

Montgomery County Employees' Retirement System

Actuarial Valuation as of July 1, 2019



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October 17, 2019

Ms. Linda Herman
Executive Director
Montgomery County Employees' Retirement System
101 Monroe Street, 15th Floor
Rockville, Maryland 20850

Dear Linda:

We are pleased to provide our formal annual Actuarial Valuation Report as of July 1, 2019 for the Montgomery County Employees' Retirement System ("System"). The actuarial valuation was performed at the request of Montgomery County ("County") and is intended for use by the County and the System and those designated by the County and the System. This report may be provided to parties other than the County and System only in its entirety and only with the permission of the County and System. GRS is not responsible for unauthorized use of this report.

The purposes of the actuarial valuation are to measure the funding progress of the System and to determine the recommended annual contribution to the System for the Plan Year commencing July 1, 2020, and ending on June 30, 2021. Information required by GASB Statement Nos. 67 and 68 is provided in a separate report. This report should not be relied on for any purpose other than the purposes described herein. Determinations of financial results, associated with the benefits described in this report, for purposes other than those identified above may be significantly different.

The recommended annual contribution in this report is determined using the actuarial assumptions and methods disclosed in Section C of this report. This report includes risk metrics on page A-6 but does not include a more robust assessment of the risks of future experience not meeting the actuarial assumptions. Additional assessment of risks was outside the scope of this assignment.

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

The actuarial valuation was based upon information furnished by the County Staff, concerning benefits provided by the Montgomery County Employees' Retirement System, financial transactions, plan provisions and census data for active members, terminated members, retirees and beneficiaries as of July 1, 2019. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by the County Staff.

This report was prepared using actuarial assumptions adopted by the Board as authorized under Montgomery County Code. All actuarial assumptions used in this report are reasonable for the purposes of this actuarial valuation and meet the parameters set forth in the Actuarial Standards of Practice issued by the Actuarial Standards Board. Additional information about the actuarial assumptions is included in the Section C of this report. The actuarial assumptions used in this actuarial valuation are based on an experience review covering the period July 1, 2014 to July 1, 2018 and were first adopted for use beginning with the actuarial valuation as of July 1, 2019.

The plan provisions have remained unchanged since the last valuation, performed as of July 1, 2018.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. To the best of our knowledge the information contained in this report is accurate and fairly presents the actuarial position of the Montgomery County Employees' Retirement System as of the actuarial valuation date. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board.

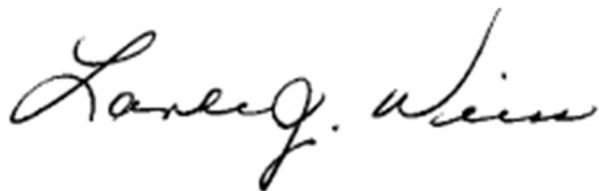
Lance J. Weiss and Amy Williams are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein.

The signing actuaries are independent of the plan sponsor.

We will be pleased to review this report with you at your convenience.

Respectfully submitted,

Gabriel, Roeder, Smith & Company



Lance J. Weiss, E.A., M.A.A.A., F.C.A.
Senior Consultant and Team Leader



Amy Williams, A.S.A., M.A.A.A., F.C.A.
Senior Consultant

LW/AW:rmn



SECTION A

ACTUARIAL VALUATION RESULTS

Comments on the Actuarial Valuation

At your request, we have performed an actuarial valuation of the Montgomery County Employees' Retirement System as of July 1, 2019.

The purposes of this actuarial valuation are as follows:

- To determine the funding status of the System as of the actuarial valuation date;
- To determine the recommended contribution for the fiscal year beginning July 1, 2020; and
- To provide other data required by the System.

Accounting information required under Governmental Accounting Standards Board ("GASB") Statement Nos. 67 and 68 is presented in a separate report.

We received the data from the Montgomery County Employees' Retirement System Staff. We performed certain checks for reasonableness and found the data to be complete and reliable for actuarial valuation purposes. However, we did not audit the data.

A total of 6,003 active members (excluding DRSP and DROP) were included in the actuarial valuation as of July 1, 2019. Between the 2018 and 2019 actuarial valuations, the number of active employees decreased by 1 member. The average annual actuarial valuation pay (excluding DRSP and DROP) increased by 1.9 percent, from \$77,944 to \$79,397 between the 2018 and 2019 actuarial valuation. The number of benefit recipients (including DRSP and DROP) increased from 6,615 to 6,731, or 1.8 percent, since the last actuarial valuation. The average monthly benefit increased by 2.4 percent, from \$3,219 to \$3,295. Section B summarizes the membership data.

There is a group of retirees who have benefits that are insured by Aetna. The total benefit amount reported for each of these members in the actuarial valuation report includes the insured benefit amount. However, the actuarial liabilities exclude the value of the insured benefits. The actuarial liabilities for these members who are included in the actuarial valuation are for the cost of living adjustments provided and are paid by the Montgomery County Employees' Retirement System.

Section C outlines the actuarial assumptions and methods used in the actuarial valuation. The actuarial assumptions used in this actuarial valuation are based on an experience review covering the period July 1, 2014 to July 1, 2018 and were first adopted for use beginning with the actuarial valuation as of July 1, 2019.

Following is a summary of the key findings and changes, as approved by the Directors:

- **Price inflation:** The rate of assumed price inflation was decreased from 2.75 percent to 2.50 percent.
- **Investment return:** There was no change to the assumption of 7.50 percent.
- **Salary increase:** The salary increase assumptions were increased to reflect observed experience.
- **Payroll growth:** The payroll growth assumption was decreased from 3.25 percent to 3.00 percent. The payroll growth assumption is used to amortize the unfunded liability as a level percent of pay.
- **Retirement rates:** The retirement rates were decreased to reflect observed experience.
- **Turnover rates:** The turnover rates were changed based on observed experience.

Comments on the Actuarial Valuation (Continued)

- **Mortality rates:** The mortality rates were changed from the RP 2014 Mortality Tables to the Pub-2010 Public Retirement Plans Mortality Tables with rates projected from 2010 using projection scale MP-2018 (generational mortality). The tables for Safety Employees were used for the public safety groups and the tables for General Employees were used for the non-public safety groups.
- **Disability rates:** The disability rates were changed based on observed experience.
- **DROP participation:** There were no changes to the DROP/DRSP participation assumption of 75 percent for Groups E and F and an increase to the assumption from 75 percent to 85 percent for Group G based on observed experience.
- **Other assumptions:** There were no changes to the current actuarial cost method, amortization method, asset smoothing method, administrative expense assumption and pay increase and decrement timing assumptions.

The assumption for administrative expenses is equal to 105 percent of the average of the prior three years' administrative expenses. This amount has increased from \$3,174,700 to \$3,192,200.

Section D outlines the principal benefit provisions of the System. The plan provisions used in this actuarial valuation are the same as those used in the actuarial valuation at July 1, 2018.

During the plan year ending June 30, 2019, the unfunded actuarial accrued liability ("UAAL") decreased from \$184,942,468 as of July 1, 2018, to \$58,164,659 as of July 1, 2019, which is a decrease of \$126,777,809. The key factors contributing to the decrease in the UAAL were (1) the change in actuarial assumptions from the recent experience study, (2) favorable demographic experience compared to the assumptions used in the last actuarial valuation, (3) lower than expected cost of living (COLA) increases for retired members, (4) contributions under the funding policy that are expected to decrease the UAAL, and (5) higher dollar contributions than expected. (The COLA increase was 1.603 percent compared to an assumed COLA increase of 2.75 percent from last year's actuarial valuation for benefits attributable to service prior to July 1, 2011, and an assumed COLA increase of 2.30 percent for benefits attributable to service on or after July 1, 2011. For members who receive an increase based on 60 percent of CPI, the actual increase was 0.962 percent compared to an assumption of 1.65 percent from last year's valuation.)

On a market value basis, the Plan assets had an investment return of approximately 8.05 percent¹ (net of investment expenses). Recognition of investment gains during fiscal years ending 2017, 2018 and 2019 were partially offset by recognition of the fiscal year end 2015 and 2016 investment losses. The net investment gains resulted in an estimated net asset rate of return of 6.46 percent on an actuarial value of assets basis, which compares to the assumed rate of return of 7.50 percent.

The funded ratio (ratio of assets to liabilities) increased from 95.7 percent to 98.7 percent on an actuarial value of assets basis, and increased from 95.7 percent to 99.9 percent on a market value of assets basis between the 2018 and 2019 actuarial valuations.

The funded ratio and unfunded actuarial accrued liability are useful for assessing the need for and the amount of future unfunded liability contributions (excludes normal cost contributions). They are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the System's benefit obligations.

¹ As provided by Montgomery County ERS.

Comments on the Actuarial Valuation (Continued)

Recommended County Contributions

The total contribution rate is equal to the normal cost rate plus amortization of the unfunded liability as a level percentage of payroll. The amortization policy was updated beginning with the actuarial valuation as of July 1, 2015. The unfunded liability as of July 1, 2015 (and in each future year) for Groups A and H (which are closed to new members) is amortized over a single closed period of 9 years (5 years remaining at the actuarial valuation as of July 1, 2019 to amortize the total unfunded liability). The unfunded liability as of July 1, 2015, for the Public Safety groups (Groups E, F and G), Group J and GRIP was amortized over a closed period of 20 years (16 years remaining at the actuarial valuation as of July 1, 2019) and the unfunded liability bases established in each subsequent year are amortized over separate 20-year closed periods.

The single equivalent amortization period for the System in total as of July 1, 2019, is 4.5 years. The single equivalent amortization period is 5.0 years for the closed Non-Public Safety groups (Groups A and H), 5.5 years for the non-GRIP open groups (Public Safety groups and Group J) and 14.6 years for GRIP as of July 1, 2019. The current unfunded liability as of July 1, 2019, is expected to be fully paid off after five years (at the end of fiscal year 2025) for Groups A and H and after 20 years (at the end of fiscal year 2040) for the open groups (Public Safety groups, Group J and GRIP). (Because the unfunded liability bases established after July 1, 2015 were negative, which results in amortization credits, the unfunded liability is expected to be fully paid off after 16.0 years for the non-GRIP open groups.)

The unfunded liability is amortized as a level percentage of payroll and assumes that total payroll will increase by 3.00 percent each year. Groups A and H are closed plans (no new members are entering), and payroll is expected to decrease as members retire or otherwise exit the active population. Based on the level percentage of payroll amortization method, the portion of the County contribution rate attributable to the unfunded liability is expected to increase significantly as a percentage of payroll, as payroll declines.

However, if all assumptions are realized, the unfunded liability contribution will increase as a dollar amount by 3.00 percent each year. The payroll basis used in calculating the percentage of pay contribution for amortizing the unfunded liability for fiscal year 2021 reflects the assumption that fiscal year 2021 payroll will decrease from the payroll as of July 1, 2019 for the closed groups.

The total contribution rate minus the average employee contribution rate equals the County contribution rate. The actuarial valuation as of July 1, 2018 established the County contribution rate for fiscal year beginning July 1, 2019 and ending June 30, 2020. The actuarial valuation as of July 1, 2019, establishes the County contribution rate for fiscal year beginning July 1, 2020, and ending June 30, 2021.

Non-GRIP

The unfunded liability by group as of July 1, 2019, was calculated as the difference between the actuarial accrued liability and the actuarial value of assets as of July 1, 2019. The unfunded liability as of July 1, 2019 is amortized over a single closed five-year period for Groups A and H. The unfunded liability for Groups E, F, G and J, as of July 1, 2015, was amortized over an initial closed period of 20 years (16 years remaining at the actuarial valuation as of July 1, 2019) as a level percentage of payroll. The additional unfunded liability from each subsequent actuarial valuation, beginning with the actuarial valuation as of July 1, 2016, is amortized over a 20-year closed period as a level percentage of payroll. Additional details on the unfunded liability and amortization payments by group can be found in Section C.

Comments on the Actuarial Valuation (Concluded)

The amortization base for GRIP is separately tracked. Outside agencies are separately amortizing their portion of the non-GRIP unfunded liability as a level dollar amount over a 20-year closed period as of July 1, 2015 (10-year closed period for Strathmore Hall and Washington Suburban Transit Commission). In determining the unfunded actuarial accrued liability base and amortization of unfunded liability contribution rate for Group A, the non-GRIP outside agencies' unfunded liability was deducted along with excluding the non-GRIP outside agencies' contribution basis payroll for amortization of the unfunded actuarial accrued liability.

The County contribution rates for fiscal year 2021 decreased for Public Safety and for non-Public Safety from the fiscal year 2020 County contribution rate. The decrease in the County contribution rates was mainly attributable to the change in the actuarial assumptions, which decreased the unfunded actuarial accrued liability. In addition, both Public Safety and non-Public Safety groups experienced favorable experience during fiscal year 2019, including lower retiree COLA increases than expected under the actuarial assumptions and higher contributions than expected. This favorable experience was partially offset by recognition of deferred asset losses from fiscal years 2015 and 2016 in the actuarial value of assets.

The actuarial value of assets is currently approximately 99 percent of the market value of assets. There is \$52,483,322 in net asset gains currently being deferred (\$54,639,874 deferred asset gains in total for GRIP and non-GRIP) that will be phased into the actuarial value of assets over the next four years. Assuming all future assumptions are realized, there is projected to be a decrease in the recommended County contribution as the remaining deferred asset gains are recognized.

GRIP

Beginning with the July 1, 2015, actuarial valuation, amortization bases established prior to July 1, 2015, were recombined into a single amortization base equal to the unfunded liability as of July 1, 2015. The unfunded liability for GRIP as of July 1, 2015, was amortized over an initial closed period of 20 years (16 years remaining at the actuarial valuation as of July 1, 2019) as a level percentage of payroll. The additional unfunded liability from each subsequent actuarial valuation is amortized over a separate 20-year closed period as a level percentage of payroll.

The County contribution rate for fiscal year 2021 increased for GRIP members from the fiscal year 2020 rate. The increase in the County contribution rate is mainly attributable to amortizing the negative unfunded liability contribution over a larger payroll base, which results in a lower unfunded liability amortization rate. The County contribution rate is approximately 0.5 percent lower than the County normal cost rate.

The actuarial value of GRIP assets is approximately 99 percent of the market value of assets. There is \$2,156,552 in net asset gains currently being deferred that will be phased into the actuarial value of assets over the next four years. Assuming all future assumptions are realized, there is projected to be a decrease in the recommended County contribution as the remaining deferred asset gains are recognized.

RISKS ASSOCIATED WITH THE MEASURING THE ACCRUED LIABILITY AND ACTUARIALLY DETERMINED CONTRIBUTION

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

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

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

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

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

The County contribution rates shown on page A-7 may be considered as a minimum contribution rate that complies with the County's funding policy. The timely receipt of the actuarially determined contributions is critical to support the financial health of the plan. Users of this report should be aware that contributions made at the actuarially determined rate do not necessarily guarantee benefit security.

Risk Measures

PLAN MATURITY MEASURES

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

	2018	2019
Ratio of the market value of assets to total payroll	8.87	9.06
Ratio of actuarial accrued liability to payroll	9.26	9.06
Ratio of actives to retirees and beneficiaries ¹	0.91	0.89
Ratio of net cash flow to market value of assets	-0.03	-0.03

¹ DRSP/DROP participants included in the count of retirees and beneficiaries

RATIO OF MARKET VALUE OF ASSETS TO PAYROLL

The relationship between assets and payroll is a useful indicator of the potential volatility of contributions. For example, if the market value of assets is 2.0 times the payroll, a return on assets 5% different than assumed would equal 10% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in plan sponsor contributions as a percentage of payroll.

RATIO OF ACTUARIAL ACCRUED LIABILITY TO PAYROLL

The relationship between actuarial accrued liability and payroll is a useful indicator of the potential volatility of contributions for a fully funded plan. A funding policy that targets a funded ratio of 100% is expected to result in the ratio of assets to payroll and the ratio of liability to payroll converging over time. The ratio of liability to payroll may also be used as a measure of sensitivity of the liability itself. For example, if the actuarial accrued liability is 2.5 times the payroll, a change in liability 2% other than assumed would equal 5% of payroll. A higher (lower) or increasing (decreasing) level of this maturity measure generally indicates a higher (lower) or increasing (decreasing) volatility in liability (and also plan sponsor contributions) as a percentage of payroll.

RATIO OF ACTIVES TO RETIREES AND BENEFICIARIES

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

RATIO OF NET CASH FLOW TO MARKET VALUE OF ASSETS

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

ADDITIONAL RISK ASSESSMENT

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

Summary of Actuarial Valuation Results

		July 1, 2018	July 1, 2019
		Results	Results
Membership			
Data	Active Members	6,004	6,003
	DRSP/DROP	147	171
	Deferred Vested	489	543
	Retirees and Beneficiaries	6,468	6,560
	TOTAL	13,108	13,277
Plan			
Liabilities	Actuarial Accrued Liability:		
	Active Members	\$ 1,433,472,176	\$ 1,392,815,876
	DRSP/DROP	153,884,982	172,080,764
	Deferred Vested	35,543,402	39,648,856
	Retirees and Beneficiaries	2,711,396,238	2,715,615,576
	TOTAL	\$ 4,334,296,798	\$ 4,320,161,072
Actuarial Value of Assets at Valuation Date		\$ 4,149,354,330	\$ 4,261,996,413
Unfunded (Overfunded) Actuarial Accrued Liability		\$ 184,942,468	\$ 58,164,659
Funded Position of Plan's Actuarial Accrued Liability ¹		95.7 %	98.7 %
Recommended			
Annual Contribution			
Requirements ²		Fiscal Year 2020	Fiscal Year 2021
Annual Normal Cost as of Valuation Date		\$ 77,383,488	\$ 77,548,547
Normal Cost Expense Load		3,174,700	3,192,200
Amortization Payment		27,714,338	11,116,117
Total Annual Required Contribution		108,272,526	91,856,864
Expected Employee Contributions		26,349,166	26,754,202
County Contribution Requirement		\$ 81,923,360	\$ 65,102,662
Contribution Basis Payroll:			
For Normal Cost		\$ 444,232,854	\$ 455,281,503
For Amortization of Unfunded Liability		\$ 448,889,802	\$ 459,728,326
County Contribution % of Payroll			
Public Safety		19.88%	18.18%
Non-Public Safety		43.38%	21.28%
GRIP		5.93%	6.10%

¹ Equals the ratio of the actuarial value of assets to the total actuarial accrued liability.

² Includes the Retirement Incentive cost. Excludes the non-GRIP outside agency unfunded liability contribution of \$1,261,270. Includes the GRIP outside agency estimated normal cost and unfunded liability contribution and the non-GRIP estimated normal cost contribution of \$668,893. County estimated contribution is \$81,325,246 for fiscal year 2020 and \$64,433,769 for fiscal year 2021.

