
Contribution BOY	1,108,063	1,161,775	1,207,318	1,216,411	1,344,681	1,440,795	1,516,515	1,453,190	1,484,570	1,504,307	1,542,765
Contribution MOY	1,146,189	1,201,749	1,248,859	1,258,265	1,390,949	1,490,370	1,568,695	1,503,191	1,535,651	1,556,067	1,595,849
% of Payroll	21.6%	22.6%	23.3%	23.0%	25.1%	26.1%	27.0%	25.2%	25.4%	25.3%	25.5%
Payroll	5,315,891	5,310,432	5,354,369	5,469,928	5,537,570	5,716,061	5,814,013	5,962,443	6,056,151	6,147,065	6,268,302
Change in Contribution											
Contribution MOY	88,351	90,440	89,138	87,229	89,937	91,027	94,519	90,620	91,918	93,259	95,390
% of Payroll	1.7%	1.7%	1.7%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.5%	1.5%

- Funded percentages as 1/1/2022 satisfy 105.684 (above 80% currently above 75% after proposed changes)
- Impacts measured starting with data as of 1/1/2022, with a steady flat active population
- Accrued Liability (AL) is calculated using the projected unit credit cost method at 7.00%
- Assets are assumed to grow at **-15.00% in 2022 and 7.00% per annum thereafter**
- The unfunded liability was amortized over 30 years beginning in 1/1/2018. The amortization period decreases by 1 each year until reaching 15 years in 2033 at which time new sources of gains and losses will be amortized in a separate amortization base over 15 years. Amortizations are determined as a level percent of pay assuming a 3% annual growth in total payroll.
- Actual contributions are assumed to be equal to the recommended contributions shown above, interest has been added to reflect anticipated middle of year (MOY) timing.

Financial Impacts: 7.00% returns all years, 4% Salary Scale

Current Provisions	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Liability	30,071,010	31,831,680	33,515,289	35,246,781	36,814,234	38,413,708	40,005,455	41,689,177	43,159,289	44,534,163	45,813,993
Assets	24,083,157	26,396,956	29,120,593	31,411,726	33,229,973	34,797,590	36,344,887	38,021,373	39,412,613	40,764,313	42,030,066
Unfunded Accrued Liability	5,987,853	5,434,724	4,394,696	3,835,055	3,584,261	3,616,118	3,660,568	3,667,804	3,746,676	3,769,850	3,783,927
Funded Percentage	80.1%	82.9%	86.9%	89.1%	90.3%	90.6%	90.8%	91.2%	91.3%	91.5%	91.7%
Normal Cost	772,943	793,387	813,520	768,684	825,902	827,718	888,872	810,357	825,012	826,679	846,649
% of Payroll	14.4%	14.7%	14.8%	13.6%	14.3%	13.8%	14.5%	12.8%	12.8%	12.6%	12.6%
Payment on Unfunded	356,075	330,771	274,159	245,626	236,103	245,467	256,614	266,168	282,207	295,603	309,916
% of Payroll	6.6%	6.1%	5.0%	4.3%	4.1%	4.1%	4.2%	4.2%	4.4%	4.5%	4.6%
Contribution BOY	1,129,018	1,124,158	1,087,679	1,014,310	1,062,005	1,073,185	1,145,486	1,076,525	1,107,219	1,122,282	1,156,565
Contribution MOY	1,167,865	1,162,838	1,125,104	1,049,210	1,098,547	1,110,111	1,184,900	1,113,566	1,145,316	1,160,898	1,196,360
% of Payroll	21.8%	21.5%	20.5%	18.5%	19.1%	18.5%	19.3%	17.6%	17.8%	17.7%	17.8%
Payroll	5,367,502	5,404,617	5,494,995	5,658,117	5,758,568	5,990,874	6,130,460	6,336,995	6,442,026	6,565,871	6,719,143
Proposed Provisions											
Liability	30,985,619	32,759,356	34,449,845	36,178,327	37,706,234	39,274,518	40,846,315	42,519,060	43,940,948	45,299,827	46,556,227
Assets	24,083,157	26,403,204	29,128,883	31,413,660	33,190,172	34,726,922	36,256,282	37,926,369	39,275,456	40,620,342	41,874,751
Unfunded Accrued Liability	6,902,462	6,356,152	5,320,962	4,764,667	4,516,062	4,547,596	4,590,033	4,592,691	4,665,492	4,679,485	4,681,476
Funded Percentage	77.7%	80.6%	84.6%	86.8%	88.0%	88.4%	88.8%	89.2%	89.4%	89.7%	89.9%
Normal Cost	803,966	824,851	842,172	793,888	852,034	853,205	915,829	831,606	845,449	846,317	866,186
% of Payroll	15.0%	15.3%	15.3%	14.0%	14.8%	14.2%	14.9%	13.1%	13.1%	12.9%	12.9%
Payment on Unfunded	410,464	386,852	331,944	305,165	297,483	308,696	321,772	333,286	351,414	366,930	383,429
% of Payroll	7.6%	7.2%	6.0%	5.4%	5.2%	5.2%	5.2%	5.3%	5.5%	5.6%	5.7%
Contribution BOY	1,214,430	1,211,703	1,174,116	1,099,053	1,149,517	1,161,901	1,237,601	1,164,892	1,196,863	1,213,247	1,249,615
Contribution MOY	1,256,216	1,253,395	1,214,515	1,136,869	1,189,070	1,201,880	1,280,184	1,204,974	1,238,045	1,254,992	1,292,612
% of Payroll	23.4%	23.2%	22.1%	20.1%	20.6%	20.1%	20.9%	19.0%	19.2%	19.1%	19.2%
Payroll	5,367,502	5,404,617	5,494,995	5,658,117	5,758,568	5,990,874	6,130,460	6,336,995	6,442,026	6,565,871	6,719,143
Change in Contribution											
Contribution MOY	88,351	90,557	89,411	87,659	90,523	91,769	95,284	91,408	92,729	94,094	96,252
% of Payroll	1.6%	1.7%	1.6%	1.5%	1.6%	1.5%	1.6%	1.4%	1.4%	1.4%	1.4%

