

# City of Grand Rapids Police and Fire Retirement System

5-Year Experience Study

January 1, 2020 through December 31, 2024





August 4, 2025

Board of Trustees  
City of Grand Rapids Police and Fire Retirement System  
Grand Rapids, Michigan

Dear Board Members:

Presented in this report are the results of an **actuarial investigation of experience** of the City of Grand Rapids Police and Fire Retirement System. The investigation was conducted for the purpose of updating the actuarial assumptions used in computing Retirement System actuarial liabilities and establishing employer contribution rates.

The investigation was based upon the data furnished for the annual actuarial valuations during the period **January 1, 2020 through December 31, 2024**.

We believe that the actuarial assumptions recommended in this experience study report represent, individually and in the aggregate, reasonable estimates of future experience of the City of Grand Rapids Police and Fire Retirement System.

Our study includes a review of the experience associated with the following actuarial assumptions:

- Price inflation;
- Investment return;
- General wage inflation and payroll growth;
- Salary increases;
- Mortality;
- Inflation;
- Retirement; and
- Withdrawal (Turnover).

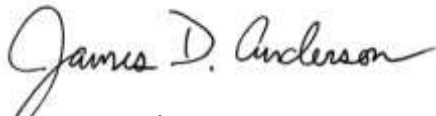
This report should not be relied on for any purpose other than that described above. It was prepared at the request of the Retirement Board and is intended for use by the Board Members and those designated or approved by the Board Members. This report may be provided to parties other than the Board Members only in its entirety and only with the permission of the Board Members. GRS is not responsible for unauthorized use of this report.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. We certify that, to the best of our knowledge, this report is complete and accurate and was made in accordance with standards of practice promulgated by the Actuarial Standards Board.

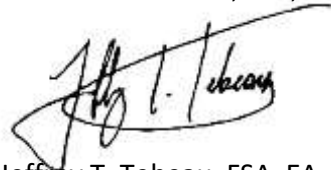
The signing individuals are independent of the plan sponsor.

James D. Anderson and Jeffrey T. Tebeau are independent of the plan sponsor, are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,  
Gabriel, Roeder, Smith & Company



James D. Anderson, FSA, EA, FCA, MAAA



Jeffrey T. Tebeau, FSA, EA, FCA, MAAA

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## **SECTION A**

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### **EXECUTIVE SUMMARY**

## Executive Summary

The last investigation of actuarial assumptions and methods was prepared for the period from January 1, 2015 through December 31, 2019. In this report, we review the current actuarial assumptions and methods and compare them to the actual experience of the Retirement System for the period from January 1, 2020 through December 31, 2024.

Based on our review of the actuarial experience, we recommend the following updates to the actuarial valuation assumptions and methods:

- Maintain the assumed investment return assumption of 6.75 percent.
- Increase the price inflation assumption of 2.25 percent to 2.40 percent.
- Increase the general payroll growth assumption of 3.00 percent to 3.15 percent.
- Increase the salary increase assumption to better reflect observed experience.
- Maintain the Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree and Employee Mortality Tables with no adjustments, with a change in future mortality improvements using scale MP-2021.
- Increase the normal retirement rates to better reflect observed experience.
- Switch to service based turnover rates better reflect observed experience.

Based on the preceding recommended assumptions, the fiscal year 2027 costs are expected to change as follows:

Actuarial Valuation as of December 31, 2024 (\$ in 1,000s)	Baseline Assumptions	Recommended Assumptions	Increase/ (Decrease)
Actuarial Accrued Liability	\$712,244	\$717,866	\$5,623
Actuarial Value of Assets	\$535,139	\$535,139	\$0
Unfunded Liability	\$177,105	\$182,728	\$5,623
Funded Ratio	75.1%	74.5%	(0.60)%
FY 2027 Computed Contribution as a % of Gross-Up Payroll	38.85%	40.90%	2.05%

## Executive Summary

As shown in the table on the prior page, there is an increase in the actuarial accrued liability and an increase in the estimated FY 2027 contribution due to the change in proposed assumptions.

The remainder of the report is an integral part of the Experience Study and includes:

- An introduction to key factors that were included in the study;
- An analysis of the experience and assumption recommendations;
- Cost impact of the proposed assumption changes; and
- Tables showing the recommended actuarial assumptions.

## **SECTION B**

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### **INTRODUCTION**

# Introduction

## Background

For any pension plan, actuarial assumptions are selected that are intended to provide reasonable estimates of future expected events, such as investment returns, interest crediting, and patterns of retirement, turnover, and mortality. These assumptions, along with an actuarial cost method, an asset valuation method, the employee census data, and the System's provisions are used to determine the actuarial liabilities and overall actuarially determined funding requirements for the System. The true cost to the System over time will be the actual benefit payments and expenses required by the System's provisions for the participant group under the System. To the extent the actual experience deviates from the actuarial assumptions, experience gains and losses will occur. These gains (losses) then serve to reduce (increase) future actuarially determined contributions and increase (reduce) the funded ratio.

A periodic review and update of the actuarial assumptions is one of many important components of understanding and managing the financial aspects of the City of Grand Rapids Police and Fire Retirement System. Use of outdated or inappropriate assumptions can result in understated costs which will lead to higher future contribution requirements or perhaps an inability to pay benefits when due; or, on the other hand, produce overstated costs which place an unnecessarily large burden on the current generation of members, employers, and taxpayers.

A single set of actuarial assumptions is typically not expected to be suitable forever. As the actual experience unfolds or the future expectations change, the assumptions should be reviewed and adjusted accordingly.

It is important to recognize that the impact from various outcomes and the ability to adjust from experience deviating from the assumption are not symmetric. Due to compounding economic forces, legal limitations, and moral obligations, outcomes from underestimating future liabilities are much more difficult to manage than outcomes of overestimates. That asymmetric risk should be considered when the assumption set, investment policy and funding policy are created. As such, the assumption set used in the actuarial valuation process needs to represent the best estimate of the future experience of the System and be at least as likely, if not more than likely, to overestimate the future liabilities versus underestimate them.

## Actuarial Standards of Practice (“ASOPs”)

The Actuarial Standards Board (“ASB”) provides guidance on measuring the costs of financing a retirement program through the following Actuarial Standards of Practices (“ASOPs”):

- (1) ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*;
- (2) ASOP No. 27, *Selection of Assumptions for Measuring Pension Obligations*;
- (3) ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*;
- (4) ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*; and
- (5) ASOP No. 56, *Modeling*.

The recommended assumptions provided in this report are consistent with the preceding actuarial standards of practice.

## Summary of Process

In determining liabilities and contribution rates for retirement plans, actuaries must make assumptions about the future. The actuarial assumptions are usually divided into two categories:

- Economic assumptions, which include:
  - Assumed rate of price inflation (as measured by the change in the Consumer Price Index for all Urban consumers)
    - Underlies all other economic assumptions
  - Assumed long-term rate of return on investments
    - Rate at which projected benefits are reduced to present value
  - General wage increases
    - Reflects inflationary forces on increases in pay for all members
  - Rate of payroll growth
    - Reflects expectation of growth in total payroll and affects level percent-of-pay statutory contributions
- Demographic assumptions, which include:
  - Mortality rates
  - Retirement rates
  - Withdrawal (Turnover) rates

For some of these assumptions, such as the mortality rates, past experience provides important evidence about the future. For others, such as the investment return assumption, the link between past and future results is much weaker. In either case, actuaries should review the System’s assumptions periodically and determine whether these assumptions are consistent with both actual past experience and anticipated future experience.

The last such actuarial experience study was performed following the December 31, 2019 actuarial valuation and the recommended assumptions were first effective with the December 31, 2020 actuarial valuation. For this experience study, we have reviewed the System’s experience for the five-year period from December 31, 2020 through December 31, 2024. This experience study is unique as we must also consider the impact of COVID in our assumption setting. With COVID, there are generally two schools of thought: 1) COVID is a one-time shock and experience will return to “normal” or 2) COVID will have a long-lasting impact for many years to come. Our general inclination with COVID is to not overreact until we have better information.



In conducting experience studies, actuaries generally use data over a period of several years. This is necessary in order to gather enough data so that the results are statistically significant. In addition, if the study period is too short, the impact of the current economic conditions may lead to misleading results. It is known, for example, that the health of the general economy can impact salary increase rates and withdrawal rates. Using results gathered during a short-term boom or bust period will not be representative of the long-term trends in these assumptions. Also, the adoption of legislation, such as plan improvements or changes in salary schedules, will sometimes cause a short-term distortion in the experience.

