Segal Consulting

Public Employees' Retirement System of the State of Nevada

Actuarial Valuation and Review as of June 30, 2017

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November 6, 2017

Public Employees' Retirement Board
693 West Nye Lane
Carson City, Nevada 89703

Dear Retirement Board Members:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2017 for the Public Employees' Retirement System of Nevada (PERS). It summarizes the actuarial data used in the valuation, establishes the actuarially determined contribution requirements for the 2017-2018 plan year 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 Plan. The census and financial information on which our calculations were based was provided by the Retirement Office. 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 completed under the supervision of Mark Hamwee, FSA, MAAA, Enrolled Actuary. 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 Plan.

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:

Brad Ramirez, FSA, MAAA, EA *Vice President & Consulting Actuary*	*Thomas D. Levy, FSA, MAAA, EA* *Senior Vice President & Chief Actuary Emeritus*	*Mark Hamwee, FSA, MAAA, EA* *Vice President & Actuary*

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SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

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Purpose

This report has been prepared by Segal Consulting to present a valuation of the Public Employees' Retirement System of the State of Nevada as of June 30, 2017. 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 Public Employees' Retirement Act,
- The characteristics of covered active members, inactive vested members, retired members, disabled members, beneficiaries and survivors as of June 30, 2017,
- The assets of the Plan as of June 30, 2017, provided by the Retirement Office,
- Economic assumptions regarding future salary increases and investment earnings, and
- Other actuarial assumptions, regarding member terminations, retirement, death, etc.

Significant Issues in Valuation Year

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

- The results of this valuation reflect changes in the actuarial assumptions adopted by the Board for the June 30, 2017 valuation. All of the assumptions recommended by Segal in the June 30, 2016 Experience Study (issued October 16, 2017) were adopted and have been applied in this valuation. The adopted changes are outlined in Section 4, Exhibit II of this report. The actuarially determined contribution rates increased by 1.60% for Regular and 2.33% for Police/Fire due to the assumption changes.

Reference: Pg. v

- The ratios of the actuarial value of assets to actuarial accrued liabilities have increased from 73.2% to 73.9% for Regular members and decreased from 77.1% to 76.4% for Police/Fire members.

Reference: Pg. 14

- There were actuarial experience gains due to a lower than expected change in the Consumer Price Index (1.5% vs 3.5% expected), which resulted in lower than expected post-retirement benefit increases (PRBIs) for continuing retirees, beneficiaries and survivors over the next several years. These gains amounted to $242 million for Regular members and $63 million for Police/Fire members, as shown in Chart 18.

  There were also actuarial experience gains due to individual salary increases less than expected for continuing active members; these gains amounted to $183 million for Regular members and $10 million for Police/Fire members, as shown in Chart 18. The average actual increase for continuing active members during 2016/17 was 5.0% for Regular members and 5.7% for Police/Fire members.

Reference: Pg. 16

- Actuarially determined contributions may increase or decrease from year to year even if all assumptions are exactly met. For both Regular and Police/Fire members, the actuarially determined contribution rates for 2017 increased from the previous year. Both groups saw an increase due to the assumption changes and the smaller than expected payroll growth used to amortize the UAAL; however, this increase was partially offset by the actuarial investment gains during the year, and the gains from lower than expected post-retirement benefit increases and individual salary increases.

Reference: Pg. 15

- The Public Employees' Retirement Act requires an adjustment in the statutory contribution rates on July 1 of each odd-numbered year based on the actuarially determined rates indicated in the actuarial valuation report for the immediately preceding year. Since this valuation is for an odd-numbered year, no adjustment in the statutory contribution rate is required as a result of this valuation.

Summary of Contribution Rates

	Regular	Police/Fire
Employer-Pay*:		
Statutory Rate for Fiscal Years July 1, 2017 through June 30, 2019 (as determined from the June 30, 2016 valuation)	28.00%	40.50%
Actuarially Determined Contribution Rate per June 30, 2017 Actuarial Valuation	29.19%	41.97%
Employee/Employer:**		
Statutory Rate for Fiscal Years July 1, 2017 through June 30, 2019 (as determined from the June 30, 2016 valuation)	29.00%	41.50%
Actuarially Determined Contribution Rate per June 30, 2017 Actuarial Valuation	30.42%	43.33%

* *See cost-sharing mechanism in NRS 286.421*

** *See cost-sharing mechanism in NRS 286.410*

Reference: Pg. 12

- The rate of investment return on the market value of assets for 2016-2017 for the PERS Fund was 11.8%, and was 2.3% for the preceding year.

Reference: Pg. 11

- The returns on the actuarial value of assets for 2016-2017 for the PERS Fund were 9.12% for Regular and 9.08% for Police/Fire, which were greater than the investment return assumption of 8.00%. As a result, the PERS Fund experienced investment gains on an actuarial value basis of approximately $311 million for Regular and $86 million for Police/Fire.

Reference: Pg. 8

- As indicated in Section 2, Subsection B (see Chart 12) of this report, the total unrecognized investment losses as of June 30, 2017 were approximately $26 million for Regular, and $7 million for Police/Fire compared to losses of $692 million and $202 million in the previous valuation, respectively. These unrecognized losses will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years and will serve to offset any investment gains that may occur after June 30, 2017. If the System earns the assumed rate of investment return of 7.50% per year (net of investment expenses) on an actuarial value basis, then the deferred losses would be recognized over the next four years as shown in the footnote on Chart 12.

- The June 30, 2017 unrecognized investment losses of $33 million represent about 0.1% of the PERS Fund market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the $33 million market losses is expected to have a small impact on the System's future funded ratio and actuarial contribution requirement. This potential impact may be illustrated as follows:
  - If the deferred losses were recognized immediately in the actuarial value of assets, the funded ratio would remain at 73.9% for Regular members and decrease from 76.4% to 76.3% for Police/Fire members.
  - If the deferred losses were recognized immediately in the actuarial value of assets, the actuarially determined contribution rates would increase as follows:

	2017/2018 Actuarially Determined Contribution Rate	2017/2018 Rate Reflecting Deferred Losses
Regular:		
Employer-Pay	29.19%	29.22%
Employee/Employer Pay	30.42%	30.45%
Police/Fire:		
Employer-Pay	41.97%	42.01%
Employee/Employer Pay	43.33%	43.37%

- The payroll growth assumptions are set by the Board and affect the timing of payments toward the unfunded liabilities. Considerations for setting these assumptions include future financial conditions that are difficult for Segal to evaluate. In recent years, payroll growth has been less than assumed. This has the effect of delaying contributions toward the unfunded liabilities and could result in increases to required contributions in future years. That assumption was reduced by the Board from 6.50% to 5.50% for Regular and from 7.50% to 6.50% for Police/Fire for the June 30, 2017 valuation. We recommend that the Board closely monitor actual payroll growth to verify that the assumptions remain valid.
- The actuarial valuation report as of June 30, 2017 is based on financial data as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected.
- In 2009, the Critical Labor Shortage (CLS) program was extended through June 30, 2015 but restrictions on eligible positions were added. This program allows PERS retirees to return to work without facing the usual suspension of retirement benefits. Subsequently, the 2015 "sunset" was removed and the program was made permanent. As of the valuation date, there were a total of 190 retired PERS members currently active and reenrolled in PERS under this provision. This program has a minimal effect on System costs.

