



Macomb County Employees Retirement System

Actuarial Valuation Report

Plan Year January 1, 2022 – December 31, 2022

August 2023



August 2023

The Retirement Commission
Macomb County Employees Retirement System
Mount Clemens, Michigan

Ladies and Gentlemen:

Macomb County retained Buck to complete this actuarial valuation of the Macomb County Employees Retirement System. This report summarizes the actuarial valuation results of Macomb County Employees Retirement System as of December 31, 2022.

Purpose of This Report

Buck has prepared this report for Macomb County for use in review of the operation of the plan, including determining contributions to be made to the plan, and as a source of information for the financial statements of the plan. An actuarial valuation is performed on the retirement plan annually as of the beginning of the fiscal year. The main purposes of the actuarial valuation detailed in this report are:

1. To determine if the funding policy for the Retirement Plan is being met considering current assets and the current employer and member contribution rates; or determine the employer contribution necessary to meet the Commission's funding policy for the Plan;
2. To disclose the funding assets and liability measures as of the valuation date;
3. To review the current funded status of the Plan;
4. To compare actual and expected experience under the Plan during the last fiscal year;
5. And to report trends in contributions, assets, liabilities, and funded status over the last several years.

This actuarial valuation provides a "snapshot" of the funded position of the Retirement Plan based on the plan provisions, membership, assets, and actuarial assumptions as of the valuation date.

Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies, or inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, Buck recommends requesting its advance review of any statement, document, or filing to be based on information contained in this report. Buck will accept no liability for any such statement, document or filing made without its prior review.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. Because of limited scope, Buck performed no analysis of the potential range of such future differences.

Data Used

The actuarial valuation is based on unaudited financial and member data provided by the staff of the Retirement System and summarized in this report. The benefits considered are those delineated in the plan as amended and restated effective December 31, 2015. The actuary did not verify the data submitted but did perform tests for consistency and reasonableness.

Use of Models

Actuarial Standard of Practice No. 56 (“ASOP 56”) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses the following:

- third-party software in the performance of annual actuarial valuations and projections to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report.
- an internally developed model that applies applicable funding methods and policies to the liabilities derived from the output of the third-party software and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report

Buck has an extensive review process whereby the results of the liability calculations are checked using detailed sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other outputs and the internal model are similarly reviewed in detail and at a high level for accuracy, reasonability and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software or model. The review is performed by experts within the company who are familiar with applicable funding methods as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked and reviewed by multiple experts within the company who are familiar with the details of the required changes.

Assessment of Risks

Actuarial Standard of Practice No. 51 (“ASOP 51”) applies to funding calculations such as those presented in this report and requires certain disclosures of potential risks. Section 6 of this report presents an assessment of the key risks applicable to this plan, as well as historical information and plan maturity measures.

Assumptions and Methods

All costs, liabilities and other factors under the Plan were determined in accordance with actuarial principles and procedures adopted in accordance with the Actuarial Standards of Practice (ASOPs). An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of the Plan.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the Plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the Plan. The actuary performs an analysis of Plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience.

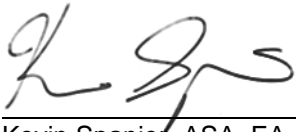
Where presented, references to “funded ratio” and “unfunded accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the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

Actuarial Certification

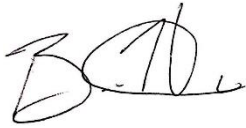
The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all Applicable Actuarial Standards of Practice and they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

Respectfully submitted,

Buck Global, LLC (Buck)



Kevin Spanier, ASA, EA, MAAA, FCA
Director, Retirement Consulting



Brett Hunter, ASA, EA, MAAA
Senior Consultant, Retirement Consulting

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Summary of Results

Overview

The Macomb County Employees Retirement System provides pension and ancillary benefit payments to the terminated and retired employees of Macomb County, Michigan. A Retirement Commission comprised of employer, employee, and appointed representatives is responsible for administering the Plan and making investment decisions. This report presents the results of the actuarial valuation of the Employees Retirement System as of December 31, 2022.

Membership

Actives

As of December 31, 2022, there were 1,203 employees in active service covered under the provisions of the Plan not participating in DROP. The significant age, service, and salary information for these employees is summarized below, along with comparative figures from the last actuarial valuation one year earlier.

	December 31, 2022	December 31, 2021
Active participants		
Number	1,203	1,312
Average age	49.1 years	48.3 years
Average service	14.5 years	13.7 years
Total annual valuation salary	\$ 94,227,867	\$ 92,556,195
Average annual salary	\$ 78,327	\$ 70,546

The number of active members decreased by 8.3% from the previous valuation date as the plan is closed to the entrance of new members. The average age of the active members increased by 0.8 years and the average service increased 0.8 years. The total annual valuation salary increased by 1.8% and the average salary increased by 11.0% from the previous valuation. There were 1,202 active members who were also reported active in the December 31, 2021 actuarial valuation. The total annual salary for this group increased by 11.63% which was higher than the 3.76% increase we expected for the group.

Distributions of active members by age, service, and salary are given in Section 3.2. The salaries shown for active members are the annualized salaries reported, projected to the valuation year.

A schedule of active member data and reconciliation of the active membership from the previous year is shown in Sections 3.3 and 3.4.

In addition, there are 1,615 active employees (not included above) hired after December 31, 2015 earning vesting service to receive a \$1,000 lump sum benefit upon termination of employment.

Inactives

In addition to the active members, there were 528 inactive members who did not elect to receive their accumulated contributions when they left covered employment. The significant age and annual benefit information for these inactive members are summarized below with comparative figures from the last actuarial valuation one year earlier.

	December 31, 2022	December 31, 2021
Terminated vested participants		
Number	273	289
Average age	51.7 years	51.6 years
Average annual benefit payments	\$ 14,262	\$ 13,784

The number of inactive vested members decreased by 5.5% from the previous valuation. The average age of the inactive vested members increased by 0.1 years. The Average Annual Pension Benefit for these members increased by 3.5% from the previous valuation.

	December 31, 2022	December 31, 2021
Non-vested participants owed refund		
Number	255	264
Average payoff amount	\$ 2,255	\$ 2,329

The number of inactive non-vested members decreased by 3.4% from the previous valuation. The Average Refund Due for these members decreased by 3.2% from the previous valuation.

Distributions of inactive members by age and pension benefit are given in Section 3.5.

Retirees and Beneficiaries

In addition to the active and inactive members, there were 2,485 retired members and 397 beneficiaries who are receiving monthly benefit payments on the valuation date. The significant age and annual benefit information for these members are summarized below with comparative figures from the last actuarial valuation performed one year earlier.

	December 31, 2022	December 31, 2021
Retired participants		
Number	2,485	2,432
Average Age	70.2 years	70.1 years
Average annual retirement benefits	\$ 23,097	\$ 22,710

	December 31, 2022	December 31, 2021
Survivors and beneficiaries of participants		
Number	397	392
Average Age	72.7 years	72.9 years
Average annual retirement benefits	\$ 16,214	\$ 15,707

The number of retired members and beneficiaries increased by 2.1% from the previous valuation date. The average age of the retired members and beneficiaries remained the same as prior valuation. The average annual benefit payments for these members increased by 1.9% from the previous valuation date.

Distributions of retired members by age and form of payment are given in Section 3.6 and 3.7.

DROP Participants

In addition to the actives, inactives, and retirees, there were 218 DROP members who are receiving monthly benefit payments on the valuation date. The significant age and annual benefit information for these members are summarized below.

	December 31, 2022	December 31, 2021
DROP participants		
Number	218	260
Average Age	57.8 years	58.0 years
Average annual retirement benefits	\$ 35,087	\$ 32,818
Average pay	\$ 77,075	\$ 68,251

In our opinion, the membership data collected and prepared for use in this actuarial valuation meets the data quality standards required under Actuarial Standards of Practice No. 23.

Plan Assets

The Plan's assets are held in trust and invested for the exclusive benefit of plan members. The trust is funded by member and employer contributions and pays benefits directly to eligible members in accordance with plan provisions. The assets are audited annually and are reported at fair value. On a fair value basis, the Plan has Net Assets Available for Benefits of \$1,066.4 million as of December 31, 2022. This includes a decrease of \$250.9 million over the Net Assets Available for Benefits of \$1,317.4 million as of December 31, 2021. During the prior year, the fair value of assets experienced an investment rate of return of (14.46)%.

In order to reduce the volatility investment gains and losses can have on the Plan's actuarially required contribution and funded status, the Commission has adopted a five-year smoothing method to determine the actuarial value of assets used for funding purposes. This method recognizes gains and losses, i.e. the difference between actual investment return during the year and the expected return based on the valuation interest rate, on a level basis over a five-year period. In our opinion, this method complies with Actuarial Standards of Practice No. 44.

As of December 31, 2022, the assets available for benefits on an actuarial value basis was \$1,141.7 million. This includes a decrease of \$0.5 million over the actuarial value of assets of \$1,142.2 million as of December 31, 2021. During the prior year, the actuarial value of assets experienced an actuarial rate of return of 5.82%.

A summary of the assets held for investment, a summary of changes in assets, and the development of the actuarial value of assets is shown in Section 2.

Actuarial Experience

Differences between the expected experience based on the actuarial assumptions and the actual experience create changes in the actuarial accrued liability, actuarial value of assets, and the unfunded actuarial accrued liability from one year to the next. These changes create an actuarial gain if the experience is favorable and an actuarial loss if the experience is unfavorable. The Plan experienced a total net actuarial loss of \$40.8 million during the prior year. This total net loss is about 3.7% of the plan's prior year actuarial accrued liability.

The demographic experience tracks actual changes in the plan's population compared to the assumptions for decrements such as mortality, turnover, and retirement, as well as pay increases. The Plan experienced a demographic loss of \$27.0 million during the year ending December 31, 2022, primarily due to larger than expected salary increases. This loss increased the unfunded actuarial accrued liability by \$27.0 million and decreased the funded ratio by 2.5%.

Continued tracking of the demographic experience is warranted in order to confirm the appropriateness of the actuarial assumptions. Details of the demographic, economic, and other assumptions used to value the plan liabilities and normal cost can be found in Section 6. In our opinion, the economic assumptions comply with Actuarial Standards of Practice No. 27 and the demographic assumptions comply with Actuarial Standards of Practice No. 35.

On the asset side, the Plan experienced a loss on an actuarial value of assets basis. The actual rate of return on the actuarial value of plan assets for the year ending December 31, 2022 was 5.82% compared to the assumption of 7.00%, resulting in an asset loss of \$13.8 million. This loss increased the unfunded actuarial accrued liability by \$13.8 million and decreased the funded ratio by 1.2%.