In an experience study, we first determine the number of deaths, retirements, etc. that occurred during the period. Then we determine the number expected to occur, based on the current actuarial assumptions. The number of "expected" decrements is determined by multiplying the probability of the occurrence at the given age, by the "exposures" at that same age. For example, consider a rate of retirement of 5.00 percent at age 55. The number of exposures can only be those members who are age 55 and eligible for retirement at that time. Thus, they are considered "exposed" to that assumption. Finally, we calculate the A/E ratio, where "A" is the actual number (of retirements, for example) and "E" is the expected number. If the current assumptions were "perfect," the A/E ratio would be 100 percent. When it varies much from this figure, it is a sign that new assumptions may be needed. However, in some cases we prefer to set our assumptions to produce an A/E ratio a little above or below 100 percent, in order to introduce some conservatism. Of course, we not only look at the assumptions as a whole, but we also review how well they fit the actual results by gender, by age and by service.

If the data leads the actuary to conclude that new tables are needed, the actuary may "graduate" or smooth the results, since the raw results can be quite uneven from age to age or from service to service.

Please bear in mind while the recommended assumption set represents our best estimate, there are other reasonable assumption sets that could be supported. Some other reasonable assumption sets would show higher or lower liabilities or costs.

## Summary of Recommendations

Our recommended changes to the current actuarial assumptions and methods are summarized as follows:

### *Economic Assumptions*

- **Price inflation:** We recommend increasing the rate of price inflation from 2.25 percent to 2.40 percent.
- **Investment return:** We recommend maintaining the nominal investment return assumption of 6.75 percent. Based on blended capital market assumptions from independent sources and the System's current asset allocation, over the next 20 years the likelihood assets will earn at least 6.75 percent per year is roughly 50 percent. Based on a shorter 10-year horizon, the likelihood assets will earn at least 6.75 percent is roughly 47 percent. Given the amount of benefits being paid in the next 10 years, we recommend placing more weight on the 10-year horizon results.
- **Payroll growth assumption:** We recommend increasing the general payroll growth assumption of 3.00 percent to 3.15 percent, which reflects an underlying general price inflation assumption of 2.40 percent.

### ***Economic Assumptions (concluded)***

- **Salary increase:** We recommend increasing the service-based salary increase assumptions based on observed and expected experience.

### ***Mortality Assumptions***

- We recommend maintaining the post-retirement mortality tables as the Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables. We also recommend assuming mortality rates will improve in the future using a fully generational approach, with the recently published projection scale, MP-2021.
- We recommend maintaining pre-retirement mortality tables for active employees as the Pub-2010 Amount-Weighted, Public Safety, Employee, Male and Female tables. We also recommend assuming mortality rates will improve in the future using a fully generational approach, with the most recently published projection scale, MP-2021.
- We recommend maintaining disability retirement mortality tables for active employees as the Pub-2010 Amount-Weighted, Public Safety, Disabled Retiree, Male and Female tables. We also recommend assuming mortality rates will improve in the future using a fully generational approach, with the most recently published projection scale, MP-2021.
- We recommend not applying scaling factors to the base mortality tables.

### ***Other Demographic Assumptions***

- **Normal retirement rates:** Overall, the actual rates of retirement were higher than expected. We recommend increasing the overall rates to better reflect observed experience.
- **Turnover rates:** Overall, the observed experience showed that more members terminated employment than expected. We recommend switching to service based turnover rates better reflect observed experience.

## **SECTION C**

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### **ANALYSIS OF EXPERIENCE AND RECOMMENDATIONS**

# Economic Assumptions

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Economic assumptions reflect the effects of economic forces on the projections of retirement benefits payable from the System and in the discounting of those benefits to present value. These assumptions are based, at their core, on the assumed level of price inflation. Each economic assumption is then developed from expected spreads over price inflation. The key economic assumptions are:

- Assumed Rate of Inflation – The rate of price inflation (as measured by the Consumer Price Index for all Urban consumers) which underlies the remainder of the economic assumptions.
- Assumed Rate of Investment Return – The rate at which projected future benefits under the pension plan are reduced to present value.
- Rate of General Annual Pay Increases – This reflects inflationary forces on increases in pay for individual members.

## Actuarial Standard of Practice No. 27

Actuarial Standard of Practice No. 27, Selection of Assumptions for Measuring Pension Obligations, provides guidance to actuaries on giving advice on selecting economic assumptions for measuring obligations for defined benefit plans. ASOP No. 27 was revised and adopted by the Actuarial Standards Board (ASB) in December 2023. The standard requires that the selected economic assumptions be consistent with each other. That is, the selection of the investment return assumption should be consistent with the selection of the wage inflation and price inflation assumptions.

As no one knows what the future holds, it is necessary for an actuary to estimate possible future economic outcomes. Recognizing that there is not one right answer, the current standard calls for an actuary to develop a reasonable economic assumption. ASOP No. 27 (Doc. No. 211), adopted by the Actuarial Standards Board (ASB) in December 2023, defines a reasonable economic assumption as an assumption that has the following characteristics:

- (a) It is appropriate for the purpose of the measurement;
- (b) It reflects current and historical data that is relevant to selecting the assumption for the measurement date, to the extent such relevant data is reasonably available;
- (c) It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data (if any), or a combination thereof; and
- (d) It is expected to have no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included or when alternative assumptions are used for the assessment of risk, in accordance with ASOP No. 51, *Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions*.

However, the standard explicitly advises an actuary not to give undue weight to recent experience that is not sufficiently credible.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular actuarial valuation, each economic assumption should be consistent with every other economic assumption over the measurement period. Generally, the economic assumptions are much more subjective in nature than the demographic assumptions.

# Economic Assumptions

## Inflation Assumption

By “inflation,” we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies most of the other economic assumptions. It impacts investment return, salary increases, and overall payroll growth. The current annual inflation assumption is 2.25 percent.

Over the five-year period from December 2019 through December 2024, the CPI-U has increased at an average annual rate of 4.20 percent. **However, the assumed inflation rate is only weakly tied to past results.**

The following table shows the average inflation over various periods, ending December 2024.

Fiscal Year	Annual Increase in CPI-U
2019-20	1.36%
2020-21	7.04%
2021-22	6.45%
2022-23	3.35%
2023-24	2.89%
3-Year Average	4.22%
5-Year Average	4.20%
10-Year Average	3.00%
20-Year Average	2.56%
25-Year Average	2.55%
30-Year Average	2.52%
40-Year Average	2.78%
50-Year Average	3.68%

## Future Inflation Expectations

Since price inflation is relatively volatile and is subject to a number of influences not based on recent history, economic assumptions are less reliably based on recent past experience than are the demographic assumptions. Therefore, it is important not to give undue weight to recent experience. We must also consider future expectations as well.

Although historically high increases in CPI were observed in 2021 and into 2022, persisting long-term trends in these measures are generally in line with the current assumption. We will continue to monitor this assumption based on the spectrum of expectations from various sources.

One source of information about future inflation is the market for US Treasury bonds. Simplistically, the difference in yield between non-indexed and indexed treasury bonds should be a reasonable estimate of what the bond market expects on a forward-looking basis for inflation. According to inflation rate forecasts from the Federal Reserve Bank of St. Louis, as of June 30, 2025, the difference for 20-year bonds implies that inflation over the next 20 years would average 2.46 percent. The difference in yield for 30-year bonds implies 2.28 percent inflation over the next 30 years.

## Economic Assumptions

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The following tables present a summary of inflation rate forecasts from the Federal Reserve.

<b>Federal Reserve Bank of Cleveland</b>	<b>July 2021</b>	<b>July 2022</b>	<b>July 2023</b>	<b>July 2024</b>	<b>June 2025</b>
30-Year Expectation	2.02%	2.37%	2.27%	2.47%	2.46%
20-Year Expectation	1.85%	2.29%	2.17%	2.42%	2.40%
10-Year Expectation	1.62%	2.22%	2.06%	2.37%	2.34%

<b>Federal Reserve Bank of St. Louis</b>	<b>July 2021</b>	<b>July 2022</b>	<b>July 2023</b>	<b>July 2024</b>	<b>June 2025</b>
30-Year Breakeven Inflation	2.23%	2.22%	2.27%	2.28%	2.28%
20-Year Breakeven Inflation	2.39%	2.60%	2.55%	2.47%	2.46%
10-Year Breakeven Inflation	2.33%	2.36%	2.30%	2.27%	2.30%

However, this analysis is known to be imperfect as it ignores the inflation risk premium that buyers of US Treasury bonds often demand as well as possible differences in liquidity between US Treasury bonds and Treasury Inflation Protected Securities (TIPS).

Another point of reference is the Social Security Administration’s (SSA) 2024 Trustees Report, in which the Office of the Chief Actuary is projecting a long-term average ultimate annual inflation rate of 2.40 percent under the intermediate cost assumption. The ultimate inflation assumption is 1.80 percent and 3.00 percent respectively in the low cost and high cost projection scenarios. The Social Security Trustees report uses the ultimate rates for their 75-year projections, much longer than the longest horizon we can discern from Treasuries and TIPS.

We also surveyed the inflation assumption used by various investment consulting firms. In our sample of these firms, the inflation assumption ranged from 2.10 percent to 2.70 percent, with an average of 2.39 percent in the short term (10 years or less) and 2.48 percent in the long term (20 to 30 years).

The following table provides inflation forecasts from various sources.