Summary of Key Valuation Results

	Total (Regular and Police/Fire Combined)	
	2017	**2016**
Actuarially determined contribution rates for plan year beginning July 1[(1)]	31.47%	30.10%
Funding elements for plan year beginning July 1:		
Normal cost, including administrative expenses	18.33%	18.36%
Total rate payroll[(2)]	$6,237,158,079	$6,081,072,010
Market value of assets	$38,686,253,408	$35,002,028,906
Actuarial value of assets	$38,719,300,694	$35,896,247,280
Actuarial accrued liability	$51,986,097,492	$48,459,161,570
Unfunded actuarial accrued liability	$13,266,796,798	$12,562,914,290
Funded ratio on actuarial value basis (AVA / AAL)	74.5%	74.1%
Funded ratio on market value basis (MVA / AAL)	74.4%	72.2%
Demographic data for plan year beginning July 1:		
Number of retired members and beneficiaries	64,130	61,180
Number of vested former members	16,668	15,639
Number of active members	105,801	105,167
Total salary[(3)]	$5,542,246,654	$5,346,338,947
Average salary	$52,384	$50,837

(1) *Average rate for the combined Regular and Police/Fire Employer-pay and Employee/Employer pay plans.*

(2) *Based on actual pay for prior year, annualized for new hires and part-time employees, and projected one year using individual salary increase assumption.*

(3) *Based on actual pay for prior year, without adjustment.*

Summary of Key Valuation Results (continued)

	Regular		Police/Fire	
	2017	2016	2017	2016
Actuarially determined contribution rates for plan year beginning July 1:				
Employer-Pay[1]	29.19%	28.02%	41.97%	39.88%
Employee/Employer Pay[2]	30.42%	29.13%	43.33%	41.07%
Funding elements for plan year beginning July 1:				
Normal cost, including administrative expenses				
Employer-Pay[1]	16.54%	16.57%	26.32%	26.62%
Employee/Employer Pay[2]	17.77%	17.68%	27.68%	27.81%
Total rate payroll[3]	$5,222,055,031	$5,105,827,741	$1,015,103,048	$975,244,269
Market value of assets	$30,034,610,674	$27,224,073,776	$8,651,642,734	$7,777,955,130
Actuarial value of assets	$30,060,747,596	$27,916,452,518	$8,658,553,098	$7,979,794,762
Actuarial accrued liability	$40,651,650,857	$38,114,382,320	$11,334,446,635	$10,344,779,250
Unfunded actuarial accrued liability	$10,590,903,261	$10,197,929,802	$2,675,893,537	$2,364,984,488
Funded ratio on actuarial value basis (AVA / AAL)	73.9%	73.2%	76.4%	77.1%
Funded ratio on market value basis (MVA / AAL)	73.9%	71.4%	76.3%	75.2%
Demographic data for plan year beginning July 1:				
Number of retired members and beneficiaries	55,975	53,484	8,155	7,696
Number of vested former members	15,763	14,795	905	844
Number of active members	93,276	93,030	12,525	12,137
Total salary[4]	$4,617,385,202	$4,458,166,961	$924,861,452	$888,171,986
Average salary	$49,502	$47,922	$73,841	$73,179

(1) *See cost-sharing mechanism in NRS 286.421*

(2) *See cost-sharing mechanism in NRS 286.410*

(3) *Based on actual pay for prior year, annualized for new hires and part-time employees, and projected one year using individual salary increase assumption.*

(4) *Based on actual pay for prior year, without adjustment.*

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 System. The Plan uses an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.

- **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 System. 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 the System 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 System 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

i. Regular Members

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

This section presents a summary of significant statistical data on the Regular member group.

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

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

CHART 1

Regular Member Population: 2008 – 2017

Year Ended June 30	Active Members	Vested Terminated Members	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2008	93,816	10,965	33,248	0.47
2009	92,784	10,954	36,705	0.51
2010	90,219	11,167	38,400	0.55
2011	87,975	11,931	40,675	0.60
2012	86,719	12,253	43,258	0.64
2013	87,193	13,009	45,796	0.67
2014	88,709	13,851	48,283	0.70
2015	91,124	14,206	50,877	0.71
2016	93,030	14,795	53,484	0.73
2017	93,276	15,763	55,975	0.77

i. Regular Members (continued)

Active Members

Plan costs are affected by the age, years of service and salaries of active members. In this year's valuation, there were 93,276 active members with an average age of 45.9, average years of service of 9.8 years and average salary of $49,502. The 93,030 active members in the prior valuation had an average age of 46.0, average service of 9.9 years and average salary of $47,922.

Inactive Members

In this year's valuation, there were 15,763 members with a vested right to a deferred or immediate vested benefit versus 14,795 members in the prior valuation.

The average age and service of these members is 49.6 and 9.0 years, as compared to 49.4 and 8.9 as of last year's valuation date.

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

CHART 2

Distribution of Active & Inactive Regular Members by Age as of June 30, 2017

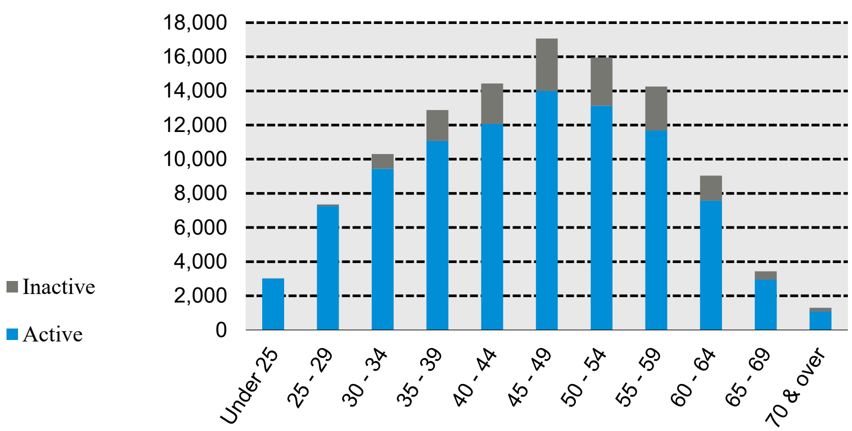
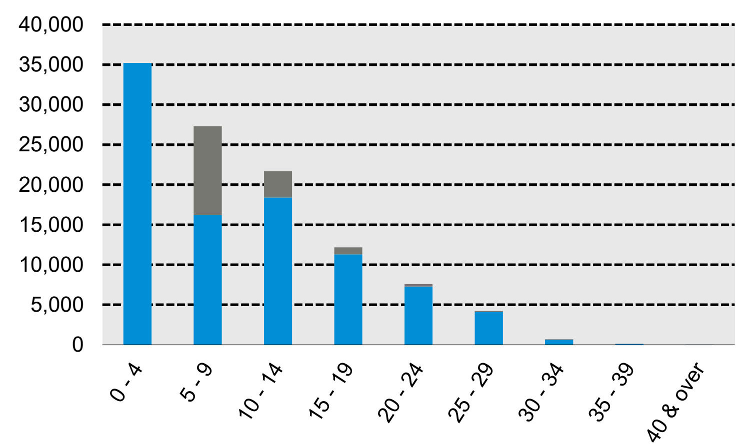


CHART 3

Distribution of Active & Inactive Regular Members by Years of Service as of June 30, 2017



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i. Regular Members (continued)

Retired Members and Beneficiaries

As of June 30, 2017, 50,091 retired members and 5,884 beneficiaries and survivors were receiving total monthly benefits of $153,763,984. Of these, 804 retired members and 17 beneficiaries and survivors were receiving annual benefits of at least $100,000, which represents 1.5% of all retirees, beneficiaries and survivors. For comparison, in the previous valuation there were 47,899 retired members and 5,585 beneficiaries and survivors receiving monthly benefits of $144,501,237, with 1.4% of those receiving annual benefits of at least $100,000.

