Government Employees' Retirement System of the Virgin Islands

Actuarial Valuation and Review as of October 1, 2016

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August 21, 2017

Board of Trustees
Government Employees' Retirement System of the Virgin Islands
GERS Complex
St. Thomas, Virgin Islands, 00802

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of October 1, 2016. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal year ending September 30, 2017 and later years and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the staff of the Government Employees' Retirement System of the Virgin Islands (GERS) under the supervision of Austin L. Nibbs. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.

The actuarial calculations were directed under our supervision. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Retirement System.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 

Leon F. (Rocky) Joyner, ASA, FCA, MAAA, EA
Vice President and Actuary

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Senior Vice President and Actuary

SECTION 1

VALUATION SUMMARY

SECTION 2

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SECTION 4

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SECTION 1: Valuation Summary for the Government Employees' Retirement System of the Virgin Islands

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Government Employees' Retirement System of the Virgin Islands as of October 1, 2016. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Pension Plan, as administered by the Board as of October 1, 2016;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of October 1, 2016, provided by the GERS;
- The assets of the Plan as of September 30, 2016, provided by the Fund Auditor;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. Based on the results of this valuation, the System is projected to run out of assets in the fiscal year beginning October 1, 2023. However, depending on the liquidity of the System's assets, the System's inability to pay full benefits could be sooner.
    a. For illustration, if we assume 0% return on assets, the System is projected to run out of assets in the fiscal year beginning October 1, 2021.
    b. Upon insolvency, the projected contributions are expected to cover only about half of the projected benefits and expenses. Without additional financial resources (contributions or other commitments) and/or adjustments to the benefit levels, the System's continued viability is in jeopardy.
2. It is our understanding that the legislation that covers the System provides that contributions are to be made on an actuarial reserve basis. An actuarial valuation is performed to calculate the "Actuarially Determined Employer Contributions" (ADEC) and is based on the assumptions and methods adopted by the Board for this purpose. Furthermore, Section 718(l) of the Virgin Islands Code prohibits the Board from paying benefits that are not adequately funded.
3. The actual amounts contributed by the government employers to the System have not been based on the ADEC amounts. The amounts contributed have been significantly less than the ADEC (see Section 4, Exhibit II) for many years:
    a. Although the employer contribution rate was recently increased from 17.5% to 20.5% of pay, ADEC have increased from 35% of pay in 2006 to 64% of pay as of October 1, 2016.
    b. Therefore, current benefits are not being funded adequately on an actuarial basis.
4. The historical and continuing shortfall in the contributions to the System has resulted in increasing negative cash flow, declining assets, increasing unfunded actuarial liabilities and as noted above, projected insolvency, if nothing else is done.
5. Over the last ten years, the System's funding percentage has declined from about 55% to 25% based on a long-term investment return assumption (currently, 7.00%). The funding percentage as of October 1, 2016 based on GASB 67/68 accounting standards is 16.5%, which uses a rate of return of 3.20%. As indicated above, this decline is primarily due to contributions being significantly less than the amount necessary for proper plan funding.

6. The 7.00% investment return assumption is based on a long-term funding approach which includes a presumption that action will be taken that prevents insolvency and provides a sustainable future for GERS. If such action is not forthcoming, the 7.00% investment return assumption will be re-evaluated in future valuations and will likely be reduced significantly to reflect the lower expected investment returns under the current low interest rate environment and due to the System's liquidity requirements.
7. This valuation reflects the changes to both the eligibility and benefit amounts for Tier 2 Regular and Public Safety employees for Service and Early pensions. While these changes significantly lowered the cost of benefit accruals of Tier 2 employees from 9.3% to 7.4% of pay, their overall impact to the System's ADEC was minimal and has no immediate impact on the projected solvency date. The plan of benefits, including those changes, are described in detail in Section 4 of the report.
8. The actuarial valuation report as of October 1, 2016 is based on financial information provided as of that date. Changes in the value of assets subsequent to that date are not reflected. Unfavorable asset experience will increase the actuarial cost of the System, while favorable experience will decrease the actuarial cost of the System.

Summary of Key Valuation Results

	2016		2015	
Contributions for fiscal year beginning October 1:		% of Payroll		% of Payroll
Actuarially determined contribution	$294,875,169	74.88%	$284,807,821	77.39%
Expected contributions:				
Employer	80,723,102	20.50%	75,444,821	20.50%
Employee	44,301,146	11.25%	37,649,684	10.23%
Shortfall	169,850,921	43.13%	171,713,316	46.66%
Funding elements for plan year beginning October 1:				
Normal cost, including administrative expenses	$56,273,007		$56,985,129	
Market value of assets	917,162,043		991,041,251	
Actuarial value of assets	917,162,043		991,041,251	
Actuarial accrued liability	3,621,859,574		3,573,547,073	
Unfunded actuarial accrued liability	2,704,697,531		2,582,505,822	
Funded ratio	25.32%		27.73%	
Projected insolvency in plan year beginning October 1	2023		2022	
Demographic data for plan year beginning October 1:				
Number of retired members and beneficiaries	8,520		8,465	
Number of active members	9,499		9,303	
Projected covered payroll	$393,771,228		$368,023,518	
Projected average payroll	$41,454		$39,560	
GASB 67 information as of September 30:				
Total pension liability	$5,543,764,311		$5,062,702,088	
Plan fiduciary net position	917,162,043		991,041,251	
Net pension liability	4,626,602,268		4,071,660,837	
Plan fiduciary net position as a percentage of the total pension liability	16.54%		19.58%	

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal Consulting ("Segal") relies on a number of input items. These include:

- **Plan of benefits** Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
- **Assets** The valuation is based on the market value of assets as of the valuation date, as provided by the Fund Auditor.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared at the request of the Board of Trustees of the Government Employees' Retirement System of the Virgin Islands (GERS). Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If GERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board of Trustees should look to their other advisors for expertise in these areas.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

A. MEMBER DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, vested terminated members, retired members and beneficiaries.

The significant decline in the ratio of actives to retirees over the last 20 years indicates a smaller contribution base supporting the payment of benefits and expenses.

In addition, there are inactive members with rights to deferred vested pensions that are not shown in the chart below. For purposes of our valuation, the potential liabilities for such inactive members were estimated and reflected in the valuation.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A and B.

A historical perspective of how the member population has changed over the past 20 years valuations can be seen in this chart.

CHART 1

Member Population: 1997 – 2016

Year Ended September 30	Active Members	Retired Members and Beneficiaries	Ratio of Actives to Retirees
1997	11,572	4,682	2.5
1999	10,763	6,212	1.7
2001	9,303	5,581	1.7
2003	10,037	6,093	1.6
2006	10,739	7,282	1.5
2011	10,376	7,592	1.4
2013	9,393	8,024	1.2
2014	9,227	8,465	1.1
2015	9,303	8,465	1.1
2016	9,499	8,520	1.1

Active Members

Plan costs are affected by the age, years of credited service and payroll of active members. In this year's valuation, there were 9,499 active members, including 4,054 Tier 2 employees with an average age of 46.3, average years of credited service of 14.5 years and average payroll of $41,454. The 9,303 active members including 3,553 Tier 2 employees in the prior valuation had an average age of 46.5, average service of 14.7 years and average payroll of $39,560.

