Judicial Retirement Benefits Trust
State of Rhode Island

Actuarial Valuation Report
As of June 30, 2017

GRS Retirement Consulting

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December 22, 2017

Retirement Board
40 Fountain Street, First Floor
Providence, RI 02903-1854

Dear Members of the Board:

Subject: Actuarial Valuation of the JRBT as of June 30, 2017

This is the June 30, 2017 actuarial valuation of the Judicial Retirement Benefits Trust (JRBT). This report describes the current actuarial condition of the JRBT, determines the recommended employer contribution rate, and analyzes changes in the contribution rate. Valuations are prepared annually, as of June 30, the last day of the JRBT plan year. Benefits for state judges hired before January 1, 1990 are funded by the State from general assets, on a pay-as-you-go basis, and are not included in this valuation.

Under Rhode Island General Laws, the employer contribution rate for the JRBT is certified annually by the State of Rhode Island Retirement Board. This rate is determined actuarially, based on the plan provisions in effect as of the valuation date and the actuarial assumptions and methods adopted by the Board or set by statute. The Board's current policy is that the contribution rate determined by a given actuarial valuation becomes effective two years after the valuation date. For example, the rate determined by the June 30, 2017 actuarial valuation will be applicable for the year beginning July 1, 2019 and ending June 30, 2020.

Financing objectives and funding policy

The actuarial cost method and the amortization periods are set by statute. The normal cost rate (as a percent of pay) and actuarial accrued liabilities are computed using the Entry Age Normal actuarial cost method. The employer contribution rate is the sum of two pieces: the employer normal cost rate and the amortization rate. The employer normal cost rate is the difference between the normal cost rate and the member contribution rate. The amortization rate, also determined as a level percent of pay, is the amount required to amortize the unfunded actuarial accrued liability over a closed period. The amortization rate is adjusted for the two-year deferral in contribution rates.

Progress toward realization of financing objectives

The funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) is a standard measure of a plan's funded status. The funded status alone is not appropriate for assessing the need for future contributions. The funded status is also not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded ratio, as can be seen in Table 4 of this report, decreased from 98.6% to 93.3% between the valuations primarily due to the change in assumptions effective with this valuation. When compared to the 2016 results under the new assumptions, the funded ratio actually increased from 91.9%. This is due to gains from salaries increasing more slowly than expected and no retirements during the year. If the market value of assets were used rather than the actuarial value, the funded ratio would be 92.1%.

Given the plan's contribution allocation procedure, if all actuarial assumptions are met (including the assumption of the plan earning 7.00% on the actuarial valuation of assets), it is expected that:

1. The amortization payment as a percentage of pay will increase through fiscal year 2024 as annual payments begin for each of four staggered bases established in connection with the experience study after which it will remain level through fiscal year 2036,
2. The unfunded actuarial accrued liability will be fully amortized after 20 years from fiscal year 2020, and
3. In the absence of benefit improvements, the funded ratio should increase over time, until it reaches 100%.

The employer contribution rate increased from 20.28% to 21.30% for fiscal year 2020.

An analysis of the changes in the employer contribution rate appears on Table 11a of this report. An analysis of the changes in the unfunded actuarial accrued liability appears on Table 11c.

Additional information regarding these assumptions changes is provided further below and in the body of this report.

Benefit provisions

The benefit provisions reflected in this valuation are those which were in effect on June 30, 2017, and there have been no changes in benefits since the preceding valuation. All benefit provisions are summarized in Appendix B.

Assumptions and methods

The assumptions have been updated from the last actuarial valuation based on the 2017 Actuarial Experience Investigation Study approved by the Board on May 15, 2017. Below is a summary of the changes made to the assumptions:

1. Decrease the general inflation assumption from 2.75% to 2.50%.
2. Decrease the nominal investment return assumption from 7.50% to 7.00%.
3. Reduce the payroll growth rate assumption from 3.50% to 3.00%.
4. Decrease the salary increase assumption from 3.50% to 3.00% consistent with the decrease in payroll growth.
5. Decrease the assumption for the contingent post-retirement benefit adjustments to be 2.10% per year.
6. Update the post-retirement mortality tables to variants of the RP-2014 table. For the improvement scale, update to the ultimate rates of the MP-2016 projection scale.

The impact on contribution rates would be uniformly reflected in the contribution rates over the five year period beginning with the Fiscal Year 2020 contribution rates. The change in the normal cost will be fully reflected in the Fiscal Year 2020 contribution rates. The impact from the increase in UAAL will be spread over the five years in such a way to create approximately the same increase in contribution rate each of the five years. Each new layer will be over a maximum of 20 years and each successive layer will have one less year of amortization.

The results of the actuarial valuation are dependent upon the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities and the calculated contribution rates.

All assumptions and methods are described in Appendix A. The actuarial assumptions and methods used in this report comply with the parameters for disclosure that appear in Governmental Accounting Standards Board (GASB) Statement Number 67.

Data

The System's staff supplied data for active members and retirees as of June 30, 2017. We did not audit this data, but we did apply a number of tests to the data, and we concluded that it was reasonable and consistent with the prior year's data. The System's staff also supplied asset data as of June 30, 2017.

Certification

All of our work conforms with generally accepted actuarial principles and practices and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of Rhode Island state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries. All are Members of the American Academy of Actuaries. They all meet the Qualification Standards of the American Academy of Actuaries, and they are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

Joseph P. Newton, FSA, MAAA, EA
Pension Market Leader and Actuary

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Consultant

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ACTUARIAL STANDARDS OF PRACTICE DISCLOSURE STATEMENTS

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

This report should not be relied on for any purpose other than the purpose described above. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

The valuation was based upon information furnished by the System's staff, concerning Retirement System benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by the System's staff.

The developed findings included in this report consider data or other information through June 30, 2017.

This is one of multiple documents comprising the actuarial report. The other document comprising the actuarial report is a PowerPoint presentation presented to the Board of Trustees following the publication of this report.

