

Central County Transportation Authority
Pension Plan
Annual Actuarial Valuation
December 31, 2021



Table of Contents

| Section | Page | |
|----------|----------|---|
| | | Introduction |
| A | 1 | Executive Summary |
| B | | Valuation Results |
| | 1 | Computed Contributions to Provide Benefits |
| | 3 | History of CCTA's Contribution Rates |
| | 4 | Unfunded Accrued Liability |
| | 5 | Schedule of Funding Progress |
| | 6 | Assets and Accrued Liabilities |
| | 7 | Development of Experience Gain/(Loss) |
| | 8 | Development of Valuation Assets |
| | 9 | Valuation Asset Growth History |
| | 10 | Development of Valuation Investment Gain/(Loss) |
| C | | Summary of the Information Submitted for the Valuation |
| | 1 | Brief Summary of Benefit Provisions |
| | 3 | Reported Financial Information |
| | 4 | Financial Information (Valuation Basis) |
| | 4 | Reserve for Retired Benefit Payments |
| | 5 | Active Members and Benefit Recipients |
| | 6 | Retired Life Data |
| | 8 | Inactive Member Data |
| | 9 | Active Member Data |
| D | | Actuarial Cost Methods and Assumptions |
| | 1 | Valuation Methods and Assumptions |
| | 2 | Actuarial Assumptions Used for the Valuation |
| | 7 | Miscellaneous and Technical Assumptions |
| | 8 | Glossary |
| | | Appendix |
| | 1 | 10-Year Contribution Projection |



April 21, 2022

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

**Re: Central County Transportation Authority Pension Plan
Annual Actuarial Valuation as of December 31, 2021 Actuarial Disclosures**

Ladies and Gentlemen:

The results of the December 31, 2021 Annual Actuarial Valuation of the Central County Transportation Authority (CCTA) Pension Plan are presented in this report.

The computed contribution rate shown on page B-2 may be considered as a minimum contribution rate that complies with the Board's funding policy. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any pension plan, we suggest that contributions to the Plan in excess of those presented in this report be considered.

The contribution rate in this report is determined using the actuarial assumptions and methods disclosed in Section D of this report. This report includes risk metrics on page A-4 but does not include a more robust assessment of the risks of future experience not meeting actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

This report was prepared at the request of the Board and is intended for use by the Pension Plan and those designated or approved by the Board. This report may be provided to parties other than the Plan only in its entirety and only with the permission of the Board. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are to measure the Plan's funding progress, and to determine the employer contribution rate for the fiscal year ending September 30, 2023. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The findings in this report are based on data and other information through December 31, 2021. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period, or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The scope of an actuarial valuation does not include an analysis of the potential range of such future measurements.

This valuation assumed the continuing ability of the plan sponsor to make the contributions necessary to fund this Plan. A determination regarding whether or not the plan sponsor is actually able to do so is outside our scope of expertise and was not performed.

The valuation was based upon information furnished by the Administrator concerning Pension Plan benefits, financial transactions, plan provisions and active members, terminated members, retirees, and beneficiaries. We checked for internal reasonability and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the Administrator.

In addition, this report was prepared using certain assumptions approved by the Board as described in the section of this report entitled Actuarial Cost Methods and Assumptions.

This report was prepared using our proprietary valuation model and related software which, in our professional judgment, has the capability to provide results that are consistent with the purposes of the valuation and has no material limitations or known weaknesses. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report reflects the impact of COVID-19 experience through December 31, 2021. It does not reflect the ongoing impact of COVID-19, which is likely to influence demographic and economic experience, at least in the short term. We will continue to monitor these developments and their impact on the Central County Transportation Authority Pension Plan. Actual future experience will be reflected in each subsequent annual valuation, as experience emerges.


This report has been prepared by actuaries who have substantial experience valuing public employee pension plans. To the best of our knowledge, the information contained in this report is accurate and fairly presents the actuarial position of the Central County Transportation Authority Pension Plan as of the valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

James D. Anderson and Michael D. Kosciuk are Members of the American Academy of Actuaries (MAAA) and meet the Academy's Qualification Standards to render the actuarial opinions contained herein.

The signing actuaries are independent of the plan sponsor.

Gabriel, Roeder, Smith & Company will be pleased to review this valuation and report with the Board and to answer any questions pertaining to the valuation.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



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



Michael D. Kosciuk, FSA, EA, FCA, MAAA

JDA/MDK:sc

SECTION A

EXECUTIVE SUMMARY

Executive Summary

Computed Employer Contributions - Fiscal Year Beginning October 1, 2022

Required CCTA employer contributions have increased from \$8,966 in the last valuation to \$134,715 for the fiscal year ending 2023, as shown on page B-2. While the Plan continues to have an overfunding credit, application of the \$577,517 credit against the Employer Normal Cost of \$712,232 results in a required Employer contribution amount of \$134,715, or 2.30% of active member payroll.

Reasons for Changes

There are three general reasons why contribution requirements change from one valuation to the next. The first reason is a change in the benefits or eligibility conditions of the Plan – these are unchanged in this valuation. The second reason is a change in the valuation assumptions used to predict future occurrences and the methods used to finance the benefits – these are unchanged in this valuation. The third reason is the difference during the year between the Plan’s actual experience and what the assumptions predicted, or the plan experience.

Causes of the Gain (Loss)

There was an experience loss of \$407,330 during 2021. This represents 1.45% of the reported 2020 valuation accrued liability. Factors contributing to the experience include, but are not limited to:

- A market value of asset return of 19.39% in 2021, with a corresponding return on the (smoothed) valuation assets of 10.09%. Net investment income on the smoothed basis was larger than the long-term assumption of 7.00%, resulting in an asset gain of \$1,021,516.
- Additional liabilities from participants living longer than expected and higher pay increases than expected for continuing active members, resulting in a demographic loss of \$1,428,846.

| | |
|-----------------------------|--------------------|
| Investment gain (loss) | \$ 1,021,516 |
| Remaining gain (loss) | <u>(1,428,846)</u> |
| Gain (loss) from all causes | \$ (407,330) |



Executive Summary (Continued)

2021 Funding Position and Other Plan Metrics

| | 12/31/2021 Valuation | 12/31/2020 Valuation |
|-------------------------------|----------------------|----------------------|
| Funded Status = AAL - AVA | \$(5,036,723) | \$(5,728,519) |
| Funded Percentage = AVA / AAL | 116.5% | 120.4% |
| Funded Percentage = MVA / AAL | 130.1% | 123.5% |
| Employer Contribution (AVA) | 2.30% of pay | 0.16% of pay |
| Employer Contribution (MVA) | 0.00% of pay | 0.00% of pay |
| AVA / MVA | 89.6% | 97.4% |

Where AAL = Actuarial Accrued Liability, AVA = Actuarial Value of Assets, MVA = Market Value of Assets

Contribution Requirements Longer Term

Contributions are based on a smoothed (actuarial) value of assets that recognize a given year's asset gain or loss over the current and subsequent four years. Given annual investment returns of 7.00% going forward, net investment gains are scheduled for the next four years (see page B-8 for further details). This will exert downward pressure on computed contribution rates and upward pressure on the funded ratio. Over the long term, contributions will eventually converge to the normal cost rate of roughly 12% of pay shown on page B-2.



