# Central County Transportation Authority Pension Plan

## Review of System Experience

## January 1, 2019 through December 31, 2023

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January 27, 2025

Board of Trustees
Central County Transportation Authority Pension Plan
Kalamazoo, Michigan

Dear Trustees:

Presented in this report are the results of a review of Pension Plan experience. The investigation was conducted for the purpose of updating the actuarial assumptions used in valuing the Central County Transportation Authority (CCTA) Pension Plan actuarial liabilities, assets, and actuarially determined employer contribution rates.

The investigation was based upon the data furnished for the annual actuarial valuations during the period ***January 1, 2019 through December 31, 2023.***

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 **Central County Transportation Authority Pension Plan**.

This report should not be relied on for any purpose other than that described above. It was prepared at the request of the CCTA and is intended for use by the CCTA and those designated or approved by the CCTA and the Board of Trustees. This report may be provided to parties other than the CCTA only in its entirety and only with the permission of the Trustees. 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 actuaries are independent of the plan sponsor.

James D. Anderson and Michael D. Kosciuk 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.

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We show the expected impact of the proposed changes on City contribution rates using the finalized December 31, 2023 valuation. This information is shown in Section D of this report.

Respectfully submitted,
Gabriel, Roeder, Smith & Company

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cc: Mark Buis, GRS

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# Table of Contents

# Executive Summary

In this report, we review the current actuarial assumptions and methods and compare them to the actual experience of the Pension Plan for the period from January 1, 2019 to December 31, 2023. Section D of this report shows the illustrative cost impact of the changes below on the Pension Plan. Section E shows complete versions of the proposed decrement assumptions. Section F contains a draft funding policy for consideration.

The table below lists each of the primary assumptions and methods that we analyzed, including our recommendations for each item, and the impact of any recommended changes on average liabilities and contribution rates.

| Assumption | Recommendation | Financial Impact |
|---|---|---|
| Retirement Rates | No Change | N/A |
| Turnover Rates | Increase Rates | Decrease |
| Disability Rates | No Change | N/A |
| Pre- and Post-Retirement Mortality Rates | Lower Rates | Increase |
| Pay Increases Due to Seniority | Various | Decrease |
| Price Inflation | No Change | N/A |
| Wage Inflation | No Change | N/A |
| Interest Rate | No Change | N/A |
| Amortization Method | Lengthen Period | Increase Contribution |
| **Total** | **Various** | **Increase** |

The overall impact on the Pension Plan contribution rate was an increase in Normal Cost of 1.77% of payroll, which is primarily attributable to updating the mortality assumption. Note that if the Plan were less than 100% funded, lengthening the amortization period would decrease the Employer contribution.

# Introduction

Each year, as of December 31st, the actuarial liabilities of the Central County Transportation Authority Pension Plan are valued. In order to perform the valuation, assumptions must be made regarding the future experience relating to the following risk areas:

- Rates of **termination** of active members;
- Rates of **disability** among active members;
- Rates of **retirement** among active members;
- Rates of **mortality** among active members, retirants, and beneficiaries;
- Long-term rates of **investment return** to be generated by the assets of the Plan; and
- Patterns of **salary increases** to active members.

Assumptions should be carefully chosen and continually monitored. Continued use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due or sharp increases in required contributions at some point in the future; and

- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate or an unnecessarily large burden on the current generation of members, employers, and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things also changes. In recognition of this, assumptions used to value the liabilities of the Pension Plan should be reviewed and adjusted periodically to recognize changes in experience trends, a changing economic environment (or changing perceptions of the economic environment), and to maintain consistency within the universe of public employee retirement systems.

A common practice among public employee retirement systems is that the actuary recommends a set of demographic assumptions and suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice from the various alternatives.

# SECTION A

## DEMOGRAPHIC ASSUMPTIONS

# Retirement

***Discussion:*** Rates of retirement are used to measure the probabilities of an eligible member retiring from CCTA employment during the next year. During the study period, actual rates of retirement have been close to expectations.

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

**Number of Retirements Among Eligible System Members**

| | Normal Retirement | | Early (Reduced) Retirement | |
|---|---|---|---|---|
| **Department** | **Actual** | **Expected** | **Actual** | **Expected** |
| ATU | 10 | 11.25 | 1 | 1.70 |
| Transit Exempt | 1 | 0.80 | 2 | 1.25 |
| **Total** | **11** | **12.05** | **3** | **2.95** |

***Proposal:*** We recommend no change in the retirement rates. This will result in unchanged computed liabilities and contributions.

# Current and Proposed Rates of Retirement

| Retirement Ages | Exempt | ATU |
|---|---|---|
| 55 | 10% | 10% |
| 56 | 10 | 10 |
| 57 | 25 | 25 |
| 58 | 25 | 25 |
| 59 | 20 | 20 |
| 60 | 25 | 25 |
| 61 | 30 | 30 |
| 62 | 30 | 30 |
| 63 | 15 | 15 |
| 64 | 15 | 15 |
| 65 | 100 | 100 |

# Turnover

***Discussion:*** During the study period, actual rates of vested termination were in line with expectations. Conversely, actual non-vested termination experience was higher than expected for all groups.

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

**Number of Employee Terminations from CCTA Employment**

| | Vested Terminations | | Non-Vested Terminations | |
|---|---|---|---|---|
| **Department** | **Actual** | **Expected** | **Actual** | **Expected** |
| ATU | 2 | 3.07 | 41 | 24.08 |
| Transit Exempt | 2 | 1.02 | 16 | 8.05 |
| **Total** | **4** | **4.09** | **57** | **32.13** |

***Proposal:*** We recommend an increase to the turnover rate for below five years of service. The tables on the following page show the current and proposed rates of termination.

## Current Turnover Rates

| Sample Ages | Years of Service | % of Active Members Separating within Next Year |
|---|---|---|
| | 0 | 15.0% |
| | 1 | 14.0 |
| | 2 | 9.0 |
| | 3 | 8.0 |
| | 4 | 7.0 |
| 25 | 5 or Over | 7.4 |
| 30 | | 5.8 |
| 35 | | 5.0 |
| 40 | | 4.0 |
| 45 | | 3.3 |
| 50 | | 2.5 |
| 55 | | 2.0 |
| 60 | | 2.0 |

## Proposed Turnover Rates

| Sample Ages | Years of Service | % of Active Members Separating within Next Year |
|---|---|---|
| | 0 | 18.0% |
| | 1 | 16.0 |
| | 2 | 12.0 |
| | 3 | 11.0 |
| | 4 | 10.0 |
| 25 | 5 or Over | 7.4 |
| 30 | | 5.8 |
| 35 | | 5.0 |
| 40 | | 4.0 |
| 45 | | 3.3 |
| 50 | | 2.5 |
| 55 | | 2.0 |
| 60 | | 2.0 |

# Disability

***Discussion:*** The actual number of disability retirements was close to those expected during the study period.

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

**Number of Employees Becoming Disabled While Actively Employed**

| Department | Disabilities | |
|---|---|---|
| | Actual | Expected |
| ATU | 1 | 1.75 |
| Transit Exempt | 0 | 0.09 |
| **Total** | **1** | **1.84** |

***Proposal:*** We recommend no change in the disability rates. This will result in unchanged computed liabilities and contributions.