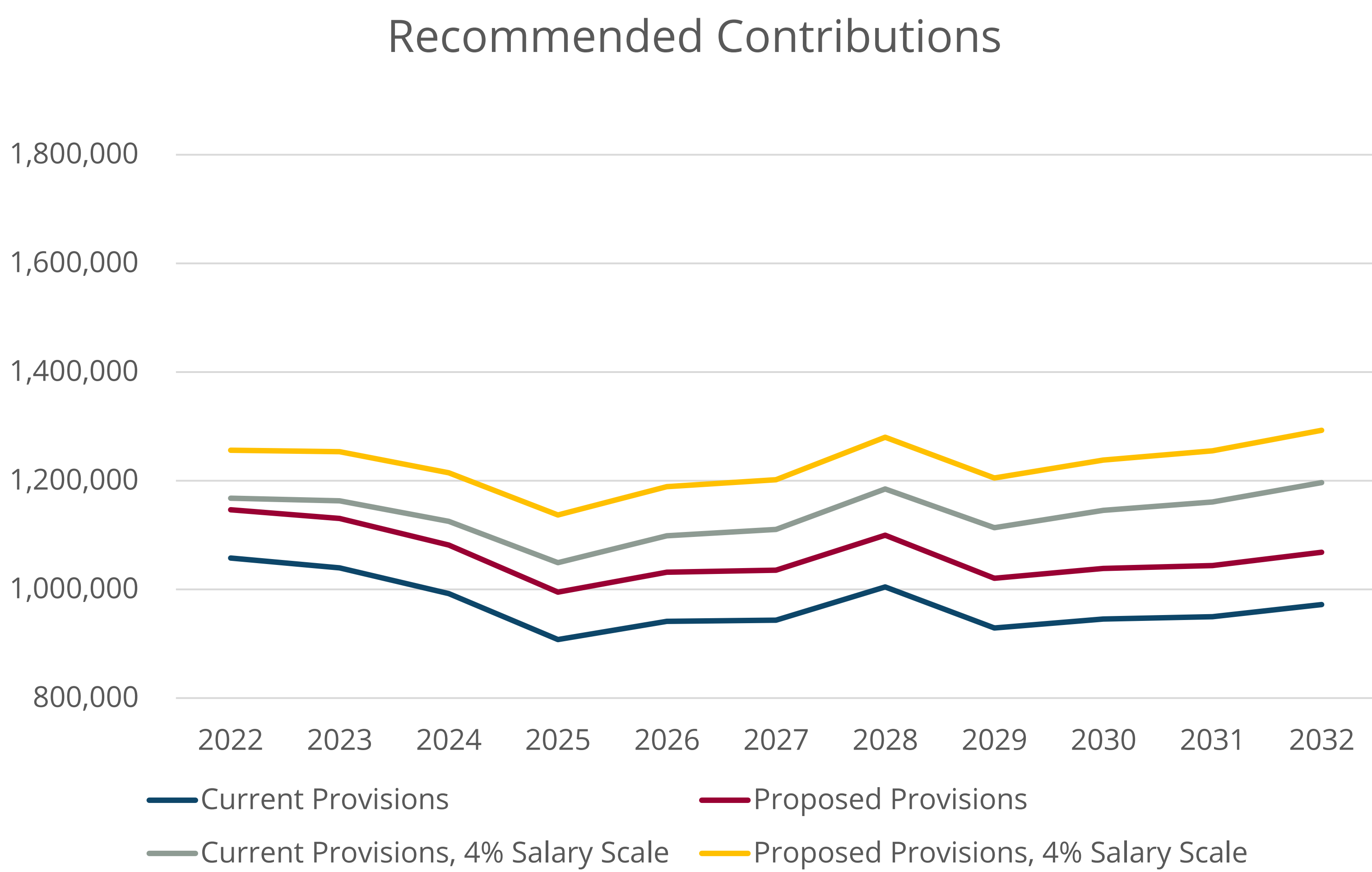
- Funded percentages as 1/1/2022 satisfy 105.684 (above 80% currently above 75% after proposed changes)
- Impacts measured starting with data as of 1/1/2022, with a steady flat active population
- Accrued Liability (AL) is calculated using the projected unit credit cost method at 7.00%
- Assets are assumed to grow at **7.00% per annum**
- The unfunded liability was amortized over 30 years beginning in 1/1/2018. The amortization period decreases by 1 each year until reaching 15 years in 2033 at which time new sources of gains and losses will be amortized in a separate amortization base over 15 years. Amortizations are determined as a level percent of pay assuming a 3% annual growth in total payroll.
- Actual contributions are assumed to be equal to the recommended contributions shown above, interest has been added to reflect anticipated middle of year (MOY) timing.

