



# Macomb County Employees Retirement System

## Actuarial Valuation Report

Plan Year            January 1, 2021 – December 31, 2021

September 2022



September 2022

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, 2021.

### **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.

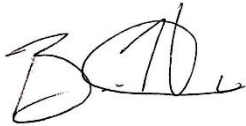
Respectfully submitted,

Buck Global, LLC (Buck)



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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, 2021.

## Membership

### Actives

As of December 31, 2021, there were 1,312 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, 2021	December 31, 2020
Active participants		
Number	1,312	1,440
Average age	48.3 years	47.7 years
Average service	13.7 years	13.0 years
Total annual valuation salary	\$ 92,556,195	\$ 93,922,408
Average annual salary	\$ 70,546	\$ 65,224

The number of active members decreased by 8.9% 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 0.6 years and the average service increased 0.7 years. The total annual valuation salary decreased by 1.5% and the average salary increased by 8.2% from the previous valuation. There were 1,310 active members who were also reported active in the December 31, 2020 actuarial valuation. The total annual valuation salary for this group increased by 7.31% which was higher than the 3.70% 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 1,490 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 553 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, 2021	December 31, 2020
Terminated vested participants		
Number	289	285
Average age	51.6 years	51.0 years
Average annual benefit payments	\$ 13,784	\$ 13,566

The number of inactive vested members decreased by 1.4% from the previous valuation. The average age of the inactive vested members increased by 0.6 years. The Average Annual Pension Benefit for these members increased by 1.6% from the previous valuation.

	December 31, 2021	December 31, 2020
Non-vested participants owed refund		
Number	264	270
Average payoff amount	\$ 2,329	\$ 2,423

The number of inactive non-vested members decreased by 2.2% from the previous valuation. The Average Refund Due for these members decreased by 3.9% from the previous valuation.

Distributions of inactive members by age and pension benefit are given in Section 3.6.

### Retirees and Beneficiaries

In addition to the active and inactive members, there were 2,432 retired members and 392 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, 2021	December 31, 2020
Retired participants		
Number	2,432	2,407
Average Age	70.1 years	69.9 years
Average annual retirement benefits	\$ 22,710	\$ 22,322

	December 31, 2021	December 31, 2020
Survivors and beneficiaries of participants		
Number	392	376
Average Age	72.9 years	72.4 years
Average annual retirement benefits	\$ 15,707	\$ 15,712

The number of retired members and beneficiaries increased by 1.5% from the previous valuation date. The average age of the retired members and beneficiaries increased by 0.2 years. The average annual benefit payments for these members increased by 1.4% 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 260 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, 2021	December 31, 2020
DROP participants		
Number	260	281
Average Age	58.0 years	58.1 years
Average annual retirement benefits	\$ 32,818	\$ 30,749
Average pay	\$ 68,251	\$ 59,119

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 \$1,317.4 million as of December 31, 2021. This includes an increase of \$163.7 million over the Net Assets Available for Benefits of \$1,153.6 million as of December 31, 2020. During the prior year, the fair value of assets experienced an investment rate of return of 19.49%.

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, 2021, the assets available for benefits on an actuarial value basis was \$1,142.2 million. This includes an increase of \$73.6 million over the actuarial value of assets of \$1,068.6 million as of December 31, 2020. During the prior year, the actuarial value of assets experienced an actuarial rate of return of 12.42%.

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 gain of \$42.4 million during the prior year. This total net gain is about 4.0% 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 \$13.2 million during the year ending December 31, 2021. This loss increased the unfunded actuarial accrued liability by \$13.2 million and decreased the funded ratio by 1.3%.

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 gain 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, 2021 was 12.42% compared to the assumption of 7.00%, resulting in an asset gain of \$55.6 million. This gain decreased the unfunded actuarial accrued liability by \$55.6 million and increased the funded ratio by 5.1%.

The rate of return on the fair value of assets for the year ending December 31, 2021 was consistent with the statement above. It was 19.49%, which was higher than the assumed rate of 7.00%. The actuarial value of the assets recognizes only 1/5 of the 2021 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 12 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 2022 has been determined to be \$9.7 million or 10.55% 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, 2021 is (\$52.8) million. This represents a decrease of \$48.7 million in the unfunded actuarial accrued liability from last year's amount of (\$4.1) million.

The annual actuarially required employer contribution for 2023 is \$5.7 million, or 6.25% of pay. This represents a decrease of \$4.2 million in the employer contribution amount of \$9.9 million for 2022, or a decrease of 4.34% of pay from last year's employer contribution rate of 10.59%.

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, 2021, the funded ratio of the Plan is 104.85%. This represents an increase of 4.46% from last year's funded ratio of 100.39% as of December 31, 2020.

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, 2020.

## **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, 2020 valuation report.

# Comparative Summary of Key Actuarial Valuation Results

Actuarial Valuation as of

December 31, 2021

December 31, 2020

## Summary of Member Data

Number of Members Included in the Valuation

Active Members	1,312	1,440
Terminated Vested Members	289	285
Non-vested Members Owed Refund	264	270
Retirees and Beneficiaries	2,824	2,783
DROP Participants	<u>260</u>	<u>281</u>
Total	4,949	5,059

Annual Payroll

Average (actual)	70,546	65,224
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Annual Benefit Payments

Terminated Vested Members (Average)	13,784	13,566
Non-vested Member Refund (Average)	2,329	2,423
Retirees and beneficiaries (Average)	21,732	21,432
DROP Participants (Average)	32,818	30,749

## Summary of Assets

Fair Value	1,317,355,983	1,153,630,925
Rate of Return	19.49%	11.95%
Actuarial Value	1,142,153,181	1,068,574,127
Rate of Return	12.42%	10.10%

## Summary of Liabilities

Total Actuarial Accrued Liability	1,089,306,972	1,064,429,280
Actuarial Value of Assets	1,142,153,181	1,068,574,127
Unfunded Actuarial Accrued Liability	(52,846,209)	(4,144,847)
Funded Ratio	104.85%	100.39%
Maturity Ratio (See section 1.2)	73.96%	74.19%