# Current and Proposed Rates of Disability

| Sample Ages | % of Active Members Becoming Disabled within Next Year | |
|---|---|---|
| | ATU | Exempt |
| 20 | 0.23% | 0.04% |
| 25 | 0.27 | 0.04 |
| 30 | 0.32 | 0.04 |
| 35 | 0.40 | 0.04 |
| 40 | 0.55 | 0.10 |
| 45 | 0.76 | 0.13 |
| 50 | 1.45 | 0.25 |
| 55 | 2.84 | 0.45 |
| 60 | 0.00 | 0.71 |

# 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. 35 Disclosure Section 4.1.1 states, "The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand 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 valuation include a provision for future mortality improvement.

***Mortality Tables and Projection Scale***

In 2019, the Society of Actuaries (SOA) published the "Pub-2010 Public Retirement Plans Mortality Tables Report," a mortality study specific to public sector retirement systems. This very comprehensive study includes numerous mortality tables created for each classification of employee (General members, Public Safety, Teachers, Survivors, Juvenile, headcount-weighted, benefit-weighted, above median, below median). In addition, the SOA released updated mortality projection scales annually through the release of the MP-2021 Projection Scale – the latest published table – which account for future improvements in mortality that are expected to occur.

***Discussion***: The mortality assumption used in the annual valuations of the Pension Plan measures the probabilities of members dying before retirement and the probability of each benefit payment being made after retirement. While there were more deaths than expected (9 actual vs. 8.0 expected) among retirees over the experience period, the number of actual deaths is very likely inflated by the COVID pandemic and, importantly, the membership in this group is not sufficiently large to set mortality expectations for the future. The mortality tables currently used in the annual valuation of the Pension Plan are the Pub-2010 amount-weighted General tables with mortality improvements projected to 2025 using the MP-2019 Projection Scale.

We recommend continuing the use of the Pub-2010 amount-weighted General tables, but updating to the use of the fully generational mortality projection using the MP-2021 Projection Scale.

# Mortality (Continued)

***Proposal***: We recommend the following mortality tables for use in future valuations of the Pension Plan. This change will increase measured liabilities:

**All Groups**

- **Healthy Pre-Retirement:** The Pub-2010 Amount-Weighted, General, Employee, Male and Female tables, projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010.
- **Healthy Post-Retirement:** The Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010.
- **Disability Retirement:** The Pub-2010 Amount-Weighted, General, Disabled Retiree, Male and Female tables, projected with mortality improvements using the fully generational MP-2021 projection scale from a base year of 2010.

# Mortality (Concluded)

## Summary of Life Expectancies under the Current Tables

### All Groups

| Sample Attained Ages | Healthy 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 |
| 55 | 32.90 | 34.92 | 29.19 | 31.95 | 21.41 | 23.96 |
| 60 | 28.28 | 30.17 | 24.84 | 27.44 | 18.65 | 21.11 |
| 65 | 23.77 | 25.48 | 20.67 | 23.03 | 16.03 | 18.18 |
| 70 | 19.34 | 20.87 | 16.67 | 18.76 | 13.44 | 15.08 |
| 75 | 14.99 | 16.36 | 12.94 | 14.75 | 10.86 | 12.04 |
| 80 | 10.73 | 11.98 | 9.63 | 11.12 | 8.43 | 9.29 |

## Summary of Life Expectancies under the Proposed Tables

### All Groups

| Sample Attained Ages | Healthy 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 |
| 55 | 34.13 | 36.20 | 30.63 | 33.48 | 22.79 | 25.64 |
| 60 | 29.23 | 31.17 | 25.91 | 28.61 | 19.62 | 22.31 |
| 65 | 24.47 | 26.24 | 21.42 | 23.88 | 16.69 | 19.04 |
| 70 | 19.82 | 21.41 | 17.16 | 19.34 | 13.88 | 15.67 |
| 75 | 15.28 | 16.69 | 13.23 | 15.09 | 11.12 | 12.37 |
| 80 | 10.86 | 12.14 | 9.75 | 11.27 | 8.53 | 9.43 |

* *Based on retirements in 2023. Retirements in future years will reflect improvements in life expectancy.*

# Merit and Longevity Portion of Pay Increases

***Discussion:*** Pay increases granted to individual active members consist in principle of two parts. The first part is an across-the-board economic type of increase related to inflation or cost-of-living changes. The second part, merit and/or longevity increases, relates to the performance of individual active members during a given year. Merit and longevity may include promotions and pay increases related to years of experience. Overall, merit and longevity pay increases differed from expectations for both ATU and Exempt members.

***Summary of Experience:*** The experience for the ATU and Exempt groups during the study period is summarized below:

| | | Merit/Seniority % Increase | | | | Merit/Seniority % Increase | | |
|---|---|---|---|---|---|---|---|---|
| | | | Sample Values | | | | Sample Values | |
| | | | ATU | | | | Exempt | |
| Svc | Number | Actual | Current | Proposed | Number | Actual | Current | Proposed |
| 1 | 48 | 32.6% | 7.0% | 6.0% | 13 | 26.6% | 6.0% | 8.0% |
| 2 | 36 | 3.4% | 7.0% | 5.0% | 16 | 2.4% | 6.0% | 6.0% |
| 3 | 34 | 4.0% | 6.0% | 4.0% | 14 | 4.7% | 0.5% | 3.0% |
| 4 | 25 | 2.9% | 5.0% | 4.0% | 14 | 2.2% | 0.5% | 2.0% |
| 5 | 15 | 4.0% | 4.0% | 4.0% | 10 | 5.8% | 0.5% | 2.0% |
| 6 | 11 | 5.5% | 0.0% | 2.0% | 9 | 1.8% | 0.3% | 1.0% |
| 7 | 15 | (6.1)% | 0.0% | 1.0% | 5 | 3.5% | 0.3% | 1.0% |
| 8 | 11 | 0.4% | 0.0% | 0.5% | 3 | 5.5% | 0.3% | 0.5% |
| 9 | 15 | 7.0% | 0.0% | 0.5% | 3 | (1.9)% | 0.3% | 0.5% |
| 10 | 13 | 2.6% | 0.0% | 0.5% | 3 | 2.5% | 0.3% | 0.5% |
| 11 | 12 | (2.8)% | 0.0% | 0.5% | 2 | 1.9% | 0.3% | 0.5% |
| 12 | 10 | 3.8% | 0.0% | 0.5% | 0 | 0.0% | 0.3% | 0.5% |
| 13 | 7 | (3.8)% | 0.0% | 0.5% | 1 | 3.6% | 0.3% | 0.5% |
| 14 | 4 | 9.7% | 0.0% | 0.5% | 1 | 0.9% | 0.3% | 0.5% |
| 15+ | 67 | 2.4% | 0.0% | 0.0% | 32 | 2.4% | 0.3% | 0.0% |