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

CHART 4

Distribution of Retired Regular Members and Beneficiaries by Type and by Monthly Amount as of June 30, 2017

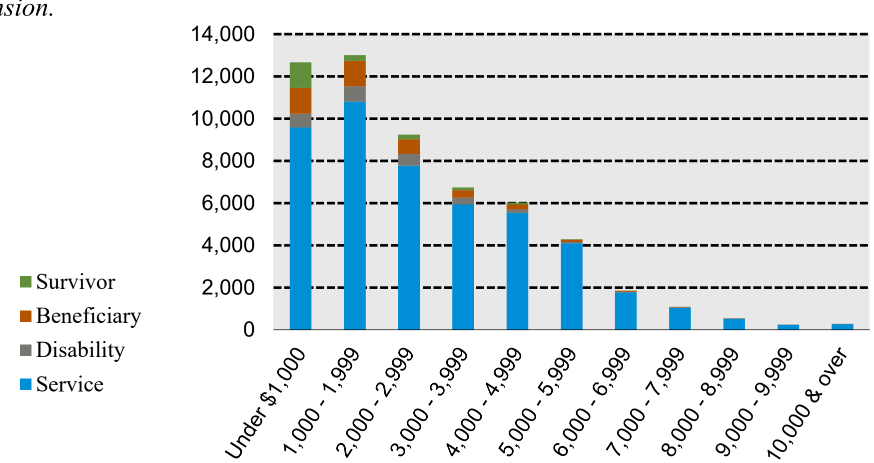
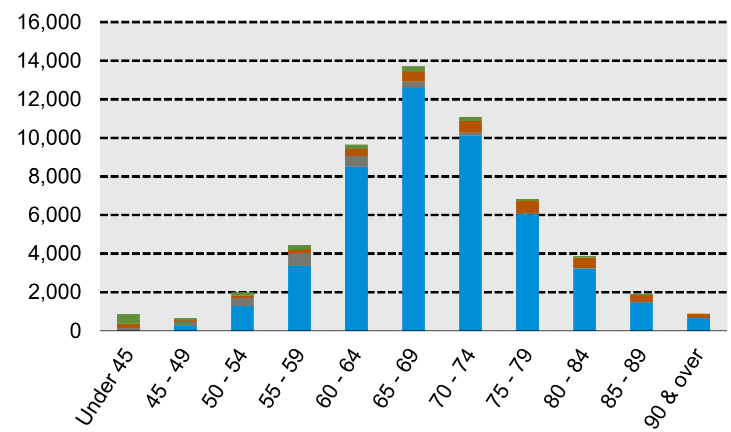


CHART 5

Distribution of Retired Regular Members and Beneficiaries by Type and by Age as of June 30, 2017



ii. Police/Fire Members

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

This section presents a summary of significant statistical data on the Police/Fire member group.

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

ii. Police/Fire Members (continued)

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

CHART 6
Police/Fire Member Population: 2008 – 2017

Year Ended June 30	Active Members	Vested Terminated Members	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2008	12,307	628	4,882	0.45
2009	12,633	620	5,200	0.46
2010	12,375	640	5,519	0.50
2011	11,936	701	5,903	0.55
2012	11,793	709	6,288	0.59
2013	11,845	730	6,634	0.62
2014	11,813	782	6,925	0.65
2015	11,984	826	7,282	0.68
2016	12,137	844	7,696	0.70
2017	12,525	905	8,155	0.72

Active Members

Plan costs are affected by the age, years of service and salaries of active members. In this year's valuation, there were 12,525 active members with an average age of 40.2, average years of service of 11.2 years and average salary of $73,841. The 12,137 active members in the prior valuation had an average age of 40.7, average service of 11.5 years and average salary of $73,179.

Inactive Members

In this year's valuation, there were 905 members with a vested right to a deferred or immediate vested benefit versus 844 members in the prior valuation.

The average age and service of these members is 45.6 and 8.5 years, as compared to 45.6 and 8.5 as of last year's valuation date.

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

CHART 7

Distribution of Active & Inactive Police/Fire Members by Age as of June 30, 2017

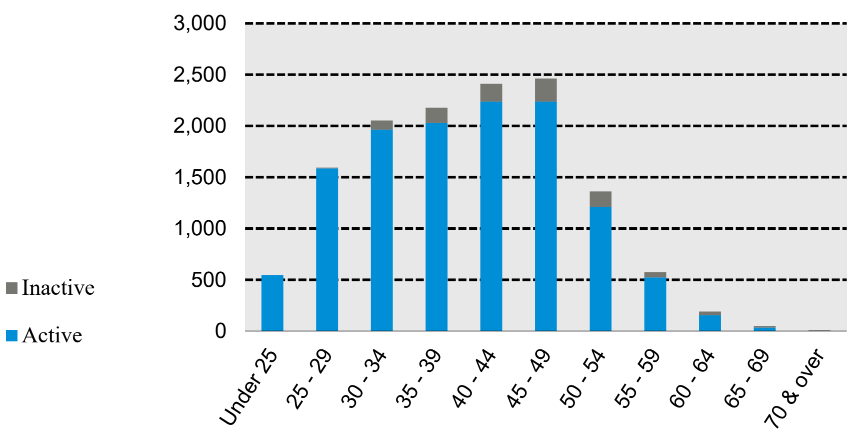
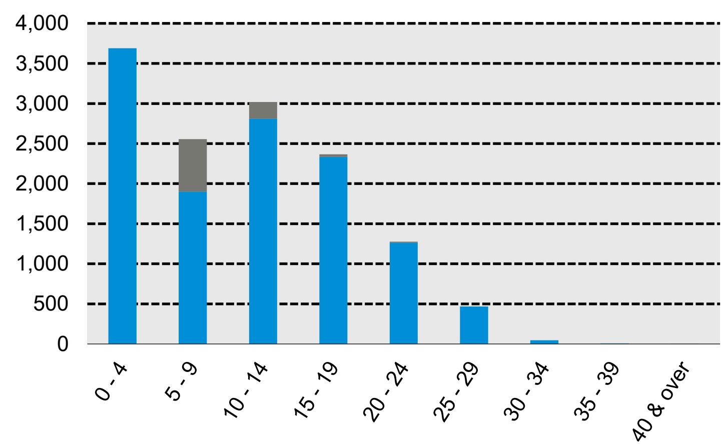


CHART 8

Distribution of Active & Inactive Police/Fire Members by Years of Service as of June 30, 2017



ii. Police/Fire Members (continued)

Retired Members and Beneficiaries

As of June 30, 2017, 7,108 retired members and 1,047 beneficiaries and survivors were receiving total monthly benefits of $39,589,227. Of these, 1,013 retired members and 7 beneficiaries and survivors were receiving annual benefits of at least $100,000, which represents 12.5% of all retirees, beneficiaries and survivors. For comparison, in the previous valuation there were 6,716 retired members and 980 beneficiaries and survivors receiving monthly benefits of $36,413,109, with 11.4% of those receiving annual benefits of at least $100,000.