# Economic Assumptions

Forward-Looking Price Inflation Forecasts <sup>a</sup>	
<b>Congressional Budget Office<sup>b</sup></b>	
5-Year Annual Average	2.26%
10-Year Annual Average	2.23%
<b>Federal Reserve Bank of Philadelphia<sup>c</sup></b>	
5-Year Annual Average	2.40%
10-Year Annual Average	2.30%
<b>Federal Reserve Bank of Cleveland<sup>d</sup></b>	
10-Year Expectation	2.30%
20-Year Expectation	2.38%
30-Year Expectation	2.44%
<b>Federal Reserve Bank of St. Louis<sup>e</sup></b>	
10-Year Breakeven Inflation	2.33%
20-Year Breakeven Inflation	2.41%
30-Year Breakeven Inflation	2.25%
<b>U.S. Department of the Treasury<sup>f</sup></b>	
10-Year Breakeven Inflation	2.32%
20-Year Breakeven Inflation	2.47%
30-Year Breakeven Inflation	2.30%
50-Year Breakeven Inflation	2.36%
100-Year Breakeven Inflation	2.41%
<b>Social Security Trustees<sup>g</sup></b>	
Ultimate Intermediate Assumption	2.40%

<sup>a</sup>End of the First Quarter, 2025. Version 2025-06-09 by Gabriel, Roeder, Smith & Company

<sup>b</sup>The Budget and Economic Outlook: 2025 to 2035, Release Date: January 2025, Consumer Price Index (CPI-U), Percentage Change from Year to Year, 5-Year Annual Average (2025 - 2029), 10-Year Annual Average (2025 - 2034).

<sup>c</sup>First Quarter 2025 Survey of Professional Forecasters, Release Date: February 14, 2025, Headline CPI, Annualized Percentage Points, 5-Year Annual Average (2025 - 2029), 10-Year Annual Average (2025 - 2034).

<sup>d</sup>Inflation Expectations, Model output date: March 1, 2025.

<sup>e</sup>The breakeven inflation rate represents a measure of expected inflation derived from X-Year Treasury Constant Maturity Securities and X-Year Treasury Inflation-Indexed Constant Maturity Securities. Observation date: March, 2025.

<sup>f</sup>The Treasury Breakeven Inflation (TBI) Curve, Monthly Average Rates, March, 2025.

<sup>g</sup>The 2024 Annual Report of The Board of Trustees of The Federal Old-Age And Survivors Insurance and Federal Disability Insurance Trust Funds, May 6, 2024, p. 10, Key Assumptions and Summary Measures for Long-Range (75-year) Projections, Intermediate, Consumer Price Index (CPI-W).



# Economic Assumptions

The following table shows inflation forecasts from various professional experts at different points in time.

Forward-Looking Price Inflation Forecasts				
	6/30/2023	12/31/2023	6/30/2024	12/31/2024
<b>Congressional Budget Office</b>				
5-Year Annual Average	2.83%	2.83%	2.44%	2.44%
10-Year Annual Average	2.57%	2.57%	2.32%	2.32%
<b>Federal Reserve Bank of Philadelphia</b>				
5-Year Annual Average	2.50%	2.60%	2.50%	2.40%
10-Year Annual Average	2.36%	2.40%	2.33%	2.23%
<b>Federal Reserve Bank of Cleveland</b>				
10-Year Expectation	1.75%	2.28%	2.37%	2.32%
20-Year Expectation	1.96%	2.33%	2.41%	2.38%
30-Year Expectation	2.11%	2.39%	2.46%	2.44%
<b>Federal Reserve Bank of St. Louis</b>				
10-Year Breakeven Inflation	2.20%	2.18%	2.26%	2.30%
20-Year Breakeven Inflation	2.48%	2.42%	2.43%	2.42%
30-Year Breakeven Inflation	2.23%	2.19%	2.27%	2.27%
<b>U.S. Department of the Treasury</b>				
10-Year Breakeven Inflation	2.10%	2.09%	2.19%	2.27%
20-Year Breakeven Inflation	2.40%	2.37%	2.43%	2.45%
30-Year Breakeven Inflation	2.19%	2.19%	2.27%	2.30%
50-Year Breakeven Inflation	2.29%	2.29%	2.36%	2.37%
100-Year Breakeven Inflation	2.37%	2.36%	2.43%	2.42%
<b>Social Security Trustees</b>				
Ultimate Intermediate Assumption	2.40%	2.40%	2.40%	2.40%

## Recommendation

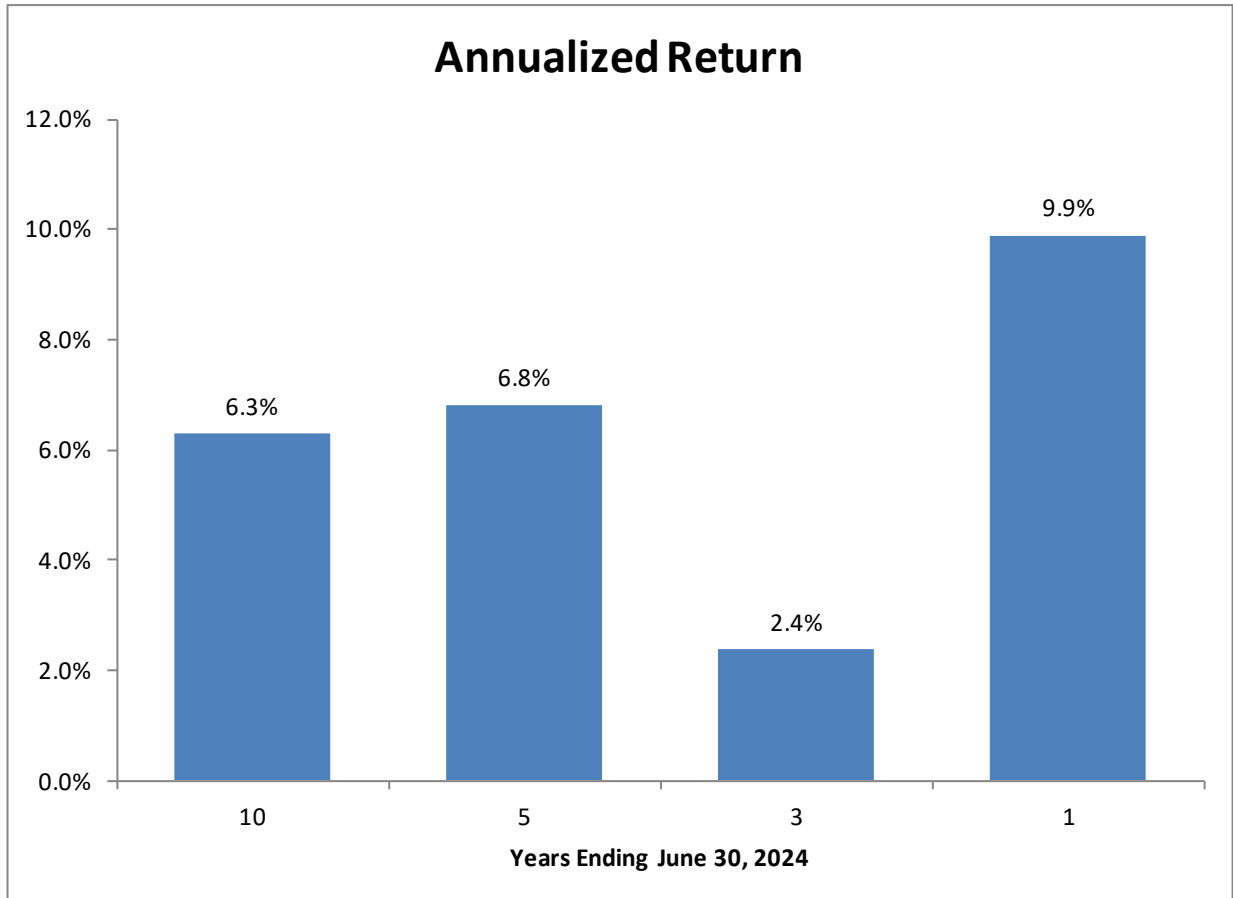
Based on this information, our opinion is that it would be reasonable to increase the current price inflation assumption from 2.25 percent to 2.40 percent. It is important to remember any change in this assumption also affects all other economic assumptions, as shown in the following discussion.

# Economic Assumptions

## Investment Return Assumption

The investment return assumption is one of the principal assumptions used in any actuarial valuation of a retirement plan. It is used to discount future expected benefit payments to the actuarial valuation date in order to determine the liabilities of the plans. Even a small change to this assumption can produce significant changes to the liabilities and contribution rates. Currently, it is assumed that future investment returns will average 6.75 percent per year, net of investment expenses.

The chart below shows the historical annualized history of the System's market returns through calendar year end 2024.



# Economic Assumptions

## Real Return

The allocation of assets within the universe of investment options will have a significant impact on the overall performance. Therefore, it is meaningful to identify the range of expected returns based on the fund's targeted allocation of investments and an overall set of capital market assumptions.