Contribution Rate Summary

All Plans

Valuation as of July 1, 2019												July 1, 2018
	Non-Public Safety				Public Safety				GRIP	Total	Total Agency	Total
	Group A	Group H	Group J	Total Non PS	Group E	Group F	Group G	Total PS				
County Contribution Requirement (\$)												
Non-GRIP	\$ 7,753,897	\$ 7,245,299	\$ 1,273,069	\$ 16,272,265	\$ 3,498,016	\$ 13,534,389	\$ 23,711,012	\$ 40,743,417	\$ -	\$ 57,015,682	\$ 1,392,568	\$ 74,977,750
GRIP	-	-	-	-	-	-	-	-	9,348,250	9,348,250	481,618	8,206,880
Total All Plans	\$ 7,753,897	\$ 7,245,299	\$ 1,273,069	\$ 16,272,265	\$ 3,498,016	\$ 13,534,389	\$ 23,711,012	\$ 40,743,417	\$ 9,348,250	\$ 66,363,932	\$ 1,874,186	\$ 83,184,630
County Normal Cost Contribution Requirement (% of Payroll)												
Non-GRIP	5.91%	5.71%	12.90%	6.79%	13.26%	16.72%	19.14%	17.19%		14.51%	5.91%	14.75%
GRIP									6.66%	6.66%	6.66%	6.63%
Total All Plans	5.91%	5.71%	12.90%	6.79%	13.26%	16.72%	19.14%	17.19%	6.66%	11.86%		12.20%
County UAL Contribution Requirement (% of Payroll)												
Non-GRIP	17.67%	17.61%	-0.98%	14.49%	-2.33%	-3.35%	7.13%	0.98%		4.01%	NA	9.49%
GRIP									-0.56%	-0.56%	-0.56%	-0.70%
Total All Plans	17.67%	17.61%	-0.98%	14.49%	-2.33%	-3.35%	7.13%	0.98%	-0.56%	2.42%	NA	6.17%
Total County Contribution Requirement (% of Payroll)												
Non-GRIP	23.58%	23.32%	11.92%	21.28%	10.93%	13.37%	26.27%	18.17%		18.52%	NA	24.24%
GRIP									6.10%	6.10%	6.10%	5.93%
Total All Plans	23.58%	23.32%	11.92%	21.28%	10.93%	13.37%	26.27%	18.17%	6.10%	14.27%	NA	18.37%

Valuation as of July 1, 2018												July 1, 2017
	Non-Public Safety				Public Safety				GRIP	Total	Total Agency	Total
	Group A	Group H	Group J	Total Non PS	Group E	Group F	Group G	Total PS				
County Contribution Requirement (\$)												
Non-GRIP	\$ 14,468,108	\$ 14,522,804	\$ 1,412,694	\$ 30,403,606	\$ 3,952,781	\$ 15,876,340	\$ 24,745,023	\$ 44,574,144	\$ -	\$ 74,977,750	\$ 1,391,762	\$ 77,205,528
GRIP	-	-	-	-	-	-	-	-	8,206,880	8,206,880	467,623	6,650,009
Total All Plans	\$ 14,468,108	\$ 14,522,804	\$ 1,412,694	\$ 30,403,606	\$ 3,952,781	\$ 15,876,340	\$ 24,745,023	\$ 44,574,144	\$ 8,206,880	\$ 83,184,630	\$ 1,859,384	\$ 83,855,537
County Normal Cost Contribution Requirement (% of Payroll)												
Non-GRIP	5.63%	5.56%	14.20%	6.63%	13.88%	18.15%	19.01%	17.88%		14.75%	5.63%	14.44%
GRIP									6.63%	6.63%	6.63%	6.63%
Total All Plans	5.63%	5.56%	14.20%	6.63%	13.88%	18.15%	19.01%	17.88%	6.63%	12.20%		12.28%
County UAL Contribution Requirement (% of Payroll)												
Non-GRIP	35.80%	39.75%	-0.41%	32.06%	-1.39%	-1.97%	8.34%	2.28%		9.49%	NA	10.50%
GRIP									-0.70%	-0.70%	-0.70%	-0.89%
Total All Plans	35.80%	39.75%	-0.41%	32.06%	-1.39%	-1.97%	8.34%	2.28%	-0.70%	6.17%	NA	7.22%
Total County Contribution Requirement (% of Payroll)												
Non-GRIP	41.43%	45.31%	13.79%	38.69%	12.49%	16.18%	27.35%	20.16%		24.24%	NA	24.94%
GRIP									5.93%	5.93%	5.93%	5.74%
Total All Plans	41.43%	45.31%	13.79%	38.69%	12.49%	16.18%	27.35%	20.16%	5.93%	18.37%	NA	19.50%

Beginning in fiscal year 2017 for non-GRIP members, outside agencies will make normal cost contributions for their active employees (based on payroll) plus a level dollar amortization payment of \$1,261,270. The level dollar amortization payment will be made for 20 years (10 years for Strathmore Hall and Washington Suburban Transit Commission) and is not based on payroll. There are 16 years remaining in the 20-year closed amortization period, and 6 years remaining in the 10-year closed amortization period, as of July 1, 2019.

The unfunded liability for the non-Public Safety groups A and H was amortized over a single nine-year closed period and the unfunded liability for the Public Safety groups, Group J and GRIP was amortized over separate 20-year closed periods beginning July 1, 2015. Beginning in fiscal year 2019, Group J is included with the Non-Public Safety groups.

Actuarial Valuation Results

All Plans

	Valuation as of July 1, 2019								July 1, 2018			
	Non-Public Safety			Public Safety			GRIP	Total	% of Payroll	Total	% of Payroll	
	Group A	Group H	Group J	Group E	Group F	Group G						
Total All Plans												
Active Members												
Number	314	466	129	457	1,230	1,153	2,254	6,003		6,004		
Average Age	59.2	59.4	47.2	41.6	39.6	38.7	47.4	45.2		45.3		
Average Service	29.1	27.7	13.8	11.0	13.8	12.2	7.3	12.7		13.0		
Total Base Payroll	\$ 35,177,690	\$ 37,608,010	\$ 11,375,815	\$ 33,706,249	\$ 105,953,344	\$ 92,373,859	\$ 160,424,145	\$ 476,619,112		\$ 467,974,450		
Contribution Basis Payroll:												
For Normal Cost	\$ 32,286,121	\$ 34,514,823	\$ 10,729,553	\$ 32,306,505	\$ 102,170,159	\$ 89,415,570	\$ 153,858,772	\$ 455,281,503		\$ 444,232,854		
For Amortization of Unfunded Liability*	25,941,127	29,953,786	11,375,815	33,706,249	105,953,344	92,373,859	160,424,145	459,728,326		448,889,802		
DRSP/DROP Members												
Number				40	60	71		171		147		
Total Base Payroll				\$ 4,132,707	\$ 6,577,642	\$ 7,844,103		\$ 18,554,451		\$ 15,984,633		
Total Benefits				2,237,497	4,330,306	5,046,743		11,614,546		10,084,168		
Terminated Vested Members												
Number	42	51	1	30	29	20	370	543		489		
Total Benefits (non-GRIP)	\$ 415,356	\$ 397,624	\$ 4,929	\$ 469,912	\$ 242,586	\$ 130,611		\$ 1,661,018		\$ 1,963,458		
Retired Members and Beneficiaries												
Number							4	6,560		6,468		
Total Benefits							\$ 57,237	\$ 254,564,987		\$ 245,455,253		
Total Membership							2,628	13,277		13,108		
Actuarial Accrued Liability												
Active Members	\$ 169,776,513	\$ 156,596,107	\$ 41,854,373	\$ 108,304,898	\$ 430,398,945	\$ 340,077,966	\$ 145,807,074	\$ 1,392,815,876		\$ 1,433,472,176		
DRSP/DROP Members				32,818,999	63,673,748	75,588,017		172,080,764		153,884,982		
Terminated Vested Members	3,926,866	3,636,700	2,752	4,181,907	1,929,434	725,022	25,246,175	39,648,856		35,543,402		
Retired Members and Beneficiaries	746,711,817	530,032,431	9,353,031	257,429,358	629,188,321	542,424,484	476,134	2,715,615,576		2,711,396,238		
Total	920,415,196	690,265,238	51,210,156	402,735,162	1,125,190,448	958,815,489	171,529,383	4,320,161,072		4,334,296,798		
Actuarial Value of Assets	\$ 887,368,462	\$ 666,003,557	\$ 52,710,683	\$ 414,319,994	\$ 1,174,157,548	\$ 885,951,012	\$ 181,485,157	\$ 4,261,996,413		\$ 4,149,354,330		
Unfunded Actuarial Accrued Liability	\$ 33,046,734	\$ 24,261,681	\$ (1,500,527)	\$ (11,584,832)	\$ (48,967,100)	\$ 72,864,477	\$ (9,955,774)	\$ 58,164,659		\$ 184,942,468		
Outside Agency Non-GRIP Unfunded Liability	11,966,080	-	-	-	-	-	-	11,966,080		12,392,507		
Net Unfunded Actuarial Accrued Liability	21,080,654	24,261,681	(1,500,527)	(11,584,832)	(48,967,100)	72,864,477	(9,955,774)	46,198,579		172,549,961		
Funded Ratio (Actuarial Value of Assets)	96.4%	96.5%	102.9%	102.9%	104.4%	92.4%	105.8%	98.7%		95.7%		
Annual Gross Normal Cost												
Benefits	\$ 3,495,202	\$ 3,685,871	\$ 2,016,538	\$ 6,216,809	\$ 23,009,717	\$ 22,963,320	\$ 16,161,090	\$ 77,548,547	(17.03%)	\$ 77,383,488	(17.42%)	
Expenses of Administration	389,111	358,903	95,926	248,224	986,434	779,426	334,176	3,192,200	(0.70%)	3,174,700	(0.71%)	
Total	3,884,313	4,044,774	2,112,464	6,465,033	23,996,151	23,742,746	16,495,266	80,740,747	(17.73%)	80,558,188	(18.13%)	
Amortization of Unfunded Liability ¹	\$ 4,584,191	\$ 5,275,936	\$ (111,334)	\$ (785,358)	\$ (3,548,052)	\$ 6,598,509	\$ (897,775)	\$ 11,116,117	(2.42%)	\$ 27,714,338	(6.17%)	
Annual Contribution Requirement:												
County Portion	\$ 6,492,627	\$ 7,245,299	\$ 1,273,069	\$ 3,498,016	\$ 13,534,389	\$ 23,711,012	\$ 9,348,250	\$ 65,102,662	(14.27%)	\$ 81,923,360	(18.37%)	
Employee Portion	1,975,877	2,075,411	728,061	2,181,659	6,913,710	6,630,243	6,249,241	26,754,202	(5.88%)	26,349,166	(5.93%)	
Total	8,468,504	9,320,710	2,001,130	5,679,675	20,448,099	30,341,255	15,597,491	91,856,864	(20.15%)	108,272,526	(24.30%)	
Non-Public Safety/Public Safety/GRIP County Portion			\$ 15,010,995				\$ 40,743,417	\$ 9,348,250				
*Excludes Non-GRIP Payroll from Outside Agencies												
Outside Agency UAL Payroll	\$ 1,897,641											

¹ Amortization bases established prior to the July 1, 2015 actuarial valuation were recombined into a single amortization base equal to the total unfunded liability as of July 1, 2015. Beginning July 1, 2015, amortization of the current and future unfunded liability will occur over a single closed period of nine years for Groups A and H and separate closed 20-year amortization periods for the Public Safety groups, Group J and GRIP. Beginning in fiscal year 2019, Group J is included with the Non-Public Safety groups.

Actuarial Valuation Results Outside Agencies

Valuation as of July 1, 2019

Non-GRIP	Washington Suburban Transit Commission											
	Assessment and Taxation	Circuit Court	CRU 92 Credit		Housing Opportunities Commission	Revenue Authority	Strathmore Hall	Town of Chevy Chase	Transit Commission	Total Agency (Excluding GRIP)	Total Non-Agency (Excluding GRIP)	Total ERS (Excluding GRIP)
Actuarial Accrued Liability												
Active Members (Non-GRIP)	\$ -	\$ 573,355	\$ 637,354	\$ -	\$ 8,190,197	\$ 496,872	\$ 1,612,838	\$ -	\$ -	\$ 11,510,616	\$ 1,235,498,186	\$ 1,247,008,802
DRSP/DROP Members	-	-	-	-	-	-	-	-	-	-	172,080,764	172,080,764
Terminated Vested Members	-	-	-	-	905,514	-	-	31,301	-	936,815	13,465,866	14,402,681
Retired Members and Beneficiaries	11,497,990	999,731	2,036,006	1,644,548	37,950,556	3,751,292	2,339,211	1,017,176	-	61,236,510	2,653,902,932	2,715,139,442
Total	\$ 11,497,990	\$ 1,573,086	\$ 2,673,360	\$ 1,644,548	\$ 47,046,267	\$ 4,248,164	\$ 3,952,049	\$ 1,048,477	\$ -	\$ 73,683,941	\$ 4,074,947,748	\$ 4,148,631,689
Actuarial Accrued Liability by Group												
Group A	\$ 11,497,990	\$ 1,573,086	\$ 2,673,360	\$ 1,644,548	\$ 47,046,267	\$ 4,248,164	\$ 3,952,049	\$ 1,048,477	\$ -	\$ 73,683,941		
Remaining Unfunded Actuarial Accrued Liability												
Non-GRIP	\$ 2,072,412	\$ 75,816	\$ 686,641	\$ 363,761	\$ 7,412,036	\$ 903,122	\$ 374,076	\$ -	\$ 78,216	\$ 11,966,080	\$ 56,154,353	\$ 68,120,433
Closed Level Dollar Amortization of Unfunded Actuarial Accrued Liability¹												
Non-GRIP	\$ 210,887	\$ 7,715	\$ 69,872	\$ 37,016	\$ 754,243	\$ 91,901	\$ 74,135	\$ -	\$ 15,501	\$ 1,261,270		
Contribution Basis Payroll:												
For Normal Cost (Non-GRIP)	\$ -	\$ 67,865	\$ 119,543	\$ -	\$ 1,616,811	\$ 90,016	\$ 327,397	\$ -	\$ -	\$ 2,221,632	\$ 299,201,099	301,422,731
Normal Cost Contribution Requirement (% of Payroll)	5.91%	5.91%	5.91%	5.91%	5.91%	5.91%	5.91%	5.91%	5.91%	5.91%		
Estimated Normal Cost \$ Contribution Requirement	\$ -	\$ 4,011	\$ 7,065	\$ -	\$ 95,554	\$ 5,320	\$ 19,349	\$ -	\$ -	\$ 131,298	\$ 43,609,222	\$ 43,740,520
Actual \$ UAL Contribution Requirement	210,887	7,715	69,872	37,016	754,243	91,901	74,135	-	15,501	1,261,270	12,013,892	13,275,162
Estimated Total \$ Contribution Requirement	\$ 210,887	\$ 11,726	\$ 76,937	\$ 37,016	\$ 849,797	\$ 97,221	\$ 93,484	\$ -	\$ 15,501	\$ 1,392,568	\$ 55,623,114	\$ 57,015,682

¹For Strathmore Hall and Washington Suburban Transit Commission, the remaining amortization period is 6.0 years as of July 1, 2019. Chevy Chase paid off its remaining unfunded liability and therefore has no remaining balance as of July 1, 2018. For all other agencies, the remaining amortization period is 16.0 years as of July 1, 2019.

Beginning in fiscal year 2017 for non-GRIP members, outside agencies will make normal cost contributions for their active employees (based on payroll) plus the level dollar amortization payment shown above. The level dollar amortization payment will be made for 20 years (10 years for Strathmore Hall and Washington Suburban Transit Commission) and is not based on payroll. Contributions for GRIP members will continue to be made based on the contribution rates determined in the actuarial valuations and actual payroll. Contribution basis payroll for normal cost that is shown is the fiscal year 2020 amount. Actual projected payroll for non-GRIP for fiscal year 2021 may be lower than the amount shown (or \$0 if there are no remaining active members).

Actuarial Valuation Results Outside Agencies

Valuation as of July 1, 2019

GRIP	Assessment and Taxation	Circuit Court	CRU 92 Credit Union	District Court	Housing Opportunities Commission	Revenue Authority	Strathmore Hall	Town of Chevy Chase	Washington Suburban Transit Commission	Total Agency (GRIP)	Total Non-Agency (GRIP)	Total ERS (GRIP)
Actuarial Accrued Liability												
Active Members (GRIP)	\$ -	\$ 87,897	\$ -	\$ -	\$ 7,045,921	\$ 75,515	\$ 262,206	\$ 219,230	\$ -	\$ 7,690,769	\$ 138,116,305	\$ 145,807,074
Terminated Vested Members	-	-	-	-	147,038	117,682	1,396	-	-	266,115	24,980,060	25,246,175
Retired Members and Beneficiaries	-	-	-	-	-	-	-	-	-	-	476,134	476,134
Total	\$ -	\$ 87,897	\$ -	\$ -	\$ 7,192,959	\$ 193,197	\$ 263,602	\$ 219,230	\$ -	\$ 7,956,884	\$ 163,572,499	\$ 171,529,383
Unfunded Actuarial Accrued Liability (GRIP)	\$ -	\$ (5,102)	\$ -	\$ -	\$ (417,488)	\$ (11,213)	\$ (15,300)	\$ (12,724)	\$ -	\$ (461,827)	\$ (9,493,947)	\$ (9,955,774)
Contribution Basis Payroll:												
For Normal Cost (GRIP)	\$ -	\$ 50,281	\$ -	\$ -	\$ 8,011,772	\$ 225,229	\$ 523,691	\$ 35,939	\$ -	\$ 8,846,911	\$ 145,011,861	\$ 153,858,772
For Amortization of Unfunded Liability (GRIP)	\$ -	\$ 53,882	\$ -	\$ -	\$ 8,352,854	\$ 231,363	\$ 541,167	\$ 36,674	\$ -	\$ 9,215,939	\$ 151,208,206	\$ 160,424,145
Normal Cost Contribution Requirement (% of Payroll)	6.66%	6.66%	6.66%	6.66%	6.66%	6.66%	6.66%	6.66%	6.66%			
UAL Contribution Requirement (% of Payroll)	-0.56%	-0.56%	-0.56%	-0.56%	-0.56%	-0.56%	-0.56%	-0.56%	-0.56%			
Estimated Normal Cost \$ Contribution Requirement	\$ -	\$ 3,349	\$ -	\$ -	\$ 533,584	\$ 15,000	\$ 34,878	\$ 2,394	\$ -	\$ 589,204	\$ 9,656,821	\$ 10,246,025
Estimated \$ UAL Contribution Requirement	-	(302)	-	-	(46,776)	(1,296)	(3,031)	(205)	-	(51,609)	(846,166)	(897,775)
Estimated Total \$ Contribution Requirement	\$ -	\$ 3,047	\$ -	\$ -	\$ 486,808	\$ 13,705	\$ 31,847	\$ 2,188	\$ -	\$ 537,595	\$ 8,810,655	\$ 9,348,250
Total Non-GRIP and GRIP										Total Agency	Total Non-Agency	Total ERS
Fixed Closed Level Dollar Amortization Payment	\$ 210,887	\$ 7,715	\$ 69,872	\$ 37,016	\$ 754,243	\$ 91,901	\$ 74,135	\$ -	\$ 15,501	\$ 1,261,270		
Estimated \$ Contribution for Payroll Based Contribution	-	7,058	7,065	-	582,362	19,025	51,196	2,188	-	668,893		
Total Estimated Contribution	\$ 210,887	\$ 14,773	\$ 76,937	\$ 37,016	\$ 1,336,605	\$ 110,926	\$ 125,331	\$ 2,188	\$ 15,501	\$ 1,930,163	\$ 64,433,769	\$ 66,363,932
Unfunded Actuarial Accrued Liability (Based on Actuarial Value of Assets)												
Non-GRIP	\$ 2,072,412	\$ 75,816	\$ 686,641	\$ 363,761	\$ 7,412,036	\$ 903,122	\$ 374,076	\$ -	\$ 78,216	\$ 11,966,080	\$ 56,154,353	\$ 68,120,433
GRIP	-	(5,102)	-	-	(417,488)	(11,213)	(15,300)	(12,724)	-	(461,827)	(9,493,947)	(9,955,774)
Total	\$ 2,072,412	\$ 70,714	\$ 686,641	\$ 363,761	\$ 6,994,548	\$ 891,909	\$ 358,776	\$ (12,724)	\$ 78,216	\$ 11,504,253	\$ 46,660,406	\$ 58,164,659

Beginning in fiscal year 2017 for non-GRIP members, outside agencies will make normal cost contributions for their active employees (based on payroll) plus the level dollar amortization payment shown above. The level dollar amortization payment will be made for 20 years (10 years for Strathmore Hall and Washington Suburban Transit Commission) and is not based on payroll. Contributions for GRIP members will continue to be made based on the contribution rates determined in the actuarial valuations and actual payroll. Contribution basis payroll for normal cost that is shown is the fiscal year 2020 amount. Actual projected payroll for non-GRIP for fiscal year 2021 may be lower than the amount shown (or \$0 if there are no remaining active members).