Financial Impacts: -15% return in 2022 and 7.00% thereafter, 4% Salary Scale

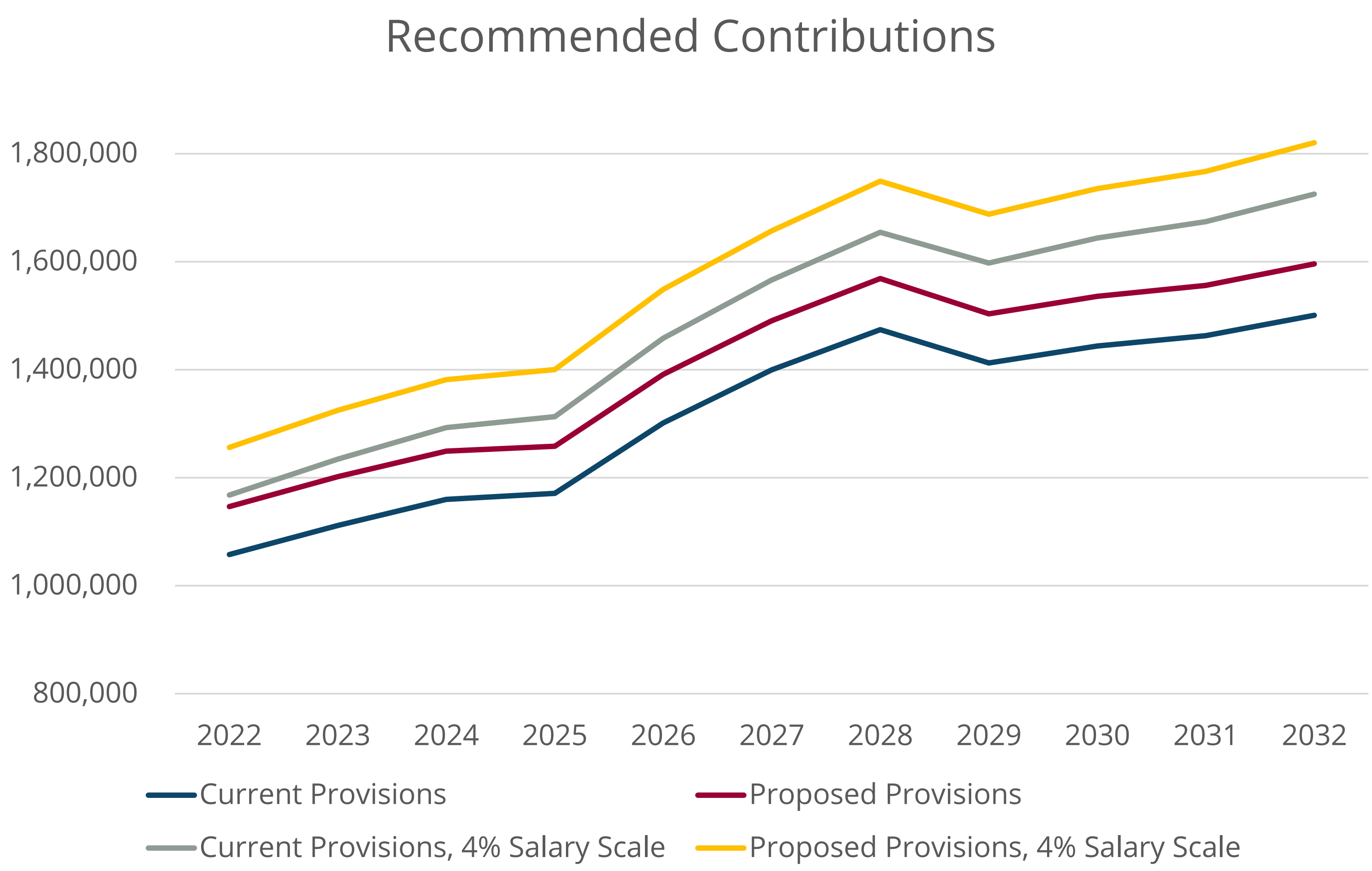
Current Provisions	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Liability	30,071,010	31,831,680	33,515,289	35,246,781	36,814,234	38,413,708	40,005,455	41,689,177	43,159,289	44,534,163	45,813,993
Assets	24,083,157	25,260,918	26,524,886	27,432,978	27,950,296	28,304,904	29,869,295	31,578,220	33,018,742	34,438,182	35,791,875
Unfunded Accrued Liability	5,987,853	6,570,762	6,990,403	7,813,803	8,863,938	10,108,804	10,136,160	10,110,957	10,140,547	10,095,981	10,022,118
Funded Percentage	80.1%	79.4%	79.1%	77.8%	75.9%	73.7%	74.7%	75.7%	76.5%	77.3%	78.1%
Normal Cost	772,943	793,387	813,520	768,684	825,902	827,718	888,872	810,357	825,012	826,679	846,649
% of Payroll	14.4%	14.7%	14.8%	13.6%	14.3%	13.8%	14.5%	12.8%	12.8%	12.6%	12.6%
Payment on Unfunded	356,075	399,913	436,090	500,455	583,888	686,198	710,568	733,740	763,806	791,650	820,845
% of Payroll	6.6%	7.4%	7.9%	8.8%	10.1%	11.5%	11.6%	11.6%	11.9%	12.1%	12.2%
Contribution BOY	1,129,018	1,193,300	1,249,610	1,269,139	1,409,790	1,513,916	1,599,440	1,544,097	1,588,818	1,618,329	1,667,494
Contribution MOY	1,167,865	1,234,359	1,292,607	1,312,808	1,458,298	1,566,007	1,654,474	1,597,226	1,643,486	1,674,013	1,724,869
% of Payroll	21.8%	22.8%	23.5%	23.2%	25.3%	26.1%	27.0%	25.2%	25.5%	25.5%	25.7%
Payroll	5,367,502	5,404,617	5,494,995	5,658,117	5,758,568	5,990,874	6,130,460	6,336,995	6,442,026	6,565,871	6,719,143
Proposed Provisions											