Based on information provided by the System and their investment consultant, following is a table with the System's current target asset allocation and capital market assumptions based on a 20-year horizon:

Asset Category	Current Target Allocation
US Cash	1.00%
US Aggregate Bonds	28.50%
US Large Cap	24.00%
US Small Cap	4.75%
EAFE Equity	15.25%
Emerging Markets	6.50%
US REITS	5.00%
Value Add Real Estate	0.00%
Private Equity	5.00%
Direct Lending	5.00%
Commodities	0.00%
MLPS	5.00%
<b>Total</b>	<b>100.00%</b>

We applied the System's target asset allocation, and performed an analysis using capital market assumptions (CMAs) from a sample of 13 nationally known investment firms. Eight of the firms provided capital market expectations for longer-time horizons (20 to 30 years). Twelve firms provided capital market expectations for shorter-time horizons (10 years or less).

These firms periodically issue reports that describe their capital market assumptions; that is, their estimates of expected returns, volatility, and correlations among the different asset classes. The assumptions for most of the investment consultants are for 2025. While some of these assumptions may be based upon historical analysis, many of these firms also incorporate forward-looking adjustments to better reflect near-term and long-term expectations. The estimates for core investments (i.e., fixed income, equities, and real estate) are generally based on anticipated returns produced by passive index funds.

The current nominal investment return assumption of 6.75 percent is based on an inflation assumption of 2.25 percent and a real return of 4.50 percent.

Given the System's current target asset allocation and the capital market assumptions from the investment consultants, the development of the average nominal return, net of investment expenses, is provided in the following tables.

# Economic Assumptions

## Short-term Investment Horizon (10 years or less) Assumptions – One-Year Arithmetic Returns

Short-Term Capital Market Assumption Set (CMA)	CMA Expected Nominal Return	CMA Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Plan Incurred Administrative Expenses	Expected Nominal Return Net of Expenses (6)-(7)	Annualized Standard Deviation of Expected Return
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	6.29%	2.35%	3.94%	2.40%	6.34%	0.13%	6.21%	11.51%
2	6.68%	2.60%	4.08%	2.40%	6.48%	0.13%	6.35%	11.56%
3	6.87%	2.40%	4.47%	2.40%	6.87%	0.13%	6.74%	11.26%
4	7.42%	2.70%	4.72%	2.40%	7.12%	0.13%	6.99%	11.78%
5	7.20%	2.42%	4.78%	2.40%	7.18%	0.13%	7.05%	12.27%
6	7.34%	2.51%	4.82%	2.40%	7.22%	0.13%	7.09%	11.28%
7	7.41%	2.34%	5.07%	2.40%	7.47%	0.13%	7.34%	11.40%
8	7.36%	2.30%	5.06%	2.40%	7.46%	0.13%	7.33%	10.56%
9	7.28%	2.21%	5.08%	2.40%	7.48%	0.13%	7.35%	10.53%
10	7.45%	2.31%	5.14%	2.40%	7.54%	0.13%	7.41%	10.91%
11	7.57%	2.41%	5.16%	2.40%	7.56%	0.13%	7.43%	11.12%
12	7.34%	2.10%	5.24%	2.40%	7.64%	0.13%	7.51%	11.34%
<b>Average</b>	<b>7.18%</b>	<b>2.39%</b>	<b>4.80%</b>	<b>2.40%</b>	<b>7.20%</b>	<b>0.13%</b>	<b>7.07%</b>	<b>11.29%</b>

Based on the short-term capital market assumptions for J.P. Morgan (the capital market assumptions set used by the System's investment consultant) and the recommended price inflation assumption of 2.40 percent, the average one-year arithmetic return is 7.43 percent.

Short-Term Capital Market Assumption Set (CMA)	CMA Expected Nominal Return	CMA Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal One-Year Arithmetic Return Net of Expenses (4)+(5)	Plan Incurred Administrative Expenses	Expected Nominal Return Net of Expenses (6)-(7)	Annualized Standard Deviation of Expected Return
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7)	(7)
J.P. Morgan	7.57%	2.41%	5.16%	2.40%	7.56%	0.13%	7.43%	11.12%

# Economic Assumptions

## Long-term Investment Horizon (20 to 30 years) Assumptions – One-Year Arithmetic Returns

Long-Term Capital Market Assumption Set (CMA)	CMA Expected Nominal Return	CMA Inflation Assumption	Expected Real Return (2)-(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Plan Incurred Administrative Expenses	Expected Nominal Return Net of Expenses (6)-(7)	Annualized Standard Deviation of Expected Return
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	6.42%	2.50%	3.92%	2.40%	6.32%	0.13%	6.19%	10.64%
2	7.05%	2.20%	4.85%	2.40%	7.25%	0.13%	7.12%	11.26%
3	7.64%	2.70%	4.94%	2.40%	7.34%	0.13%	7.21%	11.56%
4	7.45%	2.30%	5.15%	2.40%	7.55%	0.13%	7.42%	12.27%
5	7.97%	2.70%	5.27%	2.40%	7.67%	0.13%	7.54%	11.78%
6	7.55%	2.32%	5.24%	2.40%	7.64%	0.13%	7.51%	11.21%
7	7.70%	2.40%	5.30%	2.40%	7.70%	0.13%	7.57%	10.56%
8	8.81%	2.74%	6.07%	2.40%	8.47%	0.13%	8.34%	11.40%
<b>Average</b>	<b>7.57%</b>	<b>2.48%</b>	<b>5.09%</b>	<b>2.40%</b>	<b>7.49%</b>	<b>0.13%</b>	<b>7.36%</b>	<b>11.33%</b>

Based on each investment firm’s assumptions, we estimated the expected real return of the System’s portfolio (col. (4)). Next, based on the actuary’s recommended inflation, we estimated the expected one-year arithmetic return net of expenses (col. (8)). The average one-year arithmetic return is 7.07 percent using short-term investment horizon assumptions, and 7.36 percent using long-term investment horizon assumptions.

However, in addition to examining the expected one-year arithmetic return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net returns that could be expected to be produced by the investment portfolio.

The following tables provide the 40<sup>th</sup>, 50<sup>th</sup>, and 60<sup>th</sup> percentiles of the geometric average (10-year for short-term investment horizon and 20-year for long-term investment horizon) of the expected nominal return, net of expenses based on the recommended inflation assumption of 2.40 percent. The tables also show the probability of exceeding the baseline 6.75 percent assumption and alternative assumption of 6.50 percent.

# Economic Assumptions

## Short-term Investment Horizon (10 years or less) – Annualized 10-Year Geometric Returns

Short-Term Capital Market Assumption Set (CMA)	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of Exceeding	Probability of Exceeding
	40th	50th	60th	6.75%	6.50%
(1)	(2)	(3)	(4)	(5)	(6)
1	4.68%	5.59%	6.51%	37.45%	40.08%
2	4.82%	5.73%	6.65%	38.97%	41.62%
3	5.26%	6.15%	7.05%	43.26%	46.05%
4	5.41%	6.34%	7.28%	45.63%	48.32%
5	5.38%	6.35%	7.33%	45.86%	48.44%
6	5.61%	6.51%	7.41%	47.25%	50.06%
7	5.84%	6.74%	7.65%	49.91%	52.70%
8	5.98%	6.82%	7.66%	50.80%	53.80%
9	6.00%	6.83%	7.68%	51.03%	54.04%
10	5.99%	6.86%	7.73%	51.23%	54.14%
11	5.98%	6.86%	7.75%	51.29%	54.14%
12	6.02%	6.91%	7.82%	51.83%	54.64%
<b>Average</b>	<b>5.58%</b>	<b>6.47%</b>	<b>7.38%</b>	<b>47.04%</b>	<b>49.84%</b>

## Long-term Investment Horizon (20 to 30 years) – Annualized 20-year Geometric Returns

Long-Term Capital Market Assumption Set (CMA)	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of Exceeding	Probability of Exceeding
	40th	50th	60th	6.75%	6.50%
(1)	(2)	(3)	(4)	(5)	(6)
1	5.06%	5.66%	6.26%	32.24%	36.09%
2	5.91%	6.54%	7.17%	46.58%	50.57%
3	5.95%	6.59%	7.24%	47.57%	51.46%
4	6.04%	6.73%	7.42%	49.71%	53.38%
5	6.24%	6.90%	7.56%	52.29%	56.10%
6	6.30%	6.93%	7.56%	52.83%	56.82%
7	6.46%	7.06%	7.65%	55.19%	59.39%
8	7.11%	7.75%	8.39%	65.43%	69.03%
<b>Average</b>	<b>6.13%</b>	<b>6.77%</b>	<b>7.41%</b>	<b>50.23%</b>	<b>54.11%</b>

## J.P. Morgan (10 years)

Short-Term Capital Market Assumption Set (CMA)	Distribution of 10-Year Average Geometric Net Nominal Return			Probability of Exceeding	Probability of Exceeding
	40th	50th	60th	6.75%	6.50%
(1)	(2)	(3)	(4)	(5)	(6)
J.P. Morgan	5.98%	6.86%	7.75%	51.29%	54.14%

## Economic Assumptions

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As these tables indicate, the average expected rate of return at the 50<sup>th</sup> percentile based on (1) the System's current target asset allocation, (2) the recommended inflation assumption of 2.40 percent and (3) the capital market assumptions from the investment consultants is 6.47 percent under the shorter-term investment horizon and 6.77 percent under the longer-term investment horizon. Based on the capital market assumptions from J.P. Morgan, the average expected rate of return at the 50<sup>th</sup> percentile is 6.86 percent under the shorter-term horizon.

