Joint Committee on Pensions

2017 INTERIM REPORT

Annapolis, Maryland

December 2017

Contributing Staff

Writers
Phillip S. Anthony
Dana K. Tagalicod

For further information concerning this document contact:

Library and Information Services
Office of Policy Analysis
Department of Legislative Services
90 State Circle
Annapolis, Maryland 21401

Baltimore Area: 410-946-5400 ● Washington Area: 301-970-5400
Other Areas: 1-800-492-7122, Extension 5400
TDD: 410-946-5401 ● 301-970-5401
Maryland Relay Service: 1-800-735-2258
E-mail: libr@mlis.state.md.us
Home Page: http://mgaleg.maryland.gov

MARYLAND GENERAL ASSEMBLY

JOINT COMMITTEE ON PENSIONS

December 13, 2017

The Honorable Thomas V. Mike Miller, Jr., Co-Chair
The Honorable Michael E. Busch, Co-Chair
Members of the Legislative Policy Committee

Ladies and Gentlemen:

The Joint Committee on Pensions herewith submits a report of its 2017 interim activities and legislative recommendations. The joint committee met three times during the 2017 interim and addressed three pension topics and six legislative proposals requested by the Board of Trustees for the State Retirement and Pension System. The joint committee made recommendations on many of these items at its final meeting for the 2017 interim. The joint committee also had its annual briefings on the actuarial valuation of the system and the system's investments.

We thank the joint committee members for their diligence and attention to the work of the committee. Also, on behalf of the committee members, we thank Phillip S. Anthony, Dana K. Tagalicod, Matthew B. Jackson, and Cathy Kramer of the Department of Legislative Services and the staff of the Maryland State Retirement Agency for their assistance.

Sincerely,

Senator Guy Guzzone
Senate Chair

Benjamin S. Barnes/eck
Delegate Benjamin S. Barnes
House Chair

GG:BSB/PSA:DKT/eck

Enclosure
cc: Mr. Ryan Bishop
Ms. Carol Swan

Room 226 Legislative Services Building · 90 State Circle · Annapolis, Maryland 21401-1991
410-946-5510 · Fax 410-946-5529 · TTY 410-946-5401
301-970-5510 · Fax 301-970-5529 · TTY 301-970-5401

Maryland General Assembly
Joint Committee on Pensions
2017 Interim
Membership Roster

Guy Guzzone, Senate Chair
Benjamin S. Barnes, House Chair

Senators

Adelaide C. Eckardt
Bill Ferguson
Edward J. Kasemeyer
Roger P. Manno
Nathaniel J. McFadden
Andrew A. Serafini
Craig J. Zucker

Delegates

Barrie S. Ciliberti
Keith E. Haynes
Michael A. Jackson
Carol L. Krimm
Brooke E. Lierman
Tony McConkey
Patrick G. Young, Jr.

Committee Staff

Phillip S. Anthony
Dana K. Tagalicod
Matthew B. Jackson

Contents

Joint Committee on Pensions
2017 Interim Report

Over the course of three meetings during the 2017 interim, the Joint Committee on Pensions addressed several pension topics and six legislative proposals requested by the Board of Trustees for the State Retirement and Pension System (SRPS). The joint committee also had its annual briefings on the actuarial valuation of the system and the system's investments.

Results of the 2017 Actuarial Valuation and Fiscal 2019 Contribution Rates

From fiscal 2016 to 2017, SRPS's funded status (the ratio of projected actuarial assets to projected actuarial liabilities) improved from 69.5% at the end of fiscal 2016 to 70.9% at the end of fiscal 2017 (these figures exclude funding for local governments that participate in the State plan.) The total State unfunded liability decreased from $19.121 billion to $18.854 billion.

Several combined factors set the system up for continued improvement in its funding status, including the increasing number of new members entering the system under the reformed benefit structure enacted in 2011, the elimination of the corridor funding method, and continued supplemental contributions above the actuarially determined contribution.

Fiscal 2019 Contribution Rates at Actuarial Determined Contribution Rates

Exhibit 1 shows that the employer contribution rate for the Teachers' Combined Systems (TCS) will decrease from 16.45% in fiscal 2018 to 16.16% in fiscal 2019, and the contribution rate for the Employees' Combined Systems (ECS) will increase from 19.22% in fiscal 2018 to 19.23% in fiscal 2019. The aggregate contribution rate, including contributions for public safety employees and judges, decreases from 18.34% in fiscal 2018 to 18.15% in fiscal 2019. Based on projected payroll growth and other factors, the SRPS actuary estimates that total employer pension contributions will increase from $1.907 billion in fiscal 2018 to $1.930 billion in fiscal 2019.[1] The contribution rates are the actuarially determined contribution rates and reflect the board of trustees decision to lower the investment return assumption from 7.55% to 7.50%. The funding rates and contribution amounts are inclusive of the required $75 million supplemental contribution required by Chapter 489 of 2015.

[1] System contributions are based on the fiscal 2017 system valuation presented on November 7, 2017, to the joint committee by the SRPS actuary, Gabriel, Roeder, Smith, & Co., and include the supplemental contributions established by Chapter 489 of 2015.

Exhibit 1
State Pension Contributions
Fiscal 2018 and 2019
($ in Millions)

	2018		2019	
Plan	**Rate**	**Contribution**	**Rate**	**Contribution**
Teachers'	16.45%	$1,122.6	16.16%	$1,130.0
Employees'	19.22%	639.1	19.23%	648.5
State Police	81.36%	79.8	79.41%	83.6
Judges'	46.45%	21.8	44.53%	21.9
Law Enforcement Officers'	40.77%	43.7	40.81%	45.7
Aggregate	**18.34%**	**$1,906.9**	**18.15%**	**$1,929.6**

Note: Except for the Teachers' Combined System (TCS), contribution rates and dollar amounts reflect State funds only, excluding municipal contributions. For TCS, they reflect the combined total of State and local contributions. Figures also reflect the $75 million supplemental contribution established by Chapter 489 of 2015.

Source: Gabriel, Roeder, Smith & Co.

Employer contribution rates were subject to multiple influences this year, some exerting upward pressure and others downward pressure. Investment returns over the five-year smoothing period exert upward pressure on the fiscal 2019 contribution rates. Increased membership under the reformed benefits exerts downward pressure on the rates. Chapter 489 eliminated the corridor funding method, which restricted the growth of contribution rates for TCS and the ECS, the two largest plans within SRPS. This ensures that the budgeted contribution rate is the actuarially determined rate necessary to fully fund the system.

In addition to eliminating the corridor method and returning the system to full actuarially determined funding, Chapter 489 also provides for a supplemental contribution of $75.0 million each year until the system is 85% funded. Additionally, Chapter 489 included a sweeper provision, which will direct a portion of unspent general funds to the system as additional supplemental payments in fiscal 2017 through 2020. Since fiscal 2017 ended with an unappropriated fund balance totaling $256.3 million, the Administration is required to include an additional $50.0 million appropriation for State pension contributions, the maximum required by Chapter 489.

State Retirement and Pension System Investment Performance

The system's investment return for fiscal 2017 was 10.02% net of management fees, exceeding the assumed rate of return for the first time in three years. The performance was driven primarily by growth equity returns, which made up 49.0% of the portfolio and returned 18.53% for the fiscal year. The system's assets totaled $49.1 billion as of June 30, 2017, an increase of over $3.6 billion over fiscal 2016. Additionally, as of September 30, 2017, the fund has increased to $50.3 billion, the first time the fund has exceeded $50.0 billion. As noted below, the strongest performing asset classes were public and private equity, credit, and real estate.

The system as a whole performed 15 basis points above the benchmark. Public equity, private equity, credit, and natural resources and infrastructure all had strong returns above the assumed rate of return of 7.55%. Commodities and nominal fixed income had the poorest returns, at -8.22% and -2.35%, respectively, though nominal fixed income returned above its benchmark. Absolute return's performance of 3.31% was 285 basis points below its benchmark return of 6.16%. The system's cash and cash equitization program had the best performance relative to its benchmark, returning 5.11% against a benchmark of 0.46%. The system's five-year return through June 30, 2017, is 7.64%.

Board Requested Legislation

Nonvested Account Member Contributions of Active Members

The State Retirement Agency (SRA) was notified in April 2017 of a member who had accrued 18 months of service in the Alternate Contributory Pension Selection (ACPS) of the Employees' Pension System (EPS). In June 2012, the member left State employment but did not withdraw member contributions from EPS. After an absence of more than four years, the individual returned to State service. Because the individual was not vested in the ACPS when they left State service, and the membership status had lapsed (due to a break in service of more than four years), the individual was enrolled as a member in the Reformed Contributory Pension Benefit (RCPB). The individual's ACPS member contributions have ceased to accrue interest, as the ACPS membership period (four years) ended, and the individual was not vested.

Upon returning to service, the member requested a return of the ACPS member contributions. However, because the individual is once again a State employee, a return of the ACPS member contributions would be considered an in-service distribution under Internal Revenue Code provisions, Treasury Regulations, and Revenue Rulings, and could jeopardize the qualified status of the SRPS. Additionally, refunding the ACPS member contributions could subject the individual to a federal tax penalty. The individual noted that the ACPS member contributions will no longer be earning any interest while being held by the system, describing the contributions as being in "pension purgatory". Acknowledging that a legislative proposal to address this issue could result in additional costs to the system, the board recommended three options for the joint committee's consideration.

The first option proposed by the board would allow a member to transfer nonvested inactive ACPS service into the individuals active RCPB account. Currently, only members with vested accounts in one tier of EPS may combine the prior service with their current active EPS account. The proposal would also require a member who combines their prior nonvested service to be responsible for making up any difference in member contributions for the ACPS service. The board notes this approach would allow affected individuals to make use of their prior ACPS service. SRA notes that there are approximately 445 ACPS inactive accounts that could be impacted by this approach. The employer contributions associated with these accounts are allocated as system gains, and reduce future employer contributions. As such, this approach would have an actuarial cost.

The second option proposed by the board would be to allow these individuals to transfer their nonvested ACPS service into RCPB but would only allow this service to apply toward eligibility service. SRA advises that this proposal would have a likely insignificant cost because it would not allow service to be used for calculation of the final benefit, only eligibility to receive a benefit.

The third option proposed by the board would be to allow the individual to begin earning interest on their inactive ACPS accounts. This proposal would not provide for any combination of the inactive ACPS service with the individual's active RCPB service.

The joint committee will sponsor legislation to allow employee contributions for nonvested ACPS service to earn interest while an individual is an active member in the RCPB.

Judicial Retirement System – Retirement by Order of the Court of Appeals

Provisions in the Judges' Retirement System (JRS) provide in part that an individual who becomes a member of JRS on or after July 1, 2012, is entitled to a JRS retirement allowance "when retired by order of the Court of Appeals, with less than five years of eligibility service, if the member has eligibility service equal to the mandatory retirement age required by Article IV, § 3 of the Maryland Constitution minus the member's age when the member first becomes a member."

This provision was added through Chapter 150 of 2015. The intent of this legislation was to ensure that an individual who was older than age 65 when appointed to the bench on or after July 1, 2012, would receive a benefit when reaching mandatory retirement age. As drafted, "retired by order of the Court of Appeals" was intended to mean the same as being required to retire due to reaching the mandatory retirement age. The fiscal and policy note for the legislation states a "JRS member who must retire by order of the Court of Appeals with less than five years of eligibility service may receive a prorated allowance if the member's service equals the mandatory retirement age in the Maryland Constitution minus the member's age when the member first became a JRS member."

Legal counsel for SRA has informed SRA staff that language stating "when retired by order of the Court of Appeals" is not the same as stating a JRS member is required to retire due to reaching mandatory retirement age and noted that the pension statute distinguishes between retirement at the mandatory retirement age and retirement by order of the Court of Appeals. Reported judicial decisions consistently have used the phrase "by order of the Court of Appeals" to signify a particular order of that court in a particular case, and usually involve the court's disciplinary role. To distinguish between requiring a member to retire due to reaching mandatory retirement age and being required to retire by order of the Court of Appeals, the board recommended amending the provisions that address eligibility for retirement by JRS members to clarify that a member who has reached mandatory retirement age is eligible for an allowance if the member has fewer than five years of service. The board indicated that this proposal would codify existing practice.

The joint committee will sponsor the requested legislation.

Board of Trustees Oath

Section 21-104(c) of the State Personnel and Pensions Article requires any individual elected or appointed as a trustee to the board of trustees for the system to take and subscribe to an oath of office that charges trustees with certain duties of diligence and honesty when administering the affairs of the board. However, Article I, Section 9 of the Maryland Constitution and Article 37 of the Maryland Declaration of Rights address oaths of office that elected or appointed individuals are required to take. Article I, Section 9 of the Maryland Constitution provides in part that "every person elected, or appointed, to any office of profit or trust, under this Constitution, or under the Laws, made pursuant thereto, shall, before he enters upon the duties of such office, take and subscribe the following oath." Article 37 of the Maryland Declaration of Rights provides in part that, "nor shall the Legislature prescribe any other oath of office than the oath prescribed by this Constitution."

Legal counsel for the board have advised that in light of these provisions included in the Maryland Constitution and the Declaration of Rights, new trustees to the board should not take the oath required under § 21-104(c) of the State Personnel and Pensions Article. Since 2014, new trustees have only taken the oath as provided for in Article I, Section 9 of the Maryland Constitution. The board recommended replacing the existing language in § 21-104(c) with language that specifically references trustees taking the oath provided for under Article I, Section 9. The board indicated that this proposal would codify existing practice.

The joint committee will sponsor the requested legislation.

Modification of Municipal Pension Surcharges

The 2011 reforms caused the pooled employer cost to decrease by about 2% of pay. Most of that decrease was due to the increase in employee contribution rates for the ACPS participants, from 5% to 7%. Participating governmental units (PGU) with participants subject to the Non-Contributory Pension Benefit (NCPB) or the Employees' Contributory Pension Benefit (ECPB) benefitted from the decrease in employer contributions although there was no offsetting increase in employee contributions from their NCPB and ECPB participants. This was the result of a specific provision included in the 2011 reforms that exempted these employees from participating in RCPB.

The board recommended the establishment of a new surcharge of 2% of pay for each of the employers participating in NCPB or ECPB. Due to the magnitude of this proposed change to the employer contribution rate and the impact to these PGUs, the board also recommended that these changes be phased in over a five-year period, beginning with the December 2019 billing and a fully implemented surcharge by the December 2023 billing.

The joint committee decided to hold the requested legislation so that more detailed information on the impacts of the legislation can be obtained.

Administrative Expense Cap Calculation

Section 21-315(c) of the State Personnel and Pensions Article states that each year "the Board of Trustees shall estimate the amount, not exceeding 0.22% of the payroll of members, necessary for the administrative and operational expenses of the board of trustees and the State Retirement Agency." Legislation enacted during the 2000 session included the allowances of retirees and earnable compensation of former members as part of the calculation. That change included a three year sunset termination. However, after the provision terminated, the cap calculation continued to include these costs.

In its fiscal 2018 budget analysis of SRA, the Department of Legislative Services (DLS) noted that the agency advises that it has included the cost of benefits paid to retirees in the calculation of member payroll even though statute clearly states that retirees are not members. It was also noted that the calculation includes the payroll of inactive members even though many of those individuals are likely no longer members, since membership in most instances terminates four years after separation from employment. The inclusion of retiree benefits and inactive compensation in the calculation of the spending cap has been a longstanding practice (since 2000), so any change to the method of calculation would be extremely disruptive to agency operations as this calculation includes a broader compensation base. Language was included in the 2017 *Joint Chairmen's Report* (JCR) requiring SRA to submit a report regarding the calculation of the spending cap and make recommendations for clarifying legislation.

In its report, the board recommended legislation that would permanently restore the inclusion of retiree benefits and inactive member compensation with active member salaries when calculating the administrative expense cap. The board noted that this would codify the existing practice for calculating the cap and should not have any effect on costs.

The joint committee will sponsor the requested legislation.

In its report, the board also made recommendations for legislative options that would alter the 0.22% administrative expense cap. The board noted that anticipated information technology projects over the next few years could impact SRA's ability to stay under the 0.22% cap through fiscal 2022. To alleviate the stress these projects may have on SRA's budget, the board proposed three legislative options:

- ***Option A***: Increase the administrative expense cap to 0.26% through fiscal 2022.
- ***Option B***: Exempt funding of the Maryland Pension Administration System and other major information technology projects from the administrative expense cap.
- ***Option C***: Permanently increase the administrative expense cap to 0.26%.

All of the above options were proposed under the context that the calculation of the administrative expense cap would be based on active member payroll, retiree benefits, and former member compensation.

The joint committee will sponsor legislation to increase the cap to 0.26% through fiscal 2022. As this issue may be affected by legislation regarding investment division governance, the joint committee noted that the amount of the increase under this legislation may need to be adjusted.

Investment Division Governance

During the 2016 interim, the board requested legislation to give SRA authority to set the compensation of personnel in the SRA Investment Division and to establish positions within the division. Legislation introduced during the 2017 session did not pass, but language was included in the 2017 JCR requiring SRA to submit a report on how the requested authority would be utilized. That report was presented at the October 25, 2017 meeting of the joint committee.

The report noted that "it would be in the best interest of SRPS to be provided the additional authority to allow it to make necessary adjustments to the investment management program through time, specifically in the areas of compensation, creating and eliminating positions, and procuring investment-related products and services," The report noted that while authority to set compensation will not eliminate turnover, it would reduce compensation related turnover, providing more staff continuity to the system. The report noted the ability to control the positions within the division (initially creating additional positions) would allow more senior managers to pass down necessary administrative functions to junior staff positions, allowing senior staff to focus more on developing and enhancing investment strategies. The report further noted that with control over personnel, the division can be structured so that no critical functions are the sole responsibility of one individual. Control over the number of division staff "will enable the division to expand the universe of potential managers or investments to pursue, enhance the methodology of evaluating those opportunities, or design tactical strategies to adjust the mix of investments for intermediate-term performance." As the fund has grown, the complexity of the assets under management has also grown. The request for staffing authority would allow SRA to expand its staff resources as both the complexity of the fund assets and the size of the assets under management is expected to grow.

Longer term, the report indicates that economies of scale will likely necessitate moving to internal management functions. The report noted that out of 24 peer-plans with assets greater than $40 billion, only 4 (including the system) had no internal management functions. The report noted that in the early 2000s, about one-third of system assets were under internal management, but the internal management functions were stopped due to the inability to attract and retain personnel to perform the function. The report noted that a mix of internal and external management will be necessary and that moving into internal management will be a long-term process, phasing up to a target of 50% of assets managed internally over a 10-year period.

Previously, DLS had noted that a shift to internal management would require significant operational changes. Performance measures would need to be adopted to monitor and evaluate the effectiveness of internal management of system assets compared to external management. Additionally, guidelines and reporting requirements would need to be implemented to track the internal management of system funds, as well as any expansion or reduction of internal management once implemented. The report acknowledged that personnel will need to be evaluated more stringently under higher compensation structures and given the higher expectations for asset management.

One of the arguments for internal management is that it can reduce fees paid for asset management. The report noted that fee savings of just 1 basis point would net the system $5 million. Utilization of internal management would have the potential to significantly reduce management fees, resulting in net gains to the system. However, SRA has been effective at negotiating favorable fee arrangements with external managers, and external management provides the system with options to select asset managers and to diversify the management of assets among multiple managers. When particular managers do not perform well, the system is able to terminate the management arrangement and place the funds under management elsewhere. If assets under internal management fail to adequately perform, the investment performance would be an SRA personnel issue, rather than a manager selection issue. Flexibility and diversification in managements of assets will need to be balanced with potential cost savings from reduced fees. Additionally, turnover of internal management personnel could affect investment performance continuity.

The board requested legislation that would allow the board to approve the annual budget for the Investment Division, including the number of division employees, the compensation levels for the division employees (including bonus compensation authority), and expenditures for the products and services necessary to enhance and preserve the assets of the system.

In its presentation to the joint committee, SRA noted that the requested legislation will ensure that no critical functions will be the responsibility of only one person in the Investment Division. Additionally, authority over division personnel will free up senior staff from administrative functions, so they can focus more on investment activities. SRA also noted that control over personnel and compensation will reduce turnover and promote continual improvement and accountability of division staff.

DLS noted that if the joint committee decided to sponsor the requested legislation, it may want to consider including the incorporation of controls and limitations on the exercise of the board's authority. In its report, SRA discussed tracking division staff compensation against a universe of peer systems, as well as setting a cap on bonus compensation and requiring quantifiable performance measures when granting bonuses. DLS recommended that the joint committee may also want to consider including reporting requirements detailing the exercise of the granted authority. Inclusion of a periodic report and review of division staffing would also provide both the legislature and the system a designated opportunity to review the implementation of the granted authority and make recommendations for improved procedures and to address any deficiencies.

The joint committee will sponsor the requested legislation, which will include controls for the exercise of the granted authority and will also include review and reporting requirements.

With respect to its request for authority over the Investment Division personnel and services expenses, the board refrained from making a recommendation regarding the funding source for these costs if granted the requested authority. At its regular board meetings and as noted at the October joint committee meeting, the board discussed whether the division funding should be treated as an investment expense or whether the division funding should be treated as an administrative expense included within SRA's annual State budget allocation.

If the division costs were included within SRA's annual budget allocation, those costs would flow through the administrative fees charged to all participating employers in the system. This would raise costs to all participating employers but would not be deducting these costs from investment returns, leaving more funds to be invested.

The other option would be to treat division costs as investment expenses. Part of the long-term vision for the division is to bring some investment functions in-house as the system assets grow and in-house management will provide investment efficiencies that will reduce management fees and is intended to improve overall returns. In-house management would replace the current fee based external management which is treated as an investment expense. There is a nexus for investment division staff costs to be considered investment expenses. As external managers are investment expenses, returns are reported net of fees, reflecting the impact management costs have on the gross returns. As one of the goals of granting the board authority over the division's costs is to improve the quality of investment performance, funding the division as an investment expense (which will reduce gross returns) will provide a measure by which the performance of the division can be evaluated. If the costs of the division will impact the net return values, this would create incentive to control costs as well as incentivize positive performance. As the system already reports returns net of fees, SRA could be required to report the investment returns net of fees including the costs of the investment division if the committee decided to charge division costs as investment expenses. Additionally under this option, the legislation should consider how division costs should be considered under the administrative expense cap. If division costs are charged as off-budget investment expenses, this would free up some room under the cap calculation.

For the legislation sponsored by the joint committee to grant authority to the board over costs of the investment division, the committee indicated that the legislation should provide that those costs are to be charged as investment related expenses not included in the calculation of administrative fees charged to participating employers.

Additional Topics

Report on the Review of 10-Year Vesting

Chapter 397 of 2011 increased the time period required for an employee hired on or after June 30, 2011, to vest in the employees' and teachers' pension systems and other pension systems for public safety employees from 5 to 10 years. In response to several bills introduced during the 2017 session that attempted to address recruitment and retention in State government, the budget committees, in the 2017 JCR, requested that SRA study the impact of the 10-year vesting requirement enacted under Chapter 397.

In undertaking the study, the actuary for the system analyzed the potential added cost to the system if the legislature elected to reduce 10-year vesting to 5-year vesting for all active members as of June 30, 2017. The actuary determined that the projected employer contributions would increase as follows:

- for fiscal year 2020, by $7.9 million;
- for fiscal years 2020 through 2024, by a cumulative $52.0 million; and
- by fiscal year 2038, which is the conclusion of the system's 25-year amortization period, by a cumulative $427.0 million.

With regard to the funded status of the system, the actuary determined that reducing the vesting period to five years would not have an impact on the system reaching either 80% funded or 100% funded status. Additionally, the report addressed legislative considerations for the following former members if five-year vesting was implemented: (1) those who have withdrawn their accumulated contributions from the system; and (2) those who terminated employment with more than five years of eligibility service but did not elect to withdraw their employee contributions when they left.

Ultimately, the study noted that returning to 5-year vesting provides the greatest advantage to members of State and local pension plans, while 10-year vesting benefits the system. SRA noted that, while it is believed that lower vesting periods do serve as a "sweetener" to accept employment with a participating employer, certain stakeholders do not believe that 10-year vesting is the deciding factor in whether an individual accepts or rejects a job offer from a participating employer. Additionally, certain stakeholders do not believe that employees are leaving employment with participating employers solely because it takes 10 years to vest in their pension system.

Report on Membership in EPS for Individuals Employed Less Than 500 Hours Per Fiscal Year

Membership in EPS is mandatory for most elected and appointed officials of participating governmental units who began serving between July 1, 2004, and June 30, 2015. A compliance review conducted by SRA noted that three elected and appointed officials employed for a participating employer were identified as not being enrolled in EPS despite meeting eligibility requirements. The officials questioned whether they should be enrolled because they work less than 500 hours per fiscal year and the officials were concerned that, despite paying a member contribution, they would not be entitled to a benefit from EPS because working less than 500 hours per fiscal year would result in them failing to accrue any eligibility or creditable service. In an attempt to address the concerns of the officials, Chapter 281 of 2017 required SRA and DLS to conduct a study regarding membership in EPS for individuals who are employed in a position for which the budgeted hours per fiscal year are less than 500 hours and to report their findings and recommendations to the joint committee.

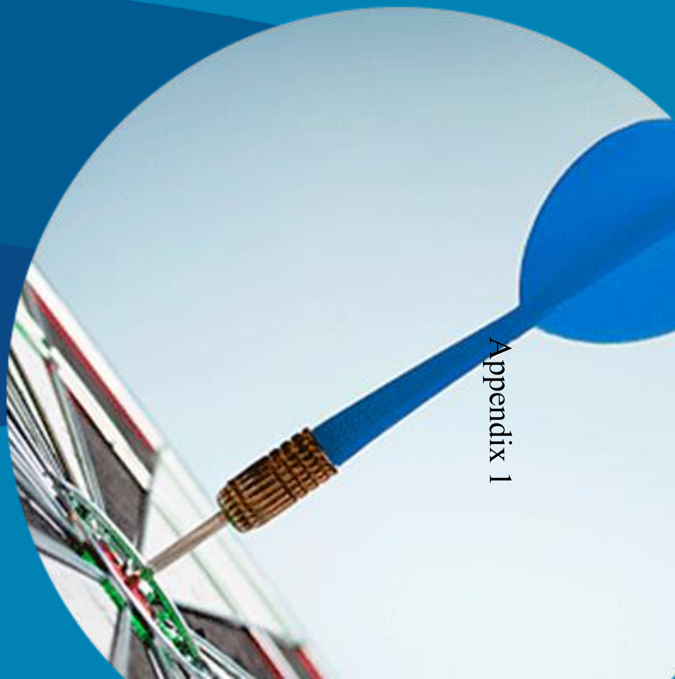
The study noted that although other categories of individuals who are otherwise eligible for membership in EPS are not required to enroll in EPS if they work less than 500 hours in a fiscal year, this exception does not apply to elected and appointed officials. Therefore, it is not erroneous to require elected and appointed officials who began serving between July 1, 2004, and June 30, 2015, to be enrolled in EPS even if they work less than 500 hours in a fiscal year. Additionally, the study noted that a member of EPS who works less than 500 hours per fiscal year is able to accrue creditable and eligibility service if they are in a contributory tier of EPS or are reported as full-time employees.

Finally, the study noted that very limited remedies are available to elected and appointed officials who object to being enrolled in EPS. A member who disputes his or her enrollment may request the board to review the member's eligibility. If an individual is not already enrolled in EPS, legislation could be introduced that would prohibit the individual, while serving in that position, from being enrolled in EPS. If an individual is enrolled in EPS, the individual cannot unilaterally choose to disenroll after he or she is enrolled; legislation would be required to provide for disenrollment. Legislation could be introduced that would disenroll the individual; however, any such legislation could potentially have adverse tax consequences to SRPS because employees of an employer participating in the employer pick-up program are allowed only a single election at commencement of employment.

Maryland State Retirement and Pension System

Results of the June 30, 2017
Actuarial Valuation for Fiscal Year 2019

November 7, 2017 Joint Committee on Pensions



Appendix 1

Table of Contents

14

GRS Retirement Consulting

BACKGROUND

Purpose of the Actuarial Valuation

- Measure the financial position of MSRPS
- Provide the Board with State and PGU contribution rates for certification
- Provide disclosure information for financial reporting
  - Provided by separate GASB 67 and 68 valuations
- Analyze aggregate experience over the last year

GRS Retirement Consulting

Funding Objectives

1. Intergenerational equity with respect to plan costs
   – This is a long term goal. We will only know in hindsight if it is achieved. The break with corridor funding was a step in the right direction.
2. Stable or increasing ratio of assets to liabilities
   – Funded ratio improved this year on an actuarial value of assets basis and on a market value basis.
3. Stable pattern of contribution rates
   – Average State Contribution rate decreased by 0.19% of payroll this year.

GRS Retirement Consulting

2011 Benefit Reform Scorecard

	Projected June 30, 2017 Results Based on June 30, 2010 Valuation		Actual Result
	Before Reforms	**After Reforms**	**2017 Valuation**
FY 2019 Contribution Rates No Reinvestment			
ECS (State)	21.56%	18.09%	18.58%
TCS	21.38%	17.77%	15.43%
All State Plans	22.32%	18.70%	17.42%
June 30, 2017 Funded Ratio No Reinvestment			
All State Plans	64.4%	64.5%	70.1%
June 30, 2017 Funded Ratio Reinvestment			
All State Plans	64.4%	67.2%	70.9%

2010 valuation was the basis for the original estimates and projections related to potential effects of the 2011 reforms. Certain changes since implementation of reforms affect the comparability of the figures:

1. Systems are now receiving Actuarially Determined Contributions based on a 25 year closed amortization of UAAL ending in FY 2039. Elimination of the corridor funding method resulted in a large contribution increase for ECS State. The change was very small for TCS.
2. The General Assembly lowered reinvested savings to $75 Million from the original $300 Million in two steps beginning in FY 2014.
3. Both demographic and economic assumptions have changed since 2010 acting to increase contributions and decrease funded ratios.
4. There was favorable experience since 2010 which decreased actuarial contribution rates and increased funded ratios.

GRS Retirement Consulting

Variables Affecting Valuation Results

- Benefits (Retirement, Disability, Survivor)
- Actual past experience
- Legislative Changes
  - 2017 General Assembly passed HB 28
    - Amended provisions of HB 72, below.
    - Beginning in FY 2021 and continuing until the System is 85% funded, 25% of the budget surplus in excess of $10 million, up to a maximum of $25 million, would be made as an additional contribution to SRPS.
  - 2016 General Assembly changed amortization policy for Municipal ECS
  - 2015 General Assembly passed HB 72
    - For FY 2017-2020, 50% of the budget surplus in excess of $10 million, up to a maximum of $50 million, would be made as an additional contribution to SRPS.
    - $50 million was received in FY 2017.
    - These excess funds were eliminated in the FY 2018 budget.
    - Additional funds are still anticipated in FY 2019 and FY 2020.
  - 2011 General Assembly reforms result in a gradually decreasing normal cost rate, also increased participant contribution rates for most people
- Assumption changes since last valuation
  - Investment return assumption lowered from 7.55% to 7.50%
  - Wage inflation assumption lowered from 3.20% to 3.15%
  - Price inflation assumption lowered from 2.70% to 2.65%

GRS Retirement Consulting

Primary Assumptions

- Actuarial assumptions based on the 2010-2014 experience study (first used in 2015 Valuation)
  - Economic Assumptions (updated for 2017 valuation)
    - 7.50% investment return; 3.15% payroll growth; 2.65% CPI
    - 2.26% COLA, 2.63% COLA, 2.65% COLA for service where COLA is capped at 3%, 5% or not capped, respectively
    - 1.47% COLA for service earned after July 1, 2011 where COLA is capped at 2.5% in years when the System earns at least the investment assumption or capped at 1% in years when the System earns less than the investment assumption
  - Demographic Assumptions
    - RP 2014 mortality tables with generational mortality projection using scale MP-2014
      - Calibrated to MSRPS experience
    - Retirement, termination, disability and seniority and merit salary increase rates based on plan experience
- Reinvested Savings to continue according to current schedule ($75 Million per year).

GRS Retirement Consulting

Funding Policy

- Entry Age Actuarial Cost Method
- 5-year asset smoothing/20% market value collar
- Amortization policy
  - State Systems
    - Single period closed amortization ending in FY 2039 (21 years remaining in 2017 valuation)
  - Municipal Systems
    - ECS: Single period closed amortization period ending in FY 2041. Phased-in at 40 years in 2017 valuation grading down to 20 years for the 2022 valuation
    - LEOPS: Single period closed amortization period ending in FY 2040
    - CORS: Single period closed amortization period ending in FY 2047
  - Level % of payroll (except for first few years of Municipal ECS phase-in).
  - Needs to be reconsidered to control volatility once remaining period falls below about 10-15 years.

GRS Retirement Consulting

PARTICIPANT DATA

Demographic Data

	Statistics as of June 30				
	2017			2016	
Number Counts	**State**	**PGU**	**Total**	**Total**	**% Chg**
Active Members	167,164	25,578	192,742	192,494	0.1%
Vested Former Members	46,669	6,959	53,628	53,568	0.1%
Retired Members	138,236	18,130	156,366	152,566	2.5%
Total Members	352,069	50,667	402,736	398,628	1.0%
Total Valuation Payroll ($ in Millions)	$10,253.5	$1,165.5	$11,419.0	$11,155.9	2.4%
Active Member Averages					
Age	45.9	48.8	46.3	46.3	0.1%
Service	12.6	11.6	12.5	12.5	0.0%
Pay	$ 61,338	$ 45,565	$ 59,245	$ 57,955	2.2%
Total Retiree Benefits ($ in Millions)	$3,329.7	$257.5	$ 3,587.3	$ 3,449.0	4.0%
Average Retiree Benefit	$ 24,087	$ 14,204	$ 22,941	$ 22,606	1.5%

GRS Retirement Consulting

Active Membership by Benefit Plan

	State				Municipal			
	Count	Payroll	Avg. Age	Avg. Srv.	Count	Payroll	Avg. Age	Avg. Srv.
ERS/TRS	927	$ 81,469,521	65.4	41.0	66	$ 4,030,122	63.1	40.6
NCPB	211	14,508,848	59.6	34.1	3,111	201,412,669	49.4	13.6
ECPB	-	-			117	4,429,298	45.9	10.2
ACPB	103,499	6,998,537,950	49.8	17.3	12,749	601,843,654	53.0	16.7
RCPB	52,104	2,549,193,605	38.3	3.0	8,429	288,739,564	43.6	3.0
Other	10,423	609,811,860	43.3	11.9	1,106	64,996,226	39.2	11.0
Total	167,164	$ 10,253,521,784	45.9	12.6	25,578	$ 1,165,451,533	48.8	11.6

24

State employees in NCPB are mostly employees of withdrawn employers whose liabilities have been transferred to the state pool.

NCPB: Non Contributory Pension Benefit
ECPB: Contributory Pension Benefit
ACPB: Alternate Contributory Pension Benefit
RCPB: Reformed Contributory Pension Benefit
Other: Includes CORS, Judges, Legislators, LEOPS, and State Police.

GRS Retirement Consulting

Active Membership by PGU Type

(MUNICIPAL ONLY)

25

	PGU Count	Member Count	Payroll	Avg. Age	Avg. Srv.
Board of Education (w. ECS employees)	**19**	12,716	$ 495,975,966	50.3	11.3
City/Town Govt.	**58**	3,319	161,869,296	46.0	11.2
Community College	**9**	846	36,704,499	48.1	9.6
County Agency/Authority	**14**	577	21,777,336	46.9	8.4
County Govt.	**16**	7,631	431,310,541	47.8	12.7
Library	**6**	145	6,281,227	47.6	8.2
Other	**10**	344	11,532,668	50.6	12.4
Total	**132**	25,578	$ 1,165,451,533	48.8	11.6

GRS Retirement Consulting

26

ASSET DATA

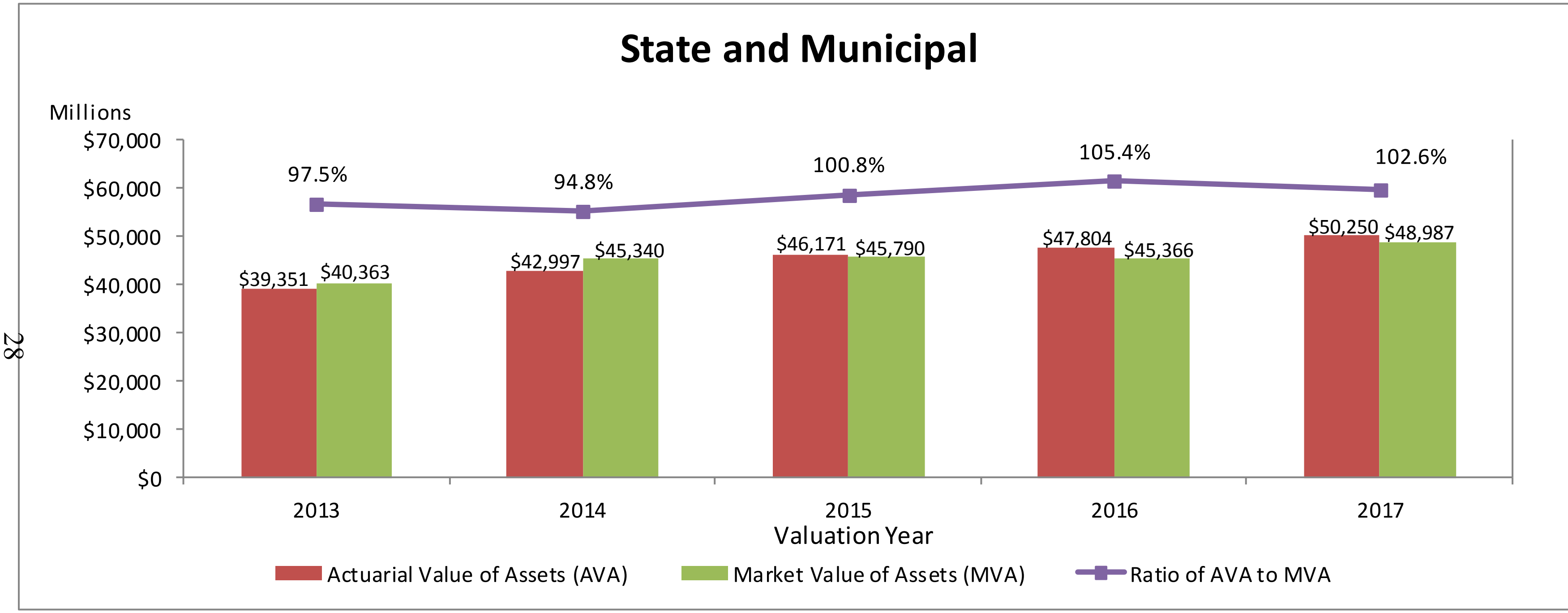
Actuarial Value of Assets – ($ Millions)
State and Municipal Combined

Fiscal Year	2017	2018	2019	2020	2021
1. Actuarial Value at July 1, 2016	$ 47,803.7				
2. Net Cash Flow	(852.2)				
3. Market Investment Return	4,473.4				
4. Expected Return	3,393.5				
5. Gain or loss (3-4)	1,079.9				
6. Amount for full recognition	3,393.5				
7. Phase-in amounts					
7a. From this year	216.0				
7b. From one year ago	(585.1)	$ 216.0			
7c. From two years ago	(448.6)	(585.1)	$ 216.0		
7d. From three years ago	525.2	(448.6)	(585.1)	$ 216.0	
7e. From four years ago	197.9	525.2	(448.6)	(585.1)	$ 216.0
8. Total Phase-ins	(94.6)	(292.5)	(817.7)	(369.1)	216.0
9. Adjustment to Remain within 20% Collar	-				
10 Final Actuarial Value: 1+2+6+8	50,250.5				
11 Final Market Value	48,987.2				

There is a net loss of about $1.26 billion to be recognized in the future ($1.15 billion State and $0.11 Billion Municipal), down from $2.44 billion last year.

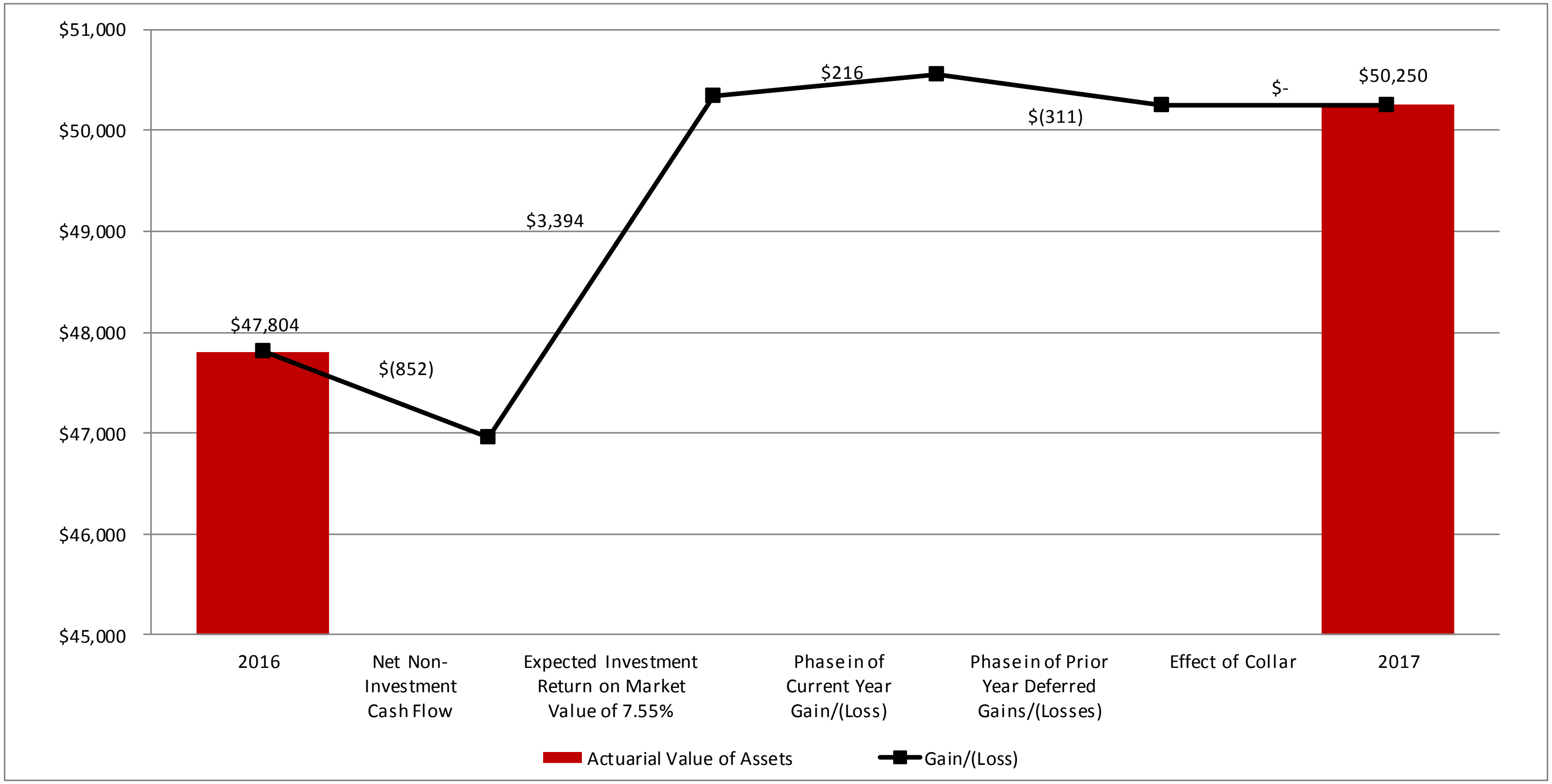
GRS Retirement Consulting

Actuarial Value of Assets - ($ Billions)



The actuarial valuation is not based directly upon market value, but rather uses a smoothed value of assets that phases in each year’s gain or loss above/below the investment return assumption over 5 years.