***Proposal:*** We recommend changes to the ATU and Exempt merit and longevity rates. The current and proposed rates are shown on the following page. This change will put slight downward pressure on liabilities for the affected groups.

# Current Rates

| Service | Exempt | ATU |
|---|---|---|
| 1 | 6.0% | 7.0% |
| 2 | 6.0 | 7.0 |
| 3 | 0.5 | 6.0 |
| 4 | 0.5 | 5.0 |
| 5 | 0.5 | 4.0 |
| 6 | 0.3 | 0.0 |
| 7 | 0.3 | 0.0 |
| 8 | 0.3 | 0.0 |
| 9 | 0.3 | 0.0 |
| 10 | 0.3 | 0.0 |
| 11 | 0.3 | 0.0 |
| 12 | 0.3 | 0.0 |
| 13 | 0.3 | 0.0 |
| 14 | 0.3 | 0.0 |
| thereafter | 0.3 | 0.0 |

# Proposed Rates

| Service | Exempt | ATU |
|---|---|---|
| 1 | 8.0% | 6.0% |
| 2 | 6.0 | 5.0 |
| 3 | 3.0 | 4.0 |
| 4 | 2.0 | 4.0 |
| 5 | 2.0 | 4.0 |
| 6 | 1.0 | 2.0 |
| 7 | 1.0 | 1.0 |
| 8 | 0.5 | 0.5 |
| 9 | 0.5 | 0.5 |
| 10 | 0.5 | 0.5 |
| 11 | 0.5 | 0.5 |
| 12 | 0.5 | 0.5 |
| 13 | 0.5 | 0.5 |
| 14 | 0.5 | 0.5 |
| thereafter | 0.0 | 0.0 |

# SECTION B

## ECONOMIC ASSUMPTIONS

# Summary of Findings – Economic Assumptions

Economic assumptions include **long-term rates of investment return** (net of administrative and investment expenses), **wage inflation** (the across-the-board portion of salary increases), and pay increases due to **merit and seniority**. Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are affected more by external forces; namely inflation (both wage and price), general productivity changes, and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both long-term rates of investment return and wage inflation are increased by some provision for long-term inflation.

If inflation and/or productivity increases are lower than expected, it will probably result in both actual rates of salary increases and investment return below the assumed rates. Salaries increasing at rates less than expected produce lower liabilities. However, actual investment return below the assumed rate of investment return (whether due to manager performance, change in the mix of assets, or general market conditions) results in lower than expected asset amounts.

Sources considered in the analysis of the economic assumptions included:

- Actual Plan experience over the last 5 years (i.e., merit and seniority pay increases);
- **Future expectations of various investment firms**;
- 2024 Social Security Trustees Report; and
- Historical observations of inflation statistics (both price and wage) and investment returns.

Current economic assumptions for the Plan are as follows:

| | |
|---|---|
| Investment Return | 7.00% |
| Wage Inflation | 3.25% |
| Price Inflation | 2.25% |
| Spread Between Investment Return and Wage Inflation | 3.75% |
| Spread Between Investment Return and Price Inflation | 4.75% |

The remainder of this section addresses the economic assumptions other than pay increases due to merit and seniority. Pay increases due to merit and seniority are addressed on pages 12 and 13.

# Economic Assumptions – ASOP No. 27

Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. 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.

ASOP No. 27, which is applicable to valuation dates on or after September 30, 2014, 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 the actuary's professional judgment;
(c) It takes into account historical and current economic data that is relevant as of the valuation date;
(d) It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data, or a combination thereof; and
(e) It has 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 and disclosed under Section 3.5.1, or when alternative assumptions are used for the assessment of risk.

***Public Act 202.*** Under Public Act 202 of the State of Michigan, Michigan municipalities will be required to report liabilities under new uniform assumption guidelines. While the current guidelines are currently only for reporting purposes (and not funding), city governments will be encouraged to use these new assumptions for funding. The recommendations for fiscal years ending in 2024 include the following:

- Investment return no higher than 6.90%;
- Assumed wage inflation no lower than 3.25%*;
- Mortality assumption that uses a version of the Pub-2010 table in conjunction with the MP-2021 Projection Scale*; and
- Amortization period no longer than 15 years for Pension Plans and 25 years for Retiree Health Plans.

** Or based on an actuarial experience study conducted within the last five years.*

# Summary of Findings – Economic Assumptions (Continued)

***Price Inflation.*** While no specific price inflation assumption is necessary in order to perform the actuarial valuation, price inflation is a key component of the underlying wage inflation and interest rate assumptions. The chart on the following page shows forward-looking inflation expectations from various published sources. One page further, we see that over the past 50 years, price inflation has averaged 3.9%, but due to recent inflationary pressures, 3- and 5-year averages exceed 4%. During the past decade, price inflation averaged 2.8%. Most investment firms expect inflation to be between 2.0% and 2.5%, and the 2024 annual report of the Social Security Trustees uses 2.4% as the intermediate assumption. **Based upon the reviewed data, we suggest the Board maintain the current price inflation assumption of 2.25%.**

| Forward-Looking Price Inflation Forecasts[a] | |
|---|---|
| **Congressional Budget Office**[b] | |
| 5-Year Annual Average | 2.44% |
| 10-Year Annual Average | 2.32% |
| **Federal Reserve Bank of Philadelphia**[c] | |
| 5-Year Annual Average | 2.40% |
| 10-Year Annual Average | 2.30% |
| **Federal Reserve Bank of Cleveland**[d] | |
| 10-Year Expectation | 2.12% |
| 20-Year Expectation | 2.23% |
| 30-Year Expectation | 2.32% |
| **Federal Reserve Bank of St. Louis**[e] | |
| 10-Year Breakeven Inflation | 2.11% |
| 20-Year Breakeven Inflation | 2.30% |
| 30-Year Breakeven Inflation | 2.11% |
| **U.S. Department of the Treasury**[f] | |
| 10-Year Breakeven Inflation | 2.03% |
| 20-Year Breakeven Inflation | 2.32% |
| 30-Year Breakeven Inflation | 2.21% |
| 50-Year Breakeven Inflation | 2.32% |
| 100-Year Breakeven Inflation | 2.40% |
| **Social Security Trustees**[g] | |
| Ultimate Intermediate Assumption | 2.40% |