Additionally, the average results of the investment firms with shorter-term expectations indicate there is about a 47 percent chance that the System will produce an average return that exceeds 6.75 percent in the next 10 years.

The average results of the investment firms with longer-term expectations indicate there is about a 50 percent chance that the System will produce an average return that exceeds 6.75 percent in the next 20 years.

A key factor to consider when evaluating short-term or long-term investment projections is the relative level of assets available to pay benefits over the next 10 years to 25 years. Using current assumptions and liability measures as of December 31, 2024, the present value of benefits expected to be paid over the next 10 years make up about 51 percent of the accrued liability.

Consequently, it is important to consider both short-term and long-term expectations when setting economic assumptions. Given the System's current funded ratio and near-term benefit obligations, we recommend placing more weight on the 10-year horizon results.

### **Recommendation**

Based on our analysis of the expected investment return and the current target asset allocation, we recommend maintaining the investment return assumption to 6.75 percent for the actuarial valuation as of December 31, 2024, reflecting an inflation assumption of 2.40 percent.

The current investment return assumption consists of an inflation assumption of 2.25 percent and a real rate of return assumption of 4.50 percent. The proposed investment return assumption consists of an inflation assumption of 2.40 percent and real rate of return assumption of 4.35 percent.

We recommend that the assumed investment return be monitored for continued appropriateness between experience reviews. Also, any significant changes in the target asset allocation of the System may warrant an additional review of the rate of return assumption.

We believe that this assumption can be supported by the Actuarial Standard of Practice No. 27. Under the Standard, all economic assumptions must be selected to be consistent with the purpose of the measurement. The purpose of the measurement is to determine the contribution rate which will lead to the accumulation of assets to pay benefits when due.

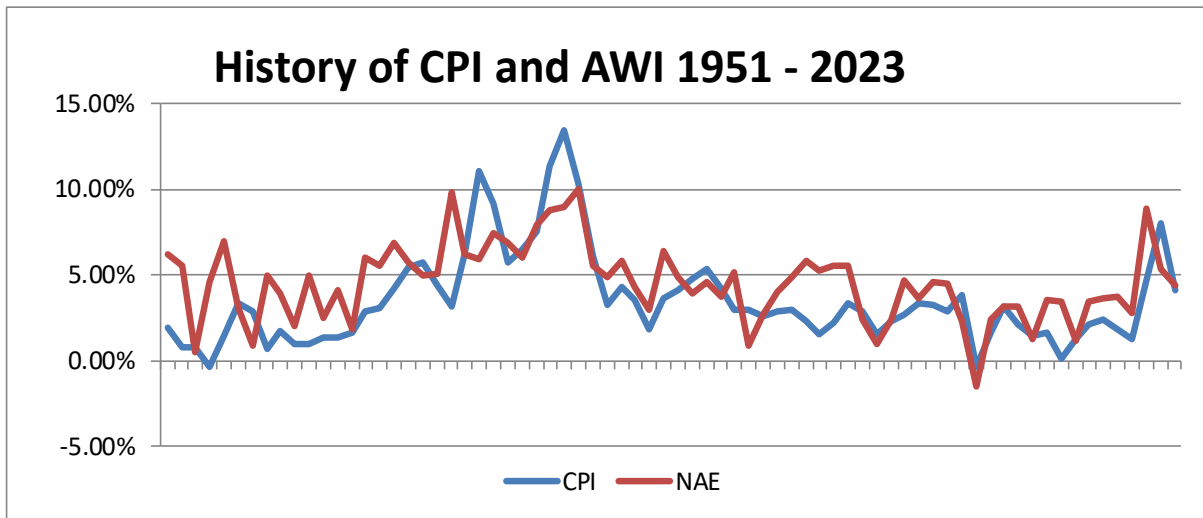
# Economic Assumptions

## General Wage Inflation and Payroll Growth

A General Wage Inflation (“GWI”) assumption represents the real wage growth over time in the general economy. It is the assumption on how much the pay scales themselves will change year to year, not necessarily how much the pay increases received by individuals are, or even necessarily how the payroll in total may change, which can be affected by population changes, etc. Wage inflation consists of two components, (1) a portion due to pure price inflation (i.e., increases due to changes in the CPI), and (2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market, and other macroeconomic factors).

The Average Wage Index (“AWI”), formerly named the National Average Earnings (“NAE”), series published in connection with the operation of the Social Security program is a useful proxy for measuring general changes in wage levels in the economy. Increases in AWI typically exceed increases in the Consumer Price Index (“CPI”), although there are periods where the patterns are reversed. The economic argument for wages exceeding prices in the long run is that CPI is based on the prices of a fixed basket of goods whereas wages reflect innovations, real productivity growth, labor supply and demand, and other factors in addition to pure price inflation.

The following graph compares CPI and AWI over the past 73 years.



## Economic Assumptions

The following table shows the average inflation and increase in the AWI through 2023.

Years	Annual Increases in		
	Prices (CPI-U)	Wages (AWI)	Difference
1964-1973	3.79%	5.60%	1.81%
1974-1983	8.41%	7.23%	-1.18%
1984-1993	3.79%	4.65%	0.86%
1994-2003	2.45%	3.95%	1.50%
2004-2013	2.39%	2.80%	0.41%
2014-2023	2.72%	4.03%	1.31%
3-Year Average	4.22%	6.20%	1.98%
5-Year Average	4.20%	5.02%	0.83%
10-Year Average	3.00%	4.03%	1.03%
20-Year Average	2.56%	3.41%	0.85%
25-Year Average	2.55%	3.40%	0.86%
30-Year Average	2.52%	3.59%	1.07%
40-Year Average	2.78%	3.76%	0.97%
50-Year Average	3.68%	4.44%	0.77%
60-Year Average	3.77%	4.63%	0.86%
65-Year Average	3.64%	4.56%	0.92%

Since 1951, for the national economy as a whole, wage inflation has been about 1.02 percent higher than price inflation each year. For the last 10 years, for the national economy as a whole, wage inflation has been 4.03 percent, outpacing price inflation by about 1.23 percent. However, that spread will likely be viewed as skewed due to the historically volatile inflation during the past decade.

As with the investment return assumption, past experience does not necessarily dictate future expectations. Current expectations are mixed on whether price and wage inflation will remain high in the short term, particularly due to the aftereffects of recent federal government spending. For a long-term view, the 2024 Annual Report from the Trustees of the Social Security Administration (SSA) assumes an intermediate average ultimate CPI of 2.40 percent over the next 75 years and an ultimate intermediate growth assumption for average wages in covered employment of 3.56 percent. The SSA report provides alternate “High-cost” assumptions of 1.80 percent CPI/2.34 percent wages and “Low-cost” assumptions of 3.00 percent CPI/4.79 percent wages.

# Economic Assumptions

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## Recommendation

While the ongoing pressure on the ability of municipalities to sustain across the board increases in wages is consistent with historical norms, we do not believe there is justification to increase the assumption for productivity increases; in other words, to increase the assumed gap between price increases and wage growth. In fact, we recommend maintaining the assumption for productivity increases of 0.75 percent. Combining this recommendation with our recommendation for price inflation of 2.40 percent implies a wage inflation assumption of 3.15 percent. These assumptions are summarized below:

	Grand Rapids Police and Fire Wage Inflation and Payroll Growth Assumption	
	Current Assumption	Proposed Assumption
<b>Price Inflation</b>	2.25%	2.40%
<b>Productivity Increases</b>	0.75%	0.75%
<b>Total Wage Inflation</b>	3.00%	3.15%

# Economic Assumptions

## Salary Increases

Most actuaries recommend salary increase assumptions that include elements which depend on the member's age or service. Generally, younger or shorter-service employees receive higher merit and promotion salary increases. As the employee's age or service increases, these salary increases tend to decrease.

Total salary increases include components for wage inflation and other increases. Over the experience study period, actual salary increases for plan members averaged 6.48 percent compared to expected total increases of 3.00 percent. During the same period, actual general inflation averaged 4.17 percent compared to the current assumption of 3.00 percent. We recommend increasing the current assumed real rates of salary increase. The graph on page 22 shows the real salary increase plus price inflation.

**Pay increases due to merit and seniority.** The tables below summarize recent experience and the current and proposed rates of salary. During the study period rates of salary increases were slightly higher than expected. We noted that while wage schedules and across the board increases may differ by union and positions, on average the current assumptions result is a similar salary projection. Therefore, we propose the following changes to the current assumptions.