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Executive Summary

Item	Valuation Date: June 30, 2017	New Assumptions* June 30, 2016	Valuation Report June 30, 2016
Membership			
• Number of:			
- Active members	55	52	52
- Retirees and beneficiaries	20	20	20
- Inactive members	0	0	0
- Total	75	72	72
• Payroll supplied by ERSRI, annualized	$ 9,569,304	$ 9,034,080	$ 9,034,080
Contribution rates			
• Member	12.00%	12.00%	12.00%
• State	21.30%	22.64%	20.28%
Assets			
• Market value	$ 67,895,115	$ 60,418,485	$ 60,418,485
• Actuarial value	68,784,251	64,401,616	64,401,616
• Return on market value	11.6%	0.0%	0.0%
• Return on actuarial value	6.1%	5.7%	5.7%
• Employer contribution	$ 2,057,158	$ 2,410,038	$ 2,410,038
• Ratio of actuarial value to market value	101.3%	106.6%	106.6%
Actuarial Information			
• Employer normal cost %	21.30%	21.84%	19.48%
• Unfunded actuarial accrued liability (UAAL)	$ 4,944,096	$ 5,658,816	$ 885,911
• Amortization rate	0.00%	0.80%	0.80%
• Funding period	20 years	20 years	20 years
• Funded ratio	93.3%	91.9%	98.6%
Projected employer contribution			
• Fiscal year ending June 30,	2020	2019	2019
• Projected payroll	$ 10,708,103	$ 9,628,716	$ 9,769,622
• Projected employer contribution	2,280,826	2,179,941	1,981,279

* The fiscal year 2019 is not being restated.

Discussion (Contribution Rates)

The employer contribution rate for the JRBT is determined actuarially. The rate determined in each valuation becomes effective two years after the valuation date, in this case as of July 1, 2019. The rate consists of two pieces: the employer's normal cost rate and the amortization rate. The normal cost rate is the employer's Entry Age Normal cost expressed as a percent of pay. The unfunded actuarial accrued liability (UAAL) is amortized as a level percent of payroll over a closed period. The period is 25 years as measured from June 30, 2010, or 19 years as of the current valuation date for the existing UAAL. Beginning with the June 30, 2014 actuarial valuation, new experience gains and losses are amortized over individual closed periods of 20 years using the process of "laddering". However, the impact of the experience study was divided into separate "staggers" with the first payment beginning in FY2020 over a 20 year period. Other staggers will begin payment in FY2021 through FY2024 with amortization periods decreasing by one year for each year past FY2020 in which payment begins (e.g. the FY2024 stagger will have a 16 year amortization period). The amortization rate is adjusted for the fact that the contribution rate set by this valuation is deferred for two years Should the JRBT become overfunded, the UAAL will be amortized using a single base over a period of 20 years.

The increase in the employer contribution rate, from 20.28% to 21.30% of payroll, was primary due to the new assumptions effective with this valuation.

An analysis of the changes in the employer contribution rate appears in Table 11a of this report and a history of the employer contribution rates appears in Table 11b. Table 11c shows a reconciliation of the UAAL.

Discussion (Financial Data and Experience)

Assets for the JRBT are held in trust and are commingled with those of several other plans and programs—including the Employees' Retirement System of Rhode Island—for investment purposes. The State Investment Commission is responsible for setting the asset allocation policy and for investing the funds.

Table 6 shows the net plan assets for the JRBT. Table 7 shows a reconciliation of the assets between the previous valuation and this valuation. Table 8 shows the development of the actuarial value of assets. Table 9 shows the distribution of investments by category — 60% of assets are held in equities, including real estate and private equity — and Table 10 shows a historical summary of the return rates. As can be seen, the market value rate of return was 11.6% for the year ended June 30, 2017, and the return on an actuarial asset value basis was 6.1%.

The average annual return based on the market value of assets over the last ten years (July 1, 2007 – June 30, 2017) was 4.2%. This is less than the current 7.00% annual investment return assumption. The average annual return based on the actuarial value of assets over the same period was 5.5%.

All returns above are net of both investment and administrative expenses and may differ from other information provided by the General Treasurer's office or the investment managers and advisors.

The System's staff provided all of the financial information used in this report.

Discussion (Member Data)

The System's staff supplied member data as of June 30, 2017. While we did not audit this data, we did perform various tests to ensure that it was internally consistent, consistent with the prior year's data, and was reasonable overall. Information provided for active members includes: name, identification number, sex, a code indicating whether the member was active or inactive, date of birth, service, salary, date of last contribution, and accumulated member contributions without interest. For retired members, data includes: name, an identification number, sex, date of birth, date of retirement, amount of benefit (original, COLA, gross), a code indicating the option elected and the type of retiree (service retiree, disabled retiree, beneficiary), and if applicable, the joint pensioner's date of birth and sex.

Table 12 and Table 13 show information and statistics about the active and retired members. Table 14 shows the distribution of active members by age and service.

The total payroll shown on the statistical tables is the amount that was supplied by the System's staff. For the cost calculations, the earnings were adjusted in accordance with the actuarial assumptions to reflect one year's salary increase.

Discussion (Benefit Provisions)

Appendix B includes a summary of the benefit provisions for the JRBT. There were no changes in the benefit provisions since the preceding valuation. Also, there are no ancillary benefits—e.g., cost of living benefits—that are currently provided by a source independent of the JRBT but that might be deemed a liability of the JRBT if continued beyond the availability of funding by the current funding source.

The COLA to be provided to retired members is contingent on the investment performance, the annual change in the CPI-U, and funded status of the System. The amount of the COLA is determined based on 50% of the plan's five-year average investment rate of return minus 5.0% and will range from zero to 4.0%, and 50% of the lesser of 3% or last year's CPI-U increase for a total maximum increase of 3.00%. This calculation produces a 1.51% COLA for Calendar Year 2018. The COLA will be limited and this limit will be indexed annually to increase in the same manner as COLAs, with the known values of $25,855 for 2016, $26,098 for 2017, $26,290 for 2018, and $26,687 for 2019.

Furthermore, the COLA will be suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%; however, an interim COLA will be granted in four-year intervals while the COLA is suspended. The first interim COLA may begin January 1, 2017. Also, for current retirees and beneficiaries retired on or before July 1, 2015 the $25,000 cap will be increased to $30,000 (indexed) for any COLA payable based on the every fourth year provision.

Discussion (Actuarial Methods and Assumptions)

Appendix A of this report includes a summary of the actuarial assumptions and methods used in this valuation. Costs are determined using the Entry Age Normal actuarial cost method. This method was initially adopted effective June 30, 1999 and was modified, effective June 30, 2011, to be consistent with the Act and the standards outlined in the GASB Statement No. 67 exposure draft, which has now been finalized.