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

CHART 9

Distribution of Retired Police/Fire Members and Beneficiaries by Type and by Monthly Amount as of June 30, 2017

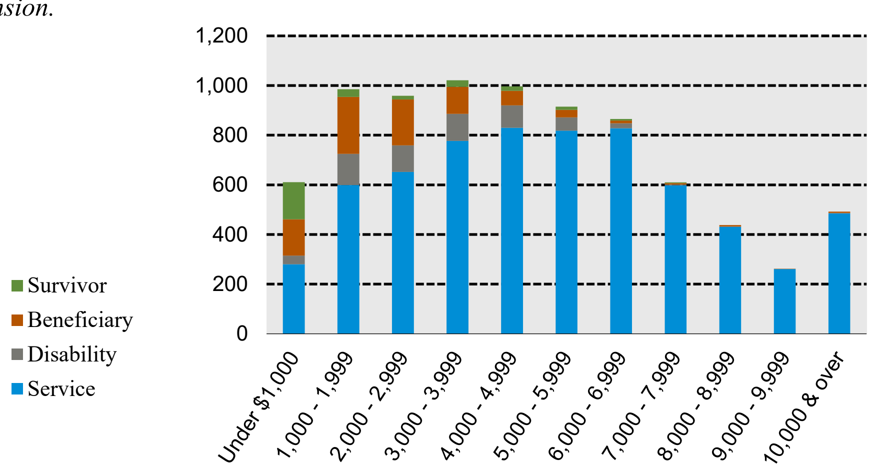
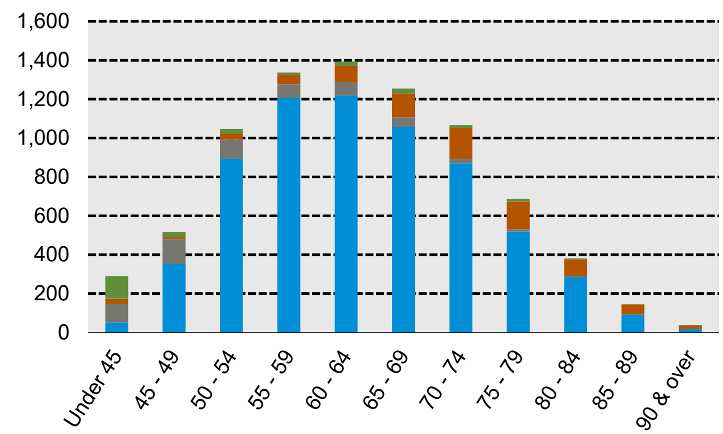


CHART 10

Distribution of Retired Police/Fire Members and Beneficiaries by Type and by Age as of June 30, 2017



B. FINANCIAL INFORMATION

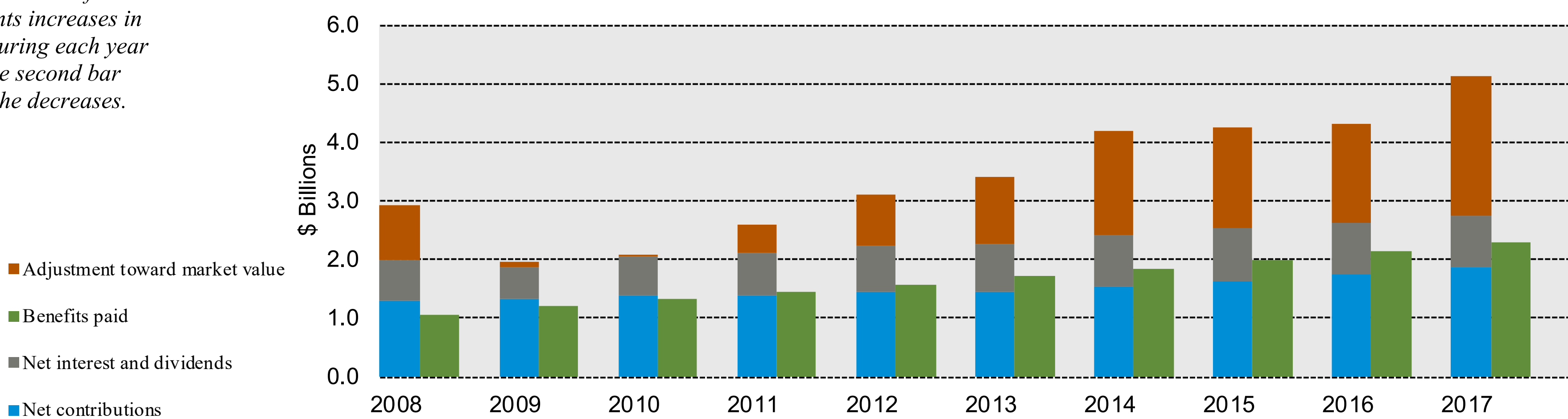
Retirement plan funding anticipates that, over the long term, both net contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

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 D, E and F.

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 11

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended June 30, 2008 – 2017



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

The chart shows the determination of the actuarial value of assets as of the valuation date.

CHART 12

Determination of Actuarial Value of Assets for Year Ended June 30, 2017

	Regular		Police/Fire	
1. Market value of assets		$30,034,610,674		$8,651,642,734
2. Calculation of unrecognized return	Original Amount[1]	Unrecognized Return	Original Amount[1]	Unrecognized Return
(a) Year ended June 30, 2017[2]	$977,327,110	$781,861,689	$280,510,254	$224,408,204
(b) Year ended June 30, 2016[2]	-1,479,964,178	-887,978,507	-421,255,666	-252,753,400
(c) Year ended June 30, 2015[2]	-862,766,254	-345,106,502	-241,902,572	-96,761,029
(d) Year ended June 30, 2014[2]	2,125,431,988	425,086,398	590,979,307	118,195,861
(e) Year ended June 30, 2013[2]	795,397,787	0	219,573,607	0
(f) Total unrecognized return[3]	$1,555,426,453	-$26,136,922	$427,904,930	-$6,910,364
3. Preliminary actuarial value of assets: (1) - (2f)		$30,060,747,596		$8,658,553,098
4. Additional write up/(down) due to 70%/130% corridor:		$0		$0
5. Actuarial value of assets: (3) + (4)		$30,060,747,596		$8,658,553,098
6. Actuarial value as a percentage of market value: (5) ÷ (1) [4]		100.09%		100.08%

[1] *Market value minus prior year's actuarial value, adjusted for cash flows and expected return, minus prior year's unrecognized return*

[2] *Recognition at 20% per year over 5 years*

[3] *Deferred return as of June 30, 2017 recognized in each of the next four years:*

	Regular	Police/Fire	Total
(a) Amount recognized during 2017/2018	*$152,005,733*	*$41,666,265*	*$193,671,998*
(b) Amount recognized during 2018/2019	*-273,080,664*	*-76,529,597*	*-349,610,261*
(c) Amount recognized during 2019/2020	*-100,527,414*	*-28,149,082*	*-128,676,496*
(d) Amount recognized during 2020/2021	*195,465,423*	*56,102,050*	*251,567,473*
	-$26,136,922	*-$6,910,364*	*-$33,047,286*