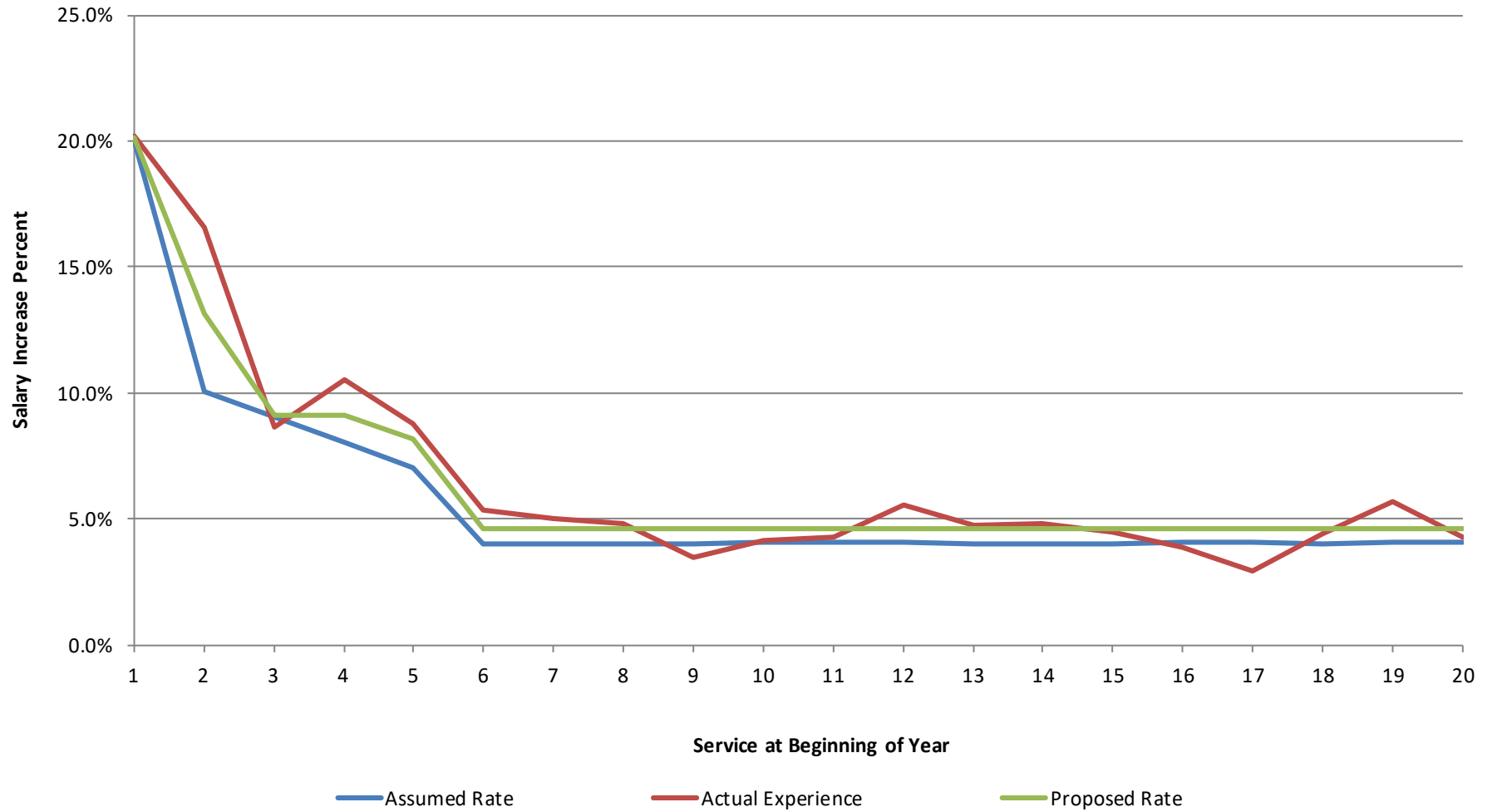
Period Ending 12/31	Salary Increases for Continuing Active Members		Difference Between Actual and Expected
	Expected	Actual	
2020	5.49%	5.46%	(0.02)%
2021	5.24%	5.07%	(0.17)%
2022	5.01%	9.70%	4.69%
2023	5.19%	6.63%	1.44%
2024	6.02%	5.55%	(0.47)%
		Average	1.05%

Service at Beginning of Year	Current Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	17.00%	3.00%	20.00%
2	7.00	3.00	10.00
3	6.00	3.00	9.00
4	5.00	3.00	8.00
5	4.00	3.00	7.00
6 and over	1.00	3.00	4.00

Service at Beginning of Year	Proposed Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	17.00%	3.15%	20.15%
2	10.00	3.15	13.15
3	6.00	3.15	9.15
4	6.00	3.15	9.15
5	5.00	3.15	8.15
6 and over	1.50	3.15	4.65

# Economic Assumptions

## Salary Experience January 1, 2020 - December 31, 2024



# Demographic Assumptions

## Retirement

**Discussion:** Rates of retirement are used to measure the probabilities of an eligible member retiring from City employment during the next year. During the study period, actual rates of retirement were greater than those expected.

**Summary of Experience:** The experience during the study period is summarized below:

Year Ending December 31,	Actual	Expected	Actual / Expected
2020	34	18.0	189%
2021	33	19.7	168%
2022	17	14.7	116%
2023	18	13.9	130%
2024	28	16.0	175%
<b>Total</b>	<b>130</b>	<b>82.2</b>	<b>158%</b>

**Proposal:** We recommend increasing rates of retirement as shown below. This change will put upward pressure on liabilities.

## Rates of Retirement

Retirement Ages	Current Percent Retiring	Proposed Percent Retiring
50	30	40
51	30	40
52	30	40
53	30	40
54	30	40
55	35	40
56	35	40
57	35	40
58	35	40
59	35	40
60	50	50
61	60	60
62	70	70
63	80	80
64	90	90
65	100	100

# Demographic Assumptions

## Turnover

**Discussion:** The tables below summarize recent experience and the current and proposed rates of termination. During the study period, actual rates of termination were higher than those expected.

**Summary of Experience:** The experience during the study period is summarized below:

Year Ending December 31,	Actual	Expected	Actual / Expected
2020	5	7.9	63%
2021	10	6.2	161%
2022	9	5.9	152%
2023	16	6.1	260%
2024	10	7.0	142%
<b>Total</b>	<b>50</b>	<b>33.2</b>	<b>151%</b>

**Proposal:** We recommend changing from an age-based withdrawal assumption to a service based assumption, as shown below. This change will put downward pressure on liabilities.

## Turnover Rates

Sample Ages	% of Active members Separating within Next Year	
	Current	
	Police	Fire
25	3.45	2.07
30	2.85	1.71
35	1.95	1.17
40	1.35	0.81
45	1.05	0.63
50	0.90	0.54
55	0.90	0.54
60	0.90	0.54

Sample Service	% of Active members Separating within Next Year	
	Proposed	
	Police	Fire
1	10.00	5.00
2	9.00	4.50
3	4.00	2.00
4	2.00	1.00
5	2.00	1.00
6	2.00	1.00
7	2.00	1.00
8	2.00	1.00
9	2.00	1.00
10 & Over	1.00	0.50



# Demographic Assumptions

## Disability

**Discussion:** The tables below summarize recent experience and the current rates of disability. The actual number of disability retirements were lower than those expected.

**Summary of Experience:** The experience during the study period is summarized below:

Year Ending December 31,	Actual	Expected	Actual / Expected
2020	0	2.9	0%
2021	1	2.7	37%
2022	1	2.8	36%
2023	4	2.7	146%
2024	2	2.6	76%
<b>Total</b>	<b>8</b>	<b>13.7</b>	<b>58%</b>

**Proposal:** We recommend decreasing rates of disability as shown below. This change will put downward pressure on liabilities.

## Rates of Disability

Sample Ages	% of Active Members Becoming Disabled	
	Current	Proposed
20	0.12 %	0.10 %
25	0.12	0.10
30	0.12	0.10
35	0.27	0.23
40	0.59	0.49
45	1.05	0.88
50	1.68	1.40
55	2.51	2.09

## Duty/Non-Duty Disability Split

**Discussion:** We recommend changing the current duty/non-duty disability split based on the ratio of duty to non-duty disabilities. The proposed assumption is shown below:

	Duty Related	Non-Duty Related
Cause of Disability: Men	70%	30%
Women	70%	30%

# Demographic Assumptions

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## Mortality

### ***Mortality Experience***

Post-retirement mortality is an important component in cost calculations and should be updated from time to time to reflect current and expected future longevity improvements. Pre-retirement mortality is a relatively minor component in cost calculations. The frequency of pre-retirement deaths is so low that mortality assumptions based on actual experience can only be produced for very large retirement systems, if at all.