Liability	30,985,619	32,759,356	34,449,845	36,178,327	37,706,234	39,274,518	40,846,315	42,519,060	43,940,948	45,299,827	46,556,227
Assets	24,083,157	25,269,017	26,537,405	27,441,397	27,919,101	28,244,818	29,791,246	31,493,719	32,892,007	34,304,523	35,646,730
Unfunded Accrued Liability	6,902,462	7,490,339	7,912,440	8,736,930	9,787,133	11,029,700	11,055,069	11,025,341	11,048,941	10,995,304	10,909,497
Funded Percentage	77.7%	77.1%	77.0%	75.9%	74.0%	71.9%	72.9%	74.1%	74.9%	75.7%	76.6%
Normal Cost	803,966	824,851	842,172	793,888	852,034	853,205	915,829	831,606	845,449	846,317	866,186
% of Payroll	15.0%	15.3%	15.3%	14.0%	14.8%	14.2%	14.9%	13.1%	13.1%	12.9%	12.9%
Payment on Unfunded	410,464	455,881	493,611	559,579	644,700	748,710	774,985	800,096	832,228	862,168	893,524
% of Payroll	7.6%	8.4%	9.0%	9.9%	11.2%	12.5%	12.6%	12.6%	12.9%	13.1%	13.3%
Contribution BOY	1,214,430	1,280,732	1,335,783	1,353,467	1,496,734	1,601,915	1,690,814	1,631,702	1,677,677	1,708,485	1,759,710
Contribution MOY	1,256,216	1,324,799	1,381,745	1,400,037	1,548,234	1,657,034	1,748,992	1,687,846	1,735,403	1,767,271	1,820,258
% of Payroll	23.4%	24.5%	25.1%	24.7%	26.9%	27.7%	28.5%	26.6%	26.9%	26.9%	27.1%
Payroll	5,367,502	5,404,617	5,494,995	5,658,117	5,758,568	5,990,874	6,130,460	6,336,995	6,442,026	6,565,871	6,719,143
Change in Contribution											
Contribution MOY	88,351	90,440	89,138	87,229	89,936	91,027	94,518	90,620	91,917	93,258	95,389
% of Payroll	1.6%	1.7%	1.6%	1.5%	1.6%	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%