Actuarial Value of Assets - ($ Millions)



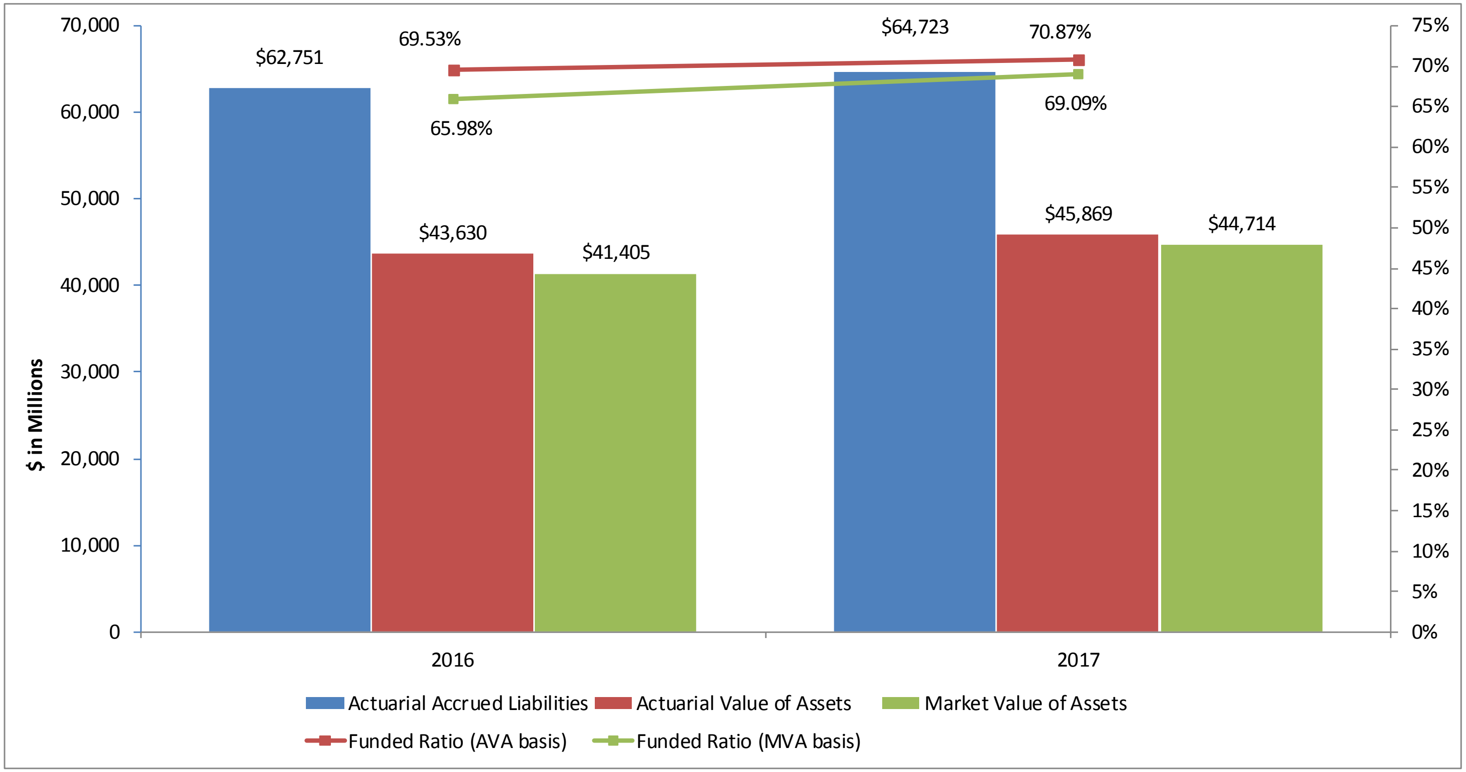
29

GRS Retirement Consulting

STATE RESULTS

Valuation Results – Combined State Systems *($ in Millions)*

31



GRS Retirement Consulting

Year to Year Comparison of Results: STATE Systems

(STATE ONLY except as noted, $ in Millions)

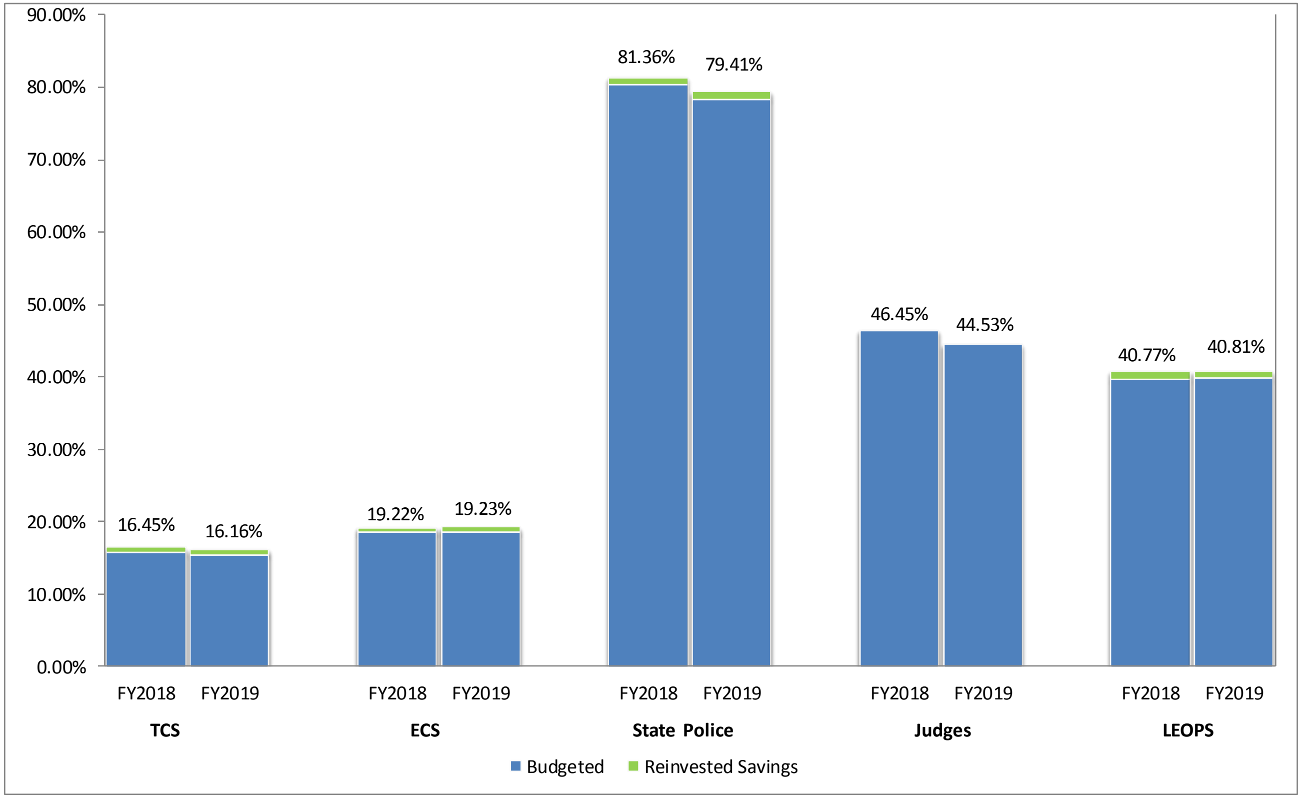
32

	Teachers' Combined System	Employees' Combined System	State Police	Judges	LEOPS	Total
FY 2019 Contr. Rate (w. Reinv. Savings)	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%
FY 2018 Contr. Rate (w. Reinv. Savings)	16.45%	19.22%	81.36%	46.45%	40.77%	18.34%
FY 2019 Actuarial Contribution Rate	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%
FY 2018 Actuarial Contribution Rate	15.71%	18.56%	80.29%	46.45%	39.69%	17.60%
2017 Actuarial Value of Assets	$ 30,501	$ 12,849	$ 1,409	$ 453	$ 657	$ 45,869
2017 Unfunded Actuarial Liability	$ 10,698	$ 6,901	$ 790	$ 83	$ 383	$ 18,854
2016 Unfunded Actuarial Liability	$ 10,913	$ 6,958	$ 781	$ 93	$ 376	$ 19,121
Funded Ratios						
2017	74.0%	65.1%	64.1%	84.6%	63.2%	70.9%
(Including Municipal)		*68.9%*			*63.8%*	*71.8%*
2016	72.7%	63.7%	63.3%	82.2%	62.1%	69.5%
(Including Municipal)		*67.7%*			*63.0%*	*70.5%*

Municipal Actuarial Value of Assets of $4,381 Million and Municipal Unfunded Actuarial Liability of $882 Million are also included in the development of the Total Funded Ratio of 71.8%.

GRS Retirement Consulting

Actuarially Determined Contribution Rates



33

Reconciliation of Employer Contribution Rates

(STATE ONLY)

	Teachers' Combined System	Employees' Combined System	State Police	Judges	LEOPS	Total
FY 2018 Actuarial Contribution Rate	**15.71%**	**18.56%**	**80.29%**	**46.45%**	**39.69%**	**17.60%**
Change due to Investment Return	0.18%	0.15%	0.60%	0.50%	0.31%	0.17%
Change due to Demographic and Non-Inv. Exp.	-0.43%	-0.33%	0.08%	-2.11%	0.00%	-0.40%
Change due to Other	-0.15%	0.07%	-2.77%	-0.28%	-0.51%	-0.09%
Change due to Assumption Changes	0.13%	0.13%	0.22%	-0.03%	0.29%	0.13%
FY 2019 Actuarial Contribution Rate	**15.43%**	**18.58%**	**78.41%**	**44.53%**	**39.78%**	**17.42%**
Reinvested Savings Rate	0.73%	0.65%	1.00%	0.00%	1.03%	0.73%
Final FY 2019 Total Budgeted Contr. Rate	**16.16%**	**19.23%**	**79.41%**	**44.53%**	**40.81%**	**18.15%**

Contributions for FY 2017 were based upon the June 30, 2015 valuation, which was NOT based on the corridor funding method. FY 2016 was the final year in which corridor funding applied.

"Other" includes the impact of the change in total base payroll on the contribution rate.
Sources of change due to demographic experience are described on slide 26.

GRS Retirement Consulting

Budgeted Employer Contribution Rates Year-to-Year Comparison

35

(STATE ONLY)

	Teachers' Combined System	Employees' Combined System	State Police	Judges	LEOPS	Total
FY 2019 Contribution Rates						
Actuarial Contribution Rate	15.43%	18.58%	78.41%	44.53%	39.78%	17.42%
Reinvested Savings Rate^	0.73%	0.65%	1.00%	0.00%	1.03%	0.73%
Total Contribution Rate	16.16%	19.23%	79.41%	44.53%	40.81%	18.15%
FY 2018 Contribution Rates						
Actuarial Contribution Rate	15.71%	18.56%	80.29%	46.45%	39.69%	17.60%
Reinvested Savings Rate^	0.74%	0.66%	1.07%	0.00%	1.08%	0.74%
Total Contribution Rate	16.45%	19.22%	81.36%	46.45%	40.77%	18.34%
Year over Year Change	-0.29%	0.01%	-1.95%	-1.92%	0.04%	-0.19%

^ *Rate calculated based on allocated reinvested dollars and FY 2019 projected payroll. It is our understanding that the Retirement Agency will monitor contributions to ensure that the System receives the expected amount of reinvested savings during Fiscal Year 2019.*

GRS Retirement Consulting

Allocation of Contribution to Local Employers (Boards of Education)

Teachers Combined System				
	FY2019 Contribution ($ in Millions)			
	% of Pay	Total	Local Employers	State
Employer Normal Cost	4.41%	$ 308.4	$ 283.8	$ 24.6
UAAL Amortization	11.02%	770.8	-	770.8
Reinvested Savings	0.73%	50.8	-	50.8
Total	16.16%	$ 1,130.0	$ 283.8	$ 846.2

Teachers Combined System				
	FY2018 Contribution ($ in Millions)			
	% of Pay	Total	Local Employers	State
Employer Normal Cost	4.47%	$ 305.0	$ 280.5	$ 24.5
UAAL Amortization	11.24%	766.8	-	766.8
Reinvested Savings	0.74%	50.8	-	50.8
Total	16.45%	$ 1,122.6	$ 280.5	$ 842.1

Calculation of Contributions Attributable to Reinvestment Amounts

(STATE ONLY, $ in Millions)

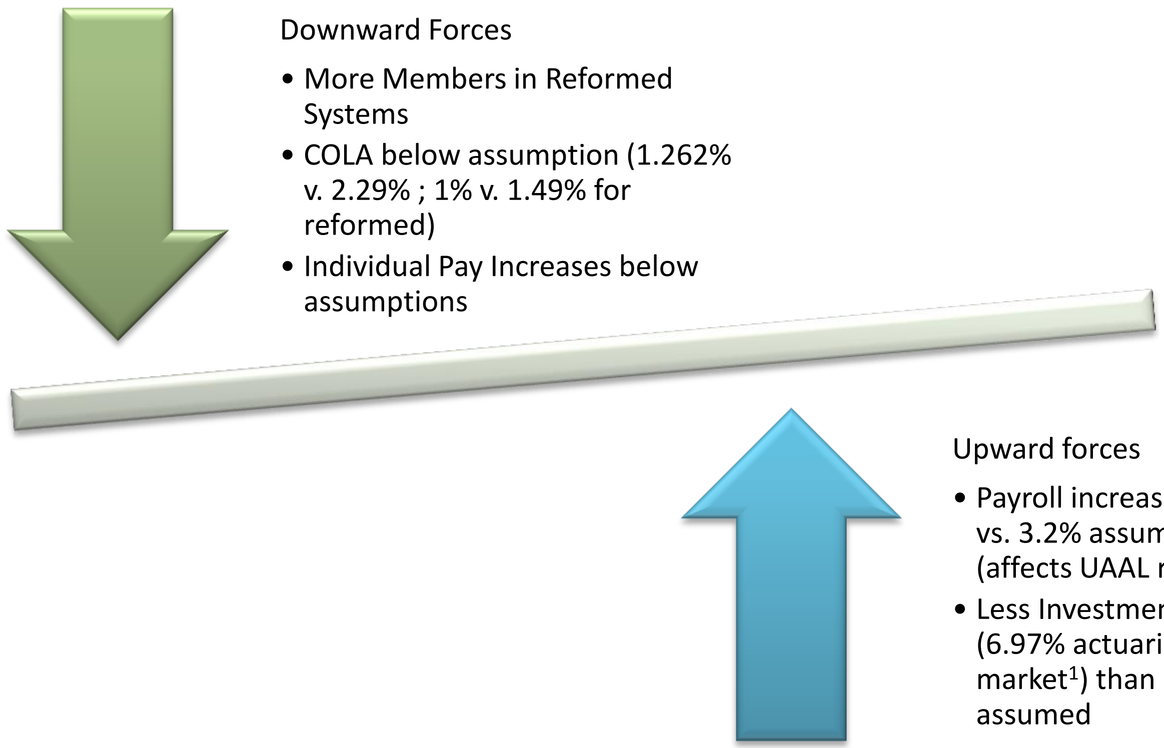
	Teachers' Combined System	Employees' Combined System	State Police	Judges	LEOPS	Total
% of Total Pension Reform Savings#	67.7%	29.4%	1.4%	0.0%	1.5%	100.0%
Reinvested Savings	$ 50.8	$ 22.0	$ 1.1	$ -	$ 1.2	$ 75.0
FY 2019 Contributions						
Illustrated Dollar Contributions	$ 1,079.2	$ 626.5	$ 82.5	$ 21.9	$ 44.5	$ 1,854.6
TCS Local Employer Contributions	$ (283.8)	$ -	$ -	$ -	$ -	$ (283.8)
Reinvested Savings	$ 50.8	$ 22.0	$ 1.1	$ -	$ 1.2	$ 75.0
State Total Illustrated Contributions	$ 846.2	$ 648.5	$ 83.6	$ 21.9	$ 45.7	$ 1,645.8
FY 2018 Contributions						
Illustrated Dollar Contributions	$ 1,071.8	$ 617.1	$ 78.7	$ 21.8	$ 42.5	$ 1,831.9
TCS Local Employer Contributions	$ (280.5)	$ -	$ -	$ -	$ -	$ (280.5)
Reinvested Savings	$ 50.8	$ 22.0	$ 1.1	$ -	$ 1.2	$ 75.0
State Total Illustrated Contributions	$ 842.1	$ 639.1	$ 79.8	$ 21.8	$ 43.7	$ 1,626.4
State Year over Year Change	$ 4.1	$ 9.4	$ 3.8	$ 0.1	$ 2.0	$ 19.4

 # Based on Calculations from June 30, 2011 Valuation.

FY 2019 Contribution based on payroll as of June 30, 2017, projected to FY2018 for TCS and FY2019 for all other systems. FY2018 Contribution based on payroll as of June 30, 2016, projected to FY 2017 for TCS and FY2018 for all other systems. FY 2018 and FY2019 Contributions for TCS would be $1,157 Million and $1,165 Million, respectively, if payroll was projected in the same manner as for the other systems (based on payroll projected one additional year to FY 2018 and FY2019, respectively).

GRS Retirement Consulting

Slight Net Decrease in State Rates



Downward Forces

- More Members in Reformed Systems
- COLA below assumption (1.262% v. 2.29% ; 1% v. 1.49% for reformed)
- Individual Pay Increases below assumptions

Upward forces

- Payroll increase of 2.4%, vs. 3.2% assumed (affects UAAL rate)
- Less Investment Return (6.97% actuarial, 10% market[1]) than 7.55% assumed

[1] Rate shown is based on actuarial estimation method and differs modestly from figures reported by State Street.

GRS Retirement Consulting

39

Municipal Results

Year-to-Year Comparison of Results: MUNICIPAL Systems

(MUNICIPAL ONLY, $ in Millions)

	Employees' Combined System	LEOPS	CORS	Total
FY 2019 Basic (Pooled) Contribution Rate	5.47%	31.43%	9.85%	6.82%
FY 2018 Basic (Pooled) Contribution Rate	5.03%	30.75%	9.53%	6.28%
2017 Actuarial Value of Assets	$ 4,091	$ 268	$ 23	$ 4,382
2017 Unfunded Actuarial Liability	$ 739	$ 142	$ 1	$ 882
2016 Unfunded Actuarial Liability	$ 729	$ 128	$ 1	$ 857
Funded Ratios				
2017	84.7%	65.3%	95.7%	83.3%
2016	84.3%	65.4%	96.9%	83.0%

40

The increase in the ECS pooled rate from FY 2018 to FY 2019 is mostly driven by a legislated change in amortization policy. The change was designed to deal with an otherwise scheduled doubling of the rate from FY 2021 to FY 2022.

GRS Retirement Consulting

Other Components of PGU Contributions

PGU Contributions consist of the pooled rate, certain surcharges as shown below, deficits or credits related to pre-2001 ECS liability, and new entrant and withdrawal payments and credits, all of which are shown in the full report.

	Surcharge			
Surcharge Group	**Normal Cost**	**UAAL**	**Total**	**Payroll**
Retirement System	5.00%	0.00%	5.00%	Retirement System
NCPB to ECPB	1.00%	1.42%	2.42%	Retirement and Pension System
ECPB to ACPB	-0.40%	1.51%	1.11%	Pension System
NCPB to ACPB	0.60%	6.84%	7.44%	Pension System

NCPB: Non Contributory Pension Benefit
ECPB: Contributory Pension Benefit
ACPB: Alternate Contributory Pension Benefit
RCPB: Reformed Contributory Pension Benefit

GRS Retirement Consulting

42

RISK/MATURITY MEASURES

Risk Measures Summary

State and Municipal ($ in Millions)

Valuation Date (6/30)	(1) Accrued Liabilities (AAL)	(2) Market Value of Assets	(3) Market Value Unfunded AAL	(4) Valuation Payroll	(5) Market Value Funded Ratio (2)/(1)	(6) Retiree Liabilities (RetLiab)	(7) RetLiab / AAL (6)/(1)	(8) AAL / Payroll (1)/(4)	(9) Assets / Payroll (2)/(4)
2012	$ 57,869	$ 37,179	$ 20,690	$ 10,337	64.2%	$ 32,779	56.6%	559.9%	359.7%
2013	60,060	40,363	19,697	10,478	67.2%	34,498	57.4%	573.2%	385.2%
2014	62,610	45,340	17,270	10,804	72.4%	36,077	57.6%	579.5%	419.7%
2015	66,282	45,790	20,492	11,064	69.1%	38,588	58.2%	599.1%	413.9%
2016	67,782	45,366	22,416	11,156	66.9%	39,785	58.7%	607.6%	406.7%
2017	69,987	48,987	20,999	11,419	70.0%	41,112	58.7%	612.9%	429.0%

(5). The Funded ratio is the most widely known measure of a plan's financial strength, but the trend in the funded ratio is much more important than the absolute ratio. The funded ratio should trend to 100%. As it approaches 100%, it is important to re-evaluate the level of investment risk in the portfolio and potentially to re-evaluate the assumed rate of return.

(6) and (7). The ratio of Retiree liabilities to total accrued liabilities gives an indication of the maturity of the system. As the ratio increases, cash flow needs increase, and the liquidity needs of the portfolio change. A ratio on the order of 50% indicates a maturing system.

(8) and (9). The ratios of liabilities and assets to payroll gives an indication of both maturity and volatility. Many systems have ratios between 500% and 700%. Ratios significantly above that range may indicate difficulty in supporting the benefit level as a level % of payroll.

GRS Retirement Consulting

Risk Measures Summary (Cont.)

State and Municipal ($ in Millions)

Valuation Date (6/30)	(10) Portfolio StdDev	(11) Std Dev % of Pay	(12) Unfunded / Payroll	(13) Non-Investment Cash Flow (NICF)	(14) NICF / Assets (13)/(2)	(15) Market Rate of Return	(16) 5-year Trailing Average
2012			200.2%	$ (518)	-1.4%	19.8%	
2013			188.0%	(661)	-1.6%	0.3%	
2014			159.9%	(729)	-1.6%	10.4%	
2015	12.5%	51.7%	185.2%	(748)	-1.6%	14.3%	11.6%
2016	12.0%	48.8%	200.9%	(921)	-2.0%	2.7%	9.3%
2017	13.3%	57.1%	183.9%	(852)	-1.7%	10.0%	7.4%

(10) and(11). The portfolio standard deviation measures the volatility of investment return. When multiplied by the ratio of assets to payroll it gives the effect of a one standard deviation asset move as a percent of payroll. This figure helps users understand the difficulty of dealing with investment volatility and the challenges volatility brings to sustainability.
(12). The ratio of unfunded liability to payroll gives an indication of the plan sponsor's ability to actually pay off the unfunded liability. A ratio above approximately 300% or 400% may indicate difficulty in discharging the unfunded liability within a reasonable time frame.
(13) and (14). The ratio of Non-Investment Cash Flow to assets is an important measure of sustainability. Negative ratios are common and expected for a maturing system. In the longer term, this ratio should be on the order of approximately -4%. A ratio that is significantly more negative than that for an extended period could be a leading indicator of potential exhaustion of assets.
(15) and (16). Investment return is probably the largest single risk that most systems face. The year-by-year return and the 5-year geometric average both give an indication of the reasonableness of the system's assumed return. Of course, past performance is not a guarantee of future results. Market rate shown is based on actuarial estimation method and differs modestly from figures reported by State Street.

GRS Retirement Consulting

45

CONCLUSION

GRS Retirement Consulting

Recommended Budgeted Contributions Fiscal Year 2019: STATE

46

	Fiscal 2019		Prior Year	
System	**Budgeted Rate**	**Illustrated Dollars (Millions)**	**Budgeted Rate**	**Illustrated Dollars (Millions)**
TCS	15.43%	$1,079	15.71%	$1,072
ECS	18.58%	626	18.56%	617
State Police	78.41%	82	80.29%	79
Judges	44.53%	22	46.45%	22
LEOPS	39.78%	45	39.69%	42
Total	17.42%	$1,855	17.60%	$1,832
TCS Local Employer Portion		284		280
Total State Only Portion		$1,571		$1,551

Reinvested savings of $75 Million are to be added to the amounts above. The final Illustrated State Total for FY 2019 is therefore $1,646 Million plus any amounts resulting from the sweeper amendment.

GRS Retirement Consulting

Recommended Basic Contributions Fiscal Year 2019: MUNICIPAL

System	FY 2019	FY 2018
ECS	5.47%	5.03%
LEOPS	31.43%	30.75%
CORS	9.85%	9.53%

47

PGU Contributions consist of the basic pooled rate shown above, certain surcharges, deficits or credits related to pre-2001 ECS liability, and new entrant and withdrawal payments and credits, all of which are shown in the full report.

GRS Retirement Consulting

Concluding Comments

- Experience in total was more favorable than anticipated for the FY 2017 valuation which led to slightly lower FY 2019 illustrative (dollar) contributions than was projected.
- Upward pressure on contribution rates expected through FY 2022 due to deferred asset losses.
- State Systems on a path to reach a 100% funded ratio by 2039.

48

GRS Retirement Consulting

Conclusion

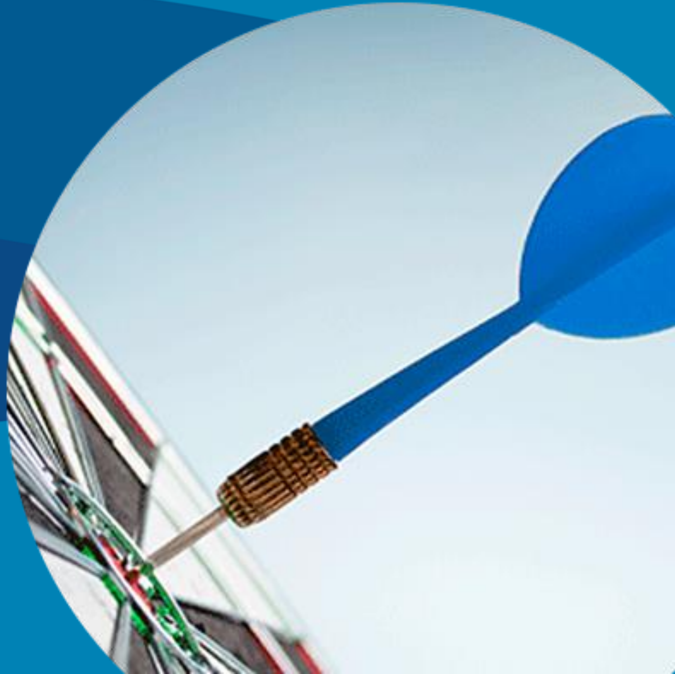
- What Is Needed to Sustain MSRPS?
  - Continued reasonable forecasts of resources and obligations
  - Continued sound investment program
  - Continued long-term approach to changes
  - Continued adherence to funding policy

49

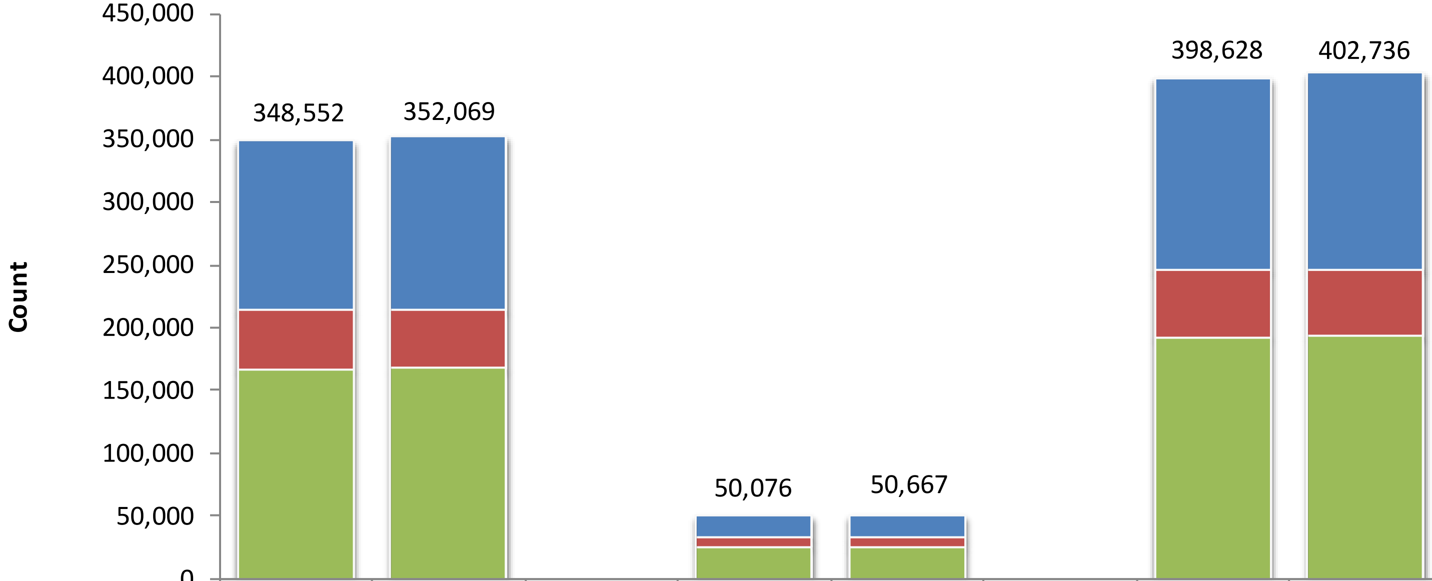
GRS Retirement Consulting

Appendix

50



State and Municipal Demographic Data



	2016 State	2017 State		2016 Muni	2017 Muni		2016 Total MSRPS	2017 Total MSRPS
Retired	134,975	138,236		17,591	18,130		152,566	156,366
Vested Former	46,670	46,669		6,898	6,959		53,568	53,628
Active	166,907	167,164		25,587	25,578		192,494	192,742
Total	348,552	352,069		50,076	50,667		398,628	402,736

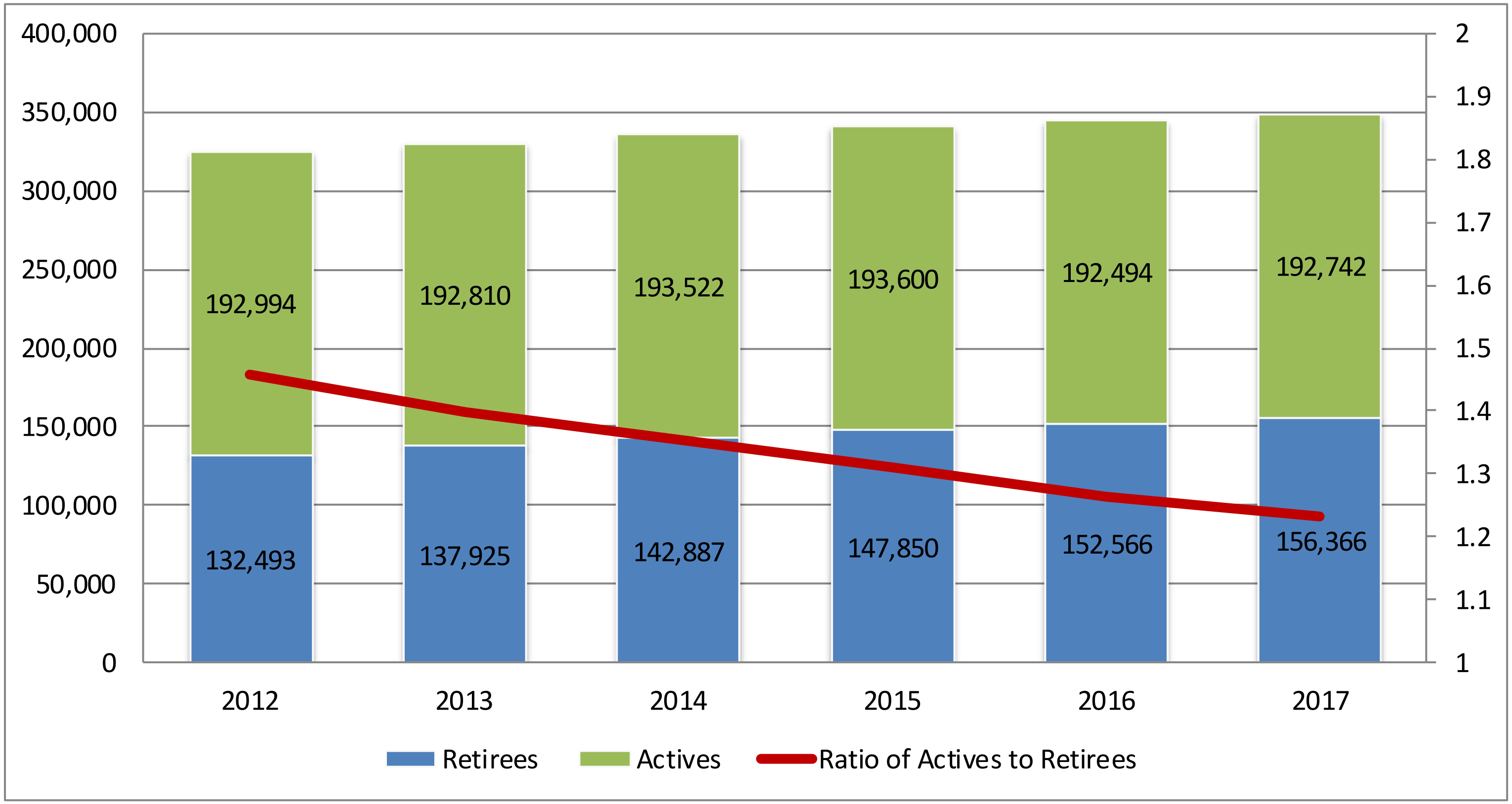
51

GRS Retirement Consulting

Membership History

Combined State and Municipal

52

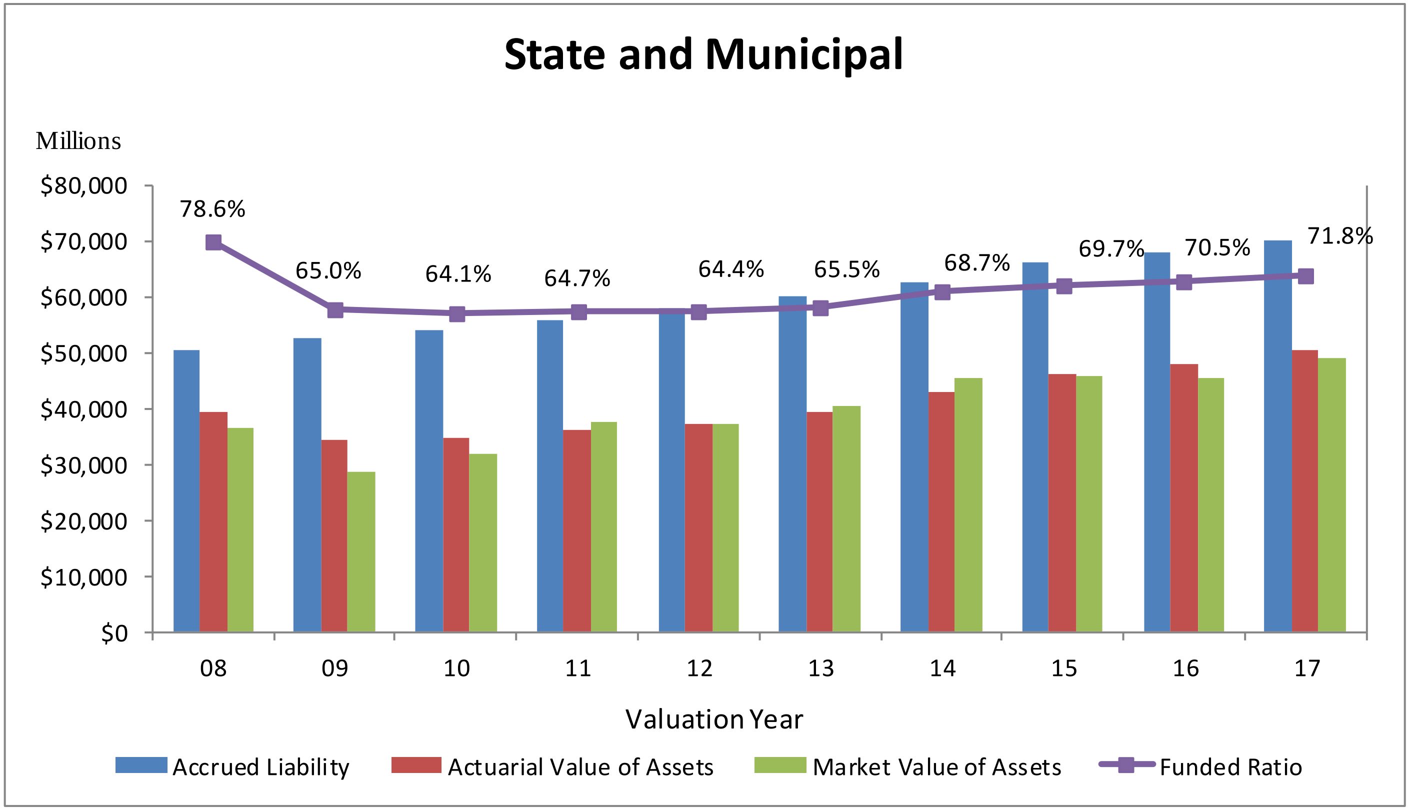


The ratio of Retirees to Actives gives an indication of the maturity of the system. *Counts exclude terminated vested members.*

GRS Retirement Consulting

Historical Trends – Change in Funded Status, 2008 to 2017

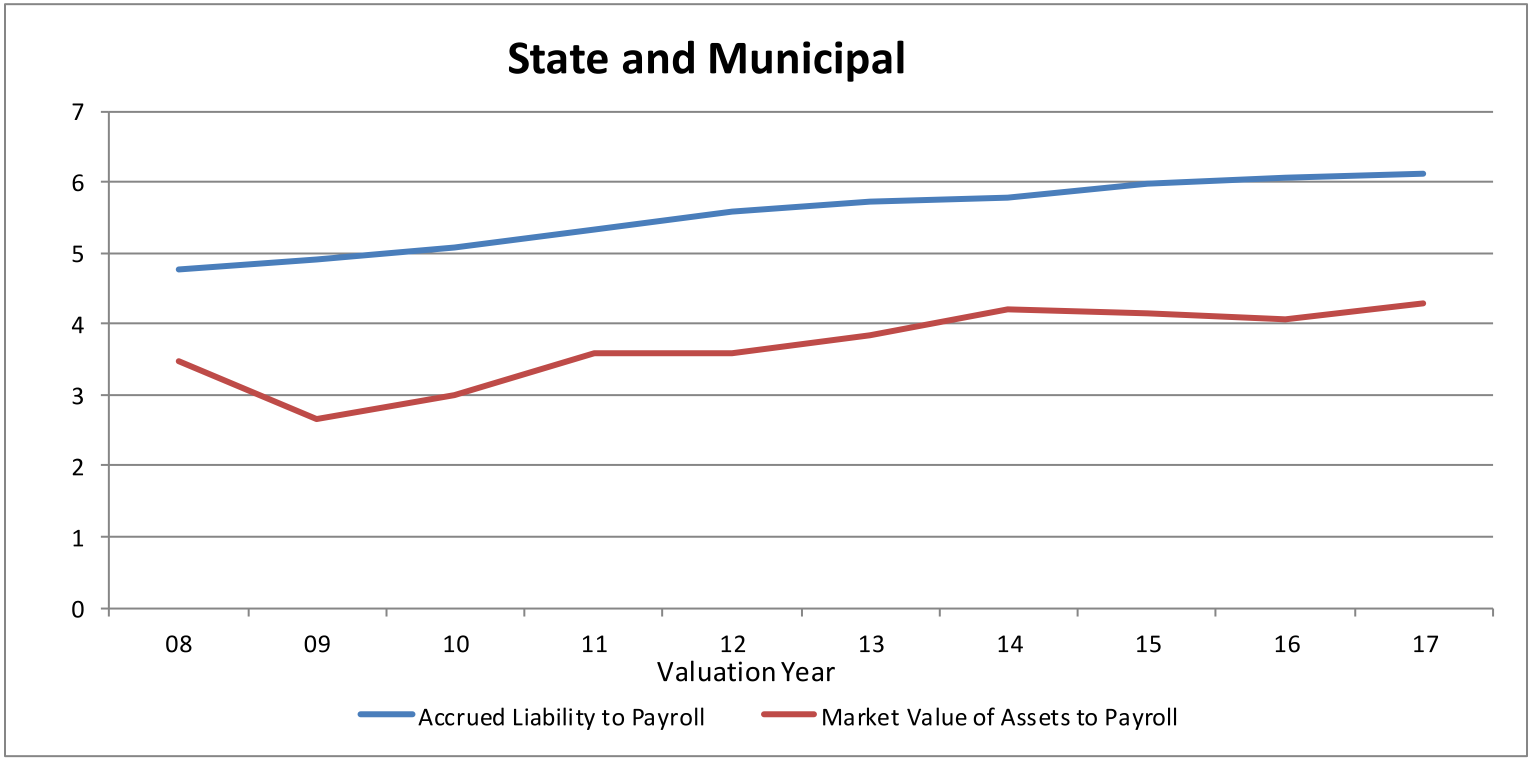
53



GRS Retirement Consulting

Ratio of Accrued Liability and Market Value of Assets to Payroll

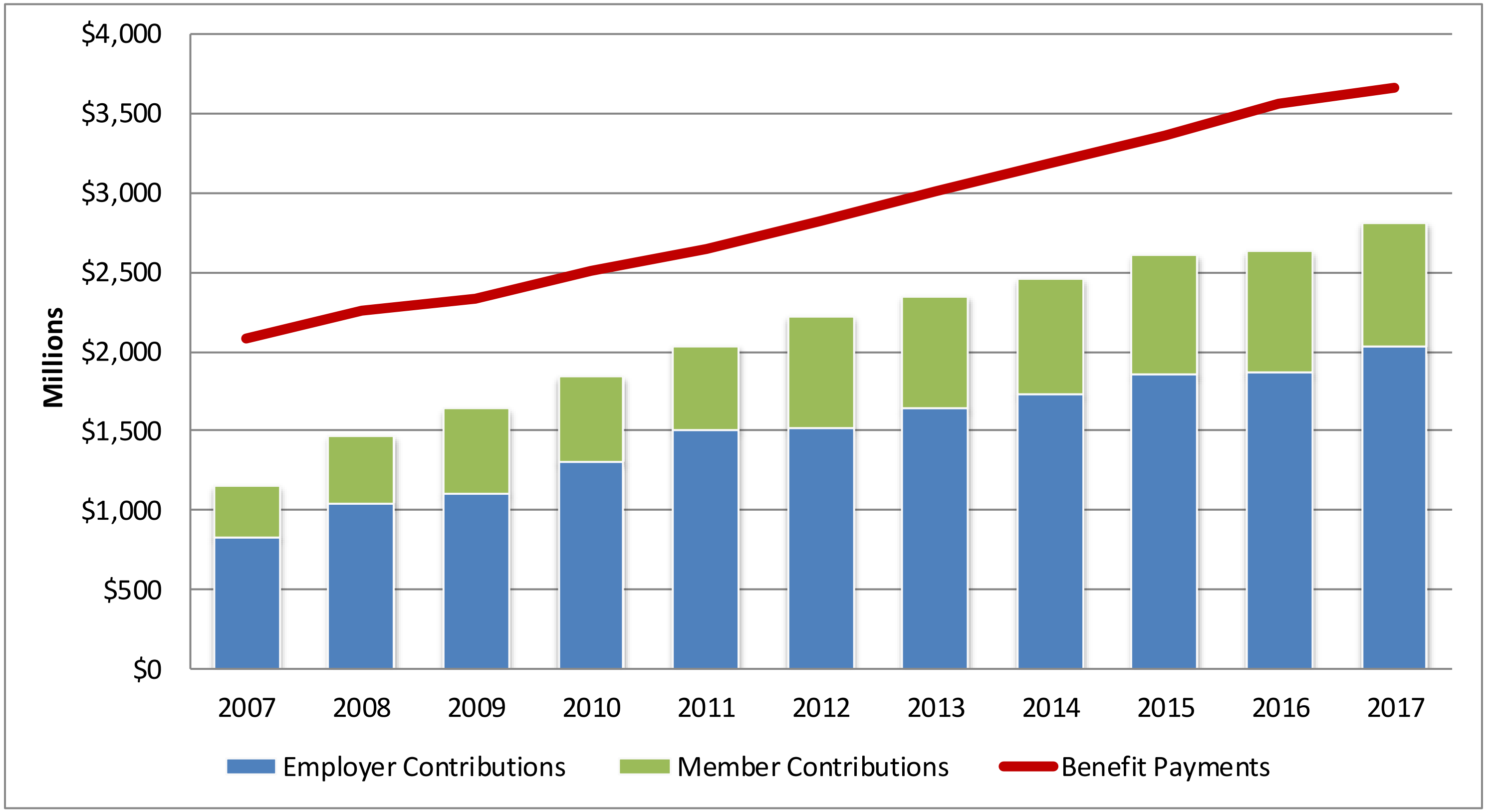
54



GRS Retirement Consulting

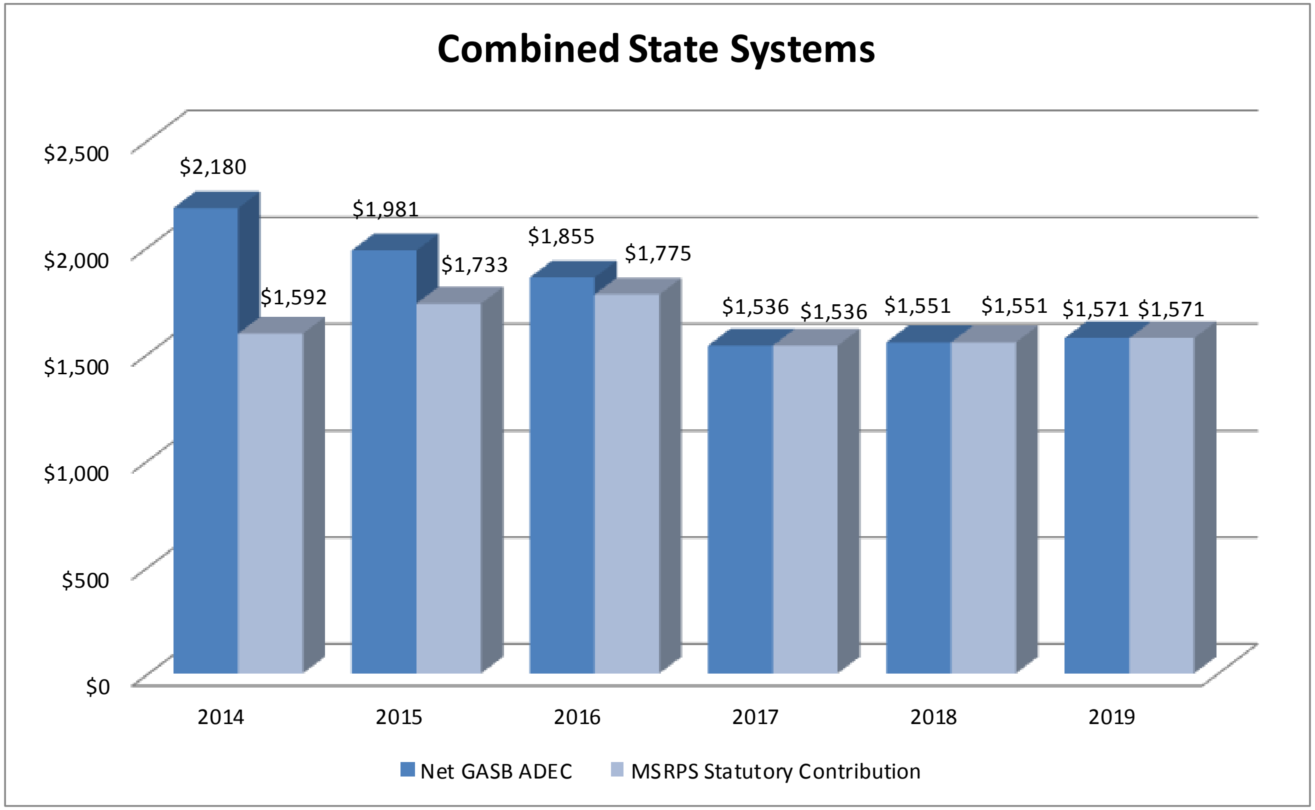
Historical Trends – Non-Investment Cash Flow (State and Municipal)

55



GRS Retirement Consulting

Statutory Contributions vs. Annual Required Contributions *($ in Millions)*

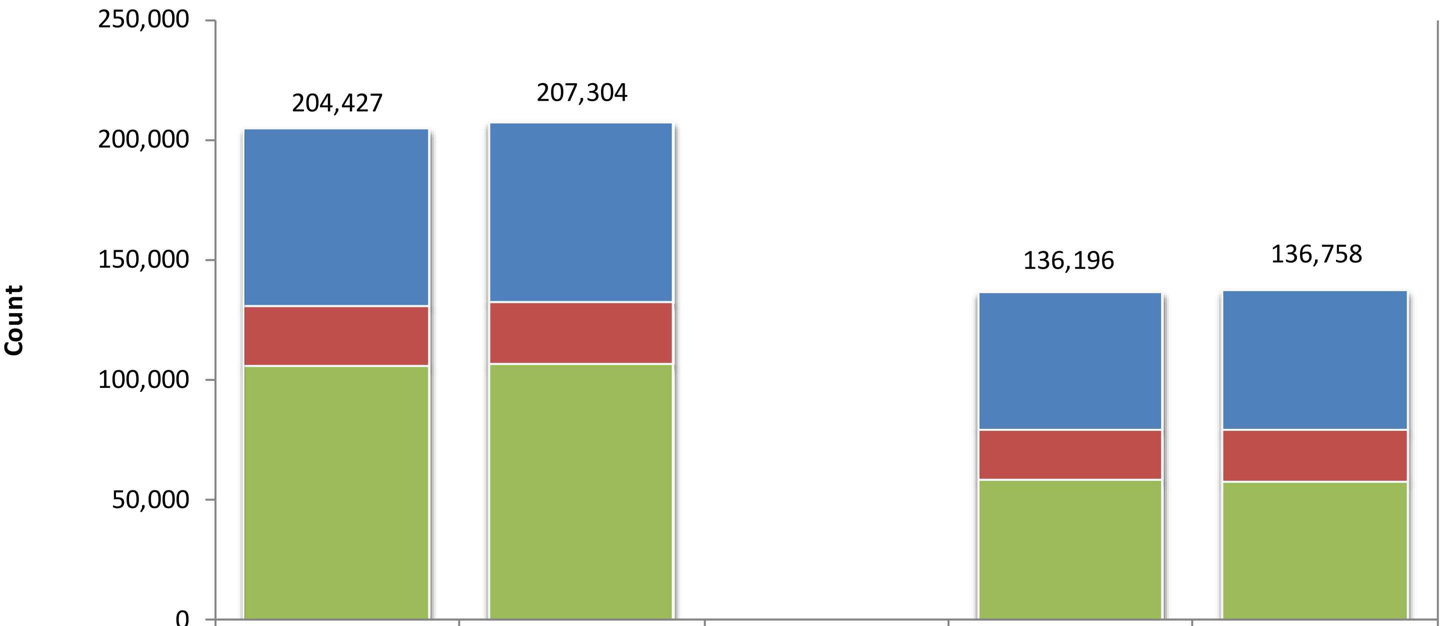


2015, 2016 and 2017 contributions reflect the reduced reinvested savings schedule per new legislation. Net GASB ADEC based on actuarially determined contributions (without corridor) and maximum 30-year amortization period where applicable (before 2015).