Tier 2 employees are those employees hired on or after October 1, 2005.

These graphs show a distribution of active members by age and by years of credited service.

CHART 2

Distribution of Active Members by Age as of September 30, 2016

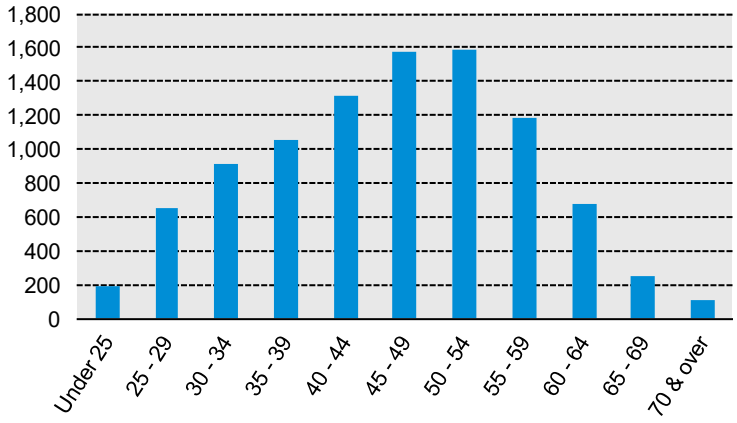
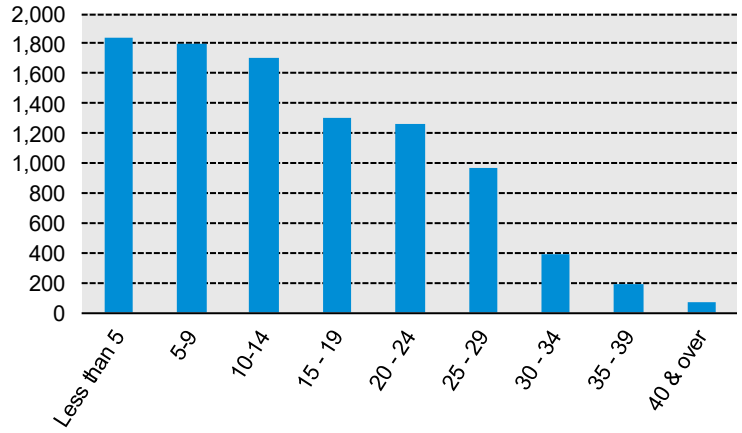


CHART 3

Distribution of Active Members by Years of Credited Service as of September 30, 2016



Retired Members and Beneficiaries

As of September 30, 2016, 8,349 retired members and 171 beneficiaries were receiving total semi-monthly benefits of $10,152,450. For comparison, in the previous valuation, there were 8,295 retired members and 170 beneficiaries receiving semi-monthly benefits of $10,004,807.

These graphs show a distribution of the current retired members based on their semi-monthly amount and age, by type of pension.

CHART 4

Distribution of Retired Members by Type and by Semi-Monthly Amount as of September 30, 2016

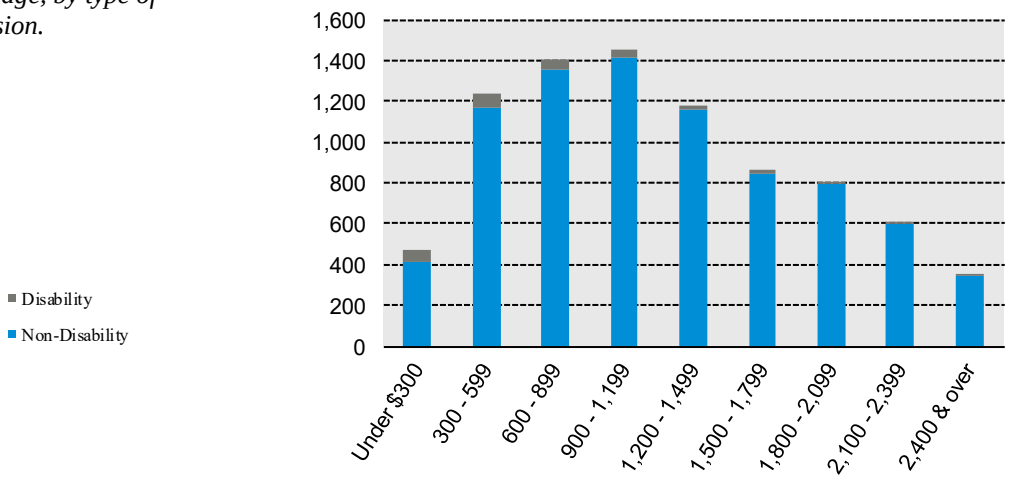
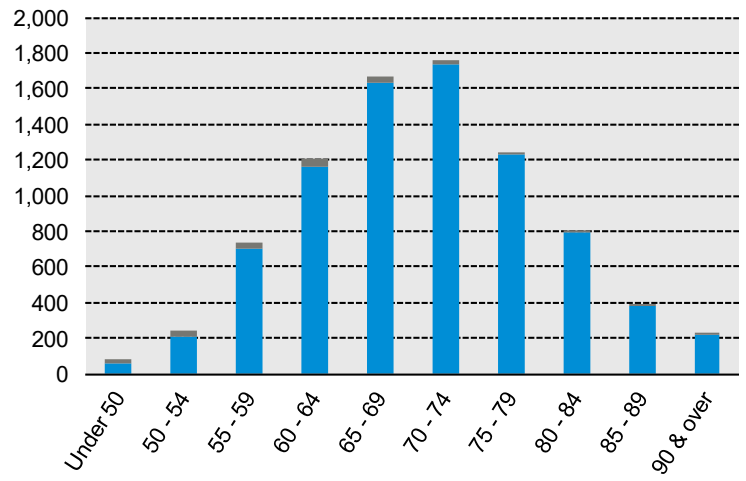