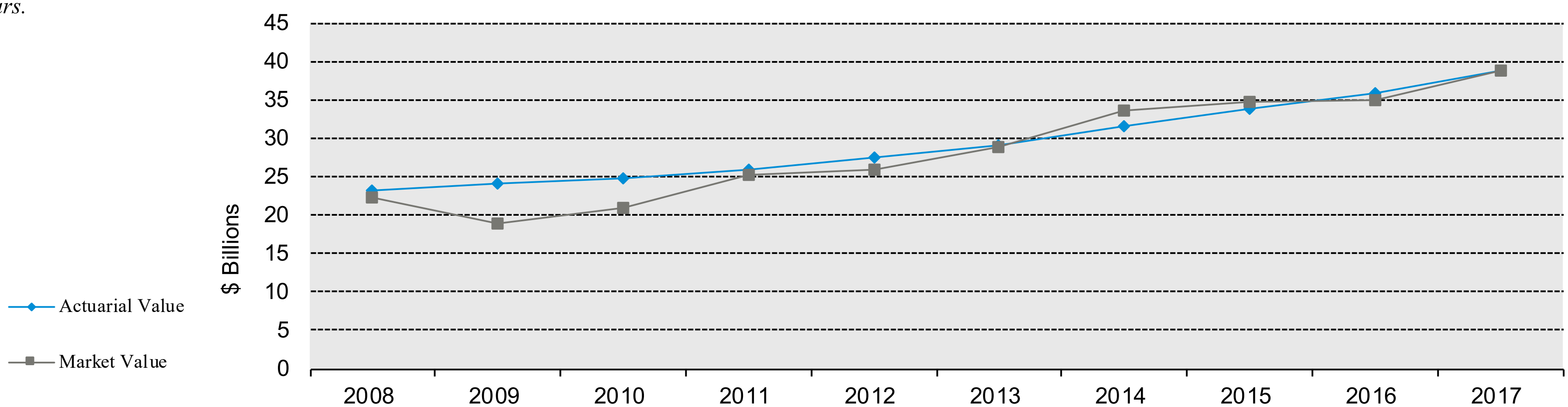
[4] *Total actuarial value as a percentage of total market value is 100.09% for Regular and Police/Fire.*

Both the actuarial value and market value of assets are representations of PERS's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because PERS'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.

This chart shows the change in the actuarial value of assets versus the market value over the past ten years.

CHART 13

Actuarial Value of Assets vs. Market Value of Assets as of June 30, 2008 – 2017



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.

The components of the total gain of $677.9 million are shown below. The net experience gain from sources other than investments was 0.55% 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 14
Actuarial Experience for Year Ended June 30, 2017

	Regular	Police/Fire	Total
1. Net gain/(loss) from investments[(1)]	$311,085,290	$85,580,986	$396,666,276
2. Net gain/(loss) from post-retirement benefit increases other than expected[(2)]	242,347,659	63,326,221	305,673,880
3. Net gain/(loss) from individual salary increases other than expected[(2)]	182,646,032	9,947,766	192,593,798
4. Net gain/(loss) from other experience[(2)]	-123,384,366	-93,636,040	-217,020,406
5. Net experience gain/(loss): (1) + (2) + (3) + (4)	$612,694,615	$65,218,933	677,913,548

(1) *Details in Chart 15.*

(2) *Details in Chart 18. Does not include the effects of Plan or assumption changes, if any.*

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 PERS investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets for the 2016-2017 plan year is 8.00%. The actual rates of return on an actuarial basis for the 2016-2017 plan year were 9.12% for Regular and 9.08% for Police/Fire.

Since the actual return for the year was greater than the assumed return, PERS experienced an actuarial gain during the year ended June 30, 2017 with regard to its investments.

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

CHART 15
Actuarial Value Investment Experience for Year Ended June 30, 2017

	Regular	Police/Fire	Total
1. Actual return	$2,529,012,783	$722,225,866	$3,251,238,649
2. Average value of assets	27,724,093,666	7,958,060,997	35,682,154,663
3. Actual rate of return: (1) ÷ (2)	9.12%	9.08%	9.11%
4. Assumed rate of return	8.00%	8.00%	8.00%
5. Expected return: (2) x (4)	2,217,927,493	636,644,880	2,854,572,373
6. Actuarial gain/(loss): (1) – (5)	$311,085,290	$85,580,986	$396,666,276

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 an actuarial basis compared to the market value investment return for the last ten years, including five-year and ten-year averages.

CHART 16

Investment Return – Actuarial Value vs. Market Value: 2008 – 2017

	Regular				Police/Fire				Total			
	Market Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return		Actuarial Value Investment Return	
Year Ended June 30	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
2008	$(596,088,431)	(3.26%)	$1,320,009,898	7.68%	$(144,603,728)	(3.24%)	$321,274,088	7.64%	$(740,692,159)	(3.26%)	$1,641,283,986	7.68%
2009	(2,834,457,823)	(15.98%)	497,747,740	2.68%	(706,537,749)	(16.00%)	123,352,371	2.67%	(3,540,995,572)	(15.99%)	621,100,111	2.68%
2010	1,641,734,286	11.03%	537,022,624	2.82%	419,574,635	11.03%	141,729,146	2.93%	2,061,308,921	11.03%	678,751,770	2.84%
2011	3,489,069,530	21.10%	942,690,794	4.81%	915,513,116	21.09%	258,581,939	5.07%	4,404,582,646	21.10%	1,201,272,733	4.86%
2012	605,897,096	3.05%	1,297,183,274	6.36%	162,299,827	3.05%	354,285,182	6.53%	768,196,923	3.05%	1,651,468,456	6.40%
2013	2,511,331,333	12.41%	1,541,374,010	7.19%	685,094,279	12.40%	429,796,701	7.39%	3,196,425,612	12.40%	1,971,170,711	7.23%
2014	3,941,218,147	17.55%	2,066,313,021	9.10%	1,092,158,512	17.54%	583,651,095	9.32%	5,033,376,659	17.55%	2,649,964,116	9.15%
2015	1,091,598,827	4.19%	2,032,338,690	8.32%	306,479,335	4.18%	582,473,284	8.50%	1,398,078,162	4.19%	2,614,811,974	8.36%
2016	607,842,576	2.27%	1,998,441,567	7.66%	172,798,662	2.27%	569,208,453	7.67%	780,641,238	2.27%	2,567,650,020	7.66%
2017	3,195,254,603	11.82%	2,529,012,783	9.12%	917,155,134	11.82%	722,225,866	9.08%	4,112,409,737	11.82%	3,251,238,649	9.11%
Total	13,653,400,144		14,762,134,401		3,819,932,023		4,086,578,125		17,473,332,167		18,848,712,526	
Five-year average return		9.26%		8.31%		9.21%		8.42%		9.25%		8.33%
Ten-year average return		6.51%		6.80%		6.73%		6.99%		6.55%		6.84%

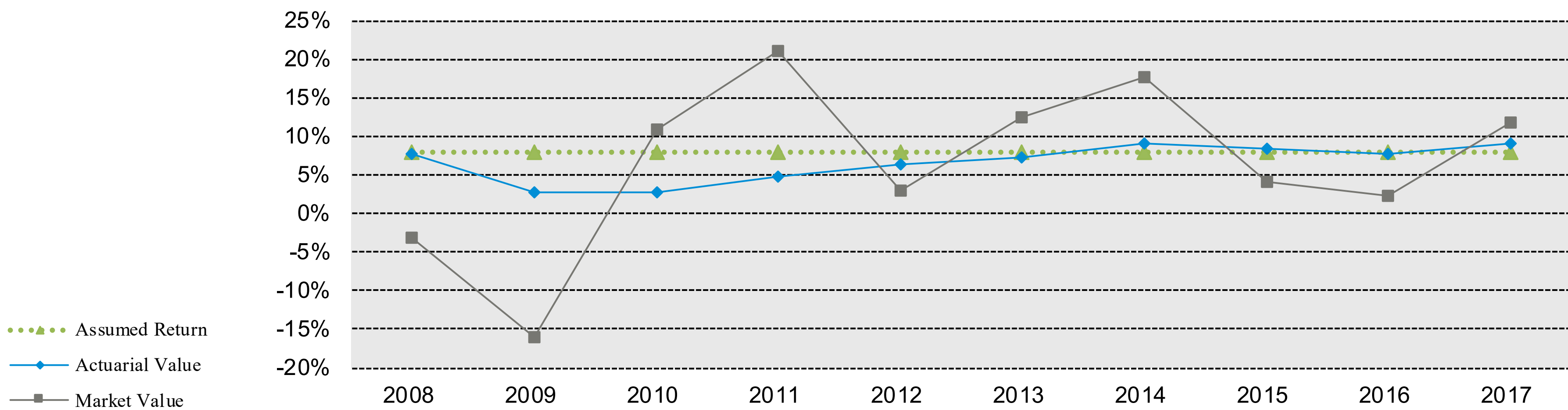
Note: Each year's yield is weighted by the average asset value in that year.

