

Maryland State Retirement and Pension System

Annual Actuarial Valuation Report for
Maryland Municipal Corporations
as of June 30, 2020



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November 5, 2020

Board of Trustees
Maryland State Retirement and Pension System
120 East Baltimore Street, 16th Floor
Baltimore, Maryland 21202

Dear Members of the Board:

The results of the **June 30, 2020 annual actuarial valuation** of the Maryland State Retirement and Pension System (“MSRPS”) for participating Municipal Corporations in the Employees’ Combined System Municipal (“ECS” Municipal), Correctional Officers' Retirement System (“CORS”) and the Municipal Law Enforcement Officers Pension System (“LEOPS” Municipal) are presented in this report. Participating Municipal Corporations which are the responsibility of the State for funding purposes have been excluded, and certain previously withdrawn Municipal Corporations have been valued as part of the State valuation, and are therefore excluded from this valuation. The State acts as guarantor to the extent that the present value of their future payments are in excess of or less than the present value of their future liabilities for previously withdrawn municipal corporations. Municipal employers who withdraw on or after June 30, 1997 will have their employees' benefits guaranteed by the other municipalities covered by this plan.

This report was prepared at your request and is intended for use by the Maryland State Retirement Agency (“SRA”) and the Board of Trustees of the MSRPS and those designated or approved by the SRA or the Board. This report may be provided to other parties only in its entirety and only with the permission of the SRA or the Board. GRS is not responsible for unauthorized use of this report.

The purposes of the valuation are as follows:

- Measure the financial position of Municipal Corporation Systems of MSRPS, and
- Assist the Board in establishing basic or pooled employer contribution rates necessary to fund the benefits provided by MSRPS.

Additional statistical and actuarial reporting and disclosure information covering the MSRPS Municipal Corporations can be found in the combined State and Municipal MSRPS actuarial valuation report and the GASB Statement Nos. 67 and 68 report.

The individual member data required for the valuations was furnished by the SRA, together with pertinent data on financial operations (unaudited) and Participating Governmental Unit (“PGU”) schedules. The cooperation and collaboration of SRA staff in furnishing these materials is acknowledged with appreciation. 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 SRA.

Actuarial valuations are based upon assumptions regarding future activity in specific risk areas including the rates of investment return and payroll growth, eligibility for the various classes of benefits, and longevity among retired lives. The Board adopts these assumptions after considering the advice of the actuary and other professionals.

Each actuarial valuation considers all prior differences between actual and assumed experience in each risk area and adjusts the contribution rates as needed. GRS performed an experience study of MSRPS for the period 2014-2018 after completion of the June 30, 2018 valuations. Assumptions from the experience study including investment return, inflation, COLA increases, mortality rates, retirement rates, withdrawal rates, disability rates, and rates of salary increase were adopted by the Board for first use in the actuarial valuation as of June 30, 2019. It is our opinion that the actuarial assumptions used for the valuation are reasonable.

The computed contribution rates shown on page 5 may be considered as a minimum contribution rate that complies with the funding policy stated in the Code. Users of this report should be aware that contributions made at that rate do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the System in excess of those presented in this report be considered. This report includes risk metrics on page 8, 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.

The benefit provisions valued in the actuarial valuation as of June 30, 2020, are the same as the provisions from the last actuarial valuation as of June 30, 2019, with the exception of State Police and LEOPS.

This valuation assumes the continuing ability of the participating employers to make the contributions necessary to fund this System. A determination regarding whether or not the participating employers are actually able to do so is outside our scope of expertise. Consequently, we did not perform such an analysis.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. The actuary did not perform an analysis of the potential range of such future measurements in this actuarial valuation report. This report 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 report was prepared using our proprietary valuation model and related software which in our professional judgment has the capability to provide results that are consistent with the purposes of the valuation. We performed tests to ensure that the model reasonably represents that which is intended to be modeled.

This report has been prepared by actuaries who have substantial experience valuing public employee retirement systems. We certify that, to the best of our knowledge, this report is complete and accurate and has been prepared in accordance with Maryland's Annotated Code and generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice as promulgated by the Actuarial Standards Board.

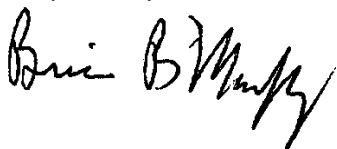
This report should not be relied on for any purpose other than the purposes previously described. Determinations of the financial values associated with benefits described in this report for a purpose other than the intended purpose may produce results that differ significantly from those presented in this report.

The signing actuaries are independent of the plan sponsor.

This is one of multiple documents comprising the actuarial report. Other documents comprising the actuarial report include the PowerPoint presentation presented to the Board in October 2020 and to the Joint Committee on Pensions in November 2020. Not all of these documents have been issued as of this date.

Brian B. Murphy, Brad L. Armstrong and Amy Williams are Members of the American Academy of Actuaries (MAAA), and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Respectfully submitted,



Brian B. Murphy, FSA, EA, FCA, MAAA, PhD



Brad L. Armstrong, ASA, EA, FCA, MAAA



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BBM/BLA/AW:rmn



SECTION I

BOARD SUMMARY

Board Summary

During the 1996 legislative session, legislation was passed which changed the contribution calculations for participating employers in the Municipal Pension Plan. Commencing with the June 30, 1996 actuarial valuation, the ongoing funding requirements for all Municipal Corporations consist of four components. The first two components are the same for all Corporations. The last two components, which vary by individual Corporation, are based on some characteristics unique to those Corporations.

The shared components are:

- (1) **Normal Cost Rate** based upon Pension System provisions.
- (2) **Unfunded Liability Rate** based upon all plan provisions.

The varying components are:

- (3) Various **surcharges** on normal cost and unfunded liability, based on plan elections.
- (4) **Special Adjustments** to the final rate reflecting:
 - Credits for "over-funded" Corporations as of 6/30/95,
 - Charges for "under-funded" Corporations as of 6/30/95,
 - Certain "special payments" called for under prior and future entry into the System, and
 - Any withdrawal liability payments owed to the System for withdrawals after 6/30/96.

The normal cost rate is a single rate determined by the actuary, based upon the valuation year demographics of the participants.

The unfunded liability rate is determined annually by the actuary and is the rate that, when applied to current and future expected payrolls, is sufficient to pay for all future benefits of current and prior plan participants not funded by:

- current actuarial value of assets,
- the present value of all future normal costs (employer and employee),
- the present value of all future surcharge contributions,
- the net present value of all future "special adjustment" contributions, and
- the present value of all future withdrawal liability payments on behalf of withdrawn Corporations.

The special adjustments include a dollar amount credit or charge subtracted from, or added to, the other three pieces. In no event can the total credits exceed the sum of the otherwise called for contribution.

A charge applies to each Municipal Corporation which as of 6/30/95 was determined to be underfunded on the basis of having less assets in the Retirement System than would be needed to fund the present value of benefits **accrued** as of 6/30/95 for prior and current participants in the Retirement System. Once this "deficit" was determined as of 6/30/95, the actuary determined a series of charges increasing by 5% per year to the year 2020 with present value equal to the amount of the deficit. For a few Municipal Corporations, the deficit payment was calculated to be greater than 2% of payroll when using a 25-year amortization payment. These Corporations are amortizing their charges to the year 2035. Individual deficit amounts and December 2021 charges are displayed in Table III-2 (page 18).



Board Summary

A credit applies to each Municipal Corporation which, as of 6/30/95, was determined to be overfunded on the basis of having assets which exceed the present value of all future benefits expected to be paid to current and prior participants of that employer. Once this "surplus" was determined as of 6/30/95, the actuary determined a series of credits increasing by 5% per year to the year 2020 with present value equal to the amount of the surplus. Individual surplus amounts and December 2021 credits are displayed in Table III-3 (page 19).

The un-pooled unfunded liability (the unfunded liability before reflecting the liabilities for special adjustments, withdrawals, and surcharges) increased from \$947 million to \$952 million for Employees' Combined System (ECS). The *pooled* unfunded liability increased from \$774 million to \$803 million for the ECS. This happened because the liabilities for special adjustments, withdrawals, and surcharges are amortized faster than the pooled unfunded liability. The pooled unfunded liability remained at \$175 million for LEOPS and increased from \$2.1 to \$3.9 million for CORS. The increase in the unfunded liability for CORS is comprised of experience losses on both assets and liabilities.

The combined Municipal System's market value of assets earned 3.51% based on our estimate and 3.57% as reported by State Street (using a slightly different computation method) for the year ended June 30, 2020. This is less than the 7.40% assumed rate of investment return for fiscal year 2020. The actuarial, or smoothed, rate of return measured from this past year was 5.80%, compared to the actuarial assumption of 7.40%, which resulted in an asset loss. The return of 5.80% was due to partial recognition of asset losses from FY 2016, FY 2019 and FY 2020 and partial recognition of asset gains from FY 2017 and FY 2018.

Each System experienced losses on the liabilities due to higher individual salary increases than assumed. Retiree liability experience was favorable due to retiree COLA increases. COLA increases of 1.81% were granted to eligible retirees who have a COLA cap of 3.00%, 5.00%, and no COLA cap compared to the actuarial assumptions of 2.19%, 2.57%, and 2.60%, respectively. A COLA increase of 1.81% was granted to benefits with the reformed cap compared to the actuarial assumption 1.42%, however reformed benefits constitute only approximately 12% of the total retiree liability.

UAAL and Actuarial Gain/(Loss) (\$ in Millions)

	Municipal
Unfunded Actuarial Accrued Liability (UAAL) as of June 30, 2019	\$ 1,111
Expected UAAL as of June 30, 2020 before changes	1,112
Changes in benefit provisions	(0)
Changes in methods and assumptions	-
Expected UAAL as of June 30, 2020 after changes	1,112
Actual UAAL as of June 30, 2020	1,120
Net actuarial gain/(loss)	(8)
Actuarial gain/(loss) by source	
Actuarial investment experience	(75)
Actuarial accrued liability experience	67



Board Summary

In 2020, the General Assembly passed legislation so that members of the LEOPS cease making member contributions once the member reaches the maximum benefit percentage of 65%, which occurs at 32.5 years of service. This legislation decreased the actuarial accrued liability by \$18 thousand but increased the Basic Employer Contribution Rate by 0.11% due to the corresponding decrease in the weighted average member contribution rate.

The basic or pooled contribution rate, which includes a normal cost rate and an unfunded liability rate, increased for ECS and CORS and decreased for LEOPS, from those calculated in the June 30, 2019 valuation to those calculated in the June 30, 2020 valuation (which determines the FY 2021 and FY 2022 contributions, respectively). The rate increased from 6.71% to 7.04% for the ECS, decreased from 34.93% to 34.21% for LEOPS, and increased from 9.67% to 11.06% for CORS. The unfunded liability rate is calculated by amortizing the pooled unfunded liability.

The increase in the basic contribution rate for ECS and CORS was partially attributable to investment losses. In addition to investment losses, the ECS rate increased due to the amortization policy (as described below). The decrease in the basic contribution rate for LEOPS was due to a liability gain that offset the investment losses and more active members participating in the reformed plan.

Based on recent legislation, effective with the June 30, 2016 valuation, the amortization method for ECS Municipal was changed to a closed amortization period ending in FY 2043. This will be accomplished by phasing the period down from 100 years in the 2016 valuation to 20 years for the 2022 valuation. The amortization period used for ECS in the June 30, 2020 valuation is 25 years.

Maryland's laws specify a single 40-year level-percent-of-pay closed amortization period beginning July 1, 2000 and ending June 30, 2040 (19 years remaining as of the of June 30, 2020 valuation) for LEOPS, and beginning July 1, 2007 and ending the June 30, 2047 (26 years remaining as of the of June 30, 2020 valuation) for CORS.

In addition to the basic contribution rate, the following surcharges apply for ECS:

Surcharge Group	Surcharge		Total	Applicable Payroll
	Normal Cost	Unfunded Liability ¹		
Retirement System	5.00%	0.00%	5.00%	Retirement System
Non-Contributory to CPB	1.00%	1.42%	2.42%	Retirement and Pension System
CPB to ACPS ²	(0.40)%	1.51%	1.11%	Pension System
Non-Contributory to ACPS	0.60%	6.84%	7.44%	Pension System

¹ The Contributory Pension Benefit UAL surcharge was paid through FY 2020 and the other two UAL surcharges are payable through FY 2031.

² Contributory Pension Benefit to Alternate Contributory Pension System.

Board Summary

In 2011, the General Assembly enacted pension reforms which were effective July 1, 2011, and affected both current actives and new hires. The member contribution rate was increased for members of the Employees' Pension System from 5% to 7%. The member contribution rate was increased from 4% to 7% for LEOPS. In addition, the benefit attributable to service on or after July 1, 2011 is subject to cost-of-living adjustments (COLAs) that are based on the increase in the Consumer Price Index and capped at 2.5% or 1.0%. The cap is 2.5% if the market value investment return from the preceding calendar year was higher than the investment return assumption used in the valuation (currently 7.40%), and 1.0% otherwise. There were also other changes that affected only those members hired on or after July 1, 2011.

Each employer with current active participants in the Retirement System must pay 5% on the Retirement System payroll. Municipal Corporations who elected to provide CPB have a 2.42% surcharge applied to total Retirement and Pension System payroll. The surcharge consists of a 1.00% normal cost rate surcharge and a 1.42% UAL rate surcharge. Municipal Corporations who elected to provide CPB and who later elected to participate in the ACPS pay a 1.11% surcharge applied to Pension System payroll. The surcharge is the net result of a (0.40)% normal cost rate surcharge and a 1.51% UAL rate surcharge. This is paid in addition to the 2.42% CPB surcharge. Municipalities who did not elect the CPB but did elect the ACPS pay a surcharge of 7.44% applied to Pension System payroll. The surcharge consists of 0.60% normal cost rate surcharge and a 6.84% UAL rate surcharge.

The 2011 General Assembly pension reforms changed the relative cost to the employers to provide benefits under the Non-Contributory Pension System (NCPS), the Contributory Pension System (ECPS) and the Alternate Contributory Pension Selection (ACPS) by increasing the ACPS employee contribution rate from 5% to 7%, while not changing the employee contribution rate for the NCPS and ECPS. In order to address the change in the relative cost between the different plans (NCPS, ECPS, ACPS), we have proposed phasing in revisions to the payroll surcharges for employers whose members are covered under the Employees' Pension System. The proposal requires statutory action, so it may be submitted for consideration during the 2021 Legislative Session. Our most recent analysis can be found in a letter dated September 4, 2019 to the Executive Director.

The special adjustments to the final contribution rate that apply to each Municipal Corporation can be found in Tables III-2 through III-4 for the ECS, Table III-5 for LEOPS and Table III-6 for CORS.

Municipalities with credits in the plan may use up to the amount shown to offset their basic December 2021 billing amount. Any unused credit will revert to the pooled plan on an annual basis.