Executive Summary (Continued)

Other Observations

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial value of assets for the plan), it is expected that:

- (1) Employer normal cost amounts as a percentage of payroll will remain approximately level year to year;
- (2) The overfunding credit will be used up over a period of years; and
- (3) The funded status of the plan will decrease towards a 100% funded ratio.

Unless otherwise indicated, a funded status measurement presented in this report is based upon the actuarial accrued liability and the actuarial value of assets. Unless otherwise indicated, with regard to any funded status measurements presented in this report:

- (1) The measurement is inappropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations; and
- (2) The measurement is inappropriate for assessing the need for or the amount of future employer contributions.

Risk Commentary

Determination of the accrued liability, the employer contribution, and the funded ratio requires the use of assumptions regarding future economic and demographic experience. Risk measures, as illustrated in this report, are intended to aid in the understanding of the effects of future experience differing from the assumptions used in the course of the actuarial valuation. Risk measures may also help with illustrating the potential volatility in the accrued liability, the actuarially determined contribution, and the funded ratio that result from the differences between actual experience and the actuarial assumptions.

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

Executive Summary (Continued)

Examples of risk that may reasonably be anticipated to significantly affect the plan’s future financial condition include:

- **Investment Risk** – actual investment returns may differ from the expected returns;
- **Asset/Liability Mismatch** – changes in asset values may not match changes in liabilities, thereby altering the gap between the accrued liability and assets, and consequently altering the funded status and contribution requirements;
- **Contribution Risk** – actual contributions may differ from expected future contributions. For example, actual contributions may not be made in accordance with the plan’s funding policy or material changes may occur in the anticipated number of covered employees, covered payroll, or other relevant contribution base;
- **Salary and Payroll Risk** – actual salaries and total payroll may differ from expected, resulting in actual future accrued liability and contributions differing from expected;
- **Longevity Risk** – members may live longer or shorter than expected and receive pensions for a period of time other than assumed; and
- **Other Demographic Risks** – members may terminate, retire or become disabled at times or with benefits other than assumed resulting in actual future accrued liability and contributions differing from expected.

The effects of certain trends in experience can generally be anticipated. For example, if the investment return since the most recent actuarial valuation is less (or more) than the assumed rate, the cost of the plan can be expected to increase (or decrease). Likewise, if longevity is improving (or worsening), increases (or decreases) in cost can be anticipated.

The computed contribution rate shown on page B-2 may be considered as a minimum contribution rate that complies with the Board’s funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

PLAN MATURITY MEASURES

Risks facing a pension plan evolve over time. A young plan with virtually no investments and paying few benefits may experience little investment risk. An older plan with a large number of members in pay status and a significant trust may be much more exposed to investment risk. Generally accepted plan maturity measures include the following:

| | <u>2021</u> | <u>2020</u> | <u>2019</u> | <u>2018</u> | <u>2017</u> |
|--|-------------|-------------|-------------|-------------|-------------|
| Ratio of the market value of assets to total payroll | 7.2 | 6.6 | 6.4 | 5.9 | 6.7 |
| Ratio of actuarial accrued liability to payroll | 5.5 | 5.3 | 5.2 | 4.9 | 4.8 |
| Ratio of actives to retirees and beneficiaries | 1.3 | 1.4 | 1.5 | 1.4 | 1.6 |
| Ratio of net cash flow to market value of assets | (4.20%) | (4.30%) | (4.30%) | (4.50%) | (3.80%) |



Executive Summary (Concluded)

RATIO OF MARKET VALUE OF ASSETS TO TOTAL PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 6.0 times the payroll, a return on assets 5% different than assumed would equal 30% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

A young plan with many active members and few retirees will have a high ratio of actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

A positive net cash flow means contributions exceed benefits and expenses. A negative cash flow means existing funds are being used to make payments. A certain amount of negative net cash flow is generally expected to occur when benefits are prefunded through a qualified trust. Large negative net cash flows as a percent of assets may indicate a super-mature plan or a need for additional contributions.

ADDITIONAL RISK ASSESSMENT

Additional risk assessment is outside the scope of the annual actuarial valuation. Additional assessment may include scenario tests, sensitivity tests, stochastic modeling, stress tests, and a comparison of the present value of accrued benefits at low-risk discount rates with the actuarial accrued liability.

Conclusion

The overfunded position of the Plan has generated a funding credit which allows the CCTA to temporarily reduce annual contribution requirements to the Plan.



SECTION B

VALUATION RESULTS

Computed Contributions to Provide Benefits

The Pension Plan is supported by contributions from the CCTA and active members and by the investment income earned on Plan assets. Member contribution rates are determined by the benefit provisions of the Plan and are summarized in Section B of this report. The CCTA provides an actuarially determined contribution, the remainder, if any, needed to meet the financial objective.

Member and CCTA contributions cover both (i) normal cost and (ii) financing of the unfunded accrued liability over a period of future years. The normal cost is the portion of Plan costs allocated to the current year by the valuation method described in Section D. The unfunded accrued liability is the portion of Plan costs not covered by present Plan assets and future normal costs.

For a plan that is overfunded, contribution income needs to cover the normal cost less an amortization credit on the overfunding. When a plan is extremely overfunded, the amortization credit may completely offset the normal cost, eliminating the need for employer contribution income. This can persist for years as long as investment income is sufficient to maintain the overfunding.

Since contributions are required, we recommend one of the following procedures for determining CCTA contributions to the Pension Plan:

- (1) Contribute dollar amounts for a period which are equal to the CCTA's percent-of-payroll contribution requirements on page B-2 multiplied by the covered active member payroll for the period. Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Pension Plan benefits and to include non-payroll payments that are covered compensation.
- (2) Contribute the dollar amounts on page B-2.