# Section 1: Actuarial Funding Results

## Section 1.1 - Actuarial Liabilities and Normal Cost

Actuarial Liabilities Based on December 31, 2021 Valuation	General County	Sheriff's Department	Road Commission	Martha T. Berry	Totals
1. Present Value of Projected Benefits					
Active Members					
Retirement Benefits	147,085,288	124,014,436	40,794,478	6,445,240	318,339,442
Withdrawal Benefits	17,861,975	3,656,733	755,763	1,921,215	24,195,686
Disability Benefits	11,173,998	3,995,246	1,411,441	694,981	17,275,666
Death Benefits	3,192,424	1,519,907	538,913	170,720	5,421,964
Return on Contributions	<u>1,371,139</u>	<u>302,854</u>	<u>130,632</u>	<u>125,178</u>	<u>1,929,803</u>
Total	180,684,824	133,489,176	43,631,227	9,357,334	367,162,561
2. Vested Inactive Members with Deferred Benefits	19,368,254	3,545,942	1,920,731	1,041,132	25,876,059
3. Non-Vested Inactive Members with Deferred Benefits	424,545	54,436	31,970	55,663	566,614
4. Retired Members and Beneficiaries Receiving Benefits	367,165,825	166,390,105	84,792,743	24,666,241	643,014,914
5. DROP Participants Receiving Benefits	73,265,692	38,275,815	22,643,116	2,055,017	136,239,640
6. Total Present Value of Projected Benefits (1 + 2 + 3 + 4 + 5)	640,909,140	341,755,474	153,019,787	37,175,387	1,172,859,788
7. Present Value of Future Normal Costs	<u>41,003,439</u>	<u>33,046,624</u>	<u>7,363,246</u>	<u>2,139,507</u>	<u>83,552,816</u>
8. Total Actuarial Accrued Liability (6 – 7)	599,905,701	308,708,850	145,656,541	35,035,880	1,089,306,972
<b>Normal Cost for Fiscal Year Ending December 31, 2021</b>					
1. Total Normal Cost	6,546,485	4,471,709	1,290,293	333,020	12,641,507
2. Expected Member Contribution	<u>(1,460,008)</u>	<u>(1,101,152)</u>	<u>(295,400)</u>	<u>(91,106)</u>	<u>(2,947,666)</u>
3. Employer Normal Cost	5,086,477	3,370,557	994,893	241,914	9,693,841

## 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	117,510,639	95,188,143	34,444,702	5,122,628	252,266,112
ii. Withdrawal Benefits	11,929,768	1,887,249	442,104	1,420,549	15,679,670
iii. Death Benefits	2,236,736	931,332	372,789	128,345	3,669,202
iv. Disability Benefits	7,508,873	2,370,857	958,129	502,735	11,340,594
v. Return on Employee Contributions	<u>495,369</u>	<u>64,971</u>	<u>50,257</u>	<u>43,570</u>	<u>654,167</u>
vi. Total	139,681,385	100,442,552	36,267,981	7,217,827	283,609,745
b. Vested Inactive Members with Deferred Benefits	19,368,254	3,545,942	1,920,731	1,041,132	25,876,059
c. Non-Vested Inactive Members with Deferred Benefits	424,545	54,436	31,970	55,663	566,614
d. Retired Members and Beneficiaries Receiving Benefits	367,165,825	166,390,105	84,792,743	24,666,241	643,014,914
e. DROP Participants Receiving Benefits	<u>73,265,692</u>	<u>38,275,815</u>	<u>22,643,116</u>	<u>2,055,017</u>	<u>136,239,640</u>
f. Total (1.a.vi. + 1.b. + 1.c. + 1.d. + 1.e.)	599,905,701	308,708,850	145,656,541	35,035,880	1,089,306,972
2. Actuarial Value of Assets	642,220,027	313,722,209	142,039,310	44,171,635	1,142,153,181
3. Unfunded Actuarial Accrued Liability (UAAL) (1.f. -2.)	(42,314,326)	(5,013,359)	3,617,231	(9,135,755)	(52,846,209)
4. Funded Ratio (2. / 1.f.)	107.05%	101.62%	97.52%	126.08%	104.85%
5. Maturity Ratio [(1.b. + 1.c. + 1.d. + 1.e.) / 1.f.]	76.72%	67.46%	75.10%	79.40%	73.96%
6. Employer Contribution for Fiscal 2023					
Total Normal Cost	6,546,485	4,471,709	1,290,293	333,020	12,641,507
Member Contribution	(1,460,008)	(1,101,152)	(295,400)	(91,106)	(2,947,666)
Administrative Expense	425,874	204,516	93,064	29,460	752,914
UAAL Contribution	(3,903,507)	(462,484)	333,690	(842,776)	(4,875,077)
Timing Adjustment	<u>41,404</u>	<u>101,783</u>	<u>46,500</u>	<u>(21,030)</u>	<u>168,657</u>
Total Employer Contribution Dollar (Not less than 0)	1,650,248	3,214,372	1,468,147	0	6,332,767 <sup>1</sup>
Projected Member Pay	54,229,041	24,749,664	9,199,789	3,714,012	91,892,506
Total Employer Contribution (% of Pay)	3.04%	12.99%	15.96%	0.00%	6.89%
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 2023 contribution <sup>2</sup>	12	12	12	12	