- Funded percentages as 1/1/2022 satisfy 105.684 (above 80% currently above 75% after proposed changes)
- Impacts measured starting with data as of 1/1/2022, with a steady flat active population
- Accrued Liability (AL) is calculated using the projected unit credit cost method at 7.00%
- Assets are assumed to grow at **-15.00% in 2022 and 7.00% per annum thereafter**
- The unfunded liability was amortized over 30 years beginning in 1/1/2018. The amortization period decreases by 1 each year until reaching 15 years in 2033 at which time new sources of gains and losses will be amortized in a separate amortization base over 15 years. Amortizations are determined as a level percent of pay assuming a 3% annual growth in total payroll.
- Actual contributions are assumed to be equal to the recommended contributions shown above, interest has been added to reflect anticipated middle of year (MOY) timing.

Comparisons of Contributions: 7.00% return all years



Comparisons of Contributions: -15% return in 2022 and 7.00% thereafter



Assumptions

The following assumptions all match the January 1, 2022 valuation report as required:

- Investment Return: 7.00%
- Salary Scale: 3.00%
- Mortality:
  - Healthy: Pub-S 2010 Mortality Table with generational improvements from 2010 based on MP-21
  - Survivors: Pub-2010 Continuing Survivor Mortality Table with generational improvements from 2010 based on MP-21
- Retirement – Employees are assumed to retire at the following rates:

	Years of Service*			
Age	< 30	30	31-34	35
55	0%	50%	25%	100%
56	0%	50%	25%	100%
57	0%	50%	25%	100%
58	0%	50%	25%	100%
59	0%	50%	25%	100%
60 +	100%	100%	100%	100%

* 5 years of service are required for eligibility

Assumptions

- Withdrawal: T-2 Actuaries Table. Sample Rates:

Age	Rate
25	5.3%
35	4.7%
40	3.5%
45	1.8%
55	0.0%

- Disability: None assumed

Additional assumptions made to provide projections:

- Active participant count flat over the projection period
- Actual contributions are assumed to be equal to the recommended contributions
- Alternative scenario with salary scale of 4.00%

Required Statements

- Current Contributions
  - The plan has made and continues to make contributions well exceeding the contributions as calculated and recommended under current plan provisions.

- Proposed Contributions
  - To our knowledge, the additional contributions described as part of the proposed benefit changes will be met based on recent contributions levels. These funds will be provided by designated tax revenue and general funds. The projected improvement of the funding ratio of the plan under the proposed changes over the next 10 years demonstrates this outcome.

- Assumptions
  - The actuarial assumptions and methods used for the valuation were chosen by the employer. In our opinion, all actuarial assumptions and methods used in both the valuation and projections are individually reasonable, and in aggregate produce results which are reasonable.

Required Statements

- Actuarial Funding Methods
  - The actuarial cost method used in the valuation was the projected unit credit cost method.
  - Under this method, the normal cost is the sum of the individual normal costs for all participants. For an active participant, the individual normal cost is the present value at the current age of the projected benefit at the assumed retirement age, based on the actuarial assumptions, divided by the participant's expected years of credited service at that age. For a non-active participant, the normal cost is zero.
  - The actuarial accrued liability is the sum of the individual accrued liabilities for all plan participants. For an active participant, the individual accrued liability is the product of the normal cost and the total years of credited service at the current age. For non-active participants, the individual accrued liability is the present value at the current age of future benefits. The unfunded actuarial accrued liability equals the actuarial accrued liability less the actuarial value of assets.
  - The total annual contribution of the plan is calculated as the normal cost plus an amount to amortize the initial unfunded actuarial accrued liability. The unfunded liability was amortized over 30 years beginning in 1/1/2018. The amortization period will decrease by 1 each year until reaching 15 years in 2033 at which time new sources of gains and losses will be amortized in a separate amortization base over 15 years. Amortizations are determined as a level percent of pay assuming a 3% annual growth in total payroll.

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Plan to change firefighter pensions advances

BY AUSTIN HUGUELET
St. Louis Post-Dispatch

ST. LOUIS — The Board of Aldermen on Thursday gave initial approval to a plan that would give control of firefighter pensions back to a board dominated by firefighters, reversing part of a 2012 overhaul meant to rein in costs.

Sponsoring Alderman Tom Oldenburg, of St. Louis Hills, says moving a new pension system set up by reforms and currently overseen by a city-dominated board under the old firefighter-led board will save money and make the system more responsive to firefighter concerns.

But city Budget Director Paul Payne has said claims of cost savings are inaccurate, and argued the move would begin to unwind fixes to problems that once threatened to overwhelm the city budget. Former Mayor Lyda Krewson vetoed a similar plan last year.

On Thursday, a spokesman for Mayor Tishaura O. Jones indicated she continues to oppose the idea as well.

"The proposed change would cause pension costs to soar as they did in the past, when they consumed a full third of the Fire Department's budget," said spokesman Nick Desideri.

But the politically influential Local 73 of the International Association of Fire Fighters is pushing hard for the move. And the board advanced the bill on Thursday on a voice vote, so it was not entirely clear whether it had the two-thirds majority necessary to override a mayoral veto.

Alderman Shane Cohn, of Dutchtown, moved to send the bill back to committee for further debate, but the board rejected the motion 24-3.

Aldermen Annie Rice, of Shaw, Anne Schweitzer, of far south city, and Cohn voted in favor of the motion. North side Alderman Sharon Tyus did not vote on the motion.

A final vote on the bill could be held next week.

The changes would also require approval from the state legislature.