[a] **End of the Third Quarter, 2024**. Version 2024-10-14 by Gabriel, Roeder, Smith & Company

[b] *An Update to the Budget and Economic Outlook: 2024 to 2034* , Release Date: June 2024, Consumer Price Index (CPI-U), Percentage Change from Year to Year, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

[c] *Third Quarter 2024 Survey of Professional Forecasters* , Release Date: Augustr 9, 2024, Headline CPI, Annualized Percentage Points, 5-Year Annual Average (2024 - 2028), 10-Year Annual Average (2024 - 2033).

[d] Inflation Expectations, Model output date: September 1, 2024.

[e] 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: September, 2024.

[f] The Treasury Breakeven Inflation (TBI) Curve, Monthly Average Rates, September, 2024.

[g] *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).

# Summary of Findings – Economic Assumptions (Continued)

***Wage Inflation.*** 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 long-term rate of increase in National Average Earnings over the last 50 years is higher than the current assumption, and shorter-term averages reflect a temporary spike in price inflation. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. Given our recommendation for a 2.25% price inflation assumption, we believe a reasonable range for this assumption is from 3.0% to 3.5% a year. **We recommend no change to the current wage inflation assumption of 3.25%.**

| Year | Annual Increase in Prices (CPI-U) | Annual Increase in Wages (NAE) | Difference |
|---|---|---|---|
| 3-Year Avg. | 5.6 % | 5.9 % | 0.3 % |
| 5-Year Avg. | 4.1 % | 4.9 % | 0.8 % |
| 10-Year Avg. | 2.8 % | 4.0 % | 1.2 % |
| 20-Year Avg. | 2.6 % | 3.4 % | 0.8 % |
| 30-Year Avg. | 2.5 % | 3.6 % | 1.1 % |
| 50-Year Avg. | 3.9 % | 4.4 % | 0.5 % |

# Summary of Findings – Economic Assumptions (Continued)

***Investment Return*.** The investment return assumption is the actuarial assumption that has the largest impact on actuarial valuation results. As more of the actuarial accrued liabilities are related to non-active members, the nominal (as opposed to real) investment return assumption becomes a more prominent factor. Since one of CCTA's fundamental financial objectives is the receipt of level contributions over time, the discount rate assumption is set equal to the investment return assumption (with perhaps an adjustment for conservatism).

**Analysis**

The assumed rate of investment return generally depends on factors such as the plan's investment policy and capital market expectations.

Our analysis is based on the GRS Capital Market Assumption Modeler (CMAM). Because GRS is a benefits consulting firm and does not develop or maintain capital market expectations, we request and monitor forward-looking expectations developed by several major investment consulting firms. We update our CMAM on an annual basis. The capital market assumptions in the 2024 CMAM are from the following investment consultants (in alphabetical order): Aon Hewitt, Blackrock, BNY Mellon, Callan, Cambridge, JPMorgan, Meketa, Mercer, NEPC, RVK, Verus, and Wilshire. We believe the benefit of performing this analysis using multiple investment consulting firms is to recognize the uncertain nature of the items affecting the selection of the investment return assumption.

While there may be differences in asset classes, investment horizons, inflation assumptions, treatment of investment expenses, excess manager performance (i.e., alpha), etc., we have attempted to align the various assumption sets from the different investment consultants to be as consistent as possible.
In the following charts, all returns are net of investment expenses and have no assumption for excess manager performance (alpha) in excess of active management fees.

For purposes of this analysis, we have reviewed the following investment allocation as summarized below:

| Asset Class | Target Allocation |
|---|---|
| US Small Cap (Manager 1) | 5.00% |
| US Small Cap (Manager 2) | 10.00% |
| Int'l Developed Equity | 10.00% |
| US Large Cap (Manager 1) | 30.00% |
| US Large Cap (Manager 2) | 5.00% |
| Emerging Markets | 10.00% |
| Domestic Fixed Income | 25.00% |
| Real Estate (Manager 1) | 2.50% |
| Real Estate (Manager 2) | 2.50% |
| Total | 100.00% |

# Summary of Findings – Economic Assumptions (Continued)

Based upon the approximate target asset allocation, future expectations of various investment consultants were analyzed. The next few exhibits show the results of this analysis. Final expected nominal investment return results are based upon a 2.25% price inflation assumption. We used the actuarial assumption for price inflation rather than the consultant assumption, in order to be consistent with the calculation of liabilities. Investment results presented are net of expenses.

The arithmetic expected return developed from this asset allocation is shown in the table below. Note that the arithmetic return is in general higher than the median return due to the compounding effect of random returns. In general, the difference between the arithmetic and median return will be larger for larger standard deviation of returns. We have shown the standard deviation of returns as the investment risk in Column 9.

ASOP No. 27 acknowledges that for any given economic assumption, there is a reasonable range of opinions on that assumption. This is evident from the summaries we show from our CMAM.