The rate of return on the fair value of assets for the year ending December 31, 2022 was consistent with the statement above. It was (14.46)%, which was lower than the assumed rate of 7.00%. The actuarial value of the assets recognizes only 1/5 of the 2022 gain on fair value, delaying the recognition of the remaining 4/5 over the next four years. Moreover, the actuarial value of assets also recognizes deferred portions of prior years' gains and losses on fair value. It should be noted that the plan's assumed asset return of 7.00% is a long-term rate and short-term performance is not necessarily indicative of expected long-term future returns. A summary of the actuarial gains and losses experienced during the prior year is shown in Section 1.3.

Actuarial Contributions

Effective with the December 31, 2013 annual valuation, the Retirement Commission established a closed 20-year amortization policy assuming 5.00% payment increases. For this valuation, the remaining period is 11 years.

The normal cost represents the cost of the benefits that accrue during the year for active members under the Entry Age Normal Actuarial Cost Method. It is determined as a level percentage of pay which, if paid from entry age to the assumed retirement age, assuming all the actuarial assumptions are exactly met by plan experience would accumulate to a fund sufficient to pay all benefits provided by the Plan. The expected member contributions are subtracted from this amount to determine the employer normal cost. The employer normal cost for 2023 has been determined to be \$9.9 million or 10.65% of pay.

The cost method also determines the actuarial accrued liability which represents the value of all accumulated past normal cost payments. This amount is compared to the actuarial value of assets to determine if the Plan is ahead or behind in funding as of the valuation date. The difference between the total actuarial accrued liability and the actuarial value of assets equals the amount of unfunded actuarial accrued liability or surplus (if negative) on the valuation date. This amount is amortized and added to the employer normal cost to determine the annual actuarially required employer contribution for the year.

The unfunded actuarial accrued liability as of December 31, 2022 is (\$17.5) million. This represents an increase of \$35.3 million in the unfunded actuarial accrued liability from last year's amount of (\$52.8) million.

The annual actuarially required employer contribution for 2024 is \$9.2 million, or 9.91% of pay. This represents an increase of \$3.5 million in the employer contribution amount of \$5.7 million for 2023, or an increase of 3.66% of pay from last year's employer contribution rate of 6.25%.

The actuarial liabilities and development of the annual actuarial employer contribution is shown in Sections 1.1 and 1.2.

In our opinion, the measurement of the benefit obligations and determination of the actuarial cost of the Plan is performed in compliance with Actuarial Standards of Practice No. 4.

Funded Status

The funded status is a measure of the progress that has been made in funding the plan as of the valuation date. It is determined as a ratio of the actuarial value of assets divided by the total actuarial accrued liability on the valuation date. A ratio of over 100% represents a plan that is ahead in funding, and a ratio of less than 100% represents a plan that is behind in funding on the valuation date.

As of December 31, 2022, the funded ratio of the Plan is 101.56%. This represents a decrease of 3.29% from last year's funded ratio of 104.85% as of December 31, 2021.

A history of the unfunded actuarial accrued liability and the funded ratio is shown in Section 1.5.

Changes in Plan Provisions

There have been no changes in benefits or other plan provisions considered in this actuarial valuation since the last valuation performed as of December 31, 2021.

Changes in Actuarial Assumptions, Methods, or Procedures

The actuarial assumptions and methods for funding purposes are the same as those used for the December 31, 2021 valuation report.

Comparative Summary of Key Actuarial Valuation Results

Actuarial Valuation as of

December 31, 2022

December 31, 2021

Summary of Member Data

Number of Members Included in the Valuation

Active Members	1,203	1,312
Terminated Vested Members	273	289
Non-vested Members Owed Refund	255	264
Retirees and Beneficiaries	2,882	2,824
DROP Participants	<u>218</u>	<u>260</u>
Total	4,831	4,949

Annual Payroll

Average (actual)	78,327	70,546
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Annual Benefit Payments

Terminated Vested Members (Average)	14,262	13,784
Non-vested Member Refund (Average)	2,255	2,329
Retirees and beneficiaries (Average)	22,152	21,732
DROP Participants (Average)	35,087	32,818

Summary of Assets

Fair Value	1,066,443,974	1,317,355,983
Rate of Return	(14.46)%	19.49%
Actuarial Value	1,141,682,925	1,142,153,181
Rate of Return	5.82%	12.42%

Summary of Liabilities

Total Actuarial Accrued Liability	1,124,197,091	1,089,306,972
Actuarial Value of Assets	1,141,682,925	1,142,153,181
Unfunded Actuarial Accrued Liability	(17,485,834)	(52,846,209)
Funded Ratio	101.56%	104.85%
Maturity Ratio (See section 1.2)	72.47%	73.96%

Section 1: Actuarial Funding Results

Section 1.1 - Actuarial Liabilities and Normal Cost

Actuarial Liabilities Based on December 31, 2022 Valuation	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals
1. Present Value of Projected Benefits					
Active Members					
Retirement Benefits	158,603,113	134,404,567	42,279,232	6,743,067	342,029,979
Withdrawal Benefits	18,144,584	3,679,875	750,504	2,009,200	24,584,163
Disability Benefits	11,639,397	4,097,739	1,467,872	726,974	17,931,982
Death Benefits	3,352,825	1,554,067	554,899	181,698	5,643,489
Return on Contributions	<u>966,479</u>	<u>206,646</u>	<u>121,608</u>	<u>70,550</u>	<u>1,365,283</u>
Total	192,706,398	143,942,894	45,174,115	9,731,489	391,554,896
2. Vested Inactive Members with Deferred Benefits	19,794,560	2,695,945	2,047,045	673,455	25,211,005
3. Non-Vested Inactive Members with Deferred Benefits	355,120	112,973	0	48,099	516,192
4. Retired Members and Beneficiaries Receiving Benefits	375,030,716	179,013,320	89,905,496	23,864,710	667,814,242
5. DROP Participants Receiving Benefits	64,173,807	36,480,456	18,251,794	2,229,662	121,135,719
6. Total Present Value of Projected Benefits (1 + 2 + 3 + 4 + 5)	652,060,601	362,245,588	155,378,450	36,547,415	1,206,232,054
7. Present Value of Future Normal Costs	<u>39,738,852</u>	<u>33,006,557</u>	<u>7,242,593</u>	<u>2,046,961</u>	<u>82,034,963</u>
8. Total Actuarial Accrued Liability (6 – 7)	612,321,749	329,239,031	148,135,857	34,500,454	1,124,197,091
Normal Cost for Fiscal Year Beginning December 31, 2022					
1. Total Normal Cost	6,626,693	4,590,563	1,218,692	324,608	12,760,556
2. Expected Member Contribution	<u>(1,402,528)</u>	<u>(1,053,007)</u>	<u>(284,273)</u>	<u>(82,544)</u>	<u>(2,822,352)</u>
3. Employer Normal Cost	5,224,165	3,537,556	934,419	242,064	9,938,204

Section 1.2 – Actuarial Contributions

	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals
1. Total Actuarial Accrued Liability					
a. Active Members					
i. Retirement Benefits	129,463,167	105,394,944	36,013,604	5,446,542	276,318,257
ii. Withdrawal Benefits	12,540,143	1,987,840	448,698	1,529,864	16,506,545
iii. Death Benefits	2,428,222	978,102	392,191	139,702	3,938,217
iv. Disability Benefits	8,106,001	2,506,068	1,018,854	538,939	12,169,862
v. Return on Employee Contributions	<u>430,013</u>	<u>69,383</u>	<u>58,175</u>	<u>29,481</u>	<u>587,052</u>
vi. Total	152,967,546	110,936,337	37,931,522	7,684,528	309,519,933
b. Vested Inactive Members with Deferred Benefits	19,794,560	2,695,945	2,047,045	673,455	25,211,005
c. Non-Vested Inactive Members with Deferred Benefits	355,120	112,973	0	48,099	516,192
d. Retired Members and Beneficiaries Receiving Benefits	375,030,716	179,013,320	89,905,496	23,864,710	667,814,242
e. DROP Participants Receiving Benefits	<u>64,173,807</u>	<u>36,480,456</u>	<u>18,251,794</u>	<u>2,229,662</u>	<u>121,135,719</u>
f. Total (1.a.vi. + 1.b. + 1.c. + 1.d. + 1.e.)	612,321,749	329,239,031	148,135,857	34,500,454	1,124,197,091
2. Actuarial Value of Assets	638,703,608	316,229,518	142,867,158	43,882,641	1,141,682,925
3. Unfunded Actuarial Accrued Liability (UAAL) (1.f. -2.)	(26,381,859)	13,009,513	5,268,699	(9,382,187)	(17,485,834)
4. Funded Ratio (2. / 1.f.)	104.31%	96.05%	96.44%	127.19%	101.56%
5. Maturity Ratio [(1.b. + 1.c. + 1.d. + 1.e.) / 1.f.]	75.02%	66.31%	74.39%	77.73%	72.47%
6. Employer Contribution for Fiscal 2024					
Total Normal Cost	6,626,693	4,590,563	1,218,692	324,608	12,760,556
Member Contribution	(1,402,528)	(1,053,007)	(284,273)	(82,544)	(2,822,352)
Administrative Expense	431,447	210,760	95,422	29,674	767,303
UAAL Contribution	(2,630,948)	1,297,382	525,424	(935,645)	(1,743,787)
Timing Adjustment	<u>90,763</u>	<u>169,223</u>	<u>51,095</u>	<u>(24,275)</u>	<u>286,806</u>
Total Employer Contribution Dollar (Not less than 0)	3,115,427	5,214,921	1,606,360	0	9,936,708 ¹
Projected Member Pay	54,935,966	25,717,033	9,168,685	3,524,060	93,345,744
Total Employer Contribution (% of Pay)	5.67%	20.28%	17.52%	0.00%	10.65%
7. Discount Rate	7.00%	7.00%	7.00%	7.00%	
8. Amortization payments increase assumption	5.00%	5.00%	5.00%	5.00%	
9. Amortization period for 2024 contribution ²	11	11	11	11	

¹ Total employer contribution is a sum of the individual employer amounts and does not add up to the items above because one group is capped at \$0 rather than negative

² Closed 20-year period beginning with December 31, 2013 Valuation

Section 1.3 - Actuarial (Gain) / Loss (\$'s in 000's)

	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals¹
1. Expected Actuarial Accrued Liability					
a. Actuarial Accrued Liability at December 31, 2021	599,906	308,709	145,657	35,036	1,089,308
b. Normal Cost at December 31, 2021	6,546	4,472	1,290	333	12,641
c. Interest on a. + b. to End of Year	42,452	21,923	10,286	2,476	77,137
d. Benefit Payments and Refund of Contributions with Interest to End of Year	46,231	20,891	11,820	2,945	81,887
e. Effect of Assumption and Plan Changes	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
f. Expected Actuarial Accrued Liability (a. + b. + c. – d. + e.)	602,673	314,213	145,413	34,900	1,097,199
2. Actuarial Accrued Liability at December 31, 2022	<u>612,322</u>	<u>329,239</u>	<u>148,136</u>	<u>34,500</u>	<u>1,124,197</u>
3. Liability (Gain) / Loss (2. – 1.f.)	9,649	15,026	2,723	(400)	26,998
4. Expected Actuarial Value of Assets					
a. Actuarial Value of Assets at December 31, 2021	642,220	313,722	142,039	44,172	1,142,153
b. Interest on a. to End of Year	44,955	21,961	9,943	3,092	79,951
c. Contribution Made	5,333	5,075	4,281	94	14,783
d. Interest on c. to End of Year	187	178	150	3	517
e. Benefit Payments and Refund of Contributions with Interest to End of Year	<u>46,231</u>	<u>20,891</u>	<u>11,820</u>	<u>2,945</u>	<u>81,887</u>
f. Expected Actuarial Value of Assets at December 31, 2022 (a. + b. + c. + d. – e.)	646,464	320,045	144,593	44,416	1,155,517
5. Actuarial Value of Assets as of December 31, 2022	<u>638,704</u>	<u>316,230</u>	<u>142,867</u>	<u>43,883</u>	<u>1,141,684</u>
6. Actuarial Asset (Gain) / Loss (4.f. -5.)	7,760	3,815	1,726	533	13,833
7. Actuarial (Gain) / Loss (3. + 6.)	17,409	18,841	4,449	133	40,831

¹ Numbers may not add due to rounding.