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Joint Committee on Public Employee Retirement
Quarterly Reports

2022 Third Quarter 11/22/2022

Pers Name	Beg. Mkt Value	End Mkt Value	ROR 12 mos.	ROR 36 mos.	ROR 60 mos.	ROR for Inv	Price Inf. Assump	Sal/Wage Assump	Comments
Affton FPD Retirement Plan	$16,008,910	$12,784,633	-15.6% Net	4.0% Net	4.1% Net	6.5%	0%	see comment s%	5-9 5%10-14 3.5%15+ 2.5%
Arnold Police Pension Plan	$16,636,176	$16,141,487	-15.47% Gross	1.91% Gross	3.33% Gross	6.0%	2.3%	4.50%	1. Plan return is gross of plan expenses and calculated using the Modified Dietz method.2. Salary Increases = average, including inflation.3. Rate of Return = net of pension plan investment expense, including inflation.
Berkeley Police & Fire Pension Fund	$15,004,078	$14,189,254	0% Net	0% Net	0% Net	7%	2.5%	5%	
Black Jack FPD Retirement Plan	$19,492,442	$18,206,190	-21.04% Net	-0.77% Net	1.34% Net	7.00%	2.75%	4.50%	
Brentwood Police & Firemen's Retirement Fund	$44,970,876	$42,802,140	-14.50% Net	3.12% Net	4.54% Net	7.00%	2.75%	4.50%	
Bridgeton Employees Retirement Plan	$37,736,476	$35,553,383	-24.40% Net	7.36% Net	8.51% Net	7.5%	3.0%	4.0%	Net of fees includes all earnings, disbursements, fees and deposits. The City issued 2021B Taxable Special Obligation Bonds on May 20, 2021 to fund the net pension liability. The net pension payment after discounts and fees was $13,374,322.
Carthage Policemen's & Firemen's Pension Plan	$8,715,836	$8,346,133	-7.39% Net	6.53% Net	7.22% Net	7.0%	2.2%	3.5%	
Central County Fire & Rescue Pension Plan	$33,364,441	$31,280,330	-13.30% Net	NA% Net	NA% Net	6.75%	2.5%	4%	
Columbia Police and Firemens' Retirement Plan	$157,147,987	$149,979,590	-16.03% Gross	2.63% Gross	4.13% Gross	6.25%	2.5%	2.75%	
Community FPD Retirement Plan	$34,222,815	$31,641,217	-17.66% Net	4.59% Net	1.23% Net	7.5%	2.5%	4%	
Cottleville Community Fire Protection District Defined Benefit Pension Plan	$25,100,036	$23,663,129	-4.70% Net	N/A	N/A	6.5%	0%	4%	rolling 12 months ROR is IRR for .25 years based on the data available.
County Employees Retirement Fund	$666,939,000	$638,439,000	-12.51% Gross	5.41% Gross	6.15% Gross	7.25%	2.5%	2.5%	
Creve Coeur Employees Retirement Plan	$29,035,619	$27,681,452	-14.1% Net	3.3% Net	4.2% Net	6.0%	2.35%	4.0%	
Creve Coeur FPD Retirement Plan	$15,318,403	$14,576,875	-18.01% Net	4.41% Net	n/a% Net	6%	3%	4%	36 rolling months is reported for time frame 05/20/2020-09/30/2022. The plan had two recordkeepers and two advising firms. Our office will report ROR going forward.ctinker@retirementplanadvisors.com
Florissant Valley FPD Retirement Plan	$33,904,651	$33,172,871	-19.46% Net	-0.98% Net	0.78% Net	6.50%	2.50%	1.90%	
Hannibal Police & Fire Retirement Plan	$21,947,523	$20,725,415	(16.4)% Gross	5.9% Gross	5.9% Gross	7.0%	2.5%	3.5%	
Hazelwood Retirement Plan	$43,513,361	$40,808,482	-16.77% Gross	2.54% Gross	4.36% Gross	7.5%	2.75%	4.5%	Includes City Council Plan

Please be aware information provided in this report may contain unaudited data.