## Investment Return Expectations of Various Investment Consultants

| 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) | Investment Expenses | Expected Nominal Return Net of Expenses (6)-(7) | | Standard Deviation of Expected Return (1-Year) |
|---|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | | (9) |
| 1 | 6.10% | 2.60% | 3.50% | 2.25% | 5.75% | 0.00% | 5.75% | | 13.11% |
| 2 | 6.48% | 2.25% | 4.23% | 2.25% | 6.48% | 0.00% | 6.48% | | 13.14% |
| 3 | 6.97% | 2.70% | 4.27% | 2.25% | 6.52% | 0.00% | 6.52% | | 13.25% |
| 4 | 6.99% | 2.40% | 4.59% | 2.25% | 6.84% | 0.00% | 6.84% | | 11.91% |
| 5 | 7.11% | 2.21% | 4.90% | 2.25% | 7.15% | 0.00% | 7.15% | | 14.02% |
| 6 | 7.56% | 2.50% | 5.06% | 2.25% | 7.31% | 0.00% | 7.31% | | 13.21% |
| 7 | 7.37% | 2.21% | 5.15% | 2.25% | 7.40% | 0.00% | 7.40% | | 13.90% |
| 8 | 7.46% | 2.44% | 5.02% | 2.25% | 7.27% | 0.00% | 7.27% | | 12.55% |
| 9 | 7.55% | 2.20% | 5.35% | 2.25% | 7.60% | 0.00% | 7.60% | | 12.75% |
| 10 | 8.20% | 2.51% | 5.68% | 2.25% | 7.93% | 0.00% | 7.93% | | 13.86% |
| 11 | 7.83% | 2.13% | 5.70% | 2.25% | 7.95% | 0.00% | 7.95% | | 12.94% |
| 12 | 8.25% | 2.51% | 5.74% | 2.25% | 7.99% | 0.00% | 7.99% | | 13.03% |
| **Average** | **7.32%** | **2.39%** | **4.93%** | **2.25%** | **7.18%** | **0.00%** | **7.18%** | | **13.14%** |
| | | | | | **Average from last 3 CMAMs** | | **6.81%** | | **13.15%** |

The average expected nominal return from Column 8 is 7.18%. This is the average arithmetic rate of return. Note that the arithmetic rate of return represents the average future expected return, which is higher than the median future expected. Setting the valuation assumption at the arithmetic expected return means that over time the average accumulated assets are expected to grow at this rate. However, in any given year it is less than 50% likely that this return will be achieved. From the perspective of the Actuarial Standards of Practice, this may be considered a reasonable assumption. Adjusting to the median return (as noted on the following page) is also a reasonable assumption.

# Summary of Findings – Economic Assumptions (Continued)

Next, we compare the probabilities of achieving returns over a 20-year horizon. We compute the 40th, 50th, and 60th percentiles of returns as well as the probability of achieving the current assumption of 7.25% over a 20-year horizon. Note that the investment horizon for most of the capital market assumption sets is between 5 and 10 years. For purposes of this analysis, no adjustment has been made to return expectations for 20 years. This implies that the second 10 years are expected to have the same distribution of returns as the first 10 years. A different assumption would result in a different distribution of returns.

| Capital Market Assumption Set (CMA) | Distribution of 10-Year Average Geometric Net Nominal Return | | | Probability of Exceeding |
|---|---|---|---|---|
| | 40th | 50th | 60th | 7.00% |
| (1) | (2) | (3) | (4) | (5) |
| 1 | 3.92% | 4.95% | 5.99% | 31.01% |
| 2 | 4.64% | 5.68% | 6.72% | 37.46% |
| 3 | 4.66% | 5.70% | 6.76% | 37.77% |
| 4 | 5.24% | 6.19% | 7.14% | 41.40% |
| 5 | 5.14% | 6.24% | 7.35% | 43.13% |
| 6 | 5.47% | 6.51% | 7.56% | 45.29% |
| 7 | 5.42% | 6.52% | 7.62% | 45.58% |
| 8 | 5.56% | 6.55% | 7.55% | 45.42% |
| 9 | 5.84% | 6.85% | 7.87% | 48.50% |
| 10 | 5.96% | 7.06% | 8.16% | 50.51% |
| 11 | 6.16% | 7.18% | 8.21% | 51.79% |
| 12 | 6.19% | 7.21% | 8.25% | 52.10% |
| **Average** | **5.35%** | **6.39%** | **7.43%** | **44.16%** |
| **Average from last 3 CMAMs** | | **6.01%** | | |

## Investment Return Expectations of Various Investment Consultants

The 50th percentile return is also related to the geometric average return. The geometric average of a sequence of returns over a number of years is the compound average of those returns over the number of years compounded. As the number of years in the geometric average increases and if the distributions of returns each year are independent and identically distributed, then the geometric average will converge to the median return. The median return is a reasonable rate of return for purposes of the valuation. The average of 50th percentile returns is 6.39% per year.

# Summary of Findings – Economic Assumptions (Concluded)

The current version of ASOP No. 27 suggests that either the expected geometric return (i.e., 50$^{th}$ percentile) or the expected arithmetic return is suitable for use as a reasonable investment return assumption. Based on the average of each of the investment consultants' expectations, this would result in a range of 6.39% to 7.18%. Note that these results are based on a 10-year horizon, but some of the investment consulting firms also provided results over a longer horizon, varying from 20 to 30 years, showing expected geometric returns of 7.50%-8.73%.

**Summary Recommendation:**

Forward-looking investment return expectations have rebounded since the prior experience study (and since 2022), stopping movement among nearly all Public Sector Retirement Systems to reduce this assumption. It is important to remember that this assumption should not drive the asset allocation or investment goals of the investment managers. Rather, it is intended to reflect the expected return of the portfolio based upon the given asset allocation. **Based upon this data, in our opinion, the assumed rate of return of 7.00% remains a reasonable assumption.**

# SECTION C

## MISCELLANEOUS ASSUMPTIONS AND METHODS, INCLUDING OPEB-SPECIFIC ASSUMPTIONS

# 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 7.25% interest rate assumption and an 80%/20% unisex blend of the Pub-2010 Amount-Weighted, General, 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 one 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 | 0.95852 | 0.95964 | 0.92035 | 0.92241 |
| 55 | 50 | 0.94728 | 0.94876 | 0.89985 | 0.90251 |
| 60 | 55 | 0.93316 | 0.93487 | 0.87469 | 0.87770 |
| 65 | 60 | 0.91537 | 0.91727 | 0.84395 | 0.84718 |

- **Current** – 7.25% interest rate assumption and an 80%/20% unisex blend of the Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2019.

- **Proposed** – 7.25% interest rate assumption and an 80%/20% unisex blend of the Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2030 using scale MP-2021.

# Amortization Policy

The current Pension Plan actuarial valuation report computes contribution amounts using a 10-year open amortization period. This method will result in contribution volatility when the System emerges from an overfunded state. We recommend that the amortization policy be lengthened to a 20-year open period for overfunded liabilities, and a 20-year closed period for unfunded liabilities (except those additional liabilities arising from any type of Early Retirement Incentive, which will be amortized over a shorter period of time). This method will result in a more level contribution as the Plan emerges from its overfunded status.

# Asset Valuation Method

The Central County Transportation Authority Pension Plan 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.

# Retirement System Loads

***Administrative Expenses.*** Over the study period, administrative expenses expressed as a percent of payroll averaged 0.94% of payroll. However, expenses have been trending down in recent years, from a high of 1.59% in 2020 to a low of 0.60% in 2023. As such, we propose no change to the current administrative expense assumption of 0.75%. This will continue being added to the Normal Cost.