Actuarial Valuation Results

Guaranteed Retirement Income Plan (GRIP)

	Valuation as of July 1, 2019						July 1, 2018	
	Agency					Total GRIP	Total	
	CC	CM	CN	CP	CZ			
Total All Plans								
Active Members								
Number	1	1,622	624	2	5	2,254		2,126
Average Age	61.3	46.4	49.9	61.9	58.4	47.4		47.3
Average Service	3.5	6.9	8.5	15.1	8.1	7.3		7.2
Total Base Payroll	\$ 38,617	\$ 98,816,602	\$ 60,613,054	\$ 186,272	\$ 769,600	\$ 160,424,145		\$ 146,038,261
Contribution Basis Payroll:								
For Normal Cost	\$ 37,217	\$ 94,798,529	\$ 58,128,951	\$ 176,273	\$ 717,802	\$ 153,858,772		\$ 139,294,821
For Amortization of Unfunded Liability	38,617	98,816,602	60,613,054	186,272	769,600	160,424,145		146,038,262
Terminated Members								
Number	2	230	132	3	3	370		296
Retired Members and Beneficiaries								
Number		2	2			4		3
Total Benefits		8,811	48,426			57,237		22,477
Total Membership	3	1,854	758	5	8	2,628		2,425
Actuarial Accrued Liability								
Active Members	\$ 12,816	\$ 78,955,439	\$ 65,822,831	\$ 318,773	\$ 697,215	\$ 145,807,074		\$ 129,611,479
Terminated Vested Members	111,776	10,540,557	12,350,933	1,445,341	797,568	25,246,175		18,595,330
Retired Members and Beneficiaries	-	84,017	392,117	-	-	476,134		193,605
Total	124,592	89,580,013	78,565,881	1,764,114	1,494,783	171,529,383		148,400,414
Actuarial Value of Assets	\$ 131,823	\$ 94,779,345	\$ 83,125,940	\$ 1,866,506	\$ 1,581,542	\$ 181,485,157		\$ 160,979,689
Unfunded Actuarial Accrued Liability	\$ (7,231)	\$ (5,199,332)	\$ (4,560,059)	\$ (102,392)	\$ (86,759)	\$ (9,955,774)		\$ (12,579,275)
Funded Ratio (Actuarial Value of Assets)	105.8%	105.8%	105.8%	105.8%	105.8%	105.8%		108.5%
Annual Gross Normal Cost								
Benefits	\$ 3,994	\$ 9,927,200	\$ 6,133,047	\$ 20,058	\$ 76,791	\$ 16,161,090	(10.50%)	\$ 14,613,619 (10.49%)
Expenses of Administration	243	174,521	153,063	3,437	2,912	334,176	(0.22%)	287,050 (0.21%)
Total	4,237	10,101,721	6,286,110	23,495	79,703	16,495,266	(10.72%)	14,900,669 (10.70%)
Amortization of Unfunded Liability	\$ (652)	\$ (468,857)	\$ (411,209)	\$ (9,233)	\$ (7,824)	\$ (897,775)	-(0.56%)	\$ (1,027,196) -(0.70%)
Annual Contribution Requirement:								
County Portion	\$ 2,096	\$ 5,840,923	\$ 3,456,501	\$ 8,974	\$ 39,756	\$ 9,348,250	(6.10%)	\$ 8,206,880 (5.93%)
Employee Portion	1,489	3,791,941	2,418,400	5,288	32,123	6,249,241	(4.06%)	5,666,593 (4.07%)
Total	3,585	9,632,864	5,874,901	14,262	71,879	15,597,491	(10.16%)	13,873,473 (10.00%)
Non-Public Safety County Portion						\$ 9,339,276	(6.10%)	\$ 8,168,836 (5.92%)
Public Safety County Portion (Agency CP)						\$ 8,974	(5.37%)	\$ 38,044 (6.75%)

Actuarial Valuation Results

Amortization of Unfunded Actuarial Accrued Liability and Amortization Payments By Group

Closed Groups

Base Year	Description	Unfunded Liability Base ¹			Remaining Financing Period	Amortization Factor	Amortization Payment		
		Group A	Group H	Total			Group A	Group H	Total
2015	Pre FY 2015 Retirement Incentive	\$ 6,635,090	\$ 9,095,924	\$ 15,731,014	5 yrs.	4.598555	\$ 1,442,864	\$ 1,977,997	\$ 3,420,861
2015	Pre FY 2015 Plan Experience	53,812,062	58,942,669	112,754,731	5	4.598555	11,701,951	12,817,651	24,519,602
2015	Pre FY 2015 Plan Changes	20,919,801	28,719,325	49,639,126	5	4.598555	4,549,212	6,245,294	10,794,506
2015	Pre FY 2015 Cost Method Changes	5,016,847	3,895,611	8,912,458	5	4.598555	1,090,962	847,138	1,938,100
2015	FY 2015 Plan Experience	(36,620,949)	(21,479,246)	(58,100,195)	5	4.598555	(7,963,578)	(4,670,869)	(12,634,447)
2015	FY 2015 Assumption and Method Changes	19,575,862	12,566,983	32,142,845	5	4.598555	4,256,960	2,732,811	6,989,771
2015	FY 2015 Plan Changes	-	-	-	5	4.598555	-	-	-
2016	FY 2016 Plan Experience	(543,391)	(5,700,885)	(6,244,276)	5	4.598555	(118,166)	(1,239,712)	(1,357,878)
2017	FY 2017 Plan Experience	(12,314,680)	(17,286,854)	(29,601,534)	5	4.598555	(2,677,946)	(3,759,193)	(6,437,139)
2018	FY 2018 Plan Experience	(3,760,616)	(9,120,059)	(12,880,675)	5	4.598555	(817,782)	(1,983,245)	(2,801,027)
2019	FY 2019 Plan Experience	2,429,350	(10,623,424)	(8,194,074)	5	4.598555	528,286	(2,310,166)	(1,781,880)
2019	FY 2019 Assumption and Method Changes	(34,068,722)	(24,748,363)	(58,817,085)	5	4.598555	(7,408,572)	(5,381,770)	(12,790,342)
Unfunded Liability		\$ 21,080,654	\$ 24,261,681	\$ 45,342,335	5.0 yrs.	4.598555	\$ 4,584,191	\$ 5,275,936	\$ 9,860,127

¹ Unfunded liability for Group A excludes Outside Agency Non-GRIP unfunded liability of \$11,966,080.

Open Groups

Base Year	Description	Unfunded Liability Base					Remaining Financing Period	Amortization Factor	Amortization Payment				
		Group E	Group J	Group F	Group G	Total			Group E	Group J	Group F	Group G	Total
2015	Pre FY 2015 Retirement Incentive	\$ 1,030,933	\$ -	\$ -	\$ -	\$ 1,030,933	16 yrs.	11.836972	\$ 87,094	\$ -	\$ -	\$ -	\$ 87,094
2015	Pre FY 2015 Plan Experience	37,514,975	-	110,215,769	111,778,940	259,509,684	16	11.836972	3,169,305	-	9,311,145	9,443,204	21,923,654
2015	Pre FY 2015 Plan Changes	3,351,200	-	(1,618,671)	69,373,586	71,106,115	16	11.836972	283,113	-	(136,747)	5,860,754	6,007,120
2015	Pre FY 2015 Cost Method Changes	205,955	-	347,672	1,314,682	1,868,309	16	11.836972	17,399	-	29,372	111,066	157,837
2015	FY 2015 Plan Experience	(22,546,795)	-	(58,762,366)	(39,876,467)	(121,185,628)	16	11.836972	(1,904,777)	-	(4,964,307)	(3,368,807)	(10,237,891)
2015	FY 2015 Assumption and Method Changes	(7,931,940)	-	(18,135,966)	(8,039,062)	(34,106,968)	16	11.836972	(670,099)	-	(1,532,147)	(679,147)	(2,881,393)
2015	FY 2015 Plan Changes	4,483,677	-	-	-	4,483,677	16	11.836972	378,786	-	-	-	378,786
2016	FY 2016 Plan Experience	(7,376,374)	-	(24,730,823)	(20,654,476)	(52,761,673)	17	12.341471	(597,690)	-	(2,003,880)	(1,673,583)	(4,275,153)
2017	FY 2017 Plan Experience	(10,808,924)	(208,712)	(22,971,918)	(21,274,021)	(55,263,575)	18	12.824851	(842,811)	(16,274)	(1,791,203)	(1,658,813)	(4,309,101)
2018	FY 2018 Plan Experience	(5,469,229)	(404,975)	(14,170,374)	1,126,990	(18,917,588)	19	13.287997	(411,592)	(30,477)	(1,066,404)	84,813	(1,423,660)
2019	FY 2019 Plan Experience	56,673	(270,229)	(6,279,664)	(9,799,291)	(16,292,511)	20	13.731755	4,127	(19,679)	(457,310)	(713,623)	(1,186,485)
2019	FY 2019 Assumption and Method Changes	(4,094,983)	(616,611)	(12,860,759)	(11,086,404)	(28,658,757)	20	13.731755	(298,213)	(44,904)	(936,571)	(807,355)	(2,087,043)
Unfunded Liability		\$ (11,584,832)	\$ (1,500,527)	\$ (48,967,100)	\$ 72,864,477	\$ 10,812,018	5.5 yrs.	5.020055	\$ (785,358)	\$ (111,334)	\$ (3,548,052)	\$ 6,598,509	\$ 2,153,765

Actuarial Valuation Results

Amortization of Unfunded Actuarial Accrued Liability and Amortization Payments By Group

GRIP

Base Year	Description	Unfunded Liability Base GRIP	Remaining Financing Period	Amortization Factor	GRIP	Amortization Payment
2015	Pre FY 2015 Retirement Incentive	\$ -	16 yrs.	11.836972	\$ -	\$ -
2015	Pre FY 2015 Plan Experience	(7,139,721)	16	11.836972	(603,171)	(603,171)
2015	Pre FY 2015 Plan Changes	(2,103,069)	16	11.836972	(177,670)	(177,670)
2015	Pre FY 2015 Cost Method Changes	2,218,878	16	11.836972	187,453	187,453
2015	FY 2015 Plan Experience	(3,387,943)	16	11.836972	(286,217)	(286,217)
2015	FY 2015 Assumption and Method Changes	(5,607,793)	16	11.836972	(473,752)	(473,752)
2015	FY 2015 Plan Changes	-	16	11.836972	-	-
2016	FY 2016 Plan Experience	(229,457)	17	12.341471	(18,592)	(18,592)
2017	FY 2017 Plan Experience	2,411,371	18	12.824851	188,023	188,023
2018	FY 2018 Plan Experience	1,419,248	19	13.287997	106,807	106,807
2019	FY 2019 Plan Experience	2,222,362	20	13.731755	161,841	161,841
2019	FY 2019 Assumption and Method Changes	240,350	20	13.731755	17,503	17,503
Unfunded Liability		\$ (9,955,774)	14.6 yrs.	11.089387	\$ (897,775)	\$ (897,775)

Actuarial Valuation Results

Amortization of Unfunded Actuarial Accrued Liability and Amortization Payments By Group

Total

Base Year	Description	Unfunded Liability Base ¹							
		Closed Groups		Open Groups				GRIP	Total
		Group A	Group H	Group J	Group E	Group F	Group G		
2015	Pre FY 2015 Retirement Incentive	\$ 6,635,090	\$ 9,095,924	\$ -	\$ 1,030,933	\$ -	\$ -	\$ -	\$ 16,761,947
2015	Pre FY 2015 Plan Experience	53,812,062	58,942,669	-	37,514,975	110,215,769	111,778,940	(7,139,721)	365,124,694
2015	Pre FY 2015 Plan Changes	20,919,801	28,719,325	-	3,351,200	(1,618,671)	69,373,586	(2,103,069)	118,642,172
2015	Pre FY 2015 Cost Method Changes	5,016,847	3,895,611	-	205,955	347,672	1,314,682	2,218,878	12,999,645
2015	FY 2015 Plan Experience	(36,620,949)	(21,479,246)	-	(22,546,795)	(58,762,366)	(39,876,467)	(3,387,943)	(182,673,766)
2015	FY 2015 Assumption and Method Changes	19,575,862	12,566,983	-	(7,931,940)	(18,135,966)	(8,039,062)	(5,607,793)	(7,571,916)
2015	FY 2015 Plan Changes	-	-	-	4,483,677	-	-	-	4,483,677
2016	FY 2016 Plan Experience	(543,391)	(5,700,885)	-	(7,376,374)	(24,730,823)	(20,654,476)	(229,457)	(59,235,406)
2017	FY 2017 Plan Experience	(12,314,680)	(17,286,854)	(208,712)	(10,808,924)	(22,971,918)	(21,274,021)	2,411,371	(82,453,738)
2018	FY 2018 Plan Experience	(3,760,616)	(9,120,059)	(404,975)	(5,469,229)	(14,170,374)	1,126,990	1,419,248	(30,379,015)
2019	FY 2019 Plan Experience	2,429,350	(10,623,424)	(270,229)	56,673	(6,279,664)	(9,799,291)	2,222,362	(22,264,223)
2019	FY 2019 Assumption and Method Changes	(34,068,722)	(24,748,363)	(616,611)	(4,094,983)	(12,860,759)	(11,086,404)	240,350	(87,235,492)
Unfunded Liability		\$ 21,080,654	\$ 24,261,681	\$ (1,500,527)	\$ (11,584,832)	\$ (48,967,100)	\$ 72,864,477	\$ (9,955,774)	\$ 46,198,579

Base Year	Description	Remaining Financing Period	Amortization Factor	Amortization of Unfunded Liability Base							
				Closed Groups		Open Groups				GRIP	Total
				Group A	Group H	Group J	Group E	Group F	Group G		
2015	Pre FY 2015 Retirement Incentive	5.2 yrs.	4.778267	\$ 1,442,864	\$ 1,977,997	\$ -	\$ 87,094	\$ -	\$ -	\$ -	\$ 3,507,955
2015	Pre FY 2015 Plan Experience	9.5	7.965184	11,701,951	12,817,651	-	3,169,305	9,311,145	9,443,204	(603,171)	45,840,085
2015	Pre FY 2015 Plan Changes	8.3	7.136819	4,549,212	6,245,294	-	283,113	(136,747)	5,860,754	(177,670)	16,623,956
2015	Pre FY 2015 Cost Method Changes	6.4	5.693134	1,090,962	847,138	-	17,399	29,372	111,066	187,453	2,283,390
2015	FY 2015 Plan Experience	9.4	7.887960	(7,963,578)	(4,670,869)	-	(1,904,777)	(4,964,307)	(3,368,807)	(286,217)	(23,158,555)
2015	FY 2015 Assumption/Method Changes	(2.0)	(2.083272)	4,256,960	2,732,811	-	(670,099)	(1,532,147)	(679,147)	(473,752)	3,634,626
2015	FY 2015 Plan Changes	16.0	11.836966	-	-	-	378,786	-	-	-	378,786
2016	FY 2016 Plan Experience	13.5	10.481132	(118,166)	(1,239,712)	-	(597,690)	(2,003,880)	(1,673,583)	(18,592)	(5,651,623)
2017	FY 2017 Plan Experience	9.3	7.809438	(2,677,946)	(3,759,193)	(16,274)	(842,811)	(1,791,203)	(1,658,813)	188,023	(10,558,217)
2018	FY 2018 Plan Experience	8.6	7.377343	(817,782)	(1,983,245)	(30,477)	(411,592)	(1,066,404)	84,813	106,807	(4,117,880)
2019	FY 2019 Plan Experience	9.4	7.933024	528,286	(2,310,166)	(19,679)	4,127	(457,310)	(713,623)	161,841	(2,806,524)
2019	FY 2019 Assumption and Method Change	6.6	5.870537	(7,408,572)	(5,381,770)	(44,904)	(298,213)	(936,571)	(807,355)	17,503	(14,859,882)
Amortization Payments		4.5 yrs.	4.156000	\$ 4,584,191	\$ 5,275,936	\$ (111,334)	\$ (785,358)	\$ (3,548,052)	\$ 6,598,509	\$ (897,775)	\$ 11,116,117

¹ Unfunded liability for Group A excludes Outside Agency Non-GRIP unfunded liability of \$11,966,080.

Actuarial Valuation Results

Gain/Loss Analysis

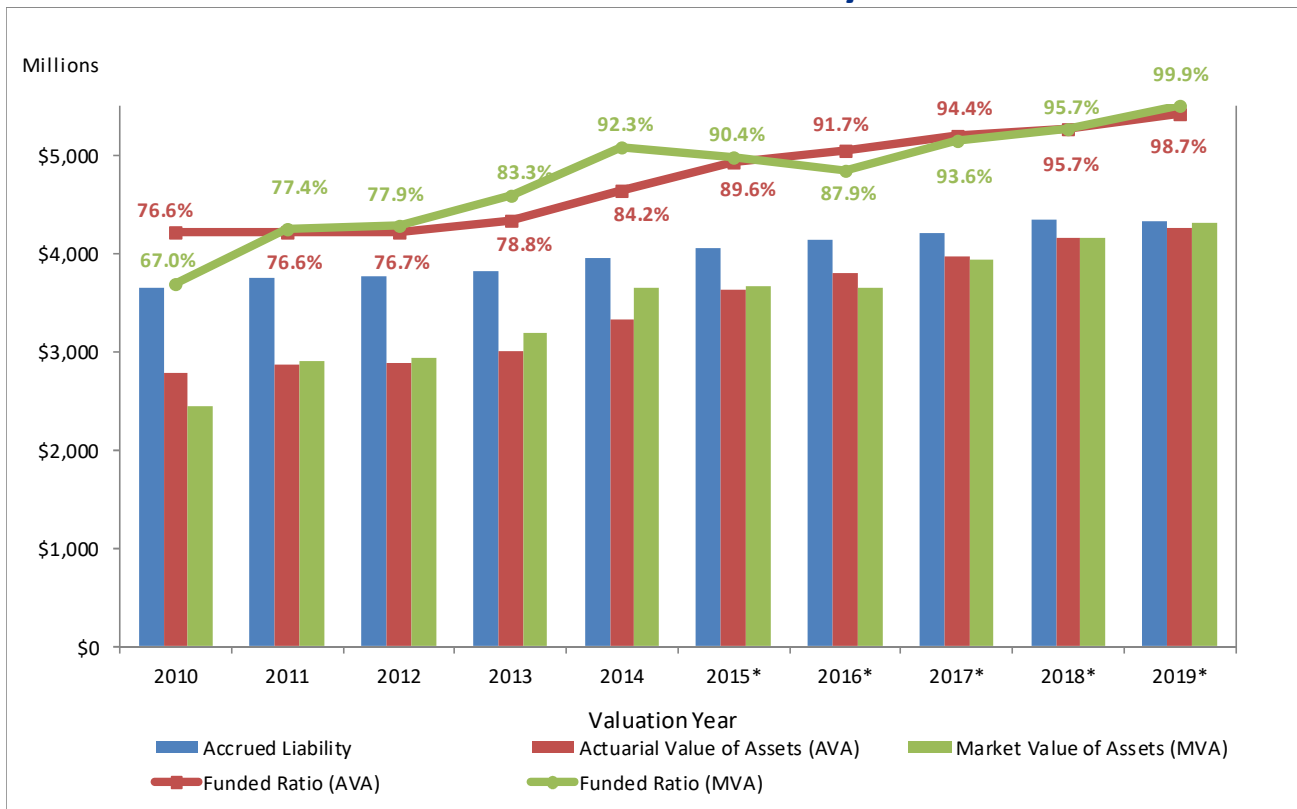
	Non-Public Safety	Public Safety	GRIP	Total
Unfunded liability at previous valuation	\$ 139,845,645	\$ 57,676,098	\$ (12,579,275)	\$ 184,942,468
Expected unfunded liability at current valuation				
Normal cost for plan year	10,860,593	54,796,926	14,900,669	80,558,188
Interest on unfunded liability and normal cost	10,888,333	6,343,443	(394,772)	16,837,004
Contributions with interest to current valuation date	<u>36,532,818</u>	<u>62,439,495</u>	<u>14,345,107</u>	<u>113,317,420</u>
Total expected change in unfunded liability at current valuation	(14,783,892)	(1,299,126)	160,790	(15,922,228)
Total expected unfunded liability at current valuation	125,061,753	56,376,972	(12,418,485)	169,020,240
Change due to:				
Recognition of asset (gains)/losses	16,424,918	24,970,687	1,058,393	42,453,998
Salary increases	3,189,631	(4,961,687)	-	(1,772,056)
COLA increases	(11,120,244)	(12,044,622)	-	(23,164,866)
Amount and timing of contributions	(1,838,865)	(2,615,067)	(1,365,299)	(5,819,231)
Demographic experience and other	(16,475,609)	(21,371,592)	2,529,267	(35,317,934)
Change in actuarial assumptions	(59,433,696)	(28,042,146)	240,350	(87,235,492)
Plan improvements	-	-	-	-
Measurement improvements	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total change	(69,253,865)	(44,064,427)	2,462,711	(110,855,581)
Unfunded liability at current valuation	\$ 55,807,888	\$ 12,312,545	\$ (9,955,774)	\$ 58,164,659

	County Contribution			Funded Status
	Non-Public Safety	Public Safety	GRIP	Total
FY 2020 County Contribution/July 1, 2018 Funded Ratio	38.69%	20.16%	5.93%	95.7%
FY 2021 County Contribution/Expected July 1, 2019 Funded Ratio	43.12%	20.20%	5.96%	96.2%
Change due to:				
Recognition of asset (gains)/losses	5.31%	0.78%	0.05%	-1.0%
Salary increases	0.62%	-0.15%	0.01%	0.0%
COLA increases	-3.59%	-0.38%	0.00%	0.5%
Amount and timing of contributions	-0.59%	-0.08%	-0.06%	0.1%
Demographic experience and other	-4.53%	-0.62%	0.10%	0.7%
Measurement improvements	0.00%	0.00%	0.00%	0.0%
Plan improvements	0.00%	0.00%	0.00%	0.0%
Change in assumptions and amortization period	<u>-19.06%</u>	<u>-1.58%</u>	<u>0.04%</u>	<u>2.0%</u>
Total change	-21.84%	-2.03%	0.14%	2.4%
FY 2021 County Contribution/July 1, 2019 Funded Ratio	21.28%	18.17%	6.10%	98.7%

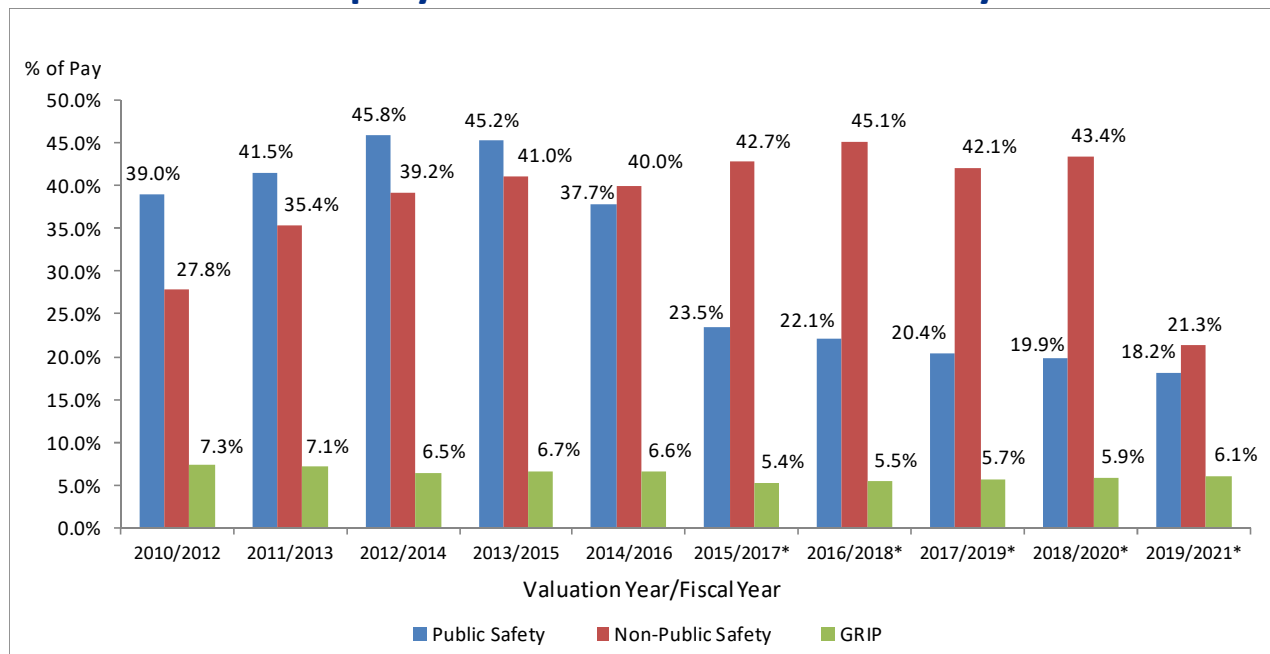
Demographic Experience and Other includes changes due to retirement, mortality, disability and termination experience that varied from the actuarial assumptions, and data changes. Beginning in fiscal year 2019, Group J is included with the Non-Public Safety groups.