GRS Retirement Consulting

State Demographic Data by System

57

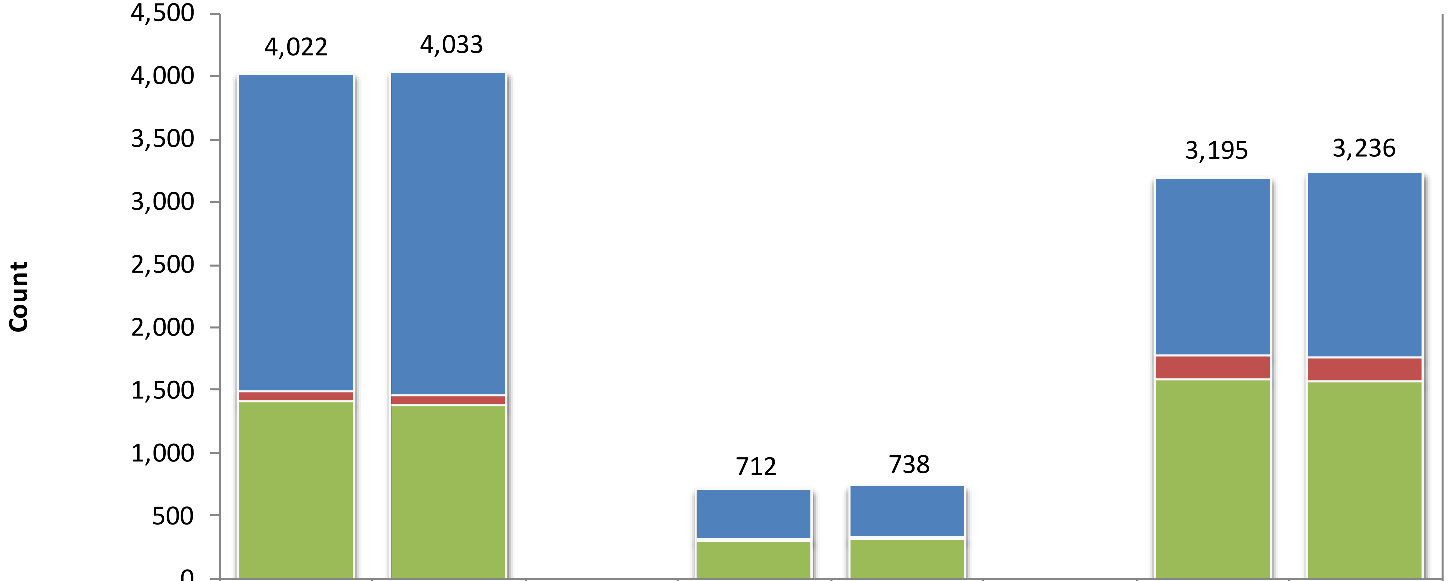


	2016 TCS	2017 TCS		2016 ECS	2017 ECS
Retired	73,582	75,509		57,026	58,256
Vested Former	25,298	25,493		21,087	20,887
Active	105,547	106,302		58,083	57,615
Total	204,427	207,304		136,196	136,758

GRS Retirement Consulting

State Demographic Data by System

58



	2016 State Police	2017 State Police		2016 Judges	2017 Judges		2016 LEOPS	2017 LEOPS
Retired	2,536	2,572		407	417		1,424	1,482
Vested Former	84	90		7	9		194	190
Active	1,402	1,371		298	312		1,577	1,564
Total	4,022	4,033		712	738		3,195	3,236

State Demographic Data by System

	TCS	ECS	State Police	Judges	LEOPS	Total
Active Members						
2017 Count	106,302	57,615	1,371	312	1,564	167,164
2016 Count	105,547	58,083	1,402	298	1,577	166,907
2015 Count	105,526	59,261	1,394	307	1,546	168,034
% Change 2017/2016	0.7%	-0.8%	-2.2%	4.7%	-0.8%	0.2%
2017 Payroll ($Mill)	$6,780.8	$3,218.6	$100.4	$46.9	$106.8	$10,253.5
2016 Payroll ($Mill)	$6,611.0	$3,171.4	$93.5	$44.7	$102.1	$10,022.7
2015 Payroll ($Mill)	$6,470.7	$3,241.0	$91.1	$44.6	$98.6	$9,946.0
% Change 2017/2016	2.6%	1.5%	7.4%	4.8%	4.6%	2.3%
2017 Average Pay	$ 63,788	$ 55,864	$ 73,220	$ 150,242	$ 68,303	$ 61,338
2016 Average Pay	$ 62,636	$ 54,600	$ 66,684	$ 150,038	$ 64,741	$ 60,050
2015 Average Pay	$ 61,319	$ 54,690	$ 65,352	$ 145,277	$ 63,777	$ 59,190
% Change 2017/2016	1.8%	2.3%	9.8%	0.1%	5.5%	2.1%

GRS Retirement Consulting

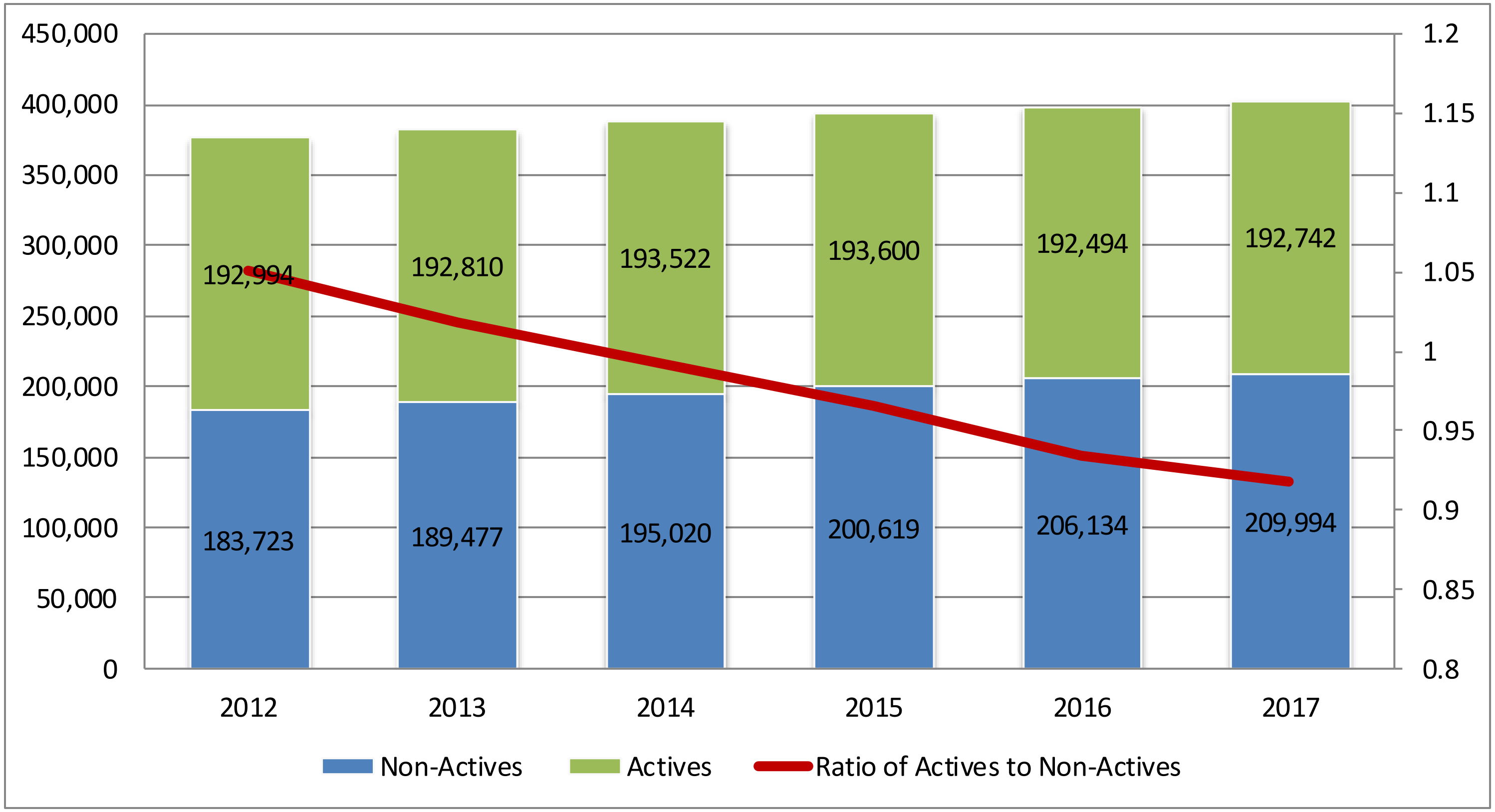
State Demographic Data by System

	TCS	ECS	State Police	Judges	LEOPS	Total
Retired Members						
2017 Count	75,509	58,256	2,572	417	1,482	138,236
2016 Count	73,582	57,026	2,536	407	1,424	134,975
2015 Count	71,176	55,509	2,508	397	1,371	130,961
% Change 2017/2016	2.6%	2.2%	1.4%	2.5%	4.1%	2.4%
2017 Benefits ($ Mill)	$2,088.4	$1,039.8	$120.3	$31.4	$50.0	$3,329.7
2016 Benefits ($ Mill)	$2,012.2	$997.4	$117.7	$30.7	$47.4	$3,205.4
2015 Benefits ($ Mill)	$1,941.8	$958.4	$116.3	$30.0	$45.5	$3,092.0
% Change 2017/2016	3.8%	4.2%	2.2%	2.2%	5.6%	3.9%
Vested Former Members						
2017 Count	25,493	20,887	90	9	190	46,669
2016 Count	25,298	21,087	84	7	194	46,670
2015 Count	24,541	21,100	81	8	193	45,923
% Change 2017/2016	0.8%	-0.9%	7.1%	28.6%	-2.1%	0.0%

GRS Retirement Consulting

Membership History

Combined State and Municipal



61

Disclosures

- This presentation is intended to be used in conjunction with the June 30, 2017 actuarial valuation report. This presentation should not be relied on for any purpose other than the purpose described in the valuation report.

- This presentation shall not be construed to provide tax advice, legal advice or investment advice.

- The actuaries submitting this presentation (Brian Murphy, Brad Armstrong, Amy Williams, and Jeff Tebeau) are Members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

- The purposes of the actuarial valuation are to measure the financial position of MSRPS, assist the Board in establishing employer contribution rates necessary to fund the benefits provided by MSRPS, and provide actuarial reporting and disclosure information for financial reporting.

GRS Retirement Consulting

Disclosures

- Future actuarial measurements may differ significantly from the current and projected measurements presented in this presentation 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.

- This is one of multiple documents comprising the actuarial reports for the combined systems and the municipal corporations. Additional information regarding actuarial assumptions and methods, and important additional disclosures are provided in the Actuarial Valuations as of June 30, 2017.

- If you need additional information to make an informed decision about the contents of this presentation, or if anything appears to be missing or incomplete, please contact us before relying on this presentation.

GRS Retirement Consulting

Annual State Retirement and Pension System's Investment Overview

Presented to the
Joint Committee on Pensions

Department of Legislative Services
Office of Policy Analysis
Annapolis, Maryland

December 2017

Annual State Retirement and Pension System's Investment Overview

At the request of the Joint Committee on Pensions, the Department of Legislative Services (DLS) annually reviews the investment performance of the State Retirement and Pension System (SRPS) for the preceding fiscal year. This report is intended to provide an overview of SRPS performance, a comparison of this performance to its peers, and an identification of issues meriting further comment by the State Retirement Agency (SRA).

State Retirement and Pension System Investment Performance

Asset Allocation

The SRPS Board of Trustees sets the allocation of assets to each investment class and continuously monitors the appropriateness of the allocation in light of its investment objectives. The SRPS Investment Policy Manual sets forth the investment objectives:

> The board desires to balance the goal of higher long-term returns with the goal of minimizing contribution volatility, recognizing that they are often competing goals. This requires taking both assets and liabilities into account when setting investment strategy, as well as an awareness of external factors such as inflation. Therefore, the investment objectives over extended periods of time (generally, ten to twenty years) are to achieve an annualized investment return that:
>
> 1. In nominal terms, equals or exceeds the actuarial investment return assumption of the System adopted by the board. The actuarial investment return assumption is a measure of the long-term rate of growth of the System's assets. In adopting the actuarial return assumption, the board anticipates that the investment portfolio may achieve higher returns in some years and lower returns in other years.
>
> 2. In real terms, exceeds the U.S. inflation rate by at least 3.0%. The inflation-related objective compares the investment performance against the rate of inflation as measured by the Consumer Price Index (CPI) plus 3.0%. The inflation measure provides a link to the System's liabilities.

3. Meets or exceeds the system's investment policy benchmark. The investment policy benchmark is calculated by using a weighted average of the Board-established benchmarks for each asset class. The policy benchmark enables comparison of the system's actual performance to a passively managed proxy and measures the contribution of active investment management and policy implementation.

The assets allocation is structured into five categories. The growth equity class includes public equity (domestic, global, international, and emerging markets) and private equity investments. The rate sensitive class includes fixed income, treasury inflation protected securities, and cash. The credit class includes high yield bonds and bank loans and emerging market debt. The real assets class includes real estate, commodities, and natural resources and infrastructure investments. Absolute return is the final asset class category and consists of investments that are expected to exceed U.S. treasuries with low correlation to public stocks. Included within these asset classes are sub-asset classes. The board approves adjustments to the asset allocations and sets transitional targets. The board also approves target ranges for sub-asset classes as well as constraints on hedge fund exposure, with total hedge fund investments capped across all asset classes. **Exhibit 1** shows system asset allocations in relation to the strategic targets in effect on June 30, 2017.

Exhibit 1 also shows a continuation of a trend that began with significant restructuring of the portfolio in fiscal 2008 and 2009. Most notably, public equity has dropped from 62.8% in fiscal 2008 to 37.4% in fiscal 2016. As of June 30, 2017, the public equity allocation has grown slightly to 38.7%, with domestic public equity increasing from 14.8% in fiscal 2016 to 16.7% at the close of fiscal 2017. The allocation for private equity – one of the system's strongest performing asset classes – increased to 10.3% as of June 30, 2017, with the allocation reaching 11.1% as of September 30, 2017. The overall strategy of diminishing allocations to public equity is part of an approach by the board to decrease risk through diversification in the wake of the 2008 financial crisis, while increased investment in private equity has resulted in positive returns for the system with less experienced volatility than public equity. Lower allocations to public equity investments are expected to result in lower returns when public equities are in growth patterns. However, as public equity can be a highly volatile asset class, a more diverse investment allocation will provide protection when equity markets perform poorly or decline. While mitigating volatility will result in not taking full advantage of highly performing public equity markets, return volatility will exacerbate swings in employer contribution rates. The board of trustees and the investment committee monitor the allocation of assets and continue to discuss the appropriate allocation (in consultation with the system's investment staff and investment consultants) that will achieve the system's investment return needs.

Exhibit 1
State Retirement and Pension System Asset Allocation

Asset Class	Target Allocation	Actual June 30, 2017	Actual September 30, 2017
Growth/Equity	**47.0%**	**49.0%**	**50.6%**
U.S. Equity	16.0%	16.7%	15.9%
International Equity	12.0%	13.4%	14.1%
Emerging Market Equity	8.0%	8.7%	9.5%
Private Equity	11.0%	10.3%	11.1%
Rate Sensitive	**21.0%**	**21.0%**	**20.7%**
Long-term Government Bonds	10.0%	9.8%	10.4%
Securitized and Corporate Bonds	6.0%	6.6%	5.7%
Inflation-linked Bonds	5.0%	4.6%	4.6%
Credit	**9.0%**	**9.5%**	**9.2%**
High Yield Bonds and Bank Loans	6.0%	6.6%	6.2%
Emerging Market Debt	3.0%	3.0%	3.0%
Real Assets	**15.0%**	**12.1%**	**10.4%**
Real Estate	10.0%	8.0%	8.2%
Commodities	3.0%	2.2%	0.4%
Natural Resources and Infrastructure	2.0%	1.9%	1.8%
Absolute Return	**8.0%**	**7.2%**	**6.4%**
Cash and Cash Equitization	**0.0%**	**1.2%**	**2.6%**
Total Fund	**100.0%**	**100.0%**	**100.0%**

Note: Columns may not add to total due to rounding. Target allocation is as of June 30, 2017.

Source: State Retirement Agency

As of October 1, 2017, the asset allocation targets have been revised. Target allocations to the growth equity class are increased to 50%, with increased target allocations to emerging markets and private equity and a decreased international equity target. The rate sensitive class is decreased to 19%. Within the credit class, the allocation targets increase the allocation to high yield bonds and bank loans and decrease the target allocation for emerging market debt. The system's *Investment Policy Manual* for the board of trustees for the SRPS will reflect actions of the board altering the asset allocation and can be found on SRA's website.

Investment Performance

The system's investment return for fiscal 2017 was 10.02% net of management fees, exceeding the assumed rate of return for the first time in three years. The performance was driven primarily by growth equity returns, which made up 49.0% of the portfolio and returned 18.53% for the fiscal year. As shown in **Exhibit 2**, the system's assets totaled $49.1 billion as of June 30, 2017, an increase of over $3.6 billion over fiscal 2016. Additionally, as of September 30, 2017, the fund has increased to $50.3 billion, the first time the fund has exceeded $50.0 billion. As noted below, the strongest performing asset classes were public and private equity, credit, and real estate.

As shown in **Exhibit 3**, the system as a whole performed 15 basis points above the benchmark. Public equity, private equity, credit, and natural resources and infrastructure all had strong returns above the assumed rate of return of 7.55%. Commodities and nominal fixed income had the poorest returns, at -8.22% and -2.35%, respectively, though nominal fixed income returned 156 basis points above its benchmark. Absolute return's performance of 3.31% was 285 basis points below its benchmark return of 6.16%. The system's cash and cash equitization program had the best performance relative to its benchmark, returning 5.11% against a benchmark of 0.46%.

Exhibit 2
State Retirement and Pension System of Maryland
Fund Investment Performance for Periods Ending June 30, 2017
($ in Millions)

	Assets	% Total	Time Weighted Total Returns 1 Year	5 Years	10 Years
Growth Equity					
Public Equity	$19,022	38.7%	19.02%	11.42%	4.21%
Private Equity	5,045	10.3%	16.44%	14.11%	10.00%
Subtotal	***$24,067***	***49.0%***	***18.53%***	***12.00%***	***4.64%***
Rate Sensitive					
Nominal Fixed Income	$8,049	16.4%	-2.35%	3.11%	5.25%
Inflation Sensitive	2,255	4.6%	-0.76%	1.12%	n/a
Subtotal	***$10,304***	***21.0%***	***-2.08%***	***2.91%***	***5.15%***
Credit	**$4,683**	**9.5%**	**9.99%**	**7.13%**	**n/a**
Real Assets					
Real Estate	$3,939	8.0%	7.19%	11.41%	4.70%
Commodities	1,082	2.2%	-8.22%	-7.92%	n/a
Natural Resources and Infrastructure	910	1.9%	12.87%	5.03%	n/a
Subtotal	***$5,931***	***12.1%***	***4.67%***	***0.57%***	***4.24%***
Absolute Return	**$3,528**	**7.2%**	**3.31%**	**2.34%**	**n/a**
Cash and Cash Equitization	**$585**	**1.2%**	**5.11%**	**2.37**	**n/a**
Total Fund	**$49,098**	**100.0%**	**10.02%**	**7.64%**	**4.15%**

Note: Data presented includes funds invested by the system on behalf of the Maryland Transit Administration. Returns beyond 1 year are annualized. Returns are net of fees, except for 10-year returns, which are gross of fees. Columns may not add to total due to rounding.

Source: State Street Investment Analytics

Exhibit 3
State Retirement and Pension System of Maryland
Benchmark Performance for Periods Ending June 30, 2017

	Return	Benchmark	Excess
Public Equity	19.02%	20.12%	-1.10%
Private Equity	16.44%	13.67%	2.77%
Nominal Fixed Income	-2.35%	-3.96%	1.61%
Inflation-linked Bonds	-0.76%	-.067%	-0.09%
Credit	9.99%	9.93%	0.06%
Real Estate	7.19%	7.16%	0.03%
Commodities	-8.22%	-6.50%	-1.72%
Natural Resources and Infrastructure	12.87%	13.35%	-0.49%
Absolute Return	3.31%	6.16%	-2.85%
Cash and Cash Equitization	5.11%	0.46%	4.65%
Total Fund	**10.02%**	**9.88%**	**0.15%**

Note: Excess may not sum due to rounding.

Source: State Street Investment Analytics

Appendix 1 presents the fiscal year-end performance by each investment manager for fiscal 2017 and prior periods by asset class and asset sub-class.

DLS requests SRA to comment on the 2017 return performance in relation to the policy benchmarks and for any asset classes and asset sub-classes that underperformed the benchmark; to comment on the factors that led to the underperformance, whether those factors are expected to negatively affect performance in fiscal 2018; and to comment what actions are being taken to mitigate those factors impacting the fiscal 2018 returns.

Additionally, SRA should comment on the utilization of any strategic adjustments to asset allocation during fiscal 2017 and the impact on investment performance.

Performance Relative to Other Systems

One method of evaluating the system's investment performance is to compare the system's investment performance with the performance of other systems. The Wilshire Trust Universe Comparison Service (TUCS) rankings are useful for providing a big-picture, snapshot assessment of the system's performance relative to other large public pension plans. In the TUCS analysis, the one-hundredth percentile represents the lowest investment return, and the first percentile is the highest investment return. According to TUCS, the system's fiscal 2017 investment performance was rated in the ninety-fifth percentile among the public pension funds with at least $25 billion in assets, as shown in **Exhibit 4**. As the system has a low allocation to equity investments compared to its peers, the system's investment policy will have a low TUCS ranking when equity markets are experiencing strong performance, as was the case during fiscal 2017. With the exception of the one-year return for fiscal 2016, long-term performance rankings place SRPS in the bottom quartile for every timeframe examined. The TUCS rankings are based on returns gross of fees.

Exhibit 4

TUCS Percentile Rankings for Periods Ending June 30

Fiscal 2014-2017

	2014	2015	2016	2017
1 Year	94	81	57	95
3 Years	94	88	95	91
5 Years	84	88	95	87
10 Years	99	91	95	100

TUCS: Wilshire Trust Universe Comparison Service

Note: Rankings for systems greater than $25 billion.

Source: Wilshire Trust Universe Comparison Service

TUCS rankings on their own offer limited insight into the manner in which a system's asset allocation drives performance. The rankings by themselves offer little by way of explaining why Maryland's performance differs from that of other funds and do not reflect a clear picture of the increased investment volatility risks borne by a system with heavier investment in equity, particularly public equity. Additionally, total system TUCS rankings will be driven by the asset allocation. SRA noted in its presentation on the Investment Division that in certain asset classes the system does outperform peers, but that when the system as a whole is compared, the low allocation to public equity will drive down the system's overall ranking.

TUCS also provides data on the risk-return profile of its members. The data shows that the system's level of risk over the three-year period ending June 30, 2017, was below the median for other public funds with assets greater than $25 billion. This is consistent with the system's comparatively low allocation to public equity, which is a highly volatile asset class. The system's asset allocation sets the system up to protect against more extreme losses in down markets. Due to the nature of the benefits that the system's investments ultimately fund, there is prudence in setting an asset allocation that achieves the necessary investment returns with the lowest level of risk capable of achieving those returns.

Asset allocation and returns in comparably sized public pension plans further illustrate the relationship between allocations to equity and fund performance. Over the last few years, high allocations to public equity resulted in higher returns due to the run-up in those markets. Based on data compiled by SRA, DLS identified seven other state pension funds with total fund values similar to Maryland, five of which utilize internal asset management. All but one of the systems had a higher share of equity allocations, and all outperformed Maryland in returns. These systems are shown in **Exhibit 5**. As expected, the systems with higher allocations to equity outperformed Maryland. Pennsylvania's Public School Employees' Retirement System (PSERS) had a substantially lower allocation to public equity than SRPS but had similar overall returns for the year.

Exhibit 5
Performance and Equity Allocation of Public Pension Fund Peers
As of June 30, 2017

			Asset Allocation			
	Assets ($ in Billions)	**Total Equity Exposure**	**Public Equity**	**Private Equity**	**Real Estate**	**Fiscal 2017 Performance**
Minnesota	$64.1	73.8%	64.9%	8.0%	0.9%	15.10%
Massachusetts	66.9	65.4%	45.7%	10.6%	9.1%	13.20%
Colorado	46.0	74.4%	57.9%	7.9%	8.6%	13.00%
Illinois	49.4	64.1%	36.4%	13.2%	14.5%	12.60%
Virginia	74.4	62.6%	41.3%	8.7%	12.6%	12.10%
Tennessee	47.0	66.0%	54.4%	3.9%	7.7%	11.42%
Pennsylvania	52.4	44.3%	21.3%	11.3%	11.7%	10.14%
Maryland	**$49.1**	**57.1%**	**38.7%**	**10.3%**	**8.0%**	**10.02%**

Note: Maryland, Massachusetts, and Minnesota do not manage investments internally. Massachusetts returns are gross of fees.
Colorado: Public Employees' Retirement Association of Colorado
Illinois: Teachers' Retirement System of the State of Illinois
Maryland: Maryland State Retirement and Pension System
Massachusetts: Massachusetts Pension Reserves Investment Management Board
Minnesota: Minnesota State Board of Investments
Pennsylvania: Pennsylvania Public School Employees' Retirement System
Tennessee: Tennessee Consolidated Retirement System
Virginia: Virginia Retirement System

Source: State Retirement Agency; Pennsylvania Public School Employees' Retirement System *2017 Comprehensive Annual Financial Report*

SRPS returns in public equity and private equity generated significant returns in fiscal 2017 above the actuarial target of 7.55%, and real estate returned 7.19% for the fiscal year. Other systems shown in Exhibit 5 highlight the strength of equity performance in fiscal 2017. All things being equal, a system with a higher allocation in these asset classes would be expected to have performed better than SRPS in fiscal 2017. However, PSERS provides an example of mitigating exposure to more volatile assets while still achieving returns that meet or exceed the investment return assumptions. PSERS had significantly less public equity exposure to SRPS yet achieved a slightly higher return than SRPS. PSERS investment return assumption was 7.25%, compared to SRPS target of 7.55%, meaning PSERS return of 10.14% provided more excess return than the SRPS return of 10.02%. While these returns were comparatively lower than other systems, they still were above the assumed rates of return and shield their beneficiaries and funding employers in periods where equity markets sustain losses. Additionally, allocations that limit exposure to more volatile assets will result in more stable employer contribution rates. Contribution rates take into account investment returns, so even fluctuations in returns that are near or above the assumed rate of return could cause swings in year-to-year employer contributions. An allocation that would result in mitigating volatility of returns (whether excess gains or returns below the assumed rate of return or investment losses) will also mitigate the impact to employer contributions from contribution rate increases due to prior year returns being higher than current year returns.

DLS requests that SRA comment on the risk profile of the system's asset allocation and comment on investment strategies that can take advantage of short-term market opportunities while still maintaining the system's overall risk tolerance.

Investment Management Fees

As shown in **Exhibit 6,** SRPS incurred $333.6 million in investment management fees during fiscal 2017, a slight increase of $329.6 million over fiscal 2016 fees. Management fees for the plan as a whole have grown substantially since the system adjusted its asset allocation to invest more heavily in alternative asset classes with higher fee structures. The shift of public equity assets to global and emerging market equity managers, which are almost all active managers, contributed significantly to the growth in fees over the past few years. While management fees increased slightly, the total plan assets increased significantly, reducing the portion of fees relative to assets under management. SRA credits its ability to negotiate favorable fee arrangements as a contributing factor in reducing management fees.

Exhibit 6
Asset Management Fees Paid by Asset Class
Fiscal 2016-2017
($ in Millions)

	2016	2017
Public Equity	$83.6	$80.1
Rate Sensitive	10.0	10.5
Credit and Debt Related	36.9	35.7
Real Return	29.6	25.4
Absolute Return	49.2	54.1
Private Equity	81.4	86.0
Real Estate	32.6	34.2
Currency	3.1	4.6
Service Providers/Other	3.1	3.1
Total	**$329.6**	**$333.6**

Note: Columns may not sum to total due to rounding.

Source: State Retirement Agency

While active management of assets results in higher overall fees, the system has benefited from active management by achieving excess returns over performance benchmarks. Private equity returned 277 basis points in excess of its fiscal 2017 benchmark. Actively managed U.S. equity outperformed passive U.S. equity with returns of 19.71% and 17.56%, respectively. International developed equity in the Terra Maria program outperformed passively managed international developed equity with returns of 20.69% and 20.01%, respectively. Actively managed investments in emerging market equity returned 24.42%, while passive investments returned 23.22%. Passive domestic nominal fixed income returned -4.01%, while active management returned -2.36% for the fiscal year. The system has demonstrated an ability to receive value when paying for active management by mitigating the extent of negative returns and achieving excess returns when market opportunity is available. Review of SRPS fees has concluded that SRPS has continued to be effective at negotiating more favorable fee arrangements than peer systems.

Private Equity Fees

Private equity investments comprise 10.3% of total system assets as of June 30, 2017. The total private equity investment has increased from 8.0% as of June 30, 2015. The system's private equity program is relatively young, beginning in 2005. Management fees for private equity comprise nearly 26.0% of total management fees, despite only constituting 10.3% of system assets in fiscal 2017. The reason for the high amount of fees in private equity involves a substantial degree of active management. Fee structures are similar to those used in hedge funds, with a set management fee, plus a portion of earnings referred to as "carried interest." The management fees only reflect the management fees, not carried interest. Because of the nature of private equity fee arrangements, carried interest fees are tied to performance. When the system pays higher carried interest fees, a higher return on investment is the result. SRA indicates that private equity returns are reported net of management fees and carried interest. Management fees for private equity shown reflect increased investment commitments in fiscal 2017.

While private equity does involve substantial management fees, the system's private equity portfolio was one of the strongest performing asset classes in 2017, with a return of 16.44%. This return was 277 basis points above its benchmark. Investment in private equity has resulted in positive returns for the system with less experienced volatility than public equity. Returns for the one-, three-, and five-year periods ending June 30, 2017, were 16.44%, 13.15%, and 14.11%, respectively. Returns for those same periods also provided significant excess returns over the asset class benchmarks. Additionally, SRA's chief investment officer has indicated plans for co-investments in private equity. Such investments would be companion investments to private equity funds SRPS is already investing in but would not carry the associated fee structure. Under this approach, SRPS would effectively be reducing its fees for any private equity investments it co-invests by increasing the invested funds with a portion of the investment not being subject to fees.

Absolute Return Fees

Absolute return comprises 7.2% of SRPS investments. Absolute return was among the lower performing asset classes in fiscal 2017, underperforming its benchmark by 285 basis points with a return of 3.31%. The system's Investment Policy Manual describes the absolute asset class as, "investments whose performance is expected to exceed the three month U.S. Treasury bill by 4-5% over a full market cycle and exhibit low correlation to public stocks." Only four investments within the absolute return class achieved returns above the asset class benchmark, with a number of investments sustaining significant losses. Similar to private equity, absolute return asset fee structures include set management fees and incentive compensation based on performance. Fees paid for absolute return were $54.1 million in fiscal 2017, which was a little more than 16% of management fees. In contrast, private equity (with similar fee structures) returned 277 basis points above its benchmark where the absolute return asset class returned 285 basis points below its benchmark, for a net return of 3.31%. Since inception, absolute return has returned 3.22% with a benchmark for that same period of 1.28%.

Given the low rate of return and high management fee structures, DLS requests SRA to comment on the returns of the absolute return asset class, including the market conditions leading to the low level of returns and what market conditions would result in markedly improved returns for investments in the asset class.

Investment Division Staffing

During the 2016 interim, the board of trustees requested legislation to give SRA authority to set the compensation of personnel in the SRA Investment Division and to establish positions within the division. Legislation introduced during the 2017 session did not pass, but language was included in the *Joint Chairmen Report* on the 2018 State Operating Budget requiring SRA to submit a report on how the requested authority would be utilized. That report was presented at the October 25, 2017 meeting of the Joint Committee on Pensions.

The report noted that "it would be in the best interest of the System to be provided the additional authority to allow it to make necessary adjustments to the investment management program through time, specifically in the areas of compensation, creating and eliminating positions, and procuring investment-related products and services." The report noted that while authority to set compensation will not eliminate turnover, it would reduce compensation-related turnover, providing more staff continuity to the system. The report noted that the ability to control the positions within the division (initially creating additional positions) would allow more senior managers to pass down necessary administrative functions to junior staff positions, allowing senior staff to focus more on developing and enhancing investment strategies. The report further noted that with control over personnel, the division can be structured so that no critical functions are the sole responsibility of one individual. Control over the number of division staff "will enable the division to expand the universe of potential managers or investments to pursue, enhance the methodology of evaluating those opportunities, or design tactical strategies to adjust the mix of investments for intermediate-term performance." As the fund has grown, the complexity of the assets under management has also grown. The request for staffing authority would allow SRA to expand its staff resources, as both the complexity of the fund assets and the size of the assets under management is expected to grow.

Longer term, the report indicates that economies of scale will likely necessitate moving to internal management functions. The report noted that out of 24 peer plans with assets greater than $40 billion, only 4 (including SRPS) had no internal management functions. The report noted that in the early 2000s, about one-third of system assets were under internal management, but the internal management functions were stopped due to the inability to attract and retain personnel to perform the function. The report noted that a mix of internal and external management will be necessary and that moving into internal management will be a long-term process, phasing up to its target of 50% of assets managed internally over a 10-year period.

Previously, DLS noted that a shift to internal management would require significant operational changes. Performance measures would need to be adopted to monitor and evaluate the effectiveness of internal management of system assets compared to external management. Additionally, guidelines and reporting requirements would need to be implemented to track the internal management of system funds as well as any expansion or reduction of internal management once implemented. The report acknowledged that personnel will need to be evaluated more stringently under higher compensation structures and given the higher expectations for asset management.

One of the arguments for internal management is that it can reduce fees paid for asset management. The report noted that fee savings of just 1 basis point would net the system $5 million. Utilization of internal management would have the potential to significantly reduce management fees, resulting in net gains to the system. However, SRA has been effective at negotiating favorable fee arrangements with external managers, and external management provides SRPS with options to select asset managers and to diversify the management of assets among multiple managers. When particular managers do not perform well, SRPS is able to terminate the management arrangement and place the funds under management elsewhere. If assets under internal management fail to adequately perform, the investment performance would be an SRA personnel issue, rather than a manager selection issue. Flexibility and diversification in managements of assets will need to be balanced with potential cost savings from reduced fees. Additionally, turnover of internal management personnel could affect investment performance continuity.

Terra Maria Program

The Terra Maria program is the system's emerging manager program. One of the Terra Maria program's stated goals is to achieve returns in excess of benchmarks. The program has demonstrated the ability to achieve excess returns over benchmarks, with instances of significant returns over benchmarks at times. With one exception, fiscal 2017 returns by manager yielded returns double the SRPS total plan assumed rate of return of 7.55%. The manager that underperformed started with the program in February 2017. Though the program as a whole performed under benchmark, three of the five managers had net returns above their benchmarks.

Over the past year, SRPS underwent reorganizing of the program asset management to better utilize the asset diversification that the program can bring to SRPS. The program transition includes eliminating mandates for allocations to large-cap domestic equity were and increasing mandates for international small-cap and emerging markets. The program consolidated under five managers, after terminating three managers and adding one new program manager. With the size of program investments in domestic equity in recent years, investment performance was tracking close to markets, making it more difficult to achieve excess returns in an asset class where it is already difficult to outperform the market, in addition to incurring active management fees. The program has maintained a diverse roster of managers through the transition.

The program continued to add value to the portfolio, but its performance has weakened compared with its early years. Now in its tenth year, the program return of 14.60% underperformed its benchmark by 74 basis points in fiscal 2017, though since inception the program has performed 64 basis points above its benchmark. Domestic public equity under Terra Maria managers had a cumulative return of 16.75%, which was 201 basis points below its benchmark. By comparison, the system returned 19.71% in actively managed domestic public equity, which was 155 basis points above the benchmark. However, in the program's largest asset allocation, international developed equity, the program outperformed SRPS' actively managed international developed equity portfolio. In this asset class, Terra Maria returned 20.69%, which was 26 basis points above benchmark compared to non-Terra Maria returns of 17.53% in the asset class, which was 232 basis points below its benchmark.

The program has also continued to experience some retrenchment in size. Total assets devoted to the program decreased from $2.6 billion in fiscal 2016 to $2.3 billion in fiscal 2017. As a proportion of total assets, Terra Maria dropped from 5.7% of total assets in fiscal 2016 to 4.7% in fiscal 2017. **Exhibit 7** provides an overview of the Terra Maria program by program manager and asset class.

Exhibit 7

Terra Maria Program Performance

Investment Performance for Periods Ending June 30, 2017
($ in Millions)

		Performance			
Program Manager	**Total Assets**	**Fiscal 2017 Actual**	**Fiscal 2017 Benchmark**	**Inception Actual**	**Inception Benchmark**
Acuitas	$97.1	–2.11%	5.82%	–2.11%	5.82%
Attucks	444.9	19.62%	19.49%	13.42%	8.66%
Capital Prospects	956.0	16.41%	15.67%	15.06%	14.86%
FIS Group	385.4	19.26%	22.96%	12.21%	11.62%
Leading Edge	437.5	19.69%	19.49%	12.17%	8.66%
Asset Class					
U.S. Equity	$410.4	16.75%	18.76%	8.03%	8.12%
International Developed Equity	1,217.6	20.69%	20.42%	2.71%	1.02%
Emerging Market Equity	50.6	17.89%	23.75%	10.17%	13.67%
Rate Sensitive	642.7	1.07%	0.11%	2.78%	2.22%
Total	**$2,321.4**	**14.60%**	**15.34%**	**5.69%**	**5.05%**

Note: Actual returns are net of fees; returns beyond one year are annualized. Total assets may not sum to total due to rounding and outstanding payables from closed accounts. Acuitas inception date is February 1, 2017.

Source: State Retirement Agency

DLS requests SRA to comment on the restructuring of the Terra Maria program, including how the reallocation of assets continues to promote the goals of the program and positions the program to continue to add investment value to SRPS.

Anti-boycott, Divestment, and Sanctions Executive Order

On October 23, 2017, Governor Lawrence J. Hogan, Jr., issued Executive Order 01.01.2017.25, which prohibits executive agencies from executing procurement contracts with a business entity unless the entity certifies that it is not engaging in a boycott of Israel and will refrain from a boycott of Israel for the duration of the contractual obligation. SRA does not consider the executive order to apply to SRPS investments. In the accompanying press release, it was noted that the Governor requested the board of trustees to "take divestment action with regard to any companies that hold investments with entities who participate in the BDS movement". Legislation was introduced during the 2017 legislative session, but no vote was taken at the committee level.

Currency Program

Adopted in fiscal 2009, the program is designed to protect against losing value when the dollar appreciates relative to some foreign currencies in countries in which the system holds assets. During periods when the dollar is weak, the currency management program's cost manifests as a slight drag on international equity holdings. However, when the dollar appreciates, the program provides gains that help offset the currency losses generated by the strengthening dollar. During fiscal 2017, the program lowered returns by $41.4 million. However, as of June 30, 2017, the currency program added value of $225.7 million since inception. Gains when the dollar is strong should outweigh losses when the dollar is weak, and the system has taken steps to lock in program gains. The primary objective of the program is to lower volatility related to currency fluctuations.

The currency hedging program is only applied to a relatively small portion of the system's total assets. In addition, not all foreign currencies are included in the hedging program. Due to liquidity constraints and higher transaction costs in some currencies, the program is currently limited to the euro, Japanese yen, Swedish krona, Swiss franc, Canadian dollar, Australian dollar, and British pound.

DLS requests SRA to comment on its process for evaluating utilization of the currency program and plans for the program moving forward.