# Marriage Assumptions

Joint and Survivor annuity benefit amounts are determined based on the member's and survivor's ages. Currently, the valuation assumes that male members have a beneficiary three years younger and female members have a beneficiary three years older. This assumption is used to predict the length of expected payments payable to a future survivor. Based on Plan experience, we recommend no change to the assumed age difference between members and their spouses.

# Summary of Current and Proposed Assumptions

| | Economic Assumptions | | | Non-Economic Assumptions | |
|---|---|---|---|---|---|
| | Net Rate of Investment | Rate of Inflation | | Amortization Period | |
| Assumption Set | Return | Wage | Spread | (Years) | Demographic |
| A. Baseline | 7.00% | 3.25% | 3.75% | 10 Years, Open | Current |
| B. Proposed Demographic | 7.00 | 3.25 | 3.75 | 10 Years, Open | Proposed |
| C. Alternate I | 7.00 | 3.25 | 3.75 | 20 Years, Open | Proposed |

# SECTION D

## CONTRIBUTION RATES BASED ON PROPOSED CHANGES

# Effects of Recommended Changes in Actuarial Assumptions on Retirement System Contribution and Funded Percent Results as of December 31, 2023[#]

| | A<br>Baseline | B<br>New Demographic Assumptions | C<br>Alternate Amortization Period |
|---|---|---|---|
| Amortization Period | **10 years** | **10 years** | **20 years** |
| Actuarial Value of Assets | $ 37,051,581 | $ 37,051,581 | $ 37,051,581 |
| Actuarial Accrued Liability | 33,289,224 | 34,125,127 | 34,125,127 |
| Unfunded Accrued Liability | $ (3,762,357) | $ (2,926,454) | $ (2,926,454) |
| Funded Percent | **111.3 %** | **108.6 %** | **108.6 %** |
| **Contributions as a Percent of Payroll** | | | |
| Total Normal Cost | 13.17 % | 13.44 % | 13.44 % |
| Administrative Expense Allowance | 0.75 % | 0.75 % | 0.75 % |
| Less: Member Contributions* | 1.46 % | 1.47 % | 1.47 % |
| Employer Normal Cost | 12.46 % | 12.72 % | 12.72 % |
| Amortization Amount | (6.27)% | (4.76)% | (2.80)% |
| Employer Contribution Requirement | **6.19 %** | **7.96 %** | **9.92 %** |
| **Contribution Dollars** | | | |
| Total Normal Cost | $ 930,200 | $ 949,270 | $ 949,270 |
| Administrative Expense Allowance | 52,973 | 52,973 | 52,973 |
| Less: Member Contributions* | 103,120 | 103,826 | 103,826 |
| Employer Normal Cost | 880,053 | 898,417 | 898,417 |
| Amortization Amount | (442,852) | (336,201) | (197,765) |
| Employer Contribution Requirement^ | **$ 437,201** | **$ 562,216** | **$ 700,652** |

[#] ***Illustrative impact***. *New assumptions will first be effective for the next actuarial valuation*.

* *Weighted average of various contribution rates.*

^ *Based on valuation payroll of $6,677,923.*

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

***Recommendation***: *The actuary also recommends that consideration also be given to establishing a minimum contribution (such as a portion of the normal cost).*

# SECTION E

## COMPLETE LISTING OF RECOMMENDED ASSUMPTIONS

# Proposed Turnover Rates

| Sample Ages | Years of Service | % of Active Members Separating within Next Year |
|---|---|---|
| | 0 | 18.0% |
| | 1 | 16.0 |
| | 2 | 12.0 |
| | 3 | 11.0 |
| | 4 | 10.0 |
| 20 | 5 or Over | 7.7 |
| 21 | | 7.7 |
| 22 | | 7.7 |
| 23 | | 7.7 |
| 24 | | 7.5 |
| 25 | | 7.4 |
| 26 | | 7.2 |
| 27 | | 7.0 |
| 28 | | 6.7 |
| 29 | | 6.2 |
| 30 | | 5.8 |
| 31 | | 5.6 |
| 32 | | 5.5 |
| 33 | | 5.4 |
| 34 | | 5.2 |
| 35 | | 5.0 |
| 36 | | 4.8 |
| 37 | | 4.6 |
| 38 | | 4.3 |
| 39 | | 4.2 |
| 40 | | 4.0 |
| 41 | | 3.9 |
| 42 | | 3.8 |
| 43 | | 3.7 |
| 44 | | 3.6 |
| 45 | | 3.3 |
| 46 | | 3.0 |
| 47 | | 2.8 |
| 48 | | 2.7 |
| 49 | | 2.6 |
| 50 | | 2.5 |
| 51 | | 2.3 |
| 52 | | 2.0 |
| 53 | | 2.0 |
| 54 | | 2.0 |
| 55 | | 2.0 |
| 56 | | 2.0 |
| 57 | | 2.0 |
| 58 | | 2.0 |
| 59 | | 2.0 |
| 60 | | 2.0 |

# Proposed Mortality Rates

**Pre-Retirement Mortality Rates[1]**

| Age | % Dying Next Year[2] Non-Public Safety Male | Female |
|---|---|---|
| 20 | 0.0370% | 0.0130% |
| 21 | 0.0360% | 0.0120% |
| 22 | 0.0330% | 0.0110% |
| 23 | 0.0310% | 0.0100% |
| 24 | 0.0290% | 0.0090% |
| 25 | 0.0280% | 0.0090% |
| 26 | 0.0300% | 0.0100% |
| 27 | 0.0310% | 0.0110% |
| 28 | 0.0330% | 0.0120% |
| 29 | 0.0340% | 0.0130% |
| 30 | 0.0360% | 0.0150% |
| 31 | 0.0380% | 0.0160% |
| 32 | 0.0400% | 0.0180% |
| 33 | 0.0420% | 0.0190% |
| 34 | 0.0440% | 0.0210% |
| 35 | 0.0470% | 0.0230% |
| 36 | 0.0500% | 0.0250% |
| 37 | 0.0530% | 0.0280% |
| 38 | 0.0570% | 0.0300% |
| 39 | 0.0610% | 0.0330% |
| 40 | 0.0660% | 0.0360% |
| 41 | 0.0710% | 0.0400% |
| 42 | 0.0770% | 0.0430% |
| 43 | 0.0830% | 0.0470% |
| 44 | 0.0900% | 0.0510% |
| 45 | 0.0980% | 0.0560% |
| 46 | 0.1070% | 0.0610% |
| 47 | 0.1160% | 0.0660% |
| 48 | 0.1270% | 0.0710% |
| 49 | 0.1380% | 0.0770% |
| 50 | 0.1490% | 0.0830% |
| 51 | 0.1620% | 0.0900% |
| 52 | 0.1750% | 0.0970% |
| 53 | 0.1890% | 0.1050% |
| 54 | 0.2030% | 0.1130% |
| 55 | 0.2190% | 0.1230% |
| 56 | 0.2360% | 0.1330% |
| 57 | 0.2550% | 0.1440% |
| 58 | 0.2750% | 0.1560% |
| 59 | 0.2960% | 0.1700% |
| 60 | 0.3190% | 0.1860% |
| 61 | 0.3440% | 0.2030% |
| 62 | 0.3710% | 0.2220% |
| 63 | 0.4010% | 0.2440% |
| 64 | 0.4330% | 0.2690% |
| 65 | 0.4680% | 0.2960% |