CHART 5

Distribution of Retired Members by Type and by Age as of September 30, 2016



B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

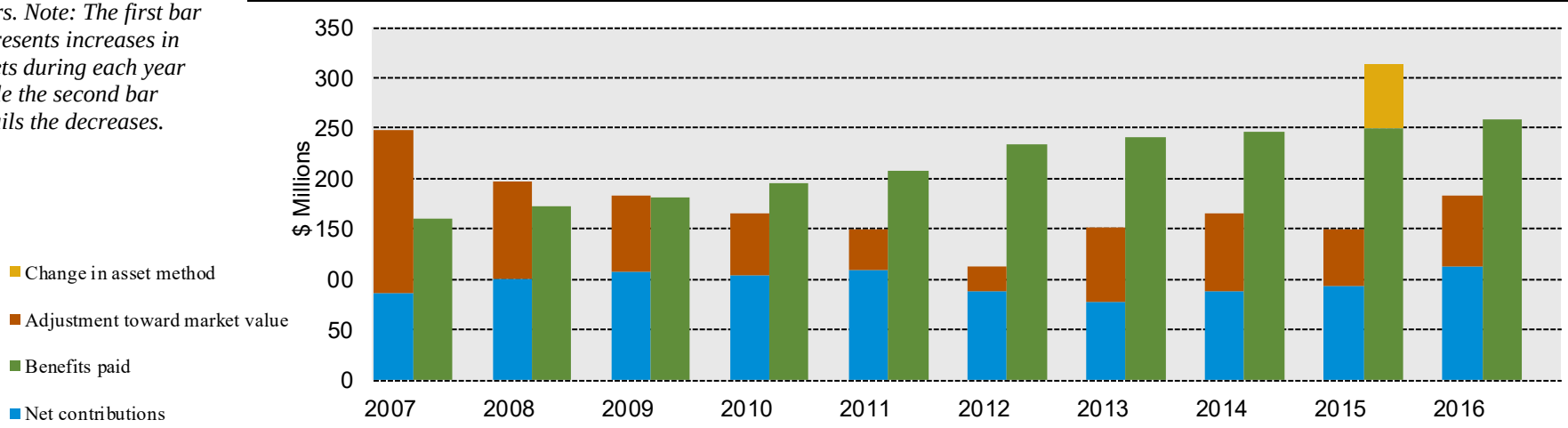
With this valuation, the actuarial value of assets is equal to the market value of assets. Once the short-term cash flow issues have been addressed, it is recommended that the Board review different asset valuation methods and consider using a method that provides more level and stable long-term costs.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits C and D.

The chart depicts the components of changes in the actuarial value of assets over the last ten years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.

CHART 6

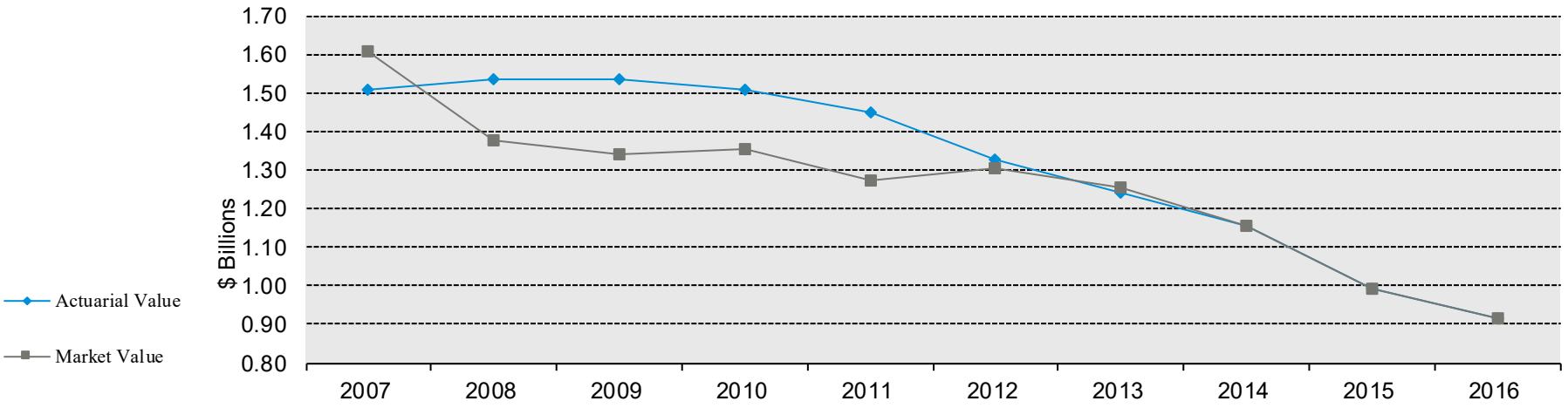
Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended September 30, 2007 – 2016



The actuarial value of assets is a representation of the System's financial status. The actuarial asset value is significant because the plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement. Effective October 1, 2015, the actuarial value of assets is the same as the market value of assets.

CHART 7

Actuarial Value of Assets versus Market Value of Assets as of September 30, 2007 – 2016



C. ACTUARIAL EXPERIENCE

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

As shown below, the total loss is $35.1 million. The net experience variation from individual sources other than investments was 1.1% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 8

Actuarial Experience for Year Ended September 30, 2016

1.	Net gain from investments*	$6,691,607
2.	Net gain from administrative expenses	1,271,426
3.	Net loss from other experience**	-43,075,239
4.	Net experience loss: (1) + (2) + (3)	-$35,112,206

** Details in Chart 9*

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the GERS's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.00%. The actual rate of return on an actuarial basis for the 2016 plan year was 7.73%.

Since the actual return for the year was greater than the assumed return, the System experienced an actuarial gain during the year ended September 30, 2016 with regard to its investments.

Please note that the assumed rate of return of 7.00% is dependent on action that ensures the long-term solvency of the System. Absent such action, the investment rate of return assumption will be re-evaluated in future valuations and will likely be significantly lower than the 7.00% assumption to reflect the lower expected investment returns under the current low interest rate environment and due to the System's liquidity requirements.

This chart shows the gain/(loss) due to investment experience.

CHART 9

Actuarial Value Investment Experience for Year Ended September 30, 2016

1.	Actual return	$70,993,934
2.	Average value of assets	918,604,680
3.	Actual rate of return: (1) ÷ (2)	7.73%
4.	Assumed rate of return	7.00%
5.	Expected return: (2) x (4)	$64,302,327
6.	Actuarial gain: (1) – (5)	$6,691,607

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on a market value basis for the last 15 years, including average returns on different periods.

CHART 10

Market Value Investment Return: 2002 - 2016

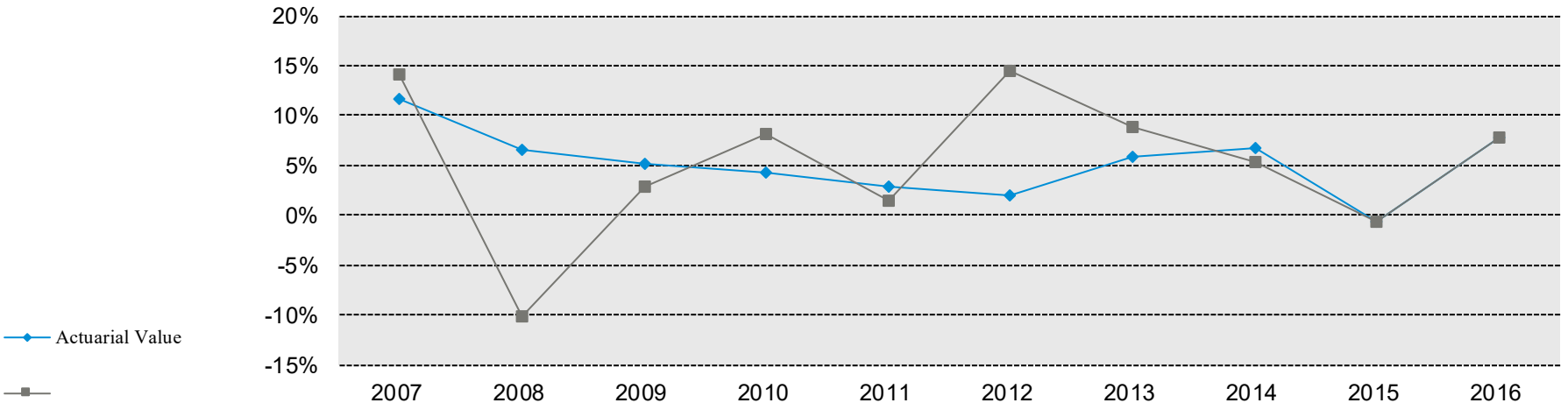
Year Ended September 30	Amount	Percent
2002	-$24,338,277	-2.05%
2003	194,663,983	17.55%
2004	132,269,237	10.61%
2005	155,416,276	11.82%
2006	104,567,156	7.45%
2007	203,822,428	14.15%
2008	-160,719,061	-10.23%
2009	38,166,899	2.85%
2010	104,159,043	8.05%
2011	19,891,578	1.53%
2012	174,056,576	14.48%
2013	111,523,919	9.12%
2014	60,326,921	5.14%
2015	-4,932,397	-0.46%
2016	70,993,934	7.73%
Total	$1,179,868,215	
	1997-2016 average annual return:	6.42%
	1997-2006 average annual return:	7.99%
	2007-2016 average annual return:	4.92%