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL PLAN	**49,097,846,204**	**100.0**	**0.43**	**3.29**	**7.52**	**10.02**	**10.02**	**4.55**	**7.64**	**4.15**	**8.07**	**07/01/86**
TOTAL PLAN POLICY INDEX [1]			0.14	2.94	6.93	9.88	9.88	4.06	6.89	3.75		07/01/86
Excess			*0.29*	*0.35*	*0.59*	*0.15*	*0.15*	*0.49*	*0.75*	*0.41*		
TOTAL GROWTH EQUITY	**24,067,258,565**	**49.0**	**0.78**	**5.05**	**11.96**	**18.53**	**18.53**	**6.97**	**12.00**	**4.64**	**5.75**	**01/01/98**
GROWTH EQUITY CUSTOM BENCHMARK [2]			0.34	4.47	11.12	18.80	18.80					01/01/98
Excess			*0.44*	*0.59*	*0.83*	*-0.27*	*-0.27*					
TOTAL RATE SENSITIVE EX OVERLAY	**10,300,853,171**	**21.0**	**-0.03**	**2.28**	**3.91**	**-2.11**	**-2.11**	**2.96**	**2.90**	**5.15**	**7.12**	**07/01/86**
CUSTOM RATE SENSITIVE BENCHMARK [3]			-0.06	2.26	3.55	-3.20	-3.20	2.97	2.45	4.35		07/01/86
Excess			*0.04*	*0.03*	*0.36*	*1.09*	*1.09*	*-0.02*	*0.45*	*0.79*		
TOTAL CREDIT/DEBT STRATEGIES EX OVERLAY	**4,682,594,600**	**9.5**	**0.24**	**2.71**	**6.28**	**9.99**	**9.99**	**3.70**	**7.13**		**10.11**	**03/01/09**
MSRA CUSTOM CREDIT BENCHMARK [4]			0.15	2.19	5.51	9.93	9.93	3.05	4.58		8.65	03/01/09
Excess			*0.09*	*0.52*	*0.77*	*0.06*	*0.06*	*0.65*	*2.55*		*1.45*	
TOTAL REAL ASSETS EX OVERLAY	**5,925,166,574**	**12.1**	**0.57**	**1.34**	**2.55**	**4.73**	**4.73**	**-0.79**	**0.58**	**4.25**	**3.87**	**02/01/06**
CUSTOM REAL ASSETS BENCHMARK [5]			-0.08	0.68	2.22	5.12	5.12	-0.33	0.20	3.09	2.89	02/01/06
Excess			*0.65*	*0.66*	*0.33*	*-0.39*	*-0.39*	*-0.46*	*0.39*	*1.16*	*0.97*	
TOTAL ABSOLUTE RETURN	**3,527,847,666**	**7.2**	**-0.67**	**-1.01**	**0.06**	**3.31**	**3.31**	**0.31**	**2.34**		**3.22**	**04/01/08**
CUSTOM ABSOLUTE RETURN BENCHMARK [6]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		1.28	04/01/08
Excess			*-0.55*	*-1.59*	*-1.99*	*-2.85*	*-2.85*	*-1.68*	*-1.80*		*1.94*	
TOTAL CASH AND EQUITIZATION	**584,886,533**	**1.2**	**0.46**	**1.06**	**2.44**	**5.11**	**5.11**	**3.19**	**2.37**		**2.94**	**07/01/08**
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30	0.46	0.46	0.20	0.15		0.20	07/01/08
Excess			*0.39*	*0.88*	*2.13*	*4.65*	*4.65*	*2.98*	*2.22*		*2.73*	

ENDNOTES

[1] Since 07/01/2008: Calculated monthly using transitional weights and asset class benchmarks. Prior to 07/01/2008: MSRA TOTAL PLAN STATIC POLICY.

[2] Benchmark is a dynamic blend of the Public Equity Benchmark and the State Street Private Equity Index based off of sub-asset class weights used in the policy benchmark.

[3] Since 07/01/2016: 48% Barclays Long-Term Government, 14% Barclays Securitized, 14% Barclays Corporate, 24% Barclays U.S. TIPS
From 11/01/2015 to 06/30/2016: 50% Barclays Long-Term Government, 15% Barclays Securitized, 15% Barclays Corporate, 20% Barclays U.S. TIPS
From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged
From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged
From 01/01/2010 to 06/30/2010: 80% BC Aggregate, 20% BC Global Bond Aggregate Unhedged
From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks
Prior to 07/01/2009: Benchmark is BC US Universal.
Formerly named "Custom Fixed Income Benchmark" prior to 11/01/2015.

[4] Since 01/01/2016: 67% US Credit Benchmark, 33% non-U.S Credit Benchmark.
From 11/01/2015 to 12/31/2015: 75% US Credit Benchmark, 25% non-U.S Credit Benchmark.
From 07/01/2013 to 10/31/2015: 50% BC High Yield / 20% BC Credit / 20% JP Morgan GBI EM Global Diversified/ 10% S&P/LSTA Leveraged Loan Index
From 01/01/2010 to 06/30/2013: 50% BC Credit / 50% BC High Yield
Prior to 01/01/2010: 75% BC Credit / 25% BC High Yield

[5] Since 11/01/2015: Benchmark is dynamically calculated using the beginning market values of the Real Estate, Commodities and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.
From 12/01/2012 to 10/31/2015: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max , 60% - 50% BC US TIPS Index/50% BC World Inflat-Linked Bond Index

From 07/01/2011 to 11/30/2012: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max , 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index
From 07/01/2009 to 06/30/2011: 20% - DJ UBS Commodities Index (Total Return), 20% - CPI + 5%; 8% Max , 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index
07/01/2008 to 06/30/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks Prior to 07/01/2008: 100% Barclays US TIPS Index
Prior to 07/01/2008: 100% Barclays US TIPS Index
Formerly named "Custom Real Return Benchmark" prior to 11/01/2015.

[6] Since 11/01/2015: HFRI Fund of Funds Conservative + 100 bps.
From 07/01/2014 to 10/31/2015: HFRI FOF: Conservative Index.
From 07/01/2008 to 06/30/2014 benchmark was HFRI Fund of Funds index.
Prior to 07/01/2008 benchmark was the Citigroup 3-Month T-bill + 500 bps.

THIS PAGE INTENTIONALLY BLANK

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
GROWTH EQUITY												
U.S. EQUITY												
RHUMBLINE RUSSELL 1000	2,621,509,940	5.3	0.71	3.06	9.22	17.95	17.95	9.25			14.69	11/01/12
Russell 1000			0.70	3.06	9.27	18.03	18.03	9.26			14.72	11/01/12
Excess			*0.01*	*0.00*	*-0.06*	*-0.08*	*-0.08*	*-0.02*			*-0.02*	
RHUMBLINE S&P 600 INDEX	384,164,957	0.8	2.98	1.72							1.61	03/01/17
S&P SMALLCAP 600			2.99	1.71							1.59	03/01/17
Excess			*-0.01*	*0.01*							*0.02*	
TOTAL US EQUITY PASSIVE	**3,005,675,070**	**6.1**	**0.99**	**2.89**	**8.94**	**17.56**	**17.56**				**11.95**	**11/01/15**
D.E. SHAW ALL CAP CORE ENHANCED	637,899,695	1.3	0.48	2.76	8.98	19.09	19.09	9.50			13.24	04/01/13
D.E. Shaw All Cap Custom Benchmark [1]			0.70	3.06	9.27	18.80	18.80	9.19			12.89	04/01/13
Excess			*-0.22*	*-0.30*	*-0.29*	*0.29*	*0.29*	*0.31*			*0.35*	
T. ROWE PRICE ENHANCED	585,783,593	1.2	0.48	4.22	11.29	19.83	19.83	10.27	15.10	7.74	8.58	05/01/06
S&P 500			0.62	3.09	9.34	17.90	17.90	9.61	14.63	7.18	7.94	05/01/06
Excess			*-0.15*	*1.13*	*1.95*	*1.93*	*1.93*	*0.66*	*0.47*	*0.55*	*0.64*	
RHUMBLINE US SCIENTIFIC BETA	567,958,426	1.2	0.91	3.59	9.18						9.18	01/01/17
SciBeta USA Multi-Beta MStrat 4F-EW TR			0.93	3.63	9.28						9.28	01/01/17
Excess			*-0.01*	*-0.04*	*-0.10*						*-0.10*	
TOTAL U.S. EQUITY ACTIVE	**1,792,560,379**	**3.7**	**0.62**	**3.50**	**10.18**	**19.71**	**19.71**	**8.75**	**15.00**	**5.43**		**06/01/94**
ACTIVE US EQ BM [2]			0.75	3.25	9.30	18.16	18.16	9.46	14.54			06/01/94
Excess			*-0.13*	*0.25*	*0.88*	*1.55*	*1.55*	*-0.71*	*0.46*			

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
US EQUITY TERRA MARIA	**410,365,719**	**0.8**	**3.01**	**2.25**	**5.94**	**16.75**	**16.75**	**5.30**	**12.18**	**7.52**	**8.03**	**04/01/07**
TERRA MARIA US EQUITY BENCHMARK [3]			3.75	2.83	6.58	18.76	18.76	8.47	14.18	7.77	8.12	04/01/07
Excess			*-0.74*	*-0.58*	*-0.64*	*-2.01*	*-2.01*	*-3.17*	*-2.01*	*-0.25*	*-0.09*	
TOTAL US EQUITY (CP)	**313,202,589**	**0.6**	**3.06**	**3.24**							**3.24**	**04/01/17**
S&P 600 Small Cap USD NET			2.95	1.61							1.61	04/01/17
Excess			*0.11*	*1.62*							*1.62*	
TOTAL US EQUITY TM + U.S. EQUITY ACTIVE	**2,202,926,098**	**4.5**	**1.06**	**3.22**	**9.01**	**19.20**	**19.20**	**7.51**	**13.89**		**9.17**	**07/01/08**
TM US EQ + ACTIVE US EQ BM [2]			1.29	3.16	8.54	18.93	18.93	9.16	14.51		10.03	07/01/08
Excess			*-0.24*	*0.06*	*0.47*	*0.26*	*0.26*	*-1.65*	*-0.62*		*-0.85*	
U.S. EQUITY EX OVERLAY	**5,208,601,168**	**10.6**	**1.02**	**3.03**	**8.96**	**18.43**	**18.43**	**8.20**	**14.19**	**6.69**	**8.77**	**04/01/94**
MSRA CUSTOM US EQUITY INDEX [4]			0.90	3.02	8.93	18.51	18.51	9.10	14.58	7.27		04/01/94
Excess			*0.12*	*0.02*	*0.03*	*-0.08*	*-0.08*	*-0.91*	*-0.39*	*-0.58*		
US Equity Structural	2	0.0										02/01/17
U.S. EQUITY OVERLAY	**2**	**0.0**										**02/01/17**
U.S. EQUITY	**5,208,601,170**	**10.6**	**1.02**	**3.03**	**8.97**	**18.44**	**18.44**	**8.20**	**14.19**	**6.69**	**8.77**	**04/01/94**
INTERNATIONAL DEVELOPED MARKETS												
SSGA INTERNATIONAL FUND	747,238,731	1.5	0.11	5.84	13.22	20.01	20.01	1.07	8.52	1.62	8.62	05/01/03
SSGA INTERNATIONAL CUSTOM INDEX [5]			0.09	5.63	12.82	19.49	19.49	0.67	8.15	1.27	8.34	05/01/03
Excess			*0.02*	*0.21*	*0.40*	*0.52*	*0.52*	*0.40*	*0.37*	*0.34*	*0.28*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
INTERNATIONAL DEVELOPED EQUITY PASSIVE	**747,238,731**	**1.5**	**0.11**	**5.84**	**13.22**	**20.01**	**20.01**				**7.65**	**11/01/15**
MSCI WORLD EX US NET (DAILY)			0.09	5.63	12.82	19.49	19.49				7.08	11/01/15
Excess			*0.02*	*0.21*	*0.40*	*0.52*	*0.52*				*0.57*	
ARTISAN PARTNERS, L.P.	551,173,211	1.1	0.28	9.06	18.68	13.54	13.54	0.16	8.46	3.61	8.54	11/01/03
ARTISAN CUSTOM BENCHMARK [6]			0.09	5.63	12.82	19.49	19.49	0.67	8.15	1.74	7.31	11/01/03
Excess			*0.18*	*3.43*	*5.85*	*-5.95*	*-5.95*	*-0.52*	*0.31*	*1.87*	*1.23*	
AQR ENHANCED ACWI EX-US	596,633,518	1.2	0.10	5.88	13.76	20.34	20.34	1.29			3.07	12/01/13
AQR Enhanced Custom Benchmark [7]			0.09	5.63	12.82	19.49	19.49	0.40			2.11	12/01/13
Excess			*0.01*	*0.25*	*0.94*	*0.85*	*0.85*	*0.89*			*0.97*	
BROWN CAPITAL MANAGEMENT INT'L	509,829,985	1.0	-0.85	7.35	15.08	14.42	14.42	2.88	12.02		13.01	12/01/08
Brown Capital Management International Custom Benchmark [8]			0.13	5.86	13.19	19.74	19.74	0.42	7.12		9.23	12/01/08
Excess			*-0.98*	*1.49*	*1.89*	*-5.32*	*-5.32*	*2.46*	*4.90*		*3.78*	
DFA INTERNATIONAL CORE EQUITY	386,595,895	0.8	0.53	6.23	13.75	23.05	23.05	2.41			6.42	05/01/13
MSCI WORLD EX US (NET)			0.09	5.63	12.82	19.49	19.49	0.67			4.24	05/01/13
Excess			*0.44*	*0.60*	*0.93*	*3.57*	*3.57*	*1.74*			*2.18*	
DFA SMALL CAP INTERNATIONAL	222,741,331	0.5	1.01	7.37	16.39	24.07	24.07	4.56	12.25	3.69	5.93	03/01/06
DFA Custom Benchmark [9]			0.32	7.28	15.45	21.26	21.26	4.02	11.43	2.90	4.73	03/01/06
Excess			*0.69*	*0.09*	*0.94*	*2.81*	*2.81*	*0.54*	*0.82*	*0.79*	*1.20*	
RHUMBLINE SCI BETA INTL EX-US	359,436,746	0.7	0.36	6.59							9.04	03/01/17
SciBeta Developed ex USA Value Div MS			0.41	6.75							9.24	03/01/17
Excess			*-0.05*	*-0.17*							*-0.21*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
INTERNATIONAL DEVELOPED EQUITY ACTIVE [10]	**2,626,765,609**	**5.4**	**0.13**	**7.12**	**15.26**	**17.53**	**17.53**	**0.60**	**7.76**	**0.99**		**01/01/95**
CUSTOM INTL DEV EQ ACTIVE BENCHMARK [11]			0.16	5.98	13.30	19.85	19.85	0.69	7.10			01/01/95
Excess			*-0.04*	*1.14*	*1.96*	*-2.32*	*-2.32*	*-0.09*	*0.67*			
INTL DEVELOPED EQUITY TERRA MARIA [10]	**1,217,638,278**	**2.5**	**-0.05**	**7.00**	**16.69**	**20.69**	**20.69**	**2.17**	**8.37**		**2.71**	**11/01/07**
TERRA MARIA INTL DEVELOPED EQ BM [12]			-0.01	6.44	14.20	20.42	20.42	0.85	7.32		1.02	11/01/07
Excess			*-0.03*	*0.56*	*2.49*	*0.26*	*0.26*	*1.32*	*1.04*		*1.69*	
TOTAL INTL DEVELOPED EQUITY (FIS)	**334,762,116**	**0.7**	**0.49**	**8.92**							**8.92**	**04/01/17**
MSCI WORLD EX US SMALL CAP (NET)			0.32	7.28							7.28	04/01/17
Excess			*0.17*	*1.64*							*1.64*	
INTL DEVELOPED EQUITY ACTIVE AND TM [10]	**3,844,403,887**	**7.8**	**0.07**	**7.08**	**15.67**	**18.43**	**18.43**	**1.04**	**7.94**		**2.52**	**07/01/08**
TM INTL DEV EQ + ACTIVE INTL DEV EQ BM [11]			0.11	6.14	13.61	20.07	20.07	0.74	7.17		2.24	07/01/08
Excess			*-0.03*	*0.94*	*2.07*	*-1.64*	*-1.64*	*0.29*	*0.78*		*0.27*	
INTL EQUITY TRANSITION ACCOUNT	36,068	0.0										11/01/04
TOTAL INTL DEV EQUITY EX RECORD CURRENCY [10]	**4,591,678,686**	**9.4**	**0.08**	**6.76**	**14.94**	**18.93**	**18.93**	**0.61**	**7.38**	**1.22**		**01/01/95**
MSRA CUSTOM INTERNATIONAL INDEX [13]			0.09	5.63	12.82	19.49	19.49	0.05	6.74	1.00		01/01/95
Excess			*-0.02*	*1.13*	*2.11*	*-0.56*	*-0.56*	*0.55*	*0.64*	*0.22*		
RECORD CURRENCY MANAGEMENT	-33,048,699	-0.1										05/01/09

68

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL INTL DEVELOPED EQUITY EX OVERLAY [10]	**4,558,629,986**	**9.3**	**-0.08**	**6.00**	**12.61**	**18.28**	**18.28**	**1.59**	**8.01**	**1.47**	**6.38**	**01/01/95**
MSRA CUSTOM INTERNATIONAL INDEX [13]			0.09	5.63	12.82	19.49	19.49	0.05	6.74	1.00	5.35	01/01/95
Excess			*-0.17*	*0.37*	*-0.21*	*-1.21*	*-1.21*	*1.53*	*1.26*	*0.47*	*1.03*	
International Equity Tactical	8	0.0										01/01/17
International Equity Structural	-10	-0.0										02/01/17
TOTAL INTL DEVELOPED EQUITY OVERLAY	**-2**	**0.0**										**12/01/16**
TOTAL INTL DEVELOPED EQUITY	**4,558,629,985**	**9.3**	**-0.08**	**5.94**	**12.58**	**18.23**	**18.23**	**1.57**	**8.00**	**1.47**	**6.38**	**01/01/95**
EMERGING MARKETS												
SSGA EMERGING MARKETS INDEX FUND	86,220,716	0.2	0.94	6.10	18.18	23.22	23.22	0.63	3.61		3.90	06/01/12
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75	1.07	3.96		4.67	06/01/12
Excess			*-0.07*	*-0.17*	*-0.25*	*-0.52*	*-0.52*	*-0.45*	*-0.35*		*-0.76*	
EMERGING MARKETS EQUITY PASSIVE	**86,220,716**	**0.2**	**0.94**	**6.10**	**18.18**	**23.22**	**23.22**				**13.27**	**11/01/15**
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				13.67	11/01/15
Excess			*-0.07*	*-0.17*	*-0.25*	*-0.52*	*-0.52*				*-0.40*	
GENESIS ASSET MANAGERS LTD	241,320,534	0.5	1.04	6.00	16.20	17.79	17.79	-0.04	4.55		8.36	07/01/09
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75	1.07	3.96		6.10	07/01/09
Excess			*0.03*	*-0.27*	*-2.23*	*-5.96*	*-5.96*	*-1.11*	*0.60*		*2.26*	

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
BAILLIE GIFFORD EMERGING MARKETS	643,078,654	1.3	2.22	9.25	27.15	34.63	34.63				15.75	11/01/15
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				13.67	11/01/15
Excess			*1.21*	*2.98*	*8.71*	*10.89*	*10.89*				*2.08*	
DFA EMERGING MARKETS	729,691,985	1.5	0.90	4.68	19.00	21.94	21.94				27.08	02/01/16
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				27.48	02/01/16
Excess			*-0.11*	*-1.59*	*0.57*	*-1.80*	*-1.80*				*-0.40*	
ACADIAN EMRG MKTS MANAGED VOLATILITY EQ	230,769,000	0.5	0.68	4.76	14.63	13.57	13.57				10.81	04/01/16
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				19.22	04/01/16
Excess			*-0.33*	*-1.51*	*-3.80*	*-10.18*	*-10.18*				*-8.41*	
POLUNIN CAPITAL PARTNERS	398,177,252	0.8	2.40	5.47	18.69	31.06	31.06				26.31	04/01/16
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				19.22	04/01/16
Excess			*1.40*	*-0.80*	*0.26*	*7.31*	*7.31*				*7.09*	
AXIOM INTERNATIONAL INVESTORS	372,285,533	0.8	1.37	7.53	20.05	21.73	21.73				20.57	05/01/16
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				20.15	05/01/16
Excess			*0.36*	*1.26*	*1.62*	*-2.01*	*-2.01*				*0.42*	
FISHER INVESTMENTS	648,390,657	1.3	2.02	8.13	21.68	23.41	23.41				20.65	05/01/16
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				20.15	05/01/16
Excess			*1.02*	*1.86*	*3.25*	*-0.33*	*-0.33*				*0.50*	
WESTWOOD GLOBAL INVESTMENTS	354,213,757	0.7	0.38	3.05	16.16	25.62	25.62	3.06	6.09		14.01	12/01/08
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75	1.07	3.96		10.50	12/01/08
Excess			*-0.63*	*-3.22*	*-2.27*	*1.87*	*1.87*	*1.99*	*2.14*		*3.51*	

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TRANSITION ACCOUNT EMERGING MARKETS	0	0.0	0.00									05/01/16
TOTAL EMERGING MARKET ACTIVE	**3,617,927,372**	**7.4**	**1.49**	**6.39**	**20.15**	**24.42**	**24.42**	**2.14**	**5.04**		**3.50**	**07/01/10**
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75	1.07	3.96		3.87	07/01/10
Excess			*0.48*	*0.12*	*1.71*	*0.68*	*0.68*	*1.07*	*1.08*		*-0.37*	
EMERGING MARKETS EQUITY TERRA MARIA	**50,575,832**	**0.1**	**1.00**	**3.94**	**16.17**	**17.89**	**17.89**				**10.17**	**11/01/15**
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				13.67	11/01/15
Excess			*-0.01*	*-2.33*	*-2.26*	*-5.85*	*-5.85*				*-3.50*	
EMERGING MARKETS ACTIVE AND TM	**3,668,503,204**	**7.5**	**1.48**	**6.36**	**20.08**	**24.17**	**24.17**				**15.50**	**11/01/15**
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				13.67	11/01/15
Excess			*0.47*	*0.09*	*1.65*	*0.42*	*0.42*				*1.83*	
TOTAL EMERGING MARKETS EQUITY EX OVERLAY	**3,754,723,920**	**7.6**	**1.47**	**6.35**	**20.12**	**24.38**	**24.38**				**14.36**	**11/01/15**
MSCI EMERGING MARKETS			1.01	6.27	18.43	23.75	23.75				13.67	11/01/15
Excess			*0.46*	*0.08*	*1.69*	*0.63*	*0.63*				*0.69*	
Emrg Mkts Structural Overlay	13	0.0										02/01/17
TOTAL EMERGING MARKETS OVERLAY	**13**	**0.0**										**02/01/17**
TOTAL EMERGING MARKETS EQUITY	**3,754,723,934**	**7.6**	**1.47**	**6.38**	**20.01**	**24.26**	**24.26**				**14.30**	**11/01/15**
GLOBAL EQUITY												
ACADIAN ASSET MGT	135,749	0.0										10/01/05

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TEMPLETON INVESTMENT MGT	678,949,139	1.4	1.29	4.22	10.26	22.25	22.25	2.77	11.73	4.57	7.28	01/01/06
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82	10.54	3.71	5.81	01/01/06
Excess			*0.83*	*-0.05*	*-1.22*	*3.47*	*3.47*	*-2.05*	*1.19*	*0.86*	*1.47*	
BAILLIE GIFFORD	653,285,301	1.3	0.86	13.13	31.29	34.94	34.94	13.41	17.39		9.23	02/01/08
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82	10.54		4.72	02/01/08
Excess			*0.41*	*8.86*	*19.81*	*16.16*	*16.16*	*8.59*	*6.85*		*4.51*	
LONGVIEW PRTNRS GLOBAL EQUITY	592,314,206	1.2	1.67	4.98	12.29	18.71	18.71	9.35	16.13		13.46	10/01/09
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82	10.54		8.67	10/01/09
Excess			*1.21*	*0.70*	*0.82*	*-0.07*	*-0.07*	*4.53*	*5.59*		*4.79*	
BROWN CAPITAL GLOBAL EQUITY	604,570	0.0										01/01/10
AQR CAPITAL - GLOBAL EQUITY	881,423,291	1.8	0.56	4.38	11.62	20.67	20.67	5.24	11.62		10.52	08/01/10
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82	10.54		9.37	08/01/10
Excess			*0.10*	*0.11*	*0.15*	*1.89*	*1.89*	*0.42*	*1.08*		*1.15*	
D.E. SHAW INV - GLOBAL EQUITY	769,704,317	1.6	0.21	3.80	11.43	17.80	17.80	5.75	12.31		11.34	08/01/10
MSCI WORLD INDEX			0.38	4.03	10.66	18.20	18.20	5.24	11.38		10.28	08/01/10
Excess			*-0.17*	*-0.22*	*0.77*	*-0.40*	*-0.40*	*0.51*	*0.93*		*1.06*	
GMO GLOBAL ALL COUNTRY EQUITY ALLOCATION	769,032	0.0										09/01/13

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
SCHRODER QEP GLOBAL BLEND	313,077,962	0.6	0.83	3.36	9.53	17.92	17.92	4.26			8.19	09/01/13
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82			8.78	09/01/13
Excess			*0.38*	*-0.91*	*-1.95*	*-0.86*	*-0.86*	*-0.56*			*-0.58*	
TOTAL GLOBAL EQUITY ACTIVE	**3,890,385,483**	**7.9**	**0.86**	**5.62**	**13.89**	**20.06**	**20.06**	**5.96**	**12.44**	**4.77**	**7.04**	**10/01/05**
MSCI AC WORLD INDEX NET			0.45	4.27	11.48	18.78	18.78	4.82	10.54	3.71	5.97	10/01/05
Excess			*0.40*	*1.35*	*2.42*	*1.28*	*1.28*	*1.14*	*1.90*	*1.06*	*1.07*	
GLOBAL EQUITY TERRA MARIA	**34,666**	**0.0**										**12/01/08**
MARSHALL WACE EUREKA FUND	403,491,134	0.8	0.25	3.75	6.22	10.95	10.95	9.81			11.64	10/01/12
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93			5.86	10/01/12
Excess			*-0.65*	*1.79*	*0.31*	*-1.20*	*-1.20*	*6.88*			*5.78*	
STELLIAM FUND	280,499,750	0.6	2.14	2.12	3.03	11.54	11.54	0.08			3.21	07/01/13
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93			5.25	07/01/13
Excess			*1.24*	*0.16*	*-2.88*	*-0.61*	*-0.61*	*-2.86*			*-2.05*	
CRITERION HORIZONS FUND	119,640,300	0.2	-1.24	4.49	11.26	8.48	8.48	3.89			4.79	09/01/13
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93			5.11	09/01/13
Excess			*-2.15*	*2.53*	*5.36*	*-3.67*	*-3.67*	*0.95*			*-0.32*	
SCOPIA PX LLC	234,952,600	0.5	-0.95	-2.01	-2.78	3.35	3.35	1.75	3.27		3.27	07/01/12
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93	6.28		6.28	07/01/12
Excess			*-1.86*	*-3.96*	*-8.69*	*-8.80*	*-8.80*	*-1.18*	*-3.00*		*-3.00*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
HOPLITE ONSHORE	286,055,250	0.6	-0.44	2.22	3.89	3.09	3.09	1.22			3.61	02/01/13
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93			5.10	02/01/13
Excess			*-1.34*	*0.26*	*-2.01*	*-9.06*	*-9.06*	*-1.71*			*-1.49*	
INDUS PACIFIC OPPORTUNITIES FUND	147,334,100	0.3	1.12	7.59	14.86	17.27	17.27	11.06			9.96	06/01/13
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93			4.72	06/01/13
Excess			*0.21*	*5.63*	*8.96*	*5.12*	*5.12*	*8.13*			*5.24*	
PELORUS JACK 2X LP	148,203,900	0.3	-1.20								-1.20	06/01/17
HFRI Equity Hedge (Total) Index			0.90								0.90	06/01/17
Excess			*-2.10*								*-2.10*	
TOTAL EQUITY HEDGE FUND	**1,620,177,035**	**3.3**	**0.11**	**2.39**	**4.74**	**8.67**	**8.67**	**2.52**	**5.05**		**5.05**	**07/01/12**
HFRI Equity Hedge (Total) Index			0.90	1.96	5.90	12.15	12.15	2.93	6.28		6.28	07/01/12
Excess			*-0.80*	*0.43*	*-1.17*	*-3.48*	*-3.48*	*-0.41*	*-1.22*		*-1.22*	
TOTAL GLB EQ TM + GLB EQ ACTIVE + HF	**5,510,597,183**	**11.2**	**0.63**	**4.67**	**11.27**	**16.76**	**16.76**	**5.05**	**10.93**		**5.63**	**07/01/08**
TM GLOBAL + ACTIVE GLOBAL BM + EQ HF [2]			0.58	3.61	9.80	16.82	16.82	4.32	9.84		4.92	07/01/08
Excess			*0.06*	*1.05*	*1.47*	*-0.06*	*-0.06*	*0.73*	*1.09*		*0.72*	
GLOBAL EQUITY TRANSITION ACCOUNT	3,167,512	0.0										06/01/11
TOTAL GLOBAL EQUITY EX RECORD CURRENCY	**5,513,764,696**	**11.2**	**0.64**	**4.67**	**11.46**	**16.96**	**16.96**	**5.12**	**11.19**	**4.15**	**6.50**	**10/01/05**
MSRA CUSTOM GLOBAL INDEX [14]			0.45	4.27	11.48	18.78	18.78	4.82	10.54	3.83	6.08	10/01/05
Excess			*0.18*	*0.40*	*-0.02*	*-1.82*	*-1.82*	*0.30*	*0.65*	*0.32*	*0.42*	

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
RECORD CURRENCY - GLOBAL	-13,511,394	-0.0										05/01/09
TOTAL GLOBAL EQUITY EX OVERLAY	**5,500,253,302**	**11.2**	**0.58**	**4.44**	**10.80**	**16.66**	**16.66**	**5.50**	**11.39**	**4.24**	**6.58**	**10/01/05**
MSRA CUSTOM GLOBAL INDEX [14]			0.45	4.27	11.48	18.78	18.78	4.82	10.54	3.83	6.08	10/01/05
Excess			*0.13*	*0.17*	*-0.68*	*-2.12*	*-2.12*	*0.68*	*0.85*	*0.41*	*0.50*	
PUBLIC EQUITY												
TOTAL PUBLIC EQUITY EX OVERLAY	**19,022,208,377**	**38.7**	**0.72**	**4.84**	**12.52**	**19.05**	**19.05**	**5.70**	**11.43**	**4.21**		**04/01/94**
PUBLIC EQ BM 2 [15]			0.66	4.61	12.31	20.12	20.12	5.13	10.80			04/01/94
Excess			*0.06*	*0.23*	*0.20*	*-1.08*	*-1.08*	*0.57*	*0.62*			
96 **TOTAL PUBLIC EQUITY OVERLAY**	**14**	**0.0**										**12/01/16**
TOTAL PUBLIC EQUITY	**19,022,208,391**	**38.7**	**0.72**	**4.83**	**12.49**	**19.02**	**19.02**	**5.69**	**11.42**	**4.21**		**04/01/94**
PRIVATE EQUITY												
TOTAL PRIVATE EQUITY	**5,045,050,175**	**10.3**	**1.00**	**5.86**	**9.69**	**16.44**	**16.44**	**13.15**	**14.11**	**10.00**	**7.52**	**03/01/94**
Custom MD/SS PEI Index [16]			-0.83	3.95	6.63	13.67	13.67	8.56	10.56	7.68		03/01/94
Excess			*1.83*	*1.91*	*3.06*	*2.77*	*2.77*	*4.59*	*3.56*	*2.31*		
TOTAL GROWTH EQUITY	**24,067,258,565**	**49.0**	**0.78**	**5.05**	**11.96**	**18.53**	**18.53**	**6.97**	**12.00**	**4.64**	**5.75**	**01/01/98**
GROWTH EQUITY CUSTOM BENCHMARK [17]			0.34	4.47	11.12	18.80	18.80					01/01/98
Excess			*0.44*	*0.59*	*0.83*	*-0.27*	*-0.27*					

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
RATE SENSITIVE												
NOMINAL FIXED INCOME												
SSGA US GOVT LONG BOND INDEX	873,996,371	1.8	0.37	3.93	5.46						-2.92	11/01/16
BBG BARC US Gov Lg Idx			0.38	3.93	5.44						-2.80	11/01/16
Excess			*-0.01*	*-0.01*	*0.02*						*-0.11*	
SSGA US SECURITIZED INDEX	141,200,900	0.3	-0.39	0.92	1.40						-0.43	11/01/16
BBG BARC Sec Idx			-0.39	0.89	1.39						-0.36	11/01/16
Excess			*0.00*	*0.03*	*0.01*						*-0.07*	
SSGA US LONG INVEST GRADE CORP INDEX	191,797,258	0.4	0.98	4.91	5.65						1.90	11/01/16
BBG BARC Lg Corp			1.08	4.94	6.36						3.07	11/01/16
Excess			*-0.09*	*-0.02*	*-0.72*						*-1.17*	
SSGA US INTERM INVEST GRADE INDEX	293,498,324	0.6	-0.08	1.48	2.68						1.02	11/01/16
BBG BARC US Corp Int Inv Grd Idx			-0.04	1.49	2.67						1.07	11/01/16
Excess			*-0.04*	*-0.01*	*0.01*						*-0.05*	
SSGA PASSIVE FIXED INCOME	1,500,492,853	3.1	0.29	3.27	4.62	-4.01	-4.01	2.85	2.20	4.51	4.17	05/01/03
SSgA Aggregate Bond Custom Benchmark [18]			0.22	3.10	4.36	-3.96	-3.96	2.99	2.34			05/01/03
Excess			*0.06*	*0.18*	*0.25*	*-0.05*	*-0.05*	*-0.14*	*-0.14*			
US NOMINAL FIXED INCOME PASSIVE	**1,500,492,853**	**3.1**	**0.29**	**3.27**	**4.62**	**-4.01**	**-4.01**				**3.43**	**11/01/15**
US NOMINAL FI PASSIVE BENCHMARK [19]			0.22	3.10	4.36	-3.96	-3.96				3.64	11/01/15
Excess			*0.06*	*0.18*	*0.25*	*-0.05*	*-0.05*				*-0.21*	

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
PIMCO	1,310,079,028	2.7	0.22	3.09	4.89	-2.65	-2.65	2.77	2.42	4.79		06/01/84
PIMCO Custom Blended Index [20]			0.22	3.10	4.36	-3.96	-3.96	2.99	2.34	4.34		06/01/84
Excess			*-0.01*	*-0.01*	*0.53*	*1.31*	*1.31*	*-0.21*	*0.08*	*0.45*		
WESTERN ASSET MANAGEMENT	2,774,918,297	5.7	0.29	3.19	5.56	-2.09	-2.09	3.58	3.52	6.14	6.05	09/01/03
WESTERN ASSET MANAGEMENT CUSTOM BM [21]			0.22	3.10	4.36	-3.96	-3.96	2.92	2.30	4.32	4.37	09/01/03
Excess			*0.06*	*0.09*	*1.19*	*1.87*	*1.87*	*0.65*	*1.22*	*1.81*	*1.67*	
FIDELITY INSTITUTIONAL ASSET	456,165,323	0.9	0.19	3.08	4.21	-3.75	-3.75	2.80	2.40		4.60	02/01/08
Custom BC Agg Int/BC Agg/US Universal BM [22]			0.22	3.10	4.36	-3.96	-3.96	3.11	2.41		3.93	02/01/08
Excess			*-0.03*	*-0.02*	*-0.15*	*0.21*	*0.21*	*-0.31*	*-0.01*		*0.67*	
GOLDMAN SACHS FI CORE PLUS	449,593,960	0.9	0.32	3.10	4.39	-3.61	-3.61	2.94	2.81		5.14	03/01/09
Custom BC Agg Int/BC Agg/US Universal BM [22]			0.22	3.10	4.36	-3.96	-3.96	3.11	2.41		4.47	03/01/09
Excess			*0.10*	*0.01*	*0.02*	*0.35*	*0.35*	*-0.17*	*0.39*		*0.68*	
DODGE & COX - FI CORE	477,525,595	1.0	0.55	3.65	5.22	0.04	0.04	4.28	4.09		5.95	03/01/09
CORE BOND CUSTOM BENCHMARK [23]			0.22	3.10	4.36	-3.96	-3.96	3.11	2.41		4.31	03/01/09
Excess			*0.33*	*0.55*	*0.85*	*4.00*	*4.00*	*1.17*	*1.68*		*1.64*	
PRINCIPAL CORE BOND	451,969,387	0.9	0.29	3.20	4.44	-3.71	-3.71	2.99	2.67		4.67	07/01/09
CORE BOND CUSTOM BENCHMARK [23]			0.22	3.10	4.36	-3.96	-3.96	3.11	2.41		4.09	07/01/09
Excess			*0.06*	*0.11*	*0.07*	*0.25*	*0.25*	*-0.13*	*0.25*		*0.59*	
US NOMINAL FIXED INCOME ACTIVE	**5,920,251,590**	**12.1**	**0.29**	**3.19**	**5.09**	**-2.36**	**-2.36**	**3.41**	**3.07**		**5.02**	**07/01/08**
CUSTOM NOMINAL FIXED INCOME BENCHMARK [24]			0.22	3.10	4.36	-3.96	-3.96	3.01	2.47		4.16	07/01/08
Excess			*0.06*	*0.09*	*0.73*	*1.59*	*1.59*	*0.40*	*0.59*		*0.86*	

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
US NOMINAL FIXED INCOME TERRA MARIA [25]	**603,560,141**	**1.2**	**-0.15**	**1.17**	**2.08**	**1.03**	**1.03**	**2.31**	**2.30**		**5.78**	**11/01/08**
TERRA MARIA FI BENCHMARK [26]			-0.24	0.97	1.70	-0.01	-0.01	2.09	1.80		6.68	11/01/08
Excess			*0.08*	*0.20*	*0.38*	*1.04*	*1.04*	*0.22*	*0.49*		*-0.90*	
TOTAL RATE SENSITIVE (CP)	**642,749,273**	**1.3**	**-0.22**	**1.07**	**1.99**	**1.14**	**1.14**	**2.45**	**2.57**		**5.60**	**11/01/08**
RATE SENSITIVE (CP) BENCHMARK [26]			-0.31	0.88	1.62	0.12	0.12	2.21	1.96		4.69	11/01/08
Excess			*0.09*	*0.19*	*0.38*	*1.02*	*1.02*	*0.24*	*0.60*		*0.91*	
TOTAL US NOMINAL FI ACTIVE + TM	**6,523,811,732**	**13.3**	**0.25**	**3.00**	**4.80**	**-2.11**	**-2.11**	**3.31**	**2.99**		**4.96**	**07/01/08**
CUSTOM NOMINAL FIXED INCOME BENCHMARK [24]			0.22	3.10	4.36	-3.96	-3.96	3.01	2.47		4.16	07/01/08
Excess			*0.02*	*-0.10*	*0.44*	*1.84*	*1.84*	*0.30*	*0.52*		*0.80*	
US NOMINAL FIXED INCOME	**8,024,304,584**	**16.3**	**0.25**	**3.05**	**4.77**	**-2.40**	**-2.40**	**3.24**	**2.87**		**5.05**	**07/01/08**
US NOMINAL FIXED INCOME BENCHMARK [27]			0.22	3.10	4.36	-3.96	-3.96	2.99	2.34		4.26	07/01/08
Excess			*0.03*	*-0.05*	*0.40*	*1.56*	*1.56*	*0.25*	*0.53*		*0.79*	
WESTERN ASSET - ISRAEL BD	21,578,741	0.0	0.34	1.69	2.93	-0.85	-0.85	0.44	1.13	2.33	2.67	06/01/05
WESTERN ASSET ISRAEL BOND INDEX			0.30	1.13	1.55	0.70	0.70	2.43	2.89	1.52	0.96	06/01/05
Excess			*0.04*	*0.56*	*1.38*	*-1.55*	*-1.55*	*-1.99*	*-1.76*	*0.80*	*1.71*	
TOTAL GLOBAL FIXED INCOME	**21,578,846**	**0.0**	**0.34**	**1.69**	**2.92**	**-0.93**	**-0.93**	**1.50**	**2.76**		**4.40**	**07/01/08**
CUSTOM GLOBAL FIXED INCOME BM [28]			-0.26	0.72	1.25	0.49	0.49	2.30	2.54			07/01/08
Excess			*0.60*	*0.98*	*1.67*	*-1.42*	*-1.42*	*-0.80*	*0.22*			
NOMINAL FIXED INCOME EX OVERLAY	**8,045,883,430**	**16.4**	**0.26**	**3.04**	**4.76**	**-2.39**	**-2.39**	**3.29**	**3.10**	**5.25**	**7.15**	**07/01/86**
CUSTOM NOMINAL FIXED INCOME BENCHMARK [24]			0.22	3.10	4.36	-3.96	-3.96	3.01	2.47	4.36		07/01/86
Excess			*0.03*	*-0.05*	*0.40*	*1.56*	*1.56*	*0.27*	*0.63*	*0.88*		

99

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
Nominal FI Tactical	3,013,798	0.0										01/01/17
Nominal FI Structural	9	0.0										01/01/17
NOMINAL FIXED INCOME OVERLAY	**3,013,807**	**0.0**										**01/01/17**
NOMINAL FIXED INCOME	**8,048,897,237**	**16.4**	**0.26**	**3.03**	**4.81**	**-2.35**	**-2.35**	**3.30**	**3.11**	**5.25**	**7.15**	**07/01/86**
INFLATION SENSITIVE												
SSGA PASSIVE US TIPS	2,215,274,685	4.5	-1.01	-0.39	0.94	-0.79	-0.79	0.69			-0.53	12/01/12
BBG BARC US TIPS Idx			-0.98	-0.41	0.95	-0.67	-0.67	0.71			-0.47	12/01/12
Excess			*-0.04*	*0.02*	*-0.01*	*-0.12*	*-0.12*	*-0.02*			*-0.06*	
TOTAL U.S. TIPS	**2,215,274,685**	**4.5**	**-1.01**	**-0.39**	**0.94**	**-0.79**	**-0.79**	**0.69**	**0.19**	**4.58**	**4.16**	**02/01/06**
CUSTOM US TIPS MD BM [29]			-0.98	-0.41	0.95	-0.67	-0.67	0.71	0.26	4.27	3.92	02/01/06
Excess			*-0.04*	*0.02*	*-0.01*	*-0.12*	*-0.12*	*-0.02*	*-0.07*	*0.31*	*0.24*	
NEW CENTURY ADVISORS (CP)	39,189,132	0.1	-1.26	-0.38	0.48	1.63	1.63	4.10	2.65		5.71	12/01/08
BC World Inflat-Linked Bond Index-Hedged			-1.39	-0.42	0.28	1.93	1.93	4.20	2.97		5.64	12/01/08
Excess			*0.13*	*0.04*	*0.19*	*-0.31*	*-0.31*	*-0.10*	*-0.32*		*0.07*	
TOTAL GILB	**39,695,056**	**0.1**	**-1.27**	**-0.20**	**0.48**	**0.86**	**0.86**	**4.43**	**3.10**		**5.65**	**12/01/08**
BC World Inflat-Linked Bond Index-Hedged			-1.39	-0.42	0.28	1.93	1.93	4.20	2.97		5.64	12/01/08
Excess			*0.12*	*0.22*	*0.20*	*-1.07*	*-1.07*	*0.23*	*0.14*		*0.01*	

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
INFLATION SENSITIVE FI EX OVERLAY	**2,254,969,741**	**4.6**	**-1.02**	**-0.39**	**0.93**	**-0.76**	**-0.76**	**1.63**	**1.12**		**3.84**	**07/01/08**
CUSTOM INFLATION SENSITIVE BENCHMARK [30]			-0.98	-0.41	0.95	-0.67	-0.67	1.76	1.22		3.58	07/01/08
Excess			*-0.04*	*0.03*	*-0.01*	*-0.09*	*-0.09*	*-0.13*	*-0.10*		*0.27*	
TOTAL RATE SENSITIVE EX OVERLAY	**10,300,853,171**	**21.0**	**-0.03**	**2.28**	**3.91**	**-2.11**	**-2.11**	**2.96**	**2.90**	**5.15**	**7.12**	**07/01/86**
CUSTOM RATE SENSITIVE BENCHMARK [31]			-0.06	2.26	3.55	-3.20	-3.20	2.97	2.45	4.35		07/01/86
Excess			*0.04*	*0.03*	*0.36*	*1.09*	*1.09*	*-0.02*	*0.45*	*0.79*		
TOTAL RATE SENSITIVE OVERLAY	**3,013,807**	**0.0**										**01/01/17**
TOTAL RATE SENSITIVE	**10,303,866,978**	**21.0**	**-0.02**	**2.28**	**3.95**	**-2.08**	**-2.08**	**2.97**	**2.91**	**5.15**	**7.12**	**07/01/86**
CREDIT/DEBT												
US CREDIT												
KKR BANK LOANS	479,875,003	1.0	-0.16	0.75	1.71	6.52	6.52	2.41	5.20		5.82	09/01/10
KKR S&P LSTA Leveraged Loan [32]			-0.04	0.76	1.91	7.42	7.42	2.82	5.08		5.82	09/01/10
Excess			*-0.12*	*-0.01*	*-0.20*	*-0.91*	*-0.91*	*-0.41*	*0.12*		*0.01*	
NEUBERGER BERMAN HIGH YIELD	549,193,811	1.1	-0.14	1.05	2.91	8.86	8.86	3.61	6.17		6.23	10/01/10
NB 80% BC US Corp HY; 20% S&P LSTA Leveraged [33]			0.10	1.89	4.32	11.63	11.63	4.88	5.85		6.32	10/01/10
Excess			*-0.24*	*-0.84*	*-1.41*	*-2.77*	*-2.77*	*-1.27*	*0.32*		*-0.08*	
MACKAY SHIELDS HIGH YIELD	464,745,611	0.9	0.25	2.14	4.37	10.80	10.80	3.32			4.66	09/01/13
MacKay 80% BC US Corp HY; 20% S&P LSTA Leveraged [34]			0.10	1.89	4.32	11.63	11.63	5.67			6.42	09/01/13
Excess			*0.15*	*0.25*	*0.05*	*-0.83*	*-0.83*	*-2.35*			*-1.75*	
CREDIT/DEBT TRANSITION ACCOUNT	0	0.0										02/01/09