<sup>1</sup> 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

<sup>2</sup> Closed 20-year period beginning with December 31, 2013 Valuation

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

	<b>General County</b>	<b>Sheriff's Department</b>	<b>Road Commission</b>	<b>Martha T. Berry</b>	<b>Totals<sup>1</sup></b>
1. Expected Actuarial Accrued Liability					
a. Actuarial Accrued Liability at December 31, 2020	590,016	294,078	145,730	34,605	1,064,429
b. Normal Cost at December 31, 2020	6,184	4,572	1,259	345	12,360
c. Interest on a. + b. to End of Year	41,734	20,906	10,289	2,447	75,376
d. Benefit Payments and Refund of Contributions with Interest to End of Year	44,027	18,574	10,627	2,834	76,062
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.)	593,907	300,982	146,651	34,563	1,076,103
2. Actuarial Accrued Liability at December 31, 2021	<u>599,906</u>	<u>308,709</u>	<u>145,657</u>	<u>35,036</u>	<u>1,089,308</u>
3. Liability (Gain) / Loss (2. – 1.f.)	5,999	7,727	(994)	473	13,205
4. Expected Actuarial Value of Assets					
a. Actuarial Value of Assets at December 31, 2020	604,423	290,259	132,081	41,812	1,068,574
b. Interest on a. to End of Year	42,310	20,318	9,246	2,927	74,801
c. Contribution Made	7,879	6,303	4,293	100	18,575
d. Interest on c. to End of Year	276	221	150	4	650
e. Benefit Payments and Refund of Contributions with Interest to End of Year	<u>44,027</u>	<u>18,574</u>	<u>10,627</u>	<u>2,834</u>	<u>76,062</u>
f. Expected Actuarial Value of Assets at December 31, 2021 (a. + b. + c. + d. – e.)	610,861	298,527	135,143	42,009	1,086,538
5. Actuarial Value of Assets as of December 31, 2021	<u>642,220</u>	<u>313,722</u>	<u>142,039</u>	<u>44,172</u>	<u>1,142,153</u>
6. Actuarial Asset (Gain) / Loss (4.f. -5.)	(31,359)	(15,195)	(6,896)	(2,163)	(55,615)
7. Actuarial (Gain) / Loss (3. + 6.)	(25,360)	(7,468)	(7,890)	(1,690)	(42,410)

<sup>1</sup> Numbers may not add due to rounding.

## Section 1.4 - Actuarial Balance Sheet

<b>Financial Resources</b>	<b>December 31, 2021</b>
1. Actuarial Value of Assets	1,142,153,181
2. Present Value of Future Contributions	
a. Expected Member Contributions	19,974,620
b. Employer Normal Cost	63,578,196
c. State Appropriations	<u>0</u>
d. Total	83,552,816
3. Unfunded Actuarial Accrued Liability/(Reserve)	(52,846,209)
4. Total Assets [1. + 2.(d) + 3.]	1,172,859,788

<b>Benefit Obligations</b>	<b>December 31, 2021</b>
1. Present Value of Future Benefits	
a. Active members	367,162,561
b. Inactive members	26,442,673
c. Retirees, disabilities and beneficiaries	643,014,914
d. DROP members	<u>136,239,640</u>
e. Total	1,172,859,788

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

<b>Valuation Date</b>	<b>Actuarial Value of Assets (AVA) (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded Actuarial Accrued Liability (UAAL) (b-a)</b>	<b>Funded Ratio (AVA as a % of AAL) (a/b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll (b-a)/(c)</b>
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)%

**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 <sup>1</sup>	44,172	755,475	234,635	999,604	100.00%	100.00%	85.22%
December 31, 2019 <sup>1</sup>	43,054	776,756	234,827	1,022,559	100.00%	100.00%	86.34%
December 31, 2020 <sup>1</sup>	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%

<sup>1</sup> Accrued liability for Active Member Contributions revised from prior year report to reflect a data selection refinement.



## Section 2: Plan Assets

### Section 2.1 - Summary of Fair Value of Assets

Asset Category	Fair Value as of December 31, 2021		Fair Value as of December 31, 2020	
	Amount	%	Amount	%
1. Cash and Short-Term Investments				
a. Cash and cash equivalents	58,787,318	4.45%	60,766,620	5.24%
b. Other short-term	<u>40,196</u>	<u>0.00%</u>	<u>16,934</u>	<u>0.00%</u>
c. Total	58,827,514	4.45%	60,783,554	5.24%
2. Investments at Fair Value				
a. U.S. Treasury and agencies	0	0.00%	0	0.00%
b. Fixed Income	107,979,434	8.16%	110,096,370	9.49%
c. Domestic Stocks and Equity	718,240,865	54.28%	626,721,116	54.00%
d. International Equity	94,970,054	7.18%	85,233,317	7.34%
e. Limited Partnership	<u>343,097,070</u>	<u>25.93%</u>	<u>277,654,404</u>	<u>23.93%</u>
f. Total	1,264,287,423	95.55%	1,099,705,207	94.76%
3. Other Assets	0	0.00%	0	0.00%
4. Total Assets (1.c. + 2.f. + 3.)	1,323,114,937	100.00%	1,160,488,761	100.00%
5. Receivables				
a. Interest and Dividends	411,577		401,920	
b. Due from primary government	58,224		0	
c. Other Receivables	<u>222,333</u>		<u>111,841</u>	
d. Total	692,134		513,761	
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>6,451,088</u>		<u>7,371,597</u>	
d. Total	6,451,088		7,371,597	
7. Net Assets for Pension [4. + 5.d. – 6.d.]	1,317,355,983		1,153,630,925	

## Section 2.2 - Changes in Fair Value of Assets

Transactions	December 31, 2021	December 31, 2020
<b>Additions</b>		
1. Contributions		
a. Contributions from Employers	15,560,031	15,146,875
b. Contributions from Plan Members	<u>3,015,289</u>	<u>3,142,287</u>
c. Total	18,575,320	18,289,162
2. Net Investment Income		
a. Interest and Dividends	9,568,493	8,441,313
b. Net Appreciation(Depreciation)	218,197,417	125,176,117
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	227,765,910	133,617,430
h. Investment Expense	<u>(8,395,231)</u>	<u>(7,523,013)</u>
i. Net Investment Income	219,370,679	126,094,417
3. Total Additions	237,945,999	144,383,579
<b>Deductions</b>		
4. Benefit Payments and Refunds		
a. Retirement Benefits	73,093,602	71,802,977
b. Refund of Contributions	396,355	324,814
c. Death	0	0
d. Supplemental Payment	0	0
e. Administrative Expenses	<u>730,984</u>	<u>666,662</u>
f. Total Deductions	74,220,941	72,794,453
5. Net Increase	163,725,058	71,589,126
6. Net Assets Held in Trust for Pension Benefits		
a. Beginning of Year	1,153,630,925	1,082,041,799
b. End of Year	1,317,355,983	1,153,630,925