Note: Each year's yield is weighted by the average asset value in that year.

The chart below illustrates the actuarial and market rates of return over the past ten years.

CHART 11

Market and Actuarial Rates of Return for Years Ended September 30, 2007 - 2016



Administrative Expenses
Administrative expenses for the year ended September 30, 2016 totaled $15,267,630 compare to the assumption of $16,500,000, payable monthly. This resulted in a gain of $1,271,426 for the year. We have maintained the same assumption for the current year.

Other Experience
There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

Another difference may be a significant change in the participant data or changes resulting from estimating the potential liability for current inactive vested members that may be eligible for future benefits.

The net loss from this other experience for the year ended September 30, 2016 amounted to $43,075,239, which is 1.2% of the expected actuarial accrued liability. The loss was the net result of gains and losses from several areas but was primarily due to higher salary increases than expected.

D. ACTUARIALLY DETERMINED CONTRIBUTION

The actuarially determined contribution to fund the System is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the funding rate of 74.9% payroll for the year beginning October 1, 2016 as compared to 77.4% of payroll as of October 1, 2015.

The actuarially determined contribution is based on a fixed 20-year amortization of the unfunded actuarial accrued liability as adopted by the Board.

The actuarially determined contribution requirements as of October 1, 2016 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

The chart compares this valuation's actuarially determined contribution with the prior valuation.

CHART 12

Actuarially Determined Contribution

	Year Beginning October 1			
	2016		2015	
	Amount	% of Payroll	Amount	% of Payroll
1. Normal cost	$40,363,747	10.25%	$41,075,869	11.16%
2. Administrative expenses (beginning of the year)	15,909,260	4.04%	15,909,260	4.32%
3. Total normal cost: (1) + (2)	56,273,007	14.29%	56,985,129	15.48%
4. Actuarial accrued liability	3,621,859,574		3,573,547,077	
5. Actuarial value of assets	917,162,043		991,041,254	
6. Unfunded actuarial accrued liability: (4) – (5)	2,704,697,531		2,582,505,823	
7. Payment on unfunded actuarial accrued liability	238,602,162	60.59%	227,822,692	61.90%
8. Actuarially determined contribution*: (3) + (7)	$294,875,169	74.88%	$284,807,821	77.39%
9. Projected employer contributions	80,723,102	20.50%	75,444,821	20.50%
10. Projected members contributions	44,301,146	11.25%	37,649,684	10.23%
11. Total expected contributions (9) + (10)	$125,024,248	31.75%	$113,094,505	30.73%
12. Shortfall (8) – (11)	$169,850,921	43.13%	$171,713,316	46.66%
13. Projected payroll	$393,771,228		$368,023,518	

** The actuarially determined contributions are based on payment at the beginning of the year.*

Reconciliation of Actuarially Determined Contribution

The chart below details the changes in the actuarially determined contribution from the prior valuation to the current year's valuation.

The chart reconciles the actuarially determined contribution from the prior valuation to the amount determined in this valuation.

CHART 13

Reconciliation of Actuarially Determined Contribution from October 1, 2015 to October 1, 2016

Actuarially Determined Contribution as of October 1, 2015	$284,807,821
Effect of plan amendments	-4,782,858
Effect of open amortization period	-6,016,045
Effect of contributions less than actuarially determined contribution	15,633,086
Effect of investment gain	-605,078
Effect of other gains and losses	3,780,042
Effect of net other changes	2,058,201
Total change	$10,067,348
Actuarially Determined Contribution as of October 1, 2016	$294,875,169

EXHIBIT A

Table of Plan Coverage

Category	Year Ended September 30 2016	2015	Change From Prior Year
Active members in valuation:			
Number	9,499	9,303	2.1%
Average age	46.3	46.5	-0.2
Average years of credited service	14.5	14.7	-0.2
Projected total payroll	$393,771,228	$368,023,518	7.0%
Projected average payroll	$41,454	$39,560	4.8%
Total active vested members	5,874	5,697	3.1%
Retired members:			
Number in pay status	8,349	8,295	0.7%
Average age	70.3	69.9	0.4
Average semi-monthly benefit	$1,207	$1,197	0.8%
Beneficiaries in pay status:			
Number in pay status	171	170	0.6%
Average age	81.1	77.7	3.4
Average semi-monthly benefit	$447	$439	1.8%

EXHIBIT B

Members in Active Service as of September 30, 2016
By Age, Years of Credited Service, and Average Covered Payroll

	Years of Credited Service									
Age	**Total**	**Less than 5**	**5-9**	**10-14**	**15 - 19**	**20 - 24**	**25 - 29**	**30 - 34**	**35 - 39**	**40 & over**
Under 25	190	184	6	- -	- -	- -	- -	- -	- -	- -
	$29,230	$29,231	$29,197	- -	- -	- -	- -	- -	- -	- -
25 - 29	656	455	186	15	- -	- -	- -	- -	- -	- -
	33,733	33,656	33,519	$38,747	- -	- -	- -	- -	- -	- -
30 - 34	913	318	358	228	9	- -	- -	- -	- -	- -
	36,368	35,170	36,761	37,405	$36,861	- -	- -	- -	- -	- -
35 - 39	1,056	242	304	353	137	20	- -	- -	- -	- -
	39,267	35,978	38,049	40,558	43,641	$44,856	- -	- -	- -	- -
40 - 44	1,314	187	246	339	331	194	17	- -	- -	- -
	41,562	38,716	37,016	40,123	44,954	46,703	$42,629	- -	- -	- -
45 - 49	1,578	156	219	249	319	395	233	7	- -	- -
	43,985	38,514	38,456	39,426	44,518	48,670	49,077	$42,770	- -	- -
50 - 54	1,581	133	189	188	215	340	353	143	20	- -
	44,628	39,861	36,426	37,474	43,796	46,969	50,119	50,583	$50,704	- -
55 - 59	1,187	90	158	154	152	169	223	142	94	5
	43,502	41,311	36,326	35,507	41,858	45,140	46,220	53,409	48,967	$45,272
60 - 64	670	50	80	101	97	93	91	72	51	35
	44,051	46,066	35,615	35,366	40,021	45,842	48,184	52,949	52,683	50,297
65 - 69	249	12	42	49	30	37	32	13	18	16
	45,286	51,787	39,301	36,699	38,039	41,554	48,532	65,082	66,147	58,586
70 & over	105	6	11	23	10	15	11	7	6	16
	42,040	48,680	38,134	33,320	41,221	45,731	38,128	33,769	51,306	54,658
Total	9,499	1,833	1,799	1,699	1,300	1,263	960	384	189	72
	$41,454	$36,043	$36,803	$38,549	$43,543	$46,926	$48,454	$52,114	$51,864	$52,759