Computed Contributions to Provide Benefits Expressed as Percentages and Dollars of Active Member Payroll

| <u>Contributions for the Year Beginning October 1,</u> | <u>2022</u> | <u>2021</u> |
|--|-------------|-------------|
| Normal cost of benefits | | |
| Age & service | 11.01 % | 10.86 % |
| Disability | 1.42 | 1.44 |
| Pre-retirement survivor | 0.22 | 0.22 |
| Refunds of member contributions | 0.22 | 0.21 |
| Total normal cost | 12.87 | 12.73 |
| Administrative expense allowance | 0.75 | 0.75 |
| Less: Member contributions* | 1.46 | 1.46 |
| Employer normal cost | 12.16 | 12.02 |
| Unfunded actuarial accrued liabilities^ | (9.86) | (11.86) |
| Employer Contribution Requirement@ | 2.30 | 0.16 |

| <u>Contributions for the Year Beginning October 1,</u> | <u>2022</u> | <u>2021</u> |
|--|---------------------|---------------------|
| Normal cost of benefits | | |
| Age & service | \$ 644,874 | \$ 608,554 |
| Disability | 83,172 | 80,692 |
| Pre-retirement survivor | 12,886 | 12,328 |
| Refunds of member contributions | 12,886 | 11,768 |
| Total normal cost | 753,818 | 713,342 |
| Administrative expense allowance | 43,929 | 42,027 |
| Less: Member contributions* | 85,515 | 81,813 |
| Employer normal cost | 712,232 | 673,556 |
| Unfunded actuarial accrued liabilities^ | (577,517) | (664,590) |
| Employer Contribution Requirement@ | \$ 134,715 | \$ 8,966 |
| Valuation Payroll | \$ 5,537,815 | \$ 5,298,103 |
| Recommended Employer Contribution | \$ 134,715 | \$ 8,966 |

* Weighted average of various contribution rates.

^ Page B-4 displays the unfunded accrued liabilities (or overfunding) that are amortized over 10 years in developing the contribution rates shown above.

@ Payroll used to develop the Employer Contribution Requirement is adjusted for pay increases assumed to occur between the valuation date and the fiscal year of contribution.



History of CCTA's Contribution Rates

| Fiscal Year | Valuation Date Dec. 31* | Contribution as Percent of Valuation Payroll | Recommended | Actual |
|----------------|-------------------------------|--|-------------|--------|
| 2017 - 2018 | 2016 | 0.00 % | \$ 0 | \$ 0 |
| 2018 - 2019 | 2017 | 0.00 % | 0 | 0 |
| 2019 - 2020 | 2018 | 0.00 % | 0 | 0 |
| 2020 - 2021 | 2019 | 0.00 % | 0 | 0 |
| 2021 - 2022 | 2020 | 0.16 % | 8,966 | ! |
| 2022 - 2023 | 2021 | 2.30 % | 134,715 | ! |

* Prior to the December 31, 2016 valuation, the CCTA was part of the City of Kalamazoo Employees Retirement System.

! Not yet available.

Unfunded Accrued Liability

| | Year Ending December 31, | |
|---|--------------------------|--------------|
| | 2021 | 2020 |
| A. Accrued Liability | | |
| 1. For Retirees and Beneficiaries | \$19,522,020 | \$17,824,254 |
| 2. For Vested Terminated Members | 755,790 | 729,961 |
| 3. For Present Active Members | | |
| a. Value of expected future benefit payments | 15,491,037 | 14,555,025 |
| b. Value of future normal costs | 5,294,434 | 4,979,804 |
| c. Active member liability: (a) - (b) | 10,196,603 | 9,575,221 |
| 4. Total | 30,474,413 | 28,129,436 |
| B. Present Assets | | |
| 1. Valuation Basis | 35,511,136 | 33,857,955 |
| 2. Market Basis | 39,649,943 | 34,753,378 |
| C. Unfunded Accrued Liability (Excess Assets) | | |
| 1. Valuation Basis: (A.4) - (B.1) | (5,036,723) | (5,728,519) |
| 2. Market Basis: (A.4) - (B.2) | (9,175,530) | (6,623,942) |
| D. Funded Percent | | |
| 1. Valuation Basis: (B.1) / (A.4) | 116.5% | 120.4% |
| 2. Market Basis: (B.2) / (A.4) | 130.1% | 123.5% |