**Healthy Post-Retirement Mortality Rates[1]**

| Age | % Dying Next Year[2] Non-Public Safety Male | Female |
|---|---|---|
| 50 | 0.2980% | 0.2220% |
| 51 | 0.3210% | 0.2330% |
| 52 | 0.3460% | 0.2460% |
| 53 | 0.3720% | 0.2590% |
| 54 | 0.4010% | 0.2720% |
| 55 | 0.4310% | 0.2860% |
| 56 | 0.4630% | 0.3010% |
| 57 | 0.4970% | 0.3180% |
| 58 | 0.5330% | 0.3360% |
| 59 | 0.5730% | 0.3580% |
| 60 | 0.6150% | 0.3840% |
| 61 | 0.6610% | 0.4160% |
| 62 | 0.7130% | 0.4540% |
| 63 | 0.7700% | 0.5000% |
| 64 | 0.8360% | 0.5520% |
| 65 | 0.9130% | 0.6130% |
| 66 | 1.0030% | 0.6820% |
| 67 | 1.1080% | 0.7600% |
| 68 | 1.2290% | 0.8490% |
| 69 | 1.3680% | 0.9500% |
| 70 | 1.5260% | 1.0630% |
| 71 | 1.7030% | 1.1910% |
| 72 | 1.9040% | 1.3350% |
| 73 | 2.1290% | 1.4970% |
| 74 | 2.3840% | 1.6790% |
| 75 | 2.6710% | 1.8830% |
| 76 | 2.9950% | 2.1110% |
| 77 | 3.3610% | 2.3680% |
| 78 | 3.7750% | 2.6580% |
| 79 | 4.2430% | 2.9860% |
| 80 | 4.7740% | 3.3600% |
| 81 | 5.3740% | 3.7870% |
| 82 | 6.0520% | 4.2760% |
| 83 | 6.8110% | 4.8340% |
| 84 | 7.6560% | 5.4740% |
| 85 | 8.5910% | 6.2050% |
| 86 | 9.6150% | 7.0410% |
| 87 | 10.7330% | 7.9870% |
| 88 | 11.9470% | 9.0460% |
| 89 | 13.2600% | 10.2160% |
| 90 | 14.6720% | 11.4870% |
| 91 | 16.1700% | 12.8330% |
| 92 | 17.7450% | 14.2390% |
| 93 | 19.3920% | 15.7020% |
| 94 | 21.1070% | 17.2280% |
| 95 | 22.8880% | 18.8250% |
| 96 | 24.7310% | 20.5050% |
| 97 | 26.6340% | 22.2780% |
| 98 | 28.5890% | 24.1470% |
| 99 | 30.5860% | 26.1130% |
| 100 | 32.6090% | 28.1600% |
| 101 | 34.6360% | 30.2650% |
| 102 | 36.6400% | 32.3820% |
| 103 | 38.6040% | 34.4940% |
| 104 | 40.5120% | 36.5810% |
| 105 | 42.3520% | 38.6250% |
| 106 | 44.1130% | 40.6090% |
| 107 | 45.7860% | 42.5190% |
| 108 | 47.3640% | 44.3410% |
| 109 | 48.8430% | 46.0670% |
| 110 | 50.0000% | 47.6900% |

**Disabled Post-Retirement Mortality Rates[1]**

| Age | % Dying Next Year[2] Non-Public Safety Male | Female |
|---|---|---|
| 50 | 1.6050% | 1.4830% |
| 51 | 1.7120% | 1.5350% |
| 52 | 1.8180% | 1.5870% |
| 53 | 1.9210% | 1.6400% |
| 54 | 2.0200% | 1.6920% |
| 55 | 2.1140% | 1.7420% |
| 56 | 2.2010% | 1.7890% |
| 57 | 2.2800% | 1.8330% |
| 58 | 2.3550% | 1.8740% |
| 59 | 2.4280% | 1.9140% |
| 60 | 2.5030% | 1.9560% |
| 61 | 2.5840% | 2.0000% |
| 62 | 2.6770% | 2.0510% |
| 63 | 2.7850% | 2.1100% |
| 64 | 2.9080% | 2.1780% |
| 65 | 3.0440% | 2.2560% |
| 66 | 3.1930% | 2.3460% |
| 67 | 3.3530% | 2.4500% |
| 68 | 3.5240% | 2.5690% |
| 69 | 3.7060% | 2.7060% |
| 70 | 3.9010% | 2.8620% |
| 71 | 4.1130% | 3.0390% |
| 72 | 4.3440% | 3.2390% |
| 73 | 4.5990% | 3.4640% |
| 74 | 4.8800% | 3.7180% |
| 75 | 5.1920% | 4.0030% |
| 76 | 5.5370% | 4.3220% |
| 77 | 5.9210% | 4.6780% |
| 78 | 6.3470% | 5.0750% |
| 79 | 6.8220% | 5.5170% |
| 80 | 7.3480% | 6.0070% |
| 81 | 7.9290% | 6.5500% |
| 82 | 8.5650% | 7.1500% |
| 83 | 9.2590% | 7.8110% |
| 84 | 10.0100% | 8.5360% |
| 85 | 10.8150% | 9.3310% |
| 86 | 11.6780% | 10.1630% |
| 87 | 12.6050% | 11.0140% |
| 88 | 13.6030% | 11.8780% |
| 89 | 14.8610% | 12.7570% |
| 90 | 16.2530% | 13.6650% |
| 91 | 17.6810% | 14.6170% |
| 92 | 19.1260% | 15.6350% |
| 93 | 20.5880% | 16.7400% |
| 94 | 22.0780% | 17.9550% |
| 95 | 23.6170% | 19.2980% |
| 96 | 25.2260% | 20.7840% |
| 97 | 26.9240% | 22.4440% |
| 98 | 28.7230% | 24.2260% |
| 99 | 30.6240% | 26.1350% |
| 100 | 32.6090% | 28.1600% |
| 101 | 34.6360% | 30.2650% |
| 102 | 36.6400% | 32.3820% |
| 103 | 38.6040% | 34.4940% |
| 104 | 40.5120% | 36.5810% |
| 105 | 42.3520% | 38.6250% |
| 106 | 44.1130% | 40.6090% |
| 107 | 45.7860% | 42.5190% |
| 108 | 47.3640% | 44.3410% |
| 109 | 48.8430% | 46.0670% |
| 110 | 50.0000% | 47.6900% |