Historical Trends of Funded Ratio and Employer Contributions

Funded Ratio History



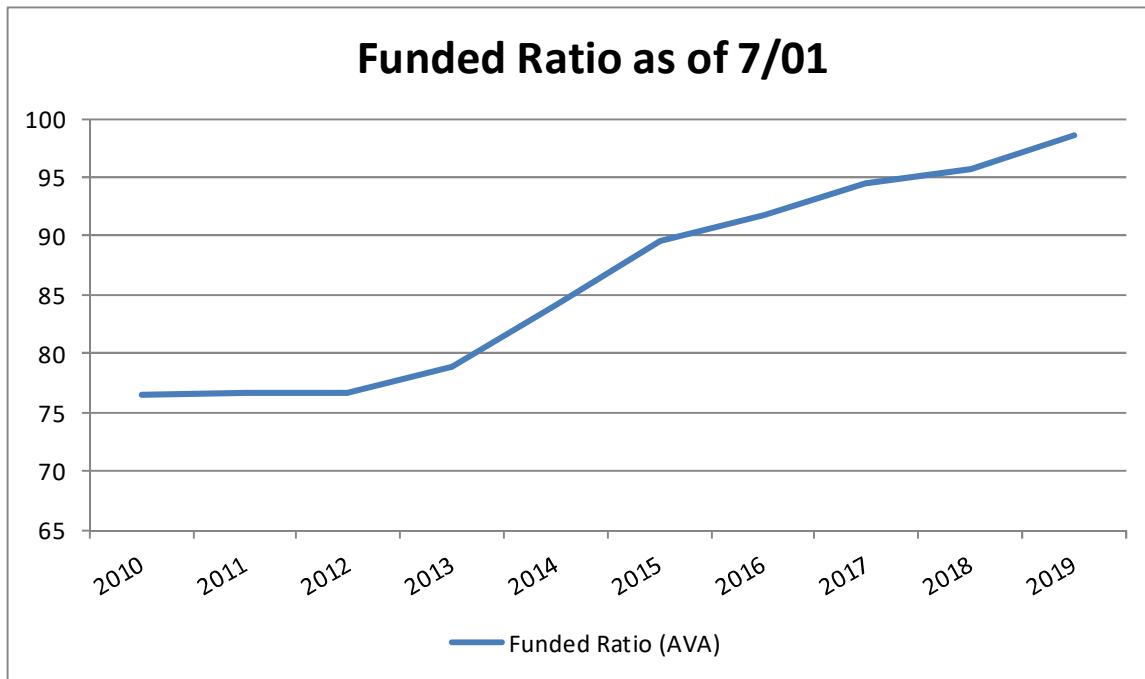
Employer Contribution Rate History



* Results beginning with the 2015 valuation (FY 2017) include changes to amortization periods used to finance the unfunded liability and changes to the actuarial assumptions used in the valuation, based on the key findings from an experience review of the System for the period from July 1, 2009 to July 1, 2014.

Funded Ratio History

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (b)	Unfunded AAL (UAAL) (b – a)	Funded Ratio (AVA) (a / b)
7/1/2010	\$2,791,144,974	\$3,645,576,341	\$854,431,367	76.6 %
7/1/2011	2,869,422,276	3,744,713,474	875,291,198	76.6
7/1/2012	2,891,435,563	3,768,745,962	877,310,399	76.7
7/1/2013	3,012,547,244	3,821,380,732	808,833,488	78.8
7/1/2014	3,333,484,724	3,958,929,718	625,444,994	84.2
7/1/2015	3,630,075,610	4,050,736,852	420,661,242	89.6
7/1/2016	3,798,555,275	4,141,060,968	342,505,693	91.7
7/1/2017	3,968,497,692	4,202,633,142	234,135,450	94.4
7/1/2018	4,149,354,330	4,334,296,798	184,942,468	95.7
7/1/2019	4,261,996,413	4,320,161,072	58,164,659	98.7



Actuarial Valuation Results Solvency Test

Valuation Date 6/30	(1) Active Member Contributions	(2) Retirees, Term Vested and Beneficiaries	(3) Active Members (Employer Financed Portion)	Actuarial Value of Assets	Portion (%) of Present Value Covered By Assets		
	Total Actuarial Accrued Liability				(1)	(2)	(3)
2010	\$3,645,576,341	\$213,191,851	\$ 2,054,949,883	\$ 1,377,434,607	\$2,791,144,974	100%	38%
2011	3,744,713,474	237,074,023	2,181,816,842	1,325,822,609	2,869,422,276	100%	34%
2012	3,768,745,962	210,537,737	2,465,714,392	1,092,493,833	2,891,435,563	100%	20%
2013	3,821,380,732	248,331,006	2,526,844,154	1,046,205,572	3,012,547,244	100%	23%
2014	3,958,929,718	265,055,643	2,585,446,584	1,108,427,491	3,333,484,724	100%	44%
2015	4,050,736,852	280,135,577	2,698,040,722	1,072,560,553	3,630,075,610	100%	61%
2016	4,141,060,968	297,715,372	2,747,575,831	1,095,769,765	3,798,555,275	100%	69%
2017	4,202,633,142	314,707,102	2,789,167,599	1,098,758,441	3,968,497,692	100%	79%
2018	4,334,296,798	327,611,097	2,900,824,622	1,105,861,079	4,149,354,330	100%	83%
2019	4,320,161,072	333,645,308	2,927,345,196	1,059,170,568	4,261,996,413	100%	95%

DRSP and DROP member liability included in item (2) with retirees beginning in 2012.

Results in 2009 and 2011 are measured as of July 1, and differ from the Comprehensive Annual Financial Report (CAFR). Results in the CAFR are as of June 30, and do not reflect the transfer of members effective July 1 of those years.

Statement of Fiduciary Net Position

	Fiscal Year Ending	
	June 30, 2018	June 30, 2019
Assets		
Equity in County's pooled cash and investments	\$2,014,964	\$ 2,058,980
Investments:		
Government and agency obligations	535,053,176	568,830,742
Municipal/Provincial obligations	8,431,521	8,921,548
Asset-backed securities	700,355	666,245
Corporate bonds	657,342,966	655,403,025
Collateralized mortgage obligations	379,768	-
Commercial mortgage-backed securities	2,283,013	2,114,604
Common and preferred stock	1,718,906,869	1,633,312,048
Mutual and commingled funds	488,075,930	495,311,451
Short-term investments	106,196,816	203,643,284
Cash collateral received under securities lending agreements	152,967,307	149,833,263
Private real assets	198,112,470	218,561,490
Private equity/debt	412,741,287	515,390,370
Total Investments	4,281,191,478	4,451,988,070
Dividend, interest and other receivables	16,824,845	15,376,533
Contributions receivable	7,425,120	7,256,074
Net capital assets	-	-
Total assets	4,307,456,405	4,476,679,657
Liabilities		
Payable for collateral received under securities lending agreements	152,967,307	149,833,263
Benefit payable and other liabilities	5,181,657	10,210,107
Total liabilities	158,148,964	160,043,370
Net position restricted for pensions	<u>\$ 4,149,307,441</u>	<u>\$ 4,316,636,287</u>

Statement of Changes in Fiduciary Net Position

Total Employees' Retirement System (ERS)

	Fiscal Year Ending	
	June 30, 2018	June 30, 2019
Additions:		
Contributions:		
Employer	\$ 93,163,298	\$ 86,584,479
Members	28,964,769	29,628,822
Total contributions	122,128,067	116,213,301
 Total income from investment activities	359,155,481	338,831,643
Less investment expenses	20,576,087	22,257,612
Net income from investment activities	338,579,394	316,574,031
 Income from securities lending	3,867,343	4,732,374
Less securities lending expenses	2,362,243	3,416,051
Net income from securities lending	1,505,100	1,316,323
 Total additions	462,212,561	434,103,655
 Deductions:		
Retiree benefits	178,267,822	193,421,574
Disability benefits	50,864,259	53,237,603
Survivor benefits	9,783,701	10,291,354
Refunds and distributions	4,624,066	6,760,028
Administrative expenses	2,870,683	3,064,250
 Total deductions	246,410,531	266,774,809
 Net increase in net position	215,802,030	167,328,846
 Net position restricted for pensions		
Beginning of year	3,933,505,411	4,149,307,441
End of year	<u>\$ 4,149,307,441</u>	<u>\$ 4,316,636,287</u>

Statement of Changes in Fiduciary Net Position Allocation between GRIP and Non-GRIP Assets

	Fiscal Year Ending June 30, 2018		Fiscal Year Ending June 30, 2019	
	Total	Non-GRIP	GRIP	Total
Additions:				
Contributions:				
Employer	\$ 93,163,298	\$ 77,707,350	\$ 8,877,129	\$ 86,584,479
Members	28,964,769	23,353,491	6,275,331	29,628,822
Total contributions	122,128,067	101,060,841	15,152,460	116,213,301
Net investment income	340,084,494	304,929,488	12,960,866	317,890,354
Total additions	462,212,561	405,990,329	28,113,326	434,103,655
Deductions:				
Benefit Payments and distributions	243,539,848	257,998,488	5,712,071	263,710,559
Administrative expenses	2,870,683	2,777,200	287,050	3,064,250
Total deductions	246,410,531	260,775,688	5,999,121	266,774,809
Net increase in net position	215,802,030	145,214,641	22,114,205	167,328,846
Net position restricted for pensions				
Beginning of year	3,933,505,411	3,987,779,937	161,527,504	4,149,307,441
End of year	<u>\$ 4,149,307,441</u>	<u>\$ 4,132,994,578</u>	<u>\$ 183,641,709</u>	<u>\$ 4,316,636,287</u>

Net investment income is allocated using the estimated market value rate of return on total plan assets during the fiscal year (8.78% and 7.80% for fiscal years ending June 30, 2018, and June 30, 2019, respectively) and net non-investment cash flow and the market value of assets from the prior fiscal year end for the respective GRIP and Non-GRIP groups.

Development of Actuarial Value of Assets (Total ERS)

Fiscal Year Ending	2018	2019	2020	2021	2022	2023
Beginning of Year:						
(1) Market Value of Assets	\$ 3,933,505,411	\$ 4,149,307,441				
(2) Actuarial Value of Assets	3,968,497,692	4,149,354,330				
End of Year:						
(3) Market Value of Assets	4,149,307,441	4,316,636,287				
(4a) Contributions	122,128,067	116,213,301				
(4b) Net Disbursements	246,410,531	266,774,809				
(5) Total Investment Income						
= (3) - (1) - (4a) + (4b)	340,084,494	317,890,354				
(6) Projected Rate of Return	7.50%	7.50%				
(7) Projected Investment Income						
= (1) x (6) + [(1 + (6)) ⁵ - 1] x (4a - 4b)	290,436,569	305,654,072				
(8) Asset Adjustment	-	-				
(9) Investment Income in Excess of Projected Income	49,647,925	12,236,282				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	\$ 9,929,585	\$ 2,447,256				
(10b) From One Year Ago	28,939,665	9,929,585	\$ 2,447,256			
(10c) From Two Years Ago	(42,817,237)	28,939,665	9,929,585	\$ 2,447,256		
(10d) From Three Years Ago	(40,949,749)	(42,817,237)	28,939,665	9,929,585	\$ 2,447,256	
(10e) From Four Years Ago	59,600,269	(40,949,750)	(42,817,236)	28,939,664	9,929,585	\$ 2,447,258
(10f) Total Recognized Investment Gain/(Loss)	14,702,533	(42,450,481)	(1,500,730)	41,316,505	12,376,841	2,447,258
(11) Change in Actuarial Value of Assets						
= (4a) - (4b) + (7) + (8) + (10f)	180,856,638	112,642,083				
End of Year:						
(3) Market Value of Assets	\$ 4,149,307,441	\$ 4,316,636,287				
(12) Final Actuarial Value of Assets as of 6/30 = (2) + (11)	\$ 4,149,354,330	\$ 4,261,996,413				
(13) Difference between Market & Actuarial Values	(46,889)	54,639,874				
(14) Estimated Market Value Rate of Return on Total Plan Assets	8.78%	7.80%				
(15) Estimated Market Value Return on Invested Plan Assets ¹	8.57%	8.05%				
(16) Actuarial Value Rate of Return	7.81%	6.46%				
(17) Ratio of Actuarial Value to Market Value	100%	99%				

¹ Rate calculated and provided by the County.

Development of Actuarial Value of Assets (Assets Allocated to GRIP)

Fiscal Year Ending	2018	2019	2020	2021	2022	2023
Beginning of Year:						
(1) Market Value of Assets	\$ 140,354,750	\$ 161,527,504				
(2) Actuarial Value of Assets	141,240,462	160,979,689				
End of Year:						
(3) Market Value of Assets	161,527,504	183,641,709				
(4a) Contributions	12,947,959	15,152,460				
(4b) Net Disbursements	4,476,906	5,999,121				
(5) Total Investment Income						
= (3) - (1) - (4a) + (4b)	12,701,701	12,960,866				
(6) Projected Rate of Return	7.50%	7.50%				
(7) Projected Investment Income						
= (1) x (6) + [(1 + (6)) ^{0.5} - 1] x (4a - 4b)	10,838,528	12,451,608				
(8) Asset Adjustment	-	-				
(9) Investment Income in Excess of Projected Income	1,863,173	509,258				
(10) Excess Investment Income Recognized						
This Year (5-year recognition)						
(10a) From This Year	\$ 372,635	\$ 101,852				
(10b) From One Year Ago	996,532	372,635	\$ 101,852			
(10c) From Two Years Ago	(1,361,821)	996,532	372,635	\$ 101,852		
(10d) From Three Years Ago	(1,208,679)	(1,361,821)	996,532	372,635	\$ 101,852	
(10e) From Four Years Ago	1,630,979	(1,208,677)	(1,361,821)	996,532	372,633	\$ 101,850
(10f) Total Recognized Investment Gain/(Loss)	429,646	(1,099,479)	109,198	1,471,019	474,485	101,850
(11) Change in Actuarial Value of Assets						
= (4a) - (4b) + (7) + (8) + (10f)	19,739,227	20,505,468				
End of Year:						
(3) Market Value of Assets	\$ 161,527,504	\$ 183,641,709				
(12) Final Actuarial Value of Assets as of 6/30 = (2) + (11)	\$ 160,979,689	\$ 181,485,157				
(13) Difference between Market & Actuarial Values	547,815	2,156,552				
(14) Estimated Market Value Rate of Return on Total Plan Assets	8.78%	7.80%				
(15) Estimated Market Value Return on Invested Plan Assets ¹	8.57%	8.05%				
(16) Actuarial Value Rate of Return	7.75%	6.86%				
(17) Ratio of Actuarial Value to Market Value	100%	99%				

¹ Rate calculated and provided by the County.

Historical Comparison of Actuarial Value of Assets to Market Value of Assets (Total ERS)

	Valuation as of July 1, 2019								July 1, 2018
	Non-Public Safety			Public Safety					
	Group A	Group H	Group J	Group E	Group F	Group G	GRIP	Total	Total
Beginning of Year:									
(1) Actuarial Value of Assets ¹	\$ 887,073,773	\$ 659,335,115	\$ 48,229,035	\$ 408,328,251	\$ 1,136,505,952	\$ 848,902,515	\$ 160,979,689	\$ 4,149,354,330	\$ 3,968,497,692
End of Year:									
(2a) County Contributions	\$ 14,886,411	\$ 16,098,890	\$ 1,433,730	\$ 4,301,972	\$ 16,679,028	\$ 24,307,319	\$ 8,877,129	\$ 86,584,479	\$ 93,163,298
(2b) Employee Contributions	2,642,055	2,471,000	784,564	2,427,601	7,538,054	7,490,217	6,275,331	29,628,822	28,964,769
(2c) Total Contributions ²	\$ 17,528,466	\$ 18,569,890	\$ 2,218,294	\$ 6,729,573	\$ 24,217,082	\$ 31,797,536	\$ 15,152,460	\$ 116,213,301	\$ 122,128,067
(3a) Benefit Payments and Refunds	\$ 72,193,288	\$ 52,914,152	\$ 798,995	\$ 26,170,657	\$ 57,783,202	\$ 48,138,194	\$ 5,712,071	\$ 263,710,559	\$ 243,539,848
(3b) Administrative Expenses	435,292	358,777	86,627	245,878	898,770	751,856	287,050	3,064,250	2,870,683
(3c) Total Deductions ³	\$ 72,628,580	\$ 53,272,929	\$ 885,622	\$ 26,416,535	\$ 58,681,972	\$ 48,890,050	\$ 5,999,121	\$ 266,774,809	\$ 246,410,531
(4) Investment Return (AVA Basis)	\$ 55,394,803	\$ 41,371,481	\$ 3,148,976	\$ 25,678,705	\$ 72,116,486	\$ 54,141,011	\$ 11,352,129	\$ 263,203,591	\$ 305,139,102
(5) Actuarial Value of Assets	\$ 887,368,462	\$ 666,003,557	\$ 52,710,683	\$ 414,319,994	\$ 1,174,157,548	\$ 885,951,012	\$ 181,485,157	\$ 4,261,996,413	\$ 4,149,354,330
(6) AVA Rate of Return	6.44%	6.44%	6.44%	6.44%	6.44%	6.44%	6.86%	6.46%	7.81%
(7) Final Actuarial Value of Assets	\$ 887,368,462	\$ 666,003,557	\$ 52,710,683	\$ 414,319,994	\$ 1,174,157,548	\$ 885,951,012	\$ 181,485,157	\$ 4,261,996,413	\$ 4,149,354,330

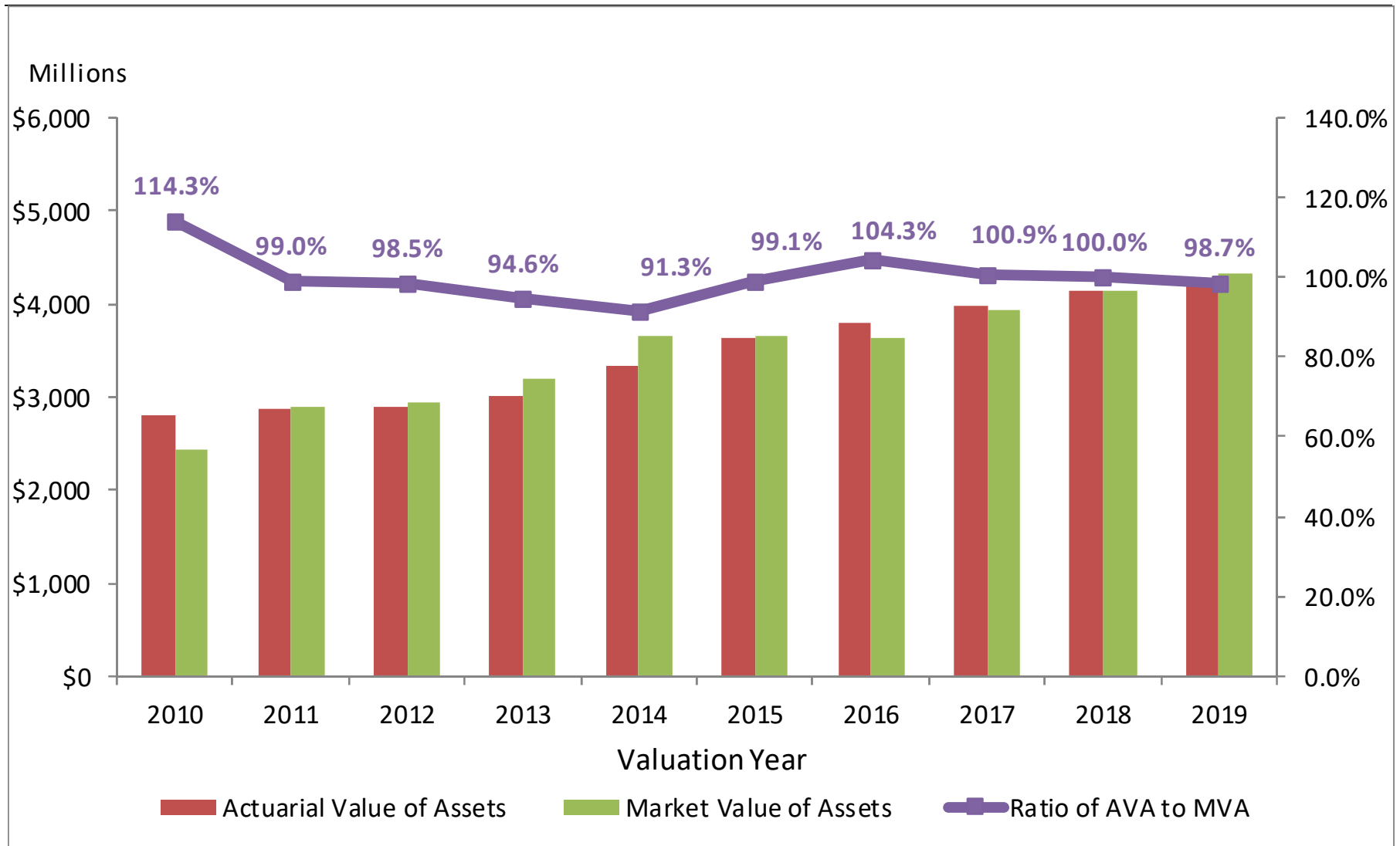
¹ Actuarial value of assets by group is from the actuarial valuation as of July 1, 2018.