Section 1.4 - Actuarial Balance Sheet

Financial Resources		December 31, 2022
1. Actuarial Value of Assets		1,141,682,925
2. Present Value of Future Contributions		
a. Expected Member Contributions		19,707,573
b. Employer Normal Cost		62,327,390
c. State Appropriations		<u>0</u>
d. Total		82,034,963
3. Unfunded Actuarial Accrued Liability/(Reserve)		(17,485,834)
4. Total Assets [1. + 2.(d) + 3.]		1,206,232,054

Benefit Obligations		December 31, 2022
1. Present Value of Future Benefits		
a. Active members		391,554,896
b. Inactive members		25,727,197
c. Retirees, disabilities and beneficiaries		667,814,242
d. DROP members		<u>121,135,719</u>
e. Total		1,206,232,054

Section 1.5 - History of UAAL and Funded Ratio (\$'s in 000's)

Valuation Date	Actuarial Value of Assets (AVA) (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded Actuarial Accrued Liability (UAAL) (b-a)	Funded Ratio (AVA as a % of AAL) (a/b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (b-a)/(c)
December 31, 2009	866,357	814,564	(51,793)	106.4%	116,523	(44.4)%
December 31, 2010	862,916	837,168	(25,748)	103.1%	110,795	(23.2)%
December 31, 2011	828,692	854,324	25,632	97.0%	108,900	23.5%
December 31, 2012	795,606	867,219	71,613	91.7%	105,392	67.9%
December 31, 2013	837,653	884,042	46,389	94.8%	102,253	45.4%
December 31, 2014	882,565	911,096	28,531	96.9%	110,159	25.9%
December 31, 2015	902,931	977,566	74,636	92.4%	110,558	67.5%
December 31, 2016	940,494	1,019,138	78,644	92.3%	122,480	64.2%
December 31, 2017	990,803	1,013,110	22,307	97.8%	112,878	19.8%
December 31, 2018	999,604	1,034,282	34,678	96.6%	107,524	32.3%
December 31, 2019	1,022,559	1,054,637	32,078	97.0%	101,650	31.6%
December 31, 2020	1,068,574	1,064,429	(4,145)	100.4%	93,922	(4.4)%
December 31, 2021	1,142,153	1,089,307	(52,846)	104.9%	92,556	(57.1)%
December 31, 2022	1,141,683	1,124,197	(17,486)	101.6%	94,228	(18.6)%

Section 1.6 - Solvency Test (\$'s in 000's)

Valuation Date	Aggregate Accrued Liability For			Valuation Assets	Portion of Accrued Liabilities Covered by Assets		
	(1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer- Financed Portion)		(1)	(2)	(3)
December 31, 2014	46,460	640,125	224,511	882,565	100.00%	100.00%	87.29%
December 31, 2015	41,678	709,409	226,479	902,931	100.00%	100.00%	67.05%
December 31, 2016	42,682	723,523	252,933	940,494	100.00%	100.00%	68.91%
December 31, 2017	42,985	737,059	233,066	990,803	100.00%	100.00%	90.43%
December 31, 2018	44,172	755,475	234,635	999,604	100.00%	100.00%	85.22%
December 31, 2019	43,054	776,756	234,827	1,022,559	100.00%	100.00%	86.34%
December 31, 2020	41,387	789,720	233,322	1,068,574	100.00%	100.00%	100.00%
December 31, 2021	39,467	805,697	244,143	1,142,153	100.00%	100.00%	100.00%
December 31, 2022	30,386	814,677	279,134	1,141,683	100.00%	100.00%	100.00%

Section 2: Plan Assets

Section 2.1 - Summary of Fair Value of Assets

Asset Category	Fair Value as of December 31, 2022		Fair Value as of December 31, 2021	
	Amount	%	Amount	%
1. Cash and Short-Term Investments				
a. Cash and cash equivalents	43,689,589	4.07%	58,787,318	4.45%
b. Other short-term	<u>17,776</u>	<u>0.00%</u>	<u>40,196</u>	<u>0.00%</u>
c. Total	43,707,365	4.07%	58,827,514	4.45%
2. Investments at Fair Value				
a. U.S. Treasury and agencies	0	0.00%	0	0.00%
b. Fixed Income	95,947,951	8.94%	107,979,434	8.16%
c. Domestic Stocks and Equity	532,426,109	49.59%	718,240,865	54.28%
d. International Equity	74,484,146	6.94%	94,970,054	7.18%
e. Limited Partnership	<u>327,151,429</u>	<u>30.47%</u>	<u>343,097,070</u>	<u>25.93%</u>
f. Total	1,030,009,635	95.94%	1,264,287,423	95.55%
3. Other Assets	0	0.00%	0	0.00%
4. Total Assets (1.c. + 2.f. + 3.)	1,073,717,000	100.00%	1,323,114,937	100.00%
5. Receivables				
a. Interest and Dividends	474,203		411,577	
b. Due from primary government	0		58,224	
c. Other Receivables	<u>233,044</u>		<u>222,333</u>	
d. Total	707,247		692,134	
6. Payables				
a. Payable for Investments Purchased	0		0	
b. Securities Lending Obligation in Excess of Collateral	0		0	
c. Accounts Payable and Accrued Liabilities	<u>7,980,273</u>		<u>6,451,088</u>	
d. Total	7,980,273		6,451,088	
7. Net Assets for Pension [4. + 5.d. – 6.d.]	1,066,443,974		1,317,355,983	

Section 2.2 - Changes in Fair Value of Assets

Transactions	December 31, 2022	December 31, 2021
Additions		
1. Contributions		
a. Contributions from Employers	11,966,428	15,560,031
b. Contributions from Plan Members	<u>2,816,531</u>	<u>3,015,289</u>
c. Total	14,782,959	18,575,320
2. Net Investment Income		
a. Interest and Dividends	9,926,365	9,568,493
b. Net Appreciation(Depreciation)	(187,776,987)	218,197,417
c. Rental Income	0	0
d. Net Securities Lending Income	0	0
e. Securities Lending Unrealized Gain/(Loss)	0	0
f. Miscellaneous	<u>0</u>	<u>0</u>
g. Total	(177,850,622)	227,765,910
h. Investment Expense	<u>(7,981,791)</u>	<u>(8,395,231)</u>
i. Net Investment Income	(185,832,413)	219,370,679
3. Total Additions	(171,049,454)	237,945,999
Deductions		
4. Benefit Payments and Refunds		
a. Retirement Benefits	78,716,138	73,093,602
b. Refund of Contributions	401,462	396,355
c. Death	0	0
d. Supplemental Payment	0	0
e. Administrative Expenses	<u>744,955</u>	<u>730,984</u>
f. Total Deductions	79,862,555	74,220,941
5. Net Increase	(250,912,009)	163,725,058
6. Net Assets Held in Trust for Pension Benefits		
a. Beginning of Year	1,317,355,983	1,153,630,925
b. End of Year	1,066,443,974	1,317,355,983

Section 2.3 - Actuarial Value of Assets

Development of Actuarial Value of Assets		Amount	
1.	Actuarial Value of Assets as of December 31, 2021	1,142,153,181	
2.	Unrecognized Return as of December 31, 2021	<u>175,202,802</u>	
3.	Fair Value of Assets as of December 31, 2021 (1. + 2.)	1,317,355,983	
4.	Contribution		
a.	Member (includes purchased service)	2,816,531	
b.	Employer	11,966,428	
c.	State appropriations	<u>0</u>	
d.	Total	14,782,959	
5.	Distributions		
a.	Benefit payments	78,716,138	
b.	Refund of contributions	401,462	
c.	Administrative Expenses	<u>744,955</u>	
d.	Total	79,862,555	
6.	Expected Return at 7.00% on		
a.	Item 1	79,950,723	
b.	Item 4 (d.)	517,404	
c.	Item 5 (d.)	<u>2,795,189</u>	
d.	Total [a. + b. - c.]	77,672,938	
7.	Actual Return on Fair Value for Fiscal Year	(185,832,413)	
8.	Return to be Spread for Fiscal year [(7. – 6(d))]	(263,505,351)	
9.	Total Fair Value of Assets as of December 31, 2022	1,066,443,974	
10.	Return to be Spread		
Fiscal Year	Return to be Spread	Unrecognized Percent	Unrecognized Return
2022	(263,505,351)	80%	(210,804,281)
2021	146,518,087	60%	87,910,852
2020	56,422,966	40%	22,569,186
2019	125,426,458	20%	25,085,292
2018	(130,180,156)	0%	<u>0</u>
	Total		(75,238,951)
11.	Preliminary Actuarial Value of Assets (9. – 10.)	1,141,682,925	
12.	Corridor		
a.	Lower Limit: 80% x 9.	853,155,180	
b.	Upper Limit: 120% x 9.	1,279,732,768	
c.	Adjustment to 11. to fit limits	<u>0</u>	
13.	Actuarial Value of Assets (11. + 12.c.)	1,141,682,925	
14.	Recognized Rate of Return for the Year on Actuarial Value of Assets ¹	5.82%	
15.	Rate of Return for the Year on Market Value of Assets (2 x 7. / [3. + 9. – 7.]	(14.46)%	

¹ The rate of return is based on the change in the actuarial value of assets from last year to this year. The rate of return is calculated assuming contributions and disbursements occur halfway through the year.