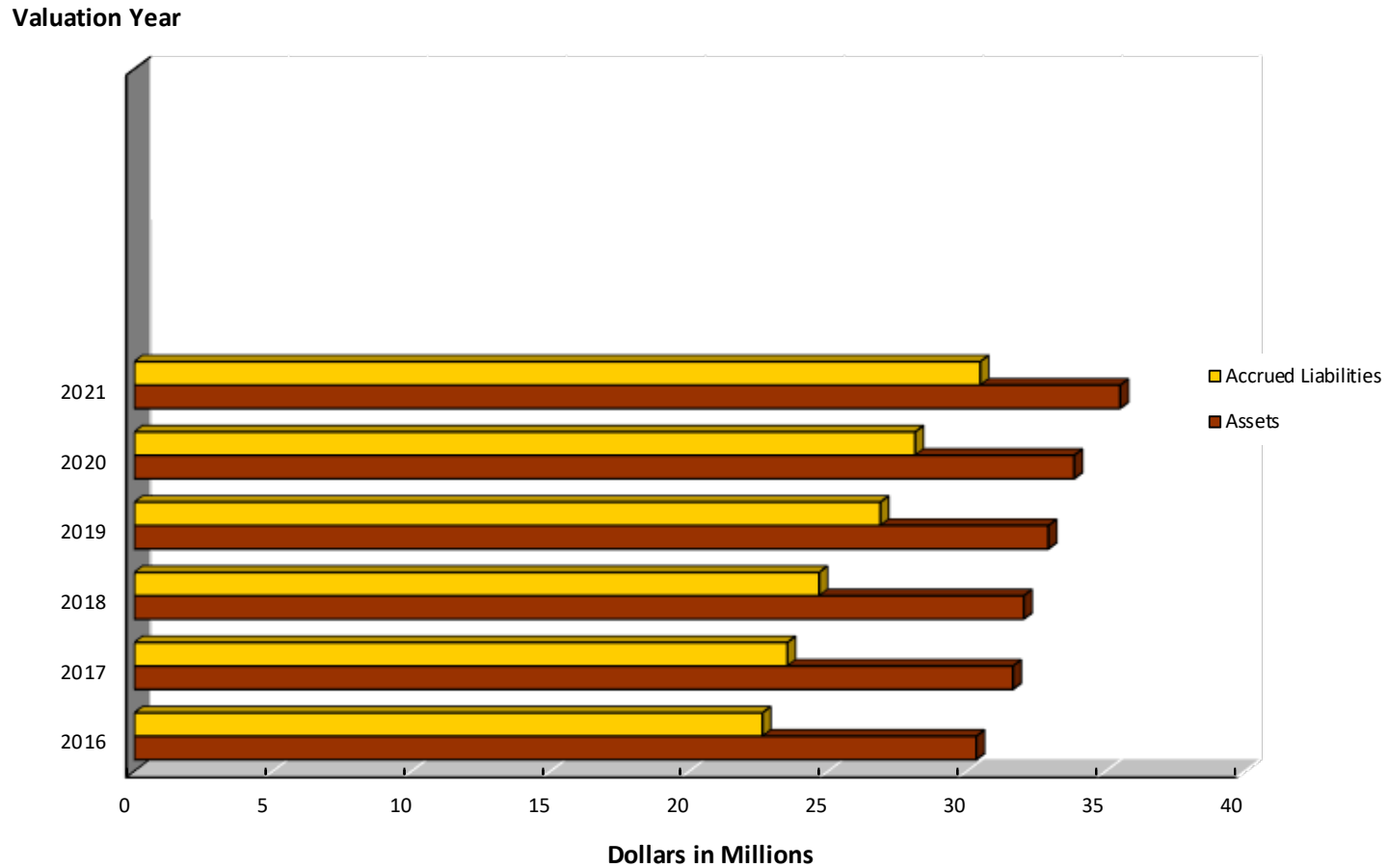
Schedule of Funding Progress

| Actuarial Valuation Date* | Actuarial Value of Assets (a) | Actuarial Accrued Liability (AAL) Entry-Age (b) | Unfunded AAL (UAAL) (b)-(a) | Funded Ratio (a)/(b) | Covered Payroll (c) | UAAL as a Percentage of Covered Payroll [(b)-(a)]/(c) |
|---------------------------------|--|--|-----------------------------------|----------------------------|---------------------------|--|
| 12/31/2016 | \$30,330,134 | \$22,628,273 | \$ (7,701,861) | 134.0% | \$4,582,818 | (168.1)% |
| 12/31/2017 | 31,648,980 | 23,521,727 | (8,127,253) | 134.6% | 4,921,201 | (165.1)% |
| 12/31/2018 | 32,040,999 | 24,671,575 | (7,369,424) | 129.9% | 4,995,358 | (147.5)% |
| 12/31/2019 | 32,928,849 | 26,875,242 | (6,053,607) | 122.5% | 5,214,419 | (116.1)% |
| 12/31/2020 | 33,857,955 | 28,129,436 | (5,728,519) | 120.4% | 5,298,103 | (108.1)% |
| 12/31/2021 | 35,511,136 | 30,474,413 | (5,036,723) | 116.5% | 5,537,815 | (91.0)% |

* Prior to the December 31, 2016 valuation, the CCTA was part of the City of Kalamazoo Employees Retirement System.



Assets and Accrued Liabilities



2016 assets equaled 134.0% of accrued liabilities.

2021 assets equaled 116.5% of accrued liabilities.

Development of Experience Gain (Loss) Year Ended December 31, 2021

Actual experience will never (except by coincidence) exactly match assumed experience. It is hoped that gains and losses will cancel each other over a period of years, but sizable year-to-year fluctuations are common. Detail on the development of the experience gain/(loss) is shown below:

| | <u>Year Ending December 31, 2021</u> |
|---|--|
| (1) UAAL* at start of year | \$(5,728,519) |
| (2) Normal cost from prior year | 746,497 |
| (3) Actual contributions | 83,962 |
| (4) Interest accruals on (1), (2), and (3) | (378,069) |
| (5) Expected UAAL before changes: (1) + (2) - (3) + (4) | (5,444,053) |
| (6) Change from benefit increases | 0 |
| (7) Change from revised actuarial assumptions and/or methods | 0 |
| (8) Expected UAAL after changes: (5) + (6) + (7) | (5,444,053) |
| (9) Actual UAAL at end of year | (5,036,723) |
| (10) Gain\loss: (8) - (9) | (407,330) |
| (11) Gain\loss as percent of actuarial accrued liabilities at start of year | (1.45)% |

* *Unfunded Actuarial Accrued Liabilities.*

| 2021 Gain (Loss) | | |
|-------------------------|-------------------|-----------------------|
| Total | Investment | Non-Investment |
| \$(407,330) | \$1,021,516 | \$(1,428,846) |



Development of Valuation Assets

| Year Ended December 31: | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|--|--------------|--------------|------------|------------|-----------|-----------|
| A. Valuation Assets Beginning of Year | \$32,928,849 | \$33,857,955 | | | | |
| B. Market Value End of Year | 34,753,378 | 39,649,943 | | | | |
| C. Market Value Beginning of Year | 33,396,603 | 34,753,378 | | | | |
| D. Non-Investment Net Cash Flow | (1,492,222) | (1,679,606) | | | | |
| E. Investment Income | | | | | | |
| E1. Market Total: B - C - D | 2,848,997 | 6,576,171 | | | | |
| E2. Assumed Rate of Investment Return | 7.00% | 7.00% | | | | |
| E3. Amount for Immediate Recognition | 2,252,792 | 2,311,271 | | | | |
| E4. Amount for Phased-In Recognition: E1-E3 | 596,205 | 4,264,900 | | | | |
| F. Phased-In Recognition of Investment Income | | | | | | |
| F1. Current Year: 0.2 x E4 | 119,241 | 852,980 | | | | |
| F2. First Prior Year | 651,205 | 119,241 | \$ 852,980 | | | |
| F3. Second Prior Year | (933,246) | 651,205 | 119,241 | \$ 852,980 | | |
| F4. Third Prior Year | 331,336 | (933,246) | 651,205 | 119,241 | \$852,980 | |
| F5. Fourth Prior Year | 0 | 331,336 | (933,248) | 651,207 | 119,241 | \$852,980 |
| F6. Total Phased-In Recognition | 168,536 | 1,021,516 | 690,178 | 1,623,428 | 972,221 | 852,980 |
| G. Valuation Assets End of Year: A + D + E3 + F6 | 33,857,955 | 35,511,136 | | | | |
| H. Difference between Market & Valuation Assets: B - G | 895,423 | 4,138,807 | 3,448,629 | 1,825,201 | 852,980 | 0 |
| I. Valuation Asset Recognized Rate of Return | 7.52% | 10.09% | | | | |
| J. Market Value Recognized Rate of Return | 8.73% | 19.39% | | | | |

The Valuation Assets recognizes assumed investment income (line E3) fully each year. Differences between actual and assumed investment income (line E4) are phased-in over a closed five-year period. During periods when investment performance exceeds the assumed rate, Valuation Assets will tend to be less than Market Value. During periods when investment performance is less than the assumed rate, Valuation Assets will tend to be greater than Market Value. The Valuation Assets are unbiased with respect to Market Value. At any time, it may be either greater or less than Market Value. If assumed rates are exactly realized for four consecutive years, it will become equal to Market Value.



Valuation Asset Growth History

| Year | Net Contribution Income | Net Investment Return | Benefit Payments and Refunds | Year End Assets |
|-------|-------------------------------|-----------------------------|------------------------------------|--------------------|
| 2016* | | | | \$ 30,330,134 |
| 2017 | \$28,158 | \$2,559,569 | \$1,268,881 | 31,648,980 |
| 2018 | 33,129 | 1,721,893 | 1,363,003 | 32,040,999 |
| 2019 | 26,112 | 2,320,340 | 1,458,602 | 32,928,849 |
| 2020 | (6,445) | 2,421,328 | 1,485,777 | 33,857,955 |
| 2021 | 34,005 | 3,332,787 | 1,713,611 | 35,511,136 |

* After reflecting CCTA spin-off into a standalone single employer Plan.