Pers Name	Beg. Mkt Value	End Mkt Value	ROR 12 mos.	ROR 36 mos.	ROR 60 mos.	ROR for Inv	Price Inf. Assump	Sal/Wage Assump	Comments
High Ridge Fire Protection District Pension Plan	$7,620,070	$6,506,402	-14.6% Net	3.3% Net	3.7% Net	6.5%	0%	0%	
Jackson County Employees Pension Plan	$329,021,892	$311,697,774	-14.07% Gross	2.92% Gross	4.42% Gross	6.75%	2.5%	2.75% to 4.75%	
Kansas City Employees' Retirement System	$1,128,202,684	$1,074,893,110	-16.22% Net	1.31% Net	2.93% Net	7.0%	2.5%	2.75 to 5.0%	
Kansas City Firefighter's Pension System	$590,111,000	$562,815,000	-15.38% Gross	3.27% Gross	4.12% Gross	7.0%	2.5%	3.0% to 9.5%	
KC Area Transportation Authority Salaried Employees Pension Plan	$21,181,264	$20,221,621	-15.00% Gross	3.63% Gross	4.57% Gross	7%	2.6%	4%	
KC Trans. Auth. Union Employees Pension Plan	$49,474,754	$45,795,748	-17.7% Net	.1% Net	2.1% Net	6.5%	2.6%	5.66%	
LAGERS Staff Retirement Plan	$21,519,391	$19,993,330	-18.26% Net	0.39% Net	2.28% Net	5.5%	2.5%	3.25%	
Little River Drainage Dist Retirement Plan	$1,888,729	$1,781,697	(15.59)% Gross	3.51% Gross	4.65% Gross	5.0%	0%	3.5%	The time-weighted rate of return percentages for 12, 36 and 60 months are as of 10/31/2022.
Local Government Employees Retirement System	$10,139,489,545	$9,724,262,480	-3.27% Net	8.14% Net	8.19% Net	7%	2.5%	3.25%	
Metro West FPD Retirement Plan	$65,128,985	$61,665,838	-16.80% Net	4.10% Net	5.20% Net	0%	0%	0%	
Mid-County FPD Retirement Plan	$1,311,940	$1,219,881	-4.08% Net	-16.63% Net	1.41% Net	6.00%	2.75%	4.50%	
Missouri Higher Education Loan Authority Supplemental Pension Plan	$52,883,026	$50,003,782	-20.90% Net	0.89% Net	NA% Net	6.75%	2.25%	4.5%	
Missouri State Employees Retirement System	$8,412,240,177	$8,428,057,814	-15.908% Net	3.187% Net	4.065% Net	6.95%	2.25%	2.75%	
MoDOT & Highway Patrol Employees' Retirement System	$3,061,161,231	$3,000,906,117	-0.19% Net	9.52% Net	8.62% Net	6.50%	2.25%	3%	
North Kansas City Hospital Retirement Plan	$262,153,272	$240,808,463	-19.43% Net	2.72% Net	4.09% Net	7.00%	2.30%	2.50%	
North Kansas City Policemen's & Firemen's Retirement Fund	$62,030,153	$58,456,809	(15.6)% Gross	4.2% Gross	4.9% Gross	6.5%	4.0%	1.2%	
O'Fallon FPD Retirement Plan	$17,414,554	$16,406,375	n/a% Net	n/a% Net	n/a% Net	6.5%	2.5%	4%	Plan has only been around since 01/01/2022. Cannot pull ROR at this time.ctiner@retirementplanadvisors.com
Olivette Salaried Employees' Retirement Plan	$22,207,189	$20,783,626	-13.5% Net	3.8% Net	4.5% Net	7.25%	2.75%	4.00%	
Overland Non-uniform Pension Fund	$11,636,000	$11,063,000	-17.85% Net	1.78% Net	3.39% Net	6.75%	2.5%	3.5%	
Overland Police Retirement Fund	$12,545,000	$11,917,000	-18.08% Net	2.20% Net	3.71% Net	6.75%	2.5%	3.5%	
Pattonville Fire Protection District	$43,397,743	$40,084,940	-14.70% Net	6.55% Net	2.75% Net	7.75%	2.5%	2.5%	
Poplar Bluff Police & Fire Pension Plan	$12,514,985	$11,970,611	-22.67% Net	-22.67% Net	-22.67% Net	7.25%	2.50%	3.25-6.55%	RoR provided for the previous 12 months only from Principal.

Pers Name	Beg. Mkt Value	End Mkt Value	ROR 12 mos.	ROR 36 mos.	ROR 60 mos.	ROR for Inv	Price Inf. Assump	Sal/Wage Assump	Comments
Prosecuting Attorneys' Retirement System	$49,698,552	$47,412,350	-14.12% Net	1.30% Net	2.67% Net	7.0%	2.0%	3.5%	For investors, the third quarter began with a relief rally but ended back in the doldrums. It was an especially dour quarter for the already -bloodied bond market, where many bond mutual funds are posting their worst losses ever. The result is that even investors with portfolios diversified among stocks and bonds, through what is often referred to on Wall Street as the 60/40 portfolio approach, are facing losses approaching 20% this year. In fact, in the third quarter, the performance of a 60/40 portfolio would have been worse than one just invested broadly in stocks, an extremely unusual turn of events. Stock and bond market performance, along with increasingly extreme moves in the currency markets, continued to be driven by the knock-on effects of decades-high inflation, aggressive interest-rate increases by the Federal Reserve and other major central banks, rising risks of recession, and lingering ripples from the pandemic and Russia's invasion of Ukraine. By quarter-end, stocks were solidly in bear-market territory, and bond yields, which move in the opposite direction of prices, were at their highest levels in years.
Public Education Employees' Retirement System	$6,126,935,069	$5,864,943,767	-7.4% Net	7.5% Net	7.2% Net	7.3%	2%	2.5%	Note: Time-weighted RoR's are partially "Net of Fees." The System is concerned about providing quarterly asset value information without corresponding liability information, which is not possible to provide on a quarterly basis. PEERS will not have liability information except annually following the completion of actuarial valuations at the close of systems' fiscal year. Though the valuations are dated effective June 30 each year, they are not finalized until fall. The Systems normally have our actuarial valuations completed and the valuation reports presented by the end of October each year.
Public School Retirement System	$47,417,801,890	$45,297,802,192	-7.4% Net	7.5% Net	7.2% Net	7.3%	2%	2.25%	Note: Time-weighted RoR's are partially "Net of Fees." The System is concerned about providing quarterly asset value information without corresponding liability information, which is not possible to provide on a quarterly basis. PSRS will not have liability information except annually following the completion of actuarial valuations at the close of systems' fiscal year. Though the valuations are dated effective June 30 each year, they are not finalized until fall. The Systems normally have our actuarial valuations completed and the valuation reports presented by the end of October each year.