Section 2.3 - Actuarial Value of Assets (cont'd)

Allocation of Retirement Systems Assets

	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total
1. Valuation assets at start of year	642,220,027	313,722,209	142,039,310	44,171,635	1,142,153,181
2. Employee contributions	1,388,591	1,052,915	281,057	93,968	2,816,531
3. Employer contributions	3,944,076	4,022,352	4,000,000	0	11,966,428
4. Benefits paid	44,346,442	20,184,566	11,388,552	2,796,578	78,716,138
5. Refund of contributions	320,877	0	31,970	48,615	401,462
6. Administrative expense allocated on BOY asset value	<u>418,881</u>	<u>204,621</u>	<u>92,643</u>	<u>28,810</u>	<u>744,955</u>
7. Average valuation assets [1. + 0.5 * {2. + 3. - 4. - 5. - 6.}]	622,343,261	306,065,249	138,423,256	42,781,618	1,109,613,384
8. Investment income allocated on average valuation assets	36,237,114	17,821,229	8,059,956	2,491,041	64,609,340
9. Transfer in	0	0	0	0	0
Transfer out	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Net transfer of assets	0	0	0	0	0
10. Valuation assets at end of year [1. + 2. +3. - 4. - 5. - 6. + 8. + 9.]	638,703,608	316,229,518	142,867,158	43,882,641	1,141,682,925
11. Total Revenues [2. +3. + 8.]	41,569,781	22,896,496	12,341,013	2,585,009	79,392,299
Percentage of revenue attributable to:					
Employee contributions	3.3%	4.6%	2.3%	3.6%	3.5%
Employer contributions	9.5%	17.6%	32.4%	0.0%	15.1%
Investment income	87.1%	77.7%	65.3%	96.4%	81.5%
12. Total Expenditures [4. + 5. + 6.]	45,086,200	20,389,187	11,513,165	2,874,003	79,862,555
Percentage of expenditures attributable to:					
Benefits paid	98.4%	99.0%	98.9%	97.2%	98.7%
Refund of contributions	0.7%	0.0%	0.3%	1.7%	0.5%
Administrative expenses	0.9%	1.0%	0.8%	1.0%	0.9%

Section 2.4 - Historical Asset Rate of Return

Year Ending December 31	Actuarial Value of Assets	Market Value of Assets
2013	10.55%	20.90%
2014	9.47%	7.22%
2015	6.86%	(1.73)%
2016	8.74%	9.58%
2017	10.01%	16.56%
2018	5.08%	(5.88)%
2019	7.35%	21.22%
2020	10.10%	11.95%
2021	12.42%	19.49%
2022	5.82%	(14.46)%

Section 2.5 - Forecast of Expected Benefit Payments (\$000)

Year Ending December 31	Active Employees	Retired, Disabled, Beneficiaries, and Deferred Vested	DROP Participants	Grand Total
2023	862	64,565	17,590	83,017
2024	1,805	63,317	10,039	75,161
2025	2,965	62,646	11,178	76,789
2026	4,018	61,836	13,488	79,342
2027	13,017	60,878	9,914	83,809
2028	18,253	59,838	7,583	85,674
2029	20,354	58,757	7,565	86,676
2030	23,316	57,616	7,544	88,476
2031	27,318	56,517	7,518	91,353
2032	32,299	55,301	7,489	95,089
2033	32,627	54,102	7,452	94,181
2034	34,921	52,879	7,417	95,217
2035	38,039	51,606	7,377	97,022
2036	38,772	50,172	7,328	96,272
2037	40,954	48,622	7,278	96,854
2038	42,277	46,998	7,222	96,497
2039	43,881	45,334	7,160	96,375
2040	46,025	43,516	7,091	96,632
2041	49,923	41,681	7,014	98,618
2042	54,215	39,863	6,928	101,006
2043	53,695	37,906	6,832	98,433
2044	52,758	35,977	6,726	95,461
2045	52,565	34,014	6,609	93,188
2046	52,201	32,035	6,480	90,716
2047	51,666	30,042	6,338	88,046
2048	51,097	28,068	6,183	85,348
2049	50,393	26,136	6,015	82,544
2050	49,533	24,235	5,832	79,600
2051	48,577	22,390	5,635	76,602
2052	47,599	20,590	5,424	73,613
2053	46,343	18,857	5,199	70,399

Section 2.6 – Retiree Reserve Balances

The liabilities for all divisions are greater than the reported assets allocated to the retiree reserve balances as of December 31, 2022. The liabilities and reserves are shown below:

	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total
1. Retiree Liability	439,204,523	215,493,776	108,157,290	26,094,372	788,949,961
2. Retiree Reserve	<u>427,609,239</u>	<u>199,772,991</u>	<u>103,997,057</u>	<u>25,889,223</u>	<u>757,268,510</u>
3. Shortfall	11,595,284	15,720,785	4,160,233	205,149	31,681,451

Reserve Accounts	Amount
1. Member Contributions	30,385,882
2. Reserve for benefits now paid	757,268,510
3. Reserve for future benefits	278,789,582
4. Supplemental reserve	<u>0</u>
5. Total	1,066,443,974

Section 3: Member Data

Section 3.1 - Summary of Members Included

As of December 31	General County		Sheriff's Department		Road Commission		Martha T. Berry		Total	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
<u>Active Members</u>										
1. Number	775	845	263	287	110	117	55	63	1,203	1,312
2. Average Age	50.9	50.1	44.0	43.3	47.6	47.3	50.7	49.2	49.1	48.3
3. Avg. Credited Service	13.7	12.9	15.8	15.4	17.8	17.1	12.1	11.3	14.5	13.7
4. Avg. Annual Earnings	68,817	62,364	96,644	83,651	80,924	76,340	61,804	56,773	75,687	67,999
5. Total Annual Earnings	53,333,292	52,697,872	25,417,468	24,007,700	8,901,636	8,931,834	3,399,243	3,576,701	91,051,639	89,214,106
<u>Active Members (Term. Benefit Only)</u>										
1. Number	1,095	1,008	171	146	91	78	258	258	1,615	1,490
<u>Retirees, Disabled and Beneficiaries</u>										
1. Number	1,992	1,962	394	370	321	311	175	181	2,882	2,824
2. Average Age	71.5	71.4	65.1	65.2	69.9	70.0	72.4	72.3	70.5	70.5
3. Avg. Monthly Benefit	1,560	1,542	3,303	3,271	2,203	2,155	1,168	1,155	1,846	1,811
<u>DROP Participants</u>										
1. Number	138	166	43	47	31	41	6	6	218	260
2. Average Age	59.6	59.4	53.3	53.4	56.6	57.6	56.1	56.3	57.8	58.0
3. Avg. Monthly Benefit	2,421	2,270	4,564	4,365	3,057	2,874	2,040	1,874	2,924	2,735
<u>Vested Terminated</u>										
1. Number	219	230	24	25	19	20	11	14	273	289
2. Average Age	51.9	51.8	48.0	48.9	51.6	51.0	54.3	53.6	51.7	51.6
3. Avg. Monthly Benefit	1,132	1,071	1,715	1,867	1,459	1,386	699	798	1,188	1,149
<u>Non-Vested with Refund</u>										
1. Number	168	174	20	20	-	-	67	70	255	264
2. Average Payoff	2,702	2,790	3,327	3,327	-	-	816	897	2,255	2,329
Total	4,387	4,385	915	895	572	567	572	592	6,446	6,439

Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2022 – Total

Attained Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
20-24	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
25-29	Number	0	6	1	0	0	0	0	0	7
	Total Salary									\$496,896
	Average Salary									\$70,985
30-34	Number	0	61	13	0	0	0	0	0	74
	Total Salary									\$5,902,328
	Average Salary									\$79,761
35-39	Number	1	75	29	19	2	0	0	0	126
	Total Salary									\$10,097,519
	Average Salary									\$80,139
40-44	Number	1	43	33	65	48	1	0	1	192
	Total Salary									\$15,107,184
	Average Salary									\$78,683
45-49	Number	3	46	34	59	98	15	1	1	257
	Total Salary									\$20,403,403
	Average Salary									\$79,391
50-54	Number	0	50	40	66	48	16	5	2	227
	Total Salary									\$17,209,257
	Average Salary									\$75,812
55-59	Number	3	29	37	60	30	7	2	5	173
	Total Salary									\$12,196,164
	Average Salary									\$70,498
60-64	Number	3	32	33	27	9	1	4	2	111
	Total Salary									\$7,271,603
	Average Salary									\$65,510
65-69	Number	0	16	8	2	2	1	1	0	30
	Total Salary									\$2,082,911
	Average Salary									\$69,430
70+	Number	0	2	2	0	1	1	0	0	6
	Total Salary									\$284,375
	Average Salary									\$47,396
TOTAL	Number	11	360	230	298	238	42	13	11	1,203
	Total Salary	\$538,391	\$24,738,587	\$16,777,227	\$23,325,358	\$20,417,410	\$3,539,003	\$835,848	\$879,814	\$91,051,639
	Average Salary	\$48,945	\$68,718	\$72,944	\$78,273	\$85,787	\$84,262	\$64,296	\$79,983	\$75,687

Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2022 – General County (continued)

Attained Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
20-24	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
25-29	Number	0	1	1	0	0	0	0	0	2
	Total Salary									\$125,658
	Average Salary									\$62,829
30-34	Number	0	19	4	0	0	0	0	0	23
	Total Salary									\$1,503,318
	Average Salary									\$65,362
35-39	Number	1	57	12	1	0	0	0	0	71
	Total Salary									\$4,986,762
	Average Salary									\$70,236
40-44	Number	1	29	22	38	15	0	0	0	105
	Total Salary									\$7,431,251
	Average Salary									\$70,774
45-49	Number	3	35	29	39	44	8	1	0	159
	Total Salary									\$11,322,768
	Average Salary									\$71,212
50-54	Number	0	40	31	46	24	8	3	1	153
	Total Salary									\$10,826,620
	Average Salary									\$70,762
55-59	Number	3	22	32	55	15	5	2	1	135
	Total Salary									\$8,939,603
	Average Salary									\$66,219
60-64	Number	3	26	27	24	7	1	4	2	94
	Total Salary									\$6,046,165
	Average Salary									\$64,321
65-69	Number	0	13	8	2	2	1	1	0	27
	Total Salary									\$1,866,772
	Average Salary									\$69,140
70+	Number	0	2	2	0	1	1	0	0	6
	Total Salary									\$284,375
	Average Salary									\$47,396
TOTAL	Number	11	244	168	205	108	24	11	4	775
	Total Salary	\$538,391	\$15,597,609	\$11,461,584	\$15,148,028	\$7,842,044	\$1,871,370	\$684,003	\$190,263	\$53,333,292
	Average Salary	\$48,945	\$63,925	\$68,224	\$73,893	\$72,612	\$77,974	\$62,182	\$47,566	\$68,817

Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2022 – Sheriff’s Department (continued)

Attained Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
20-24	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
25-29	Number	0	4	0	0	0	0	0	0	4
	Total Salary									\$308,578
	Average Salary									\$77,144
30-34	Number	0	36	9	0	0	0	0	0	45
	Total Salary									\$4,029,965
	Average Salary									\$89,555
35-39	Number	0	15	15	14	1	0	0	0	45
	Total Salary									\$4,358,515
	Average Salary									\$96,856
40-44	Number	0	7	6	10	20	0	0	1	44
	Total Salary									\$4,347,253
	Average Salary									\$98,801
45-49	Number	0	4	1	12	44	1	0	1	63
	Total Salary									\$6,479,244
	Average Salary									\$102,845
50-54	Number	0	4	2	10	16	1	1	1	35
	Total Salary									\$3,400,737
	Average Salary									\$97,164
55-59	Number	0	2	2	3	10	1	0	4	22
	Total Salary									\$2,076,633
	Average Salary									\$94,392
60-64	Number	0	0	0	3	1	0	0	0	4
	Total Salary									\$321,705
	Average Salary									\$80,426
65-69	Number	0	1	0	0	0	0	0	0	1
	Total Salary									\$94,840
	Average Salary									\$94,840
70+	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
TOTAL	Number	0	73	35	52	92	3	1	7	263
	Total Salary	\$0	\$6,386,927	\$3,241,373	\$5,132,939	\$9,606,550	\$291,682	\$68,445	\$689,551	\$25,417,468
	Average Salary	\$0	\$87,492	\$92,611	\$98,710	\$104,419	\$97,227	\$68,445	\$98,507	\$96,644

Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2022 – Road Commission (continued)

Attained Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
20-24	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
25-29	Number	0	1	0	0	0	0	0	0	1
	Total Salary									\$62,660
	Average Salary									\$62,660
30-34	Number	0	4	0	0	0	0	0	0	4
	Total Salary									\$284,825
	Average Salary									\$71,206
35-39	Number	0	1	2	3	1	0	0	0	7
	Total Salary									\$537,927
	Average Salary									\$76,847
40-44	Number	0	3	3	12	12	1	0	0	31
	Total Salary									\$2,505,784
	Average Salary									\$80,832
45-49	Number	0	2	1	7	10	6	0	0	26
	Total Salary									\$2,085,804
	Average Salary									\$80,223
50-54	Number	0	4	3	3	8	7	1	0	26
	Total Salary									\$2,170,950
	Average Salary									\$83,498
55-59	Number	0	4	0	1	4	1	0	0	10
	Total Salary									\$843,810
	Average Salary									\$84,381
60-64	Number	0	2	2	0	1	0	0	0	5
	Total Salary									\$409,876
	Average Salary									\$81,975
65-69	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
70+	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
TOTAL	Number	0	21	11	26	36	15	1	0	110
	Total Salary	\$0	\$1,492,100	\$991,018	\$2,085,237	\$2,873,931	\$1,375,951	\$83,400	\$0	\$8,901,636
	Average Salary	\$0	\$71,052	\$90,093	\$80,201	\$79,831	\$91,730	\$83,400	\$0	\$80,924

Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2022 – Martha T. Berry (continued)

Attained Age		0-4	5-9	10-14	15-19	20-24	25-29	30-34	Over 34	Total
15-19	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
20-24	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
25-29	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
30-34	Number	0	2	0	0	0	0	0	0	2
	Total Salary									\$84,219
	Average Salary									\$42,110
35-39	Number	0	2	0	1	0	0	0	0	3
	Total Salary									\$214,316
	Average Salary									\$71,439
40-44	Number	0	4	2	5	1	0	0	0	12
	Total Salary									\$822,897
	Average Salary									\$68,575
45-49	Number	0	5	3	1	0	0	0	0	9
	Total Salary									\$515,587
	Average Salary									\$57,287
50-54	Number	0	2	4	7	0	0	0	0	13
	Total Salary									\$810,950
	Average Salary									\$62,381
55-59	Number	0	1	3	1	1	0	0	0	6
	Total Salary									\$336,118
	Average Salary									\$56,020
60-64	Number	0	4	4	0	0	0	0	0	8
	Total Salary									\$493,857
	Average Salary									\$61,732
65-69	Number	0	2	0	0	0	0	0	0	2
	Total Salary									\$121,299
	Average Salary									\$60,650
70+	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
TOTAL	Number	0	22	16	15	2	0	0	0	55
	Total Salary	\$0	\$1,261,951	\$1,083,252	\$959,154	\$94,886	\$0	\$0	\$0	\$3,399,243
	Average Salary	\$0	\$57,361	\$67,703	\$63,944	\$47,443	\$0	\$0	\$0	\$61,804

Section 3.3 - Member Data Reconciliation

	Inactive Members							
	Active ¹	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2021	1,312	289	264	260	2,347	85	392	4,949
Changes due to:								
Age/Service Retirements	(27)	(21)	(1)	(71)	119	0	1	0
Disability Retirements	(2)	(1)	0	0	0	3	0	0
Deaths Without Beneficiary	(2)	(1)	0	(1)	(49)	(1)	(25)	(79)
Deaths With Beneficiary	(1)	0	0	(1)	(21)	(1)	24	0
Non-Vested Terminations	(7)	0	0	0	0	0	0	(7)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	(15)	15	0	0	0	0	0	0
Rehires	1	(1)	0	0	0	0	0	0
Cash-Outs	(25)	(5)	(5)	0	0	0	0	(35)
Expiration of Benefits	0	0	0	0	0	0	(1)	(1)
Data Corrections	0	0	(3)	0	2	(1)	0	(2)
Transfers Out	0	(2)	0	0	2	0	0	0
DROP	(31)	0	0	31	0	0	0	0
New QDROs	0	0	0	0	0	0	6	6
Net Change	(109)	(16)	(9)	(42)	53	0	5	(118)
As of December 31, 2022	1,203	273	255	218	2,400	85	397	4,831

¹ The count as of 12/31/2022 excludes 1,615 active participants who are eligible for Termination Benefit Only.

Section 3.3 - Member Data Reconciliation – General County

	Inactive Members							
	Active	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2021	845	230	174	166	1,684	39	239	3,377
Changes due to:								
Age/Service Retirements	(14)	(18)	(1)	(42)	74	0	1	0
Disability Retirements	(1)	(1)	0	0	0	2	0	0
Deaths Without Beneficiary	(2)	(1)	0	0	(36)	0	(17)	(56)
Deaths With Beneficiary	(1)	0	0	(1)	(15)	0	17	0
Non-Vested Terminations	(5)	0	0	0	0	0	0	(5)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	(13)	13	0	0	0	0	0	0
Rehires	1	(1)	0	0	0	0	0	0
Cash-Outs	(20)	(4)	(4)	0	0	0	0	(28)
Expiration of Benefits	0	0	0	0	0	0	(1)	(1)
Data Corrections	0	0	(1)	0	2	(1)	0	0
Transfers Out	0	1	0	0	2	0	0	3
DROP	(15)	0	0	15	0	0	0	0
New QDROs	0	0	0	0	0	0	2	2
Net Change	(70)	(11)	(6)	(28)	27	1	2	(85)
As of December 31, 2022	775	219	168	138	1,711	40	241	3,292

Section 3.3 - Member Data Reconciliation – Sheriff’s Department

	Inactive Members							
	Active	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2021	287	25	20	47	280	23	67	749
Changes due to:								
Age/Service Retirements	(6)	(3)	0	(15)	24	0	0	0
Disability Retirements	(1)	0	0	0	0	1	0	0
Deaths Without Beneficiary	0	0	0	0	(3)	0	(1)	(4)
Deaths With Beneficiary	0	0	0	0	(3)	(1)	4	0
Non-Vested Terminations	(1)	0	0	0	0	0	0	(1)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	(2)	2	0	0	0	0	0	0
Rehires	0	0	0	0	0	0	0	0
Cash-Outs	(1)	0	0	0	0	0	0	(1)
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	0	0	0	0	0	0	0	0
Transfers Out	(2)	0	0	0	0	0	0	(2)
DROP	(11)	0	0	11	0	0	0	0
New QDROs	0	0	0	0	0	0	3	3
Net Change	(24)	(1)	0	(4)	18	0	6	(5)
As of December 31, 2022	263	24	20	43	298	23	73	744

Section 3.3 - Member Data Reconciliation – Road Commission

	Inactive Members							
	Active	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2021	117	20	0	41	234	13	64	489
Changes due to:								
Age/Service Retirements	(6)	0	0	(12)	18	0	0	0
Disability Retirements	0	0	0	0	0	0	0	0
Deaths Without Beneficiary	0	0	0	(1)	(5)	0	(4)	(10)
Deaths With Beneficiary	0	0	0	0	(1)	0	1	0
Non-Vested Terminations	0	0	0	0	0	0	0	0
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	0	0	0	0	0	0	0	0
Rehires	0	0	0	0	0	0	0	0
Cash-Outs	0	(1)	0	0	0	0	0	(1)
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	0	0	0	0	0	0	0	0
Transfers Out	2	0	0	0	0	0	0	2
DROP	(3)	0	0	3	0	0	0	0
New QDROs	0	0	0	0	0	0	1	1
Net Change	(7)	(1)	0	(10)	12	0	(2)	(8)
As of December 31, 2022	110	19	0	31	246	13	62	481

Section 3.3 - Member Data Reconciliation – Martha T Berry

	Inactive Members							
	Active	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2021	63	14	70	6	149	10	22	334
Changes due to:								
Age/Service Retirements	(1)	0	0	(2)	3	0	0	0
Disability Retirements	0	0	0	0	0	0	0	0
Deaths Without Beneficiary	0	0	0	0	(5)	(1)	(3)	(9)
Deaths With Beneficiary	0	0	0	0	(2)	0	2	0
Non-Vested Terminations	(1)	0	0	0	0	0	0	(1)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	0	0	0	0	0	0	0	0
Rehires	0	0	0	0	0	0	0	0
Cash-Outs	(4)	0	(1)	0	0	0	0	(5)
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	0	0	(2)	0	0	0	0	(2)
Transfers Out	0	(3)	0	0	0	0	0	(3)
DROP	(2)	0	0	2	0	0	0	0
New QDROs	0	0	0	0	0	0	0	0
Net Change	(8)	(3)	(3)	0	(4)	(1)	(1)	(20)
As of December 31, 2022	55	11	67	6	145	9	21	314