Development of Valuation Investment Gain (Loss) Year Ended December 31, 2021

The December 31, 2020 valuation assumed an average 7.00% net return on valuation assets for future years. Net investment return in excess of 7.00% represents a gain. If net investment return falls short of 7.00%, the difference between expected income of 7.00% and the net return represents a loss. For the year ended December 31, 2021, the valuation anticipated investment return of \$2,311,271 (see item E3 on page B-8). Total phased-in recognition amounted to a gain of \$1,021,516 for the year (see item F6 on page B-8), resulting in a return of 10.09% on a valuation basis (see item I on page B-8).

Please note that this analysis uses asset values and investment income as defined for the actuarial valuation (dollar weighted). It is not, therefore, appropriate as a measure of manager performance.

Rates of Return and Change in Pays and Liabilities

| | Year Ended December 31, | | | | | 5-Year Average* |
|-----------------------------|-------------------------|------|------|------|------|--------------------|
| | 2021 | 2020 | 2019 | 2018 | 2017 | |
| Increase in average salary# | 10.5% | 2.6% | 5.6% | 0.1% | 4.3% | 4.6% |
| Return on assets^ | 10.1 | 7.5 | 7.4 | 5.6 | 8.6 | 7.8% |
| Liability growth | 8.3 | 4.7 | 8.9 | 4.9 | 3.9 | 6.2% |

* Compound rate of increase.

For members employed throughout the most recent two years.

^ The nominal rate of return was computed using the approximate formula $i = I$ divided by $1/2 (A + B - I)$, where I is actual investment income net of expenses, A is the beginning of year asset value, and B is the end of year asset value.



SECTION C

SUMMARY OF THE INFORMATION SUBMITTED FOR THE VALUATION

Brief Summary of Benefit Provisions *

as of December 31, 2021

Benefit Groups:

Exempt Employees (Non-Union)
Amalgamated Transit Union (ATU)
Kalamazoo Municipal Employees Association (KMEA)^

Final Average Compensation (FAC): Highest 3 consecutive years out of the last 10.

Benefit Multiplier: Varies by Benefit Group.

Non-Union: 2.3% of FAC.
ATU: 2.1% of FAC.
KMEA: 2.1% of FAC.

Normal Retirement:

Non-Union Eligibility:

Hired Prior to 9/1/2010: Age 62 with 5 years of service or age 57 with 25 years of service.

Hired On or After 9/1/2010: Age 62 with 10 years of service or age 57 with 25 years of service.

ATU Eligibility: Age 62 with 10 years of service or age 57 with 25 years of service.

KMEA Eligibility:

Hired Prior to 1/1/2009: Age 62 with 8 years of service or age 57 with 25 years of service.

Hired On or After 1/1/2009: Age 62 with 10 years of service or age 57 with 25 years of service.

Amount of Benefit: Benefit Multiplier x FAC x Years of Credited Service.

Early Retirement:

Non-Union Eligibility:

Hired Prior to 9/1/2010: Age 60 with 5 years of service or rule of 70 with minimum age 55.

Hired On or After 9/1/2010: Age 60 with 10 years of service or rule of 70 with minimum age 55.

ATU Eligibility: Age 60 with 10 years of service or rule of 70 with minimum age 55.

KMEA Eligibility:

Hired Prior to 1/1/2009: Age 60 with 8 years of service or rule of 70 with minimum age 55.

Hired On or After 1/1/2009: Age 60 with 10 years of service or rule of 70 with minimum age 55.

Amount of Benefit: Normal Retirement Benefit reduced for early commencement.

Amount of Reduction: 4/10 of 1% for each month retirement is prior to age 62 (from age 57 if retired with 25 or more years of credited service).

Deferred Vested Retirement:

Eligibility: Satisfaction of the service requirement for Early Retirement.

Amount of Benefit: Normal Retirement Benefit based upon FAC and years of credited service at termination.

Commencement of Benefit: Upon attainment of minimum age requirement for Normal Retirement.

Disability Retirement:

Eligibility: Satisfaction of the minimum service requirement for Early Retirement.

Amount of Benefit: Normal Retirement Benefit based upon FAC and years of credited service at termination.

Duty Disability Special Conditions:

1. Minimum service requirement is waived.
2. Benefit Minimum is Normal Retirement Benefit based upon FAC at termination and the minimum service requirement for a non-duty disability retirement.

* This represents a brief summary of Plan provisions, as understood by the Actuary. Official Plan documents and any applicable Collective Bargaining Agreements will ultimately govern the benefits payable from the Plan.

^ There will be no new KMEA members joining the plan as of the December 31, 2017 valuation.



Brief Summary of Benefit Provisions *

as of December 31, 2021 (Concluded)

Death Retirement:

Eligibility: Satisfaction of the minimum service requirement for Early Retirement.

Amount of Benefit: Normal Retirement Benefit based upon FAC and years of credited service at termination, reduced in accordance with a 100% joint and survivor election.

Duty Death Special Conditions:

1. Minimum service requirement is waived.
2. Benefit Minimum is:
 - a. 33 1/3% of FAC payable to surviving spouse; plus
 - b. Unmarried children under 18 years of age receive equal shares of 25% of FAC.

Annual Pension Adjustment:

Non-Union:

Eligibility: Members making election by May 30, 2006 who make increased member contributions annually.

Amount of Increase: 1.5% compounded annually. Increases are granted on January 1 annually, following one full year of retirement.

ATU:

Eligibility: Retired on or after March 1, 2000. Participants retiring before the Normal Retirement Date are excluded.

Amount of Increase: 1.0% compounded annually granted on the anniversary of retirement. Upon attainment of age 75, increases are 2.0% compounded annually.

KMEA:

Eligibility: Retired on or after March 13, 2000. Participants retiring before the Normal Retirement Date are excluded.

Amount of Increase: 1.5% compounded annually granted on the anniversary of retirement. Increases begin the later of attainment of age 64 or the first anniversary of the date of retirement.

Death After Retirement:

Beneficiaries are eligible for a \$1,000 lump sum death benefit (does not apply to deferred retirements).

Member Contributions:

Non-Union Amount: Varies by date of hire. Members electing the annual pension adjustment by May 30, 2006, pay additional 2.0% above the 1.5% of compensation.

Hired before 6/1/2006: 1.5% of compensation.

Hired on or after 6/1/2006: 3.0% of compensation.

ATU Amount: 1% of compensation.

KMEA Amount: 1% of compensation.