² Contributions by group allocated based on fiscal year 2019 contribution rates and expected fiscal year 2019 payroll from the prior actuarial valuation as of July 1, 2018.

³ Deductions by group allocated based on amounts projected by group from the prior actuarial valuation as of July 1, 2018.

Beginning in fiscal year 2019, Group J is included with the Non-Public Safety groups.

Historical Comparison of Actuarial Value of Assets to Market Value of Assets (Total ERS)



SECTION B

ACTUARIAL VALUATION DATA

Summary of Participant Data (July 1, 2019 and July 1, 2018)

	Valuation as of July 1, 2019							
	Non-Public Safety			Public Safety				
	Group A	Group H	Group J	Group E	Group F	Group G	GRIP	Total
Total All Plans								
Active Members								
Number	314	466	129	457	1,230	1,153	2,254	6,003
Average Age	59.2	59.4	47.2	41.6	39.6	38.7	47.4	45.2
Average Service	29.1	27.7	13.8	11.0	13.8	12.2	7.3	12.7
Total Base Payroll	\$ 35,177,690	\$ 37,608,010	\$ 11,375,815	\$ 33,706,249	\$ 105,953,344	\$ 92,373,859	\$ 160,424,145	\$ 476,619,112
Contribution Basis Payroll:								
For Normal Cost	\$ 32,286,121	\$ 34,514,823	\$ 10,729,553	\$ 32,306,505	\$ 102,170,159	\$ 89,415,570	\$ 153,858,772	\$ 455,281,503
For Amortization of Unfunded Liability*	25,941,127	29,953,786	11,375,815	33,706,249	105,953,344	92,373,859	160,424,145	459,728,326
DRSP/DROP Members								
Number				40	60	71		171
Total Base Payroll				\$ 4,132,707	\$ 6,577,642	\$ 7,844,103		\$ 18,554,451
Total Benefits				2,237,497	4,330,306	5,046,743		11,614,546
Terminated Vested Members								
Number	42	51	1	30	29	20	370	543
Total Benefits	\$ 415,356	\$ 397,624	\$ 4,929	\$ 469,912	\$ 242,586	\$ 130,611		\$ 1,661,018
Retired Members and Beneficiaries								
Number							4	6,560
Total Benefits							\$ 57,237	\$ 254,564,987
Total Membership							2,628	13,277

	Valuation as of July 1, 2018							
	Non-Public Safety			Public Safety				
	Group A	Group H	Group J	Group E	Group F	Group G	GRIP	Total
Total All Plans								
Active Members								
Number	381	516	128	461	1,237	1,155	2,126	6,004
Average Age	58.8	59.0	47.0	41.8	39.3	38.7	47.3	45.3
Average Service	28.8	27.2	14.3	11.2	13.5	12.2	7.2	13.0
Total Base Payroll	\$ 41,794,810	\$ 39,614,015	\$ 11,008,571	\$ 33,491,197	\$ 103,172,843	\$ 92,854,752	\$ 146,038,261	\$ 467,974,450
Contribution Basis Payroll:								
For Normal Cost	\$ 38,282,457	\$ 36,383,955	\$ 10,264,686	\$ 31,836,827	\$ 98,717,858	\$ 89,452,250	\$ 139,294,821	\$ 444,232,854
For Amortization of Unfunded Liability*	30,872,512	31,451,664	11,008,571	33,491,197	103,172,843	92,854,752	146,038,261	448,889,802
DRSP/DROP Members								
Number				39	47	61		147
Total Base Payroll				\$ 4,004,273	\$ 5,189,627	\$ 6,790,733		\$ 15,984,632
Total Benefits				2,273,057	3,581,771	4,229,341		10,084,169
Terminated Vested Members								
Number	49	56		34	36	18	296	489
Total Benefits	\$ 489,648	\$ 428,839		\$ 520,053	\$ 361,740	\$ 163,178		\$ 1,963,456
Retired Members and Beneficiaries								
Number							3	6,468
Total Benefits							\$ 22,477	\$ 245,455,253
Total Membership							2,425	13,108

*Excludes Non-GRIP UAL Payroll from Outside Agencies. As of July 1, 2019, this amount is \$1,897,641, and as of July 1, 2018, this amount is \$1,930,247.

Summary of Active Participant Data by Plan

Valuation as of July 1, 2019 Including DROP/DRSP Actives								
	Non-Public Safety			Public Safety			GRIP	Total
	Group A	Group H	Group J	Group E	Group F	Group G		
<u>Optional Non-Integrated</u>								
Number	2	3	-	-	-	1		6
Total Base Payroll	\$ 212,380	\$ 298,003	\$ -	\$ -	\$ -	\$ 108,948		\$ 619,331
<u>Optional Integrated</u>								
Number	4	5	-	-	-	-		9
Total Base Payroll	\$ 457,689	\$ 353,030	\$ -	\$ -	\$ -	\$ -		\$ 810,719
<u>Mandatory Integrated</u>								
Number	308	458	129	497	1,290	1,223		3,905
Total Base Payroll	\$ 34,507,621	\$ 36,956,977	\$ 11,375,815	\$ 37,838,956	\$ 112,530,986	\$ 100,109,014		\$ 321,943,554
<u>GRIP</u>								
Number							2,254	2,254
Total Base Payroll							\$ 160,424,145	\$ 160,424,145
<u>Total All Plans</u>								
Number	314	466	129	497	1,290	1,224	2,254	6,174
Total Base Payroll	\$ 35,177,690	\$ 37,608,010	\$ 11,375,815	\$ 37,838,956	\$ 112,530,986	\$ 100,217,962	\$ 160,424,145	\$ 483,797,749
Valuation as of July 1, 2019 Excluding DROP/DRSP Actives								
	Non-Public Safety			Public Safety			GRIP	Total
	Group A	Group H	Group J	Group E	Group F	Group G		
<u>Optional Non-Integrated</u>								
Number	2	3	-	-	-	1		6
Total Base Payroll	\$ 212,380	\$ 298,003	\$ -	\$ -	\$ -	\$ 108,948		\$ 619,331
<u>Optional Integrated</u>								
Number	4	5	-	-	-	-		9
Total Base Payroll	\$ 457,689	\$ 353,030	\$ -	\$ -	\$ -	\$ -		\$ 810,719
<u>Mandatory Integrated</u>								
Number	308	458	129	457	1,230	1,152		3,734
Total Base Payroll	\$ 34,507,621	\$ 36,956,977	\$ 11,375,815	\$ 33,706,249	\$ 105,953,344	\$ 92,264,910		\$ 314,764,916
<u>GRIP</u>								
Number							2,254	2,254
Total Base Payroll							\$ 160,424,145	\$ 160,424,145
<u>Total All Plans</u>								
Number	314	466	129	457	1,230	1,153	2,254	6,003
Total Base Payroll	\$ 35,177,690	\$ 37,608,010	\$ 11,375,815	\$ 33,706,249	\$ 105,953,344	\$ 92,373,859	\$ 160,424,145	\$ 476,619,112

Summary of Active Participant Data by Outside Agencies

Valuation as of July 1, 2019

	Assessment and Taxation	Circuit Court	CRU 92 Credit Union	District Court	Housing Opportunities Commission	Revenue Authority	Strathmore Hall	Town of Chevy Chase	Washington Suburban Transit Commission	Total Agency	Total Non-Agency	Total ERS
<u>Non-GRIP Membership</u>												
Active Members												
Number	-	1	1	-	22	2	2	-	-	28	3,721	3,749
Average Age	-	68.6	58.8	-	61.6	50.5	54.9	-	-	60.5	43.8	43.9
Average Service	-	48.0	28.8	-	29.5	29.2	25.9	-	-	29.8	15.9	16.0
Total Base Payroll	\$	-	\$ 75,562	\$ 123,500	\$ -	\$ 1,832,940	\$ 94,715	\$ 334,157	\$ -	\$ 2,460,875	\$ 313,734,093	\$ 316,194,967
DRSP/DROP Members												
Number											171	171
Total Base Payroll											\$ 18,554,451	\$ 18,554,451
Total Benefits											\$ 11,614,546	\$ 11,614,546
Terminated Vested Members												
Number	-	-	-	-	15	-	-	1	-	16	157	173
Total Benefits	\$	-	\$ -	\$ -	\$ 95,338	\$ -	\$ -	\$ 4,366	\$ -	\$ 99,703	\$ 1,561,315	\$ 1,661,018
Retired Members and Beneficiaries												
Number	19	4	7	7	148	20	5	4	1	215	6,341	6,556
Total Benefits	\$ 1,159,642	\$ 93,739	\$ 319,896	\$ 219,632	\$ 3,751,267	\$ 403,024	\$ 181,796	\$ 97,479	\$ 21,197	\$ 6,247,672	\$ 248,260,078	\$ 254,507,750
Total Non-GRIP Membership	19	5	8	7	185	22	7	5	1	259	10,390	10,649
<u>GRIP Membership</u>												
Active Members												
Number	-	1	-	-	117	4	9	1	-	132	2,122	2,254
Average Age	-	68.8	-	-	48.4	43.4	41.9	41.1	-	47.9	47.4	47.4
Average Service	-	13.0	-	-	6.7	2.9	4.2	8.5	-	6.5	7.3	7.3
Total Base Payroll	\$	-	\$ 53,882	\$ -	\$ 8,352,854	\$ 231,363	\$ 541,167	\$ 36,674	\$ -	\$ 9,215,939	\$ 151,208,206	\$ 160,424,145
Terminated GRIP Members	-	-	-	-	11	1	2	-	-	14	356	370
Retired GRIP Members											4	4
Total GRIP Membership	-	1	-	-	128	5	11	1	-	146	2,482	2,628
Total GRIP and Non-GRIP Membership	19	6	8	7	313	27	18	6	1	405	12,872	13,277

Age/Service by Group as of July 1, 2019

Group A

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	-	-	-	-	-	-	-	-	-	0	\$ -
25-29	-	-	-	-	-	-	-	-	-	0	-
30-34	-	-	-	-	-	-	-	-	-	0	-
35-39	-	-	1	1	-	-	-	-	-	2	157,185
40-44	-	-	2	1	-	-	-	-	-	3	268,348
45-49	-	-	-	1	6	9	3	-	-	19	1,693,599
50-54	-	-	-	3	6	44	14	-	-	67	6,780,375
55-59	-	-	-	1	4	41	33	1	1	81	9,427,879
60-64	-	1	2	1	4	25	33	6	5	77	9,220,819
65-69	-	1	-	-	3	16	15	10	3	48	5,695,854
70-74	-	-	-	-	1	4	5	1	-	11	1,266,618
75 and Over	-	-	-	-	-	2	2	2	-	6	667,013
Total	-	2	5	8	24	141	105	20	9	314	\$ 35,177,690

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

Current Valuation		Previous Valuation	
Average Age:	59.2	Average Age:	58.8
Average Service:	29.1	Average Service:	28.8
Average Annual Pay:	\$ 112,031	Average Annual Pay:	\$ 109,698
Vested Participants	314	Vested Participants	381
Nonvested Participants	-	Nonvested Participants	-
Total Participants	314	Total Participants	381

Group H

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	-	-	-	-	-	-	-	-	-	0	\$ -
25-29	-	-	-	-	-	-	-	-	-	0	-
30-34	-	-	2	-	-	-	-	-	-	2	140,542
35-39	2	-	3	-	-	-	-	-	-	5	344,025
40-44	1	1	2	3	1	-	-	-	-	8	583,539
45-49	-	-	3	4	9	10	3	-	-	29	2,369,296
50-54	-	1	2	11	15	40	18	-	-	87	6,956,630
55-59	-	-	-	8	17	51	30	4	-	110	8,984,431
60-64	-	1	-	4	14	38	47	7	6	117	9,553,685
65-69	-	-	2	3	9	23	20	16	7	80	6,576,948
70-74	-	-	-	1	2	8	3	1	1	16	1,133,483
75 and Over	-	-	1	-	-	4	4	1	2	12	965,431
Total	3	3	15	34	67	174	125	29	16	466	\$ 37,608,010

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

Current Valuation		Previous Valuation	
Average Age:	59.4	Average Age:	59.0
Average Service:	27.7	Average Service:	27.2
Average Annual Pay:	\$ 80,704	Average Annual Pay:	\$ 76,771
Vested Participants	463	Vested Participants	514
Nonvested Participants	3	Nonvested Participants	2
Total Participants	466	Total Participants	516

Age/Service by Group as of July 1, 2019

Group J

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	-	-	-	-	-	-	-	-	-	0	\$ -
25-29	4	1	-	-	-	-	-	-	-	5	315,011
30-34	6	2	1	-	-	-	-	-	-	9	571,118
35-39	2	6	7	2	-	-	-	-	-	17	1,299,721
40-44	6	3	1	8	3	1	-	-	-	22	1,937,982
45-49	4	3	1	6	7	3	-	-	-	24	2,262,568
50-54	1	3	5	5	4	2	1	-	-	21	2,159,736
55-59	2	1	3	10	-	-	3	-	-	19	1,710,275
60-64	-	-	3	-	1	2	-	2	-	8	774,011
65-69	-	2	1	-	1	-	-	-	-	4	345,393
70-74	-	-	-	-	-	-	-	-	-	0	-
75 and Over	-	-	-	-	-	-	-	-	-	0	-
Total	25	21	22	31	16	8	4	2	-	129	\$ 11,375,815

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

Current Valuation		Previous Valuation	
Average Age:	47.2	Average Age:	47.0
Average Service:	13.8	Average Service:	14.3
Average Annual Pay:	\$ 88,185	Average Annual Pay:	\$ 86,004
Vested Participants	104	Vested Participants	107
Nonvested Participants	25	Nonvested Participants	21
Total Participants	129	Total Participants	128

Group E

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	19	-	-	-	-	-	-	-	-	19	\$ 946,685
25-29	53	10	-	-	-	-	-	-	-	63	3,445,576
30-34	33	14	7	-	-	-	-	-	-	54	3,170,030
35-39	21	13	26	7	-	-	-	-	-	67	4,586,446
40-44	6	7	15	30	4	-	-	-	-	62	5,072,616
45-49	14	2	25	23	22	3	-	-	-	89	7,318,989
50-54	3	4	12	16	17	5	-	-	-	57	5,061,527
55-59	3	-	6	19	6	2	1	-	-	37	3,236,826
60-64	-	-	2	2	3	-	1	-	-	8	758,590
65-69	-	-	-	-	1	-	-	-	-	1	108,964
70-74	-	-	-	-	-	-	-	-	-	0	-
75 and Over	-	-	-	-	-	-	-	-	-	0	-
Total	152	50	93	97	53	10	2	-	-	457	\$ 33,706,249

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

Current Valuation		Previous Valuation	
Average Age:	41.6	Average Age:	41.8
Average Service:	11.0	Average Service:	11.2
Average Annual Pay:	\$ 73,755	Average Annual Pay:	\$ 72,649
Vested Participants	305	Vested Participants	312
Nonvested Participants	152	Nonvested Participants	149
Total Participants	457	Total Participants	461

Age/Service by Group as of July 1, 2019

Group F

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	37	-	-	-	-	-	-	-	-	37	\$ 1,991,665
25-29	108	76	-	-	-	-	-	-	-	184	11,690,987
30-34	41	119	54	-	-	-	-	-	-	214	15,434,107
35-39	13	26	122	57	-	-	-	-	-	218	18,653,032
40-44	7	10	35	100	35	-	-	-	-	187	17,835,022
45-49	2	5	16	52	89	46	2	-	-	212	21,617,968
50-54	-	-	7	16	44	61	7	-	-	135	14,208,801
55-59	-	-	2	2	3	13	11	1	-	32	3,490,893
60-64	-	2	1	1	1	-	3	3	-	11	1,030,870
65-69	-	-	-	-	-	-	-	-	-	0	-
70-74	-	-	-	-	-	-	-	-	-	0	-
75 and Over	-	-	-	-	-	-	-	-	-	0	-
Total	208	238	237	228	172	120	23	4	-	1,230	\$ 105,953,344

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

Current Valuation		Previous Valuation	
Average Age:	39.6	Average Age:	39.3
Average Service:	13.8	Average Service:	13.5
Average Annual Pay:	\$ 86,141	Average Annual Pay:	\$ 83,406
Vested Participants	1,022	Vested Participants	960
Nonvested Participants	208	Nonvested Participants	277
Total Participants	1,230	Total Participants	1,237

Group G

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	28	5	-	-	-	-	-	-	-	33	\$ 1,735,257
25-29	100	73	2	-	-	-	-	-	-	175	9,994,421
30-34	74	96	65	2	-	-	-	-	-	237	15,465,781
35-39	22	36	119	45	1	-	-	-	-	223	17,801,378
40-44	7	17	62	59	35	-	-	-	-	180	16,320,199
45-49	5	7	31	52	42	35	-	-	-	172	17,135,038
50-54	2	2	13	13	25	38	10	-	-	103	10,863,329
55-59	-	2	3	-	4	4	10	-	-	23	2,420,143
60-64	-	-	3	-	-	-	1	1	1	6	563,593
65-69	-	-	1	-	-	-	-	-	-	1	74,720
70-74	-	-	-	-	-	-	-	-	-	0	-
75 and Over	-	-	-	-	-	-	-	-	-	0	-
Total	238	238	299	171	107	77	21	1	1	1,153	\$ 92,373,859

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

Current Valuation		Previous Valuation	
Average Age:	38.7	Average Age:	38.7
Average Service:	12.2	Average Service:	12.2
Average Annual Pay:	\$ 80,116	Average Annual Pay:	\$ 80,394
Vested Participants	915	Vested Participants	909
Nonvested Participants	238	Nonvested Participants	246
Total Participants	1,153	Total Participants	1,155

Age/Service by Group as of July 1, 2019

GRIP

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	22	3	-	-	-	-	-	-	-	25	\$ 1,114,449
25-29	151	18	2	-	-	-	-	-	-	171	8,952,925
30-34	194	53	8	-	-	-	-	-	-	255	15,452,430
35-39	184	58	17	3	-	-	-	-	-	262	17,101,175
40-44	156	59	32	15	-	-	-	-	-	262	18,553,363
45-49	151	49	36	32	18	-	-	-	-	286	21,172,242
50-54	112	58	51	44	18	-	-	-	-	283	21,175,560
55-59	114	69	62	53	21	1	-	-	-	320	24,799,435
60-64	65	51	50	52	36	-	-	-	-	254	20,305,328
65-69	15	19	27	16	18	-	-	-	-	95	8,403,823
70-74	2	4	11	11	6	-	-	-	-	34	2,808,682
75 and Over	1	2	-	3	1	-	-	-	-	7	584,734
Total	1,167	443	296	229	118	1	-	-	-	2,254	\$ 160,424,145

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

Current Valuation		Previous Valuation	
Average Age:	47.4	Average Age:	47.3
Average Service:	7.3	Average Service:	7.2
Average Annual Pay:	\$ 71,173	Average Annual Pay:	\$ 68,692
Vested Participants	1,460	Vested Participants	1,332
Nonvested Participants	794	Nonvested Participants	794
Total Participants	2,254	Total Participants	2,126

Total All Groups

Current Age	Under 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 and Over	Totals	Valuation Payroll
Under 25	106	8	-	-	-	-	-	-	-	114	\$ 5,788,056
25-29	416	178	4	-	-	-	-	-	-	598	34,398,920
30-34	348	284	137	2	-	-	-	-	-	771	50,234,009
35-39	244	139	295	115	1	-	-	-	-	794	59,942,961
40-44	183	97	149	216	78	1	-	-	-	724	60,571,069
45-49	176	66	112	170	193	106	8	-	-	831	73,569,698
50-54	118	68	90	108	129	190	50	-	-	753	67,205,958
55-59	119	72	76	93	55	112	88	6	1	622	54,069,882
60-64	65	55	61	60	59	65	85	19	12	481	42,206,896
65-69	15	22	31	19	32	39	35	26	10	229	21,205,702
70-74	2	4	11	12	9	12	8	2	1	61	5,208,783
75 and Over	1	2	1	3	1	6	6	3	2	25	2,217,178
Total	1,793	995	967	798	557	531	280	56	26	6,003	\$ 476,619,112

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

Current Valuation		Previous Valuation	
Average Age:	45.2	Average Age:	45.3
Average Service:	12.7	Average Service:	13.0
Average Annual Pay:	\$ 79,397	Average Annual Pay:	\$ 77,944
Vested Participants	4,583	Vested Participants	4,515
Nonvested Participants	1,420	Nonvested Participants	1,489
Total Participants	6,003	Total Participants	6,004

Schedule of Active Member Data as of July 1, 2019

Valuation Date 7/1	Number	Annual Payroll	Average Annual Pay	% Increase in Avg Pay
2010	5,786	\$431,226,155	\$74,529	-0.66%
2011	5,515	405,336,529	73,497	-1.38%
2012	5,554	398,460,248	71,743	-2.39%
2013	5,606	395,988,026	70,636	-1.54%
2014	5,535	402,899,096	72,791	3.05%
2015	5,541	418,728,584	75,569	3.82%
2016	5,513	427,622,475	77,566	2.64%
2017	5,738	444,274,516	77,427	-0.18%
2018	6,004	467,974,450	77,944	0.67%
2019	6,003	476,619,112	79,397	1.86%

Prior to the July 1, 2014 valuation, counts and payroll include DRSP and DROP members.