Board Summary

Summary of Valuation Results June 30, 2020 (\$ in Millions)

	2020			2019		% Change
	ECS	LEOPS	CORS	Total	Total	
A. Demographic Information						
1. Active Number Counts	24,922	1,107	135	26,164	25,950	0.8%
2. Active Payroll	\$ 1,238	\$ 72	\$ 8	\$ 1,319	\$ 1,250	5.4%
3. Retired Number Counts	18,993	506	47	19,546	19,250	1.5%
4. Annual Benefits for Retired Members ¹	\$ 288	\$ 20	\$ 1	\$ 309	\$ 294	4.8%
5. Deferred / Inactive Number Counts	6,211	120	6	6,337	6,526	-2.9%
6. Total Number Counts	50,126	1,733	188	52,047	51,726	0.6%
B. Assets						
1. Market Value (MV)	\$ 4,424	\$ 341	\$ 32	\$ 4,797	\$ 4,723	1.6%
2. Rate of Return on MV ²				3.51 %	6.42 %	
3. Actuarial Value (AV)	\$ 4,557	\$ 352	\$ 33	\$ 4,942	\$ 4,758	3.9%
4. Rate of Return on AV				5.80 %	5.69 %	
5. Ratio of AV to MV				103.0%	100.8%	
C. Actuarial Results						
1. Normal Cost as a % of Payroll	8.96% ³	22.94%	12.92%	9.75%	9.87%	
2. Actuarial Accrued Liability (AAL)						
a. Active	\$ 2,203	\$ 216	\$ 21	\$ 2,440	\$ 2,370	2.9%
b. Retired	3,073	285	18	3,376	3,265	3.4%
c. Deferred/Inactive	<u>233</u>	<u>13</u>	<u>0</u>	<u>247</u>	<u>234</u>	5.4%
d. Total	\$ 5,510	\$ 513	\$ 39	\$ 6,062	\$ 5,870	3.3%
3. Unfunded AAL (UAAL)	\$ 953	\$ 162	\$ 6	\$ 1,120	\$ 1,111	0.8%
4. Funded Ratio	82.71 %	68.50 %	85.79 %	81.53 %	81.07 %	
D. Basic Contribution Rates						
	FY 2022			FY 2021		
1. Pension Contributions						
a. Employer Normal Cost	2.85%	16.04%	7.92%	3.60%	3.65%	
b. Member Contribution Rate	5.62%	6.90%	5.00%	6.15%	6.22%	
c. UAAL Contribution Rate	<u>4.19%</u>	<u>18.17%</u>	<u>3.14%</u>	<u>4.95%</u>	<u>4.59%</u>	
d. Total	12.66%	41.11%	16.06%	14.70%	14.46%	
2. Total Basic Employer Contribution Rate	7.04%	34.21%	11.06%	8.55%	8.24%	

¹Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2020 and July 1, 2019, respectively.

²Actuarial estimation method used is expected to produce results that differ modestly from figures reported by the System.

³Includes surcharges.

Totals may not add due to rounding.



Board Summary

General Implications of Contribution Allocation Procedure or Funding Policy on Future Expected System Contributions and Funded Status

Given the System's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the System earning 7.40% on the actuarial value of assets), it is expected that:

- (1) The employer normal cost as a percentage of pay will decrease to the level of the Reformed Benefit Plan's (i.e., plans for members hired after July 1, 2011) normal cost as time passes and the majority of the active population is comprised of Reformed Plan members,
- (2) The unfunded actuarial accrued liabilities will be fully amortized by:
 - a. June 30, 2043 for ECS
 - b. June 30, 2040 for LEOPS
 - c. June 30, 2047 for CORS
- (3) The funded status of the plan will increase gradually towards a 100% funded ratio.

Limitations of Funded Status Measurements

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

- (1) The measurement is inappropriate for assessing the sufficiency of System assets to cover the estimated cost of settling the System's benefit obligations, for example: transferring the liability to an unrelated third party in a market value type transaction.
- (2) The measurement is dependent upon the actuarial cost method which, in combination with the System's amortization policy, affects the timing and amounts of future contributions. The amounts of future contributions will most certainly differ from those assumed in this report due to future actual experience differing from assumed experience based upon the actuarial assumptions. A funded status measurement in this report of 100% is not synonymous with no required future contributions. If the funded status were 100%, the System would still require future normal cost contributions (i.e., contributions to cover the cost of the active membership accruing an additional year of service credit).
- (3) The measurement would produce a different result if the market value of assets were used instead of the actuarial value of assets, unless the market value of assets is already used in the measurement.

Board Summary

Risks Associated with 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 System'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 System'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.



Board Summary

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 for MSRPS include the following. Additional maturity measures are shown on the following pages.

MSRPS Municipal

	2020	2019	2018
Ratio of market value of assets to total payroll	3.64	3.78	3.76
Ratio of actuarial accrued liability to total payroll	4.60	4.69	4.60
Ratio of actives to retirees and beneficiaries	1.34	1.35	1.38
Ratio of net cash flow to market value of assets	-1.9%	-1.9%	-2.0%
Approximate duration of the actuarial accrued liability	12.04	12.04	12.16
Approximate duration of the present value of benefits	14.49	14.48	14.58

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 actives to retirees. A mature open plan may have close to the same number of actives to retirees resulting in a ratio near 1.0. A super-mature or closed plan may have significantly more retirees than actives resulting in a ratio below 1.0.



Board Summary

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.

DURATION OF ACTUARIAL ACCRUED LIABILITY

The duration of the actuarial accrued liability may be used to approximate the sensitivity to a 1% change in the assumed rate of return. For example, duration of 10 indicates that the liability would increase approximately 10% if the assumed rate of return were lowered 1%.

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.

SECTION II

ASSETS

Assets

The System uses and discloses two different asset measurements which are presented in this section of the report: market value and actuarial value of assets. The market value represents, as of the valuation date, the value of the assets if they were liquidated on that date. The actuarial value of assets is a value that attempts to smooth annual investment return performance over five years to reduce annual investment volatility, and is used in determining contribution rates for the three participating employer plans.

On the following pages we present detailed information on System assets:

- Disclosure of assets at June 30, 2020.
- Statement of cash flows during the year.
- Development of the actuarial value of assets.
- Disclosure of investment performance for the year.

Assets

**Table II-1
Market Value and Cash Flow**

	Employees (Municipal)	LEOPS (Municipal)	Corrections (Municipal)	Total Municipal
Market Value of Assets as of 6/30/2019	\$ 4,377,736,520	\$ 319,537,333	\$ 25,545,307	\$ 4,722,819,161
Employer Contributions	112,422,310	22,807,194	572,844	135,802,348
Member Contributions	68,083,477	4,646,141	403,871	73,133,489
Investment Returns	151,855,554	11,152,979	1,001,368	164,009,901
Disbursements from the Trust	(279,772,410)	(17,536,352)	(1,136,292)	(298,445,054)
Net Transfers	(6,723,549)	618,072	6,105,477	0
Market Value of Assets as of 6/30/2020	\$ 4,423,601,902	\$ 341,225,367	\$ 32,492,575	\$ 4,797,319,844

Assets

June 30, 2020

	ECS	LEOPS	CORS	Total Municipal
Beginning of Year:				
(1) Market Value of Assets	\$4,377,736,520	\$319,537,333	\$25,545,307	\$4,722,819,160
(2) Actuarial Value of Assets	4,411,058,371	321,670,508	25,731,728	4,758,460,607
End of Year:				
(3) Market Value of Assets	4,423,601,902	341,225,367	32,492,575	4,797,319,844
(4) Net of Contributions and Disbursements	(105,990,172)	10,535,055	5,945,900	(89,509,217)
(5) Total Investment Income				
=(3)-(1)-(4)	151,855,554	11,152,979	1,001,368	164,009,901
(6) Projected Rate of Return	7.40%	7.40%	7.40%	7.40%
(7) Projected Investment Income				
=(1)x(6)+([1+(6)] ⁵ -1)x(4)	320,100,850	24,028,604	2,106,425	346,235,879
(8) Beginning of Year Asset Adjustment				
(9) Investment Income in Excess of Projected Income	(168,245,296)	(12,875,625)	(1,105,057)	(182,225,978)
(10) Excess Investment Income Recognized This Year (5-year recognition)				
(10a) From This Year	(33,649,059)	(2,575,125)	(221,011)	(36,445,195)
(10b) From One Year Ago	(8,666,935)	(566,953)	(50,166)	(9,284,054)
(10c) From Two Years Ago	4,478,635	239,418	25,600	4,743,653
(10d) From Three Years Ago	17,871,792	1,142,509	100,221	19,114,522
(10e) From Four Years Ago	(47,833,604)	(2,868,637)	(262,996)	(50,965,237)
(10f) Total Phase-ins	(67,799,171)	(4,628,788)	(408,352)	(72,836,311)
(11) Change in Actuarial Value of Assets				
=(4)+(7)+(8)+(10f)	146,311,507	29,934,871	7,643,973	183,890,351
End of Year:				
(3) Market Value of Assets as of 6/30	4,423,601,902	341,225,367	32,492,575	4,797,319,844
(12) Preliminary Actuarial Value of Assets = (2)+(11)	4,557,369,878	351,605,379	33,375,701	4,942,350,958
(12a) Upper Collar Limit 120% x (3)	5,308,322,282	409,470,440	38,991,090	5,756,783,812
(12b) Lower Collar Limit 80% x (3)	3,538,881,522	272,980,294	25,994,060	3,837,855,876
(13) Adjustment to Remain within 20% Collar	0	0	0	0
(14) Final Actuarial Value of Assets as of 6/30	4,557,369,878	351,605,379	33,375,701	4,942,350,958
(15) Difference Between Market & Actuarial Values	(133,767,976)	(10,380,012)	(883,126)	(145,031,114)
(16) Actuarial Value Rate of Return	5.79%	5.93%	5.92%	5.80%
(17) Market Value Rate of Return*	3.51%	3.43%	3.51%	3.51%
(18) Ratio of Actuarial Value to Market Value	103%	103%	103%	103%

* Actuarial calculation may differ modestly from figures reported by the System.



Assets

Employees (Municipal)

	2019	2020	2021	2022	2023	2024
Beginning of Year:						
(1) Market Value of Assets	\$4,209,157,598	\$4,377,736,520				
(2) Actuarial Value of Assets	4,269,928,713	4,411,058,371				
End of Year:						
(3) Market Value of Assets	4,377,736,520	4,423,601,902				
(4) Net of Contributions and Disbursements	(98,080,762)	(105,990,172)				
(5) Total Investment Income						
=(3)-(1)-(4)	266,659,684	151,855,554				
(6) Projected Rate of Return	7.45%	7.40%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6))^5-1]x(4)	309,994,357	320,100,850				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(43,334,673)	(168,245,296)				
(10) Excess Investment Income Recognized This Year (5-year recognition)						
(10a) From This Year	(8,666,935)	(33,649,059)				
(10b) From One Year Ago	4,478,635	(8,666,935)	\$ (33,649,059)			
(10c) From Two Years Ago	17,871,792	4,478,635	(8,666,935)	\$ (33,649,059)		
(10d) From Three Years Ago	(47,833,605)	17,871,792	4,478,635	(8,666,935)	\$ (33,649,059)	
(10e) From Four Years Ago	(36,633,824)	(47,833,604)	17,871,793	4,478,636	(8,666,933)	\$ (33,649,060)
(10f) Total Phase-ins	(70,783,937)	(67,799,171)	(19,965,566)	(37,837,358)	(42,315,992)	(33,649,060)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	141,129,658	146,311,507				
End of Year:						
(3) Market Value of Assets	4,377,736,520	4,423,601,902				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	4,411,058,371	4,557,369,878				
(12a) Upper Corridor Limit 120% x (3)	5,253,283,824	5,308,322,282				
(12b) Lower Corridor Limit 80% x (3)	3,502,189,216	3,538,881,522				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	4,411,058,371	4,557,369,878				
(15) Actuarial Value Rate of Return	5.67%	5.79%				
(16) Market Value Rate of Return*	6.41%	3.51%				
(17) Ratio of Actuarial Value to Market Value	101%	103%				

* Actuarial calculation may differ modestly from figures reported by the System.



Assets

	LEOPS (Municipal)					
	2019	2020	2021	2022	2023	2024
Beginning of Year:						
(1) Market Value of Assets	\$291,591,543	\$319,537,333				
(2) Actuarial Value of Assets	295,035,407	321,670,508				
End of Year:						
(3) Market Value of Assets	319,537,333	341,225,367				
(4) Net of Contributions and Disbursements	8,737,362	10,535,055				
(5) Total Investment Income						
=(3)-(1)-(4)	19,208,428	11,152,979				
(6) Projected Rate of Return	7.45%	7.40%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6))^5-1]x(4)	22,043,191	24,028,604				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(2,834,763)	(12,875,625)				
(10) Excess Investment Income Recognized This Year (5-year recognition)						
(10a) From This Year	(566,953)	(2,575,125)				
(10b) From One Year Ago	239,418	(566,953)	\$ (2,575,125)			
(10c) From Two Years Ago	1,142,509	239,418	(566,953)	\$ (2,575,125)		
(10d) From Three Years Ago	(2,868,639)	1,142,509	239,418	(566,953)	\$ (2,575,125)	
(10e) From Four Years Ago	(2,091,787)	(2,868,637)	1,142,508	239,419	(566,951)	\$ (2,575,125)
(10f) Total Phase-ins	(4,145,452)	(4,628,788)	(1,760,152)	(2,902,659)	(3,142,076)	(2,575,125)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	26,635,101	29,934,871				
End of Year:						
(3) Market Value of Assets	319,537,333	341,225,367				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	321,670,508	351,605,379				
(12a) Upper Corridor Limit 120% x (3)	383,444,800	409,470,440				
(12b) Lower Corridor Limit 80% x (3)	255,629,866	272,980,294				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	321,670,508	351,605,379				
(15) Actuarial Value Rate of Return	5.98%	5.93%				
(16) Market Value Rate of Return*	6.49%	3.43%				
(17) Ratio of Actuarial Value to Market Value	101%	103%				

* Actuarial calculation may differ modestly from figures reported by the System.



Assets

	CORS (Municipal)					
	2019	2020	2021	2022	2023	2024
Beginning of Year:						
(1) Market Value of Assets	\$24,205,846	\$25,545,307				
(2) Actuarial Value of Assets	24,526,829	25,731,728				
End of Year:						
(3) Market Value of Assets	25,545,307	32,492,575				
(4) Net of Contributions and Disbursements	(205,524)	5,945,900				
(5) Total Investment Income						
=(3)-(1)-(4)	1,544,985	1,001,368				
(6) Projected Rate of Return	7.45%	7.40%				
(7) Projected Investment Income						
=(1)x(6)+[(1+(6))^5-1]x(4)	1,795,817	2,106,425				
(8) Beginning of Year Asset Adjustment	0	0				
(9) Investment Income in Excess of Projected Income	(250,832)	(1,105,057)				
(10) Excess Investment Income Recognized This Year (5-year recognition)						
(10a) From This Year	(50,166)	(221,011)				
(10b) From One Year Ago	25,600	(50,166)	\$ (221,011)			
(10c) From Two Years Ago	100,221	25,600	(50,166)	\$ (221,011)		
(10d) From Three Years Ago	(262,996)	100,221	25,600	(50,166)	\$ (221,011)	
(10e) From Four Years Ago	(198,053)	(262,996)	100,220	25,600	(50,168)	\$ (221,013)
(10f) Total Phase-ins	(385,394)	(408,352)	(145,357)	(245,577)	(271,179)	(221,013)
(11) Change in Actuarial Value of Assets						
=(4)+(7)+(8)+(10f)	1,204,899	7,643,973				
End of Year:						
(3) Market Value of Assets	25,545,307	32,492,575				
(12) Preliminary Actuarial Value of Assets = (2)+(11)	25,731,728	33,375,701				
(12a) Upper Corridor Limit 120% x (3)	30,654,368	38,991,090				
(12b) Lower Corridor Limit 80% x (3)	20,436,246	25,994,060				
(13) Adjustment to Remain within 20% Collar	0	0				
(14) Final Actuarial Value of Assets as of 6/30	25,731,728	33,375,701				
(15) Actuarial Value Rate of Return	5.77%	5.92%				
(16) Market Value Rate of Return*	6.41%	3.51%				
(17) Ratio of Actuarial Value to Market Value	101%	103%				

* Actuarial calculation may differ modestly from figures reported by the System.