Periodic Payment:

Description: Subject to section 15.5 of the CCTA Pension Plan document, certain retirees are eligible for a nonguaranteed payment, with a potential payment every third year. The payment is subject to additional requirements related to the need for projected employer contributions to the Plan and can be reduced or eliminated based on CCTA Board recommendation.

* This represents a brief summary of Plan provisions, as understood by the Actuary. Official Plan documents and any applicable Collective Bargaining Agreements will ultimately govern the benefits payable from the Plan.



Reported Financial Information

Year Ended December 31, 2021

Market Value

Income and Expenses

Revenues:

| | | |
|--|-----------|--------------------|
| a. Member contributions | \$ 83,962 | |
| b. Employer contributions | 0 | |
| c. Interest and dividends | 1,190,563 | |
| d. Net Appreciation in Fair Value of Investments | 5,498,869 | |
| e. Miscellaneous | 0 | |
| Total | | <u>\$6,773,394</u> |

Expenditures:

| | | |
|--|-----------|------------------|
| a. Refunds of member contributions | 14,100 | |
| b. Benefits paid including refunds of member contributions | 1,699,511 | |
| c. Administrative expenses | 0 | |
| d. Investment expenses | 113,261 | |
| e. Other expenses | 49,957 | |
| Total | | <u>1,876,829</u> |

Reserve Increase:

| | | |
|---|--|---------------------------|
| Total revenues minus total expenditures | | <u><u>\$4,896,565</u></u> |
|---|--|---------------------------|



Reported Financial Information (Valuation Basis) Year Ended December 31, 2021

Assets on Valuation Basis

Assets:

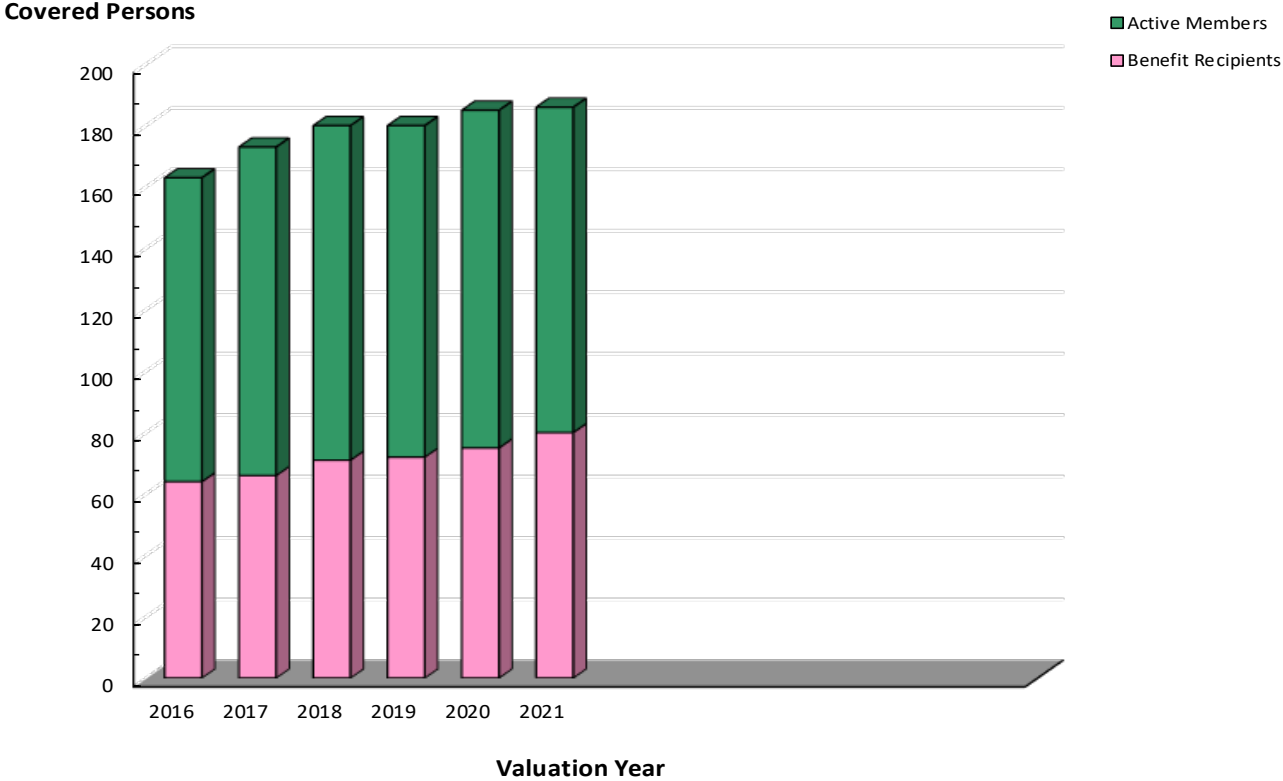
| | |
|--------------------------------|---------------------|
| a. Cash or equivalents | \$ 38,390 |
| b. Receivables net of payables | 484,821 |
| c. Stocks | 27,738,398 |
| d. Fixed income | 9,273,982 |
| e. Real Estate Investment Fund | 2,114,352 |
| f. Funding Value Adjustment | <u>(4,138,807)</u> |
| Total | <u>\$35,511,136</u> |

Reserve for Retired Benefit Payments

Part of the internal reserve tracking process is to maintain the reserve for retired benefit payments at a level equal to 100% of the value of future benefit payments to retirees and beneficiaries. As of December 31, 2021, the value of future benefit payments to retirees and beneficiaries is \$19,522,020. This valuation assumes any transfer necessary to maintain a 100% funding of the reserve for retired benefit payments has been made as of January 1, 2022.



Active Members and Benefit Recipients



Retirees and Beneficiaries as of December 31, 2021

Tabulated by Nearest Age and Type of Retirement

| Attained Age | Age and Service | | Disability | | Survivors | | Totals | |
|---------------|-----------------|--------------------|------------|-------------------|-----------|-------------------|-----------|--------------------|
| | No. | Annual Allowances | No. | Annual Allowances | No. | Annual Allowances | No. | Annual Allowances |
| 45 - 49 | | | | | | | | |
| 50 - 54 | | | 3 | \$ 63,727 | | | 3 | \$ 63,727 |
| 55 - 59 | 4 | \$ 126,871 | 1 | 17,197 | | | 5 | 144,068 |
| 60 - 64 | 10 | 220,029 | 2 | 47,929 | | | 12 | 267,958 |
| 65 - 69 | 24 | 589,025 | 5 | 69,261 | | | 29 | 658,286 |
| 70 - 74 | 11 | 249,279 | 2 | 15,966 | | | 13 | 265,245 |
| 75 - 79 | 11 | 200,253 | 1 | 13,784 | | | 12 | 214,037 |
| 80 - 84 | | | | | | | | |
| 85 - 89 | 2 | 20,372 | 2 | 18,792 | | | 4 | 39,164 |
| 90 & Over | 1 | 15,112 | 1 | 4,580 | | | 2 | 19,692 |
| Totals | 63 | \$1,420,941 | 17 | \$ 251,236 | 0 | \$ 0 | 80 | \$1,672,177 |

Average Age at Retirement: 59.2 Years.