Schedule of Members in Pay Status as of July 1, 2019

Valuation Date 7/1	Annuitants	Survivors	Disableds	Total Number	Total Annual Benefits	Total Average Annual Benefit
2010	4,132	380	1,079	5,591		\$32,606
2011	4,245	393	1,074	5,712		34,348
2012	4,309	438	1,077	5,824	\$203,710,715	34,978
2013	4,412	448	1,101	5,961	210,686,878	35,344
2014	4,669	452	1,121	6,242	229,568,856	36,778
2015	4,807	448	1,125	6,380	235,612,875	36,930
2016	4,882	445	1,126	6,453	240,863,796	37,326
2017	4,947	453	1,116	6,516	245,139,028	37,621
2018	5,031	465	1,119	6,615	255,539,421	38,630
2019	5,128	471	1,132	6,731	266,179,533	39,545

Total Annual Benefits first shown in actuarial valuation report in 2012. Amounts in prior years are not readily available. Beginning with the July 1, 2014 valuation, counts for annuitants and annual benefit amounts include DRSP and DROP members.

SECTION C

ACTUARIAL VALUATION METHODS AND ASSUMPTIONS

Actuarial Cost Method

Normal cost and the allocation of benefit values between service rendered before and after the valuation date were determined using the **Individual Entry-Age Normal actuarial cost method** having the following characteristics:

- The normal cost for each individual active member, payable from the date of employment to the date of retirement, is sufficient to accumulate the value of the member's benefit at the time of retirement; and
- Each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Financing of Unfunded Actuarial Accrued Liabilities. The unfunded actuarial accrued liability is amortized using a level-percentage of pay amortization of a closed period amortization base. The amortization method was changed from an 18-year closed period amortization of the base established on July 1, 2010, and 20-year closed period amortization of the bases established thereafter, to recombining all amortization bases established prior to July 1, 2015, into a single amortization base equal to the unfunded actuarial liability as of July 1, 2015. The single amortization base as of July 1, 2015, and subsequent unfunded liability arising in future valuations are amortized over a single nine-year closed period for Groups A and H and separate 20-year closed periods for the Public Safety groups, Group J and GRIP beginning July 1, 2015.

Allocation of Unfunded Liability and Amortization Payments by Group. The amortization payments for non-GRIP members are allocated between Groups A, E, F, G, H and J. The amortization payment schedule by group for the bases established prior to the 2012 valuation is based on the allocation established by the prior actuary. The amortization payment schedule by group for the bases established beginning in the 2012 valuation is based on allocations calculated by GRS using a consistent method with the prior actuary.

The unfunded liability as of July 1, 2014 was calculated for each group based on the amortization payment amounts in that valuation and the remaining amortization period for each payment. Beginning with the July 1, 2015 actuarial valuation, changes in the unfunded liability are separately calculated and reported for each group.

The actuarial value of assets by group as of July 1, 2014 was calculated as the difference between the actuarial accrued liability and the unfunded liability as of July 1, 2014. Beginning with the actuarial valuation as of July 1, 2015, the non-GRIP actuarial value of assets by group is calculated using the following methodology:

- 1) Beginning of year actuarial value of assets for each benefit group (calculated in the prior year's valuation); plus
- 2) Non-investment cash flows (allocated based on each group's projected non-investment cash flows from the prior valuation); plus
- 3) Assumed investment return on the actuarial value of assets (rate of return equal to the rate of return on an actuarial value of assets basis for non-GRIP assets).

Actuarial Value of Pension Plan Assets. The calculated value is determined by adjusting the market value of assets to reflect the investment gains and losses (the difference between the actual investment return and the expected investment return) during each of the last five years at the rate of 20 percent per year.

Actuarial Cost Method (Continued)

Contribution Basis Payroll. The payroll for each member who is active at the actuarial valuation date is called the Base Payroll. For purposes of calculating the contribution rates based on the dollar contributions determined, different payroll amounts are used.

Contribution Basis Payroll for Normal Cost is the expected payroll for current active members payable in the upcoming year and reflects that a percentage of members will exit the active population due to retirement, termination, death or disability. This payroll is on a consistent basis with the normal cost dollars shown in the report.

Contribution Basis Payroll for Amortization of Unfunded Liability is equal to the total base payroll for the open groups (groups who are enrolling new members) and projected payroll for the period July 1, 2020 through June 30, 2021 for the closed groups (groups that are closed to new members). The projected payroll for the closed groups reflects that a percentage of members will exit the active population due to retirement, termination, death or disability and no additional employees will be hired into those groups. The objective of using this payroll basis is to have the actual County contribution made in fiscal year 2021 for the amortization of the unfunded liability (which is based on a contribution rate and actual payroll during the year) be as close as possible to the dollar amount calculated in the 2019 actuarial valuation report.

Groups A and H are closed and the remaining groups are open.

Actuarial Assumptions in the Valuation Process

The contribution and benefit values of the System are calculated by applying actuarial assumptions to the benefit provisions and census information furnished, using the actuarial cost method described on the previous page.

The principal areas of financial risk which require assumptions about future experiences are:

- Long-term rates of investment return to be generated by the assets of the Plan;
- Patterns of pay increases to members;
- Rates of mortality among members, retirees and beneficiaries;
- Rates of withdrawal of active members;
- Rates of disability among members; and
- The age patterns of actual retirement.

In an actuarial valuation, the monetary effect of each actuarial assumption is calculated for as long as a present covered person survives; a period of time which can be as long as a century.

Actual experience of the Plan will not coincide exactly with assumed experience. Each actuarial valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time it becomes appropriate to modify one or more of the assumptions, to reflect experience trends (but not random year-to-year fluctuations). Thus, an experience review of the Montgomery County Employees' Retirement System for the period July 1, 2014 to July 1, 2018 was performed to compare the demographic and economic experience against the actuarial assumptions used in the actuarial valuations. The actuarial assumptions described in this section were adopted by the Directors for use beginning with the July 1, 2019, actuarial valuation. Additional information regarding the rationale for the actuarial assumptions may be found in the 2019 experience review report. All actuarial assumptions are expectations of future experience, not current market measures.

Actuarial Valuation Assumptions

The assumed rate of price inflation is 2.50 percent.

The assumed COLA is as follows:

	Assumed COLA
100% of CPI, benefit attributable to pre 7/1/2011 service	2.50%
60% of CPI, benefit attributable to pre 7/1/2011 service	1.50%
100% of CPI*, benefit attributable to service on or after 7/1/2011	2.20%

**Capped at 2.5 percent.*

The following groups have a COLA equal to 60 percent of the increase in CPI:

- Unrepresented Non-Public Safety Enrolled 7/1/78 & after-retired before 11/1/01
- Certain Sheriffs and Inspectors Enrolled 7/1/78 & after-retired prior to 11/1/01
- Represented Non-Public Safety Enrolled 7/1/78 & after-retired prior to 11/1/01
- Sheriffs/Corrections Enrolled 7/1/78 & after-retired prior to 11/1/01
- Fire Enrolled 7/1/78 & after-retired prior to 3/1/00
- Police Enrolled 7/1/78 & after-retired prior to 3/1/00

The assumed rate of investment return used was 7.50%, net of expenses, annually.

Actuarial Valuation Assumptions (Continued)

The rates of annual salary increase used for individual members are in accordance with the following table. This assumption is used to project a member's current salary to the salaries upon which benefit amounts will be based.

Service At Assumed Pay Increase	Group A, H and GRIP	Group E and J	Group F	Group G
1	6.75%	9.50%	7.75%	10.75%
2	5.75%	9.25%	7.50%	9.25%
3	5.25%	8.00%	7.25%	7.75%
4	5.25%	6.75%	7.00%	7.25%
5	5.25%	6.25%	6.75%	6.75%
6	5.00%	5.75%	5.75%	6.75%
7	5.00%	5.75%	5.50%	6.75%
8	5.00%	5.25%	5.50%	6.75%
9	4.75%	4.75%	5.00%	6.75%
10	4.75%	4.75%	5.00%	6.75%
11	4.25%	4.75%	4.75%	5.25%
12	4.25%	4.75%	4.75%	5.25%
13	4.25%	4.75%	4.75%	5.25%
14	4.25%	4.75%	4.75%	5.25%
15	4.25%	4.75%	4.75%	5.25%
16	4.00%	4.50%	4.50%	4.25%
17	4.00%	4.50%	4.25%	4.25%
18	4.00%	4.50%	4.00%	4.25%
19	4.00%	4.25%	4.00%	4.25%
20	4.00%	4.25%	4.00%	4.25%
21	4.00%	4.00%	3.25%	3.25%
22	3.75%	3.75%	3.25%	3.25%
23	3.75%	3.75%	3.25%	3.25%
24	3.75%	3.75%	3.25%	3.25%
25	3.50%	3.75%	3.25%	3.25%
26	3.50%	3.75%	3.00%	3.25%
27	3.50%	3.75%	3.00%	3.25%
28	3.50%	3.50%	3.00%	3.25%
29	3.50%	3.50%	3.00%	3.25%
30+	3.00%	3.00%	3.00%	3.00%

The assumed rate of total payroll growth used in amortizing the unfunded liability as a level percentage of pay is 3.00 percent.

The assumed increase in the Social Security Taxable Wage Base is 3.00 percent.

Actuarial Valuation Assumptions (Continued)

The mortality assumptions are as follows:

To provide a margin for future mortality improvements, generational mortality improvements from 2010 using projection scale MP-2018 was used.

Type	Assumption
Post-retirement non-disabled	Groups A, H, J and GRIP Pub-2010 Healthy Retiree Mortality Table (for General Employees), sex distinct Groups E, F and G Pub-2010 Healthy Retiree Mortality Table (for Safety Employees), sex distinct
Post-retirement disabled	Groups A, H, J and GRIP Pub-2010 Disabled Retiree Mortality Table (for General Employees), sex distinct Groups E, F and G Pub-2010 Disabled Retiree Mortality Table (for Safety Employees), sex distinct
Pre-retirement non-service connected	Groups A, H, J and GRIP Pub-2010 Employee Mortality Table (for General Employees) , sex distinct Groups E, F and G Pub-2010 Employee Mortality Table (for Safety Employees), sex distinct
Pre-retirement service connected	Groups F and G 15% of the rates from the Pub-2010 Employee Mortality Table (for Safety Employees), sex distinct

Actuarial Valuation Assumptions (Continued)

Age	Groups E, F and G					
	Healthy Mortality				Disabled Mortality	
	Pre-Retirement		Post-Retirement		Future Life	
	Future Life		Future Life		Future Life	
	Expectancy (years) in 2019		Expectancy (years) in 2019		Expectancy (years) in 2019	
	Male	Female	Male	Female	Male	Female
20	70.83	73.49	68.17	70.49	65.87	68.44
25	65.55	68.17	62.81	65.08	60.64	63.08
30	60.26	62.87	57.44	59.68	55.40	57.75
35	54.98	57.59	52.07	54.29	50.18	52.47
40	49.71	52.32	46.72	48.92	44.98	47.26
45	44.46	47.08	41.42	43.59	39.84	42.12
50	39.25	41.87	36.21	38.33	34.81	37.06
55	34.11	36.70	31.11	33.18	29.91	32.13
60	29.05	31.58	26.18	28.20	25.17	27.43
65	24.09	26.50	21.48	23.46	20.71	22.97
70	19.29	21.51	17.10	19.02	16.58	18.80
75	14.75	16.73	13.13	14.95	12.80	14.91
80	10.51	12.21	9.68	11.33	9.55	11.33
85	6.93	8.32	6.87	8.25	6.86	8.25
90	4.77	5.81	4.77	5.81	4.77	5.81
95	3.43	4.05	3.43	4.05	3.43	4.05
100	2.49	2.83	2.49	2.83	2.49	2.83
105	1.88	2.06	1.88	2.06	1.88	2.06

Life expectancy based on non-service connected mortality rates only.

Actuarial Valuation Assumptions (Continued)

Age	Groups A, H, J and GRIP					
	Healthy Mortality				Disabled Mortality	
	Pre-Retirement		Post-Retirement		Future Life	
	Future Life		Future Life		Future Life	
	Expectancy (years) in 2019		Expectancy (years) in 2019		Expectancy (years) in 2019	
	Male	Female	Male	Female	Male	Female
20	71.47	73.96	68.26	71.41	55.52	58.90
25	66.18	68.64	62.87	66.01	50.54	53.61
30	60.87	63.31	57.47	60.60	45.42	48.28
35	55.58	58.00	52.08	55.21	40.43	43.17
40	50.32	52.72	46.72	49.83	35.60	38.33
45	45.10	47.46	41.39	44.47	31.05	33.85
50	39.94	42.23	36.20	39.24	26.97	29.85
55	34.86	37.06	31.26	34.21	23.42	26.25
60	29.89	31.95	26.49	29.26	20.20	22.81
65	25.03	26.93	21.90	24.44	17.10	19.38
70	20.29	22.02	17.54	19.86	14.16	16.00
75	15.68	17.26	13.55	15.60	11.36	12.78
80	11.20	12.64	10.05	11.75	8.79	9.87
85	7.25	8.51	7.16	8.45	6.58	7.43
90	4.99	5.86	4.99	5.86	4.76	5.55
95	3.49	4.06	3.49	4.06	3.44	4.03
100	2.49	2.83	2.49	2.83	2.49	2.83
105	1.88	2.06	1.88	2.06	1.88	2.06

Life expectancy based on non-service connected mortality rates only.

Actuarial Valuation Assumptions (Continued)

Rates of separation from active membership are represented by the following table (rates do not apply to members eligible to retire and do not include separation on account of death or disability). This assumption measures the probabilities of members terminating employment.

Service Beginning of Year	Group A, H and GRIP		Group E and J		Group F and G	
	Male	Female	Male	Female	Male	Female
0	11.50%	12.00%	16.00%	16.00%	7.00%	10.50%
1	9.00%	11.00%	10.00%	14.00%	4.00%	5.00%
2	8.50%	9.00%	6.00%	12.00%	3.50%	4.50%
3	6.50%	8.00%	5.00%	10.00%	3.00%	4.00%
4	6.00%	7.50%	5.00%	8.00%	2.50%	3.50%
5	5.50%	6.50%	5.00%	6.00%	2.25%	3.00%
6	5.00%	5.50%	5.00%	4.00%	2.00%	2.75%
7	4.50%	4.50%	5.00%	4.00%	1.75%	2.50%
8	4.00%	3.50%	4.00%	4.00%	1.50%	2.00%
9	4.00%	3.00%	3.00%	3.00%	1.25%	1.75%
10	3.00%	2.75%	2.00%	2.00%	1.00%	1.00%
11	3.00%	2.75%	1.50%	1.00%	0.75%	0.75%
12	3.00%	2.75%	1.00%	1.00%	0.50%	0.50%
13	3.00%	2.75%	1.00%	1.00%	0.25%	0.25%
14	3.00%	2.75%	1.00%	1.00%	0.25%	0.25%
15	2.50%	2.50%	1.00%	1.00%	0.25%	0.25%
16	2.50%	2.50%	1.00%	1.00%	0.25%	0.25%
17	2.50%	2.50%	1.00%	1.00%	0.25%	0.25%
18	2.50%	2.50%	1.00%	1.00%	0.25%	0.25%
19	2.50%	2.50%	1.00%	1.00%	0.25%	0.25%
20+	2.00%	2.00%	1.00%	1.00%	0.25%	0.25%

Vested participants that terminate are assumed to elect the option with the greater present value:

- 1) *A refund of their accumulated contributions with interest or*
- 2) *A deferred benefit.*

Actuarial Valuation Assumptions (Continued)

Rates of disability were as follows:

Age	Non-Public Safety				Public Safety					
	Groups A and H		Group J		Group E		Group F		Group G	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
20	0.0144%	0.0063%	0.0288%	0.0197%	0.0288%	0.0197%	0.0504%	0.0709%	0.0720%	0.0788%
25	0.0295%	0.0168%	0.0590%	0.0525%	0.0590%	0.0525%	0.1033%	0.1890%	0.1475%	0.2100%
30	0.0604%	0.0448%	0.1207%	0.1400%	0.1207%	0.1400%	0.2113%	0.5040%	0.3018%	0.5600%
35	0.1058%	0.0705%	0.2117%	0.2203%	0.2117%	0.2203%	0.3704%	0.7931%	0.5292%	0.8812%
40	0.1626%	0.1310%	0.3251%	0.4094%	0.3251%	0.4094%	0.5690%	1.4738%	0.8128%	1.6375%
45	0.3092%	0.2456%	0.6184%	0.7674%	0.6184%	0.7674%	1.0822%	2.7626%	1.5460%	3.0695%
50	0.5316%	0.3301%	1.0631%	1.0316%	1.0631%	1.0316%	1.8605%	3.7139%	2.6578%	4.1265%
55	0.7573%	0.3469%	1.5147%	1.0841%	1.5147%	1.0841%	2.6507%	3.9029%	3.7867%	4.3365%
60	0.7573%	0.3469%	1.5147%	1.0841%	1.5147%	1.0841%	2.6507%	3.9029%	3.7867%	4.3365%

The assumed split of service-connected and non-service connected disabilities is as follows:

Group	Total	Total	Service Connected Disability	
	Non-Service	Service	Total Incapacity	Partial Incapacity
	Connected	Connected	70% Benefit	52.5% Benefit
A and H	65%	35%	17.5%	17.5%
E and J	60%	40%	10.0%	30.0%
F	33%	67%	20.0%	46.7%
G	5%	95%	30.0%	65.0%

Actuarial Valuation Assumptions (Continued)

Rates of retirement for members eligible to retire during the next year were as follows:

Age	Groups A and H		Groups E and J			Group F			Group G			GRIP	
	Under 30 Years of Service	30 Years of Service and Over	Under 25 Years of Service	25 Years of Service	26 Years of Service and Over	Under 25 Years of Service	25 Years of Service	26 Years of Service and Over	Under 20 or 21 - 24 Years of Service	20 Years of Service	25 Years of Service and Over	Under 15 Years of Service	15 Years of Service and Over
Under 42			3.50%	3.50%	3.50%	2.50%	20.00%	10.00%	2.50%	10.00%	2.50%		
42			3.50%	3.50%	3.50%	2.50%	20.00%	10.00%	5.00%	10.00%	5.00%		
43			3.50%	3.50%	3.50%	2.50%	20.00%	10.00%	5.00%	10.00%	5.00%		
44			3.50%	3.50%	3.50%	2.50%	20.00%	10.00%	5.00%	10.00%	5.00%		
45	2.00%	2.00%	3.50%	8.00%	8.00%	2.50%	20.00%	10.00%	5.00%	10.00%	7.50%		
46	2.00%	2.00%	3.50%	8.00%	8.00%	3.00%	20.00%	10.00%	5.00%	10.00%	7.50%		
47	2.00%	2.00%	3.50%	8.00%	8.00%	4.00%	20.00%	10.00%	5.00%	10.00%	7.50%		
48	2.00%	2.00%	3.50%	8.00%	8.00%	4.00%	20.00%	10.00%	5.00%	10.00%	10.00%		
49	2.00%	2.00%	5.00%	20.00%	20.00%	4.00%	20.00%	10.00%	10.00%	10.00%	10.00%		
50	3.00%	12.50%	7.50%	20.00%	20.00%	8.00%	20.00%	18.00%	10.00%	15.00%	10.00%		
51	3.00%	12.50%	7.50%	20.00%	20.00%	8.00%	20.00%	18.00%	10.00%	15.00%	17.50%		
52	3.00%	12.50%	7.50%	20.00%	20.00%	8.00%	20.00%	18.00%	12.50%	20.00%	20.00%		
53	3.00%	12.50%	7.50%	20.00%	20.00%	8.00%	25.00%	20.00%	12.50%	20.00%	20.00%		
54	3.00%	12.50%	7.50%	20.00%	20.00%	12.00%	25.00%	20.00%	12.50%	20.00%	20.00%		
55	6.00%	15.00%	15.00%	30.00%	30.00%	12.00%	40.00%	35.00%	15.00%	40.00%	30.00%	3.00%	3.00%
56	6.00%	15.00%	15.00%	30.00%	30.00%	12.00%	40.00%	35.00%	15.00%	40.00%	30.00%	3.00%	3.00%
57	6.00%	15.00%	15.00%	30.00%	30.00%	15.00%	40.00%	35.00%	15.00%	40.00%	30.00%	4.50%	5.00%
58	6.00%	15.00%	15.00%	30.00%	30.00%	15.00%	40.00%	35.00%	15.00%	40.00%	40.00%	4.50%	6.00%
59	6.00%	15.00%	15.00%	30.00%	30.00%	15.00%	40.00%	35.00%	15.00%	40.00%	40.00%	4.50%	6.50%
60	11.00%	18.00%	15.00%	30.00%	30.00%	20.00%	70.00%	50.00%	30.00%	40.00%	40.00%	4.50%	7.00%
61	13.00%	18.00%	15.00%	30.00%	30.00%	20.00%	70.00%	50.00%	30.00%	40.00%	40.00%	4.50%	7.50%
62	14.00%	18.00%	15.00%	30.00%	30.00%	20.00%	70.00%	50.00%	30.00%	40.00%	40.00%	7.00%	15.00%
63	11.00%	18.00%	15.00%	30.00%	30.00%	25.00%	70.00%	50.00%	30.00%	40.00%	40.00%	7.00%	15.00%
64	11.00%	18.00%	15.00%	30.00%	30.00%	25.00%	70.00%	50.00%	30.00%	40.00%	40.00%	10.00%	15.00%
65	15.00%	18.00%	50.00%	50.00%	50.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	13.00%	20.00%
66	22.00%	25.00%										13.00%	20.00%
67	20.00%	20.00%										13.00%	25.00%
68	20.00%	20.00%										13.00%	25.00%
69	20.00%	20.00%										13.00%	30.00%
70	30.00%	35.00%										25.00%	50.00%
71	30.00%	35.00%										25.00%	50.00%
72	30.00%	35.00%										30.00%	50.00%
73	30.00%	35.00%										30.00%	50.00%
74	30.00%	35.00%										30.00%	50.00%
75	100.00%	100.00%										100.00%	100.00%

Assumption for DRSP and DROP eligible members are as follows:

	Group E (DROP)	Group F (DRSP)	Group G (DROP)
Percent Assumed to Participate	75%	75%	85%
Average Years of Participation	3 years	3 years	3 years

Actuarial Valuation Assumptions (Continued)

Assumed Additional

Sick Leave Credit:

Members are assumed to accumulate additional service credit at termination or retirement for unused sick leave credit up to a maximum of 2 years.

Group	Years of Sick Leave Per
	Year of Credited Service
A	0.026
E, J	0.022
F	0.044
G	0.029
H	0.016

Marital Status:

It is assumed that 80 percent of active participants have an eligible spouse. The male spouse is assumed to be three years older than the female spouse.

Form of Payment:

Plan	Normal Form	Assumed in Valuation
Mandatory Integrated	Life Annuity, guaranteed returned employee contributions with interest	3 Year Certain and Continuous Annuity
Optional Integrated	Life Annuity with 120 monthly payments guaranteed	10 Year Certain and Continuous Annuity
Optional Non-Integrated	Life Annuity with 120 monthly payments guaranteed	10 Year Certain and Continuous Annuity
GRIP	Lump Sum	Lump Sum at Termination or Retirement

Benefit Service:

Exact fractional years of service are used to determine the amount of benefit payable.

Decrement Timing:

All decrements are assumed to occur at the middle of the year.

Decrement Operation:

Turnover decrements do not operate after the member reaches retirement eligibility.

Eligibility Testing:

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

Pay Increase Timing:

End of (fiscal) year.

Actuarial Valuation Assumptions (Concluded)

Expenses: Assumed administrative expenses were added to the Normal Cost and are based on 105 percent of the average of the administrative expenses over the past 3 years. The assumed amount added to the Normal Cost is:

Valuation Year	Actual Administrative Expenses				Assumed Expenses
	3 Years Prior	2 Years Prior	1 Year Prior	3 Year Average	Added to Normal Cost
2017	\$ 2,684,560	\$ 3,014,055	\$ 3,185,769	\$ 2,961,461	\$ 3,109,500
2018	3,014,055	3,185,769	2,870,683	3,023,502	3,174,700
2019	3,185,769	2,870,683	3,064,250	3,040,234	3,192,200

**Assumptions for
Missing or Incomplete
Data:**

Active members:

If payroll was not provided, the current year payroll was set equal to the prior year payroll. For new hires, the current year payroll was set equal to the average payroll for new hires in the same group (A, E, J, F, G, H and GRIP).

Vesting service and credited service were calculated for GRIP members based on date of hire and the valuation date.

Retired members:

If a beneficiary date of birth was not provided for members with a joint and survivor option, it was assumed that there was a beneficiary and males are three years older than their female spouses.

SECTION D

BENEFIT PROVISIONS

Brief Summary of Plan Provisions as of July 1, 2019

Following is a summary of the major plan provisions used in the valuation summarized in this report. Montgomery County is solely responsible for the validity, accuracy and comprehensiveness of this information. If any of the plan provisions shown below are not accurate and complete, the valuation results may differ significantly from those shown in this report and may require a revision of this report. Moreover, these plan provisions may be susceptible to different interpretations, each of which could be reasonable, and the different interpretations could lead to different valuation results.

1. Effective Date of the Plan

August 15, 1965. Latest changes to the plan were made for group A, group E, group F, group G, group H, group J and GRIP members in FY11 and were reflected in the 2011 actuarial valuation. Some of the changes were effective July 1, 2011, while others were effective July 1, 2012.

2. Employee Eligibility Requirements

- A. Optional non-integrated retirement plan: Employees enrolled prior to July 1, 1978, who do not elect to join the integrated retirement plan.
- B. Optional integrated plan: Employees enrolled prior to July 1, 1978, who elect to join the integrated retirement plan.
- C. Mandatory integrated retirement plan: Employees enrolled on or after July 1, 1978. The Plan is closed to Non-Public Safety employees hired or rehired after September 30, 1994.

3. Membership Groups and Eligibility

- Group A: Any employee who is not eligible for coverage under another membership group.
- Group B: Any correctional officer, fire prevention officer or deputy sheriff appointed or promoted to the position on or before June 30, 1978 who has not elected to transfer to another membership group.
- Group D: Any full-time police officer appointed on or before August 15, 1965, who has been continuously employed as a police officer and has not elected to transfer to any other membership group.
- Group E: The chief administrative officer, the director of the council staff, the hearing examiners, the county attorney and each head of a principal department, office or agency of the county government, if appointed before July 30, 1978, or a member having held such position on or before October 1, 1972. Any sworn deputy sheriff and such correctional staff as designated by the chief administrative officer. Non-correctional officers were moved to Group J.
- Group F: Any sworn police officer who is not eligible for coverage under another membership group.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

- Group G: Any paid firefighter, paid fire officer or paid rescue service personnel not eligible for coverage under another membership group.
- Group H: Any member, including any probationary employee, who holds a bargaining unit position, unless the member is eligible for membership in Groups B, D, E, F or G.
- Group J: Group J was established as of December 21, 2016. Non-correctional officer employees hired prior to December 21, 2016, who participated in Group E were transferred to Group J on May 28, 2017. Group J members are not eligible for Deferred Retirement Option Plan (DROP) coverage.

4. Member Contributions as a Percent of Regular Base Earnings

Effective July 1, 1989, member contributions are pre-tax and interest shall be credited annually on each member's accumulated contributions at a 4.0 percent annual rate.

A. Optional non-integrated plan:

	Prior to 7/1/2001	Effective 7/1/2001	Effective 7/1/2011	Effective 7/1/2012 and After
Group A	6%	6%	7%	8%
Group B ¹	7%	n/a	n/a	n/a
Group D ²	n/a	n/a	n/a	n/a
Group E, J	7½%	8½%	9½%	10½%
Group F	7½%	8½%	9½%	10½%
Group G	7½%	8½%	9½%	10½%
Group H	6%	6%	7%	8%

¹ The last Group B member retired August 1, 1998

² The last Group D member retired November 1, 1992

B. Optional integrated plan:

	Prior to 7/1/2001 ¹		Effective 7/1/2001 ¹		Effective 7/1/2011		Effective 7/1/2012 and After	
	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB
Group A	3%	6%	4%	6%	5%	7%	6%	8%
Group B ²	3½%	7%	4½%	7%	n/a	n/a	n/a	n/a
Group D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Group E, J	3¾%	7½%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group F	4%	8%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group G with less than 25 years of service								
	4¾%	8½%	5½%	9¼%	6½%	10¼%	7½%	11¼%
Group G with at least 25 years of service								
	4¾%	8½%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group H	3%	6%	4%	6%	5%	7%	6%	8%

¹ 7/1/2007 for Group G

² The last Group B member retired February 1, 2008

SSTWB means Social Security Taxable Wage Base.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

C. Mandatory integrated plan:

	Prior to 7/1/2001 ¹		Effective 7/1/2001 ¹		Effective 7/1/2011		Effective 7/1/2012 and After	
	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB	Up to SSTWB	In excess of SSTWB
Group A	3%	6%	4%	6%	5%	7%	6%	8%
Group B	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Group D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Group E, J	3¾%	7½%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group F	4%	8%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group G with less than 25 years of service								
	4¾%	8½%	5½%	9¼%	6½%	10¼%	7½%	11¼%
Group G with at least 25 years of service								
	4¾%	8½%	4¾%	8½%	5¾%	9½%	6¾%	10½%
Group H	3%	6%	4%	6%	5%	7%	6%	8%

¹ 7/1/2007 for Group G

5. Credited Service

A member's credited service is the total service rendered under the Employees' Retirement System of Montgomery County, plus credited service earned under State of Maryland and/or Montgomery County Police Relief and Retirement Fund Law or any other Maryland Public Plan, plus any purchased prior service or granted.

- A. Full-time: Full-time members receive one year of credited service for rendering the full normal working time in a 12-month period.
- B. Part-time: Part-time members working less than the normal scheduled workweek for full-time employees on a continuing basis shall receive one year of credited service for each 12-month period.
- C. Combined part-time and full-time: Combined part-time and full-time employees will receive one month of credited service for 176 hours worked each fiscal year. Accumulated hours of 88 to 176 or 15 days or more in any calendar month will equal one month of credited service.
- D. Sick Leave: Any employee whose retirement is effective on or after May 1, 1970, will have 176 hours of accumulated sick leave equivalent to one month of credited service up to a maximum of 4,224 hours. Accumulated sick leave of less than 11 days shall not be credited; 11 to 22 days shall be credited as one month for retirement purposes. Any member who vests on or after October 1, 1971, may have sick leave credited for vesting purposes on the same basis.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

6. Average Final Earnings

For members enrolled on or before June 30, 1978, average final earnings are equal to the regular earnings for the 12-month period immediately preceding retirement, or any consecutive 12-month period, if greater.

For members enrolled on or after July 1, 1978, average final earnings are equal to the average of regular annual earnings for the 36-month period immediately preceding retirement, or any consecutive 36-month period, if greater.

7. Social Security Wage Base

For any particular year, the maximum amount of earnings creditable for benefit computation purposes under the Old Age, Survivors and Disabilities Insurance Program established by the Federal Social Security Act.

Year	Social Security Taxable Wage Base
2011	\$106,800
2012	\$110,100
2013	\$113,700
2014	\$117,000
2015	\$118,500
2016	\$118,500
2017	\$127,200
2018	\$128,400
2019	\$132,900

8. Social Security Maximum Compensation Level

The maximum dollar amount of earnings upon which Social Security benefits are based, assuming: (1) an employee's annual compensation is at least as great as the taxable wage base each year, for a 35-year period through the year in which the employee attains Social Security Retirement Age, (2) the employee remained in covered employment during each calendar year, (3) the taxable wage base stays level from date of retirement to Social Security Retirement Age.

9. Social Security Retirement Age

- Age 65 for employees born prior to January 1, 1938.
- Age 66 for employees born on or after January 1, 1938, and prior to January 1, 1955.
- Age 67 for employees born on or after January 1, 1955.

10. Regular Earnings

Gross pay for actual hours worked, excluding overtime.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

Imputed Compensation for FY2010 only (effective July 1, 2009):

- Regular earnings for a Group A, E, J or H member who is employed on July 1, 2009, includes amounts as if the member had received an increase of 4.5% in the member's gross pay as of July 1, 2009, except for the purpose of calculating a member's contribution.
- Regular earnings for a Group F member who is employed on July 1, 2009, includes amounts as if the member had received an increase of 4.25 percent in the member's gross pay as of July 1, 2009, except for the purpose of calculating a member's contribution.
- Regular earnings for a Group G member who is employed on July 1, 2009, includes amounts as if the member had received an increase of 4.00 percent in the member's gross pay as of July 1, 2009, except for the purpose of calculating a member's contribution.

11. Benefits

A. Normal Retirement Date:

Age and Service Requirement:

- Group A: Age 60 and five years of credited service, or age 55 and 30 years of credited service *(after June 30, 2002, age 60 and five years of credited service, or age 50 and 30 years of credited service for members who are Police Telecommunicators)*.
- Group B: Age 55 and 15 years of credited service, or age 51 and 30 years of credited service.
- Group D: The requirements contained in the police relief and retirement fund law of the county.
- Group E, J: Age 55 and 15 years of credited service, or age 46 and 25 years of credited service.
- Group F: Age 55 and 15 years of credited service, or 25 years of credited service (effective July 1, 2008; previously, age 55 and 15 years of credited service, or age 46 and 25 years of credited service).
- Group G: Age 55 and 15 years of credited service, or any age with 20 years of credited service (effective July 1, 2007; previously age 55 and 15 years of credited service, or any age with 25 years of credited service).
- Group H: Age 60 and five years of credited service, or age 55 and 30 years of credited service *(after June 30, 2002, age 60 and five years of credited service, or age 50 and 30 years of credited service for members who are Police Telecommunicators or members of the Service, Labor and Trades (SLT) bargaining unit)*.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

B. Benefit Amount:

1. Optional non-integrated plan: All groups other than Group E, J, F or G – 2 percent of average final earnings multiplied by years of credited service, up to a maximum of 36 years, plus sick leave credits.
 - Group E, J: 2.4 percent of average final earnings for each of the first 25 years of credited service, plus 2 percent of average final earnings for each year of credited service after 25 years up to a maximum of 31 years, plus sick leave credits. Sick leave credit in excess of 25 years is credited at 2 percent of average final earnings.
 - Group F: 2.4 percent of average final earnings for each year of credited service, up to a maximum of 36 years, plus sick leave credits.
 - Group G: 2.5 percent of average final earnings for each of the first 20 years of credited service, plus 2 percent of average final earnings for each year of credited service after 20 years up to a maximum of 31 years, plus sick leave credits (effective July 1, 2007; previously 2 percent of average final earnings for each of the first 20 years of credited service, plus 3 percent of average final earnings for each year of credited service from 21st year through 24th year, plus 8 percent of average final earnings for the 25th year of credited service, plus 2 percent of average final earnings for each year of credited service after 25 years up to a maximum of 31 years, plus sick leave credits).
2. Integrated plans:
 - a. From date of retirement to Social Security Retirement Age:
 - For groups other than Groups E, J, F or G: 2 percent of average final earnings multiplied by years of credited service, up to a maximum of 36 years, plus sick leave credits.
 - Group E, J: 2.4 percent of average final earnings for each of the first 25 years of credited service, plus 2 percent of average final earnings for each year of credited service more than 25 years up to a maximum of 31 years, plus sick leave credits.
 - Group F: 2.4 percent of average final earnings multiplied by years of credited service, up to a maximum of 36 years of service including sick leave credits. (Effective 7/1/2008; previously 2.4 percent of average final earnings for each year of credited service, up to a maximum of 30 years, plus sick leave credits. Sick leave credit in excess of 30 years is credited at 2 percent of average final earnings).
 - Group G: 2.5 percent of average final earnings for each of the first 20 years of credited service, plus 2 percent of average final earnings for each year of credited service after 20 years up to a maximum of 31 years, plus sick leave credits (effective 7/1/2007; previously 2 percent of average final earnings for each of the first 20 years of credited service, plus 3 percent of average final earnings for each year of credited

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

service from 21st year through 24th year, plus 8 percent of average final earnings for the 25th year of credited service, plus 2 percent of average final earnings for each year of credited service after 25 years up to a maximum of 31 years, plus sick leave credits).

b. From attainment of Social Security Retirement Age:

- For Groups A, B or H: 1.25 percent of average final earnings up to Social Security maximum covered compensation plus 2 percent of average final earnings above Social Security maximum covered compensation, multiplied by years of credited service up to 36 years, plus sick leave credits.
- Group D: 1 percent of average final earnings up to Social Security maximum covered compensation plus 2 percent of average final earnings above Social Security maximum covered compensation, multiplied by years of credited service up to 36 years, plus sick leave credits.
- Group E, J: 1.25 percent (effective 7/1/2009: 1.65 percent) of average final earnings up to Social Security maximum covered compensation for each year of credited service up to a maximum of 31 years plus sick leave credits, plus 2.4 percent of average final earnings above Social Security maximum covered compensation for each of the first 25 years, and 2 percent of average final earnings above Social Security maximum covered compensation for each year of credited service after 25 years up to a maximum of 31 years, plus sick leave credits. Sick leave credits used for years in excess of 25 years is credited at 2 percent of average final earnings above Social Security maximum covered compensation.
- Group F: 1.65 percent of average final earnings up to Social Security maximum covered compensation for each year of credited service up to a maximum of 36 years including sick leave credits and 2.4 percent of average final earnings above Social Security maximum covered compensation for each year of credited service up to a maximum of 36 years including sick leave credits. (Effective 7/1/2008; previously 1.65 percent of average final earnings up to Social Security maximum covered compensation for each year of credited service up to a maximum of 30 years, plus 1.25 percent of average final earnings up to Social Security maximum covered compensation for each year of credited service in excess of 30 years, plus sick leave credits, and 2.4 percent of average final earnings above Social Security maximum covered compensation for each year of credited service up to a maximum of 30 years, plus sick leave credits. Sick leave credits used for years in excess of 30 years is credited at 2 percent of average final earnings above Social Security maximum covered compensation).
- Group G: 1.71875 percent of average final earnings for each of the first 20 years of credited service, plus 1.375 percent of average final earnings for each year of credited service after 20 years up to a maximum of 31 years, plus sick leave credits.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

12. Early Pension

A. Age and service requirements:

- Group A: Age 50 and 15 years of credited service, or age 45 and 20 years of credited service.
- Group B: Age 45 and 15 years of credited service.
- Group D: Not applicable.
- Group E, J: Age 45 and 15 years of credited service, or age 41 and 20 years of credited service.
- Group F: Age 45 and 15 years of credited service, or age 41 and 20 years of credited service.
- Group G: Only normal retirement is allowed (effective 7/1/2007, previously age 45 and 15 years of credited service, or age 41 and 20 years of credited service).
- Group H: Age 50 with 15 years of credited service, or age 45 and 20 years of credited service.

B. Benefit amount: Regular pension accrued, reduced by the following schedule:

	YEARS EARLY										
	0	1	2	3	4	5	6	7	8	9	10
MONTHS EARLY	0	100.00%	98.00%	95.00%	91.00%	86.00%	80.00%	72.00%	64.00%	56.00%	48.00%
1	99.83%	97.75%	94.67%	90.58%	85.50%	79.33%	71.33%	63.33%	55.33%	47.33%	40.00%
2	99.67%	97.50%	94.33%	90.17%	85.00%	78.67%	70.67%	62.67%	54.67%	46.67%	
3	99.50%	97.25%	94.00%	89.75%	84.50%	78.00%	70.00%	62.00%	54.00%	46.00%	
4	99.33%	97.00%	93.67%	89.33%	84.00%	77.33%	69.33%	61.33%	53.33%	45.33%	
5	99.17%	96.75%	93.33%	88.92%	83.50%	76.67%	68.67%	60.67%	52.67%	44.67%	
6	99.00%	96.50%	93.00%	88.50%	83.00%	76.00%	68.00%	60.00%	52.00%	44.00%	
7	98.83%	96.25%	92.67%	88.08%	82.50%	75.33%	67.33%	59.33%	51.33%	43.33%	
8	98.67%	96.00%	92.33%	87.67%	82.00%	74.67%	66.67%	58.67%	50.67%	42.67%	
9	98.50%	95.75%	92.00%	87.25%	81.50%	74.00%	66.00%	58.00%	50.00%	42.00%	
10	98.33%	95.50%	91.67%	86.83%	81.00%	73.33%	65.33%	57.33%	49.33%	41.33%	
11	98.17%	95.25%	91.33%	86.42%	80.50%	72.67%	64.67%	56.67%	48.67%	40.67%	

Unreduced early retirement benefits are available if the member's age and service equals 85 with at least 35 years of credited service.