Section 3.4 - Schedule of Active Member Data

Valuation Date	Number					Annual Earnings	Annual Average Earnings	Percent Increase / (Decrease) in Average Earnings
	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total			
December 31, 2014	1,392	380	214	148	2,134	110,159,044	51,621	4.4%
December 31, 2015	1,448	408	199	168	2,223	105,254,524	47,348	(8.3)%
December 31, 2016	1,322	380	189	129	2,020	116,574,389	57,710	21.9%
December 31, 2017	1,212	367	163	100	1,842	107,492,731	58,357	1.1%
December 31, 2018	1,130	360	150	111	1,751	103,002,972	58,825	0.8%
December 31, 2019	1,021	333	134	90	1,578	97,589,925	61,844	5.1%
December 31, 2020	922	316	124	78	1,440	96,607,825	67,089	8.5%
December 31, 2021	845	287	117	63	1,312	89,214,106	67,999	1.4%
December 31, 2022	775	263	110	55	1,203	91,051,639	75,687	11.3%

Section 3.5 - Schedule of Inactive Member Data

Valuation Date	Number					Annual Retirement Benefits	Average Annual Retirement Benefits
	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total		
December 31, 2017	236	21	21	15	293	3,509,155	11,977
December 31, 2018	245	24	25	20	314	3,969,425	12,641
December 31, 2019	225	21	22	18	286	3,859,533	13,495
December 31, 2020	228	22	20	15	285	3,866,199	13,566
December 31, 2021	230	25	20	14	289	3,983,449	13,784
December 31, 2022	219	24	19	11	273	3,893,431	14,262

Section 3.6 - Schedule of Retired Members by Type of Benefit and Option Elected

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected			
		1	2	3	1	3	4	5
\$ 1 - \$ 300	79	36	42	1	56	3	15	5
301 - 600	287	218	62	7	144	31	44	68
601 - 900	399	315	72	12	191	36	60	112
901 - 1,200	366	309	39	18	148	40	68	110
1,201 - 1,500	283	232	38	13	114	33	48	88
1,501 - 1,800	247	205	29	13	101	22	41	83
1,801 - 2,100	212	171	32	9	83	33	44	52
2,101 - 2,400	193	170	18	5	55	23	49	66
2,401 - 2,700	157	140	16	1	53	20	33	51
2,701 - 3,000	148	131	17	0	43	12	41	52
3,001 - 3,300	123	104	18	1	35	9	36	43
3,301 - 3,600	95	89	4	2	19	7	27	42
3,601 - 3,900	70	66	3	1	17	8	24	21
3,901 - 4,200	58	56	1	1	8	4	17	29
Over \$4,200	165	158	6	1	39	9	56	61
Totals	2,882	2,400	397	85	1,106	290	603	883

- | | |
|--------------------------------|------------------------|
| Type of Pension Benefit | Option Selected |
| 1. Regular retirement | 1 = Straight Life |
| 2. Survivor payment | 3 = Years Certain |
| 3. Disability | 4 = Joint and Survivor |
| | 5 = Pop-Up |

Section 3.6a - Schedule of DROP Participants by Option Elected

Amount of Monthly Pension Benefit	Number of Recipients	Option Selected			
		1	3	4	5
\$ 1 - \$ 300	1	1	0	0	0
301 - 600	0	0	0	0	0
601 - 900	4	1	0	0	3
901 - 1,200	16	3	0	4	9
1,201 - 1,500	11	5	0	1	5
1,501 - 1,800	22	5	2	6	9
1,801 - 2,100	23	4	3	7	9
2,101 - 2,400	14	3	1	6	4
2,401 - 2,700	16	3	0	3	10
2,701 - 3,000	20	1	0	6	13
3,001 - 3,300	18	6	1	4	7
3,301 - 3,600	10	0	1	5	4
3,601 - 3,900	12	2	0	2	8
3,901 - 4,200	10	3	0	3	4
Over \$4,200	34	4	41	4	2
Totals	218	41	10	58	109

Option Selected

1 = Straight Life

3 = Years Certain

4 = Joint and Survivor

5 = Pop-Up

Section 3.7 - Schedule of Benefit Payments

Attained Age	Regular Retirement & Survivor Payment		Disability		Total	
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances
Under 30	5	73,387	0	0	5	73,387
30-34	2	18,243	0	0	2	18,243
35-39	2	24,018	0	0	2	24,018
40-44	4	67,302	4	61,527	8	128,829
45-49	12	333,298	7	129,428	19	462,726
50-54	97	3,126,667	10	252,564	107	3,379,231
55-59	227	7,158,356	15	283,453	242	7,441,809
60-64	433	11,030,604	15	270,566	448	11,301,170
65-69	584	13,373,403	13	241,495	597	13,614,898
70-74	565	12,035,266	7	97,289	572	12,132,555
75	92	1,824,367	2	31,930	94	1,856,297
76	65	1,285,762	1	12,949	66	1,298,711
77	64	1,363,146	1	12,133	65	1,375,279
78	72	1,340,941	1	6,019	73	1,346,959
79	71	1,210,250	2	38,809	73	1,249,059
80	78	1,486,078	0	0	78	1,486,078
81	60	1,268,082	1	5,513	61	1,273,595
82	57	929,229	2	21,166	59	950,395
83	41	752,361	1	6,030	42	758,391
84	47	842,047	0	0	47	842,047
85	35	506,316	0	0	35	506,316
86	33	459,477	0	0	33	459,477
87	17	246,437	1	15,285	18	261,722
88	21	236,216	0	0	21	236,216
89	20	262,856	0	0	20	262,856
90	22	270,796	1	9,667	23	280,463
91	17	153,612	0	0	17	153,612
92	7	85,380	1	1,637	8	87,017
93	12	152,442	0	0	12	152,442
94	12	182,482	0	0	12	182,482
95	7	94,202	0	0	7	94,202
96	6	77,536	0	0	6	77,536
97	5	40,006	0	0	5	40,006
98	2	13,992	0	0	2	13,992
99	0	0	0	0	0	0
100	2	6,729	0	0	2	6,729
101	1	4,671	0	0	1	4,671
102	0	0	0	0	0	0
103+	0	0	0	0	0	0
Total	2,797	62,335,956	85	1,497,461	2,882	63,833,416

Section 3.7 - Schedule of Benefit Payments (Continued)

Attained Age	Deferred Vested Members		DROP Members	
	No.	Estimated Annual Allowances	No.	Estimated Annual Allowances
Under 30	1	22,847	0	0
30	0	0	0	0
31	0	0	0	0
32	1	16,240	0	0
33	1	14,160	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	4	48,613	0	0
38	2	37,927	0	0
39	5	56,371	0	0
40	1	13,516	0	0
41	8	168,942	0	0
42	6	80,178	0	0
43	6	76,929	0	0
44	11	236,825	0	0
45	5	86,437	0	0
46	13	170,091	0	0
47	22	355,889	1	46,776
48	18	297,402	2	104,281
49	15	330,447	10	606,355
50	11	192,957	9	421,722
51	15	279,564	12	483,670
52	10	161,048	16	686,602
53	11	125,013	17	696,668
54	11	107,910	9	339,615
55	8	74,659	16	718,280
56	11	122,621	17	559,460
57	20	275,567	10	315,798
58	18	216,474	11	375,444
59	15	113,202	10	259,759
60	10	107,413	17	551,353
61	2	20,160	11	279,012
62	1	8,093	9	208,337
63	3	21,182	4	160,043
64	3	11,992	10	156,531
65	2	15,872	7	223,344
66	0	0	5	96,777
67	0	0	5	133,709
68	3	26,890	10	225,435
Total	273	3,893,431	218	7,648,971

Section 4 - Actuarial Assumptions, Methods and Additional Information for Funding

Valuation Date

December 31, 2022

Actuarial Methods

Actuarial Cost Method

Entry Age Normal

Amortization Method

Period

11 years remaining. Initially established as 20 years with the December 31, 2013 actuarial valuation

Open or Closed

Closed - each year the amortization period is reduced by 1 year

Aggregate or Layered basis

Aggregate - the total unfunded actuarial accrued liability (UAAL) as of the valuation date is amortized over the remaining period

UAAL Payment Increase

The UAAL payments are developed such that they would increase by 5.00% per year

Asset Valuation Method

The Actuarial Value of Assets is based on a 5 year smoothing method and is determined by spreading each year's investment return in excess of or below the expected return.

Actuarial Assumptions

The following assumptions were selected by the Board. The interest rate, inflation, decrements, salary increase, and DROP assumptions were updated based on a 2019 experience study. The remaining assumptions provided are from a 2005 experience study provided by the prior actuary. Each year, gains/losses are reviewed to determine if there is a need to revise these assumptions. In our professional judgment, the assumptions used for the measurements contained in this report do not significantly conflict with what we consider reasonable.

In the case of the Board's selection of the investment rate of return and inflation assumption, the signing actuary has used economic information and tools provided by Buck's Financial Risk Management ("FRM") practice. A spreadsheet tool created by the FRM team converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions ("CMA") that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. Percentiles are based on standard matrix multiplication and normal approximations. This simplified model (disclosed here under ASOP 56) ignores inter-period dependence and the skewed nature of single year returns. As such it is intended to suggest possible reasonable ranges for EROA without attempting to predict or select a specific best estimate rate of return. However, it does take into account the duration (horizon) of investment and the approximate allocation of assets in the portfolio to various

asset classes with different expected returns, standard deviations, and correlations to other asset classes. Under current calibrations, the EROA tool will tend to show higher expected returns for longer durations, and will show a greater divergence between arithmetic and geometric average returns the higher the standard deviation of portfolio return.

Based on the actuary's analysis, including consistency with other assumptions used in the valuation, and the percentiles generated by the spreadsheet described above, the actuary believes the EROA does not significantly conflict with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement.

Interest Rate and Inflation

Investment Rate of Return	7.00%
Inflation Assumption	3.00%

Marriage Assumption

100% of males and 100% of females are married, with males three years older than their female spouse.

Expense Load for Contribution Amount

Previous year's administrative expense increased by the inflation assumption of 3.00% and allocated by employer payroll. Administrative expenses are allocated based on the ratio of beginning of year actuarial value of assets for the asset allocation between groups in Section 2.3.

Participant Data

All census data used in these calculations was supplied by the employer.

Section 4 - Actuarial Assumptions, Methods and Additional Information for Funding (continued)

Retirement Rates

According to the following rates upon the attainment of retirement eligibility.