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
CREDIT/DEBT TERRA MARIA [25]	**0**	**0.0**										**01/01/10**
HIGH YIELD/BANK LOAN EX OVERLAY	**1,493,814,425**	**3.0**	**-0.02**	**1.23**	**2.82**	**8.50**	**8.50**				**6.28**	**11/01/15**
HIGH YIELD CUSTOM BENCHMARK [35]			0.10	1.89	4.32	11.63	11.63				9.19	11/01/15
Excess			*-0.12*	*-0.66*	*-1.50*	*-3.13*	*-3.13*				*-2.91*	
TOTAL DISTRESSED DEBT	798,230,817	1.6	0.91	5.75	10.00	18.40	18.40	8.05	12.49		9.68	01/01/10
TOTAL MEZZANINE DEBT	514,706,805	1.0	0.55	4.93	9.00	15.72	15.72	8.51	9.61		8.53	01/01/10
PERELLA WEINBERG	96,390,242	0.2	0.00	-3.73	-7.07	-10.94	-10.94	-2.12	4.04		5.93	07/01/10
HFRI ED: Distressed/Restructuring Index			0.27	0.68	3.28	14.94	14.94	0.74	5.72		5.24	07/01/10
Excess			*-0.27*	*-4.41*	*-10.35*	*-25.88*	*-25.88*	*-2.86*	*-1.68*		*0.69*	
ANCHORAGE CAPITAL GROUP	170,057,800	0.3	-1.23	-0.75	2.59	6.23	6.23	2.20	8.78		8.52	11/01/11
HFRI ED: Distressed/Restructuring Index			0.27	0.68	3.28	14.94	14.94	0.74	5.72		5.49	11/01/11
Excess			*-1.50*	*-1.43*	*-0.69*	*-8.71*	*-8.71*	*1.46*	*3.06*		*3.03*	
KING STREET CAPITAL	150,962,219	0.3	0.65	1.86	2.94	5.92	5.92	1.77	5.75		5.76	12/01/11
HFRI ED: Distressed/Restructuring Index			0.27	0.68	3.28	14.94	14.94	0.74	5.72		5.71	12/01/11
Excess			*0.38*	*1.18*	*-0.34*	*-9.02*	*-9.02*	*1.03*	*0.04*		*0.05*	
TOTAL CREDIT HEDGE FUND	**417,410,261**	**0.9**	**-0.27**	**-0.54**	**0.23**	**1.38**	**1.38**	**0.95**	**5.85**		**6.73**	**07/01/10**
HFRI ED: Distressed/Restructuring Index			0.27	0.68	3.28	14.94	14.94	0.74	5.72		5.24	07/01/10
Excess			*-0.54*	*-1.22*	*-3.05*	*-13.56*	*-13.56*	*0.21*	*0.13*		*1.49*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
US CREDIT EX OVERLAY	**3,224,162,308**	**6.6**	**0.26**	**2.73**	**5.30**	**11.15**	**11.15**	**4.71**	**8.20**		**9.98**	**03/01/09**
U.S. CREDIT CUSTOM BENCHMARK [36]			0.10	1.89	4.32	11.63	11.63	4.60	5.74		9.38	03/01/09
Excess			*0.17*	*0.84*	*0.98*	*-0.47*	*-0.47*	*0.10*	*2.46*		*0.60*	
NON US CREDIT												
SSGA EMERGING MARKET DEBT	276,544,329	0.6	0.34	3.42	9.99	5.78	5.78	-3.33	-1.40		-0.19	10/01/10
JP Morgan GBI EM Global Diversified (H)			0.46	3.62	10.36	6.41	6.41	-2.80	-0.67		0.18	10/01/10
Excess			*-0.11*	*-0.20*	*-0.37*	*-0.64*	*-0.64*	*-0.52*	*-0.73*		*-0.38*	
SSGA EMERGING MARKET HARD CURRENCY BOND	230,765,311	0.5	-0.03	1.97	5.44	6.17	6.17				9.97	01/01/16
SSgA Emerging Market Blended Benchmark [37]			0.02	1.95	5.53	6.51	6.51				10.81	01/01/16
Excess			*-0.04*	*0.02*	*-0.08*	*-0.34*	*-0.34*				*-0.84*	
STONE HARBOR BLENDED EMD [38]	614,822,652	1.3	0.09	2.60	8.64	7.09	7.09	-3.90			-2.43	10/01/13
NON-U.S. CREDIT CUSTOM BENCHMARK [39]			0.24	2.79	7.92	6.50	6.50	-2.97			-1.26	10/01/13
Excess			*-0.15*	*-0.19*	*0.71*	*0.58*	*0.58*	*-0.93*			*-1.16*	
LOGAN CIRCLE PARTNERS BLENDED EMD	336,300,000	0.7	0.36	2.75	9.05	10.23	10.23				10.23	07/01/16
NON-U.S. CREDIT CUSTOM BENCHMARK [39]			0.24	2.79	7.92	6.50	6.50				6.50	07/01/16
Excess			*0.12*	*-0.04*	*1.12*	*3.72*	*3.72*				*3.72*	
NON US CREDIT EX OVERLAY	**1,458,432,292**	**3.0**	**0.18**	**2.67**	**8.42**	**7.41**	**7.41**	**-3.76**	**-1.83**		**-0.51**	**10/01/10**
NON-U.S. CREDIT CUSTOM BENCHMARK [39]			0.24	2.79	7.92	6.50	6.50	-2.97	-0.77		0.11	10/01/10
Excess			*-0.06*	*-0.12*	*0.49*	*0.91*	*0.91*	*-0.79*	*-1.05*		*-0.62*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL CREDIT/DEBT STRATEGIES EX OVERLAY	**4,682,594,600**	**9.5**	**0.24**	**2.71**	**6.28**	**9.99**	**9.99**	**3.70**	**7.13**		**10.11**	**03/01/09**
MSRA CUSTOM CREDIT BENCHMARK [40]			0.15	2.19	5.51	9.93	9.93	3.05	4.58		8.65	03/01/09
Excess			*0.09*	*0.52*	*0.77*	*0.06*	*0.06*	*0.65*	*2.55*		*1.45*	
REAL ASSETS												
REAL ESTATE												
SSGA GLOBAL REAL ESTATE	212,876,999	0.4	0.82	2.91	5.27	0.99	0.99	4.46			5.69	05/01/14
FTSE EPRA/NAREIT Developed Net Index			0.74	2.71	4.84	0.21	0.21	3.67			4.91	05/01/14
Excess			*0.08*	*0.20*	*0.43*	*0.78*	*0.78*	*0.79*			*0.78*	
MORGAN STANLEY GLOBAL REIT	454,083,146	0.9	0.86	2.00	3.94	1.56	1.56	3.57			4.96	05/01/14
FTSE EPRA/NAREIT Developed Net Index			0.74	2.71	4.84	0.21	0.21	3.67			4.91	05/01/14
Excess			*0.12*	*-0.72*	*-0.90*	*1.35*	*1.35*	*-0.10*			*0.05*	
TOTAL REITS EX RECORD CURRENCY	**666,973,682**	**1.4**	**0.85**	**2.29**	**4.36**	**1.37**	**1.37**	**3.87**	**7.66**	**2.61**		**04/01/94**
CUSTOM MD REIT BM [41]			0.74	2.71	4.84	0.21	0.21	3.67	7.57	2.48		04/01/94
Excess			*0.10*	*-0.43*	*-0.48*	*1.16*	*1.16*	*0.20*	*0.09*	*0.14*		
RECORD CURRENCY MANAGEMENT-REITS	-1,363,951	-0.0										07/01/11
TOTAL REITS EX OVERLAY	**665,609,730**	**1.4**	**0.78**	**1.99**	**3.36**	**1.23**	**1.23**	**4.36**	**8.14**	**2.84**		**04/01/94**
CUSTOM MD REIT BM [41]			0.74	2.71	4.84	0.21	0.21	3.67	7.57	2.48		04/01/94
Excess			*0.04*	*-0.73*	*-1.48*	*1.02*	*1.02*	*0.69*	*0.58*	*0.36*		

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL PRIVATE REAL ESTATE	**3,273,794,645**	**6.7**	**1.23**	**3.22**	**5.27**	**8.44**	**8.44**	**11.47**	**11.91**	**5.31**	**9.28**	**03/01/94**
CUSTOM MD PRIVATE REAL ESTATE BM [42]			-0.18	1.77	3.93	8.34	8.34	11.79	11.93	7.31	9.74	03/01/94
Excess			*1.41*	*1.44*	*1.34*	*0.10*	*0.10*	*-0.32*	*-0.02*	*-2.00*	*-0.46*	
MSIM Cus FTSE EPRA NAREIT Dev ex US(Net) [43]			0.74	2.70	4.82	0.20	0.20	3.67	8.41	1.01		11/01/06
WILSHIRE RESI			2.12	1.91	2.42	-1.23	-1.23	8.82	9.70	5.70		01/01/78
TOTAL REAL ESTATE	**3,939,404,375**	**8.0**	**1.16**	**3.00**	**4.94**	**7.19**	**7.19**	**10.13**	**11.41**	**4.70**	**6.82**	**07/01/87**
REAL ESTATE CUSTOM INDEX [44]			-0.04	1.91	4.07	7.16	7.16	10.23	11.27	5.94	8.25	07/01/87
Excess			*1.20*	*1.09*	*0.87*	*0.03*	*0.03*	*-0.10*	*0.14*	*-1.24*	*-1.43*	
COMMODITIES												
GRESHAM INVESTMENT MGMT, LLC	339,628,169	0.7	-0.00	-2.19	-3.81	-4.67	-4.67	-13.58	-8.68		-3.66	09/01/09
Bloomberg Commodity Index TR			-0.19	-3.00	-5.26	-6.50	-6.50	-14.81	-9.25		-5.08	09/01/09
Excess			*0.19*	*0.81*	*1.45*	*1.83*	*1.83*	*1.23*	*0.57*		*1.42*	
CCM DIVERSIFIED I	405,975,740	0.8	-0.12	-3.17	-5.26	-6.50	-6.50	-14.71			-9.52	07/01/13
Bloomberg Commodity Index TR			-0.19	-3.00	-5.26	-6.50	-6.50	-14.81			-9.56	07/01/13
Excess			*0.07*	*-0.17*	*0.00*	*-0.01*	*-0.01*	*0.10*			*0.03*	
EDESIA DYNAMIC AGRICULTURE FUND	23,431,975	0.0	3.65	-0.46	-2.04	-11.94	-11.94	-7.90			-8.54	01/01/13
Bloomberg Agriculture Sub-Index TR			3.08	-0.40	-3.36	-13.05	-13.05	-10.34			-9.20	01/01/13
Excess			*0.57*	*-0.06*	*1.32*	*1.10*	*1.10*	*2.45*			*0.66*	
COMMODITY ACTIVE INDEX MANAGER	**769,035,884**	**1.6**	**0.04**	**-2.66**	**-4.53**	**-7.35**	**-7.35**	**-16.13**	**-10.41**		**-5.36**	**09/01/09**
Bloomberg Commodity Index TR			-0.19	-3.00	-5.26	-6.50	-6.50	-14.81	-9.25		-5.08	09/01/09
Excess			*0.24*	*0.35*	*0.73*	*-0.85*	*-0.85*	*-1.32*	*-1.16*		*-0.28*	

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
ASTENBECK COMMODITIES FUND III	73,538,916	0.1	-10.12	-20.95	-29.72	-26.56	-26.56	-18.82			-9.63	09/01/12
HFRX Macro: Commodity-Index			1.08	-0.58	-1.67	-4.76	-4.76	-2.13			-2.75	09/01/12
Excess			*-11.21*	*-20.37*	*-28.06*	*-21.80*	*-21.80*	*-16.69*			*-6.88*	
KOPPENBERG MACRO COMMODITY FUND LP	117,373,816	0.2	-2.74	-4.78	-0.99	3.19	3.19	5.28			4.34	10/01/12
HFRX Macro: Commodity-Index			1.08	-0.58	-1.67	-4.76	-4.76	-2.13			-2.59	10/01/12
Excess			*-3.82*	*-4.20*	*0.68*	*7.94*	*7.94*	*7.40*			*6.92*	
MADAVA ENERGY COMMODITY	115,821,000	0.2	-0.07	-1.01	-2.39	-7.37	-7.37	4.89			4.65	06/01/13
HFRX Macro: Commodity-Index			1.08	-0.58	-1.67	-4.76	-4.76	-2.13			-2.44	06/01/13
Excess			*-1.15*	*-0.42*	*-0.72*	*-2.61*	*-2.61*	*7.02*			*7.08*	
COMMODITY HEDGE FUND	**306,733,732**	**0.6**	**-3.66**	**-7.97**	**-10.27**	**-9.49**	**-9.49**	**-3.24**	**-1.07**		**-1.73**	**12/01/09**
Bloomberg Commodity Index TR			-0.19	-3.00	-5.26	-6.50	-6.50	-14.81	-9.25		-6.27	12/01/09
Excess			*-3.47*	*-4.97*	*-5.01*	*-3.00*	*-3.00*	*11.56*	*8.18*		*4.54*	
TOTAL COMMODITIES EX OVERLAY	**1,075,769,616**	**2.2**	**-1.04**	**-4.23**	**-6.24**	**-8.01**	**-8.01**	**-12.91**	**-7.88**		**-4.05**	**09/01/09**
Bloomberg Commodity Index TR			-0.19	-3.00	-5.26	-6.50	-6.50	-14.81	-9.25		-5.08	09/01/09
Excess			*-0.85*	*-1.23*	*-0.98*	*-1.51*	*-1.51*	*1.90*	*1.37*		*1.03*	
Commodity Structural	6,225,288	0.0										01/01/17
TOTAL COMMODITY OVERLAY	**6,225,288**	**0.0**										**01/01/17**
TOTAL COMMODITIES	**1,081,994,904**	**2.2**	**-1.05**	**-4.35**	**-6.44**	**-8.22**	**-8.22**	**-12.97**	**-7.92**		**-4.07**	**09/01/09**

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
NATURAL RESOURCE AND INFRASTRUCTURE												
TORTOISE CAPITAL DOMESTIC EQ	79,760,992	0.2	0.43	-5.60	-0.85	4.37	4.37	-8.63	7.28		13.02	08/01/09
S&P MLP Total Return Index			-0.24	-6.38	-2.92	3.23	3.23	-11.25	2.48		9.53	08/01/09
Excess			*0.66*	*0.78*	*2.07*	*1.14*	*1.14*	*2.62*	*4.80*		*3.49*	
HARVEST FUND ADVISORS	74,984,526	0.2	-0.48	-7.27	-3.20	2.80	2.80	-8.02	7.44		14.29	11/01/09
S&P MLP Total Return Index			-0.24	-6.38	-2.92	3.23	3.23	-11.25	2.48		9.30	11/01/09
Excess			*-0.24*	*-0.89*	*-0.27*	*-0.43*	*-0.43*	*3.23*	*4.96*		*4.99*	
TOTAL ENERGY FUNDS	491,639,857	1.0	0.01	4.42	7.50	25.27	25.27	-2.21	3.07		7.13	01/01/10
TOTAL INFRASTRUCTURE	40,613,678	0.1	0.00	0.95	-3.05	-4.02	-4.02	7.31	5.91		4.76	10/01/09
TIMBER LP FUNDS	222,993,530	0.5	0.01	0.28	1.84	3.21	3.21	2.63	3.95		7.51	05/01/10
NATURAL RESOURCE AND INFRASTRUCTURE	**909,992,583**	**1.9**	**0.01**	**1.18**	**3.70**	**12.87**	**12.87**	**-1.59**	**5.03**		**10.76**	**08/01/09**
NATURAL RESOURCE AND INFRASTRUCTURE BM [45]			-0.08	-0.06	3.94	13.35	13.35	8.12	7.67		7.45	08/01/09
Excess			*0.09*	*1.24*	*-0.24*	*-0.49*	*-0.49*	*-9.70*	*-2.63*		*3.31*	
TOTAL REAL ASSETS EX OVERLAY	**5,925,166,574**	**12.1**	**0.57**	**1.34**	**2.55**	**4.73**	**4.73**	**-0.79**	**0.58**	**4.25**	**3.87**	**02/01/06**
CUSTOM REAL ASSETS BENCHMARK [46]			-0.08	0.68	2.22	5.12	5.12	-0.33	0.20	3.09	2.89	02/01/06
Excess			*0.65*	*0.66*	*0.33*	*-0.39*	*-0.39*	*-0.46*	*0.39*	*1.16*	*0.97*	
TOTAL REAL ASSETS OVERLAY	**6,225,288**	**0.0**										**01/01/17**
TOTAL REAL ASSETS	**5,931,391,862**	**12.1**	**0.57**	**1.31**	**2.49**	**4.67**	**4.67**	**-0.81**	**0.57**	**4.24**	**3.87**	**02/01/06**

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
ABSOLUTE RETURN												
PINE RIVER GARRISON	150,000,000	0.3										06/01/17
EVENT DRIVEN STRATEGIES	**150,000,000**	**0.3**										**06/01/17**
BRIDGEWATER PURE ALPHA	624,939,696	1.3	-0.43	-3.89	-2.68	9.60	9.60	1.17	3.55		5.05	05/01/08
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		1.24	05/01/08
Excess			*-0.31*	*-4.47*	*-4.73*	*3.44*	*3.44*	*-0.83*	*-0.60*		*3.82*	
GRAHAM TACTICAL TREND	308,032,747	0.6	-4.49	-2.85	-3.19	-14.24	-14.24				-7.80	07/01/15
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				1.64	07/01/15
Excess			*-4.36*	*-3.43*	*-5.24*	*-20.40*	*-20.40*				*-9.44*	
GLOBAL MACRO/GTAA STRATEGIES	**932,972,443**	**1.9**	**-1.81**	**-3.93**	**-3.16**	**-0.43**	**-0.43**	**-1.38**	**0.12**		**2.09**	**04/01/08**
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		1.28	04/01/08
Excess			*-1.68*	*-4.52*	*-5.21*	*-6.59*	*-6.59*	*-3.37*	*-4.02*		*0.81*	
NEPHILA PALMETTO FUND	224,268,725	0.5	0.15	0.60	0.79	2.64	2.64	4.73			4.45	01/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.32	01/01/14
Excess			*0.27*	*0.02*	*-1.27*	*-3.52*	*-3.52*	*2.73*			*2.13*	
NIMBUS WEATHER FUND LTD	49,822,350	0.1	-0.36								-0.36	06/01/17
HFRI Fund of Funds Composite Index			-0.11								-0.11	06/01/17
Excess			*-0.24*								*-0.24*	

State Retirement Agency of Maryland

Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
OPPORTUNISTIC	**274,091,075**	**0.6**	**0.05**	**0.48**	**0.67**	**2.52**	**2.52**	**4.69**			**4.42**	**01/01/14**
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.32	01/01/14
Excess			*0.18*	*-0.10*	*-1.39*	*-3.64*	*-3.64*	*2.69*			*2.09*	
CARLSON DOUBLE BLACK DIAMOND	388,110,100	0.8	0.94	0.16	-0.88	5.81	5.81	2.34			3.38	01/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.32	01/01/14
Excess			*1.07*	*-0.42*	*-2.94*	*-0.35*	*-0.35*	*0.34*			*1.06*	
PINE RIVER FUND	87,644,559	0.2	-2.22	-0.68	0.69	3.97	3.97	0.46			0.15	04/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.32	04/01/14
Excess			*-2.09*	*-1.27*	*-1.37*	*-2.19*	*-2.19*	*-1.54*			*-2.18*	
HUTCHIN HILL DIVERSIFIED ALPHA	355,660,200	0.7	-1.11	-1.75	-1.30	3.17	3.17	0.67			0.85	05/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.59	05/01/14
Excess			*-0.98*	*-2.34*	*-3.36*	*-2.99*	*-2.99*	*-1.32*			*-1.74*	
HUDSON BAY FUND	309,058,800	0.6	0.09	0.88	2.57	5.76	5.76				0.96	10/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				2.09	10/01/14
Excess			*0.21*	*0.30*	*0.52*	*-0.40*	*-0.40*				*-1.13*	
ARISTEIA CAPITAL	319,749,900	0.7	-0.29	0.91	2.75	10.86	10.86				3.01	12/01/14
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				2.29	12/01/14
Excess			*-0.17*	*0.32*	*0.69*	*4.70*	*4.70*				*0.72*	
ARISTEIA CO-INVEST	14,059,965	0.0	-4.48	-6.04	-4.97	-9.49	-9.49				-4.73	03/01/16
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				5.38	03/01/16
Excess			*-4.36*	*-6.63*	*-7.02*	*-15.65*	*-15.65*				*-10.12*	

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
GARDA FIRVO	218,000,000	0.4	1.21	1.82	3.96	8.64	8.64				7.14	04/01/16
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				5.55	04/01/16
Excess			*1.33*	*1.24*	*1.90*	*2.48*	*2.48*				*1.59*	
INVESTCORP DYNAMIC ALT BETA	108,895,275	0.2	-1.70	-2.94	-3.73	-8.79	-8.79				-8.79	07/01/16
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16				6.16	07/01/16
Excess			*-1.58*	*-3.53*	*-5.79*	*-14.95*	*-14.95*				*-14.95*	
RELATIVE VALUE STRATEGIES	**1,801,178,799**	**3.7**	**-0.17**	**-0.16**	**0.70**	**4.64**	**4.64**	**1.13**			**1.91**	**01/01/14**
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00			2.32	01/01/14
Excess			*-0.04*	*-0.74*	*-1.36*	*-1.52*	*-1.52*	*-0.87*			*-0.41*	
BRIDGEWATER ALL WEATHER	343,770,931	0.7	-1.02	0.71	3.81	5.37	5.37	1.56	3.40		8.45	07/01/09
CUSTOM BRIDGEWATER BENCHMARK [48]			-0.13	0.58	2.06	6.16	6.16	2.00	3.80		5.93	07/01/09
Excess			*-0.89*	*0.13*	*1.76*	*-0.79*	*-0.79*	*-0.44*	*-0.40*		*2.52*	
DGAM DIVERSIFIED STRATEGIES FUND	2,961,727	0.0	0.00	-0.00	-2.58	-12.62	-12.62	-3.51	0.40		0.86	01/01/11
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		2.40	01/01/11
Excess			*0.13*	*-0.58*	*-4.64*	*-18.78*	*-18.78*	*-5.51*	*-3.75*		*-1.54*	
ROCK CREEK POTOMAC FUND LTD	22,872,691	0.0	1.54	0.48	5.55	16.41	16.41	3.77	6.62		5.11	02/01/10
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		2.92	02/01/10
Excess			*1.67*	*-0.10*	*3.49*	*10.25*	*10.25*	*1.77*	*2.47*		*2.19*	
MULTI ASSET	**369,605,348**	**0.8**	**-0.85**	**0.67**	**3.92**	**5.78**	**5.78**	**2.00**	**4.19**		**4.24**	**02/01/10**
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		2.92	02/01/10
Excess			*-0.73*	*0.09*	*1.86*	*-0.38*	*-0.38*	*0.00*	*0.04*		*1.33*	

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL ABSOLUTE RETURN	**3,527,847,666**	**7.2**	**-0.67**	**-1.01**	**0.06**	**3.31**	**3.31**	**0.31**	**2.34**		**3.22**	**04/01/08**
CUSTOM ABSOLUTE RETURN BENCHMARK [47]			-0.13	0.58	2.06	6.16	6.16	2.00	4.14		1.28	04/01/08
Excess			*-0.55*	*-1.59*	*-1.99*	*-2.85*	*-2.85*	*-1.68*	*-1.80*		*1.94*	
CASH												
MARYLAND MONEY MARKET ACCOUNT	261,957,044	0.5	0.08	0.23	0.40	0.68	0.68	0.36	0.24		0.20	01/01/11
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30	0.46	0.46	0.20	0.15		0.13	01/01/11
Excess			*0.01*	*0.05*	*0.10*	*0.23*	*0.23*	*0.16*	*0.09*		*0.07*	
SELF LIQUIDATING ACCOUNT	79,935	0.0	36.70	20.70	14.30	9.05	9.05	22.77	22.89	25.67		06/01/84
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30	0.46	0.46	0.20	0.15	0.51		06/01/84
Excess			*36.63*	*20.51*	*14.00*	*8.59*	*8.59*	*22.56*	*22.74*	*25.16*		
TOTAL CASH AGGREGATE	**271,837,457**	**0.6**	**0.58**	**0.87**	**1.35**	**3.56**	**3.56**	**2.68**	**2.06**		**2.77**	**07/01/08**
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30	0.46	0.46	0.20	0.15		0.20	07/01/08
Excess			*0.50*	*0.69*	*1.04*	*3.10*	*3.10*	*2.47*	*1.92*		*2.56*	
BLACKROCK CASH EQUITIZATION	313,049,076	0.6	0.82	3.00	6.98						12.27	12/01/16
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30						0.33	12/01/16
Excess			*0.75*	*2.82*	*6.67*						*11.93*	
TOTAL CASH AND EQUITIZATION	**584,886,533**	**1.2**	**0.46**	**1.06**	**2.44**	**5.11**	**5.11**	**3.19**	**2.37**		**2.94**	**07/01/08**
CITIGROUP 3 MONTH T-BILL			0.07	0.18	0.30	0.46	0.46	0.20	0.15		0.20	07/01/08
Excess			*0.39*	*0.88*	*2.13*	*4.65*	*4.65*	*2.98*	*2.22*		*2.73*	

State Retirement Agency of Maryland
Rates of Return - Net Mgr
Periods Ending June 30, 2017

STATE STREET

SUMMARY OF PERFORMANCE

	Market Value	% of Plan	1 MO	3 MO	YTD	FYTD	1 YR	3 YRS	5 YRS	10 YRS	ITD	Inception Date
TOTAL PLAN	**49,097,846,204**	**100.0**	**0.43**	**3.29**	**7.52**	**10.02**	**10.02**	**4.55**	**7.64**	**4.15**	**8.07**	**07/01/86**
TOTAL PLAN POLICY INDEX [49]			0.14	2.94	6.93	9.88	9.88	4.06	6.89	3.75		07/01/86
Excess			*0.29*	*0.35*	*0.59*	*0.15*	*0.15*	*0.49*	*0.75*	*0.41*		
TOTAL PLAN CUSTOM STATIC INDEX [50]			0.14	2.91	6.91	10.03	10.03	4.29	6.99			07/01/08

ENDNOTES

[1] Since 12/01/2016: 100% Russell 1000
From 04/01/2013 to 11/30/2016: 100% Russell 3000

[2] Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks

[3] Since 11/01/2008: Benchmark is dynamically calculated using Average Balance (BMV+ Weighted Net Cash Flows) weights of the underlying portfolios and their corresponding indices. From 09/01/2008 - 10/31/2008: Benchmark was dynamically calculated based on the beginning weights of the underlying portfolios and their corresponding indices From 05/01/2008 - 08/31/2008: 11.1% S&P 500; 13.3% Russell 1000 Value; 33.3% Russell 1000 Growth; 16.7% Russell Mid Cap Growth; 25.6% Russell 2000 Value 11/01/2007 - 04/30/2008: 10.9% S&P 500; 13.1% Russell 1000 Value; 33.3% Russell 1000 Growth; 17.2% Russell Mid Cap Growth; 25.6 Russell 2000 Value Prior to 11/01/2007: 11% S&P 500; 13.1% Russell 1000 Value; 32% Russell 1000 Growth; 16.5% Russell Mid Cap Growth; 27.4% Russell 2000 Value

[4] Since 07/01/2008: 100% Russell 3000
From 01/01/2005 to 6/30/2008: 100% Dow Jones Willshire 5000
Prior to 01/01/2005: 100% Russell 3000

[5] Since 09/01/2009: 100% MSCI EAFE + CANADA (NET)
From 01/01/2005 to 08/31/2009: 100% MSCI AC WORLD ex US (NET)
From 05/01/2003 to 12/31/2004: 100% MSCI EAFE (NET)

[6] From 11/01/2003: 100% of MSCI AC WORLD ex US (NET)
From 07/01/2012: 100% of MSCI WORLD EX US (NET)

113

[7] Since 04/01/2016: 100% MSCI WORLD EX US (NET).
From 01/01/2013 to 03/31/2016: 100% MSCI AC World ex US Net.

[8] Since 06/01/2016: 100% MSCI World Ex US IMI Net
From 12/01/2008 to 05/31/2016: 100% MSCI All Country World ex US IMI Net

[9] From 03/01/2006 to 06/30/2012: 100% MSCI EAFE SMALL CAP(G)
Since 07/01/2012: 100% MSCI WORLD EX US SMALL CAP (NET)

[10] Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.

[11] Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks. Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.

[12] Since 11/01/2008: Benchmark is dynamically calculated using Average Balance (BMV+ Weighted Net Cash Flows) weights. Prior to 11/01/2008: 100% MSCI EAFE (net).

Returns for periods prior to 11/01/2015 also included Emerging Market Equity portfolios.

[13] Since 11/01/2015: 100% MSCI WORLD EX US (NET)
From 07/01/2010 to 10/31/2015: 100% MSCI All Country World ex. U.S.
From 07/01/2009 to 06/30/2010: 100% MSCI All Country World ex. U.S. IMI Net
From 01/01/2003 to 06/30/2009: 100% MSCI All Country World ex. U.S.
Prior to 01/01/2003: 100% MSCI EAFE

[14] Since 07/01/2010: 100% MSCI AC WORLD NET
From 07/01/2009 to 06/30/2010: 100% MSCI ACWI IMI NET
Prior to 07/01/2009: 100% MSCI AC WORLD NET

ENDNOTES

[15] Since 07/01/2016: Weighted off Transitional Targets; 44.445% Russell 3000, 33.333% MSCI World ex. U.S. (Net), 22.222% MSCI EM
From 01/01/2016 to 06/30/2016: Weighted off Transitional Targets; 45.946% Russell 3000, 37.838% MSCI World ex. U.S. (Net), 16.216% MSCI EM
From 11/01/2015 to 12/31/2015: Weighted off Transitional Targets; 47.369% Russell 3000, 42.105% MSCI World ex. U.S. (Net), 10.526% MSCI EM
Prior to 11/01/2015: Benchmark is dynamically calculated using the weights of the US Equity, International Equity, and Global Equity aggregates and the corresponding asset class benchmarks

[16] The Private Equity benchmark is the State Street Private Equity Index (1 quarter lag). However, in non-quarter end months, the actual Private Equity return will be applied. In the third month of the quarter, the return will be calculated so that when geometrically linked with months 1 and 2, the three month return equals the published SS PEI (1 quarter lag).

[17] Benchmark is a dynamic blend of the Public Equity Benchmark and the State Street Private Equity Index based off of sub-asset class weights used in the policy benchmark.

[18] Since 11/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate Index
Prior 07/01/2013: 100% Barclays Aggregate Bond

[19] Since 11/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index

[20] Since 11/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate Index
07/01/2009 to 06/30/2013: 100% Barclays Aggregate Bond
11/01/2003 to 06/30/2009: 100% Barclays US Universal Index
Prior to 11/01/2003: 100% Citigroup BIG

114

[21] Since 10/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
07/01/2013 to 09/30/2015: 100% Barclays US Intermediate Aggregate Index
07/01/2009 to 06/30/2013: 100% Barclays Aggregate Bond Index
Prior to 07/01/2009: 100% Barclays US Universal Index

[22] Since 12/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 11/30/2015: 100% Barclays US Intermediate Aggregate Index
From 07/01/2009 to 06/30/2013:100% BC Aggregate Prior to 07/01/2009: 100% BC U.S. Universal Index

[23] Since 12/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 11/31/2015: 100% Barclays US Intermediate Aggregate Index
Prior 07/01/2013: 100% Barclays Aggregate Bond

[24] Since 11/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged
From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged
From 01/01/2010 to 06/30/2010: 80% BC Aggregate, 20% BC Global Bond Aggregate Unhedged
From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks
Prior to 07/01/2009: Benchmark is BC US Universal

[25] As of 01/01/2010 all high yield and convertible managers were moved out of the Fixed Income asset class and into the Credit/Debt asset class. Historical returns for high yield and convertible managers remain in Fixed Income composite.

[26] Benchmark is dynamically calculated based on the Average Balance (BMV + Weighted Net Cash Flows) weights of the underlying portfolios and their corresponding indices

[27] Since 11/01/2015: 62.50% Barclays US Government Long Bond Index, 18.75% Barclays US Investment Grade Corporate Index, 18.75% Barclays US Securitized Index
From 07/01/2013 to 10/31/2015: 100% Barclays US Intermediate Aggregate Index
Prior 07/01/2013: 100% Barclays Aggregate Bond

ENDNOTES

[28] Since 07/01/2013: 100% BC Global Aggregate 1-10 Year Hedged Index
From 07/01/2010 to 06/30/2013: 100% BC Global Aggregate Hedged
Prior to 07/01/2010: 100% BC Global Aggregate Unhedged

[29] As of 12/01/2012: 100% of Barclays US TIPS Index, B Series
From 02/01/2006 to 11/30/2012: 100% of Barclays Global Inflation Linked:US TIPS, L Series

[30] Since 11/01/2015: 100% Barclays US TIPS Index
From 12/01/2012 to 10/31/2015: 50% Barclays Global Inflation Linked:US TIPS; 50% Barclays World Inflat-Linked Bond Index
Prior to 11/30/2012: 65% Barclays Global Inflation Linked:US TIPS; 35% Barclays World Inflat-Linked Bond Index

[31] Since 07/01/2016: 48% Barclays Long-Term Government, 14% Barclays Securitized, 14% Barclays Corporate, 24% Barclays U.S. TIPS
From 11/01/2015 to 06/30/2016: 50% Barclays Long-Term Government, 15% Barclays Securitized, 15% Barclays Corporate, 20% Barclays U.S. TIPS
From 07/01/2013 to 10/31/2015: 80% BC Aggregate Intermediate, 20% BC Global Aggregate 1-10 Year Hedged
From 07/01/2010 to 06/30/2013: 80% BC Aggregate, 20% BC Global Bond Aggregate Hedged
From 01/01/2010 to 06/30/2010: 80% BC Aggregate, 20% BC Global Bond Aggregate Unhedged
From 07/01/2009 to 12/31/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks
Prior to 07/01/2009: Benchmark is BC US Universal.
Formerly named "Custom Fixed Income Benchmark" prior to 11/01/2015.

[32] Since 11/01/2015: 100% S&P/LSTA Leveraged Loan Index

From 09/01/2010 to 10/31/2015: 50% S&P/LSTA & 50% B of A ML High Yield Master II

[33] Since 11/01/2015: 80% BC US Corp HY, 20% S&P LSTA Leveraged

From 10/01/2010 to 10/31/2015: 50% BC CREDIT & 50% BC HIGH YIELD

[34] Since 11/01/2015: 80% BC US Corp HY, 20% S&P LSTA Leveraged

From 09/01/2013 to 10/31/2015: Barclays Credit

[35] 80% Barclays US High Yield, 20% S&P/LSTA Leveraged Loan

[36] Since 11/01/2015: 80% Barclays US High Yield, 20% S&P/LSTA Leveraged Loan.
From 07/01/2013 to 10/31/2015: 62.5% Barclays US High Yield, 25% Barclays Credit, 12.5% S&P/LSTA Leveraged Loan.
From 01/01/2010 to 06/30/2013: 50% Barclays Credit, 50% Barclays Corp High Yield.
From 03/01/2009 to 12/31/2009: 75% Barclays Credit, 25% Barclays Corp High Yield.

[37] 50% JPM EMBI GLOBAL DIVERSIFIED INDEX / 50% JPM CEMBI BROAD

[38] Historical data prior to 02/01/2016 is M4ID Stone Harbor Emerging Market Debt.

[39] Since 11/01/2015: 50% JP Morgan GBI EM Global Diversified, 25% JP Morgan EMBI Global Diversified, 25% JPMorgan CEMBI Broad.
Prior to 11/01/2015: 100% JP Morgan GBI EM Global Diversified.

[40] Since 01/01/2016: 67% US Credit Benchmark, 33% non-U.S Credit Benchmark.
From 11/01/2015 to 12/31/2015: 75% US Credit Benchmark, 25% non-U.S Credit Benchmark.
From 07/01/2013 to 10/31/2015: 50% BC High Yield / 20% BC Credit / 20% JP Morgan GBI EM Global Diversified/ 10% S&P/LSTA Leveraged Loan Index
From 01/01/2010 to 06/30/2013: 50% BC Credit / 50% BC High Yield
Prior to 01/01/2010: 75% BC Credit / 25% BC High Yield

ENDNOTES

[41] From 11/01/2006: Benchmark is dynamically calculated using BMV weights of the underlying portfolios and their benchmarks.
From 04/01/1994: 100% of LaSalle REIT Benchmark

[42] The Private Real Estate benchmark is the NCREIF ODCE (1 quarter lag) since 07/01/2013. However, in non-quarter end months, the actual Maryland Private Real Estate return will be applied. In the third month of the quarter, the return will be calculated so that when geometrically linked with months 1 and 2, the three month return equals the published NCREIF ODCE (1 quarter lag).
Prior 07/01/2013, the Private Real Estate benchmark is the NCREIF PROPERTY INDEX QTR LAG.

[43] Since 11/2007 benchmark is 100% FTSE EPRA NAREIT Developed Ex US (Net) index. Prior to 11/2007, the net version of the index was calculated by and provided to State Street by MSIM

[44] Since 07/01/2016, a static blend of 85% NCREIF ODCE (one qtr lag) and 15% FTSE EPRA/NAREIT Developed Net Index.
Prior to 07/01/2016, a dynamic blend of the NCREIF ODCE (one qtr lag), and the FTSE EPRA/NAREIT Developed Net Index.
Prior to 05/01/2014, a dynamic blend of the Wilshire RESI, NCREIF ODCE (one qtr lag), and the MSIM Custom EPRA/NAREIT Global ex US
Prior to 07/01/2013, a dynamic blend of the Wilshire RESI, NCREIF Property (one qtr lag), and the MSIM Custom EPRA/NAREIT Global ex US
Prior to 07/01/2008: 50% Wilshire RESI & 50% NCREIF Property (one qtr lag)

[45] Since 07/01/2016: 75% S&P Global Natural Resources Index; 25% DJ Brookfield Global Infra Comp.
From 11/01/2015 to 06/30/2016: 100% of CPI + 5%; 10% Max.
From 08/01/2009 to 10/31/2015: 100% of CPI + 5%; 8% Max.

[46] Since 11/01/2015: Benchmark is dynamically calculated using the beginning market values of the Real Estate, Commodities and Natural Resource/Infrastructure sub-asset classes and their corresponding benchmarks.
From 12/01/2012 to 10/31/2015: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max , 60% - 50% BC US TIPS Index/50% BC World Inflat-Linked Bond Index
From 07/01/2011 to 11/30/2012: 30% - DJ UBS Commodities Index (Total Return), 10% - CPI + 5%; 8% Max , 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index
From 07/01/2009 to 06/30/2011: 20% - DJ UBS Commodities Index (Total Return), 20% - CPI + 5%; 8% Max , 60% - 65% BC US TIPS Index/35% BC Global Inflation Linked (USD Hedged) Index
07/01/2008 to 06/30/2009: Benchmark is dynamically calculated using Beginning Market Value weights of the underlying portfolios and their benchmarks Prior to 07/01/2008: 100% Barclays US TIPS Index
Prior to 07/01/2008: 100% Barclays US TIPS Index
Formerly named "Custom Real Return Benchmark" prior to 11/01/2015.

[47] Since 11/01/2015: HFRI Fund of Funds Conservative + 100 bps.
From 07/01/2014 to 10/31/2015: HFRI FOF: Conservative Index.
From 07/01/2008 to 06/30/2014 benchmark was HFRI Fund of Funds index.
Prior to 07/01/2008 benchmark was the Citigroup 3-Month T-bill + 500 bps.

[48] Since 07/01/2014 Benchmark is 100% of Custom Absolute Return Benchmark.
From 07/01/2011 to 06/30/2014 Benchmark is composed of 100% 3 month T-Bill + 6.5%
From 07/01/2009 to 06/30/2011 Benchmark is composed of 75% Barclays Capital US TIPS , 10% DJ-AIG Commodities Total Return Index and 15% MSCI ACWI.

[49] Since 07/01/2008: Calculated monthly using transitional weights and asset class benchmarks. Prior to 07/01/2008: MSRA TOTAL PLAN STATIC POLICY.

[50] Calculated monthly using the strategic target weights and asset class benchmarks.

117

State Retirement Agency

Response to Questions Received from DLS

December 6, 2017

DLS requests SRA to comment on the 2017 return performance in relation to the policy benchmarks, and for any asset classes and asset sub-classes that underperformed the benchmark, comment on the factors that led to the underperformance, whether those factors are expected to negatively affect performance in fiscal 2018, and what actions are being taken to mitigate those factors impacting the fiscal 2018 returns.

Additionally, SRA should comment on the utilization of any strategic adjustments to asset allocation during fiscal 2017 and the impact on investment performance.

In fiscal year 2017, the State Retirement and Pension System (System) achieved a net investment return of 10.02%, outperforming the policy benchmark return by 0.15%. The policy benchmark is the weighted average of each of the individual asset class benchmarks, and represents what the System would have returned if the asset class benchmark returns were achieved. While the System was able to earn excess returns over the policy benchmark on a total fund level, the returns of several asset classes lagged those of their respective benchmarks. The Board of Trustees of the System does not expect each asset class to outperform every year but, instead, across economic cycles. Investment Division staff reviews the performance of underperforming asset classes to assess whether the performance is consistent with expectations, or a sign of a longer term problem.

As noted in the DLS investment overview, the performance of the Public Equity asset class trailed its benchmark by 1.10%. Most of this shortfall can be explained by the use of long/short equity hedge funds within the public equity asset class. These strategies allow the managers to generate returns by buying stocks they believe will rise in value, and selling stocks they believe to be overvalued and expected to decline. These off-setting trades result in total exposures to the stock market that are less than a more traditional stock manager whose returns are dependent on stock prices rising. The System employs these strategies to provide some degree of downside protection during periods of equity declines, as well as to allow skilled managers to profit from both stocks that are expected to increase in price, as well as stocks that are expected to fall. Because of the lower sensitivity to the stock market, equity long/short strategies are typically expected to underperform broad equity indices during periods of strong equity performance, such as fiscal year 2017. During this time period, global stocks returned about 18.8%, while the System's long/short equity program earned 8.7%. Though the System's exposure to these strategies is relatively small at roughly 3.3% of total assets, the wide disparity of returns relative to the long-only benchmark resulted in a significant contribution to the underperformance of the Public Equity asset class. Going forward, because stock market values are historically high, the returns from equity hedge funds are expected to track more closely with equity markets in positive return markets, and preserve value for the System in falling stock markets.

The System's currency hedging program also detracted from returns in the Public Equity asset class for fiscal year 2017. The objective of the currency hedging program is to provide some protection against a strengthening U.S. dollar and reduce the volatility of the currency portion of the System's non-U.S. public equity investments over the long term. This program will generate profits when foreign currencies weaken relative to the dollar, and will produce losses during periods of foreign currency strength. During the second half of fiscal year 2017, the dollar weakened as doubts emerged as to whether the newly elected President and his administration would be able to implement policies that would stimulate the U.S. economy, resulting in currency hedging losses of roughly $41.1 million. However, since the inception of the program in May of 2009 through June 30, 2017, the program has generated profits of roughly $225 million. The System's underlying managers in the developed international portfolio trailed the benchmark by 0.56% before the impact of the currency hedging program, while the global equity managers that are included in the hedging program outperformed their benchmark by 1.28%. Investment Division staff believes the currency program provides a valuable risk mitigating tool for the System. Staff is working with the currency hedging manager to minimize the drag on performance in directionless, but volatile currency markets, while maintaining the protection it affords in periods of persistent dollar strength.

U.S. Public Equity is an example of a sub-asset class that Investment Division staff identified as having a fundamental structural problem. In fiscal year 2016, staff analyzed the lagging performance of the U.S. equity portfolio and recommended removing the large capitalization active management portion of the Terra Maria program, and reallocating that portion to other markets with higher prospects for outperformance. While the U.S. equity portfolio underperformed in fiscal 2017, the performance improved substantially after the restructuring took place in December 2016.