The method used to determine the actuarial value of assets is the five-year smoothed market method. This technique is further described in Section III of Appendix A. The development of the actuarial value of assets utilizing this method is shown on Table 8.

The assumptions have been updated from the last actuarial valuation based on the 2017 Actuarial Experience Investigation Study approved by the Board on May 15, 2017. Below is a summary of the changes made to the assumptions:

1. Decrease the general inflation assumption from 2.75% to 2.50%.
2. Decrease the nominal investment return assumption from 7.50% to 7.00%.
3. Reduce the payroll growth rate assumption from 3.50% to 3.00%.
4. Decrease the salary increase assumption from 3.50% to 3.00% consistent with the decrease in payroll growth.
5. Decrease the assumption for the contingent post-retirement benefit adjustments to be 2.10% per year.
6. Update the post-retirement mortality tables to variants of the RP-2014 table. For the improvement scale, update to the ultimate rates of the MP-2016 projection scale.

The impact on contribution rates would be uniformly reflected in the contribution rates over the five year period beginning with the Fiscal Year 2020 contribution rates. The change in the normal cost will be fully reflected in the Fiscal Year 2020 contribution rates. The impact from the increase in UAAL will be spread over the four years in such a way to create approximately the same increase in contribution rate each of the five years beginning in FY2020. Each new layer will be over a maximum of 20 years and each successive layer will have one less year of amortization.

We believe the assumptions are internally consistent and are reasonable, based on the actual experience of the JRBT.

Table 1

Development of Contribution Rate (Judges)

	June 30, 2017	June 30, 2016	
		New Assumptions*	Valuation Result
	(1)	(2)	(3)
1. Compensation			
(a) Supplied by ERSRI, annualized	$ 9,569,304	$ 9,034,080	$ 9,034,080
(b) Adjusted for one-year's pay increase	10,093,414	9,075,988	9,120,047
2. Actuarial accrued liability	73,728,347	70,060,432	65,287,527
3. Actuarial value of assets	68,784,251	64,401,616	64,401,616
4. Unfunded actuarial accrued liability (UAAL) (2 - 3)	4,944,096	5,658,816	885,911
5. Remaining amortization period at valuation date	20	20	20
6. Contribution effective for fiscal year ending:	June 30, 2020	June 30, 2019	June 30, 2019
7. Base pay projected for two-year delay	10,708,103	9,628,716	9,769,622
8. Amortization of UAAL	-	76,882	77,756
9. Normal cost			
(a) Total normal cost rate	33.30%	33.84%	31.48%
(b) Employee contribution rate	12.00%	12.00%	12.00%
(c) Employer normal cost rate (a - b)	21.30%	21.84%	19.48%
10. Employer contribution rate as percent of payroll			
(a) Employer normal cost rate	21.30%	21.84%	19.48%
(b) Amortization payments (8 / 7)	0.00%	0.80%	0.80%
(c) Total (a + b)	21.30%	22.64%	20.28%
11. Estimated employer contribution amount (7 * 10(c))	$ 2,280,826	$ 2,179,941	$ 1,981,279

* The fiscal year 2019 is not being restated.

Table 2

Summary of Unfunded Liability

Purpose	Remaining Balance as of June 30, 2017	Fiscal Year 2018 Amortization Payment *	Fiscal Year 2019 Amortization Payment *	Fiscal Year 2020 Amortization Payment *	Years Remaing Beginning with Fiscal Year 2020
Original 2011 RIRSA Base	6,258,673	487,636	502,265	517,333	16
2014 Experience Base	(3,676,654)	(275,991)	(284,271)	(292,799)	17
2014 Mediation Settlement	290,869	21,834	22,489	23,164	17
2015 Experience Base	(1,361,721)	(98,744)	(101,706)	(104,757)	18
2016 Experience Base	(797,720)	-	(61,895)	(63,752)	19
2016 Assumption Change - FY20 Stagger **	223,137	-	-	18,525	20
2016 Assumption Change - FY21 Stagger **	1,296,120	-	-	-	20
2016 Assumption Change - FY22 Stagger **	1,296,120	-	-	-	20
2016 Assumption Change - FY23 Stagger **	1,296,120	-	-	-	20
2016 Assumption Change - FY24 Stagger **	1,296,120	-	-	-	20
New Experience Base This Fiscal Year	(1,176,968)	-	-	(97,714)	20
Unfunded Actuarial Accrued Liability	$ 4,944,096	$ 134,735	$ 76,882	$ -	

*Assuming payment made at the middle of the year.

**Assumption change staggers will begin in the fiscal year indicated.

Table 3

Actuarial Present Value of Future Benefits

		June 30, 2017 (1)	June 30, 2016 (2)
1.	Active members		
a.	Service retirement benefits	$ 63,026,892	$ 54,808,726
b.	Deferred termination benefits	-	-
c.	Refunds	-	-
d.	Pre-retirement death benefits	1,075,342	1,179,989
e.	Non-occupational disability retirement benefits	-	-
f.	Occupational disability retirement benefits	-	-
g.	Total	$ 64,102,234	$ 55,988,715
2.	Retired members		
a.	Service retirements	$ 23,364,620	$ 22,149,053
b.	Disability retirements	-	-
c.	Beneficiaries	2,324,183	2,256,664
d.	Total	$ 25,688,803	$ 24,405,717
3.	Inactive members	$ -	$ -
4.	Total actuarial present value of future benefits	$ 89,791,037	$ 80,394,432
5.	Determination of actuarial accrued liability		
a.	Total actuarial present value of future benefits	$ 89,791,037	$ 80,394,432
b.	Less present value of future normal costs	(16,062,690)	(15,106,905)
c.	Actuarial accrued liability (a + b)	$ 73,728,347	$ 65,287,527