### ***Actuarial Standards of Practice***

Actuarial Standards of Practice (ASOP) No. 27 Disclosure Section 4.1.1 states, “The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand any adjustment to reflect mortality improvement from the effective date of the table to the measurement date and the provision made for future mortality improvement. If the actuary assumes zero mortality improvement after the measurement date, the actuary should state that no provision was made for future mortality improvement.” The current mortality rates used in the actuarial valuation include a provision for future mortality improvement.

### ***The Pub-2010 Mortality Tables***

The Society of Actuaries’ (SOA’s) Retirement Plans Experience Committee (RPEC) released mortality tables in 2019 (the Pub-2010 tables) which reflect the improvement in longevity of the studied group of public sector pension plan participants, and which also reflects projected future improvements for current and future generations of participants. The SOA published an updated version of the Pub-2010 tables currently used for City of Grand Rapids valuations, referred to as the Pub-2016 Public Retirement Plans Mortality Tables. The Pub-2016 tables were in draft form when this study commenced and since the mortality rates are not significantly different from current rates, we propose continued use of the Pub-2010 tables.

As part of each experience study, we regularly update to the most recent mortality projection scale issued by the Society of Actuaries.

Since the last experience study there was one update to Mortality Improvement Scales, to MP-2021. The preliminary MP-2022 projection scale would have reflected mortality experience during 2020 (which was significantly impacted by COVID-19) and would have required significant adjustments to the projection model to consider the impact. Although it was originally anticipated that the SOA would release new improvement scales annually, due to the pandemic, it will likely be around five years before another update is released. For purposes of actuarial valuations, we recommend using the MP-2021 improvement scales until the next experience study, even if a new projection scale is released prior to the next experience study. The mortality improvement scale is applied to the Pub-2010 table to reflect improvements in mortality that are expected to occur with each new generation of participants.

# Demographic Assumptions

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## Mortality (Continued)

**Proposal:** We recommend the following mortality tables for use in future valuations of the Retirement System; this change will slightly increase measured liabilities:

- **Healthy Pre-Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Employee, Male and Female tables, a base year of 2010 and future mortality improvements projected using scale MP-2021.
- **Healthy Post-Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables, with a base year of 2010 and future mortality improvements projected using scale MP-2021.
- **Disability Retirement:** The Pub-2010 Amount-Weighted, Public Safety, Disabled Retiree, Male and Female, with a base year of 2010 and future mortality improvements projected using scale MP-2021.

# Demographic Assumptions

## Mortality (Concluded)

### Summary of Life Expectancies Under the Current Tables

Sample Age Now	Pre-Retirement Future Life Expectancy (Years)^		Healthy Post-Retirement Future Life Expectancy (Years)^		Disabled Retirement Future Life Expectancy (Years)^	
	Men	Women	Men	Women	Men	Women
	50	39.03	41.53	35.94	37.94	34.49
55	33.90	36.38	30.86	32.82	29.62	31.73
60	28.86	31.28	25.96	27.90	24.93	27.11
65	23.93	26.23	21.32	23.22	20.54	22.75
70	19.16	21.25	16.99	18.80	16.46	18.59
75	14.63	16.45	13.03	14.69	12.70	14.66
80	10.39	11.93	9.57	11.05	9.45	11.05

### Summary of Life Expectancies Under the Proposed Tables

Sample Age Now	Pre-Retirement Future Life Expectancy (Years)^		Healthy Post-Retirement Future Life Expectancy (Years)^		Disabled Retirement Future Life Expectancy (Years)^	
	Men	Women	Men	Women	Men	Women
	50	38.58	41.01	35.65	37.69	34.26
55	33.50	35.91	30.60	32.58	29.40	31.55
60	28.50	30.87	25.70	27.66	24.71	26.91
65	23.62	25.88	21.09	23.00	20.33	22.54
70	18.90	20.96	16.79	18.60	16.28	18.40
75	14.42	16.22	12.87	14.52	12.55	14.48
80	10.23	11.75	9.43	10.89	9.31	10.89

^ Using sample ages as of 2024.



## SECTION D

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### MISCELLANEOUS ASSUMPTIONS AND METHODS

## Retirement System Option Factors

Option factors are calculated using the current interest assumption and the assumed rates of mortality. If a retiring member elects an optional form of benefit, the assumed benefit is multiplied by the appropriate option factor to produce the benefit actually payable. As a matter of common practice, option factors are usually revised to correspond to the new interest and mortality assumptions adopted with an experience study.

Currently, option factors for survivor benefits are calculated using a 7.00% interest rate assumption and an 90%/10% unisex blend of the Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2019. Examples of option factors calculated using the current and the first alternate assumption sets are shown below. After the new demographic assumptions are adopted, **we recommend the actuarial factors as shown under Proposed be adopted for retirements on or after January 1, 2026** to allow time for administrative changes. We would also recommend that any such change be reviewed by legal counsel.

### Option Factor Comparison\*

Retiring Participants' Ages		50% Joint & Survivor		100% Joint & Survivor	
Retiree	Beneficiary	Current	Proposed	Current	Proposed
50	45	0.95956	0.95888	0.92227	0.92101
55	50	0.94666	0.94615	0.89872	0.89781
60	55	0.93032	0.92994	0.86972	0.86905
65	60	0.91035	0.91006	0.83545	0.83496

*\* Not all available options are shown. Does not consider COLA assumptions that are specific to group. Actual option factors will be based on applicable COLA assumptions.*

- **Current** – 7.00% interest rate assumption and an 90%/10% unisex blend of the Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2019.
- **Proposed** – 6.75% interest rate assumption and an 90%/10% unisex blend of the Pub-2010 Amount-Weighted, Public Safety, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2030 using scale MP-2021.

## Amortization Policy

Unfunded actuarial accrued liabilities were amortized by (principal & interest combined) level dollar contributions as according to the schedule below. The weighted average remaining period is 23.68 years. This change was made by the City per City Code Section 1.263 and first reflected in the December 31, 2015 valuation report.

Base Year	Current Balance	Projected to Contribution Period	Remaining Financing Period	Amortization Factor	Dollar Payment	% of Payroll Contribution
2015	\$ 79,638,921	\$ 81,994,028	21 yrs.	14.552659	\$ 5,634,299	10.73%
2016	3,902,097	4,026,204	22	15.009484	268,244	0.51%
2017	4,247,141	4,390,841	23	15.450262	284,192	0.55%
2018	17,776,232	18,410,594	24	15.875555	1,159,682	2.21%
2019	8,391,915	8,705,610	25	16.285908	534,549	1.02%
2020	16,340,140	16,976,369	26	16.681846	1,017,655	1.94%
2021	11,097,267	11,545,258	27	17.063875	676,591	1.29%
2022	25,155,208	26,203,994	28	17.432483	1,503,170	2.86%
2023	1,800,287	1,877,550	29	17.788143	105,551	0.20%
2024	8,755,921	9,141,647	30	18.131309	504,191	0.96%
<b>UAAL</b>	<b>\$ 177,105,129</b>	<b>\$ 183,272,096</b>	<b>23.68</b>	<b>15.152571</b>	<b>\$ 11,688,124</b>	<b>22.27%</b>

We do not recommend changing the period at this time. Lastly, we note that under Public Act 202, the maximum allowed amortization period is 14 years for fiscal year 2025 reporting.

## Asset Valuation Method

The City of Grand Rapids Police and Fire Retirement System currently uses a 5-year asset smoothing method with no corridor. The Funding Value of Assets recognizes assumed investment income fully each year. Differences between actual and assumed investment income are phased-in over a closed 5-year period. This is a very common method among public retirement systems. Most systems use an averaging period between 3 and 10 years with 5 being the most common. We do not recommend any changes at this time.

## Load for Service Purchases

We received data from Retirement System staff containing current reported service purchase balances in the amount of \$2.9 million for active members. We have established the liability for service purchases to be approximately \$3.8 million – based on applying valuation interest to the initial contributions reported.

## Load for 13<sup>th</sup> Check

We have tested the market rate measure of returns both historically (against actual experience) and on a forward-looking basis (via a stochastic model). We expect that the returns on assets for the 13<sup>th</sup> check group will be reduced by 70 to 80 basis points going forward. To reflect this expectation, we placed a 6.0% load on affected liabilities (member not eligible for automatic post-retirement increases).