In the preceding subsection B we described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this method is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs. This effect is clear in the chart below, where the year-to-year returns on actuarial value are less volatile than the returns on market value.

This chart illustrates how this leveling effect has actually worked over the past ten years.

CHART 17

Market and Actuarial Rates of Return for Years Ended June 30, 2008 - 2017



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.

The net gain/loss from this other experience for the year ended June 30, 2017 amounted to a gain of $301.6 million for Regular and a loss of $20.4 million for Police/Fire, which are 0.76% and 0.18% of the actuarial accrued liability before assumption changes, respectively.

A brief summary of the demographic gain/(loss) experience of the PERS for the year ended June 30, 2017 is shown in the chart below.

The chart shows elements of the experience gain/(loss) for the most recent year.

CHART 18

Experience Due to Sources Other Than Investment Return for Year Ended June 30, 2017

	Regular	% of AAL	Police/Fire	% of AAL	Total	% of AAL
Age and Service Retirements	-$187,696,655	-0.46%	-$61,373,331	-0.56%	-$249,069,986	-0.50%
Disability Retirements	-9,831,445	-0.02%	-4,793,660	-0.04%	-14,625,105	-0.03%
Pre and Post-Retirement Mortality	22,290,706	0.05%	-29,013,856*	-0.26%	-6,723,150	-0.01%
Post-Retirement Benefit Increases (PRBIs)	242,347,659	0.61%	63,326,221	0.57%	305,673,880	0.60%
Withdrawal From Employment	71,915,114	0.18%	-1,522,170	-0.01%	70,392,944	0.14%
Individual Pay Increases	182,646,032	0.46%	9,947,766	0.09%	192,593,798	0.38%
Active New Entrants	-54,320,089	-0.14%	-7,322,862	-0.07%	-61,642,951	-0.12%
Active Rehires	-20,645,577	-0.05%	-1,151,111	-0.01%	-21,796,688	-0.04%
Retiree Return to Active	25,394,451	0.06%	1,049,106	0.01%	26,443,557	0.05%
Inactive and Retiree Showups	-59,459,733	-0.15%	-7,001,817	-0.06%	-66,461,550	-0.13%
Data Adjustments	27,715,076	0.07%	1,775,969	0.02%	29,491,045	0.06%
Other**	61,253,786	0.15%	15,717,692	0.14%	76,971,478	0.15%
Total Liability Experience Gain/(Loss) During Year	$301,609,325	0.76%	-$20,362,053	-0.18%	$281,247,272	0.55%

** Reflects Police/Fire mortality experience and also the assumption that existing "employer-pay" Police/Fire retirees with an unmodified option who retired after June 30, 1981 and before July 1, 2011 have been valued assuming no surviving spouse.*

*** Other gain/(loss) includes actual purchase of service contributions of $42.5 million for Regular and $24.7 million for Police/Fire, offset by the corresponding increase in liability.*

D. CALCULATED CONTRIBUTION RATES

The amount of annual contribution required to fund the Plan is comprised of a 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 actuarially determined contribution rate.

The statutory contribution rates are adjusted at the beginning of each odd-numbered fiscal year, based on the actuarially determined rates indicated in the actuarial valuation report for the immediately preceding year. See Exhibit III in Section 4 for details about this adjustment.

The chart compares this valuation's calculated contribution rates with the prior valuation.

CHART 19
Calculated Contribution Rates

	Year Beginning July 1			
	2017		2016	
	Regular	Police/Fire	Regular	Police/Fire
Employer-Pay, current statutory rate[1]	**28.00%**	**40.50%**	**28.00%**	**40.50%**
Normal cost	16.39%	26.17%	16.42%	26.47%
Amortization percentage	12.65%	15.65%	11.45%	13.26%
Administrative expenses	0.15%	0.15%	0.15%	0.15%
Employer-Pay, total rate[1]	**29.19%**	**41.97%**	**28.02%**	**39.88%**
New statutory rounded rate	**N/A**	**N/A**	**28.00%**	**40.50%**
Employee/Employer Pay, current statutory rate[2]	**29.00%**	**41.50%**	**29.00%**	**41.50%**
Normal cost	17.62%	27.53%	17.53%	27.66%
Amortization percentage	12.65%	15.65%	11.45%	13.26%
Administrative expenses	0.15%	0.15%	0.15%	0.15%
Employee/Employer Pay, total rate[2]	**30.42%**	**43.33%**	**29.13%**	**41.07%**
New statutory rounded rate	**N/A**	**N/A**	**29.00%**	**41.50%**

(1) *See cost-sharing mechanism in NRS 286.421*
(2) *See cost-sharing mechanism in NRS 286.410*

The actuarially determined contribution rates as of June 30, 2017 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.

Reconciliation of Actuarially Determined Contribution Rate

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

The chart reconciles the actuarially determined contribution rates from the prior rate-setting year to the amount determined in this valuation.

CHART 20

Reconciliation of Actuarially Determined Contribution Rate[1] from June 30, 2016 to June 30, 2017

	Regular	Estimated Annual Dollar Cost[2]	Police/Fire	Estimated Annual Dollar Cost[2]
Actuarially Determined Contribution Rate as of June 30, 2016	28.21%	$1,440,354,006	39.99%	$390,000,183
Effect of investment (gain)/loss	-0.34%	-17,706,896	-0.44%	-4,470,304
Effect of gains on individual salary experience	-0.20%	-10,396,166	-0.05%	-519,619
Effect on existing amortization of payroll growth less than expected	0.42%	38,003,288[3]	0.36%	9,699,349[3]
Effect of changes in normal cost	-0.27%	8,131,437[4]	-0.28%	9,386,566[4]
Effect of contributions (more)/less than expected	0.10%	5,320,152	0.04%	416,635
Effect of gain on post-retirement benefit increases	-0.26%	-13,794,367	-0.32%	-3,307,832
Effect of other (gains)/losses	0.14%	7,530,395	0.47%	4,968,494
Effect of assumption changes	1.60%	77,842,330	2.33%	21,184,911
Total change	1.19%	$94,930,173	2.11%	$37,358,200
Actuarially Determined Contribution Rate as of June 30, 2017	29.40%	$1,535,284,179	42.10%	$427,358,383

(1) *Average rate for the Employer-pay and Employee/Employer pay plans.*

(2) *Based on rate payroll for each valuation date shown.*

(3) *Actual dollar increase in existing amortization bases.*

(4) *Actual dollar increase/(decrease) in normal cost.*

E. FUNDED RATIO

One critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the plan.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.