Table 4

Schedule of Funding Progress

Valuation Date (1)		Actuarial Value of Assets (AVA) (2)	Actuarial Accrued Liability (3)	Unfunded Actuarial Accrued Liability (UAAL) (3)-(2) (4)	Funded Ratio (2)/(3) (5)	Annual Covered Payroll (6)	UAAL as % of Payroll (4)/(6) (7)
June 30, 2002		$ 11,129,208	$ 16,243,709	$ 5,114,501	68.5%	$ 4,738,059	107.9%
June 30, 2003		13,270,977	18,435,395	5,164,418	72.0%	5,303,153	97.4%
June 30, 2004		16,019,053	21,845,744	5,826,691	73.3%	5,637,865	103.3%
June 30, 2005		19,347,372	22,250,728	2,903,356	87.0%	5,684,585	51.1%
June 30, 2006		23,873,009	27,504,102	3,631,093	86.8%	6,313,069	57.5%
June 30, 2007	[1]	29,630,637	35,355,326	5,724,689	83.8%	6,451,666	88.7%
June 30, 2008	[2]	34,670,394	38,115,602	3,445,208	91.0%	6,601,889	52.2%
June 30, 2009		36,839,221	41,738,040	4,898,819	88.3%	6,843,454	71.6%
June 30, 2010		38,074,287	48,941,360	10,867,073	77.8%	7,461,120	145.6%
June 30, 2010	[3]	38,074,287	46,641,701	8,567,414	81.6%	7,461,120	114.8%
June 30, 2011		40,105,919	46,594,407	6,488,488	86.1%	8,474,716	76.6%
June 30, 2012		43,428,646	52,085,154	8,656,508	83.4%	8,822,823	98.1%
June 30, 2013	[4]	47,640,773	54,429,531	6,788,758	87.5%	8,975,536	75.6%
June 30, 2014	[5]	53,830,516	57,504,663	3,674,147	93.6%	9,309,572	39.5%
June 30, 2015		60,004,470	61,963,672	1,959,202	96.8%	9,285,354	21.1%
June 30, 2016		64,401,616	65,287,527	885,911	98.6%	9,034,080	9.8%
June 30, 2017		68,784,251	73,728,347	4,944,096	93.3%	9,569,304	51.7%

[1] Reflects the benefit changes enacted by Article 35.

[2] Restated to reflect the benefit changes enacted by Article 16.

[3] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

[4] Restated to reflect recommended salary scale assumption.

[5] Restated to reflect impact of Article 21.

Table 5

Notes to Required Supplementary Information

Valuation date	June 30, 2017
Actuarial cost method	Entry Age Normal
Amortization method	Level percentage, closed
Remaining amortization period	20 years
Asset valuation method	5-Yr Smoothed Market
Actuarial assumptions:	
Investment rate of return:	7.00% *
Projected salary increase:	3.00% *
Cost of living adjustment	2.10% **

* Includes inflation at 2.50%.

** COLAs are currently suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%. It is assumed that the COLAs will be suspended for 10 years due to the current funding level of the plans; however, an interim COLA may be granted in four-year intervals while the

Table 6

Plan Net Assets
(Assets at Market or Fair Value)

Item		June 30, 2017	June 30, 2016
(1)		(2)	(3)
1.	Cash and cash equivalents	$ 547,643	$ 61,448
2.	Receivables:		
	a. Employer and member contributions	$ 0	$ 129,645
	b. Transfers receivable	0	0
	c. Miscellaneous	33,646	37,951
	d. Total receivables	$ 33,646	$ 167,596
3.	Investments		
	a. Pooled trust	$ 67,339,406	$ 60,221,244
	b. Plan specific investments	0	0
	c. Total	$ 67,339,406	$ 60,221,244
4.	Invested securities lending collateral	$ 0	$ 0
5.	Property and equipment	$ 0	$ 0
6.	Total assets	$ 67,920,695	$ 60,450,288
7.	Liabilities		
	a. Other post-employment benefit liability, net	$ 0	$ 0
	b. Securities lending liability	0	0
	c. Accounts and vouchers payable	25,580	31,803
	d. Total liabilities	$ 25,580	$ 31,803
8.	Total market value of assets available for benefits Total (Item 6 - Item 7)	$ 67,895,115	$ 60,418,485

Table 7

Reconciliation of Plan Net Assets

Item		June 30, 2017	June 30, 2016
(1)		(2)	(3)
1.	Market value of assets as of beginning of year		
	a. Market value of assets as of beginning of year	$ 60,418,485	$ 59,460,876
	b. Adjustment for market value of assets	0	48,997
	c. Adjusted market value of assets as of beginning of year	$ 60,418,485	$ 59,509,873
2.	Contributions		
	a. Members	$ 1,117,518	$ 1,052,902
	b. State	2,057,158	2,410,038
	c. Service purchases	0	0
	d. Total	$ 3,174,676	$ 3,462,940
3.	Investment earnings, net of investment and administrative expenses	$ 7,042,119	$ (23,761)
4.	Expenditures for the year		
	a. Benefit payments	$ (2,665,332)	$ (2,456,139)
	b. Cost-of-living adjustments	(74,833)	(74,428)
	c. Post-retirement death benefits	0	0
	d. Pre-retirement death benefits	0	0
	e. Social security supplements	0	0
	f. Supplemental pensions	0	0
	g. Refunds	0	0
	h. Total expenditures	$ (2,740,165)	$ (2,530,567)
5.	Transfers and other adjustments	$ 0	$ 0
6.	Market value of assets at end of year	$ 67,895,115	$ 60,418,485

Table 8

Development of Actuarial Value of Assets

	Year Ending June 30, 2017
1. Market value of assets at beginning of year	$ 60,418,485
2. Net new investments	
a. Contributions	$ 3,174,676
b. Benefits paid	(2,740,165)
c. Refunds	0
d. Subtotal	434,511
3. Market value of assets at end of year	$ 67,895,115
4. Net earnings (3-1-2)	$ 7,042,119
5. Assumed investment return rate	7.00%
6. Expected return	$ 4,244,502
7. Excess return (4-6)	$ 2,797,617

8. Development of amounts to be recognized as of June 30, 2017:

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income	Offsetting of Gains/(Losses)	Net Deferrals Remaining	Years Remaining	Recognized for this valuation	Remaining after this valuation
	(1)	(2)	(3) = (1) + (2)	(4)	(5) = (3) / (4)	(6) = (3) - (5)
2013	$ 0	$ 0	$ 0	1	$ 0	$ 0
2014	0	0	0	2	0	0
2015	(407,696)	407,696	0	3	0	0
2016	(3,575,435)	2,389,921	(1,185,514)	4	(296,378)	(889,136)
2017	2,797,617	(2,797,617)	0	5	0	0
	$ (1,185,514)	$ 0	$ (1,185,514)		$ (296,378)	$ (889,136)

9. Actuarial value of assets as of June 30, 2017 (Item 3 - Item 8)	$ 68,784,251
10. Ratio of actuarial value to market value	101.3%

*Values of $0 result from the beginning balance being offset by future gains or losses in the opposite direction.