SECTION III

LIABILITIES

Liabilities

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to the period in which benefits are earned, rather than to the period of benefit distribution. There are several methods currently used in making such a determination.

The method used for this valuation is referred to as the "individual entry age normal actuarial cost method." Under this method, a level-percent-of-pay employer cost is determined which, along with member contributions, will pay for projected retirement benefits for each specific individual. The level percent developed is called the "normal cost" rate.

The actuarial liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability. If the employer's contributions exceed the employer's normal cost for the year, after allowing for interest earned on the previous balance of the unfunded actuarial liability, this liability will be reduced. Benefit improvements, actuarial gains and losses, and changes in actuarial procedures will also have an effect on the total liability and on the portion of it that is unfunded.

After the amount of the unfunded actuarial liability has been determined, a schedule of contributions is established to amortize that amount over a given period. Maryland's laws specify a closed amortization period ending in FY 2043 for ECS Municipal. This will be accomplished by phasing the period down from 100 years in the 2016 valuation to 20 years for the 2022 valuation. The amortization period used for ECS in the June 30, 2020 valuation is 25 years. The LEOPS 40 years started with the June 30, 1999 valuation (contribution period beginning July 1, 2000 and ending June 30, 2040). Thus, for the June 30, 2020 valuation, the remaining period of amortization is 19 years for the LEOPS. The CORS 40 years started with the June 30, 2006 valuation (contribution period beginning July 1, 2007 and ending the June 30, 2047). Thus, for the June 30, 2020 valuation, the remaining period of amortization is 26 years for CORS.

The following table (Table III-1) displays by System the Individual Entry Age Normal actuarial liabilities and unfunded actuarial liability. Table III-2 shows the portion of ECS Municipal unfunded liability (i.e., Deficit Amount) assigned to each of 16 individual participating municipalities. The table also shows the additional charge which will be billed to exhaust this liability starting with the December 2021 billing.

Table III-3 shows 14 municipalities who have credits in ECS Municipal. These municipalities may use up to the amount shown to offset their basic December 2021 billing amount. Any unused credit will revert to the pooled plan on an annual basis. The June 30, 2020 valuation includes PGU withdrawals as of June 30, 2020 and does not include PGUs entries as of July 1, 2020.

Table III-4 shows the new entrant and withdrawal liability balances and payments (credits) for ECS Municipal.

Table III-5 shows the new entrant and withdrawal liability balances and payments (credits) for LEOPS Municipal.

There are no new entrant liability or withdrawal liability balances for CORS Municipal (Table III-6).



Liabilities

June 30, 2020

Table III-1
Liabilities

	Employees Combined System	LEOPS	Correctional Officers'	Total Municipal
Present Value of Benefits for:				
a. Active Members	\$ 3,028,924,310	\$ 356,851,948	\$ 28,065,588	\$ 3,413,841,846
b. Retired Member and Beneficiaries	3,073,471,706	284,842,140	17,716,877	3,376,030,723
c. Terminated Vested Members and Inactives*	<u>233,442,526</u>	<u>12,863,733</u>	<u>402,695</u>	<u>246,708,954</u>
d. Total	\$ 6,335,838,542	\$ 654,557,821	\$ 46,185,160	\$ 7,036,581,523
Individual Entry Age Actuarial Accrued Liability for:				
a. Active Members	\$ 2,203,256,993	\$ 215,582,163	\$ 20,784,278	\$ 2,439,623,434
b. Retired Member and Beneficiaries	3,073,471,706	284,842,140	17,716,877	3,376,030,723
c. Terminated Vested Members and Inactives*	<u>233,442,526</u>	<u>12,863,733</u>	<u>402,695</u>	<u>246,708,954</u>
d. Total	\$ 5,510,171,225	\$ 513,288,036	\$ 38,903,850	\$ 6,062,363,111
Actuarial Value of Assets	\$ 4,557,369,878	\$ 351,605,379	\$ 33,375,701	\$ 4,942,350,958
Unfunded Actuarial Liability	\$ 952,801,347	\$ 161,682,657	\$ 5,528,149	\$ 1,120,012,153
Funded Percent	82.7%	68.5%	85.8%	81.5%

* Includes liability for accumulated member contributions with interest for non-vested inactive members.



Liabilities

**Table III-2
Schedule of Deficit Amounts as of June 30, 2020
and Deficit Payments for December 2021 Billing**

Initial PLD Number	PLD Name	Deficit Amount at 6/30/2020*	December 2021 Payment	Year of Last Payment
7402	Dorchester Co. Bd. of Education	\$ 50,657	\$ 0	2020
7412	Dorchester Co. Roads Board	774,396	62,057 **	2035
7425	Cambridge, City of	87,254	0	2020
7602/8	Garrett Co. Bd. of Ed. & Bd. of Ed. Cafe	47,630	0	2020
7711	Harford Co. Government	997,954	0	2020
8102	Prince Georges Co. Bd. of Education	1,875,416	0	2020
8111	Prince Georges Co. Government	4,705,490	0	2020
8134	Cheverly, City of	42,965	0	2020
8135	Prince Georges Co. Crossing Guards	2,921	0	2020
8502	Talbot Co. Bd. of Education	596,224	47,779 **	2035
8604	Hagerstown Junior College	25,619	0	2020
8625	Hagerstown, City of	6,240,373	500,081 **	2035
8725	Salisbury, City of	81,488	0	2020
8811	Worcester Co. Commission	11,703	0	2020
8816	Worcester Co. Liquor Bd.	1,517	0	2020
8827	Berlin, Town of	33,607	0	2020
	TOTAL	\$ 15,575,214	\$ 609,917	

* The outstanding balance is based on the 7.40% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.

** Denotes 40-year amortization, payments increase 15% per year for the first 5 years and 5% per year thereafter (all affected municipalities are beyond the initial 5-year period and are therefore subject to 5% annual increases). All others are amortized over a 25-year period with increasing 5% per year.

Liabilities

Table III-3
Schedule of Surplus Amounts as of June 30, 2020
& Maximum Credits to December 2021 Billing

Initial PLD Number	PLD Name	Surplus Amount at 6/30/2020*	December 2021 Credit	Year of Last Credit
6534	Tri-County Council of Western Maryland	\$ (42,021)	0	2020
6533	Allegany Co. Housing Authority	(112)	0	2020
6731	Md. Health & Higher Educ. Fac. Auth	(21,329)	0	2020
7525	Brunswick, Town of	(82,863)	0	2020
7702	Harford Co. Bd. of Education	(38,759)	0	2020
7804	Howard Community College	(37,044)	0	2020
8004	Montgomery College	(38,324)	0	2020
8129	New Carrollton, City of	(56,865)	0	2020
8131	Upper Marlboro, Town of	(827)	0	2020
8202	Queen Anne Co. Bd. of Education	(9,700)	0	2020
8402	Somerset Co. Bd. of Education	(31,160)	0	2020
8426	Crisfield, City of	(4,420)	0	2020
8610	Washington Co. Library	(63,714)	0	2020
8825	Pocomoke City #	(25,016)	0	2020
	TOTAL	\$ (452,154)	0	

* *The outstanding balance is based on the 7.40% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

Reflects revised payment schedule after transferring Police Officers to LEOPS.

Amortized over a 25-year period with credits increasing 5% per year.



Liabilities

Table III-4
Employees Combined System (Municipal)
Schedule of New Entrant and Withdrawal Payments and Credits as of June 30, 2020 for December 2021 Billing
(Unless noted, amounts are amortized over 25 years with level payments)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2020*	December 2020 Payment	December 2021 Payment	Last Payment Year
NEW ENTRANT					
7028	Town of Federalsburg	\$ 277,571	\$ 36,433	\$ 36,433	2030
7480	Dorchester Co. Sanitary Commission	(15,914)	(1,494)	(1,494)	2039
7529	Town of Thurmont#	548,233	223,449	223,449	2022
7926	Town of Rock Hall	7,196	1,084	1,084	2028
7927	Kent County Soil and Water Conserv. Dist.	(35,638)	(3,518)	(3,518)	2037
8142	Town of Edmonston	(112,487)	(11,104)	(11,104)	2037
8144	Town of Morningside	22,531	2,167	2,167	2038
8429	Somerset County Economic Dev. Comm.	(12,926)	(1,276)	(1,276)	2037
	TOTAL NEW ENTRANT	\$ 678,566	\$ 245,741	\$ 245,741	
WITHDRAWAL					
6533	Allegany Co Housing Authority	\$ 99,705	\$ 8,685	\$ 8,685	2043
6628	AAC Econ Opp Com	360,900	36,664	36,664	2036
	TOTAL WITHDRAWAL	\$ 460,605	\$ 45,349	\$ 45,349	

* The outstanding balance is based on the 7.40% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.

The Town made additional payments of \$326,360 in 2012 and \$230,189 in 2014 which accelerated the last payment year from 2028 to 2022 and reduced the final payment from \$223,449 to \$157,627.

Liabilities

Table III-5
LEOPS (Municipal)
Schedule of New Entrant Payments and Credits as of June 30, 2020 for December 2021 Billing
(Amounts are amortized over 25 years with level annual payments)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2020*	December 2021 Payment	Last Payment Year
6511	Alleghany County Sheriff's Deputies	\$ (559,817)	\$ (51,467)	2035
7030	Caroline County Sheriffs	(23,538)	(2,660)	2033
7126	Town of Manchester	(535,123)	(47,384)	2042
7128	City of Taneytown	(220,594)	(33,229)	2028
7129	Town of Mount Airy	(809,268)	(71,659)	2042
7130	Town of Hampstead	(405,915)	(50,370)	2031
7131	Town of Sykesville	(350,274)	(31,016)	2042
7425	City of Cambridge	(166,801)	(39,676)	2024
7427	Town of Hurlock	(410,563)	(48,482)	2032
7925A	Town of Chestertown	(392,217)	(51,481)	2030
8126	City of Hyattsville	(325,043)	(59,012)	2026
8134	City of Cheverly	(1,095,560)	(98,764)	2041
8211	Queen Anne Public Safety EEs	(1,230,967)	(185,426)	2028
8428	Town of Princess Anne	(441,258)	(61,748)	2029
8525	Town of St. Michaels	(312,547)	(27,225)	2043
8628	Town of Hancock	(42,892)	(7,039)	2027
8725A	Salisbury Police	(566,269)	(92,930)	2027
8725B	Salisbury Fire	(973,635)	(146,663)	2028
8727	City of Fruitland	(1,183,869)	(128,611)	2034
8811	Worcester County	(2,151,419)	(254,054)	2032
8825	Pocomoke City	(1,124,690)	(103,398)	2036
	TOTAL NEW ENTRANT	\$(13,322,259)	\$(1,592,294)	
	WITHDRAWAL			
	TOTAL WITHDRAWAL	0	0	
	GRAND TOTAL	\$(13,322,259)	\$(1,592,294)	

* The outstanding balance is based on the 7.40% valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.



Liabilities

Table III-6
Correctional Officers' Retirement System (Municipal)
Schedule of New Entrant Payments and Credits as of June 30, 2020 for December 2021 Billing
(Amounts are amortized over 25 years with level annual payments)

LOC Number	Municipal Corporation	Outstanding Balance as of 6/30/2020*	December 2021 Payment	Last Payment Year
8211	Queen Anne's County	\$ 1,675,514	\$ 145,949	2043
	TOTAL	\$ 1,675,514	\$ 145,949	

* *The outstanding balance is based on the 7.40 valuation interest rate in order to determine what portion of the total unfunded liability is attributable to the pooled liability and the assigned new entrant and deficit liability. The assigned new entrant and deficit liability is based on the present value of the contributions based on the payment schedule established at entry or withdrawal discounted at the current investment return assumption. Actual payoff amounts will be based on the interest rate in effect when the balance was first established.*

SECTION IV

CONTRIBUTIONS

Contributions

A. Contribution Results for December 2021 Billings (FY 2022)

The following is based upon the current statutes as of the date of this report. Future legislation could impact the contribution rate surcharges described below.

Each Municipal Corporation's basic appropriation to the Systems in FY 2022 may be determined by applying the contribution rates set forth in this report to the expected FY 2022 active member payrolls for each Municipal Corporation.

The Individual Entry Age Normal method was used to develop the contribution rates. Under this funding method, as with most other actuarial funding methods, a total contribution rate is determined which consists of two elements: the normal cost rate and the unfunded actuarial liability rate. In addition, each employer with current active participants in the Retirement System must pay 5% on the Retirement System payroll. Municipal Corporations who elected to provide CPB have a 2.42% surcharge applied to total Retirement and Pension System payroll. The surcharge consists of a 1.00% normal cost rate surcharge and a 1.42% UAL rate surcharge. Municipal Corporations who elected to provide CPB and who later elected to participate in the ACPS pay a 1.11% surcharge applied to Pension System payroll. The surcharge is the net result of a (0.40)% normal cost rate surcharge and a 1.51% UAL rate surcharge. This is paid in addition to the 2.42% CPB surcharge. Municipalities who did not elect the CPB but did elect the ACPS pay a surcharge of 7.44% applied to Pension System payroll. The surcharge consists of 0.60% normal cost rate surcharge and a 6.84% UAL rate surcharge.

The 1.42% UAL surcharge for CPB participation were paid through FY 2020, while the other two ACPS UAL surcharges will be paid through FY 2031. Once the UAL surcharge is fully amortized, the Basic Employer Rate will increase slightly.

Certain participating employers will have to pay special liability amounts calculated at their entry to the System or deficit payments based on the 1996 legislation, and other participating employers will be able to apply credits also based on the 1996 legislation.

Contributions - ECS

Table IV-1
Detailed Actuarial Information
Employees' Combined System (ECS)

	Actuarial Valuation Performed		% Change
	June 30, 2020 (for FY 2022)	June 30, 2019 (for FY 2021)	
A. Demographic Information			
Number of:			
Active Members	24,922	24,785	0.55%
Retired Members and Beneficiaries	18,993	18,740	1.35%
Vested Deferred Members	6,211	6,400	(2.95)%
Annual Salaries of Active Members	\$ 1,238,277,518	\$ 1,177,913,393	5.12%
Annual Retirement Allowance for Retired Members and Beneficiaries [#]	\$ 287,766,650	\$ 275,298,462	4.53%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	\$ 5,510,171,225	\$ 5,358,268,576	2.83%
2. Actuarial Value of Assets	<u>4,557,369,878</u>	<u>4,411,058,371</u>	3.32%
3. Unfunded Actuarial Accrued Liability (1-2)	\$ 952,801,347	\$ 947,210,205	0.59%
4. Funded Ratio	82.7%	82.3%	
5. Assigned Liability			
a. Deficit Balances (Table III-2)	\$ 15,575,214	\$ 22,620,847	
b. Surplus Balances (Table III-3)	(452,154)	(851,617)	
c. New Entrant Liability Balances (Table III-4)	1,139,171	1,778,480	
d. UAL Portion of CPB Surcharge (Table IV-2)	0	12,758,797	
e. UAL Portion of CPB to ACPS Surcharge (Table IV-2)	127,815,833	130,677,082	
f. UAL Portion of Noncontributory to ACPS Surcharge (Table IV-2)	<u>5,649,870</u>	<u>5,830,049</u>	
g. Total Assigned Liability Balances	\$ 149,727,934	\$ 172,813,638	(13.36)%
6. Pooled Unfunded Actuarial Accrued Liability (3-5g)	803,073,413	774,396,567	
7. Outstanding Balance of Previously Amortized Bases	<u>0</u>	<u>0</u>	
8. Current Year Amortization Base (6-7)	\$ 803,073,413	\$ 774,396,567	3.70%
9. UAAL Projected to Contribution Period	812,966,386	795,384,705	
10. Pooled Unfunded Amortization Payment	52,709,761	46,713,360	12.84%
11. UAL Amortization Rate	4.19%	3.79%	
12. Total Projected Payroll	\$ 1,257,324,333	\$ 1,196,031,705	5.12%
13. Employer Normal Cost			
a. Pension System Employer Normal Cost	\$ 41,358,469	\$ 40,166,847	
b. Retirement System Normal Cost (Table IV-2)	110,654	135,843	
c. CPB Normal Cost Surcharge (Table IV-2)	9,751,145	9,311,583	
d. CPB to ACPS Normal Cost Surcharge (Table IV-2)	(3,880,484)	(3,705,890)	
e. Noncontributory to ACPS normal cost surcharge (Table IV-2)	<u>56,800</u>	<u>54,749</u>	
f. Employer Normal Cost After Adjustment (a-b-c-d-e)	\$ 35,320,353	\$ 34,370,562	2.76%
14. Employer Normal Cost Adjusted for Timing	\$ 35,863,640	\$ 34,899,240	
15. Total Normal Cost Rate	8.96%	9.10%	
16. Surcharge Rate	0.49%	0.49%	
17. Employee Contribution Rate	<u>5.62%</u>	<u>5.69%</u>	
18. Employer Normal Cost Rate	2.85%	2.92%	
19. Basic Employer Cost Rate (11+ 18)	7.04%	6.71%	

[#] Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2020 and July 1, 2019, respectively.