EXHIBIT C

Summary Statement of Income and Expenses

	Year Ended September 30, 2016		Year Ended September 30, 2015	
Net assets at market value at the beginning of the year		$991,041,251		$1,142,891,375
Contribution income:				
Employer contributions	$86,346,838		$72,287,934	
Employee contributions	41,459,511		36,245,016	
Less administrative expenses	-15,267,630		-16,401,721	
Net contribution income		112,538,719		92,131,229
Other income		1,599,307		1,161,300
Investment income:				
Interest, dividends and other income	$16,685,829		$23,500,955	
Net asset appreciation	57,226,055		-14,295,128	
Less investment fees	-2,917,949		-4,238,225	
Net investment income		70,993,934		4,967,602
Total income available for benefits		$185,131,960		$98,260,131
Less benefit payments:				
Benefits paid to members	-$250,033,339		-$246,072,384	
Refunds of employee contributions	-8,977,829		-4,037,871	
Net benefit payments		-$259,011,168		-$250,110,255
Change in reserve for future benefits		-$73,879,208		-$151,850,124
Net assets at market value at the end of the year		$917,162,043		$991,041,251

EXHIBIT D

Summary Statement of Plan Assets

	Year Ended September 30, 2016		Year Ended September 30, 2015	
Cash equivalents		$43,231,140		$57,177,831
Accounts receivable:				
Due from other agencies	$13,566,176		$5,501,438	
Accrued interest receivable	1,693,998		3,208,566	
Other assets	2,849,689		3,126,869	
Total accounts receivable		18,109,863		11,836,873
Investments:				
Investment securities	$736,643,945		$705,910,034	
Member loans	127,699,551		159,217,924	
Real estate	72,268,699		72,885,625	
Total investments at market value		875,271,192		938,013,583
Total assets		$936,612,195		$1,007,028,287
Less accounts payable:				
Retirement benefits in process of payment	-$4,269,034		-$3,986,620	
Securities purchased	-761,993		-454,596	
Other liabilities	-14,419,125		-11,545,820	
Total accounts payable		-$19,450,152		-$15,987,036
Net assets at market value		$917,162,043		$991,041,251
Net assets at actuarial value		$917,162,043		$991,041,251

EXHIBIT E

Development of the Fund Through September 30, 2016

Year Ended September 30	Employer Contributions	Employee Contributions	Other Income	Net Actuarial Investment Return*	Administrative Expenses	Benefit Payments	Actuarial Value of Assets at End of Year
2007	$60,778,382	$35,769,001	$0	$162,081,911	$9,838,704	$160,639,245	$1,509,244,380
2008	75,871,146	36,957,585	0	95,522,330	11,927,702	172,785,884	1,532,881,855
2009	80,177,004	40,099,762	0	75,674,851	13,364,747	180,533,545	1,534,935,280
2010	77,004,630	40,107,669	0	62,251,642	13,609,415	194,685,196	1,506,004,610
2011	80,849,762	42,997,146	0	40,829,900	14,440,676	207,314,151	1,448,926,591
2012	66,677,155	37,727,063	2,239,690**	23,046,297	18,481,417	233,096,472	1,327,038,907
2013	64,431,322	34,090,376	-783,854**	72,583,326	19,581,770	240,564,834	1,237,213,473
2014	68,298,617	34,020,107	3,573,611	77,187,305	18,494,773	247,069,503	1,154,728,837
2015	72,287,934	36,245,016	1,161,300	-6,869,860**	16,401,721	250,110,255	991,041,251
2016	86,346,838	41,459,511	1,599,307	70,993,934	15,267,630	259,011,168	917,162,043

* *Net of investment fees*

** *Includes adjustment due to restatement from draft financial statements.*

EXHIBIT F

Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions: The estimates on which the cost of the System is calculated including:

(a) Investment return — the rate of investment yield that the System will earn over the long-term future;

(b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age;

(d) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost: The amount of contributions required to fund the benefit allocated to the current year of service.

Actuarial Accrued Liability For Actives: The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

Actuarial Accrued Liability For Pensioners: The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability: The extent to which the actuarial accrued liability of the System exceeds the assets of the System. There is a wide range of approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

Amortization of the Unfunded Actuarial Accrued Liability: Payments made over a period of years equal in value to the System's unfunded actuarial accrued liability.

Investment Return: The rate of earnings of the System from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

EXHIBIT I

Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:			
1.	Retired members as of the valuation date (including 171 beneficiaries in pay status)		8,520
2.	Members active during the year ended September 30, 2016		9,499
	Fully vested	5,874	
	Not vested	3,625	
The actuarial factors as of the valuation date are as follows:			
1.	Normal cost, including administrative expenses		$56,273,007
2.	Present value of future benefits		3,930,163,610
3.	Present value of future normal costs		308,304,036
4.	Actuarial accrued liability		3,621,859,574
	Retired members and beneficiaries	$2,258,689,454	
	Inactive members with vested rights	185,168,172	
	Active members	1,178,001,948	
5.	Actuarial value of assets ($917,162,043 at market value as reported by Bert Smith & Co., CPAs)		917,162,043
6.	Unfunded actuarial accrued liability		$2,704,697,531

EXHIBIT I (continued)

Summary of Actuarial Valuation Results as of October 1, 2016

The determination of the actuarially determined contribution is as follows:

1.	Total normal cost		$40,363,747
2.	Administrative expenses (beginning of year)		15,909,260
3.	Total normal cost: (1) + (2)		$56,273,007
4.	20-year amortization of the unfunded actuarial accrued liability		238,602,162
5.	Total actuarially determined contribution: (3) + (4), payable at beginning of the year		$294,875,169
6.	Total expected contributions		$125,024,248
	Employer	$80,723,102	
	Members	44,301,146	
7.	Shortfall (5) – (6)		$169,850,921
8.	Projected covered payroll		$393,771,228
9.	Total actuarially determined contribution as a percentage of projected payroll: (5) ÷ (8)		74.88%

EXHIBIT II

History of Employer Contributions

Plan Year Ended September 30	Actuarially Determined Employer Contributions*	Actual Employer Contributions	Percentage Contributed
2007	$137,797,268	$60,778,382	44.1%
2008**	138,488,871	75,871,146	54.8%
2009**	147,490,851	80,177,004	54.4%
2010**	157,817,709	77,004,630	48.8%
2011**	162,841,336	80,849,762	49.6%
2012	178,644,349	66,677,155	37.3%
2013**	172,439,842	64,431,322	37.4%
2014	189,715,251	68,298,617	36.0%
2015	200,089,791	72,387,934	36.1%
2016	247,158,137	86,346,838	34.9%
2017	250,574,023	Not yet available	Not yet available