Table 9

Distribution of Assets at Market Value
(Percentage of Total Investments)

Item	June 30, 2017
(1)	(2)
US Equity	20.6%
International Developed Equity	15.9%
EM Equity	3.5%
Private Equity	11.3%
Non-Core RE	2.2%
OPP Private Credit	1.5%
HY Infrastructure	1.0%
REITS	1.0%
Liquid Credit	2.8%
Private Credit	3.2%
Treasury Duration	4.0%
Systematic Trend	4.0%
Core RE	3.6%
Private Infrastructure	2.4%
TIPs	1.0%
Nat' Resources	1.0%
IG Fixed Income	11.5%
Absolute Return	6.5%
Cash	3.0%
Total investments	100.0%

Table 10

History of Investment Return Rates

Year Ending June 30 of (1)	Market (2)	Actuarial (3)
1995	17.0%	10.2%
1996	13.7%	13.7%
1997	19.1%	19.1%
1998	16.1%	16.5%
1999	10.1%	14.7%
2000	9.1%	8.8%
2001	-11.0%	4.9%
2002	-8.4%	0.9%
2003	4.3%	1.4%
2004	18.0%	4.1%
2005	10.2%	5.9%
2006	11.6%	8.8%
2007	18.2%	12.2%
2008	-5.9%	9.1%
2009	-19.5%	1.9%
2010	13.4%	1.2%
2011	19.4%	3.2%
2012	1.6%	5.4%
2013	10.7%	6.6%
2014	15.0%	8.6%
2015	2.2%	7.6%
2016	0.0%	5.7%
2017	11.6%	6.1%
Average Returns:		
Last 5 Years	7.7%	6.9%
Last 10 Years	4.2%	5.5%
Since 1995	7.1%	7.6%

Table 11a

Analysis of Change in Employer Cost

	Basis	Employer Cost
1.	Employer contribution rates from prior valuation	20.28%
2.	Impact of changes, gains and losses	
	a. Non-salary liability experience (gain)/loss	-0.78%
	b. Salary (gain)/loss	-1.04%
	c. Total payroll growth (gain)/loss	0.03%
	d. Investment experience (gain)/loss	0.45%
	e. Changes in assumptions	2.36%
	f. Changes in plan provisions	0.00%
	g. Total	1.02%
3.	Employer contribution rates from current valuation	21.30%

Table 11b

History of Employer Contribution Rates

Valuation Date as of June 30, (1)	Fiscal Year Ending June 30, (2)	Employer Contribution Rate (3)
1998	2001	31.09%
1999	2002	31.58%
2000	2003	33.42%
2001	2004	33.90%
2002	2005	36.19%
2003	2006	35.51%
2004	2007	36.07%
2005	2008	32.07%
2006	2009	24.06%[1]
2007	2010	16.19%[2]
2008	2011	16.19%[2]
2009	2012	18.69%
2010	2013	19.69%[3]
2011	2014	27.28%
2012	2015	28.32%
2013	2016	26.80%
2014	2017	21.58%[4]
2015	2018	21.13%
2016	2019	20.28%
2017	2020	21.30%

[1] Reflects changes in benefit provisions enacted by Article 35.

[2] Restated to reflect changes in benefit provisions enacted by Article 16.

[3] Restated after reflecting the Rhode Island Retirement Security Act of 2011.

[4] Restated after reflecting the impact of Article 21.

Table 11c

Analysis of Change in UAAL

Basis (1)	June 30, 2017 (2)
1. UAAL as of June 30, 2016:	$ 886
2. Impact of changes, gains and losses	
a. Interest at 7.00% for one year	396
b. Expected amortization payments	24
c. Investment experience (gain)/loss	575
d. Salary (gain)/loss	(1,244)
e. Non-salary liability experience (gain)/loss	(466)
f. Changes in assumptions	4,773
g. Changes in plan provisions	0
i. Total	$ 4,058
3. UAAL as of June 30, 2017:	$ 4,944

Note: All dollar figures are shown in thousands.

Table 12

Membership Data (State Judges)

		June 30, 2017 (1)	June 30, 2016 (2)
1.	Active members		
	a. Number	55	52
	b. Number eligible to retire	15	14
	c. Total annualized payroll supplied by State	$ 9,569,304	$ 9,034,080
	d. Average salary	$ 173,987	$ 173,732
	e. Average age	62.0	61.5
	f. Average service	11.4	11.2
2.	Inactive members		
	a. Number	0	0
3.	Service retirees		
	a. Number	15	15
	b. Total annual benefits	$ 2,385,696	$ 2,384,770
	c. Average annual benefit	$ 159,046	158,985
	d. Average age	72.0	71.0
4.	Disabled retirees		
	a. Number	0	0
	b. Total annual benefits	$ 0	$ 0
	c. Average annual benefit	N/A	N/A
	d. Average age	N/A	N/A
5.	Beneficiaries and spouses		
	a. Number	5	5
	b. Total annual benefits	$ 349,782	$ 349,318
	c. Average annual benefit	$ 69,956	$ 69,864
	d. Average age	81.3	80.3

Table 13

Historical Summary of Active Member Data

Valuation as of June 30,	Active Members		Covered Payroll		Average Salary		Average	Average
	Number	Percent Increase	Amount	Percent Increase	Amount	Percent Increase	Age	Service
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1998	29	3.6%	3,039,957	8.0%	104,826	4.3%	54.0	4.9
1999	29	0.0%	3,169,183	4.3%	109,282	4.3%	55.0	5.9
2000	31	6.9%	3,533,354	11.5%	113,979	4.3%	55.9	6.5
2001	35	12.9%	4,092,423	15.8%	116,926	2.6%	55.4	6.4
2002	39	11.4%	4,738,059	15.8%	121,489	3.9%	55.6	7.5
2003	42	7.7%	5,303,153	11.9%	126,266	3.9%	55.8	7.6
2004	44	4.8%	5,637,865	6.3%	128,133	1.5%	56.9	8.2
2005	44	0.0%	5,684,585	0.8%	129,195	0.8%	58.3	8.4
2006	45	2.3%	6,313,069	11.1%	140,290	8.6%	58.3	9.0
2007	44	-2.2%	6,451,666	2.2%	146,629	4.5%	59.0	9.8
2008	43	-2.3%	6,601,889	2.3%	153,532	4.7%	59.4	10.4
2009	45	4.7%	6,843,454	3.7%	152,077	-0.9%	58.6	10.0
2010	49	8.9%	7,461,120	9.0%	152,268	0.1%	58.8	10.2
2011	54	10.2%	8,474,716	13.6%	156,939	3.1%	58.8	9.6
2012	53	-1.9%	8,822,823	4.1%	166,468	6.1%	59.7	10.5
2013	54	1.9%	8,975,536	1.7%	166,214	-0.2%	60.2	10.9
2014	56	3.7%	9,309,572	3.7%	166,242	0.0%	60.9	11.1
2015	54	-3.6%	9,285,354	-0.3%	171,951	3.4%	61.6	11.4
2016	52	-3.7%	9,034,080	-2.7%	173,732	1.0%	61.5	11.2
2017	55	5.8%	9,569,304	5.9%	173,987	0.1%	62.0	11.4