Contributions - ECS

**Table IV-2
Surcharges
Employees' Combined System (ECS)**

	Actuarial Valuation Performed	
	June 30, 2020 (for FY 2022)	June 30, 2019 (for FY 2021)
Normal Cost Surcharges		
1. Retirement System Payroll	\$ 2,213,080	\$ 2,716,850
2. Retirement System Normal Cost Surcharge Rate	5.00%	5.00%
3. Retirement System Normal Cost Surcharge Amount	\$ 110,654	\$ 135,843
4. Payroll for Municipals Under CPB	\$ 975,114,541	\$ 931,158,325
5. CPB Normal Cost Surcharge Rate	1.00%	1.00%
6. CPB Normal Cost Surcharge Amount	\$ 9,751,145	\$ 9,311,583
7. Payroll for Municipals Going from CPB to ACPS	\$ 970,120,939	\$ 926,472,559
8. CPB to ACPS Normal Cost Surcharge Rate	(0.40%)	(0.40%)
9. CPB to ACPS Normal Cost Surcharge Amount	\$ (3,880,484)	\$ (3,705,890)
10. Payroll for Noncontributory ACPS	\$ 9,466,742	\$ 9,124,859
11. CPB to ACPS Normal Cost Surcharge Rate	0.60%	0.60%
12. CPB to ACPS Normal Cost Surcharge Amount	\$ 56,800	\$ 54,749
Unfunded Liability Surcharges		
1. Payroll for Municipals Under CPB	\$ 975,114,541	\$ 931,158,325
2. CPB UAL Surcharge Rate	1.42%	1.42%
3. Amortization Factor*	N/A	0.964935
4. CPB UAL Surcharge Amount	\$ -	\$ 12,758,797
5. Payroll for Municipals Going from CPB to ACPS	\$ 970,120,939	\$ 926,472,559
6. CPB to ACPS UAL Surcharge Rate	1.51%	1.51%
7. Amortization Factor**	8.725329	9.340926
8. CPB to ACPS UAL Surcharge Amount	\$ 127,815,833	\$ 130,677,082
9. Payroll for Noncontributory ACPS	\$ 9,466,742	\$ 9,124,859
10. CPB to ACPS UAL Surcharge Rate	6.84%	6.84%
11. Amortization Factor**	8.725329	9.340926
12. CPB to ACPS UAL Surcharge Amount	\$ 5,649,870	\$ 5,830,049

* The remaining amortization period is 0 years in 2020 and 1 year in 2019.

** The remaining amortization period is 11 years in 2020 and 12 years in 2019.



Contributions - LEOPS

Table IV-3
Detailed Actuarial Information
Law Enforcement Officers Pension System (LEOPS)

	Actuarial Valuation Performed		% Change
	June 30, 2020 (for FY 2022)	June 30, 2019 (for FY 2021)	
A. Demographic Information			
Number of:			
Active Members	1,107	1,068	3.65%
Retired Members and Beneficiaries	506	470	7.66%
Vested Deferred Members	120	123	(2.44)%
Annual Salaries of Active Members	\$ 72,400,262	\$ 66,981,482	8.09%
Annual Retirement Allowance for Retired Members and Beneficiaries [#]	\$ 19,523,934	\$ 17,994,374	8.50%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	\$ 513,288,036	\$ 483,498,858	6.16%
2. Actuarial Value of Assets	\$ 351,605,379	\$ 321,670,508	9.31%
3. Funded Ratio	68.50%	66.53%	
4. Unfunded Actuarial Accrued Liability (1-2)	\$ 161,682,657	\$ 161,828,350	(0.09)%
5. New Entrant Liability Balances (Table III-5)	(13,322,259)	(13,623,515)	2.21%
6. Pooled Unfunded Actuarial Accrued Liability (4-5)	\$ 175,004,916	\$ 175,451,865	(0.25)%
7. UAAL Projected to Contribution Period	\$ 173,781,873	\$ 177,115,685	
8. Amortization Factors*	13.012572	13.456519	
9. Unfunded Amortization Payment	\$ 13,354,921	\$ 13,162,073	1.47%
10. UAL Amortization Rate	18.17%	18.77%	
11. Total Projected Payroll	\$ 73,513,901	\$ 68,011,771	8.09%
12. Employer Normal Cost	\$ 11,613,002	\$ 10,824,207	
13. Employer Normal Cost Adjusted for Timing	\$ 11,791,630	\$ 10,990,702	7.29%
14. Total Normal Cost Rate	22.94%	23.16%	
15. Employee Contribution	6.90%	7.00%	
16. Employer Normal Cost Rate	16.04%	16.16%	
17. Basic Employer Cost Rate (10 + 16)	34.21%	34.93%	

* The remaining amortization period is 19 years in 2020 and 20 years in 2019.

[#] Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2020 and July 1, 2019, respectively.



Contributions - CORS

Table IV-4
Detailed Actuarial Information
Correctional Officers' Retirement System (CORS)

	Actuarial Valuation Performed		
	June 30, 2020 (for FY 2022)	June 30, 2019 (for FY 2021)	% Change
A. Demographic Information			
Number of:			
Active Members	135	97	39.18%
Retired Members and Beneficiaries	47	40	17.50%
Vested Deferred Members	6	3	100.00%
Annual Salaries of Active Members	\$ 7,937,330	\$ 5,583,279	42.16%
Annual Retirement Allowance for Retired Members and Beneficiaries [#]	\$ 1,246,509	\$ 1,069,529	16.55%
B. Actuarial Results			
1. Entry Age Actuarial Accrued Liability	\$ 38,903,850	\$ 27,819,644	39.84%
2. Actuarial Value of Assets	\$ 33,375,701	\$ 25,731,728	29.71%
3. Funded Ratio	85.79%	92.49%	
4. Unfunded Actuarial Accrued Liability (1-2)	\$ 5,528,149	\$ 2,087,916	164.77%
5. New Entrant Liability Balances (Table III-6)	<u>1,675,514</u>	<u>-</u>	
6. Pooled Unfunded Actuarial Accrued Liability (4-5)	\$ 3,852,635	\$ 2,087,916	84.52%
7. UAAL Projected to Contribution Period	\$ 3,993,779	\$ 2,077,917	
8. Amortization Factors*	15.770872	16.104385	
9. Unfunded Amortization Payment	\$ 253,238	\$ 129,028	96.27%
10. UAL Amortization Rate	3.14%	2.21%	
11. Total Projected Payroll	\$ 8,059,420	\$ 5,669,159	42.16%
12. Employer Normal Cost	\$ 628,637	\$ 416,513	
13. Employer Normal Cost Adjusted for Timing	\$ 638,306	\$ 422,919	50.93%
14. Total Normal Cost Rate	12.92%	12.46%	
15. Employee Contribution	<u>5.00%</u>	<u>5.00%</u>	
16. Employer Normal Cost Rate	7.92%	7.46%	
17. Basic Employer Cost Rate (10 + 16)	11.06%	9.67%	

* The remaining amortization period is 26 years in 2020 and 27 years in 2019.

[#] Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2020 and July 1, 2019, respectively.



APPENDIX A

MEMBERSHIP INFORMATION

Membership Information

June 30, 2020

The State Retirement Agency provided the actuary with all necessary membership data. This information was gathered as of June 30, 2020.

In this section we present a review of the current membership statistics. First, we summarize the membership count, payroll and benefits by status and system. Following this summary, active membership distributions are examined by age and service.

Membership Information June 30, 2020

		Active Members		Retirees and Beneficiaries					Vested Former Members (Includes Inactives)	Total
		Number	Salary	Number	Benefits#	Avg. Monthly Benefit	Avg. Age	Avg. Age at Ret.*	Number	Number
Employees' Retirement	Total	33	\$ 2,213,080							
	Vested	33	\$ 2,213,080							
	Non-vested	0	\$ -	2,509	\$ 59,199,871	\$ 1,966	79.7	59.7	15	2,557
Employees' Pension	Total	24,889	\$ 1,236,064,438							
	Vested	11,781	\$ 687,385,795							
	Non-vested	13,108	\$ 548,678,643	16,484	\$ 228,566,778	\$ 1,155	71.0	63.2	6,196	47,569
LEOPS	Total	1,107	\$ 72,400,262							
	Vested	574	\$ 43,584,520							
	Non-vested	533	\$ 28,815,742	506	\$ 19,523,934	\$ 3,215	57.6	52.5	120	1,733
CORS Municipal	Total	135	\$ 7,937,330							
	Vested	70	\$ 4,698,953							
	Non-vested	65	\$ 3,238,377	47	\$ 1,246,509	\$ 2,210	60.3	56.4	6	188
Total Systems	Total	26,164	\$ 1,318,615,110							
	Vested	12,458	\$ 737,882,348							
	Non-vested	13,706	\$ 580,732,762	19,546	\$ 308,537,093	\$ 1,315	71.7	62.5	6,337	52,047

* Includes normal and early service retirees only.

Retiree benefit amounts include the cost-of-living adjustment granted July 1, 2020.



Membership Information June 30, 2020

Maryland State Retirement and Pension System Active Membership Statistics June 30, 2020				
System	Number	Average Age	Average Credited Service	Average Salary
Employees' Retirement	33	65.0	43.5	\$67,063
Employees' Pension	24,889	49.3	10.5	49,663
Employees' Combined System	24,922	49.3	10.6	49,686
LEOPS – Municipal	1,107	39.2	10.6	65,402
CORS	135	41.6	11.7	58,795
TOTAL SYSTEMS	26,164	48.8	10.6	\$50,398

Active Membership by PGU Type

	Count		Payroll	Average	
	PGU's	Members		Age	Elig. Service
Board of Education	19	12,930	\$ 555,684,042	50.3	11.2
County Govt.	12	7,852	495,720,775	47.5	12.1
City/Town Govt.	57	3,404	182,182,639	45.9	10.7
City Agency/Authority	1	15	523,444	53.4	15.5
Community College	9	835	38,180,400	49.0	10.0
County Agency/Authority	10	225	11,690,742	46.9	12.1
Other	17	758	27,327,506	49.3	9.1
Library	7	145	7,305,562	49.3	9.3
Total	132	26,164	1,318,615,110	48.8	11.3

Membership Information

June 30, 2020

Location Code	PGU Type	Name	Plans
6504	Comm College	Allegheny Community College	ACPB, RCPB
6502	Board of Ed.	Allegheny County Board of Education	ACPB, RCPB
6511	County	Allegheny County Government	ERS, ACPB, RCPB, LEOPS
6533	Co Agency	Allegheny County Housing Authority	Withdrawn
6506	Library	Allegheny County Library	ACPB
6530	Co Agency	Allegheny County Transit Authority	ACPB, RCPB
6625	City/Town	Annapolis, City of	ACPB, RCPB
6604	Comm College	Anne Arundel Community College	ACPB, RCPB
6602	Board of Ed.	Anne Arundel County Board of Education	ERS, ACPB, RCPB
6628	Other	Anne Arundel County Community Action Agency, Inc.	NCPB
6611	County	Anne Arundel County Government	Withdrawn
6732	Other	Baltimore Metropolitan Council	ACPB
8827	City/Town	Berlin, Town of	ACPB, RCPB
8140	City/Town	Berwyn Heights, Town of	ACPB, RCPB
8031	City/Town	Bethesda Fire Department	Withdrawn
8139	City/Town	Bladensburg, Town of	ACPB, RCPB
8137	City/Town	Bowie, City of	LEOPS
7525	City/Town	Brunswick, City of	ACPB, RCPB
6902	Board of Ed.	Calvert County Board of Education	ACPB, RCPB
7425	City/Town	Cambridge, City of	ACPB, RCPB, LEOPS
7426	City Agency	Cambridge Housing Authority	ACPB
7002	Board of Ed.	Caroline County Board of Education	ERS, ACPB, RCPB
7012	Co Agency	Caroline County Roads Board	Withdrawn
7030	Co Agency	Caroline County Sheriff Deputies	LEOPS
7102	Board of Ed.	Carroll County Board of Education	ERS, ACPB, RCPB
7106	Library	Carroll County Public Library	ACPB, RCPB
7127	Other	Carroll Soil Conservation District	ACPB, RCPB
7528	Other	Catocin & Frederick County Soil Conservation District	ACPB, RCPB
7202	Board of Ed.	Cecil County Board of Education	ACPB, RCPB
7211	County	Cecil County Government	ERS, ACPB, RCPB
7206	Library	Cecil County Library	ACPB, RCPB
8226	City/Town	Centreville, Town of	ACPB, RCPB
6626	City/Town	Chesapeake Bay Commission	ACPB, RCPB
7925	City/Town	Chestertown, Town of	ACPB, RCPB, LEOPS
8134	City/Town	Cheverly, Town of	ACPB, RCPB, LEOPS
8032	City/Town	Chevy Chase Fire Department	Withdrawn
7304	Comm College	College of Southern Maryland	ERS, ACPB, RCPB
8143	City/Town	College Park, City of	RCPB
8426	City/Town	Crisfield, City of	NCPB
8427	City Agency	Crisfield Housing Authority	NCPB
6526	City/Town	Cumberland, City of	ERS, ACPB, RCPB
6531	City/Town	Cumberland, City of -Police Department	LEOPS
7026	City/Town	Denton, Town of	ACPB, RCPB
8132	City/Town	District Heights, City of	ACPB, RCPB
7402	Board of Ed.	Dorchester County Board of Education	ACPB, RCPB
7411	County	Dorchester County Government	ERS, ACPB, RCPB, LEOPS
7412	Co Agency	Dorchester County Roads Board	ACPB, RCPB
7480	Co Agency	Dorchester County Sanitary Commission	ACPB, RCPB
8728	Library	Eastern Shore Regional Library	ACPB, RCPB
8142	City/Town	Edmonston, Town of	ACPB, RCPB
7225	City/Town	Elkton, Town of	NCPB
7531	City/Town	Emmitsburg, Town of	ECPB
7028	City/Town	Federalsburg, Town of	ACPB, RCPB
7502	Board of Ed.	Frederick County Board of Education	ERS, ACPB, RCPB
6536	City/Town	Frostburg, City of	ECPB
8727	City/Town	Fruitland, City of	ACPB, RCPB, LEOPS
7602	Board of Ed.	Garrett County Board of Education	ACPB, RCPB
7611	County	Garrett County/ Western Maryland Health Planning Council	NCPB
7680	Other	Garrett County Community Action Committee	ACPB, RCPB
7612	Co Agency	Garrett County Roads Board	ERS, NCPB
8125	City/Town	Greenbelt, City of	ERS, ACPB, RCPB, LEOPS
7029	City/Town	Greensboro, Town of	ACPB, RCPB
8625	City/Town	Hagerstown, City of	ERS, ACPB, RCPB
8604	Comm College	Hagerstown Community College	ACPB, RCPB
7130	City/Town	Hampstead, Town of	LEOPS
8628	City/Town	Hancock, Town of	Withdrawn
7702	Board of Ed.	Harford County Board of Education	ERS, ACPB, RCPB
7704	Comm College	Harford County Community College	ERS, ACPB, RCPB
7711	County	Harford County Government	ERS, ACPB, RCPB, LEOPS
7706	Library	Harford County Library	ACPB, RCPB
7716	Other	Harford County Liquor Control Board (1982)	Withdrawn
7718	Other	Harford County Liquor Board	ACPB, RCPB
7804	Comm College	Howard Community College	ACPB, RCPB
7802	Board of Ed.	Howard County Board of Education	ACPB, RCPB
7880	Other	Howard County Community Action Committee	ACPB, RCPB
7427	City/Town	Hurlock, Town of	ACPB, RCPB, LEOPS
8126	City/Town	Hyattsville, City of	ACPB, RCPB, LEOPS