13. Disability Pension

A. Non-service-connected disability retirement:

Age and service requirement: Five years of credited service.

Amount: The greater of the accrued benefit under 11(B) or 33⅓ percent of final earnings.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

B. Service-connected disability retirement:

Age and service requirement: None

Benefit amount:

1. For total incapacity: The greater of the accrued benefit under 11(B) or 66⅔ percent of final earnings.
2. For Group G members: Benefits described in (1.) above are modified as follows:
 - The minimum benefit is 70 percent of final earnings if the member meets the definition of Social Security disability.
 - The minimum benefit is 52½ percent of final earnings if the member is disabled but does not qualify for the 70 percent minimum benefit above. The Chief Administrative Officer of the County may offer a disabled member an alternative position with the County with a 5 percent pay increase in lieu of this disability benefit.
 - Certain causes of disability are automatically deemed to be service-connected.

Effective July 1, 2012, the service-connected benefit amount is modified as follows:

- Total incapacity: the minimum benefit is 70 percent of final earnings if the Disability Review Panel approves. If the member has been granted Social Security disability benefits, the Disability Review Panel must recommend total incapacity status if the Social Security award is based primarily on the impairment for which plan benefits are paid.
- Partial incapacity: the minimum benefit is 52½ percent of final earnings if the member is disabled but does not qualify for the 70 percent minimum benefit above.
- Group G: The Chief Administrative Officer of the County may offer a disabled member an alternative position with the County with a 5 percent pay increase in lieu of this disability benefit. This does not apply to Group F.

14. Termination of Employment

A. Vesting provision:

Service requirement: Effective July 1, 1989, all employees who render five or more years of credited service become fully vested. Previously, vesting was based on a five to 10-year graded vesting schedule. Elected officials become vested after five years of service with a minimum monthly benefit of \$150.

Benefit amount: The monthly vested pension payable at normal retirement date is the benefit determined according to the normal retirement pension provisions based on credited service to the date of termination.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

Effective July 1, 2010, unreduced benefit commencement date provision clarification for future terminated vested members: The unreduced benefit commencement date for groups A and H is age 60. The comparable date for groups E, J, F and G members is age 70 ½ for members who are not 55 years old with 15 years of service at their termination date.

B. Return of employee contributions:

A member's contributions plus interest will be refunded if:

- A member's service with the county terminates before the member becomes eligible to vest.
- A member eligible to vest terminates service and voluntarily elects to withdraw.

15. Discontinued Service Pension

Applies if employment ends because of an administrative action and participant has 10 or more years of continuous service. Discontinued service pension begins at early retirement date but no reductions are made for early retirement. A participant may not receive a discontinued service pension if the participant was terminated for cause or resigned.

A. Groups A, E, J, F, G and H

1. Optional Non-Integrated plan members and Optional Non-Integrated plan members who elected to transfer to the Optional Integrated plan on or before September 26, 1983.

Eligibility: 10 or more years of continuous or credited service, and not an elected or appointed member.

Benefit amount: The amount of pension that the participant would receive for a regular retirement modified as follows:

- Substitute final earnings for average final earnings
- Add 5 percent of final earnings
- No reduction at Social Security Normal Retirement Age

2. Optional Non-Integrated plan members who transferred to the Optional Integrated plan after September 26, 1983.

Eligibility: 10 or more years of credited or continuous service, and not an elected or appointed member.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

Benefit amount: The amount of pension that the participant would receive for a regular retirement modified as follows:

- Substitute final earnings for average final earnings
- Add 5 percent of final earnings

3. Mandatory Integrated plan:

Eligibility: 10 or more years of continuous service and not an elected or appointed member.

Benefit amount: The amount of pension that the participant would receive for a regular retirement without any reduction for early retirement.

B. Elected and appointed members:

On or before September 26, 1983

Eligibility: 10 or more years of credited service and enrolled or re-enrolled *on or before* September 26, 1983, or submits an application to transfer from the optional plan to the integrated plan *before* September 26, 1983.

Benefit amount: Regular pension accrued under 11(B) except that “final earnings” replaces “average final earnings” in the calculation, minimum \$300.00 monthly.

After September 26, 1983

Eligibility: 10 or more years of credited service and enrolled or re-enrolled after September 26, 1983, or submits an application to transfer from the optional plan to the integrated plan after September 26, 1983.

Benefit amount: Regular pension accrued under 11(B) except that “final earnings” replaces “average final earnings” in the calculation, minimum \$300.00 monthly.

- C. Notwithstanding the above provisions, any member covered by this plan on April 1, 1970, who has reached early retirement date with 20 years of continuous or credited service, is eligible to receive a pension commencing immediately in an amount not less than 50 percent of final earnings.

16. Death Benefits

A. Non service-connected:

Eligibility: None.

Benefit amount:

1. Return of member contributions with interest;

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

plus

2. 50 percent of average final earnings if the member was a member of the Employees' Retirement System on or before December 31, 1966, and was a Maryland State plan member on August 15, 1965.

or

3. Alternate death benefits listed under (C.) below.

B. Service-connected:

Eligibility requirement: None

Benefit amount:

1. The spouse* will receive a benefit equal to 25 percent of the member's final earnings, with a minimum of \$250.00 per month. The child will receive a benefit equal to 5 percent of the member's final earnings with a minimum of \$50.00 per month to age 21 or life if disabled;

plus

2. 50 percent of average final earnings if the member was a member of the Employees' Retirement System on or before December 31, 1966, and was a Maryland State plan member on August 15, 1965;

or

3. Alternate death benefits listed under (C.) below.

4. For Group F and Group G members: if the member dies while performing duties for the County, the plan will pay death benefits to the spouse or domestic partner and child as if they were receiving a service-connected disability at the 70 percent minimum benefit level at the time of death and had elected the 100 percent joint and survivor option.

C. Alternative death benefits:

Eligibility: Member was eligible for vesting or retirement.

Benefit amount:

1. Spouse* or child may elect to receive the amount that would have been paid had the member elected to receive a 100 percent joint and survivor pension; plus
2. 50 percent of average final earnings if the member was a member of the Employees' Retirement System on or before December 31, 1966, and was a Maryland State plan member at August 15, 1965.

** Domestic partners who meet the requirements for domestic partnership are also eligible.*

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

17. Forms of Payment

A. Normal form:

1. Optional non-integrated plan: Lifetime benefit, with first 120 monthly payments guaranteed.
2. Optional integrated plan: Lifetime benefit, with first 120 monthly payments guaranteed.
3. Mandatory integrated plan: Lifetime benefit with refund of remaining contributions and interest.

- B. Optional forms: A member may elect an optional form of pension actuarially equivalent to the normal form of retirement, otherwise payable, excluding members who qualified for a non-service-connected disability retirement before reaching early retirement date.

Available forms of payment are:

<i>Modified Cash Refund Annuity</i>	Lifetime benefit with return of employee contributions with interest guaranteed
<i>10-Year Certain and Continuous Annuity</i>	Lifetime benefit with 120 monthly payments guaranteed
<i>Social Security Adjustment Option Combined with either Modified Cash Refund Annuity or a 10-Year Certain and Continuous Annuity</i>	Provides a nearly level total income, from the Plan and Social Security, from date of retirement to date of death. At death, payment will continue to the beneficiary if the guarantee provided under the normal form of payment has not been exhausted.
<i>Joint and Survivor Annuity</i>	Provides a lifetime benefit and a continuation of a percentage of the retiree benefit upon death to the beneficiary. The minimum percentage is 10 percent. A guaranteed payment of employee contributions with interest is provided for the mandatory plan and 120 monthly payments from date of retirement for the optional plans.
<i>Joint and Survivor Annuity with Pop-Up</i>	Provides a lifetime benefit and a continuation of a percentage of the retiree benefit upon death to the beneficiary. The minimum percentage is 10 percent. If the beneficiary predeceases or divorces from the retiree, the monthly benefit pops up to the amount it would have been under the Modified Cash Refund option. A guaranteed payment of employee contributions with interest is provided.
<i>Social Security Adjustment Option Combined with Joint and Survivor Annuity Option</i>	Provides a nearly level total income, from the Plan and Social Security, from date of retirement to date of death and a continuation of a percentage of the retiree benefit upon death to the beneficiary. The minimum percentage is 10 percent.
<i>Social Security Adjustment Option Combined with Joint and Survivor Annuity Pop-Up Option</i>	Provides a nearly level total income, from the Plan and Social Security, from date of retirement to date of death and a continuation of a percentage of the retiree benefit upon death to the beneficiary. The minimum percentage is 10 percent. If the beneficiary predeceases or divorces from the retiree, the monthly benefit pops up to the amount it would have been under the Modified Cash Refund option. A guaranteed payment of employee contributions with interest is provided.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

18. Post-Retirement Increases

Optional non-integrated plan: Annual adjustment to the benefit equal to 100 percent of the change in Consumer Price Index for the Washington Metro Area for years and months of credited service before July 1, 2011. For years and months of credited service after June 30, 2011, any adjustment will not exceed 2.5 percent.

Optional integrated plan: Annual adjustment to the benefit equal to 100 percent of the change in Consumer Price Index for the Washington Metro Area for years and months of credited service before July 1, 2011. For years and months of credited service after June 30, 2011, any adjustment will not exceed 2.5 percent.

Mandatory integrated plan:

- Participants who enrolled on or after July 1, 1978, and retired before November 1, 2001 – Annual adjustment to the benefit equal to 60 percent of CPI increase, limited to 5 percent. However, if over age 65 or disabled, then the maximum limit of 5 percent does not apply.
- Participants who enrolled on or after July 1, 1978, and retired on or after November 1, 2001 – Annual adjustment to the benefit equal to 100 percent of the change in Consumer Price Index for the Washington Metro Area up to 3 percent, plus 60 percent of any change in Consumer Price Index greater than 3 percent, not to exceed a total of 7.5 percent for years and months of credited service before July 1, 2011. The maximum 7.5 percent does not apply to disability retirees or retirees over age 65 for years of service before July 1, 2011. For years and months of credited service after June 30, 2011, any adjustment will not exceed 2.5 percent.

Disability Benefits:

For a disability occurring after June 30, 2011, as determined by the Disability Review Panel, any postretirement adjustment of the disability retirement benefit will not exceed 2.5 percent.

Sick Leave:

For purposes of applying any post-retirement adjustment, any sick leave will be credited as years and months of service as of the date of retirement. For participants who retire after July 1, 2011, any post-retirement adjustment will not exceed 2.5 percent on any sick leave credited as years and months of service.

DRSP Participants:

Effective July 1, 2011, any additional sick leave credited as years and months of service at DRSP exit is subject to the 2.5 percent post-retirement adjustment limit.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

DROP Participants:

Effective July 1, 2011, any additional sick leave credited as years and months of service at DROP exit is subject to the 2.5 percent post-retirement adjustment limit.

Transferred Service:

For purposes of applying any post-retirement adjustment, any transferred service will be credited as years and months of service as of the date a properly completed application is filed with the Benefits Team. For applications to transfer service credit filed after June 30, 2011, any post-retirement adjustment will not exceed 2.5 percent on the transferred service.

Purchased Service:

For purposes of applying any post-retirement adjustment, any purchased service will be credited as years and months of service as of the date a properly completed application is filed with the Benefits Team. For applications to purchase service credit filed after June 30, 2011, any post-retirement adjustment will not exceed 2.5 percent on the purchased service.

19. Deferred Retirement Option Plan (DROP) for Group E (effective 7/1/2015)

A. Eligibility for DROP entry:

Any group E and J uniformed correctional officers or sworn deputy sheriffs who are at least 55 years old and have at least 15 years of credited service or have attained age 46 and 25 years of credited service may participate in the DROP plan.

B. Exit from DROP:

The first day of any month not to exceed 36 months.

C. The DROP account is:

- A member-directed account outside the System's usual investment.
- Credited with the investment gains and losses of the chosen investments.
- Credited with the monthly benefits that the member would have received if the member had retired at DROP entry.

Upon exit from DROP, the member can receive the DROP account as a lump sum payment or as actuarially equivalent monthly benefits.

D. Post-DROP monthly benefit:

The amount the participant would have received at DROP entry with post-retirement increases for the period in DROP.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

E. Disability while in DROP:

Non-Service Connected: The member will receive a pension benefit calculated as if they retired with a non-service connected disability on the date they exited DROP and their DROP account.

Service Connected Disability: The member can elect (i) their DROP account and the post-DROP monthly benefit or (ii) a disability benefit calculated as if the member had never entered DROP.

F. Death while in DROP:

The beneficiary will receive the greater of (i) the death benefit that the beneficiary would have received if the member had died at DROP entry with post-retirement increases plus the DROP account or (ii) the death benefit calculated as if the member had never entered DROP.

G. Member Contributions:

Members do not contribute while in DROP.

20. Discontinued Retirement Service Program (DRSP) for Group F (effective 7/1/2008)

A. Eligibility for DRSP entry:

Any group F member who has attained age 46 and 25 years of credited service may participate in the DRSP plan.

B. Exit from DRSP:

The first day of any month not to exceed 36 months.

C. The DRSP account is:

- A member-directed account outside the System's usual investment.
- Credited with the investment gains and losses of the chosen investments.
- Credited with the monthly benefits that the member would have received if the member had retired at DRSP entry.

Upon exit from DRSP, the member can receive the DRSP account as a lump sum payment or as actuarially equivalent monthly benefits.

D. Post-DRSP monthly benefit:

The amount the participant would have received at DRSP entry with post-retirement increases for the period in DRSP.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

E. Disability while in DRSP:

Non-Service Connected: The member will receive a pension benefit calculated as if they retired with a non-service connected disability on the date they exited DRSP and their DRSP account.

Service Connected Disability: The member can elect (i) their DRSP account and the post-DRSP monthly benefit or (ii) a disability benefit calculated as if the member had never entered DRSP.

F. Death while in DRSP:

The beneficiary will receive the greater of (i) the death benefit that the beneficiary would have received if the member had died at DRSP entry with post-retirement increases plus the DRSP account or (ii) the death benefit calculated as if the member had never entered DRSP.

G. Member Contributions:

Members do not contribute while in DRSP.

21. Deferred Retirement Option Plan (DROP) for Group G

A. Eligibility for DROP entry:

Any group G member who has met the age and service requirements for a normal retirement may participate in the DROP plan (*effective 7/1/2007; previously only Group G members with at least 25 years of credited service*).

B. Exit from DROP:

The first day of any month not to exceed 36 months.

C. The DROP account collects:

- The member's contributions while in DROP.
- The monthly benefits that the member would have received if the member had retired at DROP entry.
- 8.25 percent interest on the amount in the account.

Upon exit from DROP, the member can receive the DROP account as a lump sum payment or as actuarially equivalent monthly benefits.

D. Post-DROP monthly benefit:

The amount the participant would have received at DROP entry with post-retirement increases for the period in DROP.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

E. Disability while in DROP:

Non-Service Connected: The member will receive a pension benefit calculated as if they retired with a non-service connected disability on the date they entered DROP and their DROP account.

Service Connected Disability: The member can elect (i) their DROP account and the post-DROP monthly benefit or (ii) a disability benefit calculated as if the member had never entered DROP.

F. Death while in DROP:

The beneficiary will receive the greater of (i) the death benefit that the beneficiary would have received if the member had died at DROP entry with post-retirement increases plus the DROP account or (ii) the death benefit calculated as if the member had never entered DROP.

22. Guaranteed Retirement Income Plan (effective 7/1/2009)

A. Eligibility for GRIP entry:

- Full-time Non-Public Safety employees hired on or after July 1, 2009, who do not participate in the retirement savings plan may make a one-time irrevocable election to participate in the GRIP within the first 150 days of full time employment. Participation in the plan begins 180 days after employment.
- Part-time or temporary Non-Public Safety employees hired on or after October 1, 1994, who do not participate in the retirement savings plan may make a one-time irrevocable election to participate in the GRIP after at least 150 days of employment. Participation in the plan begins 180 days after employment.

B. The GRIP account collects:

- Member contributions (pre-tax unless noted otherwise)
 - a. Non-public safety employees: 4 percent of regular base earnings up to the maximum Social Security wage base plus 8 percent of the excess.
 - b. Public safety employees: 3 percent of regular base earnings up to the maximum Social Security wage base plus 6 percent of the excess.
 - c. Effective July 1, 2011, members had the option to contribute an additional 2 percent of regular earnings for service between June 30, 2011 and July 1, 2012, on an after-tax basis by making an election in writing on or before September 1, 2011.
- Employer contributions
 - a. Non-public safety employees: 8 percent of regular base earnings. Effective July 1, 2011, the employer contribution was 6 percent of regular base earnings for service between June 30, 2011, and July 1, 2012.

Brief Summary of Plan Provisions as of July 1, 2019 (Continued)

- b. Public safety employees: 10 percent of regular base earnings. Effective July 1, 2011, the employer contribution was 8 percent of regular base earnings for service between June 30, 2011, and July 1, 2012.

- 7.25 percent interest credited from the date of contribution.

C. Vesting Schedule:

- Employees are 100 percent vested in employee contributions at all times.
- County contributions are 0 percent vested from 0-3 years of credited service and 100 percent vested at 3 or more years of credited service.
- Participants become 100 percent vested at death or disability.

D. Normal Form of Payment – Lump sum

E. Optional Forms of Payment:

- Direct rollover
- Life annuity purchased from MCERP

F. Eligible Agencies:

- CC – credit union employees (outside agency)
- CM – union employees (represented)
- CN – non-bargaining employees (non-represented)
- CP – public safety employees
- CZ – elected officials who transferred from the EOP

23. Retirement Incentive Program *(effective 6/1/2010 for one time election)*

The Retirement Incentive Program offered a one-time election in June 2010 and provided enhanced benefits to 64 group A, group H and group E participants. Each retiree received up to a \$35,000 lump sum payment. The early retirement reductions that would normally apply were reduced for some participants and eliminated for others.

24. Elected Officials' Plan (EOP)

The Elected Officials' Plan is a defined contribution plan within the Employees' Retirement System.

A. Participant and Eligibility:

- Elected officials are eligible to participate in the EOP. An elected official is the sheriff, the state's attorney, a County Council member, the County Executive and any County official elected for a fixed term as specifically provided in the Charter.
- Unless an elected official was an active member of a County retirement plan before becoming an elected official, which includes being on leave without pay, an elected official

Brief Summary of Plan Provisions as of July 1, 2019 (Concluded)

must participate in the EOP upon becoming an elected official. An elected official who chooses to continue to participate in another County retirement plan may become a member of the EOP at any time while an elected official after terminating participation in the other plan.

B. Transfer to the Guaranteed Retirement Income Plan (GRIP):

- An individual who is an elected official after December 6, 2010, may make a one-time irrevocable decision to terminate participation in the EOP and participate in the GRIP. An elected official must elect to participate in the GRIP during the first 150 days after becoming an elected official. Participation will begin on the first pay period after the elected official has been in office for 180 days. The elected official will have his or her EOP account transferred to the GRIP and the amount transferred into the GRIP will become the elected official's beginning GRIP account balance.
- An elected official who does not elect to participate in the GRIP must continue to participate in the EOP.

C. EOP Contributions:

- Employee contributions: 4 percent of pay (regular earnings) on a before-tax basis. Members may make an additional voluntary after tax contributions into the account of up to 7 percent of bi-weekly gross pay.
- Employer contributions: 8 percent of pay (regular earnings before taxes).

25. Changes in plan provisions

There were no changes in plan provisions since the last actuarial valuation as of July 1, 2018.

SECTION E

GLOSSARY OF TERMS

Glossary of Terms

Actuarial Accrued Liability (AAL). The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

Actuarial Assumptions. Estimates of future plan experience such as investment return, expected lifetimes and the likelihood of receiving a pension from the Pension Plan. Demographic, or “people” assumptions, include rates of mortality, retirement and separation. Economic, or “money” assumptions, include expected investment return, inflation and salary increases.

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

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

Actuarial Value of Assets (AVA). Smoothed value of assets that recognizes the difference between the expected investment return using the valuation assumption of 7.50 percent and the actual investment return over a five-year period. Dampens volatility of asset value over time.

Amortization. Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

Annual Required Contribution. The sum of the normal cost and amortization of the unfunded actuarial accrued liability.

Asset Return. The net investment return for the asset divided by the mean asset value. Example: if \$1.00 is invested and yields \$1.075 after a year, the asset return is 7.50 percent.

Funded Ratio. The actuarial value of assets divided by the actuarial accrued liability. Measures the portion of the actuarial accrued liability that is currently funded.

Market Value of Assets (MVA). The value of assets currently held in the trust available to pay for benefits of the Pension Plan. Each of the investments in the trust is valued at market price which is the price at which buyers and sellers trade similar items in the open market

Normal Cost (NC). The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

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