Table 14

Distribution of Active Members by Age and by Years of Service
As of June 30, 2017

Attained Age	Years of Credited Service												
	0 Count & Avg. Comp.	1 Count & Avg. Comp.	2 Count & Avg. Comp.	3 Count & Avg. Comp.	4 Count & Avg. Comp.	5-9 Count & Avg. Comp.	10-14 Count & Avg. Comp.	15-19 Count & Avg. Comp.	20-24 Count & Avg. Comp.	25-29 Count & Avg. Comp.	30-34 Count & Avg. Comp.	35 & Over Count & Avg. Comp.	Total Count & Avg. Comp.
Under 30	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
30-34	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
35-39	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
40-44	0	0	0	1	0	0	0	0	0	0	0	0	1
	$0	$0	$0	$163,306	$0	$0	$0	$0	$0	$0	$0	$0	$163,306
45-49	1	1	0	0	0	0	0	0	0	0	0	0	2
	$174,174	$158,340	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$166,257
50-54	1	0	0	0	0	6	1	0	0	0	0	0	8
	$160,018	$0	$0	$0	$0	$161,778	$160,018	$0	$0	$0	$0	$0	$161,338
55-59	1	1	0	0	0	5	0	1	0	0	0	0	8
	$152,398	$152,398	$0	$0	$0	$167,123	$0	$163,306	$0	$0	$0	$0	$162,965
60-64	0	0	0	0	2	4	4	6	1	1	0	0	18
	$0	$0	$0	$0	$176,153	$175,633	$178,225	$178,465	$175,258	$192,956	$0	$0	178,152
65-69	0	0	1	1	0	3	5	3	3	2	0	0	18
	$0	$0	$182,091	$166,257	$0	$168,896	$177,471	$180,771	$181,473	$221,597	$0	$0	$181,795
70 & Over	0	0	0	0	0	0	0	0	0	0	0	0	0
	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	3	2	1	2	2	18	10	10	4	3	0	0	55
	$162,197	$155,369	$182,091	$164,782	$176,153	$167,528	$176,027	$177,641	$179,919	$212,050	$0	$0	$173,987

APPENDIX A

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

APPENDIX A

Summary of Actuarial Methods and Assumptions

I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial accrued liability (UAAL).

1. First, the actuarial present value of future benefits is determined by discounting the projected benefits for each member back to the valuation date using the assumed investment return rate as the discount rate. For active members, the projected benefits are based on the member's age, service, sex and compensation, and based on the actuarial assumptions. The calculations take into account the probability of the member's death, disability, or termination of employment prior to becoming eligible for a retirement benefit, as well as the possibility of the member will remain in service and receive a service retirement benefit. Future salary increases are anticipated. The present value of the expected benefits payable to all active members is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits. Liabilities for future members are not included.

2. The employer contributions required to support the benefits are determined as a level percentage of salary, and consist of a normal contribution and an amortization contribution.

3. The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member.

4. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

5. The actuarial accrued liability is equal to the present value of all benefits less the present value of future normal costs. The unfunded actuarial accrued liability (UAAL) is then determined as (i) the actuarial accrued liability, minus (ii) the actuarial value of assets.

6. The amortization contribution rate is the level percentage of payroll required to reduce the UAAL to zero over the remaining amortization period. The employer contribution rate determined by this valuation will not be effective until two years after the valuation date. The determination of the contribution rate reflects this deferral. The amortization payment for the applicable fiscal year is first determined based on the individual amortization bases. The covered payroll is projected forward for two years, and we then determine the amortization rate by dividing the amortization payment by the projected payroll. Contributions are assumed to be made monthly throughout the year.

   (a) The UAAL was initially being amortized over the remainder of a closed 30-year period from June 30, 1999. In conjunction with The Rhode Island Retirement Security Act of 2011, the amortization period was reset to 25 years as of June 30, 2010 for the UAAL that existed at that time. New gains and losses each year will be amortized over individual 20 year periods. At any time that the System is in an overfunded status, the amortization schedule will be a rolling 20 year amortization of any surplus.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Offsetting unrecognized gains and losses are immediately recognized, with the shortest remaining bases recognized first and the net remaining bases continue to be recognized on their original timeframe. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). The returns are computed net of administrative and investment expenses.

APPENDIX A (Continued)

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.00% per year, compounded annually, composed of an assumed 2.50% inflation rate and a 4.50% net real rate of return. This rate represents the assumed return, net of all investment and administrative expenses.

2. Salary increase rate: Salaries are assumed to increase at the rate of 3.00% per year.

   Salary increases are assumed to occur once a year, on July 1. Therefore the pay used for the period between the valuation date and the first anniversary of the valuation date is equal to the reported pay for the prior year, increased by the salary increase assumption.

3. Payroll growth rate: In the amortization of the unfunded frozen liability, payroll is assumed to increase 3.00% per year. This assumption includes no allowance for future membership growth.

4. Post-retirement Benefit Increase: Post-retirement benefit increases are assumed to be 2.1%, per annum, while the plan has a funding level that exceeds 80%; however, an interim COLA will be granted in four-year intervals while the COLA is suspended. The first such COLA will be applicable in Calendar Year 2017. As of June 30, 2016, it is assumed that the COLAs will be suspended for 10 years due to the current funding level of the plans. The actual amount of the COLA is determined based on 50% of the plan's five-year average investment rate of return minus 5.0% which will range from zero to 4.0%, and 50% of the lesser of 3% or last year's CPI-U increase for a total maximum increase of 3.50%.