Pers Name	Beg. Mkt Value	End Mkt Value	ROR 12 mos.	ROR 36 mos.	ROR 60 mos.	ROR for Inv	Price Inf. Assump	Sal/Wage Assump	Comments
Raytown Policemen's Retirement Fund	$9,512,961	$8,907,273	(14.89)% Gross	3.81% Gross	4.68% Gross	7.0%	2.5%	N/A	
Richmond Heights Police & Fire Retirement Plan	$60,619,267	$56,366,313	-17.66% Net	1.61% Net	2.57% Net	6%	2.5%	4.0%	
Rock Community FPD Retirement Plan	$23,440,255	$22,092,698	-13.8% Net	4.0% Net	4.2% Net	7.0%	0%	3%	
Saline Valley Fire Protection District Retirement Plan	$4,580,388	$4,619,190	-16.9% Gross	3.6% Gross	4.3% Gross	7.0%	2.5%	2.5%	The above information was provided by EPIC Retirement Plan Services, the Plan's discretionary investment provider. EPIC (formerly known as ABG) began providing investment provider services for the plan as of August 2017.
Sedalia Firemen's Retirement Fund	$7,415,216	$6,882,403	-13.7% Gross	5.5% Gross	5.7% Gross	7.0%	2.0%	3.0%	
Sheriff's Retirement System	$40,567,465	$38,823,143	-6.34% Gross	4.32% Gross	5.06% Gross	7%	2.5%	2.5%	
St. Louis County Library Dist Empl Pension Plan	$54,683,368	$50,683,337	-19.06% Net	2.49% Net	3.34% Net	6.75%	2.5%	3.5%	
St. Louis Police Retirement System	$789,743,936	$784,493,225	-11.5% Net	4.6% Net	4.8% Net	7.0%	3.0%	3.0%	
St. Louis Public School Retirement System	$809,908,840	$754,259,181	-13.04% Net	3.79% Net	4.09% Net	7.0%	2.5%	3.5% /5.0%	
University City Non-uniformed Retirement Plan	$25,892,852	$24,531,796	-12.4% Gross	3.5% Gross	4.7% Gross	6.5%	3.0%	3.0%	
University City Police & Fire Retirement Fund	$24,079,142	$22,612,701	-12.3% Gross	3.9% Gross	4.8% Gross	6.5%	3.0%	3.0%	
University of Mo Retirement, Disability & Death Benefit Plan	$4,285,483,954	$4,275,242,146	-2.59% Net	8.59% Net	7.44% Net	7%	NA%	NA%	none
Valley Park FPD Retirement Plan	$8,288	$7,772,651	-20.8% Net	3.55% Net	4.20% Net	7%	2%	4%	
Wentzville Fire Protection District Pension Plan	$11,541,071	$11,055,758	6.8% Gross	10.25% Gross	0% Gross	5%	2%	4%	Time Weighted Rate of Return Summary of January 1, 2022 Actuarial Valuation Report April 14, 2022. Time Weighted 36 (2021+ 2022)/2 Price Inflation GASB Nos 67 &68. Reported by Nyhart. AI not included in totals. Email skrieger@wentzvillefire.org
Records Count: 56	**$85,286,104,728**	**$82,159,803,123**							

Top 10 Largest Plans 3rd Quarter Market Performance					
PERS Name	**Begin Mkt Value**	**End Mkt Value**	**ROR12**	**ROR36**	**ROR60**
Public School Retirement System	$47,417,801,890	$45,297,802,192	-7.40%	7.50%	7.20%
Local Government Employees Retirement System	$10,139,489,545	$9,724,262,480	-3.27%	8.14%	8.19%
Missouri State Employees Retirement System	$8,412,240,177	$8,428,057,814	-15.91%	3.19%	4.07%
Public Education Employees' Retirement System	$6,126,935,069	$5,864,943,767	-7.40%	7.50%	7.20%
University of Mo Retirement, Disability & Death Benefit Plan	$4,285,483,954	$4,275,242,146	-2.59%	8.59%	7.44%
MoDOT & Highway Patrol Employees' Retirement System	$3,061,161,231	$3,000,906,117	-0.19%	9.52%	8.62%
Kansas City Employees' Retirement System	$1,128,202,684	$1,074,893,110	-16.22%	1.31%	2.93%
Kansas City Police Retirement System	$951,979,000	$914,428,000	-10.44%	3.77%	4.19%
St. Louis Public School Retirement System	$809,908,840	$754,259,181	-13.04%	3.79%	4.09%
St. Louis Employees Retirement System	$795,541,430	$757,050,593	-13.90%	3.20%	3.40%

The above table is organized from the top earning to lowest earning in the list.