The performance of the Absolute Return asset class also lagged its policy benchmark for fiscal year 2017. The Absolute Return portfolio returned 3.31%, compared to 6.16% for its policy benchmark, the HFRI Fund of Funds Conservative Index + 1%. Three components contributed to the under-performance: (1) benchmark misfit; (2) low returns provided by managers; and (3) a high degree of turnover in the staff responsible for the asset class. Unlike more traditional asset classes like Public Equity and Fixed Income which can easily be benchmarked against publicly-available and transparent indices, benchmarking hedge funds and absolute return strategies is more challenging. The current benchmark consists of a universe of managers that exhibit similar, but not exact, performance characteristics as the System's Absolute Return portfolio. The expectations for both the Absolute Return portfolio and its index are to generate returns of 4% - 5% in excess of cash, with minimal exposure and correlation to traditional asset classes that are included elsewhere in the total portfolio. For example, the best-performing hedge fund strategy for fiscal year 2017 was Equity Hedge, returning 12.16%. This strategy is included in the policy benchmark, but is not included in the System's Absolute Return portfolio, as its relatively high correlation to equity markets is inconsistent with the objectives of the program. Conversely, the System's Absolute Return portfolio includes strategies that produced negative returns for the year that have very low or negative correlation to equity markets, and these were not part of the benchmark.

While this benchmark mismatch accounted for much of the underperformance, manager performance in the Absolute Return portfolio also contributed to the shortfall. As a group, these managers have delivered roughly half the return, as well as half the volatility, the System has expected of them. Investment Division staff will continue to closely monitor the System's managers to ensure they are meeting risk and return objectives, terminating or reducing allocations to managers as necessary and engaging new managers with higher return expectations.

Investment Division staffing and retention may have also contributed to the underperformance in the Absolute Return portfolio. As of June 30, 2015, the Quantitative Strategies group was comprised of three investment professionals. This group was responsible for the 20% allocation to investment grade fixed income assets, the 10% allocation to the Absolute Return portfolio, the 3% allocation to commodities, the 3.5% investment in long/short equity hedge funds within the equity portfolio, and the risk management function for the System. One professional focused mainly on the fixed income allocations, with the rest of the functions shared among the remaining two members of the team. By June 30, 2017, only the fixed income specialist remained on this team as the other two professionals had voluntarily left the System for private sector positions.

The structure and manager selection of the Absolute Return portfolio is, in large part, a function of the resources available to evaluate strategies and investment managers as the program was being implemented, and the interruption of the monitoring process resulting from personnel turnover. As of October 2017, the Quantitative Strategies group is now back to three professionals who are only responsible for the Absolute Return portfolio, and overall portfolio risk measurement and reporting. With a more narrowed focus of responsibilities and more time to re-evaluate the investment managers and portfolio construction of the Absolute Return portfolio, the absolute performance of the portfolio should improve.

Inflation-Linked Bonds also slightly underperformed the benchmark by 0.09%. This asset class is largely passively managed, as there is very little opportunity to add enough value on an active basis, net of fees, to justify the additional risk taken to generate the outperformance. The nine basis points of underperformance can be attributed to trading costs and a modest management fee. Going forward, the returns of this asset class should closely mirror the index.

The System's Commodities portfolio returned -8.22% for the fiscal year, trailing its benchmark by 1.72%. This underperformance can be attributed to manager performance, particularly relating to investments in the oil sector. As a result of its most recent asset allocation review, the Board reduced the target allocation to commodities to 0%, and most of the managers that were included in this dedicated exposure have been terminated.

The Natural Resources and Infrastructure portfolio returned 12.87% for the fiscal year, lagging its benchmark by 0.49%. Similar to Absolute Return, the benchmark for Natural Resources and Infrastructure is not a perfect reflection of the construction of the System's portfolio. The System's portfolio consists mostly of private investments in energy, timber and infrastructure, with a small amount of publicly-traded energy master limited partnerships. The benchmark is comprised of only publicly-traded securities, as private market benchmarks in these sectors are not well-established, and it would be difficult to create a custom benchmark that combined the performance of public and private investments. While the Natural Resources and Infrastructure benchmark is not a perfect fit relative to the underlying assets of the System's portfolio, it is likely the most appropriate option available, and over time, should accurately represent the performance of the System's portfolio.

In addition to setting target allocations for each asset class, the Board also sets ranges around these targets to allow Investment Division staff the flexibility to employ tactical over-weights and under-weights.

During fiscal year 2017, staff employed modest use of this flexibility and did not approach the maximums allowed, adopting a small tactical overweight stocks and an underweight to bonds. According to an analysis conducted by the System's general investment consultant, these portfolio tilts resulted in added value of approximately 18 basis points, or $85 million. This analysis focused on quarterly calculations based on returns and allocations of the major asset classes such as Growth Equity or Real Assets. A monthly evaluation that also evaluated sub-asset class allocations such as Emerging Market vs U.S. Equity within the equity portfolio showed a larger impact of up to 50 basis points, or about $237 million. Whether the 18 or 50 basis points numbers are used, both are the product of a new initiative by the Investment Division staff to overweight and underweight segments of the System's asset allocation within the bounds permitted by the Board's investment policy to enhance the potential return of the System.

DLS requests SRA comment on the risk profile of the system's asset allocation, and comment on investment strategies that can take advantage of short term market opportunities while still maintaining the system's overall risk tolerance.

As a long-term investor with a perpetual time horizon, the System is able to accept a significant amount of risk. This risk posture is exhibited in its asset allocation, and is represented by a large exposure to growth-oriented assets that are highly correlated to public stocks. While stock returns historically have been among the highest of any asset class, they are also the riskiest and most volatile. Consistent with the long-term nature of the plan, currently about 70% of total assets are allocated to strategies that are tied to the stock market, either through the direct ownership of public stocks, or indirectly through investments in other asset classes that are correlated to equities, such as high yield and emerging market debt. As fiduciaries, the Board seeks an asset allocation that balances the long-term benefits provided by stocks against the need for diversification and some level of protection during periods of stock market declines.

While the System's asset allocation is dominated by risk-oriented investments at roughly 70%, it is less risky and more defensive and balanced relative to the peer group. The System's exposure to public equity is about 10% less than the median of the peer group. After the large stock market drawdowns that occurred during the tech bubble in the early 2000s and again during the financial crises in 2008-2009, the System determined that the fund was too exposed to the public equity market. As a result, some of the public equity assets were re-allocated to other asset classes with less exposure to the stock market. While the System's allocation to public equity represents an underweight versus the peer group, it enables to System to achieve its actuarial return target, based on modeled long-term risk and return assumptions, with lower risk and a smoother return stream than the overall peer group. This in turn will provide less volatility for budgeting purposes with regard to the annual employer contribution. The System accepts that during periods of strong public equity performance, as has been experienced over the past several years, it will lag the peer group. However, the System should perform better during periods of market stress and public equity drawdowns. Over time, the System's portfolio is expected to provide similar average returns as peer portfolios, but generate more wealth because of the lower volatility characteristic.

While the asset allocation is segregated into asset classes, the System is still able to take advantage of short-term market opportunities. External managers are typically allowed the flexibility to invest in a perceived market opportunity within their respective asset class. For example, public equity managers can rotate from one sector to another, and fixed income managers are able to overweight Treasury bonds relative to corporate bonds. Some external managers have multi-asset mandates, and are not confined to a specific area of the market. These mandates are very broad and provide the manager a significant amount of flexibility in terms of asset class, geography and security type. For example, a global macro manager can sell German stocks to buy Canadian bonds. In addition to the discretion afforded to external managers, the Investment Division staff has the ability to take advantage of market opportunities as an overlay to the total fund. Staff meets regularly to discuss the economy and potential market opportunities, and has contracted with an external manager for trade implementation.

Given the low rate of return and high management fee structures, DLS requests SRA to comment on the returns of the absolute return asset class, including the market conditions leading to the low level of returns and what market conditions would result in markedly improved returns for investments in the asset class.

The objective of the System's Absolute Return asset class is to provide diversification and risk reduction to the total fund by having very little exposure to the common risk factors found in the rest of the portfolio. The return objective is to outperform a cash return by 4% - 5% over a full market cycle. Over the last several years, this return objective has not been met. There are several potential reasons for this underperformance that relate to the market environment that has persisted for the last several years. Hedge funds comprise most of the mandates in this asset class, and are characterized by active trading strategies that attempt to take advantage of relative value opportunities between different securities and asset classes. The most favorable environment for this type of trading is one where volatility is high, correlations are low and dispersion is high. Volatility is the degree to which asset prices fluctuate, correlation is the degree to which assets move in the same direction, and dispersion refers to the difference in asset price movements regardless of whether they are moving in the same direction. Essentially, hedge funds have historically performed best in more chaotic markets. Over the last several years, markets have been very calm and volatility has hovered at all-time lows. Moreover, correlations have been high and dispersion has been low. A reason this condition has persisted may relate to the unconventional monetary policies adopted by global central banks to lower interest rates and stimulate economic growth. As central banks unwind these policies and raise interest rates, it may reverse the trend and create a more favorable environment for hedge funds.

DLS requests SRA to comment on the restructuring of the Terra Maria program, including how the reallocation of assets continues to promote the goals of the program and positions the program to continue to add investment value to SRPS.

After a detailed and comprehensive review of the Terra Maria program during fiscal year 2017, the System restructured the way the assets are allocated to improve performance and efficiency. Prior to these enhancements, each Terra Maria program manager had similar broad assignments spanning most of the public equity markets, resulting in an over-diversification of managers. Too many managers were investing in the same markets, and the ability of the group as a whole to add value had been diluted. As a result of the recent changes, the program is more focused with fewer overlapping assignments, and individual manager allocations are large enough to be meaningful for the System and the manager. Additionally, the number of program managers was reduced to prevent over-diversification, as well as to create more accountability for each program manager.

The number of Terra Maria program managers in domestic pubic equity was reduced from six to two. In developed international public equity, the number of program managers was cut from five to two. A new dedicated emerging markets mandate will be added in December 2017 and managed by one program manager. Also, a new dedicated international small cap mandate was added in April 2017, managed by one program manager. Fixed income was reduced from four program managers to one.

To promote accountability for the Terra Maria program managers, each has been given a specific benchmark, and is expected to create a portfolio of managers that add return relative to that benchmark. This focused responsibility has reduced the ability of the program to engage managers in other asset classes or that have niche strategies. However, the program managers have been invited to present outstanding managers outside their mandate that may help the System achieve its overall objectives. As a result of these changes, the overall number of underlying managers utilized was reduced, allowing for a more concentrated program. This concentration will increase the potential for generating excess returns. While the number of managers was scaled back, the overall dollar value of the Terra Maria program remained relatively the same.

As one of the most efficient asset classes, U.S. equity is particularly challenging for active managers to outperform passive benchmarks. Like most managers in this asset class, the System's Terra Maria managers struggled to generate excess returns over the last several years. As a result, Terra Maria assets were meaningfully reduced in domestic equity, and are now focused on small capitalization stocks. However, the Investment Division staff has encouraged program managers to recommend large cap managers for consideration in an effort to maintain coverage and keep abreast of the emerging managers in this asset class.

The assets that have been removed from domestic equity have been moved to the less efficient asset classes of emerging markets and international small cap, where there are greater opportunities for active managers to add value. The international developed asset class has remained at a similar asset size, as this component of the program has reliably added value over time. Now that the restructuring implementation has been completed for public markets, hedge funds will be evaluated for program fit. Separately, and in parallel, the Investment Division staff continues to build out its private equity Terra Maria program, which is implemented through staff and consultants.

DLS requests SRA to comment on its process for evaluating utilization of the currency program, and plans for the program moving forward.

The objective of the currency overlay program is to provide some protection against a strengthening U.S. dollar and reduce the volatility of the currency portion of the Agency's non-U.S. equity investments over the long term. Strong foreign currencies relative to the U.S. dollar provide a favorable environment to non-dollar investments and enhance returns. Any currency hedging program applied in this environment would act as a drag and detract from returns. This is what occurred in fiscal year 2017 as foreign currencies generally strengthened versus the dollar, particularly in the second half of the year as doubt emerged as to whether the new administration would be able to pass policies that would stimulate the economy. The impact of this program on fiscal 2017 performance was $41.4 million, or roughly 0.09%. Alternatively, when foreign currencies are weak and the dollar is strong, the currency exposure acts as an impediment to performance. It is during these periods that currency hedging programs can help offset some of those losses. While the value added by the program has fluctuated, with some years generating gains and others losses, its risk reducing qualities have been persistent over all time periods.

Given the meaningful size of the System's exposure to foreign assets, staff continues to believe that having an ability to hedge currency makes sense. As of June 30, 2017, the System's foreign equity holdings totaled roughly $11 billion, or about 22 percent of the total fund. In addition, the volatility of currency fluctuations have a significant impact on total returns. The currency effect can be demonstrated by comparing the recent returns of an index of non-U.S. stocks against its currency-hedged version. The chart below shows this index comparison as of June 30, 2017, and does not represent the returns of the System.

Annualized Returns as of June 30, 2017

	1-Year	3-Years	5-Years	7-Years	10-Years
MSCI World-ex U.S.	19.49%	0.67%	8.15%	7.47%	1.00%
MSCI World-ex U.S. Hedged	22.43%	6.90%	12.20%	9.24%	2.48%

The System's experience with the currency hedging program demonstrates both the volatility of currency markets, as well as their significant impact on total fund performance. While this program works best in momentum-driven periods of U.S. dollar strength, staff is working with the manager to mitigate the losses associated with protracted periods of dollar weakness and choppy, directionless currency markets. Staff will continue to monitor the System's exposure to currency risks to determine the appropriate hedging needs going forward.

2017 Board Requested Legislation

The following legislative proposals are offered by the Board of Trustees for the State Retirement and Pension System for the consideration by the Joint Committee on Pensions for the 2018 legislation session. These legislative proposals are intended to clarify or correct perceived inconsistencies within existing law and remove obsolete provisions within the State Personnel and Pensions Article.

Non-vested Accounts

The State Retirement Agency (Agency) was notified in April of a member who had accrued one and one-half years of service in the Alternate Contributory Pension Selection (ACPS) of the Employees' Pension System (EPS) from 2010 and 2012. In June 2012, the member left State employment but did not withdraw her member contributions from the EPS. After an absence of more than four years, she returned to State service in January 2017. Because she was not vested in the ACPS when she left State service in 2012, and because her membership status had lapsed (she had a break in service of greater than four years), she was enrolled in the Reformed Contributory Pension Benefit (RCPB) of the EPS. Additionally, her ACPS member contributions are no longer earning interest, since her membership in the ACPS has terminated.

Upon returning to service in January 2017, this member requested a return of her ACPS membership contributions. However, because she was now once again a State employee, the Agency informed her this would be considered an in-service distribution under Internal Revenue Code provisions, Treasury regulations, and Revenue Rulings, and could jeopardize the qualified status of the State Retirement and Pension System (System). Additionally, refunding her ACPS member contributions could also subject her to a 10% federal tax penalty. While the member understands why she cannot receive a return of her contributions, she rightly pointed out that the Agency will now be holding these funds (her money) while she is a member in the RCPB, and she will not be earning any further interest on these funds. She described her funds as being in "pension purgatory".

To address this issue, the Board is recommending three possible solutions for the joint committee's consideration. The first proposed solution would amend provisions of the EPS that would allow this member (and others similarly situated) to move her non-vested inactive ACPS service into her active RCPB account. Currently, only members with vested accounts in one tier of the EPS may combine their service with their current active EPS accounts. If the member chooses to take advantage of this provision, she would be responsible for making up any difference in membership contributions for her ACPS service. Nevertheless, it would allow her an opportunity to make use of the service in her abandoned ACPB account.

While the employer contributions associated with these non-vested accounts initially remain in the EPS after these members end their State service, the actuary for the System treats these employer contributions as gains to the System since no benefit will be paid on this service. As gains to the System, the actuary allocates these employer contributions to reduce future employer contributions; thus, these funds are technically no longer in the EPS. Staff for the State

Agency estimates that there are approximately 445 ACPS inactive accounts that could be impacted by this legislation. Because of this number and the fact that the employer contributions associated with this service have been allocated to fund other EPS benefits, it should be expected that there would be a cost with this legislation. At this time, staff is unable to determine what that cost would be, since we have no way of knowing how many of the 445 would opt to take advantage of this proposal.

If the legislature's actuary determines that this proposal would have a significant cost, the Board would recommend a second proposal that would allow these individuals to transfer their non-vested ACPS service into the RCPB, but would only allow these members to apply this service towards their eligibility service. This alternative would have a much lower cost (likely insignificant) because any individuals opting to take advantage of it, would not be able to use this service towards the actual calculation of their final benefit.

Finally, the joint committee may wish to consider a third proposal that would not address combining the active account with the inactive account for any reason, but would allow the active member to begin earning interest, again, on the member contributions in the inactive account.

To assist the joint committee in their deliberations of this proposal the Board has asked the System's actuary to calculate the cost of these proposals under various scenarios (25% of the non-vested members opt to participate, 50% opt in, etc.).

JRS Retirement by Order of the Court of Appeals

Provisions included in the Judges' Retirement System (JRS) provide in part that an individual who becomes a member of the JRS on or after July 1, 2012, is entitled to a JRS retirement allowance "…***when retired by order of the Court of Appeals,*** with less than five years of eligibility service, if the member has eligibility service equal to the mandatory retirement age required by Article IV, § 3 of the Maryland Constitution minus the member's age when the member first becomes a member…."

This provision was added through Chapter 150 of the Acts of 2015. The intent of this legislation was to ensure that if an individual who was older than age 65 when appointed to the bench on or after July 1, 2012, that individual, when reaching mandatory retirement age, would receive a benefit equal to the years of service the member had accrued equal to mandatory retirement age for judges minus the member's age. As drafted, it appears that "retired by order of the Court of Appeals" was intended to mean the same as being required to retire due to reaching mandatory retirement age. This interpretation of Chapter 150 is supported by the Fiscal and Policy Note for the legislation, wherein it states "[a] JRS member who must retire by order of the Court of Appeals with less than five years of eligibility service may receive a prorated allowance if the member's service equals the mandatory retirement age in the Maryland Constitution minus the member's age when the member first became a JRS member."

Legal counsel for the Agency has informed staff that language stating, "when retired by order of the Court of Appeals", is not the same as stating a JRS member is required to retire due to reaching mandatory retirement age, and in fact, the pension statute distinguishes between retirement at the mandatory retirement age and retirement by order of the Court of Appeals. Reported judicial decisions consistently have used the phrase "by order of the Court of Appeals" to signify a particular order of that Court in a particular case, and usually one involving the Court's disciplinary role. Therefore, to distinguish between requiring a member to retire due to reaching mandatory retirement age and being required to retire by order of the Court of Appeals, we recommend amending the provisions of the State Personnel and Pensions Article that address eligibility for retirement for JRS members to clarify that a member who has reached mandatory retirement age is eligible for an allowance even if he or she has fewer than five years of service.

Inasmuch as this would codify the existing practice of the Agency, the Board does not anticipate any cost associated with this proposal.

Board of Trustees Oath

Section 21-104(c) of the State Personnel and Pensions Article requires any individual elected or appointed as a trustee to the Board of Trustees for the System to take and subscribe to an oath of office that charges trustees with certain duties of diligence and honesty when administering the affairs of the Board of Trustees. However, Article I, Section 9 of the Maryland Constitution and Article 37 of the Maryland Declaration of Rights address oaths of office that elected or appointed individuals are required to take. Specifically, Article I, Section 9 of the Maryland Constitution provides in part that "every person elected, or appointed, to any office of profit or trust, under this Constitution, or under the Laws, made pursuant thereto, shall, before he enters upon the duties of such office, take and subscribe the following oath…." Moreover, Article 37 of the Maryland Declaration of Rights provides in part that "…nor shall the Legislature prescribe any other oath of office than the oath prescribed by this Constitution."

Legal counsel for the Board have advised that in light of these provisions included in the Maryland Constitution and the Declaration of Rights, new trustees to the Board should not take the oath required under § 21-104(c) of the State Personnel and Pensions Article. Accordingly, since 2014, new trustees have only taken the oath as provided for in Article I, Section 9 of the Maryland Constitution. In light of this, the Board recommends replacing the existing language in § 21-104(c) of the State Personnel and Pensions Article with language that specifically references trustees taking the oath provided for under Article I, Section 9 of the Constitution.

Inasmuch as this proposal would conform the statute to the Agency's existing practice, the Board does not anticipate any cost associated with this proposal.

Modification of Municipal Pension Surcharges

The 2011 legislative reforms substantially revised the benefit provisions and employee contribution rates for the System's EPS. When plan changes such as the 2011 reforms affect different participating governmental units (PGUs) differently, equity relationships can be affected to the systematic benefit of some and to the systematic detriment of others. It is recommended that legislation be introduced to convert or phase in a more equitable allocation of contribution requirements among the PGUs.

The 2011 reforms caused the pooled employer cost to decrease by about 2% of pay. Most of that decrease was due to the increase in employee contribution rates for the ACPS participants, from 5% to 7%. PGUs with participants subject to the Non-Contributory Pension Benefit (NCPB) or the Employees' Contributory Pension Benefit (ECPB) (10 employers) benefitted from the decrease in employer contributions although there was no offsetting increase in employee contributions from their NCPB and ECPB participants. This was the result of a specific provision included in the 2011 reforms that exempted these 10 employers from having to participate in the RCPB.

The Board of Trustees is recommending the establishment of a new surcharge of 2% of pay for each of the nine employers participating in the NCPB or ECPB. Because of the magnitude of the proposed changes to the employer contribution rate and the impact on these nine PGUs, the Board is also recommending these changes be implemented over a period of five years. This five-year phase-in would begin with the December 2019 billing and would be fully implemented by the December 2023 billing.

Investment Division Governance

Please see separate Governance and Resourcing of the Investment Division report and corresponding presentation.

2017 Board Requested Legislation
Addendum

The following legislative proposal is offered by the Board of Trustees of the State Retirement and Pension System for consideration by the Joint Committee on Pensions to sponsor as legislation for the 2018 session.

Recommendations for Changes to the Agency's Administrative Expense Cap

In 2000, legislation was enacted that amended the formula used to calculate the State Retirement Agency's (Agency) administrative expense cap. Chapter 372 of 2000 increased the cap by providing that the .22% administrative expense cap would not be calculated only against the active member payroll, but also the payroll for retirees and former members. Chapter 372 also included a sunset provision, so that beginning with fiscal year 2004, the Agency's expense cap would again be calculated using just active member payroll. However, beginning in fiscal year 2004 and each year thereafter, all budget documents prepared by the Agency, each proposed budget presented by the Administration, and all budget analyses prepared by the Department of Legislative Services continued to calculate the Agency's administrative expense cap using the payroll of active members, retirees, and former members.

Based upon the fact that the Agency's budget has, for the past 14 years been proposed, introduced, and approved on the basis of statutory provisions no longer in effect, staff is recommending legislation that would permanently restore to the Code, the three-part basis (active member salaries, retiree benefits, inactive member compensation) for calculating expense fund cap using the .22% multiplier. Inasmuch as this would codify the existing practice of the Agency, the staff does not anticipate any cost associated with this proposal.

Additionally, the Board is requesting legislation that would address a pressing issue it may face in fiscal year 2019. The Agency's technology and operational re-engineering strategy, known as the "Maryland Pension Administration System" (MPAS) project, began in 2006 and is entering its third phase. This last phase, Business Process Re-Engineering and Supporting Technology ("MPAS-3"), includes major changes to the Agency's business processes in the Administration and Finance divisions of the Agency. In addition, it will include long-anticipated integration of existing applications and modifications to MPAS that will allow members and retirees to access their own account information and transact business with the Agency over the Internet, in real time. Several new technology tools (e.g., a member relationship management system and workflow automation) are incorporated into MPAS-3. This is the culmination of the MPAS strategy, built on a strong foundation established in the previous two phases, which realizes the benefits that the core technology enables. Over the next four years, MPAS-3 is set to deliver significant improvements in member service and self-service, redirecting internal resources from current paper-driven operations to timely, efficient manual and automated processes.

Given the potential resources required to complete this last phase of MPAS, it is likely the Agency's total operating budget allocation will exceed the .22% administrative expense cap based on the payroll of members, retirees, and former members. This overage is directly attributable to major MPAS development that will occur through fiscal year 2022. To alleviate the stress these funding increases to the Agency's operating budget may cause, the Board is offering the Legislature three possible solutions.

Option A: In keeping with historical precedent with regard to funding information technology projects (Chapter 429 of 1993, Chapter 366 of 1995, and Chapter 157 of 1997), the Legislature could introduce legislation that would provide for a one-time increase to the administrative expense cap through fiscal year 2022 to address the financial needs of these projects. The Board believes that a cap of .26% would accomplish this objective.

Option B: The Legislature could introduce legislation that would exempt funding of MPAS-related projects, or possibly even Major Information Technology Development Projects in general, from the Agency's administrative expense cap.

Option C: The Legislature could introduce legislation that would permanently increase the Agency's administrative expense cap by a certain amount that would be sufficient to cover major information technology projects and other significant expenses that may arise in the future. The Board believes that a cap of .26% would accomplish this objective.

Governance and Resourcing of the Investment Division

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

OCTOBER 25, 2017

Introduction

During the 2016 interim, the Board of Trustees of the Maryland State Retirement and Pension System (System) requested the Joint Committee on Pensions sponsor legislation giving the board the authority to set compensation levels for staff, create and eliminate positions, and approve investment-related expenditures to preserve and enhance the value of System assets. While the joint committee did not agree to sponsor the legislation during its interim meetings, legislation was introduced by individual sponsors in each house during the 2017 session. During deliberations of this legislation, several questions were raised and ultimately, the 2017 Joint Chairmen's Report requested additional information in the form of a summer study before moving forward with possible legislation. Specifically, the State Retirement Agency (Agency) was charged with addressing the following topics:

- the number of new positions within the Investment Division that it would establish and the timeline for establishing and filling each position;
- the title, job description, and first-year compensation for each new and existing position within the Investment Division;
- the range of compensation that would be authorized for each position;
- the basis used for determining compensation levels for Investment Division personnel
- any incentive compensation for which employees of the Investment Division would be eligible and the criteria for determining payment of incentive compensation;
- how staff will be evaluated; and
- the process for determining adjustments to compensation, both positively and negatively.

Investment Division staff, in coordination with the Board, the Executive Director and the Director of Legislative Affairs for the Agency has prepared this report to respond to the joint committee's request. The report is presented topically, and includes a number of appendices that provide supporting details.

Table of Contents

Section 1: Background and Vision

The System is one of the largest defined benefit retirement plans in the country. At $46 billion as of September 30, 2016, ($50 billion as of September 30, 2017) the System was the 23th largest state and local plan (out of more than 4,000) and 31st including corporate plans. Over the next 20 years, as it approaches full funding, the System is projected to grow to over $110 billion. Using a shorter horizon, assets are projected to exceed $75 billion by fiscal year 2027.

It is important to consider how the Investment Division will be investing the assets of the System as they grow to these larger asset levels. Assuming the asset allocation and manager fees remain constant through time, the System is projected to spend $575 million in manager fees in fiscal year 2027. This represents a $204 million increase in fees from the 2017 realized fee level.

The governance processes for public pension plans vary from state to state, and within each state these processes have evolved over time to meet the unique circumstances of each. In Maryland, the Legislature has been responsive to the System's needs and has made necessary changes over time to address these needs. As far back as 1989, the Legislature recognized that management fees were not easily addressed in an annual appropriation. Fee expenses grew proportionally with assets at 7-8% per year, while State budgets were expected to grow at a lower rate. To address this concern, the Legislature enacted changes to provisions of the State Personnel and Pensions Article that excluded the management fees from the budget process. Instead, these fees would be paid from the corpus of the System's assets, with a cap placed on the amount of fees that could be paid in any fiscal year. This cap structure, which is currently 50 basis points of public market assets, remains in place today. At that time, the System managed assets internally, including public equity and fixed income. The challenges of recruiting, staffing and resourcing an internal asset management function under the State budgeting process led the Board, in part, to disband the internal function and move to a 100% outsourced model by 2005.

By 2007, the Board recognized, and the Legislature agreed, that the Investment Division needed greater capacity to attract and retain strong investment leadership. To address this issue, legislation was enacted that provided the Board with the authority to set compensation for the Chief Investment Officer (CIO). Additionally, this legislation provided the CIO with the sole authority to hire and fire external managers of the System. By 2011, it was apparent that having a competitively paid CIO was necessary, but further flexibility was required to attract and retain senior management. During the 2012 session, the Legislature again amended the provisions of the State Personnel and Pensions Article to provide the Board the authority to set the salaries of the Deputy CIO and Managing Directors within the State's Executive Pay Plan.

While each of these statutory changes was instrumental in creating a sound investment program for the System, they addressed specific issues that presented a challenge at a point in time. Today, the Board has identified new challenges that limit its ability to implement the investment program. In proposing solutions to these issues, the Board and Investment Division are also considering the future. Together, they are contemplating what organizational and governance structures will be needed to support the investment program, and what investment program will best support the needs of the System as it grows first to $75 billion, and then to $100 billion in assets.

In a world of uncertainty, the Board sees the need to build in flexibility to take appropriate action when confronted with a situation that cannot be foreseen today. The appropriate future investment program may be quite different than it is today, and may require different resources to facilitate the growth and stability of that program. Many of the investment options available to the System today are limited in size, but still meaningful for the System to pursue. However, as the System grows, these investments may be too small to pursue, as the impact on the total fund will not be meaningful. Similarly, at larger sizes, investment opportunities may arise that the System is precluded from accessing today.

The Board believes that it would be in the best interest of the System to be provided the additional authority to allow it to make necessary adjustments to the investment management program through time, specifically in the areas of compensation, creating and eliminating positions, and procuring investment-related products and services.

Despite the relief provided by the 2012 legislation, the existing overall compensation structure has not proven effective in supporting retention and recruitment of qualified staff within the Investment Department. Providing the Board the authority to reward strong performance with pay that is commensurate with peers provides both an enhanced recruitment and retention tool, and an alignment between the System and staff. To be clear, the Board does not believe that better compensation necessarily will eliminate turnover. Staff members may outgrow the division, develop other interests, or decide to make a lifestyle change; but, more competitive compensation will reduce the turnover that is driven purely from compensation.

Providing the Board with the authority to create and eliminate positions would allow the Board to efficiently and timely staff the investment program. Currently, the asset allocation decision is disconnected from the decision to provide staffing and other resources to carry it out. The Board determines the System's asset allocation, but does not have authority over the appropriate amount of resources required for its implementation. Sufficient staffing will lower the risk to the System from turnover by creating built-in continuity and a training process to source replacement candidates.

Finally, the budgeting process for additional costs of the Investment Division that help to enhance and protect the assets of the System is uncertain and untimely. Purchasing investment research or an enhancement to a risk system requires long lead times with uncertainty of outcomes, or a reallocation of other Agency resources. Board authority for the budgeting of these expenditures will improve the connection between the Board's decisions and the Investment Division's ability to implement them.

Given this authority, the Board and the Investment Division seek to improve the System's returns. This enhanced performance can be realized through two paths, earning more and keeping more of what is earned. The Board can hope to improve the gross returns of the System through an increased focus on forward-looking, return-generating activity by Investment Division staff. Additional staffing resources will enable the division to expand the universe of potential managers or investments to pursue, enhance the methodology of evaluating those opportunities, or design tactical strategies to adjust the mix of investments for intermediate-term performance. The authority to create positions, pay competitive wages, and provide sufficient systems and services will support these activities.

In addition to improving the gross return, the increased authority could help the System retain more of the investment returns it generates. These savings can be realized through at least three avenues. With additional staff, forensic accounting work on private funds may result in return of overcharges and other administrative costs. Additional staff may be able to invest the time necessary to research and create more cost effective methods of interacting with asset managers and making investments. Building the ability to invest directly in private assets will lower the cost to the System. The potential for internal management is one of the most powerful real options available. Section 4 explores the internal management option in more depth.

Increased control over the budget would create more specialization within the Investment Division, which would result in improved performance. For example, a private equity portfolio manager is hired based on that person's skill in identifying and gaining access to high quality funds. Freeing that person from data entry, document management, report creation and other administrative duties will allow more time to review and recommend additional high quality funds. An employee's position is determined by the part of the job description that requires the most skill. In the current state, the volume of mandatory, lower-skill, lower-value-add activities crowds out the higher-skill activities. By reassigning these functions from the higher-skilled staff to new or existing junior, lower-compensated staff, the volume of high-skill activities can increase while the necessary process work is performed. Granting the Board the authority to determine pay and staffing needs will not result in paying the existing staff more money for doing the same job, but will allow these positions to be more focused on the investment process rather than the administrative and reporting functions.

The Investment Division is unique in State government because of its potential impact on the cost of supporting the System. In the context of $50 billion (the current value of the System), small additional outlays on the investment process can have sizeable dollar impacts on investment returns. One basis point (0.01%) of additional return for the System, whether through better performance or lower costs, represents $5.0 million of value to the System. The immediate cost outlays being contemplated as a result of the proposed changes to compensation and staffing are less than $5 million. Moreover, the Board and Investment Division will have continued valuable flexibility to improve the investment performance and lower costs as the System's assets grow. The effect on the State's budget is the impact these improvements will have on contribution rates. As this response will demonstrate, the requested authority has the potential to enable the System to generate sufficient incremental returns to not only pay for any incremental costs incurred by the Investment Division, but also meaningfully impact the annual contribution rate for the State.

The requested authority is not without precedent. Within the State there are a number of skilled positions for which the State has provided flexibility on compensation (e.g. The University System of Maryland and the Maryland Department of Transportation.) Compared to System peers, Maryland is an outlier in its governance with respect to staff compensation. As shown in the table below, of the 24 state plans greater than $40 billion, only five do not have Board level salary setting authority. In fact, two of those five have worked with their legislatures to create salary structures comparable to peers. With respect to authority over the number of positions, Maryland is in the majority of peer funds that do not have that authority resting with their boards. However, the data reveals that having the authority to establish positions has resulted in both large and modest-sized investment teams, indicating that boards with the authority have exercised constraint on the growth of staff.

State Defined Benefit Pension Plans with Assets Greater Than $40 Billion as of June 30, 2017

Name	Assets	% of Assets Managed Internally	Investment Professionals	Board Salary Authority	Board PIN Level Authority
California Public Employees' Retirement System	$323.5	69%	207	Yes	No
California State Teachers' Retirement System	$208.7	38%	128	Yes	No
New York State Common Retirement Fund	$197.1	***57% *****	***33 *****	No	No
State Board of Administration of Florida	$153.6	44%	61	Yes	Yes
Teacher Retirement System of Texas	$142.0	60%	140	Yes	No
New York State Teachers' Retirement System	$114.7	61%	47	Yes	Yes
State of Wisconsin Investment Board	$110.1	57%	78	Yes	Yes
North Carolina Retirement Systems	$94.1	33%	23	Yes	No
Ohio Public Employees Retirement System	$93.4	39%	52	Yes	Yes
Washington State Investment Board	$91.6	21%	42	Yes	No
Employees Retirement System of Georgia	$87.1	88%	29	Yes	No
New Jersey Division of Investment	$76.0	82%	31	No	No
Virginia Retirement System	$74.4	33%	48	Yes	No
State Teachers' Retirement System of Ohio	$73.6	62%	93	Yes	Yes
Oregon Public Employees Retirement Fund	$73.0	10%	19	No*	No
Massachusetts PRIM	$66.9	0%	14	Yes	Yes
State of Michigan Retirement Systems	$65.6	33%	42	No*	No
Minnesota State Board of Investment	$64.1	0%	14	Yes	No
Pennsylvania PSERS	$51.8	24%	21	Yes	No
Maryland State Retirement & Pension System	$49.1	0%	16	No	No
Teachers' Retirement System of the State of Illinois	$48.8	11%	13	Yes	No
Tennessee Consolidated Retirement System	$47.0	70%	33	Yes	No
Public Employees' Retirement Association of Colorado	$46.0	58%	35	Yes	Yes
Public School Retirement System of Missouri	$41.5	0%	10	Yes	No
* Legislature created a salary structure for investment professionals based on peer data					
** Data as of June 30, 2016					
		Average:	51	Yes = 19	Yes = 7
		Average (Internal):	59	No = 5	No = 17

Section 2: Current State as of June 30, 2017

The asset allocation of the System has become more complex over the last decade. As of June 30, 2017, the System employs 20 separate portfolio benchmarks that represent a group of assets diversified by type and geography. The resulting portfolio to implement this asset allocation includes 80 managers in the public markets (including approximately 50 in the Terra Maria program), 230 private partnerships and 40 commingled investments where liquidity or access issues necessitate the structure (open-end real estate funds or emerging market equity are examples). This asset allocation is administered by 13 investment management staff, six compliance, operations and accounting staff, with an additional four open positions all overseen by the Chief Investment Officer and Deputy Chief Investment Officer.

To distinguish between these types of activities, the industry divides investment functions into three components, front, middle and back office. Front office refers to the leadership of the organization and includes all of the staff involved with the investment decision-making process. Middle office refers to the professional work supporting the investment function, such as compliance and accounting. Back Office refers to the movement of cash and securities, the settlement of trades and other related functions. As of June 30, 2017, the Investment Division had 15 front office staff and six middle and back office staff.

The division's monitoring and oversight responsibilities prescribe regular contact with the managers, including a review of performance and compliance with relevant guidelines. The current front office staff estimates they spend more than 50% of their time in these oversight activities to understand the functioning of the investments, and to ensure that they continue to fulfill their expected role in the portfolio. Approximately 20% of the investment staffs' time is spent reviewing potential new investments. The remaining 30% of time is split between reporting and other administrative activities.

Front office staff are required to be sufficiently experienced and knowledgeable to make investment recommendations to the CIO, but spend the majority of their time on lower value-add activities such as reviewing and filing reports, processing daily activity and creating reports. The front office staff performs well on the whole, but would greatly benefit from more time to focus on the important task of growing the assets of the System through a regular focus on asset allocation and researching potential opportunities for specialized investment.

The number of investment operations and accounting staff has been the same since 2007, when the System engaged far fewer managers. This staff of five reconciles 100 manager accounts with the custodian records each month, reviews 920 quarterly and 230 annual private fund statements to verify assets and fees, processes 1,400 capital calls and distributions, manages all cash and account transfers and ensures sufficient funds are available for monthly benefit payments. The number of accounts is more than many peers largely because of the System's greater focus on alternative investments. These alternative managers typically have capacity constraints, and are not able to accept the level of assets that public market fund managers can absorb.

While at present, all of the accounting and operations functions are being performed, the tasks are not necessarily being accomplished in a timely manner. For example, the 230 annual reports for private partnerships are fully analyzed, but at the rate of one or two a day the process takes longer than six months to review all of the statements. If there is a problem, accounting and operations staff may not find it in a timely manner.

No one employed within the Investment Division is eligible for overtime, but most are eligible for compensatory time. The accounting and operations staff work a large number of overtime hours per year (estimated at over 500 hours.) They routinely do not submit those hours for compensatory time because they are unable to take the time off at a later date.

Another example of stress on staff and resources is found in working with the two external risk systems, Barra and Factset. These systems are designed to estimate risk and measure the sources of return within individual portfolios and the System as a whole. All of the data for the over 350 accounts that consists of more than 30,000 line items, are fed into these systems on a regular basis. Because of the number of accounts and the natural changes that occur through time, the data requires a fair amount of scrubbing to be accurate. Investment Division front office staff only has time to scrub the data on a quarterly basis to produce rudimentary risk reports. This time challenge has been exacerbated by staff turnover in the relevant risk group. Since September 2015, this group of two has been staffed by one person. Ideally, this group should be staffed by three individuals. Since 2010, this group has experienced two cycles of complete turnover, two Managing Directors and two Senior Analysts. Compensation was the primary driver of many of these departures.

Here again, staff works a considerable amount of overtime to ensure oversight standards are met, as set forth in the division's Operations Manual, and does not submit for compensatory time for the same reasons as stated for the accounting and operations staff. The additional work hours of this group are simply necessary to maintain the current level of performance. There is no capacity for time to improve the process.

These descriptions of the front, middle, and back office groups within the Investment Division demonstrate that they are functioning and meeting responsibilities and objectives, but have little capacity for growth. However, given additional and predictable staffing, the Investment Division would exhibit substantial capacity to improve performance for the System.

Throughout fiscal year 2017, the Executive Director and Chief Investment Officer have worked with the Department of Budget and Management (DBM) on an interim solution that provides some relief to the immediate staffing and compensation issues faced by the Investment Division. In the fiscal year 2018 budget, DBM approved changes to the staffing level and compensation structure of the System. These changes:

1. Created new classifications, a new Senior Portfolio Manager classification with a pay scale between the Senior Analyst and Managing Director scales and a new Associate classification for junior analysts;
2. Established four new Investment Division positions by reassigning PINS from the rest of the Agency (one Senior Portfolio Manager, one Senior Analyst and two Associates); and
3. Approved nine Senior Analysts reclassifications to Senior Portfolio Manager to reflect the job description that comported to their responsibilities, with commensurate pay adjustments to move them into the salary range for that position, and a number of other one-time pay adjustments for other staff members to narrow the disparity with peers.

These actions were important for the retention of existing staff, and made a significant contribution to addressing staffing needs and demonstrating DBM's acknowledgement of the issues facing the Investment Division. Nevertheless, they also demonstrated the limits of the current process for creating and filling positions. The personnel needs were identified in the winter of 2016, but the approval to begin recruiting the new positions was not granted until the summer of 2017. This existing process does not respond to the Investment Division's needs in a timely manner. The request for the new positions requires waiting for the next budgeting cycle. This requirement begins the process with, at least, a nine month delay. In addition, the hiring process is further delayed until the beginning of the new fiscal year, pushing the process out to a minimum of over one year. Additional process delays include the requirement to obtain hiring freeze exemptions, or the need to wait until a position is actually vacated before beginning the recruitment process. Further, while the new position categories help the Board build out a more robust career progression, the structure of the State's salary policy limits the ability of the Board to recruit and retain qualified individuals on a competitive basis and to use the compensation process as a management tool.

The Agency continues to work with DBM to address personnel challenges. For fiscal year 2019, the System has requested eight additional PINS to address ongoing risks to the System from inadequate staffing. Appendix A presents the staffing of the Investment Division, current pay scales for positions, anticipated pay scales for positions, and projections of staffing changes through fiscal year 2023.

Section 3. Implementation

Over the course of fiscal year 2018, the Board and Investment Division will establish policies and processes necessary to exercise the responsibilities anticipated by the proposals presented in this report. In the area of staffing and compensation, the Board will establish a detailed strategy that will allow the System to operate on a competitive basis for investment positions. This compensation strategy will attempt to create alignment with Investment Division staff by providing incentives to achieve investment objectives, and conversely, disincentives for poor performance. During the summer of 2017, the Board hired Cutter Associates and Funston Advisory Services (Cutter and Funston) to evaluate the current state of the System, analyze the business case for accepting the challenge of managing assets with internal staff, and build a roadmap for the System to follow if it decides to move down that path. Based on one of the recommendations provided by Cutter and Funston, the compensation strategy will initially use information of public fund peers as provided by the McLagan Group to set median salaries and ranges of salaries by position.

The McLagan Group is a compensation advisory business owned by AON. The Investment Division has participated in annual compensation surveys administered by McLagan for a number of years. While it is not the only firm that performs compensation surveys of the investment industry, it has broad coverage of peer plans and offers a reasonable basis for comparison as the Board begins assuming this responsibility. For example, in 2016, Investment Division staff created a peer universe of plans of similar asset size and that primarily utilized an external management model. There were 18 plans identified as peers with publicly available compensation data. The 2017 McLagan study includes 14 of those plans among the total of 57. The remainder of the funds in the survey are a mix of larger funds with a high degree of internal management, and smaller plans (including some municipal plans) that use external managers.

The Investment Division's analysis of publicly available data was largely consistent with the McLagan median and top and bottom quartiles, demonstrating that as a first step, the McLagan data is reliable for establishing initial ranges. To the extent the Board enters into a contract for special compensation studies through McLagan or other providers, the study will likely focus on a subset of peer plans similar to that developed by the Investment Division. The benefits of such a study could include in-depth research at the position level to ensure that responsibilities and skill set requirements are as comparable as possible.

The Board will review and approve a salary scale for the Investment Division no less than every three years, and will approve the methodology used by the CIO and Executive Director to set individual salaries within the scale. In addition, the Board will approve an incentive compensation plan based on quantifiable performance measurements.

For front office staff, the compensation plan will consist of a salary range that will center on 90% of the McLagan median for each position, and an incentive pool that will be set at 33% of the combined existing salaries. The result will be that these employees will need to meet investment performance goals to be paid at a similar rate to peers. Underperforming employees will be paid below their peers of similar skill. Compensation will be tied to performance as the Board and the CIO will have the authority to make compensation changes based on the circumstances of the individual position, rather than based on lock-step moves for the whole division.

For middle and back office staff, the Board will use existing State salary scales for positions that are largely comparable to similar positions in State Government, even though this group will possess specific investments expertise. These employees will participate in the same evaluation process as front office staff, and the Board will have the authority to adjust salaries to reflect performance. This uniform evaluation process will promote alignment within the Investment Division and simplify its management of human capital. Middle and back office requirements will change through time. As with the front office, the ability to create and eliminate positions will be necessary to meet the changing needs of the Division.