Membership Information

June 30, 2020

Location Code	PGU Type	Name	Plans
7902	Board of Ed.	Kent County Board of Education	ACPB, RCPB
7911	County	Kent County Government	ACPB, RCPB, LEOPS
7927	Other	Kent Soil And Water Conservation District	ACPB, RCPB
8138	City/Town	Landover Hills, Town of	ACPB, RCPB
7326	City/Town	LaPlata, Town of	ACPB, RCPB
6735	Other	Lexington Market Authority	Withdrawn
7126	City/Town	Manchester, Town of	ERS, ACPB, RCPB, LEOPS
6731	Other	Maryland Health & Higher Educational Facilities Authority	ACPB, RCPB
8026	Other	Maryland National Capital Park & Planning Commission	Withdrawn
7527	City/Town	Middletown, Town of	ECPB
8004	Comm College	Montgomery College	ACPB, RCPB
8002	Board of Ed.	Montgomery County Board of Education	Withdrawn
8011	Co Agency	Montgomery County Government	Withdrawn
8006	Library	Montgomery County Public Library	Withdrawn
8144	City/Town	Morningside, Town of	RCPB
7129	City/Town	Mount Airy, Town of	ACPB, RCPB, LEOPS
8127	City/Town	Mount Rainier, City of	ACPB, RCPB
8129	City/Town	New Carrollton, City of	ERS, ACPB, RCPB
6925	City/Town	North Beach, Town of	NCPB
8925	Other	Northeast Maryland Waste Disposal Authority	ACPB, RCPB
7625	City/Town	Oakland, Town of	ACPB, RCPB
8528	City/Town	Oxford, Town of	ACPB, RCPB
8825	City/Town	Pocomoke, City of	ACPB, RCPB, LEOPS
7025	City/Town	Preston, Town of	ACPB, RCPB
8104	Comm College	Prince Georges Community College	ACPB, RCPB
8102	Board of Ed.	Prince Georges County Board of Education	ERS, ACPB, RCPB
8135	Other	Prince Georges County Crossing Guards	NCPB
8111	County	Prince Georges County Government	ERS, NCPB
8106	Library	Prince Georges County Memorial Library	ACPB, RCPB
8428	City/Town	Princess Anne, Town of	ACPB, RCPB, LEOPS
8202	Board of Ed.	Queen Anne's County Board of Education	ACPB, RCPB
8211	County	Queen Anne's County Government	ACPB, RCPB, LEOPS, CORS
8225	City/Town	Queenstown, Town of	ACPB, RCPB
7027	City/Town	Ridgely, Town of	ACPB, RCPB
7926	City/Town	Rockhall, Town of	ACPB, RCPB
8725	City/Town	Salisbury, City of	ERS, ACPB, RCPB, LEOPS
8780	Other	Shore Up!	ACPB, RCPB
8826	City/Town	Snow Hill, Town of	ACPB, RCPB
8402	Board of Ed.	Somerset County Board of Education	ACPB, RCPB
8411	County	Somerset County Government	ACPB, RCPB
8429	Co Agency	Somerset County Economic Development Commission	ACPB
8425	Co Agency	Somerset County Sanitary District, Inc.	ACPB, RCPB
7380	Other	Southern MD Tri-County Community Action Committee	ACPB, RCPB
8302	Board of Ed.	St. Mary's County Board of Education	ERS, ACPB, RCPB
8311	County	St. Mary's County Government	ERS, ACPB, RCPB
8333	Co Agency	St. Mary's County Housing Authority	ACPB, RCPB
8327	Co Agency	St. Mary's County Metropolitan Commission	ACPB, RCPB
8325	Other	St. Mary's Nursing Home	Withdrawn
8525	City/Town	St. Michaels, Town of	ACPB, RCPB, LEOPS
7131	City/Town	Sykesville, Town of	RCPB, LEOPS
8030	City/Town	Takoma Park, City of	ERS, ACPB, RCPB
8502	Board of Ed.	Talbot County Board of Education	ACPB, RCPB
8511	County	Talbot County Government	ERS, ACPB, RCPB
7128	City/Town	Taneytown, Town of	ECPB, LEOPS
7529	City/Town	Thurmont, City of	ACPB, RCPB
8834	Other	Tri-County Council For Lower Eastern Shore	ACPB, RCPB
6534	Other	Tri-County Council For Western Maryland	ACPB, RCPB
6740	Other	University of Maryland Medical System	Withdrawn
8141	City/Town	University Park, Town of	ACPB, RCPB
8131	City/Town	Upper Marlboro, Town of	ACPB, RCPB
7526	City/Town	Walkersville, Town of	ACPB, RCPB
8602	Board of Ed.	Washington County Board of Education	ACPB, RCPB
8618	Other	Washington County Liquor Board	ACPB, RCPB
8611	County	Washington County Government	Withdrawn
8610	Library	Washington County Library	ACPB, RCPB
8614	Other	Washington County Board of License Commissioners (1972)	Withdrawn
8612	Co Agency	Washington County Roads Board	Withdrawn
8626	Co Agency	Washington County Sanitary District	Withdrawn
6529	Other	Western Maryland Health Planning Agency	Withdrawn
7125	City/Town	Westminster, City of	ACPB, RCPB, LEOPS
8726	Co Agency	Wicomico County Department of Recreation and Parks	Withdrawn
8712	Co Agency	Wicomico County Roads Board	Withdrawn
8802	Board of Ed.	Worcester County Board of Education	ACPB, RCPB
8811	County	Worcester County Government	ACPB, RCPB, CORS, LEOPS
8816	Other	Worcester County Liquor Control Board	ACPB, RCPB
8704	Comm College	Wor-Wic Community College	ACPB, RCPB



APPENDIX B

ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions and Methods

A. Actuarial Assumptions

Actuarial assumptions were developed in connection with a study of 2014-2018 experience in the Experience Study report dated August 16, 2019, which includes the rationale for the assumptions. The assumptions were adopted by the Board on August 20, 2019. Actuarial assumptions are based on a combination of future expectations and historical data. Specific assumptions are shown below.

	1. Valuation Interest Rate	2. Annual Rate of Increase in Cost of			3. Aggregate Payroll Growth
		Service Before 7/1/11	Service After 7/1/11		
Employees' Retirement	7.40%	2.60%	2.60%	*	3.10%
Employees' Pension	7.40%	2.19%	1.42%	**,**	3.10%
LEOPS	7.40%	2.19%	1.42%	**,**,#	3.10%
Correctional Officers' Retirement System	7.40%	2.60%	1.42%	**	3.10%

* A rate of 2.19% is applicable for members with a COLA cap of 3%, a rate of 2.57% is applicable for members with a COLA cap of 5%, and a 2.60% COLA is applicable for members with no COLA cap.

** A 2.19% simple rate is applicable for municipal members of these Systems, who do not elect to be covered under the Contributory plan.

*** For benefits attributable to service on or after July 1, 2011, a 1.42% COLA was assumed. The increase is capped at the lesser of 2.5% and increase in CPI if the most recent calendar year market value rate of return was greater than or equal to the assumed rate (currently 7.40% as approved by the Board of Trustees). The increase is capped at the lesser of 1% and increase in CPI if the market value return was less than the assumed rate of 7.40%.

For groups whose COLA is capped at 5%, a 2.57% COLA was assumed. A 2.60% COLA was assumed for groups with an unlimited COLA.

The valuation interest rate is net of investment expenses. Administrative expenses are assumed to be paid directly by employers external to the plan assets. Price inflation is assumed to be 2.60% and wage inflation (i.e., aggregate payroll growth) is assumed to be 3.10%.

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Years of Service	3. Annual Rates of Salary Increases			
	Employees' Retirement	Employees' Pension	LEOPS	Correctional Officers
0	6.85%	6.85%	7.35%	8.35%
1	6.60%	6.60%	7.35%	7.35%
2	6.10%	6.10%	7.10%	3.85%
3	5.35%	5.35%	5.60%	3.35%
4	4.85%	4.85%	5.60%	3.35%
5	4.60%	4.60%	5.60%	3.35%
6	4.60%	4.60%	5.60%	3.35%
7	4.60%	4.60%	5.60%	3.10%
8	4.60%	4.60%	5.60%	3.10%
9	4.35%	4.35%	5.60%	3.10%
10	4.35%	4.35%	5.60%	3.10%
11	4.35%	4.35%	5.60%	3.10%
12	4.35%	4.35%	5.60%	3.10%
13	4.35%	4.35%	5.60%	3.10%
14	4.10%	4.10%	5.60%	3.10%
15	4.10%	4.10%	5.60%	3.10%
16	3.60%	3.60%	5.60%	3.10%
17	3.60%	3.60%	5.60%	3.10%
18	3.60%	3.60%	5.60%	3.10%
19	3.60%	3.60%	5.60%	3.10%
20	3.60%	3.60%	5.10%	3.10%
21	3.60%	3.60%	5.10%	3.10%
22	3.60%	3.60%	5.10%	3.10%
23	3.60%	3.60%	5.10%	3.10%
24	3.60%	3.60%	5.10%	3.10%
25	3.60%	3.60%	5.10%	3.10%
26	3.60%	3.60%	5.10%	3.10%
27	3.60%	3.60%	5.10%	3.10%
28	3.60%	3.60%	5.10%	3.10%
29	3.60%	3.60%	5.10%	3.10%
30+	3.10%	3.10%	3.60%	3.10%

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Sample Ages	Years of Service	4. Annual Rates of Withdrawal							
		Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
		Male	Female	Male	Female	Male	Female	Male	Female
All	0	19.00%	19.00%	19.00%	19.00%	14.00%	14.00%	14.00%	14.00%
	1	14.50%	15.00%	14.50%	15.00%	9.50%	9.50%	10.00%	14.00%
	2	12.00%	12.50%	12.00%	12.50%	8.00%	8.00%	8.00%	12.00%
	3	10.50%	11.00%	10.50%	11.00%	8.00%	8.00%	7.50%	10.00%
	4	9.00%	9.50%	9.00%	9.50%	6.50%	6.50%	7.00%	10.00%
	5	7.25%	7.00%	7.25%	7.00%	5.00%	5.00%	5.50%	8.50%
	6	6.50%	7.00%	6.50%	7.00%	4.50%	4.50%	5.00%	8.50%
	7	6.00%	6.00%	6.00%	6.00%	3.75%	3.75%	4.00%	6.00%
	8	5.50%	5.50%	5.50%	5.50%	3.50%	3.50%	3.50%	6.00%
	9	4.50%	4.50%	4.50%	4.50%	3.50%	3.50%	3.50%	5.00%
25	10 & Over	4.50%	4.50%	4.50%	4.50%	3.50%	3.50%	3.50%	5.00%
30		4.00%	4.50%	4.00%	4.50%	2.10%	2.10%	3.00%	4.00%
35		3.50%	3.75%	3.50%	3.75%	1.90%	1.90%	2.00%	3.50%
40		3.00%	3.00%	3.00%	3.00%	1.75%	1.75%	2.00%	3.25%
45		3.00%	2.75%	3.00%	2.75%	1.00%	1.00%	2.00%	3.25%
50		2.50%	2.50%	2.50%	2.50%	1.00%	1.00%	2.00%	3.25%
55		5.00%	5.00%	5.00%	5.00%	1.00%	1.00%	2.00%	3.25%
60		5.00%	5.00%	5.00%	5.00%	1.00%	1.00%	2.00%	3.25%
65	5.00%	5.00%	5.00%	5.00%	1.00%	1.00%	2.00%	3.25%	

For active members of Employees' Retirement (Regular) and Pension Systems, the probability of electing a refund upon withdrawal (if eligible for a vested benefit) is 15% upon first becoming vested, grading down to 0% upon reaching first eligibility for retirement. Active members that terminate from the other Systems that are eligible for a deferred vested benefit are assumed to leave their contributions in the plan and 100 percent are assumed to elect a deferred benefit.

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Rates of Mortality

Group	Status and Gender	Base Mortality Table	Scale / Multiplier	Set Forward	Projection Base Year	Projection Scale
ECS (excluding CORS)	Healthy Male Retirees	PubG-2010 Male Healthy Retiree	111%	0	2010	MP-2018
	Healthy Female Retirees	PubG-2010 Female Healthy Retiree	109%	0	2010	MP-2018
	Disabled Male Retirees	PubG-2010 Male Disabled Retiree	134%	0	2010	MP-2018
	Disabled Female Retirees	PubG-2010 Female Disabled Retiree	99%	0	2010	MP-2018
	Active Males	PubG-2010 Male Employee	100%	0	2010	MP-2018
	Active Females	PubG-2010 Female Employee	100%	0	2010	MP-2018
LEOPS and CORS	Healthy Male Retirees	PubS-2010 Male Healthy Retiree	108%	0	2010	MP-2018
	Healthy Female Retirees	PubS-2010 Female Healthy Retiree	103%	0	2010	MP-2018
	Disabled Male Retirees	PubS-2010 Male Disabled Retiree	122%	0	2010	MP-2018
	Disabled Female Retirees	PubS-2010 Female Disabled Retiree	121%	0	2010	MP-2018
	Active Males	PubS-2010 Male Employee	100%	0	2010	MP-2018
	Active Females	PubS-2010 Female Employee	100%	0	2010	MP-2018

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

5. Actuarial Present Value of \$1 Monthly for Life (without COLA) - Healthy Members								
Sample Ages in 2020	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	146.80	151.22	146.80	151.22	148.25	150.92	148.25	150.92
55	139.90	145.52	139.90	145.52	140.97	144.42	140.97	144.42
60	131.25	137.95	131.25	137.95	131.63	136.14	131.63	136.14
65	120.55	128.17	120.55	128.17	120.22	126.05	120.22	126.05
70	107.30	115.97	107.30	115.97	106.53	113.88	106.53	113.88
75	91.61	101.15	91.61	101.15	90.55	99.43	90.55	99.43
80	74.27	84.06	74.27	84.06	73.12	83.18	73.12	83.18

5. Future Life Expectancy (Years) - Healthy Members								
Sample Ages in 2020	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	34.66	37.97	34.66	37.97	35.00	37.56	35.00	37.56
55	29.79	32.98	29.79	32.98	29.93	32.43	29.93	32.43
60	25.11	28.10	25.11	28.10	25.06	27.49	25.06	27.49
65	20.67	23.38	20.67	23.38	20.49	22.84	20.49	22.84
70	16.48	18.92	16.48	18.92	16.25	18.50	16.25	18.50
75	12.62	14.75	12.62	14.75	12.39	14.49	12.39	14.49
80	9.23	11.00	9.23	11.00	9.03	10.92	9.03	10.92