Average Age Now: 68.9 Years.

Tabulated by Type of Allowances Being Paid

| Option Elected | Age & Service | Disability | | Death | | Totals |
|-------------------|---------------|------------|-----------|----------|------|-----------|
| | | Non-Duty | Duty | Non-Duty | Duty | |
| Regular | 33 | 1 | 4 | | | 38 |
| A-Cash Refund | 1 | | | | | 1 |
| B-100% J & S | 19 | | 8 | | | 27 |
| C-50% J & S | 9 | | | | | 9 |
| D-10 Year Certain | | | | | | |
| E-15 Year Certain | | | | | | |
| Survivor | 1 | 4 | | | | 5 |
| Totals | 63 | 5 | 12 | | | 80 |



Retiree and Beneficiary Comparative Schedule

| Year Ended Dec. 31 | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | % Incr. in Annual Allowances | Average Allowances | Discounted Value of Allowances | |
|-----------------------|----------------|----------------------|--------------------|----------------------|-------------------|----------------------|------------------------------------|-----------------------|-----------------------------------|------------|
| | No. | Annual Allowances | No. | Annual Allowances | No. | Annual Allowances | | | Totals | Average |
| 2016 | 2 | \$ 22,756 | 1 | \$ 4,327 | 64 | \$ 1,210,918 | N/A | \$ 18,921 | \$ 13,777,708 | \$ 215,277 |
| 2017 | 7 | 114,898 | 5 | 31,840 | 66 | 1,293,976 | 6.86% | 19,606 | 14,782,664 | 223,980 |
| 2018 | 5 | 100,832 | 0 | - | 71 | 1,394,808 | 7.79% | 19,645 | 16,047,423 | 226,020 |
| 2019 | 2 | 56,843 | 1 | 6,872 | 72 | 1,444,779 | 3.58% | 20,066 | 17,175,500 | 238,549 |
| 2020 | 4 | 93,017 | 1 | 12,120 | 75 | 1,525,676 | 5.60% | 20,342 | 17,824,254 | 237,657 |
| 2021 | 8 | 162,873 | 3 | 16,372 | 80 | 1,672,177 | 9.60% | 20,902 | 19,522,020 | 244,025 |



**Terminated Members with a Deferred Vested Benefit
as of December 31, 2021
Tabulated by Nearest Age and Estimated Allowance**

| Attained Age | No. | Deferred Allowances |
|-------------------------|------------|--------------------------------|
| 35 | 1 | \$ 13,510 |
| 41 | 1 | 5,164 |
| 44 | 2 | 20,246 |
| 46 | 1 | 9,064 |
| 50 | 1 | 14,313 |
| 52 | 2 | 29,731 |
| 55 | 1 | 5,208 |
| 56 | 1 | 9,772 |
| 59 | 1 | 7,975 |
| Totals | 11 | \$114,983 |

Active Members as of December 31, 2021 by Attained Age and Years of Service

| Attained Age | Years of Service to Valuation Date | | | | | | | Totals | |
|-----------------|------------------------------------|-----------|-----------|----------|-----------|----------|----------|------------|----------------------|
| | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30 Plus | No. | Valuation Payroll |
| 25-29 | 5 | | | | | | | 5 | \$ 191,934 |
| 30-34 | 4 | 1 | 2 | | | | | 7 | 339,664 |
| 35-39 | 10 | 5 | 1 | | | | | 16 | 760,306 |
| 40-44 | 8 | 3 | 3 | 1 | | | | 15 | 805,141 |
| 45-49 | 8 | 5 | 3 | 1 | 2 | | | 19 | 1,054,690 |
| 50-54 | 6 | 3 | 1 | 2 | 8 | | 1 | 21 | 1,161,838 |
| 55-59 | 6 | 1 | 2 | | 2 | 2 | | 13 | 707,617 |
| 60 | | 1 | | | | | | 1 | 61,416 |
| 61 | 3 | | 1 | | | | | 4 | 192,578 |
| 62 | | | | 1 | | | | 1 | 72,776 |
| 64 | 1 | | | | | | | 1 | 40,331 |
| 66 | | | | 1 | | | | 1 | 55,686 |
| 69 | | 1 | | | | | | 1 | 54,110 |
| 70 | 1 | | | | | | | 1 | 39,728 |
| Totals | 52 | 20 | 13 | 6 | 12 | 2 | 1 | 106 | \$5,537,815 |

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 46.7 years.

Service: 8.3 years.

Annual Pay: \$52,244.



SECTION D

ACTUARIAL COST METHODS AND ASSUMPTIONS

Valuation Methods and Assumptions

The normal cost was computed as follows:

The series of contributions necessary to accumulate the present value at time of retirement of the portion of a member's pension attributable to service likely to be rendered after the valuation date was computed so that each contribution in the series was a constant percentage of the member's year-by-year projected covered compensation. This is the individual entry age normal actuarial cost method.

The accrued liability was computed and financed as follows:

Retirees and Beneficiaries: The discounted value of pensions likely to be paid retirees and beneficiaries was computed using the investment return and mortality assumptions. This amount was financed by applicable accrued assets.

Active and Inactive members: The discounted value of benefits likely to be paid active and inactive members on account of service rendered prior to the valuation date was computed using the assumptions outlined on the following pages.

The computed amount was reduced by applicable valuation assets and the remainder (or overfunding) was financed as a level percent-of-payroll over a rolling period of 10 years.

Asset valuation method: Last year's valuation assets are increased by contributions and expected investment income on last year's valuation assets and non-investment net cash flow and reduced by refunds, benefit payments and expenses. To this amount is added the phased-in recognition of investment income. The phased-in recognition is the sum over the five years ending on the valuation date of 20% of the difference between each year's expected return and actual market return.

Actuarial Assumptions Used for the Valuation

Section 13.4 of the Plan document provided the Board of Trustees the authority to manage and administer the Plan. Subsection (h) provides the Board the ability to require and obtain appropriate Actuary reports. The actuarial assumptions used for this report were based upon the results of such reports; specifically, an Experience Study for the City of Kalamazoo Employees Retirement System covering the period January 1, 2009 through December 31, 2013, the Metro Transit portion – prior to CCTA spin-off (a report dated February 19, 2015 presented the results of this experience study). Assumptions related to investment return, administrative expenses, wage inflation, and mortality were updated pursuant to an assumption study as of December 31, 2018 dated November 26, 2019, performed for the Central County Transportation Authority Pension Plan. The actuarial assumptions represent estimates of future experience. Unless otherwise noted the assumptions were first used in the December 31, 2019 funding report.