The CIO will develop, and the Board will approve, an evaluation process for the Investment Division that will be used to set compensation levels and provide a framework to address performance shortfalls. The CIO has implemented a trial system in the first quarter of fiscal year 2018. The process:

- establishes job responsibilities for each individual
- evaluates the performance and skills of the individual to establish a level of proficiency, including:
    - broadly establishing an employee as " Skilled", "Proficient" or "Expert";
    - establishing a 12-month plan for improvement if needed; and
    - documenting progress or failure to achieve the 12-month plan to support subsequent promotion, demotion or termination; and
- establishes a target salary for each individual within the salary range for that position, where the path from existing salary to target salary will be governed by specific performance metrics.

An example of this process is illustrated in Appendix B.

The Agency's budget request for fiscal year 2019 sought an additional eight positions. These positions are intended to: (1) complete the remediation of staffing shortfalls identified by the CIO in 2016; (2) complete the creation of the Associates Program to recruit and train new staff; (3) add one staff to the Compliance group to recognize the expanded role of compliance in the organization and provide depth within this group; and (4) add two positions in the Accounting and Operations group to reduce the number of overtime hours worked by staff within this group and enhance the effectiveness of the reporting and oversight function they provide.

Below is a table showing the positions being requested in the fiscal year 2019 budget, the duties of those positions, and the budgeted salary for those positions. The actual salaries will be dependent on the qualifications of the candidates and will fall within the existing salary ranges for the positions.

Requested Positions:

Grade	Title	Target Salary	Salary Ranges
ES9	Managing Director – Fixed Income	$150,000	$114,874 - $153,532
22	Sr. Investment Analyst – Fixed Income	$103,743	$64,608 - $103,743
22	Sr. Investment Analyst - Compliance	$103,743	$64,608 - $103,743
20	Associate	$73,946	$56,743 - $91,107
20	Associate	$73,946	$56,743 - $91,107
20	Associate	$73,946	$56,743 - $91,107
17	Asst. Director - Administration	$60,815	$46,857 - $75,012
17	Accountant Lead Specialized	$60,815	$46,857 - $75,012

Appendix A provides additional detail regarding these positions and anticipated future actions if, and when, the System begins the process of managing assets internally.

Cutter and Funston recommended additional positions for the current state that further expanded on the theme of providing specialization for administrative functions. The suggested positions support management, recruitment and training of staff, effective procurement, overall business operation of the division, and project management specialization. These are presented to identify functions that the Investment Division presently receives from other areas of the Agency or are being performed by Investment Division Staff. Many of these positions would not normally reside in the Investment Division. However, the processes outlined in Appendix B to recruit, train and evaluate the Investment Division staff requires specialized knowledge of the investment industry. Potential solutions to this issue include: (1) direct hiring of individuals to provide these services within the Investment Division; (2) the Investment Division utilizing the existing resources throughout the Agency; (3) the Investment Division contracting with other segments of the State to provide those services; (4) or the Investment Division contracting with private service providers.

Section 4. Internal Management

Without this requested authority, the path to successfully mitigating the expense of a larger portfolio for the System is very challenging. One of the paths to lower costs is through direct management of System assets internally without the aid of outside asset managers. The Investment Division also engaged Cutter and Funston to explore the business case for moving some assets to internal management and to provide a roadmap to implementation. Their estimate of the potential net savings, after all personnel and ancillary costs, is ultimately more than $200 million per year once the internal management program is fully functioning.

Cutter and Funston began their study with an evaluation of the current state of the Investment Division and the System that resulted in several recommendations relating to staffing. Interestingly, while the study identified a shortfall in front office staff, it found a greater need for executive positions, and middle and back office functions. The staffing recommendations from their study contemplates a staged expansion of staff that follows a gradual progression of assets transitioning to internal management, focusing on phase-in periods of two years, five years and ten years.

As referenced in Section 1 of this report, the Investment Division did engage in direct management of assets for a number of years. As of 2001, Fixed Income, Equity and REITs representing approximately one-third of total System assets, were managed by Investment Division staff. Based on the investment performance relative to benchmarks, the System was achieving returns similar to, and in some cases slightly better than, benchmark indices. The Investment Committee and Board decided to end most of the internal program in 2003 due to staff turnover. The Board determined they were not able to attract and retain qualified staff to continue the internal function. At that time, System assets totaled $26.6 billion and the total staff size for the Investment Division was 13. The remainder of the internal program was terminated in 2005. Since that time, other state public pension systems, especially the larger systems, have maintained, expanded or initiated internal investment programs.

Similarly, the table in Section 1 demonstrates that the System was one of only four funds among 23 systems with assets greater than $40 billion that did not engage in some sort of internal management. As the Board and the Investment Division anticipates assets growing in the next 10 years to $75 billion, there are currently no state systems greater than $75 billion that do not engage in some sort of internal management.

In order to contemplate a successful internal management program, Cutter and Funston identified a number of key prerequisites:

- the Board and the Investment Division should be sure that it will have the ability to acquire the necessary resources to support internal management and there should be high conviction that the authority will not be revoked at some future date;
- the Board and the Investment Division should take steps to ensure the necessary oversight, risk and operational support are in place; and
- the Board and the Investment Division should ensure that appropriate training for all trustees and Investment Division staff has been developed and delivered.

With those prerequisites in hand, the Board and the Investment Division could begin insourcing investment management. Going forward, the CIO believes that the System should always have a mix of internal and external management. The System's allocation to private assets in the Real Estate, Private

Equity and other sectors necessitates partnering with experts in those markets. However, those markets are expensive, so the future state assumes that the Investment Division is able to invest alongside those managers at a much lower cost.

In public markets such as equity and fixed income, some types of investments will likely be managed entirely by staff but others, where external managers have specific skills, a hybrid solution would be most profitable for the System.

Ultimately, the Cutter and Funston study envisions approximately half of the System's assets being managed internally after 10 years. The business case for that is impressive. Cutter and Funston identified each asset class to be managed internally, estimated the number and types of staff needed to implement the strategies and estimated the costs of systems and other resources needed for implementation. To demonstrate the robustness of the business case, they included every cost, focusing on best practices in program design. Despite the projection of a large expansion of staff to over 100 (from the current 23), and corresponding product and systems support, the potential cost savings in the future state are substantial. In fiscal year 2017, the System paid about $370 million in fees for the $47 billion in average assets. Projecting that same fee structure 10 years into the future, the Board would pay approximately $575 million for the projected $75 billion in assets. The Cutter and Funston business case projects fees to external managers to actually fall to $340 million. In addition, there will be additional return opportunities through co-investment of private assets because these investments, generally, are not subject to fees or carried interest. The fees are captured in the $340 million figure, but carried interest savings could add $7 million or more to returns annually.

The Investment Division identified that there is significant implementation risk in achieving the full future state. Therefore, Cutter and Funston divided the transformation into three stages, each with its own milestones and checkpoints.

> **Stage 1:** The first two years anticipate building infrastructure and beginning to manage assets in a largely passive manner by the end of that period. As a milestone, the net annualized fee savings are projected to be approximately $18 million at the conclusion of Stage 1.
>
> **Stage 2:** During the third through fifth years, the Investment Division staff would begin to manage assets on an active basis and broaden the types of assets directly managed to include co-investment in private assets. By the end of this period, the annualized net fee savings are projected to be in excess of $120 million.
>
> **Stage 3:** The final phase concludes in the 10th year and anticipates 50% or more of assets are managed internally. By this point, staff will be engaged in more sophisticated active strategies which will produce incrementally more fee savings per dollar invested. The expected net annualized fee savings after 10 years is projected to be over $200 million.

These stages provide the Investment Division with manageable but meaningful intermediate targets and benchmarks for success. The Board will be able to evaluate the realization of the fee savings and the ability of investment staff to successfully manage assets at the expected level. It then would be in a position to decide how and when to proceed on the next stage.

The projected savings cited in each stage are net savings after accounting for the costs of building the necessary infrastructure. In large part, the additional expense is in terms of headcount. As modeled by Cutter and Funston, the investment staffing costs are the primary source of growth as total staffing is modeled to grow to 110 by fiscal year 2027. The additional staff consist of a combination of front office and middle/back office. Approximately 65 front office and 31 middle/back office positions are projected. Most of these positions are analyst and junior level middle/back office positions, with 37 of the 54 front office positions and 28 of the 31 middle/back office positions assigned to more junior level positions.

Cutter and Funston anticipate an ambitious approach to demonstrate that even an implementation with few limits on expenses shows tremendous potential value for the System. With careful planning and support of the Board, the Investment Division believes it can follow a prudent implementation plan as outlined, but anticipates fewer staff would be required than presented for full implementation.

The table in Section 1 supports the headcount projected by Cutter and Funston. While the number of investment professionals are readily available, middle and back office staff comparisons are difficult because many systems are combined with other entities such as State Treasurer's offices, and these staff are not dedicated to investment activities. What the table shows is that the projected 65 front office staff for the Investment Division (in 10 years) is consistent with other plans at similar levels of projected assets and internal management. However, there are a number of systems that operate with fewer staff members. These funds may have a different mix of active and passive strategies than is anticipated in the Cutter and Funston work. As mentioned above, the ability to create positions is still restricted in many states, which may explain the wide range of personnel deployed among plans. Whatever the reason for the differences in implementation, these plans demonstrate that there are many models for internal management of assets.

Assuming the anticipated internal staff is able to deliver a similar amount of excess returns as the existing program of external managers, the fee savings impact will result in an additional 28 basis points (.28%). In public markets, staff can achieve this through a combination of paths:

1. maintain external managers with high excess return expectations;
2. replace low excess return managers with internal managers focused on known factor strategies; and
3. convert passive accounts to internally managed accounts with modest excess return targets.

In private markets, the Investment Division will continue to manage through external partners, but a growing proportion of investment will happen outside of the partnership structure and carry little or no fees. This practice is known as co-investment, and it has the most easily demonstrable ability to maintain performance. The key to success is having investment staff trained sufficiently to minimize the negative selection bias of co-investment programs, represented by lower conviction investments offered by the general partner. The Investment Division will invest in more of the same assets that the System holds within the partnership structure and more of the return will accrue to the System.

Conclusion

The Board and the Agency appreciates the serious consideration the joint committee has afforded these proposed changes to the Investment Division and the investment program of the System. At their core, these proposals are about governance and the balance between the Board's responsibility to protect and enhance the value of System assets to meet its obligations to beneficiaries, and the responsibility of the executive and legislative branches to be efficient stewards of taxpayer funds. All involved in this endeavor understand that the issue of expenses, and in particular, compensation in the governmental context presents significant challenges.

The joint committee is rightly concerned to ensure that the authority requested by the Board will be handled responsibly and that the citizens of Maryland will benefit from the requested legislation. The results of the summer study provided herein demonstrate that:

- the Investment Division operates at a disadvantage to many of its peers in the recruitment and retention of staff as well as the ability to react in a timely manner to changing investment needs;
- The Board and Investment Division have identified specific near term needs that have been confirmed by Cutter Associates and the Funston Advisory Group
- the Board and Investment Division have a detailed plan to promote accountability and alignment within the Investment Division staff, and most importantly;
- the authority afforded by these proposed changes have significant value to the citizens of Maryland through its potential impact on cost savings and returns of the System through the development of an internal management function and other innovations available in the future.

Appendix A

Current Investment Division Structure and Compensation Plan as of October 1, 2017

POSITION	CURRENT APPROVED NUMBER	2017 MCLAGAN PEER SALARY RANGE (LOW QUARTILE TO HIGH QUARTILE ($1,000'S)	LONG TERM TARGET MSRA SALARY RANGE ($1,000'S)
Deputy CIO	1	172-265	155-239
Managing Director of Investments	4	174-266	157-239
Senior Portfolio Manager – New Position	9	148-208	133-187
Senior Analyst	3	101-146	91-131
Associate – New Position	1	60-118	54-106
Head of Operations/ Portfolio Admin	1	139-186	92-123
Supervisor Investment Accounting/Operations	2	84-135	60-97
Chief Compliance Officer	1	105-129	84-135
Senior Staff	2	68-81	47-75
TOTAL POSITIONS	24		

Positions Requested for Fiscal Year 2019 Budget

Salary Range anticipates passage of legislation granting the Board the authority to set salaries and establish positions and a five-year transition to the long-term target for new hires. These are positions intended to sustain the present investment model focusing on external management. The number of additional positions following those requested below will be a function of changes in the implementation or asset allocation of the investment program.

POSITION	2019 POSITIONS REQUESTED	2019 ANTICIPATED SALARY RANGE (1/5 OF THE WAY TO LONG TERM TARGET ($1,000's))	LONG TERM TARGET MSRA SALARY RANGE ($1,000'S)
Managing Director of Investments	1	136-176	157-239
FIXED INCOME AND CREDIT			
Senior Analyst	2	76-113	91-131
FIXED INCOME			
COMPLIANCE			
Associate	3	62-96	54-106
Senior Staff	2	47-75	47-75
ACCOUNTING AND OPERATIONS			
TOTAL	8	$694	$778

Appendix B

Investment Division Personnel Evaluation

Process

- Initiation
    - Create a list of Job Titles consistent with McLagan classifications.
    - Create a salary scale centered on 90% of the McLagan peer median and three ranges around that to represent "Skilled", "Proficient" and "Expert".
        - The 90% is designed to require staff to meet performance objectives to be paid similarly to peers.

- Annually
    - For each position, identify the primary job responsibilities, the percentage of time spent on each and the performance standards for each position.
    - Assure that the current title represents these job responsibilities. If not, consider correcting the Job Title.
    - Assess the skill at each job responsibility within the "Skilled", "Proficient", "Expert" categories and create an overall evaluation of the performance of the individual within those ranges.
    - For each position, set a target salary for the overall skill levels based on location in the range.
    - If the target salary is greater than the current salary then the CIO may recommend a new salary up to the current salary plus an increase limited by annual caps and actual investment performance.
    - If the target salary is less than the current salary then the CIO may recommend a new salary up to the current salary. The target salary below the current salary may persist as long as the employee continues to meet performance targets.
    - The target salary provides guidance for the CIO to recommend a pay action but not a right to a pay action. Additional factors may be considered in making pay action recommendations.

- Parameters
    - Every employee will be evaluated on their performance of their job responsibilities - In addition to helping to set the salary target, these performance metrics will be used to determine the pace of advancement toward that target salary.
    - For employees with responsibility for investment oversight, the evaluation of investment performance will be another tool to determine the pace of salary advancement and the measurements employed will differ by type of job description.
        - Senior staff will be evaluated based on a total fund performance and any direct investment oversight that they perform,
        - Managing Directors will be evaluated on total fund performance and the performance of the asset class they oversee,
        - Senior Portfolio Managers and analysts will be evaluated based on the performance of the asset classes they oversee and the specific portfolio or groups of portfolios for which they are responsible, and

        - Associates and other analysts will be evaluated based on the total plan performance and an asset class if it was a responsibility through the year.
    - Annual increase will be capped at
        - 3% for in-grade adjustments based on the change in the target;
        - 6% for in-grade adjustments based on the change in target and meeting performance objectives;
        - 6% for promotions and category changes that lead to a change in the target; and
        - 12% for promotions or category changes that lead to a change in the target and meeting performance objectives.

Example

- Managing Director of private equity - job responsibility is consistent with McLagan's Team Leader for Private Equity.
    - The median salary for this position in McLagan's survey for 2017 was $218,000.
    - 90% of $218,000 is $196,200 and 90% of the range of salaries was $169,100 to $241,700.
    - For MSRA this large range is further divided
        - Skilled: $169,100 - $193,300
        - Proficient: $193,300 – $217,500
        - Expert: $217,500 - $241,500
        - These ranges will be reviewed and approved by the Board.
- The evaluation process shows that he/she has been in the Skilled phase for two years and is making progress toward Proficient and has moved from 25% to 75% in grade rating.
    - The range for Learner is $169,100 to $193,300 so the target salary moves from $175,100 to $187,100 or a 6.8% increase.
    - Currently, the salary is $135,000, 28% below the target.
        - The person is still in the Skilled category so may receive 3% for the initial discrepancy and another 3% if the overall fund and the private equity portfolio outperforms the benchmark.
        - Assuming this is the case, the new target salary is $143,000. The CIO may approve this or some lesser number based on additional factors.
- The following year, the employee is evaluated to be 10% in grade for the Proficient scale. The employee would be eligible for a grade increase to Managing Director Proficient.
    - The lower range of the Proficient salary range shows a salary of $193,300.
    - The target salary for that rating would be $195,700.
    - In this case, the differential between the current salary and the target salary is 37%.
    - Now, the employee has moved up one grade so is eligible for a 12% increase.
    - Assuming both the System and private equity portfolios have achieved their targets, the new salary will be up to $160,160.
- The following year, the employee is evaluated to have improved to 50% in the Proficient range.
    - The target salary is now $205,300 a 28% increase over the previous salary.
    - The target may go up 3% based on the evaluation process but the next 3% will be dependent on the system and private equity portfolio performance.
    - Salary could move to $169,800.
- After three years of strong performance evaluations, this person is now within the salary range of peers but below the Target salary by 20%. The initial gap was 30% below target so the three-year process has improved the actual salary, the percentage the salary is below target and has rewarded the employee for good performance.

- Alternatively, this process provides a mechanism for addressing underperformance. An evaluation that results in a decline in target salary, or if an employee does not make progress while in the Skilled category, will trigger the creation of a correction plan.
  - A correction plan will be designed to provide specific actions the employee can take to improve a subsequent evaluation.
  - Interim reviews will be performed to ensure the plan is being enacted.
  - Persistent failure to complete the plan and to improve performance reviews will be a cause for termination.

Incentive Bonus

The Board may implement a performance bonus for the front office of the Investment Division. This implementation is anticipated in the projection of staffing and compensation.

The purpose of an incentive plan is to align the interests of the employees with the mission of the System.

If approved by the Board, the plan would award incentive compensation for the System achieving its investment objectives, the employee's asset class exceeding its objective and/or the employee's performance exceeding objectives with assets under direct responsibility as applicable.

The Investment Division would create a bonus pool each year equal to 33% of the salaries of employees with asset management responsibility. These employees would be eligible to earn a bonus based on investment outcomes. Performance will be measured over trailing three-year periods and performance targets will be based on the targets established for each asset class or product.

The Deputy CIO will be evaluated with respect to the total plan, the Managing Directors, Portfolio Managers, Analysts and Associates will be evaluated based on a mix of the total plan, their respective asset class performance and potentially individual portfolios for which they have delegated investment authority.

Performance targets for incentives and for pay action thresholds would initially include:

Total fund performance	range of 0-0.50% over benchmark
Active Public Equity	range of 0-0.50% over benchmark
Passive Public Markets	+/- 0.10% of benchmark over benchmark
Active Public Fixed Income/Credit	range of 0-0.35% over benchmark
Private Partnerships	two tests
	Percentage of first and second quartile funds with longer than 3 years of history
	range of 0-0.50% over benchmark
Absolute Return	range of 0-0.50% over benchmark
Real Estate	range of 0-0.50% over benchmark
Individual Portfolios	custom based on specific market and strategy.

If this system were in place for fiscal year 2019, and the whole System met its objectives with each underlying strategy performing, the total bonus pool for staff other than the CIO would approach $800,000 or $40,000 per person on average. In comparison, System would earn close to $250 million.

Because the bonus is based on a three-year look back, the System will have earned close to $750 million and staff will have earned between $800,000 and $2.4 million, depending on the timing of the performance. These numbers are based on the remediated staffing levels and salaries for 2018 in the System's budget request for fiscal year 2019.

Appendix C

The number and types of positions for periods after fiscal year 2019 consist of projections based on the Investment Division pursuing an internal management function targeting a significant portion of public and private assets. The Investment Division may find that some of these functions are appropriately outsourced (e.g. trade execution and settlement), and the numbers would adjust for those decisions. Alternatively, the Investment Division may decide to focus on one segment of the portfolio, for example direct co-investment of private assets.

Anticipated Positions Requested through Fiscal Year 2021

The Investment Division is engaged in a number of projects to lower the cost of investing with the goal of retaining more of the returns generated by the assets. One of these projects involves managing assets directly by internal Investment Division employees. If initiated, this project would anticipate expanding investment staff in two initial phases as internal management capacity is developed. The first step will create the infrastructure to support internal management, and initiate management of some assets passively.

POSITION	POSITIONS ANTICIPATED BETWEEN 2019 AND 2021	2021 ANTICIPATED SALARY RANGE (3/5 OF THE WAY TO LONG TERM TARGET ($1,000's))	LONG TERM TARGET MSRA SALARY RANGE ($1,000'S)
Senior Portfolio Manager -	1	122-179	133-187
INTERNAL PUBLIC EQUITY			
Senior Analyst	4	72-129	91-131
INTERNAL CORP BONDS			
INTERNAL MORTGAGE BONDS			
INTERNAL HIGH YIELD			
RISK			
Equity Trader	1	92-115	92-115
Senior Staff	2	47-75	47-75
OPERATIONS			
TOTAL	8	$798	$867

Anticipated Positions Requested through Fiscal Year 2023

At the end of this initial two year phase, the Investment Division will evaluate progress and determine whether to proceed to the second phase. Assuming successful implementation of phase one, the Investment Division will work on the next phase which focuses on developing more active management products and increases its focus on co-investment in private assets. The expected implementation is shown below.

POSITION	POSITIONS ANTICIPATED BY 2023	ANTICIPATED SALARY RANGE: ($1,000'S)
Deputy CIO	1	174-266
INTERNAL INVESTMENTS		
Senior Portfolio Manager -	2	133-187
INTERNAL PUBLIC EQUITY		
PRIVATE COINVEST		
Senior Analyst	5	91-131
INTERNAL CORP BONDS		
INTERNAL MORTGAGE BONDS		
INTERNAL HIGH YIELD		
COINVEST		
RISK		
Senior Equity Trader	1	115-138
TOTAL	9	$1,201

Maryland State Retirement and Pension System
120 East Baltimore Street
Baltimore, Maryland 21202

sra.maryland.gov

Governance and Resourcing of the Investment Division

MARYLAND STATE RETIREMENT AND PENSION SYSTEM

OCTOBER 25, 2017

Joint Chairmen's Report, 2017 Session:

The Maryland State Retirement Agency has been charged with providing the following information related to its request for governance and resourcing authority:

- ✔ The number of new positions within the Investment Division that it would establish and the timeline for establishing and filling each position;
- ✔ The title, job description, and first-year compensation for each new and existing position within the Investment Division;
- ✔ The range of compensation that would be authorized for each position;
- ✔ The basis used for determining compensation levels for Investment Division personnel;
- ✔ Any incentive compensation for which employees of the Investment Division would be eligible and the criteria for determining payment of incentive compensation;
- ✔ How staff will be evaluated; and
- ✔ The process for determining adjustments to compensation, both positively and negatively.

Agenda

- Background and Vision
- Current State
- Implementation
- Building to the Future
- Conclusion and Recommended Legislative Proposal

Background and Vision

Investment Division governance has long been a focus of the Legislature, the Department of Budget and Management (DBM) and the Board of Trustees (Board) for the Maryland State Retirement and Pension System (System)

1989

The Legislature removed investment management fees from annual appropriations.

2007

The Legislature delegated the authority for Chief Investment Officer (CIO) compensation to the Board.

2012

The Legislature addressed staffing and continuity by permitting the Board to set salaries for the Deputy CIO and Managing Directors within the Executive pay scale.

Background and Vision

Since 2012, the Investment Division continues to face challenges:

Struggles to attract and retain qualified staff	Staffing levels insufficient for increasingly complex portfolio
Deputy CIO and Managing Directors face salary caps below industry peers	Difficulty in procuring necessary levels of investment services and products

Background and Vision

In Fiscal Year 2017, the Agency worked with DBM on interim solutions:

1. Two new position classifications were created:
   - Senior Portfolio Manager – between the Senior Analyst and Managing Director positions
   - Associate – junior analyst
2. Four PINS were provided for Investment Division positions
   - PINS were reassigned from other divisions within the rest of the Agency
   - PINS included one Senior Portfolio Manager, one Senior Analyst and two Associates
3. Nine Senior Analysts reclassifications to Senior Portfolio Manager with commensurate salary adjustments were approved
4. A number of other in-grade salary adjustments for other staff members to narrow the disparity with peers

Proactively addressing the governance issues today will avoid reactive, piecemeal solutions through time.

Background and Vision

The authority requested by the Board and Investment Division is anticipated to improve the performance of the System.

Long–term focus with near-term impact

Higher Gross Returns

- Less Turnover + Increased Capacity = Better Return Engine
  - Improve focus on quality of investments over quantity of investments
    - 30% of investment management staff time is spent on administrative functions
    - Reviewing and filing investment manager correspondence, inputting data, running reports and other necessary administrative functions crowd out return enhancing activities
  - Additional focus on increasing returns through intermediate-term tactical investments

Higher Net Returns

  - Through fee reduction initiatives

Current State — Peer Review

State Defined Benefit Pension Plans with Assets Greater Than $40 Billion as of June 30, 2017

Name	Assets	% of Assets Managed Internally	Investment Professionals	Board Salary Authority	Board PIN Level Authority
California Public Employees' Retirement System	$323.5	69%	207	Yes	No
California State Teachers' Retirement System	$208.7	38%	128	Yes	No
New York State Common Retirement Fund	$197.1	***57% *****	***33 *****	No	No
State Board of Administration of Florida	$153.6	44%	61	Yes	Yes
Teacher Retirement System of Texas	$142.0	60%	140	Yes	No
New York State Teachers' Retirement System	$114.7	61%	47	Yes	Yes
State of Wisconsin Investment Board	$110.1	57%	78	Yes	Yes
North Carolina Retirement Systems	$94.1	33%	23	Yes	No
Ohio Public Employees Retirement System	$93.4	39%	52	Yes	Yes
Washington State Investment Board	$91.6	21%	42	Yes	No
Employees Retirement System of Georgia	$87.1	88%	29	Yes	No
New Jersey Division of Investment	$76.0	82%	31	No	No
Virginia Retirement System	$74.4	33%	48	Yes	No
State Teachers' Retirement System of Ohio	$73.6	62%	93	Yes	Yes
Oregon Public Employees Retirement Fund	$73.0	10%	19	No*	No
Massachusetts PRIM	$66.9	0%	14	Yes	Yes
State of Michigan Retirement Systems	$65.6	33%	42	No*	No
Minnesota State Board of Investment	$64.1	0%	14	Yes	No
Pennsylvania PSERS	$51.8	24%	21	Yes	No
Maryland State Retirement & Pension System	$49.1	0%	16	No	No
Teachers' Retirement System of the State of Illinois	$48.8	11%	13	Yes	No
Tennessee Consolidated Retirement System	$47.0	70%	33	Yes	No
Public Employees' Retirement Association of Colorado	$46.0	58%	35	Yes	Yes
Public School Retirement System of Missouri	$41.5	0%	10	Yes	No
		Average:	51	Yes = 19	Yes = 7
		Average (Internal):	59	No = 5	No = 17

* Legislature created a salary structure for investment professionals based on peer data

** Data as of June 30, 2016

Plans with no internal management

Source: MSRA Staff

<u>24 Peer system boards</u>: • 19 boards have salary authority • 2 boards have competitive legislated salary structure • 7 boards have PIN authority

Current State — TUCS Comparison

The Investment Division performs in line with peers at the asset class level.

TUCS Performance Universe as of June 30, 2017

(public fund defined benefit plans greater than $1billion in assets)

Asset Class	5 year TUCS Ranking	Number of Peer Funds	10- year TUCS Ranking	Number of Peer Funds
U.S. Equity	30	68	43	50
Fixed Income	53	88	45	83
Real Estate	40	32	30	22
Private Equity.	11	51	16	36
Total Fund	**79**	**88**	**96**	**78**
Policy Benchmark	**91**	**88**	**99**	**78**

(Percentile shows the percentage of plans that performed better than the System; a low number is good.)

Current State — Investment Staff Salaries

Compensation levels for the Investment Division are significantly below peers for many positions, particularly in the professional investment staff.

POSITION	CURRENT APPROVED NUMBER	2017 MCLAGAN PEER SALARY RANGE (LOW QUARTILE TO HIGH QUARTILE ($1,000'S)	LONG TERM TARGET MSRA SALARY RANGE ($1,000'S)
Deputy CIO	1	172-265	155-239
Managing Director of Investments	4	174-266	157-239
Senior Portfolio Manager – New Position	9	148-208	133-187
Senior Analyst	3	101-146	91-131
Associate – New Position	1	60-118	54-106
Head of Operations/ Portfolio Admin	1	139-186	92-123
Supervisor Investment Accounting/Operations	2	84-135	60-97
Chief Compliance Officer	1	105-129	84-135
Senior Staff	2	68-81	47-75
TOTAL POSITIONS	24		

**McLagan is a compensation consultant. The 2017 report surveyed 57 large public state plans.*

Implementation — Generally

Fiscal Year 2019 budget request

- 8 additional staff: primarily more junior level to address the administrative needs of the Investment Division
  - No guarantee of approval
  - Salary structure limits the candidate pool

Proposed salaries target McLagan peers

- 90% of McLagan Median for investment professionals
  - 33% bonus potential – requires acceptable performance to match peers

Transition salary ranges over five years to be within the target ranges

- Actual salaries will likely move more slowly than the ranges

Implementation — New Positions, Fiscal Year 2019

Positions Requested for 2019 Budget

POSITION	2019 POSITIONS REQUESTED	2019 ANTICIPATED SALARY RANGE (1/5 OF THE WAY TO LONG TERM TARGET ($1,000's))	LONG TERM TARGET MSRA SALARY RANGE ($1,000'S)
Managing Director of Investments	1	136-176	157-239
FIXED INCOME AND CREDIT			
Senior Analyst	2	76-113	91-131
FIXED INCOME			
COMPLIANCE			
Associate	3	62-96	54-106
Senior Staff	2	47-75	47-75
ACCOUNTING AND OPERATIONS			
TOTAL	8	$694	$778

Implementation
Fiscal Year 2019

175

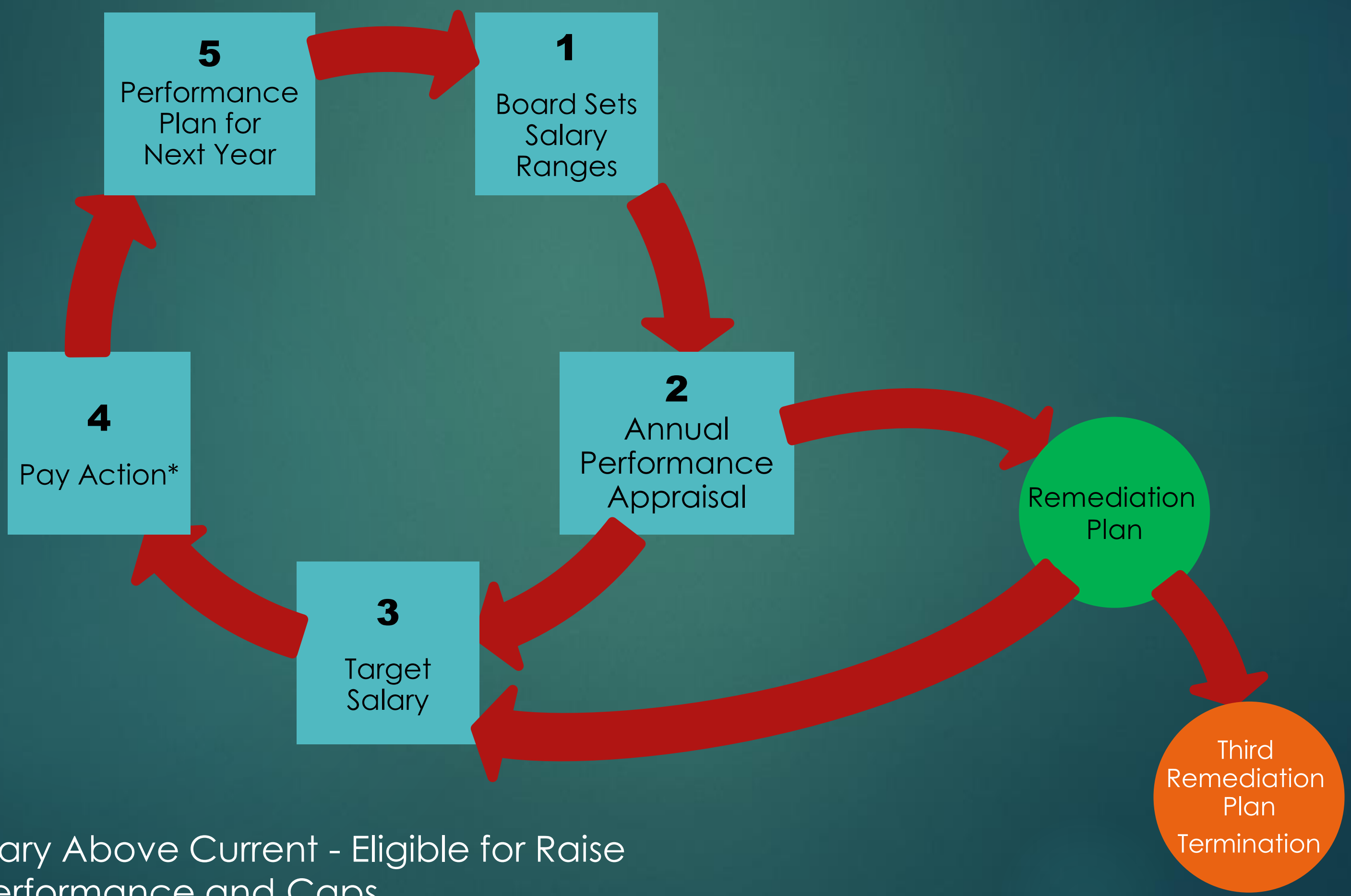
Together these improvements will help create a repeatable, progressive investment process that enhances overall performance of the System.

Investment Division 2019

- No critical function will be the responsibility of only one person
- Administrative burden will be spread across additional, more junior staff
  - Improved timeliness and reliability
  - Free up senior staff to focus more on returns
- New compensation plan should reduce turnover
- More robust personnel management will promote continual improvement and accountability

Implementation — Salary Setting and Accountability

176



*If Target Salary Above Current - Eligible for Raise Subject to Performance and Caps

Building to the Future

- The requested authority and additional positions address the needs of the near future
- Long term, the Investment Division will need to evaluate alternative organizational structures to further improve returns

- Economies of scale warrant an evaluation of moving some portion of the assets to internal management
  - Before considering internal management, an effective governance structure is required
  - The Investment Division engaged Cutter Associates and the Funston Advisory Group to analyze requirements, costs and benefits of such a move
  - Moving 50% of assets to internal management over 10 years is projected to lower the annual costs to the System by approximately $215 million, net of all expenses

Conclusion and Requested Legislative Proposal

As the size of the fund grows, the Board and the Investment Division will be challenged to effectively manage the assets of the System.

Peer plans appear to migrate to internal management for economies of scale as they grow.

Peer plans utilize the compensation and staffing flexibility the Board and Investment Division seek.

Conclusion and Requested Legislative Proposal

The Board requests the Joint Committee to sponsor legislation to authorize the Board to approve the Investment Division's annual budget, including:

- The number of employees;
- The compensation levels, including a bonus structure; and
- Expenditures for the products and services necessary to enhance and preserve the assets of the System

This requested legislation would provide:

- Significant expected value to the System;
- Improve investment returns through lowering risk;
- Potentially save more than $200 million in fees annually after 10 years; and
- Create high-skilled jobs in Baltimore paid for by management fee savings

State Retirement and Pension System
Review of 10-Year Vesting

The 2017 Joint Chairmen's Report charged the State Retirement Agency to study the impact of the 10-year vesting requirement enacted under Chapter 397 of the Acts of 2011. Additionally, the State Retirement Agency was charged with analyzing the costs and benefits of reducing the current 10-year vesting period for employees hired on or after July 1, 2011. This report offers the findings of that study.

History

Prior to the passage of Chapter 397, vesting for each of the several systems of the State Retirement and Pension System (System), with the exception of the Judges' Retirement System (JRS) and the Legislative Pension Plan (LPP), was set at five years. For the Employees' Pension System (EPS), Teachers' Pension System (TPS), Correctional Officers' Retirement System (CORS) and the Law Enforcement Officers' Pension System (LEOPS), five-year vesting was included in the initial legislation establishing these systems. The State Police Retirement System (SPRS) initially provided for a 15-year vesting period, but in 1989, with the inception of the LEOPS, vesting in the SPRS was reduced to five years.

During the 2010 session, the Public Employees' and Retirees' Benefit Sustainability Commission was established to examine all aspects of State funded benefits and pensions provided to State and public education employees and retirees in the State. Following this study, the Commission was charged with making actionable recommendations to the Governor and the General Assembly, for changes to the System that would establish a fiscally sustainable System for future generations of State, local, and public education employees. The Commission met throughout the 2010 interim and made several recommendations for changes to the benefit structures of the System, including increasing the vesting period for each of the several systems, with the exception of the JRS and LPP, from five years to 10 years. (Prior to July 1, 2012, members of the JRS enjoyed immediate vesting. Any member joining the JRS on or after July 1, 2012, is subject to five-year vesting. Members of the LPP are subject to 8-year vesting.)

In its 2010 Interim Report, the Commission stated that its rationale for increasing the vesting period for most members of the System reflected the data that Americans were working and living longer, and that Maryland should restructure its pension plans to reflect these changes. According to the Commission, data from 2010 indicated that Maryland's vesting criteria for the EPS and TPS was on par with or slightly less stringent than most other public plans, but that there was a national trend toward increasing vesting requirements. Following this recommendation, the Governor included it (among many other recommendations made by the Commission) in the Budget and Reconciliation Act of 2011 (BRFA). The BRFA was later enacted as Chapter 397 of 2011. As introduced in the BRFA, the change from five- to 10-year vesting only applied to new employees joining the Reform Contributory Pension Benefit. The

Legislature amended that provision to extend 10-year vesting to new members to all of the several systems, except the JRS and the LPP.

The fiscal analysis for the savings generated by increasing vesting from five years to 10 was not specifically quantified during the 2011 session. The actuary for the General Assembly determined that, initially, the savings would be less significant than other reforms to the System, and therefore, this change was grouped with other reforms that had a larger impact on savings. The actuary added that for the first several years following the enactment of the 2011 reforms, the majority of members in the System would still be subject to five-year vesting, delaying the savings impact of the 10-year vesting to further out into the future. Total first year savings to the employer contributions resulting from all of the 2011 reforms was estimated at $315 million. After reviewing documents from the committee hearings and floor debates during the 2011 session, it appears the actuary estimated that first year savings to the employer contribution rate specifically resulting from increasing the vesting period would equal less than 1% of the total first year savings from all reforms enacted. While the legislative history was not particularly informative, there was another bill introduced during the 2011 session that addressed vesting requirements for members of the System.

House Bill 494 of 2011 raised the eligibility criteria for a normal service retirement for new members of the EPS and TPS and raised the vesting requirement from five to 10 years for new members of each of the several systems, with the exception of the JRS and LPP. With regard to altering eligibility requirements for members of the EPS and TPS, House Bill 494 required all members of the EPS and TPS to retire from these systems with either five years of service at age 62 or 30 years of service regardless of age. This legislation received an unfavorable report from the House Appropriations Committee because its recommended changes were largely incorporated into Chapter 397 of 2011. Nevertheless, a fiscal note was prepared for House Bill 494. It reported that changing the eligibility requirements for members of the EPS and TPS and increasing vesting for most of the members of the System, would have resulted in a decrease in pension liabilities of $1.88 million, amortized over 25 years. Additionally, it was projected that this legislation would have reduced the normal costs (impacting the employer contribution rate) by $3.75 million in fiscal year 2014. Total first year savings were estimated at $3.87 million, increasing annually. The fiscal note stated that by fiscal year 2016, total savings from these two changes would have been approximately $11.3 million. Members of the joint committee should keep in mind when considering the savings reported for House Bill 494, the fiscal note incorporates the savings from increasing vesting to 10 years ***and*** altering eligibility in the EPS and TPS. Additionally, these savings were calculated assuming payment on a benefit calculated using a 1.8% benefit multiplier, since the Reform Contributory Pension Benefit had not been established yet. Nevertheless, House Bill 494 could serve as a guide for members by providing an estimate of the savings (albeit a high estimate) that the employer contribution may have experienced due to increasing vesting to 10 years in 2011.

Other Jurisdictions

In February 2017, the National Association of State Retirement Administrators (NASRA) complied benefit and eligibility data for 85 state employee and teacher public pension plans across the country. Included in this report was the vesting periods for each of these plans. It was determined that 35 plans have a vesting period greater than five years. The distribution of vesting among these plans is included in Table 1.

Table 1 Vesting Periods for State Public Plans (as of February 2017)	
Vesting Period (in years)	**Number of Plans**
10	27
8	7
7	1
5	43
4	2
3	4
0	1

The average vesting period for all plans included in NASRA's report is 6.7 years. Furthermore, based on the findings of this report, since 2007, the vesting period has increased in 20 plans, 14 of which were increased since 2011 (including Maryland's EPS and TPS). Also, of these 20 plans, 10 increased the vesting period to 10 years from five years. One plan increased the vesting period from five to 10 years in 2011, but in 2014 returned to five-year vesting.

Initial Costs and Potential Add-ons

To date, there are currently 70,236 active members in the System who are subject to the 10-year vesting requirement, 13,380 of whom have accrued five or more years of service. Table 2 provides a breakdown of 10-year vesting members by system.

Table 2
Members Subject to 10-Year Vesting by System Within SRPS
(as of October 19, 2017)

Years of Service	TPS	EPS	CORS	LEOPS	SPRS	ALL
Less than 1	7,240	4,202	347	99	93	11,981
1 or more but less than 2	7,229	6,140	83	129	51	13,632
2 or more but less than 3	5,879	4,882	288	157	68	11,274
3 or more but less than 4	5,786	4,232	324	157	58	10,557
4 or more but less than 5	5,042	3,770	371	158	71	9,412
More than 5	7,401	5,144	533	204	98	13,380
Total:	38,577	28,370	1,946	439	904	70,236

The actuary for the System analyzed the potential added cost to the System if the Legislature elected to reduce 10-year vesting to five-year vesting for all active members as of June 30, 2017. It was determined that reducing vesting to five years beginning in fiscal year 2020 (based on the June 30, 2018 valuation), would increase the projected employer contribution by $7.9 million. Over the first five fiscal years (fiscal years 2020 – 2024), the projected employer contribution would increase by a cumulative $52 million. Finally, by fiscal year 2038 (the conclusion of the System's 25-year amortization period), the projected employer contribution would increase by a cumulative $427 million due to reducing the vesting period to five years. With regard to the funded status of the System, reducing vesting to five years would not have an impact on the System reaching either 80% funded or 100% funded.

If vesting is reduced to five years for the several systems, the Legislature may choose to address former members who have withdrawn their accumulated contributions from the System. As of June 30, 2017, 1,086 former members who were subject to 10-year vesting have left employment with a participating employer and withdrawn their accumulated contributions from one of the several systems. Specifically, 74 individuals who had accrued more than five years of eligibility service have withdrawn their accumulated contributions. Had these individuals not withdrawn their accumulated contributions, they would be vested, if vesting is restored to five years. The total amount of the accumulated contributions that have been withdrawn for these individuals (those leaving with more than five years of eligibility service) is $1.2 million.

Electing to include this group of individuals who withdrew their accumulated contributions with more than five years of eligibility service in any legislation that would reduce vesting to five years, would increase the projected costs estimated by the System's actuary. Although it is expected that provisions of this possible legislation would require these individuals to redeposit their accumulated contributions, the bill also would need to address the issue of the employer contributions associated with this service. Initially, the employer contributions associated with these non-vested accounts remained in the System after these former members terminated their employment. However, the actuary then treated these employer contributions as gains to the System since no benefit would be paid on this service. As gains to the System, the actuary has allocated these employer contributions to reduce future employer contributions; thus, these funds are technically no longer in the System. Reimbursing the System for the employer contributions for this service would result in increases to future employer contributions by the System's participating employers.

Additionally, the Legislature may wish to address former members who terminated employment with more than five years of eligibility service but did not elect to withdraw their employee contributions when they left. As of June 30, 2017, there are almost 1,000 inactive accounts that were established since 10-year vesting was enacted that have earned more than five years of eligibility service. While the accumulated contributions for these accounts remain in the System, the employer contributions have been allocated to reduce future employer contributions.

Advantages and Disadvantages to Five-Year Vesting

Not surprisingly, returning to five-year vesting provides the greatest advantage to members of state and local pension plans. In 2011, the Center for Retirement Research (CRR) prepared a report, "The Impact of Long Vesting Periods on State and Local Workers". In this report, CRR reported that 47% of state and local workers leave state and local employment without ever vesting in their pension plan. In 2016, the U.S. Bureau of Labor and Statistics reported that the average tenure of a state government worker is 5.8 years. This finding supports CRR's study that 47% of state and local employees leave state or local employment without any promise of a future benefit.

Stakeholders of the System who work directly with the members of the System representing members do not believe that 10-year vesting is the deciding factor in whether an employee accepts or rejects a job offer from a participating employer; however, it is believed that lower vesting periods do serve as a "sweetener" to accept employment with a participating employer. Likewise, stakeholders do not believe employees are leaving employment with participating employers solely because it takes 10 years to vest in their pension system. That being said, one stakeholder stated that members of the System have expressed great frustration with the fact that if they leave before accruing 10 years of service, they will have no guaranteed benefit waiting at retirement for them. A lower vesting period could also help the State with retention.