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

5. Actuarial Present Value of \$1 Monthly for Life (without COLA) - Disabled Members								
Sample Ages	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	117.27	131.51	117.27	131.51	143.14	145.53	117.27	131.51
55	109.18	125.75	109.18	125.75	135.23	138.38	109.18	125.75
60	101.49	119.46	101.49	119.46	125.32	129.80	101.49	119.46
65	93.49	111.98	93.49	111.98	113.81	119.97	93.49	111.98
70	84.18	102.17	84.18	102.17	100.39	108.40	84.18	102.17
75	72.75	89.76	72.75	89.76	84.72	94.49	72.75	89.76
80	59.83	75.71	59.83	75.71	68.30	78.15	59.83	75.71

5. Future Life Expectancy (Years) - Disabled Members								
Sample Ages	Employees' Retirement		Employees' Pension		LEOPS		Correctional Officers	
	Male	Female	Male	Female	Male	Female	Male	Female
50	22.41	29.21	22.41	29.21	32.25	34.51	22.41	29.21
55	19.23	25.64	19.23	25.64	27.45	29.67	19.23	25.64
60	16.49	22.29	16.49	22.29	22.88	25.12	16.49	22.29
65	13.99	19.05	13.99	19.05	18.67	20.91	13.99	19.05
70	11.58	15.80	11.58	15.80	14.80	17.00	11.58	15.80
75	9.19	12.62	9.19	12.62	11.25	13.33	9.19	12.62
80	6.96	9.72	6.96	9.72	8.23	9.94	6.96	9.72

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Accidental Death Mortality Rates		
LEOPS		
Sample Ages in 2020	Male	Female
20	0.0120%	0.0050%
25	0.0122%	0.0068%
30	0.0155%	0.0100%
35	0.0183%	0.0135%
40	0.0205%	0.0164%
45	0.0239%	0.0195%
50	0.0329%	0.0262%
55	0.0508%	0.0386%
60	0.0819%	0.0531%
65	0.1244%	0.0657%
70	0.2162%	0.1232%
75	0.3905%	0.2464%
80	0.7294%	0.5032%

An additional margin for future mortality improvements is included in the projection scale.

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

		6. Annual Rates of Disability															
		Employees' Retirement				Employees' Pension				LEOPS				Correctional Officers			
Sample Ages	Ordinary		Accidental		Ordinary		Accidental		Ordinary		Accidental		Ordinary		Accidental		
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
25	0.11313%	0.07029%	0.03600%	0.01717%	0.11313%	0.07029%	0.03600%	0.01717%	0.14280%	0.64515%	0.30940%	0.39100%	0.08171%	0.10404%	0.05950%	0.07803%	
30	0.14499%	0.06948%	0.03775%	0.01802%	0.14499%	0.06948%	0.03775%	0.01802%	0.18305%	0.69121%	0.33053%	0.34913%	0.10472%	0.10809%	0.07140%	0.07803%	
35	0.18117%	0.12015%	0.05275%	0.02525%	0.18117%	0.12015%	0.05275%	0.02525%	0.22880%	0.69754%	0.40284%	0.34338%	0.13085%	0.18684%	0.09010%	0.07803%	
40	0.24003%	0.22194%	0.06925%	0.03230%	0.24003%	0.22194%	0.06925%	0.03230%	0.30310%	0.81785%	0.46524%	0.35100%	0.17336%	0.34524%	0.11390%	0.08670%	
45	0.32193%	0.32850%	0.06150%	0.03349%	0.32193%	0.32850%	0.06150%	0.03349%	0.40650%	0.99165%	0.51610%	0.35225%	0.23251%	0.51102%	0.14280%	0.09971%	
50	0.46503%	0.56520%	0.05475%	0.03528%	0.46503%	0.56520%	0.05475%	0.03528%	0.54820%	1.22801%	0.72134%	0.45213%	0.33248%	0.73269%	0.20230%	0.13005%	
55	0.65709%	0.72414%	0.05163%	0.03451%	0.65709%	0.72414%	0.05163%	0.03451%	0.54820%	1.22801%	0.94120%	0.70025%	0.42751%	1.01484%	0.24990%	0.18207%	
60	0.66618%	0.81234%	0.05275%	0.03740%	0.66618%	0.81234%	0.05275%	0.03740%	0.54820%	1.22801%	1.16366%	1.23825%	0.52449%	1.40238%	0.24990%	0.18207%	



Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Ages	7. Annual Rates of Normal Retirement													
	Employees' Retirement		Employees' Pension				LEOPS				Correctional Officers			
	All Years of Service		At Least 30 Years		Less Than 30 Years		At Least 25 Years		Less Than 25 Years		At Least 20 Years		Less Than 20 Years	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
40							40.0%	40.0%			25.0%	25.0%		
41							40.0%	40.0%			18.0%	18.0%		
42							40.0%	40.0%			18.0%	18.0%		
43							40.0%	40.0%			18.0%	18.0%		
44							40.0%	40.0%			18.0%	18.0%		
45	17.0%	16.0%	12.0%	11.0%			40.0%	40.0%			15.0%	15.0%		
46	17.0%	16.0%	12.0%	11.0%			40.0%	40.0%			15.0%	15.0%		
47	17.0%	16.0%	12.0%	11.0%			40.0%	40.0%			15.0%	15.0%		
48	17.0%	16.0%	12.0%	13.0%			40.0%	40.0%			13.0%	13.0%		
49	17.0%	16.0%	10.0%	11.0%			40.0%	40.0%			13.0%	13.0%		
50	10.0%	11.0%	10.0%	11.0%			25.0%	25.0%	5.0%	5.0%	13.0%	13.0%		
51	10.0%	11.0%	10.0%	11.0%			25.0%	25.0%	5.0%	5.0%	12.0%	12.0%		
52	10.0%	11.0%	10.0%	11.0%			25.0%	25.0%	5.0%	5.0%	12.0%	12.0%		
53	10.0%	10.0%	10.0%	11.0%			20.0%	20.0%	4.0%	4.0%	12.0%	12.0%		
54	8.0%	10.0%	10.0%	11.0%			30.0%	30.0%	4.0%	4.0%	12.0%	12.0%		
55	13.0%	10.0%	10.0%	11.0%			30.0%	30.0%	4.0%	4.0%	12.0%	12.0%	3.0%	3.0%
56	8.0%	10.0%	10.0%	11.0%			30.0%	30.0%	5.0%	5.0%	11.0%	11.0%	3.0%	3.0%
57	8.0%	10.0%	10.0%	11.0%			20.0%	20.0%	5.0%	5.0%	11.0%	11.0%	3.0%	3.0%
58	8.0%	13.0%	10.0%	11.0%			20.0%	20.0%	5.0%	5.0%	11.0%	11.0%	3.0%	3.0%
59	11.0%	13.0%	10.0%	11.0%			20.0%	20.0%	5.0%	5.0%	11.0%	11.0%	3.0%	3.0%
60	13.0%	13.0%	10.0%	14.0%			25.0%	25.0%	6.0%	6.0%	11.0%	11.0%	3.0%	3.0%
61	11.0%	13.0%	13.0%	14.0%			25.0%	25.0%	6.0%	6.0%	13.0%	13.0%	3.0%	3.0%
62	27.0%	25.0%	23.0%	26.0%	16.0%	18.0%	30.0%	30.0%	15.0%	15.0%	35.0%	35.0%	10.0%	10.0%
63	23.0%	22.0%	23.0%	22.0%	13.0%	16.0%	30.0%	30.0%	15.0%	15.0%	25.0%	25.0%	5.0%	5.0%
64	19.0%	22.0%	18.0%	20.0%	13.0%	14.0%	30.0%	30.0%	15.0%	15.0%	25.0%	25.0%	12.0%	12.0%
65	20.0%	22.0%	17.0%	20.0%	13.0%	16.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	12.0%	12.0%
66	25.0%	22.0%	25.0%	25.0%	18.0%	19.0%	50.0%	50.0%	30.0%	30.0%	30.0%	30.0%	20.0%	20.0%
67	25.0%	25.0%	25.0%	25.0%	16.0%	19.0%	50.0%	50.0%	30.0%	30.0%	30.0%	30.0%	15.0%	15.0%
68	18.0%	25.0%	20.0%	22.0%	16.0%	18.0%	70.0%	70.0%	30.0%	30.0%	30.0%	30.0%	10.0%	10.0%
69	18.0%	25.0%	18.0%	22.0%	16.0%	18.0%	70.0%	70.0%	30.0%	30.0%	35.0%	35.0%	20.0%	20.0%
70	20.0%	20.0%	22.0%	22.0%	16.0%	18.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
71	20.0%	20.0%	20.0%	22.0%	16.0%	18.0%								
72	20.0%	20.0%	25.0%	22.0%	17.0%	18.0%								
73	20.0%	20.0%	22.0%	25.0%	17.0%	18.0%								
74	20.0%	20.0%	22.0%	25.0%	17.0%	18.0%								
75	100.0%	100.0%	100.0%	100.0%	18.0%	18.0%								
76					18.0%	18.0%								
77 & Over					100.0%	100.0%								



Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

Ages	7. Annual Rates of Early Retirement					
	Employees' Retirement		Employees' Pension			
	Male	Female	Non-Reformed		Reformed	
			Male	Female	Male	Female
40	5.0%	5.0%				
41	5.0%	5.0%				
42	5.0%	5.0%				
43	5.0%	5.0%				
44	5.0%	5.0%				
45	5.0%	5.0%				
46	5.0%	5.0%				
47	5.0%	5.0%				
48	5.0%	5.0%				
49	5.0%	5.0%				
50	5.0%	5.0%				
51	5.0%	5.0%				
52	5.0%	5.0%				
53	5.0%	5.0%				
54	5.0%	5.0%				
55	5.0%	5.0%	1.8%	2.2%		
56	5.0%	5.0%	1.5%	2.5%		
57	5.0%	5.0%	1.5%	2.5%		
58	5.0%	5.0%	1.5%	3.5%		
59	5.0%	5.0%	2.0%	3.0%		
60			3.0%	4.5%	7.8%	11.7%
61			5.0%	5.0%	5.0%	5.0%
62					5.5%	5.5%
63					6.0%	6.0%
64					6.5%	6.5%

Ages	8. Additional Rates to Add to Annual Rates of Normal Retirement at Age of First Eligibility			
	Employees' Pension Reformed			
	At Least 30 Years		Less Than 30 Years	
	Male	Female	Male	Female
55 and Under	35.0%	35.0%		
56	28.0%	28.0%		
57	21.0%	21.0%		
58	14.0%	14.0%		
59	7.0%	7.0%		
60	0.0%	0.0%		
61	0.0%	0.0%		
62	0.0%	0.0%		
63	0.0%	0.0%		
64	0.0%	0.0%		
65+	0.0%	0.0%	25.0%	25.0%

Actuarial Assumptions and Methods

A. Actuarial Assumptions, cont.

9. Social Security Covered Compensation

Employees' Retirement	Not applicable
Employees' Pension	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.10% per annum compounded increase in the 2020 Social Security Maximum Taxable Wage Base.
LEOPS	Future covered compensation levels, used to estimate member contributions and retirement allowances, were calculated using a 3.10% per annum compounded increase in the 2020 Social Security Maximum Taxable Wage Base.
Correctional Officers' Retirement	Not applicable

Actuarial Assumptions and Methods

A. Actuarial Assumptions, concluded

10. Retirement Age for Inactive Vested Participants

Employees' Retirement	Age 60
Employees' Pension	Age 55 if at least 15 years of eligibility service. Age 62 if less than 15 years of eligibility service. Age 60 if at least 15 years of eligibility service (hired after 6/30/11). Age 65 if less than 15 years of eligibility service (hired after 6/30/11).
LEOPS	Age 50
Correctional Officers' Retirement	Age 55

Actuarial Assumptions and Methods

Marriage Assumption:	100% of males and females are assumed to be married for purposes of death-in-service benefits; 80% of healthy males and females, and 65% of disabled males and females, are assumed to be married for purposes of post-retirement death benefits.
Pay Increase Timing:	Teachers' Systems assume beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date. All other Systems assume middle of (Fiscal) year. This is equivalent to assuming that reported pays represent the annualized rate of pay at the beginning of the (Fiscal) year.
Decrement Timing:	Decrements of all types are assumed to occur mid-year, except for Teachers' Systems which assumed beginning of year (i.e., July 1) for retirement and termination.
Eligibility Testing:	Eligibility for benefits is determined based upon the age nearest birthday and rounded integer service on the date the decrement is assumed to occur.
Benefit Service:	Exact fractional service is used to determine the amount of benefit payable.
Decrement Operation:	Mortality and disability operate during retirement eligibility.
Incidence of Contributions:	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.
Unused Sick Leave:	Each member is assumed to have the following service at retirement attributable to sick leave. Correctional Officers: 2 months Employees' Retirement: 10 months Employees' Pension: 4 months LEOPS: 6 months
Unknown Data for Participants:	Average characteristics of the group as a whole are used to fill in the unknown data.
Age of Spouse:	In the absence of complete data, female retirees are assumed to be 2 years younger than male spouses, and male retirees are assumed to be 3 years older than female spouses.

Actuarial Assumptions and Methods

Option Elections:	It was assumed optional forms of payment were actuarially equivalent to the normal form of payment.
Actuarial Equivalence: ECS, & CORS	5.85% interest, RP 2014 Combined Annuitant Mortality, 50% Unisex, 2.29% COLA pre-reform, 1.49% COLA post-reform
LEOPS	5.85% interest, RP 2014 Combined Annuitant Mortality, 85% Unisex, 2.46% COLA pre-reform, 1.49% COLA post-reform.
Liability Adjustments:	For LEOPS the value of the 4% DROP interest credits compared to the valuation interest rate of 7.40% was accounted for through the use of certain load factors as shown in the table below. The assumed length of time members would stay in the DROP was 4.86 years for LEOPS, based on the average projected DROP period of DROP members in the valuation data provided by the SRA.

<u>Load Applied to</u>	<u>Load Factor</u> <u>LEOPS</u>
Active Normal Retirement Decrement	0.9887
Liabilities for Members in the DROP	0.9895
DROP Account Balances	0.9145

Actuarial Assumptions and Methods

1. Asset Valuation Method

All Systems use a method based on the principle that the difference between actual and expected investment returns should be subject to partial recognition to smooth out fluctuations in the total return achieved by the fund from year-to-year. Under this method, the actuarial value of the assets reflects annually one-fifth of the market value gains for the five prior years. The resulting value is restricted to be not less than 80% of market value nor greater than 120% of market value. As of June 30, 2007, the calculation of market gains included the difference between market and actuarial assets as of June 30, 2006.

For the Employees' Retirement & Pension System and for LEOPS, assets must be allocated between State and Municipal Corporation members. Beginning July 1, 1984, this allocation is based upon actual cash flows and shared investment results.

2. Funding Method

All Systems use the individual entry age normal method to determine costs. Under this funding method, a total contribution rate is determined which consists of two elements, the normal cost rate and the Unfunded Actuarial Liability (UAL) rate.

The Individual Entry Age Normal cost rate is determined as the value, as of age at entry into the plan, of the member's projected future benefits, and divided by the value, also as of the member's entry age, of his expected future salary. For purposes of calculating the normal cost rate, the same benefit accrual rates used to calculate the present value of future benefits are used to calculate the normal cost. The benefit provisions applicable to each member are used in developing his/her individual normal cost rate.