**Section 2.3 - Actuarial Value of Assets**

<b>Development of Actuarial Value of Assets</b>		<b>Amount</b>		
1. Actuarial Value of Assets as of December 31, 2020		1,068,574,127		
2. Unrecognized Return as of December 31, 2020		<u>85,056,798</u>		
3. Fair Value of Assets as of December 31, 2020 (1. + 2.)		1,153,630,925		
4. Contribution				
a. Member (includes purchased service)		3,015,289		
b. Employer		15,560,031		
c. State appropriations		<u>0</u>		
d. Total		18,575,320		
5. Distributions				
a. Benefit payments		73,093,602		
b. Refund of contributions		396,355		
c. Administrative Expenses		<u>730,984</u>		
d. Total		74,220,941		
6. Expected Return at 7.00% on				
a. Item 1		74,800,189		
b. Item 4 (d.)		650,136		
c. Item 5 (d.)		<u>2,597,733</u>		
d. Total [a. + b. - c.]		72,852,592		
7. Actual Return on Fair Value for Fiscal Year		219,370,679		
8. Return to be Spread for Fiscal year [(7. – 6(d))]		146,518,087		
9. Total Fair Value of Assets as of December 31, 2021		1,317,355,983		
10. Return to be Spread				
	<b>Fiscal Year</b>	<b>Return to be Spread</b>	<b>Unrecognized Percent</b>	<b>Unrecognized Return</b>
	2021	146,518,087	80%	117,214,470
	2020	56,422,966	60%	33,853,780
	2019	125,426,458	40%	50,170,583
	2018	(130,180,156)	20%	(26,036,031)
	2017	83,673,061	0%	<u>0</u>
		Total		175,202,802
11. Preliminary Actuarial Value of Assets (9. – 10.)				1,142,153,181
12. Corridor				
a. Lower Limit: 80% x 9.				1,053,884,787
b. Upper Limit: 120% x 9.				1,580,827,179
c. Adjustment to 11. to fit limits				<u>0</u>
13. Actuarial Value of Assets (11. + 12.c.)				1,142,153,181
14. Recognized Rate of Return for the Year on Actuarial Value of Assets <sup>1</sup>				12.42%
15. Rate of Return for the Year on Market Value of Assets (2 x 7. / [3. + 9. – 7.]				19.49%

<sup>1</sup> 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	604,422,737	290,258,834	132,080,617	41,811,939	1,068,574,127
2. Employee contributions	1,577,482	1,044,422	293,390	99,995	3,015,289
3. Employer contributions	6,301,027	5,259,008	3,999,996	-	15,560,031
4. Benefits paid	42,246,313	17,894,183	10,260,270	2,692,836	73,093,602
5. Refund of contributions	292,027	52,099	7,330	44,899	396,355
6. Administrative expense allocated on BOY asset value	<u>413,470</u>	<u>198,559</u>	<u>90,353</u>	<u>28,602</u>	<u>730,984</u>
7. Average valuation assets [1. + 0.5 * {2. + 3. - 4. - 5. - 6.}]	586,886,087	284,338,129	129,048,334	40,478,768	1,040,751,318
8. Investment income allocated on average valuation assets	72,870,591	35,304,786	16,023,260	5,026,038	129,224,675
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.]	642,220,027	313,722,209	142,039,310	44,171,635	1,142,153,181
11. Total Revenues [2. +3. + 8.]	80,749,100	41,608,216	20,316,646	5,126,033	147,799,995
Percentage of revenue attributable to:					
Employee contributions	2.0%	2.5%	1.4%	2.0%	2.0%
Employer contributions	7.8%	12.6%	19.7%	0.0%	10.5%
Investment income	90.1%	84.8%	78.9%	98.0%	87.5%
12. Total Expenditures [4. + 5. + 6.]	42,951,810	18,144,841	10,357,953	2,766,337	74,220,941
Percentage of expenditures attributable to:					
Benefits paid	98.4%	98.6%	99.1%	97.2%	98.6%
Refund of contributions	0.7%	0.3%	0.1%	1.6%	0.5%
Administrative expenses	1.0%	1.1%	0.9%	1.0%	1.0%

**Section 2.4 - Historical Asset Rate of Return**

<b>Year Ending December 31</b>	<b>Actuarial Value of Assets</b>	<b>Market Value of Assets</b>
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%

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

<b>Year Ending December 31</b>	<b>Active Employees</b>	<b>Retired, Disabled, Beneficiaries, and Deferred Vested</b>	<b>DROP Participants</b>	<b>Grand Total</b>
2022	831	62,162	21,377	84,370
2023	1,662	61,059	10,496	73,217
2024	2,619	60,302	13,279	76,200
2025	3,653	59,588	14,376	77,617
2026	11,383	58,748	11,270	81,401
2027	14,815	57,752	8,465	81,032
2028	19,128	56,706	8,436	84,270
2029	21,235	55,618	8,412	85,265
2030	23,907	54,470	8,381	86,758
2031	27,404	53,376	8,341	89,121
2032	32,270	52,252	8,303	92,825
2033	32,615	51,055	8,256	91,926
2034	34,392	49,790	8,208	92,390
2035	37,339	48,502	8,152	93,993
2036	38,057	47,076	8,096	93,229
2037	40,101	45,526	8,032	93,659
2038	41,370	43,903	7,961	93,234
2039	42,831	42,218	7,883	92,932
2040	44,758	40,436	7,795	92,989
2041	48,140	38,623	7,697	94,460
2042	52,029	36,784	7,589	96,402
2043	51,523	34,869	7,468	93,860
2044	50,676	32,983	7,336	90,995
2045	50,421	31,075	7,189	88,685
2046	50,034	29,153	7,029	86,216
2047	49,481	27,227	6,853	83,561
2048	48,877	25,326	6,661	80,864
2049	48,178	23,473	6,454	78,105
2050	47,302	21,658	6,231	75,191
2051	46,362	19,906	5,991	72,259
2052	45,382	18,205	5,737	69,324

## 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, 2021. The liabilities and reserves are shown below:

	General County	Sheriff's Department	Road Commission	Martha T. Berry	Total
1. Retiree Liability	440,431,517	204,665,920	107,435,859	26,721,258	779,254,554
2. Retiree Reserve	<u>429,187,861</u>	<u>187,531,644</u>	<u>105,092,039</u>	<u>26,195,313</u>	<u>748,006,857</u>
3. Shortfall	11,243,656	17,134,276	2,343,820	525,945	31,247,697