Age	General County	Martha T. Berry	Road Commission	Sheriff's Department					
	All Employees	All Employees	All Employees	<25 Years of Service	25 Years of Service	26 - 30 Years of Service	31 Years of Service	32 - 34 Years of Service	>=35 Years of Service
40	-	-	-	-	75%	40%	35%	25%	100%
41	-	-	-	-	75%	40%	35%	25%	100%
42	-	-	-	-	75%	40%	35%	25%	100%
43	-	-	-	-	75%	50%	50%	50%	100%
44	-	-	-	-	75%	50%	50%	50%	100%
45	-	-	-	-	75%	50%	50%	50%	100%
46	-	-	-	-	75%	50%	50%	50%	100%
47	-	-	-	-	75%	50%	50%	50%	100%
48	-	-	-	-	75%	50%	50%	50%	100%
49	-	-	-	-	75%	50%	50%	50%	100%
50	30%	30%	30%	-	75%	50%	50%	50%	100%
51	30%	30%	30%	-	75%	50%	50%	50%	100%
52	30%	30%	30%	-	75%	50%	50%	50%	100%
53	30%	30%	30%	-	75%	50%	50%	50%	100%
54	30%	30%	30%	-	75%	50%	50%	50%	100%
55	25%	25%	30%	-	75%	50%	50%	50%	100%
56	25%	25%	30%	-	75%	50%	50%	50%	100%
57	25%	25%	30%	-	75%	50%	50%	50%	100%
58	25%	25%	30%	-	75%	50%	50%	50%	100%
59	25%	25%	30%	-	75%	50%	50%	50%	100%
60	25%	25%	35%	25%	75%	50%	50%	50%	100%
61	25%	25%	35%	25%	75%	50%	50%	50%	100%
62	25%	25%	50%	25%	75%	50%	50%	50%	100%
63	25%	25%	50%	25%	75%	50%	50%	50%	100%
64	25%	25%	50%	25%	75%	50%	50%	50%	100%
65	25%	25%	100%	100%	100%	100%	100%	100%	100%
66	25%	25%	100%	100%	100%	100%	100%	100%	100%
67	25%	25%	100%	100%	100%	100%	100%	100%	100%
68	25%	25%	100%	100%	100%	100%	100%	100%	100%
69	25%	25%	100%	100%	100%	100%	100%	100%	100%
70	100%	100%	100%	100%	100%	100%	100%	100%	100%

Section 4 - Actuarial Assumptions, Methods and Additional Information for Funding (continued)

Disability Incidence

Sample rates of disability are shown in the following table:

Disability Rates	
Age	% of Active Members Becoming Disabled within Next Year
25	0.0675%
30	0.0825%
35	0.1125%
40	0.1650%
45	0.2700%
50	0.4575%
55	0.7575%
60	1.2450%

No disability rates are assumed before participants have attained 5 years of service.

Termination Rates

Sample rates of active members separating service are shown in the following table:

% of Active Members Separating within Next Year					
Sample Age	Years of Service	General County	Sheriff's Department	Road Commission	Martha T Berry MCF
ALL	0	11.00%	8.00%	6.50%	24.00%
	1	11.00%	8.00%	6.00%	18.00%
	2	8.00%	6.00%	5.50%	16.00%
	3	7.00%	3.00%	5.00%	12.00%
	4	6.00%	3.00%	4.50%	12.00%
25	5 & Over	11.60%	4.80%	5.00%	17.40%
30		10.60%	3.30%	4.00%	15.90%
35		8.60%	3.00%	4.00%	12.90%
40		6.60%	2.25%	3.00%	9.90%
45		4.60%	1.50%	2.00%	6.90%
50		3.60%	0.75%	1.00%	5.40%
55		3.50%	0.75%	1.00%	5.25%
60		3.00%	0.75%	1.00%	4.50%

Section 4 - Actuarial Assumptions, Methods and Additional Information for Funding (continued)

Mortality

RP-2014 (Base 2006) Mortality Tables adjusted by 105% for males and 110% for females, projected with Scale MP-2018 on a fully generational basis was used for Retired and Survivor members.

RP-2014 (Base 2006) Mortality Tables projected with Scale MP-2018 on a fully generational basis was used for Active and Deferred Vested members.

RP-2014 (Base 2006) Disabled Mortality Tables adjusted by 106% for males and 114% for females, projected with Scale MP-2018 on a fully generational basis was used for Disabled members.

The tables mentioned above were first used for the December 31, 2018 valuation. Sample values for retired participants are shown in the following table:

Single Life Retirement Values				
Sample Ages	Values at Retirement of \$1 Monthly for Life		Future Life Expectancy (years)	
	Men	Women	Men	Women
	50	\$151.23	\$155.11	33.98
55	143.83	148.13	29.28	31.27
60	134.60	139.37	24.76	26.55
65	123.43	128.69	20.47	22.08
70	110.12	115.64	16.46	17.84
75	94.57	100.06	12.75	13.88
80	77.32	82.49	9.43	10.33

Section 4 - Actuarial Assumptions, Methods and Additional Information for Funding (continued)

DROP Assumptions

75% of eligible participants are assumed to enter DROP and remain in DROP for 4 years.

Salary Increase

Rates of salary increases are shown in the following table:

Years of Service	General County	Sheriff's Department	Road Commission	Martha T Berry MCF
0	12.00%	18.00%	15.00%	12.00%
1	8.00%	11.00%	9.00%	5.00%
2	6.00%	11.00%	6.00%	5.00%
3	6.00%	10.00%	6.00%	5.00%
4	6.00%	7.00%	3.00%	5.00%
5	6.00%	7.00%	3.00%	5.00%
6	4.00%	4.00%	3.00%	5.00%
7	4.00%	4.00%	3.00%	5.00%
8	3.00%	4.00%	3.00%	3.00%
9	3.00%	4.00%	3.00%	3.00%
10	3.00%	4.00%	3.00%	3.00%
11+	3.00%	4.00%	3.00%	3.00%

Final Average Compensation Loads

General County & Martha T Berry	4.50%
Road Commission	6.00%
Sheriff's Department	
Command (hired before 11/1/1996)	11.00%
Correction Officers	1.00%
Dispatchers	1.00%
Others	0.00%

This load on pay is to approximate the accumulated sick time leave that gets factored into final benefit calculations.

Changes Since the Prior Valuation

The actuarial assumptions and methods for funding purposes are the same as those used for the December 31, 2021 valuation report.

Section 5 – Summary of Plan Provisions

Summary of DROP Provisions

Please refer to the Benefit Provision Summary for DROP eligibility provisions. The other provisions of the DROP are listed below:

- The DROP is a forward DROP.
- Members can DROP when they first become eligible for an unreduced benefit.
- Upon entering the DROP, 100% of the member's monthly retirement benefit will be credited to the DROP account.
- The DROP account will be credited with the same interest rate used to accumulate member contributions.
- The maximum DROP period is five years. Members may continue to work past the maximum DROP period, but no additional retirement benefits will be credited to the member's DROP account. Interest on the DROP account will continue to accrue for members working past the maximum DROP period.
- Member contributions to the Retirement System will cease upon entering the DROP.
- Upon actual retirement, the member would receive a monthly annuity equal to the accrued benefit credited to the DROP account under any form of payment available from the plan, and the lump sum amount accumulated in the DROP account. Members elect their form of payment at time of DROP.
- The monthly annuity as of the DROP date is calculated based on service, final average compensation and benefit provisions as of the DROP date less the annuity withdrawal reduction, if applicable; this amount is not changed for any subsequent changes in pay or benefit provisions. The annuity withdrawal is paid at the time of DROP.
- For POLC (Union 1 & 20) and MCDPSA (Union 26), interest is earned on the DROP account balance at the end of each month and shall be paid to the employee's DROP account no later than the last day of the following month.
- For POLC (Union 1), effective August 20, 2010, for new entries into DROP, upon reaching the five-year maximum DROP participation period, the DROP participant shall terminate his/her employment.
- For POAM (Union 7), effective August 6, 2010, an employee of Macomb County who is a member of the POAM-Deputies and Dispatchers, may voluntarily elect to participate in the DROP, upon obtaining the minimum age and service requirements for a normal service retirement.

Section 5 – Summary of Plan Provisions (continued)

Benefit Provision Summary For General Employees									
Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility (Age/Service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
0	General Non Union	Hired on or before 12/31/2001 or vested by 2/26/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
2	UAW Animal Shelter	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
3	AFSCME Local 411	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
6	Macomb County Environmental Health Association	Hired on or before 12/31/2001 or vested by 5/1/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
8	Teamsters 214 Court Reporters	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
9	International Union of Operating Engineers (Boiler Operators)	Hired on or before 12/31/2001 or vested by 5/1/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
10	TPOAM Circuit Court Officers	Hired on or before 12/31/2001 or vested by 7/24/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
11	MNA Unit I Health Dept.	Hired on or before 12/31/2001 or vested by 5/1/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
12	UAW Local 412 Unit 49 Information Technology	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
13	UAW Local 889 Specialized Offices	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
15	Building Trades Association	Hired on or before 12/31/2001 or vested by 5/1/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%

* Must be vested on 12/31/2012, otherwise not eligible for DROP.

** Minimum Age 50

Section 5 – Summary of Plan Provisions (continued)

Benefit Provision Summary For General Employees									
Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility (Age/Service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
16	UAW Local 412 Unity 46 Assistant Prosecutors	Hired on or before 12/31/2001 or vested by 9/14/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
18	Teamsters Local 214 FOC/Circuit Court	Hired on or before 12/31/2001 or vested by 7/24/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
19	General	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
21	POAM JJC	Hired on or before 12/31/2001 or vested by 5/1/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
24	UAW Local 889 MCCSA	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
25	UAW Local 412 Unit 75 Supervisors	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
27	TPOAM Macomb Co. Senior Service Employees Association	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
28	TPOAM Juvenile Court & Justice Center Employees	Hired on or before 12/31/2001 or vested by 6/19/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
30	UAW Local 412 Unit 95 Assistant Corporation Counsel	Hired on or before 12/31/2001 or vested by 2/27/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
43	UAW Local 889 Probate Court/ Corporation Counsel	Hired on or before 12/31/2001 or vested by 6/19/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
44	UAW Local 412 - Unit 98 MCCSA Professionals	Hired on or before 12/31/2001 or vested by 2/26/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%

* Must be vested on 12/31/2012, otherwise not eligible for DROP.

** Minimum Age 50

Section 5 – Summary of Plan Provisions (continued)

Benefit Provision Summary For Sheriff Employees									
Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility (Age/Service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
1	COAM - Command	Hired before 11/1/1996	8 years	Yes*	60/8, 25 & out	2.4% / 1% (26 yrs)	66% of FAC	3 years	4%
		Hired on or after 11/1/1996 & before 6/1/2013	8 years	Yes*	60/8, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	60/15, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
7	FOP Deputies	Hired before 6/1/2013	8 years	Yes*	60/8, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	60/15, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
7	FOP Dispatchers	Hired before 6/1/2013	8 years	Yes*	60/8, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	60/15, 25 & out	2.64% for 25 yrs	66% of FAC	3 years	4%
20	POLC Captains	Hired before 6/1/2013	8 years	Yes*	60/8, 25 & out	2.4% / 1% (26 yrs)	65% of FAC	3 years	4%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	60/15, 25 & out	2.4% / 1% (26 yrs)	65% of FAC	3 years	4%
26	MCPDSA Corrections Officers	Hired before 6/1/2013	8 years	Yes*	60/8, 25 & out	2.4% / 1% (26 yrs)	66% of FAC	3 years	4%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	60/15, 25 & out	2.4% / 1% (26 yrs)	66% of FAC	3 years	4%

* Must be vested on 12/31/2012, otherwise not eligible for DROP.