In addition to contributions required to meet the System's normal cost, contributions will be required to fund the System's unfunded actuarial liability. Actuarial liability is defined as the present value of future benefits less the present value of future normal costs. The unfunded actuarial liability is the total of the actuarial liability for all members less the actuarial value of the System's assets.

There is an additional component in the unfunded actuarial accrued liability amortization contribution rate that accounts for the effects of the lag between the valuation date and when the contribution is made. This calculation assumes the contributions that would be received in fiscal year 2021 are equal to the budgeted contributions developed in the valuation as of June 30, 2019.

The UAL for the Employees' Combined System's is amortized over a single period closed amortization period ending in FY 2043. This will be accomplished by phasing the period down from 100 years in 2016 valuation down to 20 years for the 2022 valuation.

The UAL for LEOPS is being amortized over a closed 19-year period ending June 30, 2040.

The UAL for CORS is being amortized over a closed 26-year period ending June 30, 2047.

APPENDIX C

SUMMARY OF PLAN PROVISIONS

This guide provides a general summary of certain features of the Maryland State Retirement and Pension System (“MSRPS”). The MSRPS is governed by law, including Division II of the State Personnel and Pensions Article of the Annotated Code of Maryland, and Title 22 of the Code of Maryland Regulations. If there is a conflict between the law and this guide, the law prevails.

Employees' Retirement System of the State of Maryland

1. Membership

System closed to new members hired on or after January 1, 1980. Members on December 31, 1979 continue to be members unless they elected to transfer into the Employees' Pension System (established January 1, 1980) prior to January 1, 2005.

Membership generally includes employees of the State and other eligible participating employers.

2. Member Contributions

- Plan A: Generally, 7% of earnable compensation to maintain all benefits, including unlimited compounded cost-of-living adjustments.
- Plan B: Generally, 5% of earnable compensation to maintain all benefits, except the compounded cost-of-living adjustments which are capped at 5%.
- Plan C: Provides a two-part benefit based on benefits of the Employees' Retirement System and the Employees' Pension System. Employee contributions, if any, are based on participation of the employer in the applicable component of the Employees' Pension System. (refer to summary of Employees' Pension System).

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 60.

4. Normal Service Retirement Allowance

Eligibility: 30 years of eligibility service or attainment of age 60.

Allowance: 1/55th of average final compensation for the three highest years as a member for each year of creditable service.

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System; for creditable service after election date, the amount determined by the service retirement formula for the applicable component of the Employees' - Pension System under which the employer and member participates.

5. Early Retirement Allowance

Eligibility: 25 years of eligibility service and less than 60 years old.



Employees' Retirement System of the State of Maryland

Allowance: Service retirement allowance reduced by 0.5% for each month that date of retirement precedes the earlier of age 60 or the date the member would have completed 30 years of eligibility service (maximum reduction of 30%).

Plan C: For creditable service before election date, the amount determined by the service retirement formula for Employees' Retirement System with a maximum reduction of 30%; for creditable service after election date, the amount determined by the service retirement formula for the applicable component of the Employees' Pension System under which the employer participates with a 0.5% reduction for each month retirement occurs prior to age 62 (maximum reduction of 42%).

6. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is permanent.

Allowance: The benefit is $1/55^{\text{th}}$ of average final compensation for the three highest years as a member for each year of creditable service. The minimum benefit is 25% of average final compensation; the maximum benefit can be no greater than $1/55^{\text{th}}$ of average final compensation for each year of creditable service the member would have accrued if employment continued to age 60.

Plan C: The benefit is the greater of the Employees' Retirement System allowance noted above, or the ordinary disability benefit of the Employees' Pension System.

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty at a definite time and place without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest years as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation, including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit for Active Member with Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.



Employees' Retirement System of the State of Maryland

Benefit: Return of accumulated contributions

Ordinary Death Benefit for Active Member with One or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are younger than age 55 or have less than 15 years of service.

One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death are eligible to retire and are age 55 or older with at least 15 years of service.

The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit for Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest years as a member payable to a surviving spouse, decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit for Vested Former Member

If member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.



Employees' Retirement System of the State of Maryland

8. Vested Allowance

Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

Allowance: Vested allowance payable at normal retirement age, provided member does not withdraw accumulated member contributions.

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Any COLAs are effective July 1 for all allowances which have been in payment for one year.

- Selection A (Additional Member Contributions): Uncapped and compounded.
- Selection B (Limited COLA): Capped at 5% and compounded.
- Selection C (Combination Formula): For creditable service on or after the effective date of Selection C, generally, with limited exceptions, COLA is capped at 3% and compounded. For creditable service before the effective date of Selection C, COLA is calculated based on the applicable component (A or B) to which the member was subject prior to electing Selection C.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.



Employees' Retirement System of the State of Maryland

- Option 5: 100% “pop-up” joint and survivor annuity, which pays the designated beneficiary 100% of the retiree’s reduced allowance after the retiree’s death or returns the retiree’s benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree’s spouse or disabled child.
- Option 6: 50% “pop-up” joint and survivor annuity, which pays the designated beneficiary 50% of the retiree’s reduced allowance after the retiree’s death or returns the retiree’s benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than \$50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers’ Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers’ compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers’ compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Employees’ Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers’ compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers’ compensation payments are subject to an offset by the Workers’ Compensation Commission if a recipient is receiving an ordinary disability payment from the Employees’ Retirement System for the same injury or illness. Any offset taken for an accidental disability from the Employees’ Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree’s employer by the Workers’ Compensation Commission.

Employees' Pension System of the State of Maryland

1. Membership

Membership is generally a condition of employment for all regular employees of the State of Maryland hired on or after January 1, 1980, excluding those eligible for the Teachers' Retirement System, Teachers' Pension System, State Police Retirement System, certain judges, correctional officers, Law Enforcement Officers Pension System, and members of the General Assembly. Certain governmental units also have elected to participate in the System.

There are four plans under the Employees' Pension System.

- **Noncontributory Pension System (NCPS)** - The original pension system established on January 1, 1980 that only applies to certain participating governmental units that did not elect to participate in the Contributory Pension System, Alternate Contributory Pension Selection, or Reformed Contributory Pension Benefit.
- **Employees' Contributory Pension System (ECPS)** - The ECPS established July 1, 1998 that only applies to certain participating governmental units that elected the ECPS but did not elect to participate in the Alternate Contributory Pension Selection, or Reformed Contributory Pension Benefit.
- **Alternate Contributory Pension Selection (ACPS)** - Applies to all State employees and employees of participating governmental units that are members of the ACPS on or before June 30, 2011.
- **Reformed Contributory Pension Benefit (RCPB)** - Applies to all State employees and, employees of participating governmental units enrolling in the Employees' Pension System on or after July 1, 2011. It does not apply to employees of participating governmental units that did not elect to participate in the ACPS or RCPB.

2. Member Contributions

NCPS: Members are only required to make contributions of 5% on earnable compensation that exceeds the Social Security Taxable Wage Base.

ECPS: Members are required to make contributions of 2% of earnable compensation.

ACPS: Members are required to make contributions of 7% of earnable compensation.

RCPB: Members are required to make contributions of 7% of earnable compensation.

Contributions earn interest at 5% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.



Employees' Pension System of the State of Maryland

3. Normal Retirement Age

For members of the Non-Contributory, Contributory, or Alternate Contributory Pension Selection, normal retirement age is age 62.

For members of the Reformed Contributory Pension Benefit, normal retirement age is age 65.

4. Normal Service Retirement Allowance

NCPS, ECPS, and ACPS Eligibility - 30 years of eligibility service or attainment of one of the following:

- Age 62 with five years of eligibility service
- Age 63 with four years of eligibility service
- Age 64 with three years of eligibility service
- Age 65 or older with two years of eligibility service

NCPS Allowance:

0.8% of average final compensation up to the Social Security Integration Level (SSIL) for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service;

ECPS Allowance: The greater of (i) or (ii), plus (iii), as described below:

- (i) 1.2% of average final compensation for the three highest consecutive years as a member for each year of creditable service on or before June 30, 1998;
- (ii) 0.8% of average final compensation up to the SSIL for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service on or before June 30, 1998;
- (iii) 1.4% of average final compensation for the three highest consecutive years as a member for each year of creditable service after June 30, 1998.

ACPS Allowance: The greater of (i) or (ii), plus (iii), as described below:

- (i) 1.2% of average final compensation for the three highest consecutive years as a member for each year of creditable service on or before June 30, 1998;
- (ii) 0.8% of average final compensation up to the SSIL for the three highest consecutive years as a member plus 1.5% of average final compensation over the SSIL for each year of creditable service on or before June 30, 1998;
- (iii) 1.8% of average final compensation for the three highest consecutive years as a member for each year of creditable service after June 30, 1998.



Employees' Pension System of the State of Maryland

RCPB Eligibility: Combined age and eligibility service of at least 90 years or age 65 with 10 or more years of eligibility service.

RCPB Allowance: 1.5% of average final compensation for the five highest consecutive years as a member for each year of creditable service on or after July 1, 2011.

SSIL is the average of all Social Security Wage Bases over the 35 calendar years prior to your retirement.

Note: Members who transferred into the Employees' Pension System, on or after April 1, 1998, receive benefits based on the provisions of the NCPS as in effect on January 1, 1980 except for COLA benefits.

5. Early Retirement Allowance

NCPS, ECPS, and ACPS Eligibility: Age 55 and at least 15 years of eligibility service.

NCPS, ECPS, and ACPS Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 62 (maximum reduction is 42%).

RCPB Eligibility: Age 60 with at least 15 years of eligibility service.

RCPB Allowance: Service retirement allowance computed as of early retirement date, reduced by 0.5% for each month that early retirement date precedes age 65 (maximum reduction is 30%).

6. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is likely to be permanent.

Allowance: The benefit is the service retirement allowance computed on the basis that service continues until normal retirement age. If disability occurs on or after age 62 (age 65 for RCPB), the benefit is based on creditable service at time of retirement.

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty without willful negligence by the member.



Employees' Pension System of the State of Maryland

Allowance: The benefit is 66.67% of average final compensation for the three highest consecutive years (five highest for RCPB) as a member, plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit for Active Member with Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit for Active Member with One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are not members of the Reformed Contributory Pension Benefit, are younger than age 55, and have less than 15 years of service or are members of the Reformed Contributory Pension Benefit, are younger than age 60, and have less than 15 years of service.

One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death: (1) are eligible to retire ; (2) have accrued at least 25 years of eligibility service; (3) are not members of the Reformed Contributory Pension Benefit and are age 55 or older with at least 15 years of service; or (4) are members of the Reformed Contributory Pension Benefit and are age 60 or older with at least 15 years of service.

The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. If any child is disabled, the benefit will continue for that child as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit for Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.



Employees' Pension System of the State of Maryland

Benefit: 66.67% of average final compensation for the three highest consecutive years as a member, except for member's participating in the RCPB component for which the average final compensation is the five highest consecutive years as a member, payable to a surviving spouse, the decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit for Vested Former Member

If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

NCPS, ECPS, and ACPS Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

NCPS, ECPS, and ACPS Allowance: Accrued retirement allowance payable at age 62. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 55, reduced by 0.5% for each month that benefit commencement date precedes age 62 (maximum reduction of 42%).

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

RCPB Eligibility: 10 years of eligibility service and separation from employment other than by death or retirement.

RCPB Allowance: Accrued retirement allowance payable at age 65 provided member does not withdraw accumulated contributions. A member who has completed 15 years of eligibility service may begin to receive benefit payments at any time on or after attainment of age 60, reduced by 0.5% for each month that benefit commencement date precedes age 65 (maximum reduction of 30%).

If member dies before payment of the vested allowance starts, only accumulated member contributions are returned.

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Generally, effective July 1, 1998, and for an allowance based on creditable service earned before July 1, 2011, the adjustment is capped at a maximum of 3% compounded and is applied to all allowances which have been in payment for one year.



Employees' Pension System of the State of Maryland

Generally, for an allowance based on creditable service earned on or after July 1, 2011, the COLA is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

For certain individuals, such as employees of a participating governmental unit that has not elected the contributory pension benefit or the Alternate Contributory Pension Selection for its members, or their surviving beneficiaries, the allowance is subject to a simple COLA capped at 3%.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

10. Optional Forms of Payment

Basic service allowance is in a single life annuity.

- Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.
- Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.
- Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.
- Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.
- Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Employees' Pension System of the State of Maryland

Option 6: 50% “pop-up” joint and survivor annuity, which pays the designated beneficiary 50% of the retiree’s reduced allowance after the retiree’s death or returns the retiree’s benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

Vested former members who are eligible to receive a vested allowance of less than \$50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers’ Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers’ compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers’ compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Employees’ Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers’ compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers’ compensation payments are subject to an offset by the Workers’ Compensation Commission if a recipient is receiving an ordinary disability payment from the Employees’ Pension System for the same injury or illness. Any offset taken for an accidental disability from the Employees’ Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree’s employer by the Workers’ Compensation Commission.

Law Enforcement Officers' Pension System of the State of Maryland

A. Pension Provisions

1. Membership

Membership generally is a condition of employment for all law enforcement officers who are employees of the State as provided in SPP § 26-201, or whose employers are participating governmental units who elect to have their law enforcement officers or firefighters/paramedics participate in the Law Enforcement Officers' Pension System.

2. Member Contributions

Members are required to contribute 7% of earnable compensation, up to 32 years and six months of service.

Contributions earn interest at 5% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 50.

4. Normal Service Retirement Allowance

Eligibility: 25 years of eligibility service or attainment of age 50.

Allowance: For individuals who became members on or before June 30, 2011, 2.0% of average final compensation for the three highest consecutive years as a member. For individuals who became members on or after July 1, 2011, 2.0% of average compensation for the five highest consecutive years as a member. For members who retired before July 1, 2018, the maximum benefit was 60% of average final compensation. For members who retire on or after July 1, 2018, the maximum benefit is 65% of average final compensation.

5. Early Retirement Allowance

Not applicable to the Law Enforcement Officers' Retirement System.

6. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is incapacitated for the performance of duty, and that incapacity is likely to be permanent.



Law Enforcement Officers Pension System of the State of Maryland

Allowance: Service retirement allowance computed on the basis that service continues until age 50 without any change in rate of earnable compensation. If disability occurs after age 50, the benefit is based on creditable service at time of retirement.

Accidental

Eligibility: Total and permanent incapacity for duty as certified by the medical board arising out of or in the course of the actual performance of duty, without willful negligence.

Allowance: The benefit is 66.7% of average final compensation plus an annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation.

7. Death Benefits

Normal Death Benefit – Return of Accumulated Contributions

Eligibility: Death while employed as a member and less than one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Normal Death Benefit – Return of Accumulated Contributions and Annual Earnable Compensation

Eligibility: Death while employed as a member and at least one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions and an amount equal to the member's annual earnable compensation at the time of death to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Special Death Benefit for Death While Employed and Not in Performance of Duty

Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death.

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Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 50% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Special Death Benefit for Death in the Performance of Duty

Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 66.67% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 66.67% of the member's average final compensation be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 66.67% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Waiver of Special Death Benefit

Before the payment of any special death benefit is made under this section, if all individuals eligible for a special death benefit elect to waive the payment of the special death benefit, a normal death benefit is paid to the member's designated beneficiary, or otherwise to the member's estate.

Death Benefit for Vested Former Member

If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.



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8. Vested Allowance

Eligibility: For individuals who are members on or before June 30, 2011, five years of eligibility service. For individuals who become members on or after July 1, 2011, 10 years of eligibility service.

Allowance: Accrued retirement allowance payable at age 50 if the member does not withdraw the member's accumulated member contributions.