Reserve Accounts	Amount
1. Member Contributions	39,466,508
2. Reserve for benefits now paid	748,006,857
3. Reserve for future benefits	529,882,618
4. Supplemental reserve	<u>0</u>
5. Total	1,317,355,983

## 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	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
<u>Active Members</u>										
1. Number	845	922	287	316	117	124	63	78	1,312	1,440
2. Average Age	50.1	49.6	43.3	42.8	47.3	46.7	49.2	47.6	48.3	47.7
3. Avg. Credited Service	12.9	12.2	15.4	14.9	17.1	16.5	11.3	9.5	13.7	13.0
4. Avg. Annual Earnings	62,364	60,630	83,651	86,988	76,340	75,744	56,773	49,062	67,999	67,089
5. Total Annual Earnings	52,697,872	55,900,456	24,007,700	27,488,233	8,931,834	9,392,278	3,576,701	3,826,859	89,214,106	96,607,825
<u>Active Members (Term. Benefit Only)</u>										
1. Number	1,008	923	146	148	78	70	258	381	1,490	1,522
<u>Retirees, Disabled and Beneficiaries</u>										
1. Number	1,962	1,937	370	358	311	306	181	182	2,824	2,783
2. Average Age	71.4	71.1	65.2	65.0	70.0	70.2	72.3	71.8	70.5	70.3
3. Avg. Monthly Benefit	1,542	1,528	3,271	3,227	2,155	2,120	1,155	1,137	1,811	1,786
<u>DROP Participants</u>										
1. Number	166	188	47	38	41	49	6	6	260	281
2. Average Age	59.4	59.1	53.4	53.9	57.6	57.8	56.3	54.4	58.0	58.1
3. Avg. Monthly Benefit	2,270	2,193	4,365	4,301	2,874	2,714	1,874	1,873	2,735	2,562
<u>Vested Terminated</u>										
1. Number	230	228	25	22	20	20	14	15	289	285
2. Average Age	51.8	51.1	48.9	50.6	51.0	50.0	53.6	52.8	51.6	51.0
3. Avg. Monthly Benefit	1,071	1,065	1,867	1,762	1,386	1,432	798	804	1,149	1,130
<u>Non-Vested with Refund</u>										
1. Number	174	178	20	22	-	-	70	70	264	270
2. Average Payoff	2,790	2,839	3,327	3,872	-	-	897	912	2,329	2,423
<b>Total</b>	<b>4,385</b>	<b>4,376</b>	<b>895</b>	<b>904</b>	<b>567</b>	<b>569</b>	<b>592</b>	<b>732</b>	<b>6,439</b>	<b>6,581</b>



**Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2021 – 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	1	18	0	0	0	0	0	0	19
	Total Salary									\$1,238,232
	Average Salary									\$65,170
30-34	Number	1	79	7	1	0	0	0	0	88
	Total Salary									\$6,113,399
	Average Salary									\$69,470
35-39	Number	3	84	29	23	2	0	0	0	141
	Total Salary									\$10,066,978
	Average Salary									\$71,397
40-44	Number	3	59	39	85	33	0	0	0	219
	Total Salary									\$15,831,065
	Average Salary									\$72,288
45-49	Number	5	54	33	77	100	8	1	0	278
	Total Salary									\$19,418,590
	Average Salary									\$69,851
50-54	Number	1	62	41	71	54	18	4	3	254
	Total Salary									\$17,409,451
	Average Salary									\$68,541
55-59	Number	3	34	37	69	16	2	3	1	165
	Total Salary									\$10,261,144
	Average Salary									\$62,189
60-64	Number	3	41	26	26	7	4	4	1	112
	Total Salary									\$6,871,558
	Average Salary									\$61,353
65-69	Number	1	14	5	3	1	1	0	0	25
	Total Salary									\$1,526,750
	Average Salary									\$61,070
70+	Number	1	1	4	2	2	1	0	0	11
	Total Salary									\$476,939
	Average Salary									\$43,358
<b>TOTAL</b>	Number	22	446	221	357	215	34	12	5	1,312
	Total Salary	\$912,202	\$28,403,714	\$14,440,439	\$25,194,365	\$16,615,003	\$2,497,846	\$746,062	\$404,474	\$89,214,106
	Average Salary	\$41,464	\$63,685	\$65,341	\$70,572	\$77,279	\$73,466	\$62,172	\$80,895	\$67,999

**Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2021 – 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	1	5	0	0	0	0	0	0	6
	Total Salary									\$312,880
	Average Salary									\$52,147
30-34	Number	1	32	2	0	0	0	0	0	35
	Total Salary									\$2,031,863
	Average Salary									\$58,053
35-39	Number	3	52	16	3	0	0	0	0	74
	Total Salary									\$4,745,592
	Average Salary									\$64,130
40-44	Number	3	44	30	47	9	0	0	0	133
	Total Salary									\$8,934,699
	Average Salary									\$67,178
45-49	Number	5	42	26	42	49	3	1	0	168
	Total Salary									\$10,567,089
	Average Salary									\$62,899
50-54	Number	1	51	31	53	26	7	2	1	172
	Total Salary									\$11,088,401
	Average Salary									\$64,467
55-59	Number	3	26	31	56	9	2	3	0	130
	Total Salary									\$7,550,300
	Average Salary									\$58,079
60-64	Number	3	32	22	23	6	3	4	0	93
	Total Salary									\$5,529,305
	Average Salary									\$59,455
65-69	Number	1	13	4	3	1	1	0	0	23
	Total Salary									\$1,460,805
	Average Salary									\$63,513
70+	Number	1	1	4	2	2	1	0	0	11
	Total Salary									\$476,939
	Average Salary									\$43,358
<b>TOTAL</b>	Number	22	298	166	229	102	17	10	1	845
	Total Salary	\$912,202	\$17,696,116	\$10,332,541	\$15,151,746	\$6,845,893	\$1,097,079	\$603,853	\$58,442	\$52,697,872
	Average Salary	\$41,464	\$59,383	\$62,244	\$66,165	\$67,117	\$64,534	\$60,385	\$58,442	\$62,364

**Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2021 – 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	10	0	0	0	0	0	0	10
	Total Salary									\$725,941
	Average Salary									\$72,594
30-34	Number	0	41	5	1	0	0	0	0	47
	Total Salary									\$3,712,014
	Average Salary									\$78,979
35-39	Number	0	25	11	15	1	0	0	0	52
	Total Salary									\$4,307,631
	Average Salary									\$82,839
40-44	Number	0	7	3	23	14	0	0	0	47
	Total Salary									\$4,177,182
	Average Salary									\$88,876
45-49	Number	0	4	2	22	37	0	0	0	65
	Total Salary									\$5,630,571
	Average Salary									\$86,624
50-54	Number	0	3	5	9	20	3	1	2	43
	Total Salary									\$3,502,174
	Average Salary									\$81,446
55-59	Number	0	2	2	8	6	0	0	1	19
	Total Salary									\$1,653,319
	Average Salary									\$87,017
60-64	Number	0	1	0	3	0	0	0	0	4
	Total Salary									\$298,867
	Average Salary									\$74,717
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
<b>TOTAL</b>	Number	0	93	28	81	78	3	1	3	287
	Total Salary	\$0	\$7,158,866	\$2,326,963	\$6,739,787	\$7,181,664	\$261,820	\$65,766	\$272,833	\$24,007,700
	Average Salary	\$0	\$76,977	\$83,106	\$83,207	\$92,073	\$87,273	\$65,766	\$90,944	\$83,651

**Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2021 – 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	3	0	0	0	0	0	0	3
	Total Salary									\$199,412
	Average Salary									\$66,471
30-34	Number	0	2	0	0	0	0	0	0	2
	Total Salary									\$138,012
	Average Salary									\$69,006
35-39	Number	0	4	1	5	1	0	0	0	11
	Total Salary									\$771,086
	Average Salary									\$70,099
40-44	Number	0	3	3	11	9	0	0	0	26
	Total Salary									\$1,902,359
	Average Salary									\$73,168
45-49	Number	0	3	1	10	13	4	0	0	31
	Total Salary									\$2,440,508
	Average Salary									\$78,726
50-54	Number	0	4	2	5	8	8	1	0	28
	Total Salary									\$2,241,350
	Average Salary									\$80,048
55-59	Number	0	4	1	3	1	0	0	0	9
	Total Salary									\$684,266
	Average Salary									\$76,030
60-64	Number	0	3	1	0	1	1	0	1	7
	Total Salary									\$554,841
	Average Salary									\$79,263
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
<b>TOTAL</b>	Number	0	26	9	34	33	13	1	1	117
	Total Salary	\$0	\$1,886,423	\$681,449	\$2,632,128	\$2,485,324	\$1,096,868	\$76,443	\$73,200	\$8,931,834
	Average Salary	\$0	\$72,555	\$75,717	\$77,416	\$75,313	\$84,374	\$76,443	\$73,200	\$76,340

**Section 3.2 - Age and Service Distribution of Active Members as of December 31, 2021 – Martha T. Berry (continued)**

<b>Attained Age</b>		<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>Over 34</b>	<b>Total</b>
<b>15-19</b>	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
<b>20-24</b>	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
<b>25-29</b>	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
<b>30-34</b>	Number	0	4	0	0	0	0	0	0	4
	Total Salary									\$231,511
	Average Salary									\$57,878
<b>35-39</b>	Number	0	3	1	0	0	0	0	0	4
	Total Salary									\$242,669
	Average Salary									\$60,667
<b>40-44</b>	Number	0	5	3	4	1	0	0	0	13
	Total Salary									\$816,825
	Average Salary									\$62,833
<b>45-49</b>	Number	0	5	4	3	1	1	0	0	14
	Total Salary									\$780,421
	Average Salary									\$55,744
<b>50-54</b>	Number	0	4	3	4	0	0	0	0	11
	Total Salary									\$577,526
	Average Salary									\$52,502
<b>55-59</b>	Number	0	2	3	2	0	0	0	0	7
	Total Salary									\$373,258
	Average Salary									\$53,323
<b>60-64</b>	Number	0	5	3	0	0	0	0	0	8
	Total Salary									\$488,546
	Average Salary									\$61,068
<b>65-69</b>	Number	0	1	1	0	0	0	0	0	2
	Total Salary									\$65,945
	Average Salary									\$32,972
<b>70+</b>	Number	0	0	0	0	0	0	0	0	0
	Total Salary									\$0
	Average Salary									\$0
<b>TOTAL</b>	Number	0	29	18	13	2	1	0	0	63
	Total Salary	\$0	\$1,662,310	\$1,099,486	\$670,703	\$102,122	\$42,079	\$0	\$0	\$3,576,701
	Average Salary	\$0	\$57,321	\$61,083	\$51,593	\$51,061	\$42,079	\$0	\$0	\$56,773

### Section 3.3 - Member Data Reconciliation

	Inactive Members							
	Active <sup>1</sup>	Deferred Benefits	Termination Owed Refund	DROP	Retired Members	Disabled Members	Beneficiaries	Total
As of December 31, 2020	1,440	285	270	281	2,322	85	376	5,059
Changes due to:								
Age/Service Retirements	(36)	(14)	0	(55)	105	0	0	0
Disability Retirements	(1)	0	0	0	0	1	0	0
Deaths Without Beneficiary	0	0	0	(1)	(49)	(1)	(19)	(70)
Deaths With Beneficiary	0	1	1	(1)	(31)	0	30	0
Non-Vested Terminations	(3)	0	0	0	0	0	0	(3)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	(20)	20	0	0	0	0	0	0
Rehires	2	(2)	0	0	0	0	0	0
Cash-Outs	(25)	(1)	(6)	0	0	0	0	(32)
Expiration of Benefits	0	0	0	0	0	0	(1)	(1)
Data Corrections	(9)	0	(1)	0	0	0	1	(9)
Transfers Out	0	0	0	0	0	0	0	0
DROP	(36)	0	0	36	0	0	0	0
New QDROs	0	0	0	0	0	0	5	5
Net Change	(128)	4	(6)	(21)	25	0	16	(110)
As of December 31, 2021	1,312	289	264	260	2,347	85	392	4,949