* *Prior to 2014, this amount was the Annual Required Contribution (ARC) and based on GASB statement No. 25.*

** *Estimated based on prior year's actuarial valuation.*

EXHIBIT III

Schedule of Funding Progress

Actuarial Valuation Date October 1	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll* (b) - (a) / (c)
2007	$1,509,244,380	$2,750,383,258	$1,241,138,878	54.87%	$419,161,255	296.10%
2008	1,530,604,789	2,840,823,515	1,310,218,726	53.88%	433,549,406	302.21%
2009	1,534,899,736	2,932,161,397	1,397,261,661	52.35%	458,154,309	304.98%
2010	1,505,970,212	3,019,029,885	1,513,059,673	49.88%	440,026,457	343.86%
2011	1,448,926,591	3,168,037,497	1,719,110,906	45.74%	403,473,988	426.08%
2012	1,327,038,907	2,930,797,361	1,603,758,454	45.28%	381,012,309	420.92%
2013	1,237,213,473	3,080,464,945	1,843,251,472	40.16%	370,131,865	498.00%
2014	1,154,728,837	3,128,348,875	1,973,620,038	36.91%	355,603,633	555.01%
2015	991,041,251	3,573,547,073	2,582,505,822	27.73%	368,023,518	701.72%
2016	917,162,043	3,621,859,574	2,704,697,531	25.32%	393,771,228	686.87%

* *For these years, the AAL was estimated based on projecting the AAL from the last completed actuarial valuation.*

EXHIBIT IV

Funded Ratio

A critical piece of information regarding the System's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the System as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for the System.

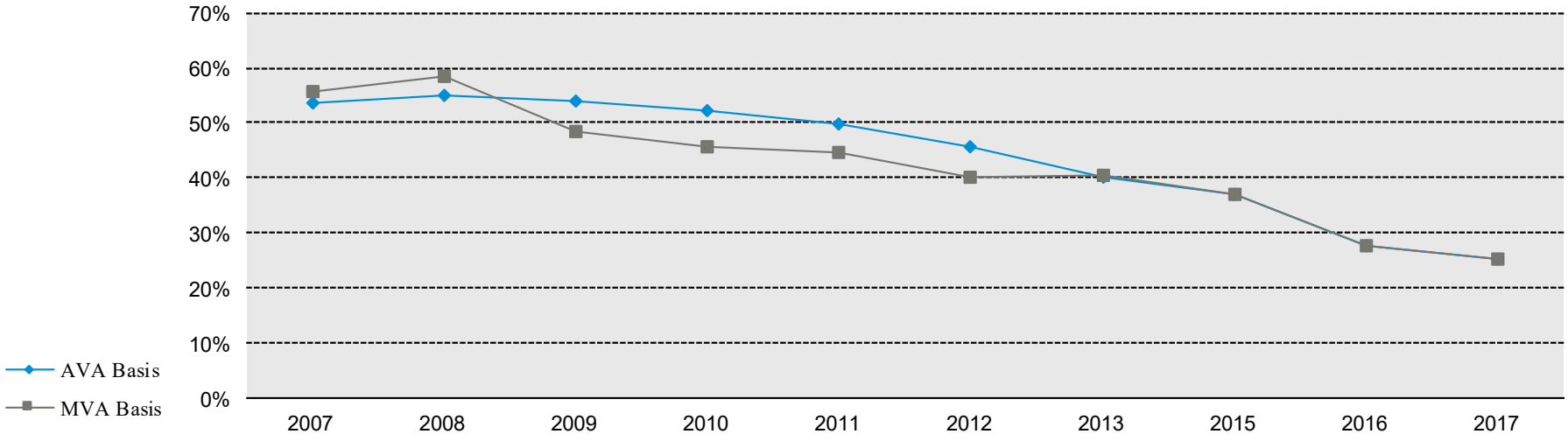


EXHIBIT V

Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions and Methods:	The assumptions and methods used in this valuation are based on the results of the Actuarial Experience Study as of September 30, 2015 and were approved by the Board of Trustees. Current data was reviewed in conjunction with this valuation. Based on professional judgment, no additional assumption or method changes are warranted at this time.
Mortality Rates:	Non-annuitant: 110% of the RP-2014 Blue Collar Employee Mortality Table with generational projection from 2015 using Scale MP-2015 Healthy annuitant: 110% of the RP-2014 Blue Collar Healthy Annuitant Mortality Table with generational projection from 2015 using Scale MP-2015 Disabled annuitant: 125% of the RP-2014 Disabled Annuitant Mortality Table with generational projection from 2015 using Scale MP-2015 The underlying tables reasonably reflect the mortality experience of the System as of the measurement date. These mortality tables were then adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Termination Rates before Retirement:

	Rate (%)				
	Mortality		Disability		Withdrawal
Age	Male	Female	Regular	Public Safety	Required and Public Safety
20	0.06	0.02	0.03	0.05	3.97
25	0.07	0.02	0.03	0.05	3.86
30	0.06	0.03	0.03	0.05	3.61
35	0.07	0.04	0.03	0.06	3.14
40	0.09	0.05	0.05	0.09	2.58
45	0.14	0.08	0.09	0.18	1.99
50	0.24	0.14	0.20	0.40	1.88
55	0.40	0.21	0.43	0.85	0.47
60	0.67	0.30	0.87	1.74	0.05

* *Mortality rates shown for base table.*
** *Withdrawal rates do not apply at or beyond early retirement age.*

No withdrawal and disability rates assumed for judges and legislature members.

Retirement Rates for Actives:

	Retirement Rates for Regular Members (%)			Retirement Rates for Regular Members (%)	
Age	<30 Years of service	>=30 years of service	Age	<30 years of service	>=30 years of service
50-59	3	15	66	7	25
60-61	10	20	67-68	7	15
62-63	10	35	69-70	15	50
64	10	25	71 & older	100	100
65	20	25			

Retirement Rates for Public Safety Members (%)

Age	Rate	Age	Rate
<50 with at least 20 years of service	10	55-59	10
50-51	5	60	40
52	15	61-64	20
53-54	5	65 & older	100

Judges: 100% at earlier of age 50 with at least 20 years of service or age 70 with at least six years of service.

Legislature: 100% at earlier of any age with at least 20 years of service or age 60 with at least six years of service.

Retirement Age for Inactive Vested Participants: 65

Unknown Data for Participants: Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

Adjustment to Inactive Vested Data: Service information for inactive vested participants was determined based on date of hire and termination, if available. If not available, inactive vested participants were assumed to have ten years of service as of the valuation date. Vested benefit amounts were estimated based on participant's salary and assumed service.

Percent Married: 80%

Age of Spouse: Females three years younger than males

Net Investment Return:	7.00%. The net investment return assumption is a long-term estimate derived from historical data, current and recent market expectations, and professional judgment. As part of the analysis, a building block approach was used that reflects inflation expectations and anticipated risk premiums for each of the portfolio's asset classes, as well as the Plan's target asset allocation.
Salary Increases:	3.25% per year
Administrative Expenses:	$16,500,000, payable monthly for the year beginning October 1, 2016
Actuarial Value of Assets:	At market value
Actuarial Cost Method:	Entry Age Normal Actuarial Cost Method. Entry Age is the age at the time the participant commenced employment. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated as a level percent of salary with Normal Cost determined as if the current benefit accrual rate of the participant's job category and tier of benefits had always been in effect.
Changes in Assumptions:	There have been no changes in actuarial assumptions since the last valuation.