Benefit Provision Summary For Road Commission Employees									
Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility (Age/Service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
31	Road Non-Union	Hired on or before 7/31/2007 or vested by 1/29/2015	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 8/1/2007 & before 12/17/2013	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 12/17/2013 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
32	Road ADTECH	Hired on or before 7/31/2007 or vested by 1/29/2015	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 8/1/2007 & before 12/17/2013	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 12/17/2013 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
33	Road ROADTECH	Hired on or before 7/31/2007 or vested by 1/29/2015	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 8/1/2007 & before 6/1/2013	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 6/1/2013 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%

* Must be vested on 12/31/2012, otherwise not eligible for DROP.

** Minimum Age 50

Section 5 – Summary of Plan Provisions (continued)

Benefit Provision Summary For Martha T. Berry Employees									
Division Code	Division Name	Benefit Tier	Service Needed to Vest	DROP Eligible?	Retirement Eligibility (Age/Service)	Multiplier	Employer Maximum	FAC Period	Employee Contribution
4	MNA (RNs at MTB)	Hired on or before 12/31/2001 or vested by 7/17/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
5	Service Employees International Union (LPNs at MTB)	Hired on or before 12/31/2001 or vested by 7/17/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
14	AFSCME 411 MTB	Hired on or before 12/31/2001 or vested by 6/26/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
40	MTB Non Union Employees	Hired on or before 12/31/2001 or vested by 2/26/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%
42	MTB UAW Supervisors	Hired on or before 12/31/2001 or vested by 6/26/2009	8 years	Yes*	60/8, Rule of 70**	2.4% / 1% (26 yrs)	65% of FAC	4 years	3.5%
		Hired on or after 1/1/2002 & before 1/1/2012	8 years	Yes*	55/25, 60/8	2.20%	66% of FAC	5 years	2.5%
		Hired on or after 1/1/2012 & before 12/31/2015	15 years	No	55/25, 60/15	2.20%	66% of FAC	5 years	2.5%

* Must be vested on 12/31/2012, otherwise not eligible for DROP.

** Minimum Age 50

Participation in the Plan

The Retirement System is closed to new entrants, effective December 31, 2015.

Lump Sum Termination Benefit

At termination, participants hired on or after January 1, 2016 and have 5 years of service are eligible for a \$1,000 lump sum payment.

Death Benefit

No age or service requirements:

Refund of accumulated contributions.

10 or more years of service:

Computed as laid out in the Benefit Provision Summary but actuarially reduced in accordance with a 100% joint and survivor election.

Disability Benefit

Computed as laid out in the Benefit Provision Summary with a minimum benefit of \$400 per month.

Employee Contributions

Employee contributions are accumulated at an annual interest rate of 3.50%.

Section 6 – ASOP 51 Disclosures

Funding future retirement benefits prior to when those benefits become due involves assumptions regarding future economic and demographic experience. These assumptions are applied to calculate actuarial liabilities, current contribution requirements and the funded status of the plan. However, to the extent future experience deviates from the assumptions used, variations will occur in these calculated values. These variations create risk to the plan. Understanding the risks to the funding of the plan is important. Actuarial Standard of Practice No. 51 (“ASOP 51”) requires certain disclosures of potential risks to the plan and provides useful information for intended users of actuarial reports that determine plan contributions or evaluate the adequacy of specified contribution levels to support benefit provisions.

Under ASOP 51, risk is defined as the potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience.

It is important to note that not all risk is negative, but all risk should be understood and accepted based on knowledge, judgement and educated decisions. Future measurements may deviate in ways that produce positive or negative financial impacts to the plan.

In the actuary’s professional judgment, the following risks may reasonably be anticipated to significantly affect the plan’s future financial condition.

- Investment risk – potential that the investment return will be different than the 7.00% expected in the actuarial valuation
- Longevity risk – potential that participants live longer than expected from the valuation mortality assumptions
- Contribution risk – potential that the contribution will be different than the recommended contribution in the actuarial valuation

The following information is provided to comply with ASOP 51 and furnish beneficial information on potential risks to the plan. This list is not all-inclusive; it is an attempt to identify the most significant risks and how those risks might affect the results shown in this report.

Section 6 – ASOP 51 Disclosures (continued)

Note that ASOP 51 does not require the actuary to evaluate the ability or willingness of the plan sponsor to make contributions to the plan when due, or to assess the likelihood or consequences of potential future changes in law. In addition, this valuation report is not intended to provide investment advice or to provide guidance on the management or reduction of risk. Buck welcomes the opportunity to assist in such matters as part of a separate project or projects utilizing the appropriate staff and resources for those objectives.

Investment Risk

Plan costs are very sensitive to the market return. Any lower than assumed return on assets will increase costs:

- The lower market return will cause the market value of assets to be lower than expected.
- The plan uses an actuarial value of assets that smooths gains and losses on market returns over a five-year period to help control some of the volatility in costs due to investment risk.
- Past volatility of asset returns can be seen in Section 2.4 of this report.

Longevity Risk

Plan costs will be increased as participants are expected to live longer. This is because:

- Benefits are paid over a longer lifetime when life expectancy is expected to increase. The longer duration of payments leads to higher liabilities.
- Health care has been improving which increases the life expectancy of participants. As health care improves, costs to the plan will increase.
- The mortality assumption for the Plan does assume future improvement in mortality. Any improvement in future mortality greater than that expected by the current mortality assumption would lead to increased costs for the Plan.

Contribution Risk

There is a risk associated with the employer's contribution when the actual amount and recommended amount differ. This is because:

- When the actual contribution is lower than the recommended contribution the Plan may not be sustainable in the long term.
- Any underpayment of the contribution will increase future contribution amounts to help pay off the additional Unfunded Actuarial Accrued Liability associated with any lower than recommended contribution amounts.

Section 6 – ASOP 51 Disclosures (continued)

Plan Maturity Measures:

There are certain measures that may aid in understanding the significant risks to the plan.

Ratio of Inactive Liability to Total Liability	December 31, 2022	December 31, 2021	December 31, 2020	December 31, 2019	December 31, 2018
1. Inactive Member Actuarial Accrued Liability ¹	814,677,158	805,697,227	789,719,875	776,755,557	755,474,838
2. Total Actuarial Accrued Liability	1,124,197,091	1,089,306,972	1,064,429,280	1,054,636,606	1,034,282,157
3. Ratio [(1) / (2)]	72.5%	74.0%	74.2%	73.7%	73.0%

A mature plan will often have a ratio above 60 - 65 percent. An increasing percentage may indicate a need for a less risky asset allocation which may lead to a lower long-term return on assets assumption and increased costs. Due to the plan being closed to new entrants, this ratio is expected to grow over time and eventually equal 100%.

Ratio of Cash Flow to Assets	December 31, 2022	December 31, 2021	December 31, 2020	December 31, 2019	December 31, 2018
1. Contributions	14,782,959	18,575,320	18,289,162	20,346,143	26,999,720
2. Benefit Payments	78,716,138	73,093,602	71,802,977	67,917,452	66,297,751
3. Cash Flow [(1) – (2)]	(63,933,179)	(54,518,282)	(53,513,815)	(47,571,309)	(39,298,031)
4. Market Value of Assets	1,066,443,974	1,317,355,983	1,153,630,925	1,082,041,799	937,087,932
5. Ratio [(3) / (4)]	(5.99%)	(4.14%)	(4.64%)	(4.40%)	(4.19%)

When this cash flow ratio is negative more cash is being paid out than deposited in the fund. Negative cash flow means the fund needs to rely on investment returns to cover benefit payments and at the same time may need to invest in more liquid assets to cover the benefit payments. More liquid assets may not garner the same returns as less liquid assets and therefore increase the investment risk. However, the low magnitude of the ratio implies there may already be enough liquid assets to cover the benefit payments, less investment return is needed to cover the shortfall, or only a small portion of assets will need to be converted to cash. Therefore, the investment risk is likely not amplified at this time. Due to the plan being closed to new entrants, this measure will grow increasingly negative as the plan moves toward wind down in the distant future.

¹ Includes retirees, beneficiaries, DROP members, and terminated members with deferred benefits

Section 6 – ASOP 51 Disclosures (continued)

Contribution Volatility	December 31, 2022	December 31, 2021	December 31, 2020	December 31, 2019	December 31, 2018
1. Market Value of Assets	1,066,443,974	1,317,355,983	1,153,630,925	1,082,041,799	937,087,932
2. Payroll	94,227,867	92,556,195	93,922,408	101,650,261	107,524,311
3. Asset Volatility Ratio (AVR) [(1) / (2)]	11.32	14.23	12.28	10.64	8.72
4. Accrued Liability	1,124,197,091	1,089,306,972	1,064,429,280	1,054,636,606	1,034,282,157
5. Liability Volatility Ratio (LVR) [(4) / (2)]	11.93	11.77	11.33	10.38	9.62

Plans that have higher asset-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with an asset-to-payroll ratio of 10 may experience twice the contribution volatility due to investment return volatility than a plan with an asset-to-payroll ratio of 5. Plans that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, if an assumption change increases the liability of two plans by the same percent the plan with a liability-to-payroll ratio of 10 may experience twice the contribution volatility than a plan with a liability-to-payroll ratio of 5.

Glossary

Actuarial Accrued Liability

Total accumulated cost to fund pension benefits arising from service in all prior years.

Actuarial Cost Method

Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension plan for a group of plan members to the years of service that give rise to that cost.

Actuarial Present Value of Future Benefits

Amount which, together with future interest, is expected to be sufficient to pay all future benefits.

Actuarial Valuation

Study of probable amounts of future pension benefits and the necessary amount of contributions to fund those benefits.

Actuary

Person who performs mathematical calculations pertaining to pension and insurance benefits based on specific procedures and assumptions.

GASB 67

Governmental Accounting Standards Board Statement Number 67.

Maturity Ratio

The ratio of the actuarial accrued liability for members who are no longer active to the total actuarial accrued liability. A ratio of over 50% indicates a mature plan. The higher the maturity ratio, the more volatile the contribution rate will be from year to year given actuarial gains and losses.

Normal Cost

That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the plan as a whole.

Unfunded Actuarial Accrued Liability (UAAL)

The portion of the actuarial accrued liability not offset by plan assets.