<sup>1</sup> The count as of 12/31/2021 excludes 1,490 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, 2020	922	228	178	188	1,669	39	229	3,453
Changes due to:								
Age/Service Retirements	(27)	(12)	0	(34)	73	0	0	0
Disability Retirements	(1)	0	0	0	0	1	0	0
Deaths Without Beneficiary	0	0	0	(1)	(34)	(1)	(15)	(51)
Deaths With Beneficiary	0	1	1	0	(24)	0	22	0
Non-Vested Terminations	(2)	0	0	0	0	0	0	(2)
Terminations Owed Refund	0	0	0	0	0	0	0	0
Vested Terminations	(16)	16	0	0	0	0	0	0
Rehires	2	(2)	0	0	0	0	0	0
Cash-Outs	(20)	(1)	(4)	0	0	0	0	(25)
Expiration of Benefits	0	0	0	0	0	0	(1)	(1)
Data Corrections	0	0	(1)	0	0	0	1	0
Transfers Out	0	0	0	0	0	0	0	0
DROP	(13)	0	0	13	0	0	0	0
New QDROs	0	0	0	0	0	0	3	3
Net Change	(77)	2	(4)	(22)	15	0	10	(76)
As of December 31, 2021	845	230	174	166	1,684	39	239	3,377

**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, 2020	316	22	22	38	272	23	63	756
Changes due to:								
Age/Service Retirements	(7)	(1)	0	(7)	15	0	0	0
Disability Retirements	0	0	0	0	0	0	0	0
Deaths Without Beneficiary	0	0	0	0	(4)	0	(1)	(5)
Deaths With Beneficiary	0	0	0	0	(3)	0	3	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	(4)	4	0	0	0	0	0	0
Rehires	0	0	0	0	0	0	0	0
Cash-Outs	(2)	0	(2)	0	0	0	0	(4)
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	0	0	0	0	0	0	0	0
Transfers Out	0	0	0	0	0	0	0	0
DROP	(16)	0	0	16	0	0	0	0
New QDROs	0	0	0	0	0	0	2	2
Net Change	(29)	3	(2)	9	8	0	4	(7)
As of December 31, 2021	287	25	20	47	280	23	67	749



### 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, 2020	124	20	0	49	227	13	66	499
Changes due to:								
Age/Service Retirements	(1)	0	0	(13)	14	0	0	0
Disability Retirements	0	0	0	0	0	0	0	0
Deaths Without Beneficiary	0	0	0	0	(7)	0	(3)	(10)
Deaths With Beneficiary	0	0	0	(1)	0	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	0	0	0	0	0	0	0
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	0	0	0	0	0	0	0	0
Transfers Out	0	0	0	0	0	0	0	0
DROP	(6)	0	0	6	0	0	0	0
New QDROs	0	0	0	0	0	0	0	0
Net Change	(7)	0	0	(8)	7	0	(2)	(10)
As of December 31, 2021	117	20	0	41	234	13	64	489

**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, 2020	78	15	70	6	154	10	18	351
Changes due to:								
Age/Service Retirements	(1)	(1)	0	(1)	3	0	0	0
Disability Retirements	0	0	0	0	0	0	0	0
Deaths Without Beneficiary	0	0	0	0	(4)	0	0	(4)
Deaths With Beneficiary	0	0	0	0	(4)	0	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	0	0	0	0	0	0	0	0
Rehires	0	0	0	0	0	0	0	0
Cash-Outs	(3)	0	0	0	0	0	0	(3)
Expiration of Benefits	0	0	0	0	0	0	0	0
Data Corrections	(9)	0	0	0	0	0	0	(9)
Transfers Out	0	0	0	0	0	0	0	0
DROP	(1)	0	0	1	0	0	0	0
New QDROs	0	0	0	0	0	0	0	0
Net Change	(15)	(1)	0	0	(5)	0	4	(17)
As of December 31, 2021	63	14	70	6	149	10	22	334

**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, 2013	1,328	377	207	156	2,068	102,252,875	49,445	(2.5)%
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%

**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, 2016	236	19	16	17	288	3,566,016	12,382
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

**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	85	44	40	1	59	4	16	6
301 - 600	295	221	66	8	150	30	46	69
601 - 900	407	319	76	12	196	39	59	113
901 - 1,200	363	306	39	18	146	42	65	110
1,201 - 1,500	272	223	38	11	113	31	44	84
1,501 - 1,800	230	190	27	13	93	22	40	75
1,801 - 2,100	211	171	30	10	81	33	47	50
2,101 - 2,400	187	167	16	4	52	23	46	66
2,401 - 2,700	150	133	16	1	52	19	31	48
2,701 - 3,000	145	129	15	1	41	12	41	51
3,001 - 3,300	116	99	16	1	33	8	36	39
3,301 - 3,600	90	84	4	2	18	7	24	41
3,601 - 3,900	65	62	2	1	17	6	22	20
3,901 - 4,200	52	50	1	1	8	5	15	24
Over \$4,200	156	149	6	1	37	9	55	55
<b>Totals</b>	<b>2,824</b>	<b>2,347</b>	<b>392</b>	<b>85</b>	<b>1,096</b>	<b>290</b>	<b>587</b>	<b>851</b>

- | 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	5	2	0	0	3
901 - 1,200	22	4	1	6	11
1,201 - 1,500	18	6	1	2	9
1,501 - 1,800	30	8	2	8	12
1,801 - 2,100	25	5	5	7	8
2,101 - 2,400	17	4	1	8	4
2,401 - 2,700	22	3	2	4	13
2,701 - 3,000	24	3	0	7	14
3,001 - 3,300	22	6	2	4	10
3,301 - 3,600	12	1	0	6	5
3,601 - 3,900	11	1	2	1	7
3,901 - 4,200	15	2	0	4	9
Over \$4,200	34	4	36	4	1
<b>Totals</b>	<b>260</b>	<b>50</b>	<b>17</b>	<b>67</b>	<b>126</b>