EXHIBIT VI

Summary of Plan Provisions

This exhibit summarizes the major provisions of the Retirement System included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	October 1 through September 30
Plan Status:	Ongoing plan
Service Pension:	
Regular Employees	
Tier 1	
Eligibility	Age 60 with 10 years of service or any age with 30 years of service
Amount	2.5% of Final Average Salary* per year of service up to 100%
Tier 2	
Eligibility	Age 65 with 10 years of service
Amount	1.75% of Career Average Salary* per year of service up to 100%
Public Safety Employees	
Tier 1	
Eligibility	Age 55 with 10 years of service or any age with 20 years of service
Amount	3.0% of Final Average Salary* per year of service up to 90%
Tier 2	
Eligibility	Age 60 with 10 years of service or age 58 with 25 years of service
Amount	1.75% of Career Average Salary* per year of service under 20 years and 2.10% of Career Average Salary* per year of service for service greater than or equal to 20 years, up to 90%

* *Final Average Salary for Regular and Public Safety Employees is based on the average of the highest annual salary up to a maximum of $65,000 for any five years in the last 10 years. Career Average Salary is also limited to a maximum of $65,000 for each year of service.*

Legislature	
Tier 1	
Eligibility	Age 50 with 6 years of service or any age with 20 years of service
Amount	2.5% of highest compensation for years 1-6
	3% of highest compensation for years 7-12
	4% of highest compensation for years above 12, up to a maximum of 75%
Tier 2	
Eligibility	Age 50 with 6 years of service or any age with 20 years of service
Amount	3.5% of highest compensation for years 1-6
	4% of highest compensation for years 7-12
	4.5% of highest compensation for years 13-20
	5% of highest compensation for years above 20, up to a maximum of 100%
Judges	
Eligibility	Age 50 with 6 years of service
Amount	5% of highest compensation per year of service up to 100%
Early Retirement:	
Regular Employees	
Tier 1	
Eligibility	Age 50 with 10 years of service
Amount	Service Pension reduced 3.9% per year less than age 60
Tier 2	
Eligibility	Age 60 with 10 years of service
Amount	Service Pension reduced 3.9% per year less than age 65

Public Safety Employees

Tier 1

Eligibility	Age 50 with 10 years of service
Amount	Service Pension reduced 3.9% per year less than age 55

Tier 2

Eligibility	Age 55 with 10 years of service
Amount	Service Pension reduced 3.9% per year less than age 60

Disability:

Duty Connected Disability

Eligibility	Total and permanent disability as a result of performance of duty
Amount	Tier 1: 75% of salary (not to exceed $65,000) less workers compensation
	Tier 2: 52.5% of salary (not to exceed $65,000) less workers compensation

Non-Duty Connected Disability

Eligibility	9 years of service and total and permanent disability
Amount	Tier 1: 2.0% of Final Average Salary* per year of service up to 60%, 20% minimum
	Tier 2: 1.4% of Final Average Salary* per year of service up to 42%, 14% minimum

* *Final Average Salary for Regular and Public Safety Employees is based on the average of the highest annual salary up to a maximum of $65,000 for any five years in the last 10 years. Career Average Salary is also limited to a maximum of $65,000 for each year of service.*

Vesting:

Eligibility	10 years of service and leave contributions in System
Amount	Service pension accrued at termination

Severance Benefit:

Amount	Refund of contributions with 4% annual interest, if no other benefits payable.

Post-Retirement COLA:	
Disabled Pensioners	1% of the original retirement benefit each year up to age 60, 1.5% thereafter.
Pensioners and Survivor annuitants	None
Pre-Retirement Death Benefit:	
Duty Connected Death	
Eligibility	Death in service as a result of performance of duty
Amount	Tier 1: Annuity of 40% of salary in effect on date of death to widow plus 10% of salary for each child up to age 18 to a maximum family benefit of 60% of salary. If no widow, 10% of salary is payable on behalf of each child under age 18 to a maximum family benefit of 50%. If no widow or children, each dependent parent is entitled to 25% of salary. Tier 2: Annuity of 28% of salary in effect on date of death to widow plus 7% of salary for each child up to age 18 to a maximum family benefit of 42% of salary. If no widow, 7% of salary is payable on behalf of each child under age 18 to a maximum family benefit of 35%. If no widow or children, each dependent parent is entitled to 17.5% of salary.
Non-Duty Connected Death	
Eligibility	Death in service
Amount	Accumulated contributions of deceased member to designated beneficiary. Tier 1: If, at the time of death, the member was eligible for a service or early retirement annuity, the surviving spouse, if any, can elect a 100% survivor annuity based on the benefit which would have been payable to the member had he/she retired the date before he/she died.

Post-Retirement Death Benefits:

Lump - sum Benefit	Lump sum payment equal to the excess of the sum of contributions plus annual salary at retirement (maximum $10,000) over the total of benefits paid.
Husband and Wife	If married, pension benefits are paid in the form of a joint and survivor annuity unless this form is rejected by the participant and spouse. If not rejected, the benefit amount otherwise payable is reduced to reflect the joint and survivor coverage. If rejected, or if not married, benefits are payable for the life of the employee, or in any other available optional form elected by the employee in an actuarially equivalent amount.

Optional Forms of Payment:

50% joint-and-survivor annuity
100% joint-and-survivor annuity

Contribution Rates
Effective January 1, 2017:

Employee Contribution Rates (% of Payroll)	Tier 1	Tier 2
Regular Employees	11%	11.5%
Public Safety Employees	13%	13.625%
Legislature	12%	14%
Judges	14%	15%

Employer Contribution Rate: 20.5% of payroll, effective January 1, 2015

Changes in Plan Provisions and Contribution Rates:

The following plan provisions were changed and are reflected in this valuation.

- For Tier 2 Regular employees, the eligibility requirement for the Service Pension was previously age 60 with 10 years of service or any age with 30 years of service and the amount payable was previously 1.75% of Final Average Salary per year of service up to 100%.
- For Tier 2 Public Safety Employees, the eligibility requirement for the Service Pension was previously age 55 with 10 years of service or any age with 20 years of service and the amount payable was previously 2.1% of Final Average Salary per year of service up to 90%.
- For Tier 2 Regular employees, the eligibility requirement for the Early Pension was previously age 50 with 10 years of service, the amount payable was previously the Service Pension reduced 3.9% per year less than age 60.
- For Tier 2 Public Safety employees, the eligibility requirement for the Early Pension was previously age 50 with 10 years of service, the amount payable was previously the Service Pension reduced 3.9% per year less than age 55.

In addition, effective January 1, 2017, the employee contribution rate for Tier 1 and Tier 2 employees increased by 1% of pay.