APPENDIX A (Continued)

B. Demographic Assumptions

1. Post-termination mortality rates (non-disabled lives)

   a. Males: RP-2014 Combined Healthy for Males with Blue Collar adjustments, projected with Scale Ultimate MP16.

   b. Females: RP-2014 Combined Healthy for Females, projected with Scale Ultimate MP16.

2. Post-termination mortality rates (disabled lives)

   a. Males: RP-2014 Disabled Retiree Table for males, projected with Scale Ultimate MP16.

   b. Females: RP-2014 Disabled Retiree Table for males, projected with Scale Ultimate MP16.

3. Pre-termination mortality rates – Use the RP-2014 employee table for males and females.

4. Disability rates – None

5. Termination rates – None

6. Retirement rates – 33% of members are assumed to retire when first eligible for a reduced retirement benefit (age 65 with 10 years of service, or any age with 20 years of service). All other members are assumed to retire when eligible for an unreduced retirement benefit (age 65 with 20 years of service, or age 70 with 15 years of service). Judges who have not reached eligibility for a retirement benefit by age 75 are assumed to terminate at age 75 and receive either a reduced retirement benefit, if eligible, or a refund.

C. Other Assumptions

1. Percent married: 85% of employees are assumed to be married.

2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.

3. Remarriage: It is assumed that no surviving spouse will remarry and there will be no children's benefit.

4. All married members appointed after January 1, 2009 will elect the optional spouse's coverage at retirement.

5. Investment and administrative expenses: The assumed investment return rate represents the anticipated net return after payment of all investment and administrative expenses.

V. Participant Data

Participant data was supplied in electronic files for active members and retirees. The data for active members included birth date, sex, service, salary and employee contribution account balance. For retired members and beneficiaries, the data included date of birth, sex, spouse's date of birth (where applicable), amount of monthly benefit, date of retirement, and a form of payment code.

APPENDIX B

SUMMARY OF BENEFIT PROVISIONS

APPENDIX B

Summary of Benefit Provisions

1. Effective Date and Authority: The Judicial Retirement Benefits Trust (JRBT) became effective on January 1, 1990 for judges hired on or after that date. Benefits are described in Rhode Island General Laws, Title 8, Chapters 3, 8, and 16, Title 28, Chapter 30, and Title 31, Chapter 43.

2. Plan Year: A twelve-month period ending June 30th.

3. Administration: The Judicial Retirement Benefits Trust is administered by the State of Rhode Island Retirement Board. However, the State Investment Commission is responsible for the investment of the trust assets, including the establishment of the asset allocation policy. Assets are commingled for investment purposes with those of the Employees' Retirement System of Rhode Island and various other plans and programs.

4. Type of Plan: The Judicial Retirement Benefits Trust is a qualified governmental defined benefit retirement plan. For Governmental Accounting Standards Board purposes, it is a single-employer plan.

5. Eligibility: All judges or justices of the Supreme Court, a superior court, a district court, a family court, an administrative adjudication court or a workers' compensation court participate in this plan if they were hired on or after January 1, 1990. (These are referred to collectively as state judges.) Benefits for state judges hired before January 1, 1990 are being paid by the state from the general assets of the state, on a pay-as-you-go basis. Eligible state judges become members at their date of employment.

6. Salary: Contributions are based on the judge's salary. Benefits are based on the judge's salary at the time of retirement.

7. Employee Contributions: State judges contribute 8.75% of their salary per year. Effective July 1, 2012, State judges (excluding justices of supreme, superior, family, and district courts) will contribute 12.00% of their salary per year. Active justices of supreme, superior, and family courts as of June 30, 2011 contribute the rate in effect as of June 30, 2012. The State "picks up" the members' contributions for its employees under the provisions of Internal Revenue Code (IRC) Section 414(h).

8. Employer Contributions: The State contributes an actuarially determined percentage of the member's annual salary. Contributions determined in a given actuarial valuation go into effect two years after the actuarial valuation.

APPENDIX B (Continued)

9. Final Average Compensation (FAC)

   a. For judges who became members on or before July 2, 1997, one-twelfth of the judge's annual salary at the time of retirement.

   b. For judges who became members after July 2, 1997 but before July 1, 2009, one-twelfth of the average of the judge's highest three consecutive annual salaries.

   c. For judges who became members on or after July 1, 2009, one-twelfth of the average of the judge's highest five consecutive annual salaries.

   d. Benefits for death while an active member are based on the member's salary at the time of death, regardless of when the judge became a member.

10. Full Retirement

   a. Eligibility: All judges are eligible for unreduced retirement at or after age 65 if the judge has served for 20 years, or at or after age 70 after 15 years of service.

   b. Monthly Benefit:
      (i) Judges who were appointed prior to January 1, 2009 receive 100% of FAC at retirement.
      (ii) Judges who were appointed on or after January 1, 2009 but prior to July 1, 2009 receive 90% of FAC at retirement, and take an additional 10% reduction to 80% of FAC at retirement if they wish to elect the spouse's death benefit.
      (iii) Judges who were appointed on or after July 1, 2009 receive 80% of FAC at retirement, or 70% of FAC at retirement if they wish to elect the spouse's death benefit.

   c. Payment Form: Benefits are paid as a monthly life annuity. Members appointed prior to January 1, 2009 automatically receive the spouse's death benefit described below. Members appointed on or after January 1, 2009 must elect to a reduced benefit as described above if they wish to receive the spouse's death benefit. There are no other optional forms of payment available.

   d. Death Benefit: After the death of a retired member, if the member was married, 50% of the retiree's benefit is paid to the surviving spouse for life (or until remarriage) if spouse's death benefit is elected. (No election or benefit reduction is required for members appointed prior to January 1, 2009.)

APPENDIX B (Continued)

11. Reduced Retirement

    a. Eligibility: A judge is eligible for a reduced retirement benefit at age 65 if the judge has served for 10 years, or at any age after 20 years of service.

    b. Reduced Retirement Benefit:
        (i) For judges who were appointed prior to January 1, 2009: 75% of FAC at retirement.
        (ii) For judges who were appointed on or after January 1, 2009 but prior to July 1, 2009: receive 70% of FAC at retirement, or take an additional 10% reduction to 60% of FAC at retirement if they wish to elect the spouse's death benefit.
        (iii) For judges who were appointed on or after July 1, 2009: receive 65% of FAC at retirement, or 55% of FAC at retirement if they wish to elect the spouse's death benefit.

    c. Payment Form: Same as for Full Retirement.

    d. Death Benefit: Same as for Full Retirement.