A longer vesting period benefits the System. Increasing vesting requirements to 10 years reduced costs to the System because fewer people will now qualify for a vested benefit if they leave membership with more than five but fewer than 10 years of service. As discussed above, these individuals are entitled to a return of their accumulated contributions when they leave employment with a participating employer, yet, the corresponding employer contributions remain in the System for the actuary to then allocate for purposes of reducing to reduce future employer contributions.

Appendix 6

State Retirement and Pension System
Administrative Expense Cap

This report (1) describes the State Retirement Agency's methodology for calculating the administrative expense fund cap; (2) presents the history of the administrative expense cap and how it has come to include retiree benefit and the compensation of inactive members; and (3) offers recommendations for amendments to provisions of the State Personnel and Pensions Article that establish the Agency's administrative expense cap that would bring what has continued as the Agency's practice in line with State law. Additionally, this report also recommends additional amendments that would increase the Agency's administrative expense cap for funding major information technology projects that will occur through fiscal year 2022.

Administrative Expense Fund Cap Calculations

Section 21-315(c) of the State Personnel and Pensions Article states that, "[e]ach year the Board of Trustees shall estimate the amount, not exceeding 0.22% of the payroll of members, necessary for the administrative and operational expenses of the Board of Trustees and the State Retirement Agency." This amount is calculated each year by taking the State Retirement and Pension System's (System) total payroll data as submitted to, then reconciled by, the System's actuary, and applying the statutory .22% multiplier to that total. As depicted in the chart below, the calculation results in the sum of the total payroll of active members and deferred/inactive members, plus the benefit payroll for retirees and beneficiaries. It should be noted that the payroll for deferred/inactive members is based on each member's salary at the time they left State service.

FY 2018 ADMINISTRATIVE FEE OPERATING CAP

FULL TIME EQUIVALENT SALARIES:			
ACTIVE (as of 6/30/2016)	GRS	$	11,155,923,517
DEFERRED/INACTIVE	GRS	$	2,220,999,724
PROJECTED SALARIES		$	13,376,923,241
RETIRED - BENEFIT PAYMENTS (as of 6/30/2016)	6/30 G/L		3,469,493,169
TOTAL MEMBER PAYROLL		$	**16,846,416,410**
OPERATING CAP (.22%)		$	**37,062,116**

Administrative Expense Fund Cap History

The Administrative Expense Fund was created in 1941 when the Employees' Retirement System (ERS) and its Board of Trustees (Board) were established. At that time, the statute required the Board for the ERS to "estimate the amount of money, not in excess of three-tenths of one percent of the payroll of members, which shall be deemed necessary to be paid into the Expense Fund during the ensuing years to provide for the expense of operation of the retirement system." This .3% expense cap remained in effect until 1984 when the Legislature separated expenses for the State Retirement Agency (Agency) into two groups – administrative and operations expenses and investment expenses. Chapter 263 of 1984 provided that the Board could pay up to .2% of the payroll of members to cover the expense of administration and operation of the System, and "up to .5% of the market value as of December 31 of the preceding fiscal year of invested assets that are externally managed, necessary to procure and retain the services of external investment counseling organizations." Following this change, the administrative and operations expense cap remained at .2% until 1999. However, from 1993 through 1999, the Legislature provided several one-time increases to the administrative expense cap for limited periods for specific expenses.

During the 1992 interim, the Board requested the Joint Committee on Pensions to increase its administrative expense cap to .4% to cover the cost of two major projects: an upgrade of the Agency's data processing systems and retirement contribution audits of 64 educational institutions. The Joint Committee agreed to sponsor this legislation; however, Chapter 429 of 1993 provided that the administrative cap would remain at .2%, but that the Board was authorized to pay up to an additional .2% of member payroll to cover these new expenses. Furthermore, Chapter 429 also provided that this increase to .4% would only remain in effect until the end of fiscal year 1995. During the 1994 interim, the Board again returned to the Joint Committee requesting the one-time .2% increase to the administrative expense cap be increased to .25% and extended until the end of fiscal year 1998. The Board informed the Joint Committee this increase would be used exclusively for funding the System's new data processing system. The Joint Committee agreed to sponsor this legislation, and Chapter 366 of 1995 enacted these requested changes. During the 1996 interim, the Board requested the Joint Committee to increase the one-time .25% increase to the administrative expense cap to .3% and extend the sunset for this supplemental expense cap until the end of fiscal year 2000. The Board informed the Joint Committee that this increase to the expense cap would continue to be budgeted solely for costs to implement the Agency's data processing project. The Joint Committee agreed to sponsor this legislation, and Chapter 157 of 1997 enacted these legislative changes.

The Board returned to the Joint Committee in the 1998 interim and requested that the statutory expense fee cap (not the one-time .3% additional administrative expense cap in effect until the end of fiscal year 2000) be increased to .25%. In its request to the Joint Committee, the Board pointed out that the .2% expense cap was based on the payroll of active members and had not been increased since 1985. Moreover, the Board stated that, at that time (fiscal year 1999) the Agency's expenses were reaching the then .2% cap and the Board was anticipating higher costs for the Agency as more services were requested and needed. The Joint Committee declined to sponsor this legislation. In its 1998 Interim Report, the Joint Committee pointed out that the Agency was in the midst of a $35 million spending program under a separate one-time increase to the spending cap (Chapter 157 of 1997) to enhance its computing abilities, and once that was completed, it expected the Agency would be able to operate more efficiently within existing resources. Nevertheless, during the Agency's 1999 budget hearings before the legislature it was pointed out that the Agency's fiscal year 2000 budget allowance for administrative expenses was within $696 of its forecasted spending cap for that fiscal year. In response, Chapter 595 of 1999 (introduced by an independent sponsor) increased the Agency's administrative expense cap to .22% of the payroll of active members.

During the 1999 interim, the Board reported to the Joint Committee that while Chapter 595 provided immediate relief to the Agency's budget issues for fiscal year 2000, the Agency continued to find that the complexity and cost of administering the System was continuing to rise as more services were requested and expected by the System's more than 250,000 members, retirees, beneficiaries, and former members. To address these concerns, the Board requested legislation that would maintain the expense cap at .22%, but would amend the payroll upon which it was based. Specifically, the Board requested that the .22% expense cap be based on the payroll for all active, vested, and retired members. The Board explained that because the needs of the vested members and retirees of the System continued to grow with the needs of the active members, these needs justified including the payroll of the vested members and retirees in the calculation of the Agency's administrative expense cap. The Joint Committee agreed to sponsor this legislation and added in its 1999 Interim Report, "[i]f the agency begins to close in on the new spending authority, it can come back to the joint committee to justify the additional spending authority."

The Joint Committee introduced House Bill 419 in the 2000 session. The legislation increased the administrative expense cap by amending the payroll base used in the calculation of this cap. Specifically, House Bill 419 provided:

> (2) The amount of the administrative and operational expenses of the Board of Trustees and the State Retirement Agency may not exceed 0.22% of the sum of:
>
> (i) the payroll of the members of the State systems;
>
> (ii) the allowances of the retirees and surviving beneficiaries of deceased members, former members, or retirees of the State systems; and
>
> (iii) the aggregated earnable compensation of the former members of the State systems as of their date of separation from employment.

Throughout the Agency's budget hearings (and bill hearings for House Bill 419) it was pointed out that without this legislation the Agency's proposed fiscal year 2001 budget exceeded its then current administrative expense cap by $2.5 million. Despite this information, House Bill 419 was amended to include a three-year sunset. (There is no documentation in the bill file to explain what prompted this amendment.) The amended legislation was passed and enacted as Chapter 372 of 2000.

At the start of fiscal year 2004, the statutory language for calculating the Agency's administrative expense cap returned to its prior iteration, stating that the cap may not exceed .22% of the payroll of members. However, neither the Administration's proposed budget for fiscal year 2004 nor the budget analysis for that same fiscal year prepared by the Department of Legislative Services (DLS) include any reference to returning to a lower administrative expense cap. Additionally, the Agency could find no reference to return to the lower cap in its documents that were prepared in response to the Administration's 2004 proposed budget and the corresponding DLS analysis. Further review of documents from 2005 to 2016 are consistent with the 2004 budget documents prepared by the Agency, DLS, and the Administration in that no reference is made by any of the parties involved stating that the calculation of the Agency's administrative expense cap should return to the 1999 formula.

A brief review of the definitions in the State Personnel and Pensions Article indicate that from inception to the current statutory language, the provision addressing administrative expenses for the Agency has required that this calculation be based on the payroll of *members*. "Member" is defined under § 20-101(z) of the State Personnel and Pensions Article as an individual "for whom membership in a State system is a condition of employment" or an individual "for whom membership in a State system is optional and who has elected to become a member in a State system."

A "member" is differentiated from a "former employee" which is defined in § 20-101(t) as "an individual who (1) has been a member, (2) has separated from employment with a participating employer, and (3) is not currently a member or retiree." Accordingly, the two terms have distinct meanings and the use of "member" in the statutory language addressing the calculation of the Agency's administrative expense cap would almost certainly exclude "former members" in determining administrative and operative expenses. What is even more certain is that the use of "member" does not include retiree. Nevertheless, not to include the payroll for these two groups going forward in the calculation of the Agency's administrative expense cap would be detrimental to the Agency's operating budget. This is supported by looking to the Agency's fiscal year 2018 budget and requested fiscal year 2019 budget. The fiscal year 2018 budget for the Agency came within 6% of the .22% administrative expense cap. If the Administration includes the entirety of the Agency's budget request in its fiscal year 2019 allowance, the Agency's projected operating budget could potentially exceed the .22% cap by 14%.

In its 2017 budget analysis of the Agency, DLS agrees with this assessment pointing out that to return to a formula that only included the payroll of active members of the System could be extremely disruptive to the Agency's operations. DLS stated, "[t]he inclusion of retiree benefits and inactive compensation in the calculation of the spending cap has been a long-standing practice, so any change to the method of calculation would be extremely disruptive to agency operations. For instance, the Governor's allowance for fiscal 2018 provides $35.4 million for agency and board expenses below the calculated cap of $37.1 million. If the cap were calculated using only active member payroll, it would be $24.5 million, requiring significant cuts to the agency's budget."

Recommendations for Amendment to Administrative Expense Cap

Based upon the fact that the Agency's budget has, for the past 14 years been proposed, introduced, and approved on the basis of statutory provisions no longer in effect, the Board of Trustees is recommending legislation that would permanently restore to the State Personnel and Pensions Article, the three-part basis (active member salaries, retiree benefits, inactive member compensation) for calculating the administrative expense cap using the .22% multiplier. Inasmuch as this would codify the existing practice of the Agency, the Board does not anticipate any cost associated with this proposal.

Additionally, the Board is requesting legislation that would address a pressing issue it may face in fiscal year 2019. The Agency's technology and operational re-engineering strategy, known as the "Maryland Pension Administration System" (MPAS) project, began in 2006 and is entering its third phase. This last phase, Business Process Re-Engineering and Supporting Technology ("MPAS-3"), includes major changes to the Agency's business processes in the Administration and Finance divisions of the Agency. In addition, it will include long-anticipated integration of existing applications and modifications to MPAS that will allow members and retirees to access their own account information and transact business with the Agency over the Internet, in real time. Several new technology tools (e.g., a member relationship management system and workflow automation) are incorporated into MPAS-3. This is the culmination of the MPAS strategy, built on a strong foundation established in the previous two phases, which realizes the benefits that the core technology enables. Over the next four years, MPAS-3 is set to deliver significant improvements in member service and self-service, redirecting internal resources from current paper-driven operations to timely, efficient manual and automated processes.

Given the potential resources required to complete this last phase of MPAS, it is likely the Agency's total operating budget allocation will exceed the .22% administrative expense cap based on the payroll of members, retirees, and former members. This overage is directly attributable to major MPAS development that will occur through fiscal year 2022. To alleviate the stress these funding increases to the Agency's operating budget may cause, the Board is offering the Legislature three possible solutions.

Option A: In keeping with historical precedent with regard to funding information technology projects (Chapter 429 of 1993, Chapter 366 of 1995, and Chapter 157 of 1997), the Legislature could introduce legislation that would provide for a one-time increase to the administrative expense cap through fiscal year 2022 to address the financial needs of these projects. The Board believes that a cap of .26% would accomplish this objective.

Option B: The Legislature could introduce legislation that would exempt funding of MPAS-related projects, or possibly even major information technology development projects in general, from the Agency's administrative expense cap.

Option C: The Legislature could introduce legislation that would permanently increase the Agency's administrative expense cap by a certain amount that would be sufficient to cover major information technology projects and other significant expenses that may arise in the future. The Board believes that a cap of .26% would accomplish this objective.

Report on Membership in the Employees' Pension System for Individuals Employed Less Than 500 Hours Per Fiscal Year

**Submitted to the
Joint Committee on Pensions**

**Department of Legislative Services
Office of Policy Analysis
Annapolis, Maryland**

December 2017

Report on Membership in the Employees' Pension System for Individuals Employed Less Than 500 Hours Per Fiscal Year

Background

2014 Study on Optional Membership for Elected and Appointed Officials

Chapter 636 of 2014 charged the State Retirement Agency (SRA) with studying the issue of optional membership for elected and appointed officials in the Employees' Pension System (EPS). Before July 1, 2004, membership in EPS was optional for specified elected and appointed officials; however, Chapter 532 of 2004 made membership mandatory for elected and appointed officials who began serving on or after July 1, 2004.

It appears that the legislature's primary rationale for this action was the five year vesting period for EPS at that time. Section 23-302(c) of the State Personnel and Pensions Article states that if a member completes at least 500 hours of employment while a member in any fiscal year, the member is entitled to one year of eligibility service. Because EPS members can earn a year of eligibility service for any fiscal year in which the member works at least 500 hours, it was possible at that time for an elected and appointed official to accrue five years of eligibility service during four calendar years and be vested after serving one term of office. Additionally, requiring elected and appointed officials to join EPS ensured that they were protected with disability and death benefits.

However, the increase in the vesting period to 10 years for EPS members hired on or after July 1, 2011, would have required most local elected and appointed officials to serve two and one-half terms before the officials would vest. During the 2014 study, SRA's review of the legislation enacted since the passage of Chapter 532 suggested that local governments preferred a return to optional membership for their elected and appointed officials.

2015 Legislation – Optional Membership for Certain Elected and Appointed Officials

Following the 2014 study by SRA, the General Assembly passed Chapter 182 of 2015, which made membership in EPS optional moving forward for most local elected and appointed officials of participating governmental units. However, the legislation clarified that membership in in EPS is not optional for any individual employed in a position before July 1, 2015, who was required to be a member of EPS, while the individual remains in that position. As mentioned above, prior to the 2015 change, membership in EPS was mandatory for most elected and appointed officials of participating governmental units who began serving between July 1, 2004, and June 30, 2015.

Study Required by Chapter 281 of 2017

SRA periodically conducts compliance reviews of participating employers to determine if all eligible employees are properly enrolled. Following the enactment of Chapter 182 of 2015, a compliance review of a participating employer noted that, as was the case in a previous review, three Orphans' Court judges employed for the participating employer were identified as not being enrolled in EPS despite meeting eligibility requirements.

The review noted that the three Orphans' Court judges were not enrolled in EPS in anticipation of legislation that would impact their eligibility. However, Chapter 182 affected only the eligibility of officials who were elected or appointed after June 30, 2015. Since each of the three officials identified in the previous review were initially elected before June 30, 2015, their enrollment in EPS is mandatory.

After the review, two of the three Orphans' Court judges were subsequently enrolled in EPS. However, the judges questioned whether they should have been enrolled because they work less than 500 hours per fiscal year. Additionally, the judges were concerned that, despite paying a member contribution, they would not be entitled to a benefit from EPS because working less than 500 hours per fiscal year would result in them failing to accrue any eligibility or creditable service.

In an attempt to address the concerns of the Orphans' Court judges, House Bill 1178 of 2017 was introduced that would have required the Board of Trustees for the State Retirement and Pension System (SRPS), upon request, to review the status of an individual in EPS and determine whether the individual was incorrectly enrolled. If an individual was incorrectly enrolled, the board would have been required to disenroll the individual as soon as practicable.

Section 23-205 of the State Personnel and Pensions Article already requires the board of trustees to determine whether an individual is (or should be) a member of EPS if the eligibility of the individual is unclear. Since the law already requires the board to review the status of an individual in EPS if his or her eligibility is unclear, HB 1178 as introduced appeared to be redundant. However, SRA and Department of Legislative Services (DLS) staff recognized that this issue might require further study. Therefore, HB 1178 (Chapter 281) was amended to require SRA and DLS to conduct a study regarding membership in EPS for individuals who are employed in a position for which the budgeted hours per fiscal year are less than 500 hours and to report their findings and recommendations to the Joint Committee on Pensions on or before December 1, 2017. This report is intended to fulfill that requirement.

The questions that SRA and DLS staff sought to answer during the study were:

(1) Is it erroneous to require elected and appointed officials who began serving between July 1, 2004, and June 30, 2015 to be enrolled in EPS if the officials work less than 500 hours in a fiscal year?

(2) Are other categories of employees who work less than 500 hours in a fiscal year required to enroll in EPS?

(3) If a member of EPS works less than 500 hours per fiscal year, are they able to accrue creditable and eligibility service?

(4) If it was erroneous to require elected and appointed officials to be enrolled in EPS if they work less than 500 hours in a fiscal year, what remedies are available to these individuals?

For the reasons explained below (1) it is not erroneous to require elected and appointed officials who began serving between July 1, 2004,and June 30, 2015, to be enrolled in EPS if they work less than 500 hours in a fiscal year; (2) other categories of employees who work less than 500 hours in a fiscal year are not required to enroll in EPS; and (3) a member of EPS who works less than 500 hours per fiscal year is able to accrue creditable and eligibility service if they are in a contributory tier of EPS or are reported as full-time employees. Additionally, very limited remedies are available to elected and appointed officials who object to being enrolled in EPS.

Statutory Distinction Between Employees and Officials

Section 23-201(a) of the State Personnel and Pensions Article lists the positions for which mandatory enrollment in EPS is a condition of employment. In subsection (a), paragraph (1) specifies regular State employees, paragraph (2) specifies State elected and appointed officials, and paragraph (3) specifies employees and local officials of participating governmental units (PGU). Section 23-201(b) of the State Personnel and Pensions Article lists the positions to which mandatory enrollment in EPS does not apply. Paragraph (7) specifies an employee who is not already a member of a State system and who accepts a position for which the budgeted hours per fiscal year are less than 500 hours in the first fiscal year of employment.

The plain language of the statue distinguishes between elected and appointed officials and employees; therefore, Section 23-201(b)(7) applies only to employees and not to elected and appointed officials. SRA has interpreted this section in this manner and has required local elected and appointed officials to enroll in EPS if they began serving between July 1, 2004, and June 30, 2015, regardless of the number of hours they work.

SRA cannot pinpoint exactly when this practice originated, but this is a long standing agency practice that dates back prior to the establishment of the Contributory Pension System (CPS) in July 1998. Prior to the establishment of CPS, the pension systems were mostly noncontributory and, with the exception of the first and last year of employment, members working less than 700 hours (now 500 hours) in a fiscal year did not receive service credit. To prevent this inequity for elected and appointed officials, which has also been extended to other groups that work limited hours such as other compensated board or commission members, SRA practice is to instruct the employer to report the individual as a full-time employee. The rationale for this practice is based on the recognition that these elected and appointed officials, unlike employees, are always on the job responding to constituents, and often work additional hours. Having the employer report elected and appointed officials as full-time employees results in the member receiving full-time service credit using their reported budgeted annual salary.

Categories of Employees Eligible for EPS

Data on employees who work less than 500 hours in a fiscal year who have the potential for membership in EPS was not readily available. Therefore, DLS collected data on State employees and surveyed PGUs, the Maryland Judiciary, the Maryland General Assembly, DLS, Baltimore City Community College, and the public four-year institutions of higher education. The survey asked each unit how many individuals in the unit were employed in a position for which the budgeted hours per fiscal year are less than 500 hours, the position title/position classification of these employees, whether these employees are elected or appointed, and the status of these employees in EPS.

The survey also asked if the unit has received any complaints from individuals who work less than 500 hours regarding their status or lack thereof in the EPS. Additionally, the survey asked the unit what their experience has been in working with SRA regarding the enrollment of employees in the EPS who work less than 500 hours per year. A sample survey can be found in **Appendix 1**.

Survey Findings

Over 70% of the units responded to the survey. The vast majority of units do not have any regular employees who are employed in a position for which the budgeted hours per fiscal year are less than 500 hours. Several of the responses included temporary or contractual employees; however, those categories of employees are not eligible for membership in EPS. **Appendix 2** provides a summary by unit of the regular employees who are employed in a position for which the budgeted hours per fiscal year are less than 500 hours.

Based on the survey responses, over two-thirds of elected and appointed officials are enrolled in EPS, and slightly less than one-third are not. The elected and appointed officials who are not enrolled in EPS likely began serving after June 30, 2015, or otherwise have optional membership in EPS.

One-third of employees working less than 500 hours are enrolled in EPS, while two-thirds of employees are not. SRA indicates that if an employee works more than 500 hours in a fiscal year, the employee is enrolled in EPS; however, the employee is not disenrolled if the employee's hours fall below 500 hours in a subsequent fiscal year.

With the exception of elected and appointed officials, other categories of individuals who are otherwise eligible for membership in EPS are not required to enroll in EPS if they work less than 500 hours in a fiscal year.

Survey Comments

The majority of units said that they have not received complaints from individuals who work less than 500 hours regarding their status or lack thereof in the EPS. A few units have received complaints and some of those responses are shown below:

"The city has not received any complaints from employees working less than 500 hours about their ineligibility to join. Most part-time employees do not want to be enrolled in the pension plans because they do not want to contribute 7% and they do not contemplate working the 10 years to be required to be vested."(College Park)

"When the library required shelvers to enroll in the State Pension Plan, we did receive complaints from employees regarding required participation in the Pension Plan." (Frederick County Library)

"Part-time person expressed not being notified when hired that she would participate in the pension system." (Hagerstown)

"Our employees do not want to be enrolled. They are retirees, students, and others who are working our positions as secondary employment or temporary employment and they want the money. They are not employees who took their positions with us to earn a retirement benefit." (Kent County Government)

"Employees have expressed concern about the 7% required contribution." (New Carrollton)

"Other than the elected officials who are required to enroll, we do not enroll employees who work under 500 hours. We occasionally have concerns raised from newly elected county commissioners. However the majority of concerns come from appointed employees who work over 500 hours and are required to enroll in the retirement system. This is especially true now with the 10 year vesting and rule of 90 for retirement coupled with the 7% contribution." (Queen Anne's County)

"Yes, employees who are enrolled have expressed concern about being enrolled." (Somerset County)

"Through grant funding we hire hourly employees. These employees have no budgeted hours and are not included in the full-time employee count. When these hourly employees work more than 500 hours, they express concern about not being enrolled in the Pension System." (St. Mary's County Government)

"No one has expressed concern about not being enrolled in EPS. Elected officials who are forced to enroll have expressed concerns that they would rather not be enrolled." (Sykesville)

"Since Talbot County employs a large percentage of part-time and seasonal workers, it is always time consuming to have them in any way involved in the System. We would prefer not to have them in the system in any fashion as almost without exception, they must be removed and their contributions refunded. This is especially true with the ten-year vesting rule." (Talbot County)

"The only concerns we hear are from those individuals who are already past normal retirement age that have to participate. We hire many older food service workers and bus drivers who do not want to enroll in their late 60's, early 70's." (Washington County Public Schools)

"There have been no issues enrolling elected officials, but because of the 10-year vesting, there is some reluctance to joining by the prospective member." (Westminster)

"The board members questioned why they needed to be enrolled, especially after several years of holding a position on the board. They feel it is unnecessary to be enrolled." (Worcester County Board of Education)

Additionally, the survey asked the unit what their experience has been in working with the SRA regarding the enrollment of employees in the EPS who work less than 500 hours per-year. The majority of units did not respond to this question; however, several responses were positive comments about SRA:

"No problems. SRA staff are always helpful." (Edmonston)

"Always receptive to questions." (Kent County Public Schools)

"Good – our questions are answered promptly and thoroughly." (St. Mary's County Government)

"There has only been one question for SRA, and it was answered in a timely manner." (Sykesville)

A few responses noted some issues:

"Confusing!! The retirement agency doesn't really know how to handle the employees who decrease to less than 500 hours. After many discussions, we made the decision to leave them enrolled if they were initially over 500 hours and decrease." (Carroll County Public Schools)

"Received fine from SRA for non-compliance of member enrollment; however the elected official failed/refused to complete and return. In interim, the elected official was sent a letter from the Director of Administration asking for the completion of necessary documents and will face withholding of next quarterly compensation if not returned." (Cecil County Government)

"It has been noted on audits for not picking up the previous time when they become eligible."(Kent County)

"Following our last audit we were instructed to enroll the Mayor and Council who do not work 500 hours per year. We are currently in the process of enrolling them. Because many of our Councilmembers and Mayor have served for a long time, it raises questions of how far to go back. Fortunately, our Mayor and Council until recently (four years) received a stipend and were not on payroll so it is hoped that our liability will only be for the four years they have been on payroll or their time elected. For small towns who only pay their Mayor and Councilmembers a few hundred dollars a month, I'm not sure if its worth all of the paperwork on anyone's end. As far as working with the State Retirement Agency, they have always been very helpful and easy to work with." (Landover Hills)

"Only complaint is for employees who were budgeted above 500 hours at one time but no longer are, having to remain enrolled despite their lower wages and less hours." (Somerset County)

"We have had some difficulty, as our board members are only paid quarterly. The retirement system would send notices of the accounts being inactive since contributions had not been sent. We can only send contributions quarterly." (Worcester County Board of Education)

Eligibility for Pension Benefit

One of the concerns that led to the introduction of House Bill 1178 of 2017 was the question of whether a member of EPS who works less than 500 hours per fiscal year would accrue any eligibility or creditable service that is necessary to be eligible for a benefit from EPS. With the exception of members who are in the Noncontributory Pension Benefit and who are not reported as full-time employees, a member of EPS who works less than 500 hours per fiscal year is able to accrue eligibility and creditable service.

Except as explained below, members in the Noncontributory Pension Benefit tier of EPS who work less than 500 hours in a fiscal year will not be eligible for a benefit because they do not earn any creditable or eligibility service when they work less than 500 hours in a fiscal year. However, if a member of the Noncontributory Pension Benefit who works less than 500 hours in a fiscal year is reported as a full-time employee, the member will earn creditable or eligibility service. Thus, the SRA practice to instruct employers to report elected and appointed officials as full–time allows these individuals to be eligible for a benefit if they otherwise meet eligibility requirements.

Members in the CPS, Alternate Contributory Pension Selection, or Reformed Contributory Pension Benefit who work less than 500 hours in a fiscal year will be eligible for a benefit from EPS because they earn prorated creditable and eligibility service. **Exhibit 1** illustrates the difference between how service credit is earned in the noncontributory and contributory tiers of EPS.

Exhibit 1
EPS
Service Credit Accrual Illustration

Noncontributory Pension Benefit				
Fiscal Year	**Hours Worked**	**Standard Hours**	**Creditable Service**	**Eligibility Service**
2012	1040	2080	6	12
2013	1040	2080	6	12
2014	1040	2080	6	12
2015	400	2080	0	0
2016	400	2080	0	0
2017	400	2080	0	0
Totals			18	36

Contributory Tiers: CPS, ACPS, and RCPB				
Fiscal Year	**Hours Worked**	**Standard Hours**	**Creditable Service**	**Eligibility Service**
2012	1040	2080	6	12
2013	1040	2080	6	12
2014	1040	2080	6	12
2015	400	2080	3	10
2016	400	2080	3	10
2017	400	2080	3	10
Totals			27	66

ACPS: Alternate Contributory Pension Section
CPS: Contributory Pension Benefit
RCPB: Reformed Contributory Pension Benefit

Note: Creditable service is awarded as (Hours Worked / Standard Hours) x Number of Months Worked in a fiscal year (assuming in above example that employee worked 12 months each year). An individual cannot receive a partial month of service credit; therefore, the product of the calculation is rounded up to the next whole number so that the individual receives credit for the entire month (*e.g.,* 2.3 is rounded up to 3). Eligibility service is awarded as (1) if Hours Worked in a fiscal year are greater than 500 then 12 months awarded (10 months would be awarded for a 10-month employee), or (2) if Hours Worked are less than 500 then (Hours Worked / 500) x 12 months (or x 10 months for a 10-month employee). The applicable service credit values are then used in calculating the benefit.

Source:

Therefore, the Orphans' Court judges would accrue eligibility and creditable service even if they work less than 500 hours per fiscal year for two reasons: (1) the judges are reported as full-time employees; therefore, they earn service credit as a full–time employee; and (2) even if they were not reported as full–time employees, the judges would earn prorated service credit because they are employed with a participating employer who participates in a contributory tier of EPS.

Remedies for Elected and Appointed Officials Enrolled in EPS

As explained above, based on current law, it is not erroneous to require elected and appointed officials to be enrolled in EPS, even if they work less than 500 hours in a fiscal year. However, assuming some elected and appointed officials do not want to be enrolled in EPS, there are very limited remedies available to these individuals.

As noted above, Section 23-205 of the State Personnel and Pensions Article requires the board of trustees to determine whether an individual is (or should be) a member of EPS if the eligibility of the individual is unclear. A member who disputes his or her enrollment may request the board to review the member's eligibility.

If an individual is not already enrolled in EPS, legislation could be introduced that would prohibit the individual, while serving in that position, from being enrolled in EPS. To avoid issues with special laws, the prohibition would need to be a prohibition on individuals serving in the position from being enrolled in EPS, which would result in prohibiting any individual who may subsequently serve in the position from EPS participation.

If an individual is enrolled in EPS, the individual cannot unilaterally choose to disenroll after he or she is enrolled; legislation would be required to provide for disenrollment. Legislation could be introduced that would disenroll the individual; however, any such legislation could potentially have adverse tax consequences to the SRPS because employees of an employer participating in the employer pick-up program are allowed only a single election at commencement of employment. Additionally, Internal Revenue Code in-service distribution rules prohibit refunding of employee contribution while an individual is employed with any employer participating in the systems.

Although it may be frustrating for an individual to be required to enroll in EPS and contribute 7% of their annual salary toward a benefit for which they may not become eligible, the member may receive a return of the member's contributions plus interest at the time the member stops serving as an elected or appointed official. However, unlike the nonvested member who may receive a return of the member's accumulated contributions, the employer will not receive a return of employer contributions made on behalf of this member.

Appendix 1
Survey Questions for Employees' Pension System Membership Study on Under 500 Hour Employees
(Chapter 281 of 2017)

Please provide responses by e–mail no later than Friday, October 13, 2017

Please e–mail your responses to:
matthew.jackson@mlis.state.md.us
dana.tagalicod@mlis.state.md.us

During the 2017 session, the General Assembly passed legislation (Chapter 281) that requires the State Retirement Agency and the Department of Legislative Services to conduct a study on membership in the Employees' Pension System for individuals who are employed in a position for which the budgeted hours per fiscal year are less than 500 hours. For more information see the attached legislation.

In order to gather the data necessary for the study, the Department of Legislative Services is conducting a survey of all of the governmental units that participate in the Employees' Pension System. Please answer the following questions about the individuals who are employed in your governmental unit:

(1) How many individuals in the governmental unit are employed in a position for which the budgeted hours per fiscal year are less than 500 hours?

(2) Please complete the chart below for EACH individual who is employed in a position for which the budgeted hours per fiscal year are less than 500 hours. In the column labeled "Elected or Appointed?" please note whether the position is elected, appointed, or neither. In the column labeled "Status in the Employees' Pension System" please enter either "enrolled" or "not enrolled", as appropriate.

Position Title/ Position Classification	Elected or Appointed?	Status in the Employees' Pension System

(3) Has the governmental unit ever had an individual whose budgeted hours per fiscal year were initially less than 500 hours but subsequently became more than 500 hours? For example, an employee worked 250 hours in fiscal 2015 and then worked 750 hours in fiscal 2016.

If yes, please complete the chart below for EACH individual who falls in this category. In the column labeled "Elected or Appointed?" please note whether the position is elected, appointed, or neither. Please note the status of the individuals in the Employees' Pension System using one of the following letters (a) the individual was never enrolled in the Employees' Pension System; (b) the individual was not enrolled when he/she worked less than 500 hours, but was enrolled when he/she began working more than 500 hours; (c) the individual was enrolled even though he/she worked less than 500 hours; or (d) none of the above – please explain.

Position Title/ Position Classification	**Elected or Appointed?**	**Status in the Employees' Pension System**

(4) Has the governmental unit received any complaints from individuals who work less than 500 hours regarding their status or lack thereof in the Employees' Pension System? For example, have any individuals who are enrolled in the Employees' Pension System expressed concern about being enrolled? Have any individuals who are not enrolled in the Employees' Pension System expressed concern about not being enrolled?

(5) What has the experience of the governmental unit been in working with the State Retirement Agency regarding the enrollment of employees in the Employees' Pension System who work less than 500 hours per year?

Appendix 2
Summary of Survey Responses

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Allegany College of Maryland	0		
Allegany County Public Schools/Board of Education	Board Member (2)	Elected	Enrolled
	Board Member (2)	Elected	Enrolled
	Board Member (1)	Elected	Not enrolled
Allegany County Commissioners	0		
Allegany County, Housing Authority of	0		
Annapolis, City of	0		
Anne Arundel Community College	0		
Anne Arundel County Government	0 (Withdrawn PGU)		
Anne Arundel County Public Schools	Media Specialist (1)	Neither	Enrolled
	Media Specialist (1)	Neither	Not enrolled
	Speech Pathologist (1)	Neither	Enrolled
	Teacher Assistant-Media (4)	Neither	Enrolled
	Teacher Assistant-Special Education (1)	Neither	Enrolled
	Teacher-Math (1)	Neither	Enrolled
	Teacher-Music (1)	Neither	Not enrolled
	Teacher-Student Instructional Support (1)	Neither	Enrolled
	Food Service Worker (4)	Neither	Enrolled
	Food Service Worker (1)	Neither	Not enrolled
Baltimore City Community College	0		
Baltimore County Public Library	0		
Baltimore County Public Schools	0 (Does not participate in EPS)		
Baltimore County State Officials	0		
Baltimore Metropolitan Council	0		
Berwyn Heights, Town of	0		

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Bowie, City of	0		
Brunswick, City of	0		
Calvert County Commissioners	0 (Withdrawn PGU)		
Calvert County Library	0		
Calvert County Public Schools	0		
Cambridge, City of	0		
Caroline County Public Library	0		
Caroline County Public Schools	President	Elected	Not enrolled
	Vice President	Elected	Not enrolled
	Board Member	Appointed	Not enrolled
Carroll County Community College	0		
Carroll County Government	0		
Carroll County Public Library	0		
Carroll County Public Schools	Cafeteria Worker (3)	Neither	Enrolled
	Cafeteria Worker (1)	Neither	Not enrolled
	Teacher (2)	Neither	Enrolled
	Teacher (3)	Neither	Not enrolled
	Secretary	Neither	Enrolled
Carroll Soil Conservation District	0		
Cecil Community College	0		
Cecil County Government	Chief Judge – Orphan's Court	Elected	Enrolled
	Associate Judge – Orphan's Court (2)	Elected	Enrolled
	Liquor Board Commissioner (3)	Appointed	Not enrolled
Cecil County Public Library	0		
Cecil County Public Schools	President	Elected	Not enrolled
	Vice President	Elected	Not enrolled
	Members	Elected	Not enrolled
Centreville, Town of	Council Members (3)	Elected	Enrolled

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Charles County Public Schools	0 (Does not participate in EPS)		
Chesapeake Bay Commission	0		
Chesapeake College	0		
Chestertown, Town of	Mayor	Elected	Enrolled
	Members (2)	Elected	Enrolled
College Park, City of	Mayor	Elected	Enrolled
	Councilmembers (6)	Elected	Enrolled
	Councilmembers (2)	Elected	Not enrolled
College of Southern Maryland	0		
Dorchester County Council	0		
Dorchester County Public Library	0		
Dorchester County Sanitary Commission	0		
Eastern Shore Regional Library, Inc.	0		
Edmondston, Town of	Mayor	Elected	Enrolled
	Town Council Member (3)	Elected	Enrolled
Elkton, Town of	0	Elected	Enrolled
Emmitsburg, Town of	Mayor	Elected	Enrolled
	Commissioner (5)	Elected	Enrolled
	After School Manager	Neither	Not enrolled
	After School Assistant	Neither	Not enrolled
Frederick Community College	0		
Frederick County Government and Library	Part-time Library (58)	Neither	Not enrolled
	Sheriff-Extra/Special Duty (2)	Neither	Not enrolled
Frederick County Public Schools	Speech Pathologist/ .2 FTE *266 hrs (1)	N/A	Not enrolled
	Speech Pathologist/ .3 FTE *399 hrs (1)	N/A	Not enrolled
	Teacher/.3 FTE	N/A	Not enrolled

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Frostburg, City of	Mayor	Elected	Not enrolled
	Commissioner of Water, Parks and Rec	Elected	Not enrolled
	Commissioner of Finance	Elected	Not enrolled
	Commissioner of Public Safety	Elected	Not enrolled
	Commissioner of Public Works	Elected	Enrolled
Fruitland, City of	Council President	Elected	Enrolled
	Council Treasurer	Elected	Not enrolled
	Councilman (1)	Elected	Not enrolled
	Councilman (2)	Elected	Enrolled
	Grants (Part- time)	Neither	Not enrolled
	Officer (Part-time) (1)	Neither	Enrolled
	Officer (Part-time) (1)	Neither	Not enrolled
Garrett College	0		
Garrett County Commissioners	0		
Garrett County, Ruth Enlow Library of	0		
Greenbelt, City of	0		
Greensboro, Town of	0		
Hagerstown, City of	Mayor	Elected	Not enrolled
	Councilmember	Elected	Enrolled
	Videographer	Neither	Not enrolled
	Police Support aide	Neither	Not enrolled
	Customer support aide	Neither	Not enrolled
Hancock, Town of	0		
Harford Community College	0		
Harford County Government	0		
Harford County Public Library	0		
Harford County Public Schools	0		
Howard Community College	0		

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Howard County Government	0 (Withdrawn PGU)		
Howard County Public Library	0		
Kent County Government	Dispatchers (5)	Neither	Enrolled
	Paramedic	Neither	enrolled
Kent County Public Schools	Board Members (5)	Elected	Enrolled
Kent Soil & Water Conservation District	0		
La Plata, Town of	Part-time cashier/receptionist	Appointed	Enrolled
	Police Cadet	Appointed	Enrolled
Landover Hills, Town of	Mayor	Elected	In process of enrolling
	Vice Mayor	Elected	In process of enrolling
	Public Works Helper PT	Neither	Not enrolled
	Councilmembers (4)	Elected	In process of enrolling
Maryland National Capital Park & Planning	0 (Withdrawn PGU)		
Maryland General Assembly/DLS	0		
Maryland Judiciary	0		
Montgomery College	0		
Montgomery County Government	0		
Montgomery County Public Schools	0		
Morningside, Town of	Mayor	Elected	Enrolled
	Vice Mayor	Elected	Enrolled
	Councilmember (2)	Elected	Enrolled
	Councilmember	Elected	Not enrolled
Mount Airy, Town of	0		

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
New Carrollton, City of	Mayor	Elected	Enrolled
	Treasurer	Appointed	Enrolled
	Cable TV Operator	Neither	Not enrolled
	Video Prod Assistant	Neither	Not enrolled
	Council member (4)	Elected	Enrolled
	Council member (1)	Elected	Not Enrolled
North Beach, Town of	0		
Oakland, Town of	Mayor	Elected	Not enrolled
	Council Person (3)	Elected	Not enrolled
	Council Person (3)	Elected	Enrolled
	Laborer	Neither	Not enrolled
	Parking Gate Attendant (2)	Neither	Not enrolled
Preston, Town of	0		
Prince George's Community College	0		
Prince George's County Government	0		
Prince George's County Memorial Library	0		
Prince George's County Public Schools	0		
Princess Anne, Town of	President	Elected	Enrolled
	Vice President	Elected	Enrolled
	Commissioner (2)	Elected	Enrolled
Queen Anne's County	County Commissioners (5)	Elected	Enrolled
	Circuit Court (5)	Appointed	Not enrolled
	Dispatchers (4)	Appointed	Not enrolled
	EMT's (12)	Appointed	Not enrolled
	Parks Workers (5)	Appointed	Not enrolled
	Public Works (10)	Appointed	Not enrolled
	Orphans Court Judges (3)	Elected	Enrolled
	Miscellaneous (5)	Appointed	Not enrolled

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Ridgely, Town of	Commissioner (3)	Elected	Enrolled
Salisbury, City of	Mayor	Elected	Enrolled
	Council President	Elected	Enrolled
	Council Vice President	Elected	Enrolled
	Council (3)	Elected	Enrolled
	Parking Attendant (1)	Appointed	Enrolled
	Parking Attendant (6)	Appointed	Not enrolled
	Marina (2)	Appointed	Not enrolled
	Zoo Educator (3)	Appointed	Not enrolled
Shore Up, Inc.	0		
Snow Hill, Town of	0		
Somerset County	Courtroom Bailiff (2)	Neither	Not enrolled
	Mosquito Control Technician (3)	Neither	Not enrolled
	Mosquito Control Technician (1)	Neither	Enrolled
	Liquor Licensing Board Chairman (1), Attorney (1), Clerk (1) Member (2)	Appointed	Not enrolled
	Orphans Court Chief Judge (1), Judge (2)	Elected	Not enrolled
	Sanitary Commission Chairman (1), Vice Chairman (1), Secretary Treas. (1), Member (2)	Appointed	Not enrolled
	Supervisor of Elections President (1), Attorney (1), Secretary (1), Members (2)	Appointed	Not enrolled
	Emergency Communications Specialist Part-time	Neither	Enrolled
	Board of Zoning Chairman (1), Members (4), Alternate (1)	Appointed	Not enrolled
	Planning Commission Chairman (1), Vice Chairman (1), Members (5)	Appointed	Not enrolled
	County Commissioner President (1), V.P. (1), Commissioner (1), Member (1)	Elected	Enrolled
	County Commissioner	Elected	Not enrolled

Governmental Unit	Position Title/Classification	Elected or Appointed?	Status in EPS
Somerset County Public Schools	Board Member (4)	Elected	Not enrolled
	Board Member (1)	Elected	Enrolled
	Bus Driver Trainer	Appointed	Not enrolled
	Family Services Coordinator	Neither	Not enrolled
	Adult Education Teacher (5)	Neither	Not enrolled
	Consultant	Appointed	Not enrolled
	Athletic Teacher	Neither	Not enrolled
Somerset County Library	Library Assistant (2)	Neither	Not enrolled
	Branch Manger	Neither	Not enrolled
Somerset County Sanitary District	0		
Southern MD Regional Library Association, Inc.	0		
St. Mary's College of Maryland	0		
St Mary's County, Housing Authority of	0		
St. Mary's County Government	0		
St. Mary's County Memorial Library	0		
St. Mary's County Public Schools	0		
State of Maryland Employees	Subsequent Injury Fund Board Members (3)		Not Enrolled
	Uninsured Employers Fund Members (3)		Not Enrolled
	Physician Clinical Specialist		Enrolled
	Program Admin IV Health Services		Not Enrolled
	Admin. Officer II		Not Enrolled
	Staff Specialist I Education		Enrolled
Sykesville, Town of	Post Office Clerk (2)	Appointed	Not Enrolled

Talbot County Government	Planning Commission Member (5)	Appointed	Enrolled
	Election Board Member (5)	Appointed	Enrolled
	Liquor Board Member (2)	Appointed	Enrolled
	Liquor Board Member (1)	Appointed	Not Enrolled
	Orphans' Court Judges (3)	Appointed	Enrolled
	Board of Appeals (5)		Enrolled
	Electrical Board Member (4)		Enrolled
	Electrical Board Member (1)		Not enrolled
Talbot County Free Library	0		
Talbot County Public Schools	0		
Taneytown, City of	0		
Tri-County Council Lower Eastern Shore MD	0		
University System of Maryland	Various Faculty Positions at the University of Maryland, College Park (9)	Neither	Not Enrolled
Upper Marlboro, Town of	Part-time Police Officer (7)	Appointed	Enrolled
Walkersville, Town of	Burgess	Elected	Enrolled
	Commissioner (5)	Elected	Enrolled
	Code Enforcement Officer	Appointed	Not enrolled
	Recycling Coordinator	Appointed	Not enrolled
Washington County Board of Liquor Commissioners	Chairman	Appointed	Enrolled
	Commissioner (2)	Appointed	Not enrolled
	Inspector	Neither	Not enrolled
	Inspector	Neither	Enrolled
Washington County Free Library	0		
Washington County Public Schools	Paraprofessional	Neither	Enrolled
Washington Suburban Sanitary Commission	0 (Withdrawn PGU)		
Westminster, City of	Mayor	Elected	Enrolled
	Council President	Elected	Enrolled
	Council Member (4)	Elected	Enrolled

Wicomico County Board of Education	0		
Wicomico County Maryland	0		
Wor Wic Community College	0		
Worcester County Board of Education	Board Member(5)	Elected	Enrolled