High ratios indicate a well-funded plan with assets sufficient to cover the plan's liabilities. Lower ratios may indicate funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

This graph shows the funded ratios on an AVA basis for Regular and Police/Fire.

CHART 21
Funded Ratios

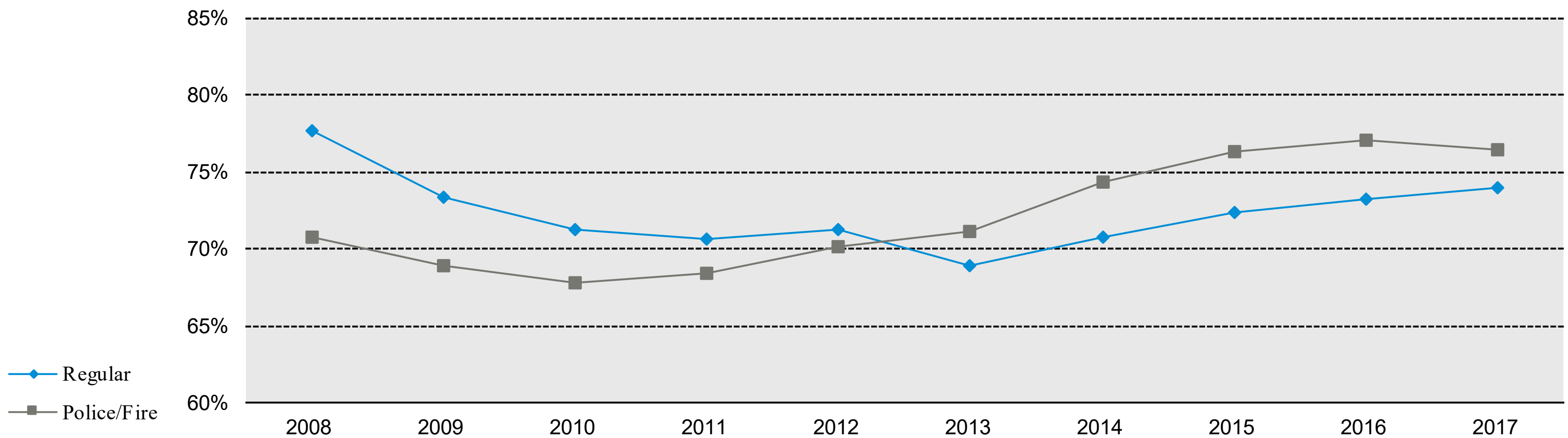


EXHIBIT A

Table of Plan Coverage

i. Regular

Category	Year Ended June 30		Change From Prior Year
	2017	2016	
Active members in valuation:			
Number	93,276	93,030	0.26%
Employer-Pay	74,165	74,016	0.20%
Employee/Employer	19,111	19,014	0.51%
Average age	45.9	46.0	-0.1
Average service	9.8	9.9	-0.1
Total annual salary	$4,617,385,202	$4,458,166,961	3.57%
Average annual salary	$49,502	$47,922	3.30%
Account balances	$789,547,374	$745,541,463	5.90%
Total active vested members	62,007	64,030	-3.16%
Vested terminated members	15,763	14,795	6.54%
Retired members:			
Number in pay status	47,571	45,362	4.87%
Average age	69.7	69.5	0.2
Average monthly benefit	$2,899	$2,854	1.58%
Disabled members:			
Number in pay status	2,520	2,537	0.67%
Average age	59.3	59.3	0.0
Average monthly benefit	$2,119	$2,089	1.44%
Beneficiaries:			
Number in pay status	3,914	3,660	6.94%
Average age	71.3	71.3	0.0
Average monthly benefit	$1,985	$1,945	2.06%
Survivors:			
Number in pay status	1,970	1,925	2.34%
Average age	56.0	55.6	0.4
Average monthly benefit	$1,395	$1,364	2.27%

EXHIBIT A

Table of Plan Coverage
ii. Police/Fire

Category	Year Ended June 30 2017	Year Ended June 30 2016	Change From Prior Year
Active members in valuation:			
Number	12,525	12,137	3.20%
Employer-Pay	10,732	10,464	2.56%
Employee/Employer	1,793	1,673	7.17%
Average age	40.2	40.7	-0.5
Average service	11.2	11.5	-0.3
Total annual salary	$924,861,452	$888,171,986	4.13%
Average annual salary	$73,841	$73,179	0.90%
Account balances	$131,260,183	$127,230,263	3.17%
Total active vested members	9,120	9,315	-2.09%
Vested terminated members	905	844	7.23%
Retired members:			
Number in pay status	6,558	6,179	6.13%
Average age	63.9	63.9	0.0
Average monthly benefit	$5,407	$5,274	2.52%
Disabled members:			
Number in pay status	550	537	2.42%
Average age	54.2	54.4	-0.2
Average monthly benefit	$3,195	$3,084	3.60%
Beneficiaries:			
Number in pay status	785	726	8.13%
Average age	70.6	70.4	0.2
Average monthly benefit	$2,424	$2,396	1.17%
Survivors:			
Number in pay status	262	254	3.15%
Average age	45.8	45.6	0.2
Average monthly benefit	$1,783	$1,693	5.32%

EXHIBIT A

Table of Plan Coverage
iii. Total

Category	Year Ended June 30 2017	Year Ended June 30 2016	Change From Prior Year
Active members in valuation:			
Number	105,801	105,167	0.60%
Employer-Pay	84,897	84,480	0.49%
Employee/Employer	20,904	20,687	1.05%
Average age	45.2	45.4	-0.2
Average service	10.0	10.0	0.0
Total annual salary	$5,542,246,654	$5,346,338,947	3.66%
Average annual salary	$52,384	$50,837	3.04%
Account balances	$920,807,557	$872,771,726	5.50%
Total active vested members	71,127	73,345	-3.02%
Vested terminated members	16,668	15,639	6.58%
Retired members:			
Number in pay status	54,129	51,541	5.02%
Average age	69.0	68.8	0.2
Average monthly benefit	$3,203	$3,144	1.88%
Disabled members:			
Number in pay status	3,070	3,074	-0.13%
Average age	58.4	58.5	-0.1
Average monthly benefit	$2,311	$2,263	2.12%
Beneficiaries:			
Number in pay status	4,699	4,386	7.14%
Average age	71.2	71.2	0.0
Average monthly benefit	$2,059	$2,020	1.93%
Survivors:			
Number in pay status	2,232	2,179	2.43%
Average age	54.8	54.4	0.4
Average monthly benefit	$1,441	$1,402	2.78%

EXHIBIT B

Members in Active Service as of June 30, 2017 By Age, Years of Service, and Average Annual Salary
i. Regular