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Any COLAs are effective July 1, for allowances which have been in payment for one year. Effective July 1, 2000, for an allowance based on creditable service earned before July 1, 2011, the adjustment is capped at a maximum 3% compounded and is applied to all allowances which have been in payment for one year.

For an allowance based on creditable service earned on or after July 1, 2011, the COLA adjustment is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

10. Optional Forms of Payment

If, at the time of death, the retiree is married, the retiree's spouse is entitled to receive a survivor benefit consisting of 50% of the retiree's basic allowance. If there is no surviving spouse or upon the death of the surviving spouse, payment of the survivor benefit is divided equally among any children of the deceased retiree under the age of 26 years, until each child dies or becomes age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. If there is no spouse at time of retirement, member may select an optional allowance.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.



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- Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.
- Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.
- Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.
- Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.
- Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Law Enforcement Officers' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Law Enforcement Officers' Pension System for the same injury or illness. Any offset taken for an accidental disability

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from the Law Enforcement Officers' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

12. Deferred Retirement Option Plan (DROP)

Eligibility: Members are eligible to participate in the DROP if they have at least 25 and less than 30 years of creditable service.

Participation: An eligible member may participate in the DROP for the lesser of 5 years, the difference between 30 years and the member's creditable service, or a term selected by the member. Participation also ends if the participant dies, is terminated from employment, accepts an accidental disability retirement allowance, or submits a binding letter of resignation or notice of intent to terminate employment. Members who participate in the DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits.

Allowance: For members who entered the DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for accidental disability benefits if incapacitated while in DROP.

B. Members Transferring from the Employees' Retirement System¹

1. Membership

The retirement tier was closed to new participants effective January 1, 2005.

2. Member Contributions

Members who transferred from Employees' Retirement System (Plan A) are required to contribute 7% of earnable compensation. Members who transferred from the Employees' Retirement System (Plan B) contribute 5% of earnable compensation.

¹ This Section B outlines the provisions applicable to members of LEOPS who transferred from the Employees' Retirement System before January 1, 2005 and were subject to Selection A or Selection B and did not elect to participate in the contributory law enforcement officers' modified benefit.

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Contributions earn interest at 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 50.

4. Normal Service Retirement Allowance

Eligibility: 25 years of eligibility service or attainment of age 50.

Allowance: 2.3% of average final compensation for the three highest years as a member for each of the first 30 years of creditable service, plus 1.0% of average final compensation for each additional year.

5. Early Retirement Allowance

Not applicable to this System.

6. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is incapacitated for the performance of duty, and that incapacity is likely to be permanent.

Allowance: The greater of normal service retirement allowance or 25% of average final compensation.

Accidental

Eligibility: Total and permanent incapacity for duty as certified by the medical board arising out of or in the course of the actual performance of duty, without willful negligence.

Allowance: The benefit is 66.7% of average final compensation plus an annuity that is the actuarial equivalent of accumulated contributions. The maximum benefit cannot be greater than the average final compensation.

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7. Death Benefits

Normal Death Benefit – Return of Accumulated Contributions

Eligibility: Death while employed as a member and less than one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Normal Death Benefit – Return of Accumulated Contributions and Annual Earnable Compensation

Eligibility: Death while employed as a member and at least one year of eligibility service. A normal death benefit may not be paid if a special death benefit is paid for that death.

Benefit: Lump sum payment of member's accumulated member contributions and an amount equal to the member's annual earnable compensation at the time of death to the member's designated beneficiary or, if there is no designated beneficiary, to the member's estate.

Special Death Benefit for Death While Employed and Not in Performance of Duty

Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions plus an allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 50% of the ordinary disability allowance the member would have received at the time of the member's death shall be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 50% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

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Special Death Benefit for Death in the Performance of Duty

Eligibility: Death while employed as a member, without the member's willful negligence, and not in the performance of duty. The member is survived by a spouse, a child under the age of 26, a disabled child, or a dependent parent.

Benefit: Accumulated member contributions paid plus an allowance equal to 66.67% of the member's average final compensation.

Beneficiary: Payment of the member's accumulated member contributions shall be paid to the member's designated beneficiary, or otherwise to the member's estate. An allowance equal to 66.67% of the member's average final compensation be made to the surviving spouse; however, if there is no surviving spouse or spouse dies before youngest child reaches age 26, 66.67% of average final compensation continues prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, payment is made to dependent parents. If none of the above conditions is met, the normal death benefit is paid to the designated beneficiary.

Waiver of Special Death Benefit

Before the payment of any special death benefit is made under this section, if all individuals eligible for a special death benefit elect to waive the payment of the special death benefit, a normal death benefit is paid to the member's designated beneficiary, or otherwise to the member's estate.

Death Benefit for Vested Former Member

If a member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: Five years of eligibility service and separation from employment other than by death or retirement.

Allowance: Service retirement allowance payable at normal retirement age if the member does not withdraw the member's accumulated member contributions.

Law Enforcement Officers' Pension System of the State of Maryland

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Any COLAs are effective July 1, for all allowances which have been in payment for one year.

For an allowance for members that elected Selection A (contributing 7% of earnable compensation), uncapped COLA is compounded annually. For an allowance for members that elected Selection B (contributing 5% of earnable compensation), the COLA is capped at a maximum 5% compounded annually.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

10. Optional Forms of Payment

If, at the time of death, the retiree is married, the retiree's spouse is entitled to receive a survivor benefit consisting of 50% of the retiree's basic allowance. If there is no surviving spouse or upon the death of the surviving spouse, payment of the survivor benefit is divided equally among any children of the deceased retiree under the age of 26 years, until each child dies or becomes age 26. If the child is disabled, the benefit will continue as long as the child remains disabled, regardless of age. If there is no spouse at time of retirement, member may select an optional allowance.

- Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.
- Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.
- Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.
- Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.
- Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

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The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.

11. Reduction for Benefits Payable under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Law Enforcement Officers' Pension System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Law Enforcement Officers' Pension System for the same injury or illness. Any offset taken for an accidental disability from the Law Enforcement Officers' Pension System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.

12. Deferred Retirement Option Program (DROP)

Eligibility: Members are eligible to participate in the DROP if they have at least 25 and less than 30 years of creditable service.

Participation: An eligible member may participate in the DROP for the lesser of 5 years, the difference between 30 years and the member's creditable service, or a term selected by the member. Participation also ends if the participant dies, is terminated from employment, accepts an accidental disability retirement allowance, or submits a binding letter of resignation or notice of intent to terminate employment. Members who participate in the DROP are retired and cease making member contributions, and cease accruing service credit and additional benefits.



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Allowance: For members who entered the DROP on or before June 30, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 6% per year, compounded monthly. For members who enter DROP on or after July 1, 2011, the service retirement allowance, with annual COLAs, is credited to an account earning interest at the rate of 4% per year, compounded annually. When the DROP period ends, members terminate employment and begin receiving their monthly allowance plus the lump sum payment from their DROP account. During the DROP period, members remain eligible for Accidental Disability benefits if incapacitated while in DROP.

Correctional Officers Retirement System

1. Membership

Membership is generally a condition of employment for correctional officers serving in the first six job classifications, individuals serving as a security chief, a facility administrator, and assistant warden or a warden, maximum security attendants at Clifton T. Perkins Hospital Center, and employees of the State as provided in SPP § 25-201. This includes participating governmental units who elect to have their detention center officers participate in the Correctional Officers' Retirement System.

2. Member Contributions

Members are required to make contributions of 5% of earnable compensation.

Interest earned on all employee contributions is 4% per year, compounded annually, until retirement, withdrawal of accumulated contributions, death, or the end of membership for former members who are not entitled to receive a vested allowance.

3. Normal Retirement Age

Normal retirement age is age 55 for service retirement, age 60 for disability retirement.

4. Normal Service Retirement Allowance

Eligibility: For individuals who are members on or before June 30, 2011, either age 55 with at least 5 years of eligibility service credit or 20 years of eligibility service, regardless of age. For individuals who are members on or after July 1, 2011, either age 55 with at least 10 years of eligibility service credit, or 20 years of eligibility service, regardless of age.

Allowance: For individuals who are members on or before June 30, 2011, 1/55th of average final compensation for the three highest years as a member for each year of creditable service. For individuals who are members on or after July 1, 2011, 1/55th of average final compensation for the five highest years as a member for each year of creditable service.

5. Early Retirement Allowance

Not applicable to the Correctional Officers' Retirement System, except for certain Baltimore City Jail employees who may retire with 10 years of creditable service., as specified in SPP § 25-401.1.

6. Disability Retirement Allowance

Ordinary

Eligibility: Five years of eligibility service and certification of the medical board designated by the Board of Trustees that member is mentally or physically incapacitated from the performance of the normal duties of the member's position, and that incapacity is likely to be permanent.



Correctional Officers Retirement System

Allowance: The benefit is 1/55th of the average final compensation for the three highest years as a member (five highest for members enrolled on or after July 1, 2011). The minimum benefit is 25% of average final compensation; the maximum benefit can be no greater than 1/55th of average final compensation for each year of creditable service the member would have accrued if employment continued to age 60.

Accidental

Eligibility: Certification of the medical board designated by the Board of Trustees that member is totally and permanently incapacitated from the performance of the normal duties of the member's position as the natural and proximate result of an accident that occurred in the actual performance of duty at a definite time and place without willful negligence by the member.

Allowance: The benefit is 66.67% of average final compensation for the three highest years as a member (five highest for members enrolled on or after July 1, 2011), plus the annuity provided by accumulated member contributions. The maximum benefit cannot be greater than the average final compensation, including any annuitized accumulated contributions.

7. Death Benefits

Ordinary Death Benefit for Active Member with Less Than One Year of Service

Eligibility: Less than one year of eligibility service and not eligible for a special death benefit.

Benefit: Return of accumulated contributions

Ordinary Death Benefit for Active Members with One Or More Years of Service

Eligibility: One or more years of eligibility service and not eligible for a special death benefit.

Benefit:

Members who at the time of death are younger than age 55 or have less than 15 years of service

One-time lump sum payment of member's annual earnable compensation at time of death plus accumulated contributions to the member's designated beneficiary.

Members who at the time of death are eligible to retire and are age 55 or older with at least 15 years of service.

The surviving spouse of a deceased member may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) a monthly allowance under Option 2 (100% survivor benefit). In cases where a deceased member is not survived by a spouse, the decedent's children may elect to receive: (1) a one-time lump sum payment of the member's annual earnable compensation at the time of death plus the member's accumulated contributions; or (2) an allowance equal to 50% of the basic allowance that would have been paid to the deceased member, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated



Correctional Officers Retirement System

among the remaining eligible children. If any child is disabled, the benefit will continue for that child past age 26 as long as the child remains disabled, regardless of age. In cases where a deceased member is not survived by a spouse or children, the member's designated beneficiary shall receive a one-time lump sum payment consisting of the member's accumulated contributions and the member's annual compensation at the time of death.

Special Death Benefit for Active Member

Eligibility: Death arising out of or in the course of the actual performance of duty without willful negligence by the member.

Benefit: 66.67% of average final compensation for the three highest years as a member payable to a surviving spouse, the decedent's children or dependent parents. Accumulated member contributions are paid to the designated beneficiary. Children of deceased members receiving a special death benefit will continue to receive this benefit, prorated equally among the eligible children. A child is eligible for a prorated share of the annuity until reaching age 26. The annuity shall be reallocated among the remaining eligible children. Disabled children receiving a special death benefit may receive a special death benefit as long as they remain disabled, regardless of age.

Death Benefit for Vested Former Member

If member is not active, but is eligible for a vested allowance, the member's designated beneficiary or estate is eligible to receive only accumulated member contributions at time of death.

8. Vested Allowance

Eligibility: For individuals who are members on or before June 30, 2011, five years of eligibility service. For individuals who become member on or after July 1, 2011, 10 years of eligibility service. Member must also be separated from employment other than by death or retirement.

Allowance: Service retirement allowance payable at age 55 provided the member does not withdraw the member's accumulated contributions.

9. Cost-of-Living Adjustments (COLA)

Retirement allowances may be adjusted each year based on the Consumer Price Index (CPI). Any COLAs are effective July 1 for all allowances which have been in payment for one year.

Uncapped compounded COLAs are applied to all benefits attributable to creditable service earned on or before June 30, 2011.

For an allowance based on creditable service earned on or after July 1, 2011, the COLA is capped at 2.5% if, for the calendar year ending December 31 in the previous fiscal year the several systems' total investment performance was greater than or equal to the assumed rate of investment return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year. The adjustment is capped at 1% if, for the calendar year ending December 31 in the previous fiscal year, the several systems' total investment performance was less than the assumed rate of investment



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return established by the Board of Trustees and in effect as of December 31 of the preceding fiscal year.

In years in which COLAs would be less than zero due to a decline in the CPI, retirement allowances will not be adjusted. COLAs in succeeding years are adjusted until the difference between the negative COLA that would have applied and the zero COLA is fully recovered.

10. Optional Forms of Payment

Basic service allowance is a single life annuity.

Option 1: Lump-sum refund equal to excess of present value of basic retirement allowance at date of retirement minus total amount of payments made to date of death excluding any cost of living adjustments for retirees before July 1, 2017.

Option 2: 100% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 100% of the retiree's reduced allowance for the life of the designated beneficiary. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 3: 50% joint and survivor annuity, which pays the retiree's surviving designated beneficiary 50% of the retiree's reduced allowance for the life of the designated beneficiary.

Option 4: Lump-sum refund equal to value of accumulated member contributions minus total portion of monthly payments attributed to member contributions made to date of death, excluding any cost of living adjustments for retirees before July 1, 2017.

Option 5: 100% "pop-up" joint and survivor annuity, which pays the designated beneficiary 100% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree. The designated beneficiary cannot be more than 10 years younger than the retiree unless the beneficiary is the retiree's spouse or disabled child.

Option 6: 50% "pop-up" joint and survivor annuity, which pays the designated beneficiary 50% of the retiree's reduced allowance after the retiree's death or returns the retiree's benefit to the unreduced basic allowance if beneficiary predeceases retiree.

Retirees who have selected Options 2, 3, 5, or 6 and change their designated beneficiary after they retire, will have their retirement allowance re-calculated to reflect the age of the new designated beneficiary. Retirees who elect to change their beneficiary under Options 2, 3, 5, and 6, may rescind their request to change their designated beneficiary before the second monthly allowance is paid. Retirees who rescind the change of beneficiary, will have their benefit payment amount for the next payment restored to the amount paid before the change in beneficiary was made.



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Vested former members who are eligible to receive a vested allowance of less than \$50 a month may elect to receive a lump-sum payment equal to the present value in lieu of a monthly benefit.

11. Reduction for Benefits Payable Under Workers' Compensation

Disability retirement allowances, excluding annuity reserves, are reduced for workers' compensation benefits paid or payable after retirement from injury occurring during employment by the State if the workers' compensation benefits are for the same injury for which disability retirement was granted and are paid or payable for the same period of time for which the retirement benefits are paid. Correctional Officers' Retirement System retirees receiving an accidental disability payment are subject to an offset if they are getting a workers' compensation payment for the same injury or illness, subject to specified limits. Offsets do not include any calculation of cost-of-living benefits that are paid on the original benefit amount. Conversely, workers' compensation payments are subject to an offset by the Workers' Compensation Commission if a recipient is receiving an ordinary disability payment from the Correctional Officers' Retirement System for the same injury or illness. Any offset taken for an accidental disability from the Correctional Officers' Retirement System will be adjusted if the retiree was originally awarded an ordinary disability retirement benefit that was later converted to an accidental disability benefit. The adjusted offset shall reflect any offset awarded to the retiree's employer by the Workers' Compensation Commission.