**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	3	37,449	0	0	3	37,449
35-39	4	68,027	0	0	4	68,027
40-44	3	51,031	5	88,049	8	139,080
45-49	11	298,887	4	70,250	15	369,137
50-54	93	2,701,737	11	264,645	104	2,966,382
55-59	212	6,801,892	18	335,485	230	7,137,377
60-64	441	11,077,142	13	269,585	454	11,346,727
65-69	594	13,237,086	12	209,840	606	13,446,926
70-74	543	11,567,336	9	129,219	552	11,696,554
75	67	1,304,362	1	12,949	68	1,317,311
76	67	1,424,963	1	12,133	68	1,437,096
77	72	1,318,086	1	6,019	73	1,324,105
78	73	1,318,841	2	38,809	75	1,357,650
79	79	1,531,178	0	0	79	1,531,178
80	62	1,246,326	1	5,513	63	1,251,839
81	56	917,532	2	21,166	58	938,698
82	43	777,055	1	6,030	44	783,086
83	49	890,049	0	0	49	890,049
84	37	551,180	0	0	37	551,180
85	33	459,477	0	0	33	459,477
86	19	263,831	1	15,285	20	279,116
87	28	316,475	0	0	28	316,475
88	22	281,987	0	0	22	281,987
89	22	270,796	1	9,667	23	280,463
90	22	208,137	0	0	22	208,137
91	10	128,979	1	1,637	11	130,617
92	19	203,975	0	0	19	203,975
93	15	236,257	1	6,813	16	243,070
94	10	115,527	0	0	10	115,527
95	8	108,570	0	0	8	108,570
96	6	47,060	0	0	6	47,060
97	3	15,584	0	0	3	15,584
98	2	6,133	0	0	2	6,133
99	2	6,729	0	0	2	6,729
100	2	13,863	0	0	2	13,863
101	0	0	0	0	0	0
102	1	2,633	0	0	1	2,633
103+	1	5,275	0	0	1	5,275
<b>Total</b>	<b>2,739</b>	<b>59,884,834</b>	<b>85</b>	<b>1,503,095</b>	<b>2,824</b>	<b>61,387,929</b>

**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	1	16,240	0	0
32	1	14,160	0	0
33	0	0	0	0
34	1	0	0	0
35	0	0	0	0
36	5	48,613	0	0
37	2	37,927	0	0
38	5	56,371	0	0
39	1	13,516	0	0
40	5	97,778	0	0
41	7	96,766	0	0
42	5	76,929	0	0
43	9	176,237	0	0
44	5	86,437	0	0
45	12	151,221	0	0
46	22	355,887	1	46,776
47	16	261,619	0	0
48	12	249,681	7	414,324
49	14	271,777	4	244,432
50	16	302,344	8	378,581
51	10	161,048	15	618,709
52	11	125,013	25	979,287
53	11	107,910	10	324,476
54	7	63,319	20	881,195
55	11	118,472	22	697,859
56	19	239,297	14	413,762
57	19	216,474	14	469,686
58	18	148,134	19	529,159
59	25	351,662	19	613,133
60	2	20,160	9	211,374
61	1	8,093	9	199,389
62	3	21,182	9	287,959
63	3	11,992	15	307,633
64	2	15,872	9	252,438
65	1	7,350	8	150,439
66	0	0	8	193,394
67	3	26,890	4	46,865
68	3	4,231	11	271,774
<b>Total</b>	<b>289</b>	<b>3,983,449</b>	<b>260</b>	<b>8,532,644</b>

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

## Valuation Date

December 31, 2021

## Actuarial Methods

### Actuarial Cost Method

Entry Age Normal

### Amortization Method

#### Period

12 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:

<b>Disability Rates</b>	
<b>Age</b>	<b>% of Active Members Becoming Disabled within Next Year</b>
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:

<b>% of Active Members Separating within Next Year</b>					
<b>Sample Age</b>	<b>Years of Service</b>	<b>General County</b>	<b>Sheriff's Department</b>	<b>Road Commission</b>	<b>Martha T Berry MCF</b>
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:

<b>Single Life Retirement Values</b>				
<b>Sample Ages</b>	<b>Values at Retirement of \$1 Monthly for Life</b>		<b>Future Life Expectancy (years)</b>	
	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
	50	\$151.09	\$154.99	33.88
55	143.64	147.97	29.19	31.18
60	134.38	139.19	24.67	26.47
65	123.21	128.50	20.40	22.01
70	109.89	115.41	16.39	17.77
75	94.31	99.78	12.69	13.82
80	77.02	82.19	9.38	10.27

## 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, 2020 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, 2021	December 31, 2020	December 31, 2019	December 31, 2018	December 31, 2017
1. Inactive Member Actuarial Accrued Liability <sup>1</sup>	805,697,227	789,719,875	776,755,557	755,474,838	737,059,473
2. Total Actuarial Accrued Liability	1,089,306,972	1,064,429,280	1,054,636,606	1,034,282,157	1,013,110,113
3. Ratio [(1) / (2)]	74.0%	74.2%	73.7%	73.0%	72.8%

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, 2021	December 31, 2020	December 31, 2019	December 31, 2018	December 31, 2017
1. Contributions	18,575,320	18,289,162	20,346,143	26,999,720	25,124,450
2. Benefit Payments	73,093,602	71,802,977	67,917,452	66,297,751	65,895,203
3. Cash Flow [(1) – (2)]	(54,518,282)	(53,513,815)	(47,571,309)	(39,298,031)	(40,770,753)
4. Market Value of Assets	1,317,355,983	1,153,630,925	1,082,041,799	937,087,932	1,037,372,865
5. Ratio [(3) / (4)]	(4.14%)	(4.64%)	(4.40%)	(4.19%)	(3.93%)

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.

<sup>1</sup> Includes retirees, beneficiaries, DROP members, and terminated members with deferred benefits

## Section 6 – ASOP 51 Disclosures (continued)

Contribution Volatility	December 31, 2021	December 31, 2020	December 31, 2019	December 31, 2018	December 31, 2017
1. Market Value of Assets	1,317,355,983	1,153,630,925	1,082,041,799	937,087,932	1,037,372,865
2. Payroll	92,556,195	93,922,408	101,650,261	107,524,311	112,878,234
3. Asset Volatility Ratio (AVR) [(1) / (2)]	14.23	12.28	10.64	8.72	9.19
4. Accrued Liability	1,089,306,972	1,064,429,280	1,054,636,606	1,034,282,157	1,013,110,113
5. Liability Volatility Ratio (LVR) [(4) / (2)]	11.77	11.33	10.38	9.62	8.98

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.