EXHIBIT 1

Net Pension Liability

The components of the net pension liability as of September 30, 2016 were as follows:	
Total pension liability	$5,543,764,311
Plan fiduciary net position	917,162,043
Net pension liability	4,626,602,268
Plan fiduciary net position as a percentage of the total pension liability	16.54%

Actuarial assumptions. The total pension liability was determined by an actuarial valuation as of September 30, 2016, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	3.25%, including inflation
Investment rate of return	3.20%, net of pension plan investment expense, including inflation

The demographic assumptions are the same as the assumptions used in the October 1, 2016 funding valuation and are based on the results of an actuarial experience study for the period October 1, 2011 through September 30, 2015.

Mortality rates for healthy lives were based on 110% of the RP-2014 Blue Collar Healthy Annuitant and Employee Mortality Tables with generational projection from 2015 using Scale MP-2015. Mortality rates for disabled lives were based on 125% of the RP-2014 Disabled Retiree Mortality Table with generational projection from 2015 using Scale MP-2015.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of real rates of return for each major asset class included in the pension plan's target asset allocation as of September 30, 2016 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	29%	6.59%
International equity	12%	8.29%
Fixed income	27%	1.59%
Cash	2%	0.99%
Alternatives (including Local Assets)	30%	5.50%
Total	100%	

Discount rate: The discount rate used to measure the total pension liability was 3.20% as of September 30, 2016 and 3.84% as of September 30, 2015. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate, including the increases in the employee contribution rates effective January 1, 2017. Based on those assumptions, the pension plan's fiduciary net position was not projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments of 7.0% was applied to all periods of projected benefit payments that are covered by projected assets. For periods where projected future benefit payments are not covered by projected assets, the yield on a 20-year AA Municipal Bond Index was applied. As of September 30, 2016, that rate was 3.06%.

Note, the discount rate to measure the total pension liability as of September 30, 2015 was developed using the same method as described above but a 20-Year AA Municipal Bond Index of 3.71% as of September 30, 2015 was applied to those periods where projected benefit payments were not covered by projected assets.

Sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability, calculated using the discount rate of 3.20%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (2.20%) or 1-percentage-point higher (4.20%) than the current rate:

	1% Decrease (2.20%)	Current Discount (3.20%)	1% Increase (4.20%)
Net pension liability	$5,410,383,502	$4,626,602,268	$3,983,605,992

EXHIBIT 2

Schedules of Changes in Net Pension Liability – Last Ten Fiscal Years

September 30	2016	2015	2014	2013	2012
Total pension liability					
Service cost	$87,734,650	$69,262,969	$65,274,936		
Interest	192,803,756	184,451,782	191,113,749		
Change of benefit terms	-48,588,579	0	-40,421,809		
Differences between expected and actual experience	76,689,946	98,193,233	35,917,905		
Change of assumptions	431,433,618	731,994,972	241,527,329		
Benefit payments, including refunds of employee contributions	-259,011,168	-250,110,255	-247,069,503		
Net change in total pension liability	$481,062,223	$833,792,701	$246,342,607		
Total pension liability – beginning	5,062,702,088	4,228,909,387	3,982,566,780		
Total pension liability – ending (a)	$5,543,764,311	$5,062,702,088	$4,228,909,387		
Plan fiduciary net position				(Historical information prior to implementation of GASB 67/68 is not required)	
Contributions – employer	$86,346,838	$72,287,934	$68,298,617		
Contributions – employee	41,459,511	36,245,015	34,020,107		
Net investment income	70,993,934	4,967,602	60,326,921		
Benefit payments, including refunds of employee contributions	-259,011,168	-250,110,255	-247,069,503		
Administrative expense	-15,267,630	-16,401,722	-18,867,491		
Other	1,599,307	1,161,301	3,573,611		
Net change in plan fiduciary net position	-$73,879,208	-$151,850,124	-$99,717,738		
Plan fiduciary net position – beginning	991,041,251	1,142,891,375	1,242,609,113		
Plan fiduciary net position – ending (b)	$917,162,043	$991,041,251	$1,142,891,375		
Net pension liability – ending (a) – (b)	$4,626,602,268	$4,071,660,837	$3,086,018,012		
Plan fiduciary net position as a percentage of the total pension liability	16.54%	19.58%	27.03%		
Covered employee payroll*	$368,023,518	$355,603,653	$370,131,865		
Net pension liability as percentage of covered employee payroll	1,257.15%	1,145.00%	833.76%		

** Covered employee payroll as reported in the participant data as of each valuation date*

Benefits provided.

There were changes to the eligibility and benefit amounts for Tier 2 Regular and Public Safety Employees for Service and Early pensions reflected in this valuation. The plan of benefits, including those changes, are described in detail in Section 4 of the report.

Change of Assumptions:

In the year ended September 30, 2014, amounts reported as changes in assumptions resulted from a decrease in the discount rate used to measure the total pension liability from 4.87% as of September 30, 2013 to 4.42% as of September 30, 2014.

In the year ended September 30, 2015, amounts reported as changes in assumptions resulted from a decrease in the discount rate used to measure the total pension liability from 4.42% as of September 30, 2014 to 3.84% as of September 30, 2015 and several changes in assumptions based on the actuarial experience study as of September 30, 2015 adopted by the Board effective September 30, 2015. The changes include changes to the long-term expected rate of return, salary scale, inflation, the mortality assumption for healthy and disabled lives including the provision for future mortality improvement, retirement ages for active members and pre-retirement decrement rates for turnover and disability.

In the year ended September 30, 2016, amounts reported as changes in assumptions resulted from a decrease in the discount rate used to measure the total pension liability from 3.84% as of September 30, 2015 to 3.20% as of September 30, 2016.

EXHIBIT 3

Schedule of Contributions – Last Ten Fiscal Years

Year Ended September 30	Actuarially Determined Employer Contributions	Contributions in Relation to the Actuarially Determined Employer Contributions	Contribution Deficiency (Excess)	Covered-Employee Payroll	Contributions as a Percentage of Covered Employee Payroll
2007	$137,797,268	$60,778,382	$77,018,886	$394,595,844	15.40%
2008*	138,488,871	75,871,146	62,617,725	419,161,255	18.10%
2009*	147,490,851	80,177,004	67,313,847	433,549,406	18.49%
2010*	157,817,709	77,004,630	80,813,079	458,154,309	16.81%
2011*	162,841,336	80,849,762	81,991,574	440,026,457	18.37%
2012	178,644,349	66,677,155	111,967,194	403,473,988	16.53%
2013*	172,439,842	64,431,322	108,008,520	381,012,309	16.91%
2014	189,715,251	68,298,617	121,416,634	370,131,865	18.45%
2015	200,089,791	72,287,934	127,801,857	355,603,633	20.33%
2016	247,158,137	86,346,838	160,811,299	363,023,518	23.46%

** Estimated based on prior year's actuarial valuation*

EXHIBIT 4

Notes to Required Supplementary Information

Valuation date	Actuarially determined contributions are calculated as of October 1
Methods and assumptions used to determine contribution rates:	
Actuarial cost method	Entry Age Normal Cost Method determined as a level percent of salary
Amortization method	Level dollar, closed group
Amortization period	20 years open amortization
Asset valuation method	Market value

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