Investment Return. The rate of investment return is compounded annually net of investment expenses.

| | |
|--|-------|
| 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% |

These assumptions are used to equate the value of payments due at different points in time.

Investment Expenses. 0.50% of average valuation assets.

Administrative Expenses. 0.75% of covered member payroll was added to the Normal Cost in anticipation of administrative expenses expected to be paid during the fiscal year.

Actuarial Assumptions Used for the Valuation (Continued)

Pay Projections. These assumptions are used to project current pays to those upon which benefits will be based.

The annual rate of pay increases consists of two parts:

- (i) A long-term rate of pay inflation equal to 3.25%; and
- (ii) Merit and longevity increases, which vary according to age or length of service. These rates are illustrated below:

| Years of 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 |

If the number and distribution of active members remain constant, then the total active member payroll is expected to increase 3.25% annually for the base portion of the salary increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

Actuarial Assumptions Used for the Valuation (Continued)

The *mortality tables* used were as follows:

- **Healthy Pre-Retirement:** The Pub-2010 Amount-Weighted, General, Employee, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2019.
- **Healthy Post-Retirement:** The Pub-2010 Amount-Weighted, General, Healthy Retiree, Male and Female tables, with future mortality improvements projected to 2025 using scale MP-2019.
- **Disability Retirement:** The Pub-2010 Amount-Weighted, General, Disabled Retiree, Male and Female, with future mortality improvements projected to 2025 using scale MP-2019.

| Sample Attained Ages | Healthy Pre-Retirement | | Healthy Post-Retirement | | Disabled Retirement | |
|----------------------------|-----------------------------------|--------|-----------------------------------|--------|-----------------------------------|--------|
| | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | | Future Life Expectancy (Years) | |
| | Male | Female | Male | Female | Male | Female |
| 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 |

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

Actuarial Assumptions Used for the Valuation (Continued)

The rates of retirement used to measure the probability of eligible members retiring during the next year were as follows:

| 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 |

Retirement probabilities were applied for members after both attaining age 55 and completing 15 years of service, or age 62 with 10 years of service (5 years for Non-Union members hired before 9/1/2010). The assumptions above were first used for the December 31, 2009 valuation of the City of Kalamazoo Employees Retirement System.

Actuarial Assumptions Used for the Valuation (Concluded)

Rates of disability were as follows:

| 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 |

Rates of separation from active membership were as shown below (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members remaining in employment.

| 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 |

The assumptions above were first used for the December 31, 2009 valuation of the City of Kalamazoo Employees Retirement System.



Miscellaneous and Technical Assumptions

| | |
|--|---|
| Active Member Group Size | The number of active members was assumed to remain constant. |
| Marriage Assumption | 100% of males and 100% of females are assumed to be married for purposes of death-in-service benefits. Male spouses are assumed to be three years older than female spouses. |
| Pay Increase Timing | Was assumed to occur in the middle of the year. This means that the pays reported for the valuation are assumed to be rates of pay on the valuation date. |
| Decrement Timing | Decrements are assumed to occur at the middle of the fiscal year. |
| Eligibility Testing | Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur. |
| Benefit Service | Exact fractional service is used to determine the amount of benefit payable. |
| Decrement Relativity | Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects. |
| Decrement Operation | Death-in-service decrement does not operate until member becomes vested. Withdrawal does not operate during retirement eligibility. |
| Normal Form of Benefit | The assumed normal form of benefit is the straight life form. |
| Incidence of Contributions | Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits. |
| Actuarial Equivalence Basis for Optional Forms of Payment | 7.0% interest with an 85%/15% unisex blend of the Pub-2010 Tables, with future mortality improvements projected to 2025 using scale MP-2019. |
| Post-Retirement Adjustment Timing | Post-retirement adjustments (PRAs) were assumed to be paid on January 1 of each year for Exempt retirees (beginning the second year following retirement). PRAs were assumed to be paid on the first of the month immediately following the retiree's birthday for all other groups. |
| Active Member Pay Adjustments | New hire pays were annualized. Pays were adjusted for members on Worker's Compensation or Leave of Absence for part of the valuation year. |



Glossary

Accrued Service. The service credited under the plan which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability. 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.” Under the actuarial cost method used the “AAL” differs somewhat from the value of future payments based on benefits earned as of the valuation date.

Actuarial Assumptions. Estimates of future plan experience with respect to rates of mortality, disability, retirement, investment income, and salary increases. Decrement assumptions (rates of mortality, separation, 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 appropriate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the normal costs to be paid in the future and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

Actuarial Equivalent. Benefits whose actuarial present values are equal.

Actuarial Present Value. The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

Amortization. Payment of an interest-bearing liability by means of periodic contributions of interest and principal, as opposed to a lump sum payment.

Experience Gain (Loss). A measure of the difference between actual experience and experience anticipated by a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost. The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” An amortization payment toward the unfunded actuarial accrued liability is in addition to the normal cost.

Reserve Account. An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

Unfunded Actuarial Accrued Liability. The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Valuation Assets. The value of current plan assets recognized for valuation purposes.



APPENDIX

10-Year Contribution Projection

This appendix shows estimated projected contribution requirements for the coming 10 fiscal years, based on the data, methods, and assumptions used for this report and assuming a stable population. The ability to make a periodic payment to certain retirees, as described in Section 15.5 of the CCTA Pension Plan document, is in part contingent on the level of projected employer contributions for the coming 10 fiscal years. The purpose of the projection is to determine estimated employer contribution rates for the next 10 fiscal years. If the projected employer contribution is 0% for 10 years, the CCTA Board may review the remaining requirements in order to determine if a periodic payment may be made. If the projected employer contribution is not 0% for 10 years, a periodic payment may not be made.

The last periodic payment was made during June 2018.

Please note that future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

| Fiscal Start | Employer NC % | UAL Payment % | Employer Contribution % |
|-----------------|------------------|------------------|----------------------------|
| October 1, 2022 | 12.16% | -9.86% | 2.30% |
| October 1, 2023 | 12.16% | -9.02% | 3.14% |
| October 1, 2024 | 12.16% | -8.26% | 3.90% |
| October 1, 2025 | 12.16% | -7.56% | 4.60% |
| October 1, 2026 | 12.16% | -6.92% | 5.24% |
| October 1, 2027 | 12.16% | -6.33% | 5.83% |
| October 1, 2028 | 12.16% | -5.79% | 6.37% |
| October 1, 2029 | 12.16% | -5.30% | 6.86% |
| October 1, 2030 | 12.16% | -4.85% | 7.31% |
| October 1, 2031 | 12.16% | -4.44% | 7.72% |