## **SECTION E**

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### **COST IMPACT**

# Effects of Recommended Changes in Actuarial Assumptions on Retirement System Contribution and Funded Percent

## Summary of Assumption Sets

Assumption Set	Economic Assumptions			Demographic Assumptions
	Net Rate of Investment Return	Rate of Inflation		
		Wage	Spread	
A. Published Results	6.75%	3.00%	3.75%	Current
B. Proposed Economic and Demographic	6.75%	3.15%	3.60%	Proposed



# Effects of Recommended Changes in Actuarial Assumptions on Retirement System Contribution and Funded Percent

## Results as of December 31, 2024<sup>#</sup>

	December 31, 2024 Valuation	Proposed Demographic Assumptions and Indicated Economic Assumptions	
	Current	Current	Proposed
Economic Assumptions			
Investment Return	6.75%	6.75%	6.75%
Wage Inflation	3.00%	3.00%	3.15%
Demographic Assumptions	Current	Proposed	Proposed
Contributions for	% of Gross-Up Active Payroll		
Total Normal Cost	27.80%	29.06%	29.54%
Member Contributions*	11.22%	11.22%	11.22%
Employer Normal Cost	16.58%	17.84%	18.32%
Unfunded Actuarial Accrued Liabilities	22.27%	22.78%	22.58%
<b>COMPUTED EMPLOYER RATE</b>	<b>38.85%</b>	<b>40.62%</b>	<b>40.90%</b>
Illustrative Contribution^ (\$ millions)	\$ 20.4	\$ 21.3	\$ 21.5
Funded Ratio	75.1%	74.6%	74.5%

<sup>#</sup> **Illustrative impact.** New assumptions will first be effective for the next actuarial valuation.  
<sup>\*</sup> Weighted average of various contribution rates.  
<sup>^</sup> Based on projected fiscal year payroll.

A change in assumptions will not change the long-term cost of the plan – only the timing of contributions to support the promised benefits.



## **SECTION F**

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### **COMPLETE LISTING OF RECOMMENDED ASSUMPTIONS**

## Proposed Retirement Rates

Retirement Ages	Proposed Percent Retiring
50	40
51	40
52	40
53	40
54	40
55	40
56	40
57	40
58	40
59	40
60	50
61	60
62	70
63	80
64	90
65	100

## Proposed Withdrawal Rates

Sample Service	% of Active members Separating within Next Year	
	Proposed	
	Police	Fire
1	10.00	5.00
2	9.00	4.50
3	4.00	2.00
4	2.00	1.00
5	2.00	1.00
6	2.00	1.00
7	2.00	1.00
8	2.00	1.00
9	2.00	1.00
10 & Over	1.00	0.50

# Proposed Mortality Rates

Pre-Retirement Mortality Rates			Healthy Post-Retirement Mortality Rates			Disabled Post-Retirement Mortality Rates		
Age	% Dying Next Year*		Age	% Dying Next Year*		Age	% Dying Next Year*	
	Public Safety			Public Safety			Public Safety	
	Male	Female		Male	Female		Male	Female
20	0.0423%	0.0174%	50	0.1813%	0.1347%	50	0.3332%	0.2748%
21	0.0430%	0.0189%	51	0.1969%	0.1519%	51	0.3481%	0.3001%
22	0.0429%	0.0194%	52	0.2145%	0.1712%	52	0.3668%	0.3304%
23	0.0429%	0.0210%	53	0.2352%	0.1937%	53	0.3904%	0.3650%
24	0.0429%	0.0227%	54	0.2601%	0.2203%	54	0.4191%	0.4044%
25	0.0429%	0.0246%	55	0.2893%	0.2511%	55	0.4537%	0.4486%
26	0.0466%	0.0265%	56	0.3230%	0.2856%	56	0.4955%	0.4967%
27	0.0496%	0.0285%	57	0.3621%	0.3234%	57	0.5461%	0.5480%
28	0.0528%	0.0320%	58	0.4075%	0.3648%	58	0.6053%	0.6032%
29	0.0561%	0.0341%	59	0.4583%	0.4089%	59	0.6720%	0.6589%
30	0.0580%	0.0376%	60	0.5153%	0.4569%	60	0.7455%	0.7161%
31	0.0611%	0.0397%	61	0.5780%	0.5057%	61	0.8262%	0.7733%
32	0.0640%	0.0430%	62	0.6456%	0.5566%	62	0.9106%	0.8298%
33	0.0667%	0.0461%	63	0.7180%	0.6104%	63	0.9995%	0.8869%
34	0.0689%	0.0488%	64	0.7961%	0.6673%	64	1.0904%	0.9439%
35	0.0722%	0.0511%	65	0.8804%	0.7284%	65	1.1852%	1.0037%
36	0.0749%	0.0529%	66	0.9711%	0.7935%	66	1.2830%	1.0664%
37	0.0754%	0.0555%	67	1.0706%	0.8667%	67	1.3868%	1.1356%
38	0.0782%	0.0563%	68	1.1797%	0.9498%	68	1.4969%	1.2122%
39	0.0802%	0.0579%	69	1.3023%	1.0435%	69	1.6169%	1.2976%
40	0.0814%	0.0590%	70	1.4402%	1.1522%	70	1.7515%	1.3958%
41	0.0820%	0.0599%	71	1.5975%	1.2757%	71	1.9045%	1.5063%
42	0.0847%	0.0616%	72	1.7755%	1.4183%	72	2.0843%	1.6319%
43	0.0856%	0.0621%	73	1.9791%	1.5820%	73	2.2965%	1.7742%
44	0.0874%	0.0637%	74	2.2128%	1.7692%	74	2.5484%	1.9335%
45	0.0902%	0.0653%	75	2.4791%	1.9843%	75	2.8432%	2.1123%
46	0.0929%	0.0672%	76	2.7844%	2.2276%	76	3.1819%	2.3128%
47	0.0966%	0.0703%	77	3.1325%	2.5034%	77	3.5650%	2.5393%
48	0.1005%	0.0729%	78	3.5310%	2.8162%	78	3.9878%	2.8162%
49	0.1067%	0.0769%	79	3.9851%	3.1675%	79	4.4458%	3.1675%
50	0.1133%	0.0822%	80	4.5021%	3.5627%	80	4.9388%	3.5627%
51	0.1204%	0.0882%	81	5.0913%	4.0080%	81	5.4779%	4.0080%
52	0.1300%	0.0948%	82	5.7582%	4.5052%	82	6.0729%	4.5052%
53	0.1404%	0.1020%	83	6.5044%	5.0602%	83	6.7347%	5.0602%
54	0.1516%	0.1106%	84	7.3433%	5.6798%	84	7.4865%	5.6798%
55	0.1654%	0.1197%	85	8.2808%	6.3712%	85	8.3515%	6.3712%
56	0.1821%	0.1299%	86	9.3241%	7.1397%	86	9.3241%	7.1397%
57	0.1995%	0.1410%	87	10.4771%	7.9983%	87	10.4771%	7.9983%
58	0.2205%	0.1508%	88	11.7552%	8.9560%	88	11.7552%	8.9560%
59	0.2437%	0.1619%	89	13.1691%	10.0188%	89	13.1691%	10.0188%
60	0.2678%	0.1721%	90	14.7225%	11.1970%	90	14.7225%	11.1970%
61	0.2941%	0.1811%	91	16.3136%	12.4565%	91	16.3136%	12.4565%
62	0.3223%	0.1909%	92	17.8728%	13.7676%	92	17.8728%	13.7676%
63	0.3508%	0.1995%	93	19.3765%	15.1227%	93	19.3765%	15.1227%
64	0.3793%	0.2079%	94	20.8275%	16.5127%	94	20.8275%	16.5127%
65	0.4097%	0.2157%	95	22.2338%	17.9565%	95	22.2338%	17.9565%
			96	23.7587%	19.5454%	96	23.7587%	19.5454%
			97	25.3516%	21.2313%	97	25.3516%	21.2313%
			98	27.0454%	23.0255%	98	27.0454%	23.0255%
			99	28.8739%	24.9311%	99	28.8739%	24.9311%
			100	30.8141%	26.9404%	100	30.8141%	26.9404%
			101	32.8315%	29.0241%	101	32.8315%	29.0241%
			102	34.8429%	31.1354%	102	34.8429%	31.1354%
			103	36.8508%	33.2593%	103	36.8508%	33.2593%
			104	38.8160%	35.3743%	104	38.8160%	35.3743%
			105	40.7216%	37.4634%	105	40.7216%	37.4634%
			106	42.5725%	39.4984%	106	42.5725%	39.4984%
			107	44.3646%	41.4807%	107	44.3646%	41.4807%
			108	46.0549%	43.3884%	108	46.0549%	43.3884%
			109	47.6742%	45.2084%	109	47.6742%	45.2084%
			110	48.9994%	46.9373%	110	48.9994%	46.9373%

\* Actual tables extend further than sample ages shown.  
Using Sample ages as of 2024.



## Proposed Disability Rates

Sample Ages	% of Active Members Becoming Disabled
	Proposed
20	0.10 %
25	0.10
30	0.10
35	0.23
40	0.49
45	0.88
50	1.40
55	2.09

	Duty Related	Non-Duty Related
Cause of Disability: Men	70%	30%
Women	70%	30%

## Proposed Rates of Salary Increase

Service at Beginning of Year	Proposed Salary Increase Assumptions For an Individual Member		
	Merit & Seniority	Base (Economic)	Increase Next Year
1	17.00%	3.15%	20.15%
2	10.00	3.15	13.15
3	6.00	3.15	9.15
4	6.00	3.15	9.15
5	5.00	3.15	8.15
6 and over	1.50	3.15	4.65