[1] *Tables based on Pub-2010 tables without projection.*

[2] *Actual table extends further than sample ages shown.*

# Proposed Merit and Longevity Rates

| Service | Exempt | ATU |
|---|---|---|
| 1 | 8.0% | 6.0% |
| 2 | 6.0 | 5.0 |
| 3 | 3.0 | 4.0 |
| 4 | 2.0 | 4.0 |
| 5 | 2.0 | 4.0 |
| 6 | 1.0 | 2.0 |
| 7 | 1.0 | 1.0 |
| 8 | 0.5 | 0.5 |
| 9 | 0.5 | 0.5 |
| 10 | 0.5 | 0.5 |
| 11 | 0.5 | 0.5 |
| 12 | 0.5 | 0.5 |
| 13 | 0.5 | 0.5 |
| 14 | 0.5 | 0.5 |
| thereafter | 0.0 | 0.0 |

# SECTION F

## DRAFT ACTUARIAL FUNDING POLICY

# Draft Actuarial Funding Policy

## Introduction

The purpose of this Actuarial Funding Policy is to record the funding objectives and policy set by the Board for the Central County Transportation Authority Pension Plan. The Board establishes this Funding Policy to help ensure the systematic funding of future benefit payments for members of the Pension Plan.

In 2012, the Governmental Accounting Standards Board (GASB) approved two new financial reporting standards. GASB Statement No. 67, "Financial Reporting for Pension Plans" replaces the requirements of Statement No. 25. GASB Statement No. 68, "Accounting and Financial Reporting for Pensions" replaces the requirements of Statements No. 27 and No. 50. Prior to the changes, the Annual Required Contribution (ARC) rate was used as a basis for funding decisions. The new GASB statements separate accounting cost (expense) from funding cost (contributions), necessitating the creation of this funding policy.

This funding policy shall be reviewed by the Board annually for several years following initial adoption until the next experience study. Subsequently, it shall be reviewed every five years in conjunction with the experience study.

## Funding Objectives

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings are sufficient to fund all benefits expected to be paid to members and their beneficiaries.
2. Maintain stability of employer contribution rates, consistent with other funding objectives.
3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.
4. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.
5. Provide a reasonable margin for adverse experience to help offset risks.
6. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL).

# Draft Actuarial Funding Policy

## Elements of Actuarial Funding Policy

1. **Actuarial Cost Method**
   a. The Individual Entry Age Normal level percent-of-pay actuarial cost method of valuation shall be used in determining Actuarial Accrued Liability (AAL) and Normal Cost. Differences in the past between assumed experience and actual experience ("actuarial gains and losses") shall become part of the AAL. The Normal Cost shall be determined on an individual basis for each active member.

2. **Asset Smoothing Method**
   a. The investment gains or losses of each valuation period, resulting from the difference between actual investment return and assumed investment return, shall be recognized annually in level amounts over 5 years in calculating the Funding Value of Assets.

3. **Amortization Method**
   a. The Funding Value of Assets are subtracted from the computed AAL. If the Funding Value of Assets is less than the AAL, the underfunding is amortized over a closed period of no more than 25 years. If the Funding Value of Assets exceeds the AAL, the excess is amortized over a closed period of 20 years and applied as a credit to reduce the Normal Cost otherwise payable.

4. **Funding Target**
   a. The targeted funded ratio shall be 100%.
   b. The maximum amortization period shall be 25 years.
   c. If the funded ratio is between 100% and 120%, a minimum contribution equal to the Normal Cost will be considered.

## Elements of Actuarial Funding Policy

**5. Risk Management**

a. Assumption Changes

- The actuarial assumptions used shall be those last adopted by the Board based on the most recent experience study and upon the advice and recommendation of the actuary. In accordance with best practices, the actuary shall conduct an experience study every five years. The results of the study shall be the basis for the actuarial assumption changes recommended to the Board.
- The actuarial assumptions can be updated during the 5-year period if significant plan design changes or other significant events occur, as advised by the actuary.

b. Amortization Method

- The amortization method, Level Percent Closed, will ensure full payment of the UAAL over a finite, systematically decreasing period not to exceed 25 years. The amortization period will be reviewed once the period reaches 15 years.

c. Risk Measures

- The following risk measures will be annually determined to provide quantifiable measurements of risk and their movement over time.

  (i) Classic measures currently determined

  – Funded ratio (assets/liability)

  (ii) UAAL/Total Payroll

  – Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. An increase in this measure indicates an increase in contribution risk.

  (iii) Total Liability/Total Payroll

  – Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. An increase in this measure indicates an increase in experience risk.

## Glossary

1. **Actuarial Accrued Liability (AAL):** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as "accrued liability" or "past service liability."
2. **Actuarial Assumptions:** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
3. **Actuarial Cost Method:** A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future plan benefits" between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the "actuarial funding method."
4. **Actuarial Gain (Loss):** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in UAAL, or "actuarial gain" as of the next valuation. These include contribution gains and losses that result from actual contributions made being greater or less than the level determined under the policy.
5. **Actuary:** A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). The Society of Actuaries (SOA) is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. The SOA administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.
6. **Amortization:** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
7. **Entry Age Normal Actuarial Cost Method:** A funding method that calculates the Normal Cost as a level percentage-of-pay over the working lifetime of the plan's members.
8. **Experience Study:** An actuarial investigation of demographic and economic experiences of the Plan during the period studied. The investigation is made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities.

## Glossary

9. **Funding Value of Assets**: The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as "Actuarial Value of Assets."
10. **Market Value of Assets:** The fair value of plan assets as reported in the plan's audited financial statements.
11. **Normal Cost (NC):** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as "current service cost." Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.
12. **Unfunded Actuarial Accrued Liability (UAAL):** The positive difference, if any, between the actuarial accrued liability and valuation assets. Sometimes referred to as "unfunded accrued liability."