12. Refunds

    a. Eligibility: All judges leaving covered employment for a reason other than death or retirement.

    b. Benefit: A lump-sum payment equal to the sum of his/her employee contributions. No interest is credited on these contributions.

13. Death Benefit of Active Members

    After the death of an active member, if the member was married, a benefit will be paid to the spouse until his/her death or remarriage. The benefit is equal to 25% of the judge's salary at death if the member had less than seven years of service. If the judge had at least seven but less than 15 years of service, the benefit is equal to 1/3 of the judge's salary at death. If the judge had at least 15 years of service or if the judge was eligible for retirement, the spouse receives 50% of the judge's salary at death. Benefits are payable until the spouse's death or remarriage. Benefits may be paid to any minor children after the death of the spouse. If an active member dies without having a spouse or minor children, a refund is paid to the member's beneficiary.

14. Post-retirement Benefit Increase:

APPENDIX B (Continued)

a. For members who retired or will be eligible for retirement as of June 12, 2010: members receive an increase equal to 3.00% of the original benefit each year, beginning in January of the year in which the member reaches the third anniversary of retirement. The increase applies to both retirement and death benefits. This increase is not tied in any way to actual increases in the cost of living. (Judges of the administrative adjudication and workers compensation courts receive a compound 3.00% increase, rather than a simple 3.00% increase.)

b. For members who are or were formally justices of supreme, superior, family, and district courts and were not retired or were not eligible to retire as of June 12, 2010: The member will receive the first COLA upon the later of their third anniversary of retirement or when the member reaches age 65. The annual increase in the member's benefit will be equal to the lesser of their original benefit and the COLA limit in effect in the year the member retires, multiplied by the percentage increase in CPI up to a maximum of 3.0% per year. The COLA will be provided on a simple basis. The applicable annual COLA limit will be $35,000 in 2010, and increase annually by the percentage increase in the Consumer Price Index (CPI) up to a maximum of 3.0% per year. No COLA would be paid on any part of the annual benefit in excess of this limit. The annual increase in the COLA limit will be determined on a compound basis.

c. For members who are or were formally judges of the administrative adjudication court, traffic tribunal, and workers' compensation court and were not retired or were not eligible to retire as of June 12, 2010: The member will receive the first COLA upon the later of their third anniversary of retirement or when the member reaches age 65. The annual increase in the member's benefit will be equal to the lesser of the current benefit and the current COLA limit, multiplied by the percentage increase in CPI up to a maximum of 3.0% per year. The COLA will be provided on a compound basis. The applicable annual COLA limit will initially be $35,000, and increase annually by the percentage increase in the Consumer Price Index (CPI) up to a maximum of 3.0% per year. No COLA would be paid on any part of the annual benefit in excess of this limit. The annual increase in the COLA limit will be determined on a compound basis.

d. For members who retire after June 30, 2012: members will be eligible to receive cost of living increases at the later of the member's third anniversary of retirement and the month following their SSNRA.

e. Effective July 1, 2012, the following provisions will apply to all members:

   (i) The COLA will be suspended for all state employees, teachers, BHDDH nurses, correctional officers, judges and state police until the aggregate funding level of their plans exceeds 80%; however, an interim COLA will be granted in four-year

intervals while the COLA is suspended. The first interim COLA may begin January 1, 2017.

(ii) Effective July 1, 2015, the COLA is determined based on 50% of the plan's five-year average investment rate of return less 5.5% limited to a range of 0.0% to 4.0%, plus 50% of the lesser of 3.0% or last year's CPI-U increase for a total maximum increase of 3.50%. Previously, it was the plan's five-year average investment rate of return less 5.5% limited to a range of 0.0% to 4.0%

(iii) The COLA will be limited to the first $25,000 of the member's annual pension benefit. For retirees and beneficiaries who retired on or before July 1, 2015, years in which a COLA is payable based on the every fourth year provision described in (i) above will be limited to the first $30,000. These limits will be indexed annually to increase in the same manner as COLAs, with the known values of $25,000 for 2013, $25,000 for 2014, $25,168 for 2015, $25,855 for 2016, and $26,098 for 2017.

f. In addition to the scheduled increases described in section (e) above, there will be a one-time 2% COLA paid in FY2016 on the first $25,000 of pension benefit for all retirees and beneficiaries who retired on or before June 30, 2012. There will also be two one-time stipends of $500 payable in FY2016 and FY2017 to retirees and beneficiaries who retired on or before June 30, 2015.

GLOSSARY

Actuarial Accrued Liability (AAL): That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

Actuarial Assumptions: Assumptions as to future experience under the Fund. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

Actuarial Cost Method or ***Funding Method:*** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ARC.

Actuarial Gain or ***Actuarial Loss:*** A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Fund's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

Actuarially Equivalent: Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

GLOSSARY (Continued)

Actuarial Present Value (APV): The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. For purposes of this standard, each such amount or series of amounts is:

a) adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

b) multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and

c) discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Actuarial Present Value of Future Plan Benefits: The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

Actuarial Valuation: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB 25, such as the funded ratio and the ARC.

Actuarial Value of Assets or ***Valuation Assets:*** The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

Actuarially Determined: Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

Amortization Method: A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing

payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

Amortization Payment: That portion of the pension plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Annual Required Contribution (ARC): The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB 25. The ARC consists of the Employer Normal Cost and the Amortization Payment.

Closed Amortization Period: A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

Decrements: Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

Defined Benefit Plan: A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

Defined Contribution Plan: A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

Employer Normal Cost: The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

Experience Study: A periodic review and analysis of the actual experience of the Fund which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

Funded Ratio: The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA.

GLOSSARY (Continued)

Funding Period or ***Amortization Period:*** The term "Funding Period" is used it two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ARC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

GASB: Governmental Accounting Standards Board.

GASB 67 and ***GASB 68***: Governmental Accounting Standards Board Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Normal Cost: That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

Open Amortization Period: An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

Unfunded Actuarial Accrued Liability: The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

GLOSSARY (Continued)

Valuation Date or Actuarial Valuation Date: The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.