		Years of Service								
Age	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	3,013	3,004	9	- -	- -	- -	- -	- -	- -	- -
	$20,641	$20,604	$33,086	- -	- -	- -	- -	- -	- -	- -
25 – 29	7,253	6,467	740	46	- -	- -	- -	- -	- -	- -
	32,671	31,717	40,055	$47,428	- -	- -	- -	- -	- -	- -
30 – 34	9,440	5,666	2,630	1,103	41	- -	- -	- -	- -	- -
	40,994	35,544	47,925	51,789	$57,784	- -	- -	- -	- -	- -
35 - 39	11,074	4,697	2,541	3,167	629	40	- -	- -	- -	- -
	47,335	36,005	50,968	57,628	63,895	$71,685	- -	- -	- -	- -
40 - 44	12,065	4,011	2,226	3,015	2,069	694	50	- -	- -	- -
	51,928	35,112	50,016	60,127	67,642	70,801	$81,312	- -	- -	- -
45 - 49	13,998	3,644	2,299	3,019	2,379	1,969	670	18	- -	- -
	55,691	36,446	48,367	58,163	67,731	74,088	76,637	$89,035	- -	- -
50 - 54	13,136	2,944	2,065	2,793	2,182	1,628	1,382	135	7	- -
	55,661	35,471	45,907	55,719	65,016	72,474	76,110	79,839	$70,476	- -
55 - 59	11,679	2,360	1,763	2,604	2,079	1,532	1,080	229	30	2
	55,398	36,068	45,433	55,182	62,750	69,681	74,640	77,865	74,480	*
60 - 64	7,574	1,534	1,234	1,733	1,284	978	610	146	46	9
	54,700	37,223	44,785	55,011	62,514	68,547	70,750	79,156	83,548	$81,254
65 - 69	2,958	610	500	685	462	350	233	81	25	12
	53,498	36,991	47,147	53,516	59,959	64,191	68,711	76,830	82,297	82,597
70 & over	1,086	277	205	231	166	99	66	31	4	7
	46,349	31,515	39,024	46,193	55,983	66,013	60,726	61,342	*	122,892
Total	93,276	35,214	16,212	18,396	11,291	7,290	4,091	640	112	30
	$49,502	$33,768	$47,481	$56,570	$64,939	$71,144	$74,396	$77,959	$80,048	$92,557

** Not shown for groups with fewer than five members.*

EXHIBIT B

Members in Active Service as of June 30, 2017 By Age, Years of Service, and Average Annual Salary
ii. Police/Fire

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	546	544	2	- -	- -	- -	- -	- -	- -	- -
	$35,736	$35,701	*	- -	- -	- -	- -	- -	- -	- -
25 – 29	1,586	1,395	180	11	- -	- -	- -	- -	- -	- -
	47,928	45,896	$62,002	$75,228	- -	- -	- -	- -	- -	- -
30 – 34	1,964	858	645	443	18	- -	- -	- -	- -	- -
	62,776	45,965	70,062	83,434	$94,689	- -	- -	- -	- -	- -
35 - 39	2,027	420	479	862	247	19	- -	- -	- -	- -
	73,655	46,178	70,170	82,784	93,423	$95,367	- -	- -	- -	- -
40 - 44	2,239	227	278	676	797	250	11	- -	- -	- -
	83,932	46,174	68,119	83,743	93,430	105,288	$102,681	- -	- -	- -
45 - 49	2,238	133	178	477	756	564	129	1	- -	- -
	89,107	41,637	62,415	80,579	93,444	104,710	112,543	*	- -	- -
50 - 54	1,212	52	82	212	330	306	219	11	- -	- -
	91,035	42,316	60,878	75,944	88,940	103,319	113,546	$109,912	- -	- -
55 - 59	523	37	38	99	136	89	94	27	3	- -
	86,401	46,106	61,388	72,604	85,660	95,889	108,915	119,112	*	- -
60 - 64	154	18	17	23	45	32	10	6	3	- -
	72,834	35,698	55,114	64,241	77,679	89,395	91,531	83,802	*	- -
65 - 69	34	4	2	9	6	4	4	2	1	2
	74,872	*	*	69,419	63,959	*	*	*	*	*
70 & over	2	1	- -	- -	- -	1	- -	- -	- -	- -
	*	*	- -	- -	- -	*	- -	- -	- -	- -
Total	12,525	3,689	1,901	2,812	2,335	1,265	467	47	7	2
	$73,841	$44,214	$67,577	$81,645	$91,977	$103,296	$111,323	$111,245	$118,416	*

** Not shown for groups with fewer than five members.*

EXHIBIT B

Members in Active Service as of June 30, 2017 By Age, Years of Service, and Average Annual Salary
iii. Total

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	3,559	3,548	11	- -	- -	- -	- -	- -	- -	- -
	$22,957	$22,919	$35,311	- -	- -	- -	- -	- -	- -	- -
25 – 29	8,839	7,862	920	57	- -	- -	- -	- -	- -	- -
	35,408	34,233	44,349	$52,793	- -	- -	- -	- -	- -	- -
30 – 34	11,404	6,524	3,275	1,546	59	- -	- -	- -	- -	- -
	44,745	36,915	52,285	60,857	$69,237	- -	- -	- -	- -	- -
35 - 39	13,101	5,117	3,020	4,029	876	59	- -	- -	- -	- -
	51,409	36,840	54,014	63,010	72,221	$79,720	- -	- -	- -	- -
40 - 44	14,304	4,238	2,504	3,691	2,866	944	61	- -	- -	- -
	56,937	35,704	52,026	64,452	74,813	79,934	$85,061	- -	- -	- -
45 - 49	16,236	3,777	2,477	3,496	3,135	2,533	799	19	- -	- -
	60,297	36,629	49,377	61,221	73,932	80,906	82,434	$90,588	- -	- -
50 - 54	14,348	2,996	2,147	3,005	2,512	1,934	1,601	146	7	- -
	58,649	35,590	46,479	57,146	68,159	77,354	81,231	82,105	$70,476	- -
55 - 59	12,202	2,397	1,801	2,703	2,215	1,621	1,174	256	33	2
	56,727	36,223	45,769	55,820	64,156	71,120	77,385	82,216	77,502	*
60 - 64	7,728	1,552	1,251	1,756	1,329	1,010	620	152	49	9
	55,061	37,206	44,925	55,132	63,028	69,208	71,085	79,339	86,291	$81,254
65 - 69	2,992	614	502	694	468	354	237	83	26	14
	53,740	37,106	47,164	53,722	60,010	64,544	68,829	77,172	83,774	87,113
70 & over	1,088	278	205	231	166	100	66	31	4	7
	46,379	31,540	39,024	46,193	55,983	66,221	60,726	61,342	*	122,892
Total	105,801	38,903	18,113	21,208	13,626	8,555	4,558	687	119	32
	$52,384	$34,758	$49,590	$59,895	$69,572	$75,898	$78,180	$80,236	$82,305	$93,910

** Not shown for groups with fewer than five members.*

EXHIBIT C
Reconciliation of Member Data

	Active Members	Inactive Members	Retired Members	Disabled Members	Beneficiaries and Survivors	Total
Number as of June 30, 2016	105,167	15,639	51,541	3,074	6,565	181,986
New members	11,395	26	110	1	636	12,168
Terminations – with vested rights	-2,544	2,545	-1	0	0	0
Terminations – without vested rights	-5,521	-139	N/A	N/A	N/A	-5,660
Retirements	-2,801	-882	3,823	-140	N/A	0
New disabilities	-214	-22	-1	237	N/A	0
Return to work	510	-473	-37	0	N/A	0
Died with or without beneficiary	-100	-26	-1,260	-101	-215	-1,702
Certain period expired	N/A	N/A	0	0	-55	-55
Data adjustments	-91	0	-46	-1	0	-138
Number as of June 30, 2017	105,801	16,668	54,129	3,070	6,931	186,599

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis *(based on unaudited financial statements)*

	Year Ended June 30, 2017			Year Ended June 30, 2016
	Regular	Police/Fire	Total	Total
Net assets at actuarial value at the beginning of the year	$27,916,452,518	$7,979,794,762	$35,896,247,280	$33,717,929,776
Contribution income:[1]				
Employer contributions[2]	$703,045,853	$198,698,356	$901,744,209	$1,569,709,596
Member contributions	703,110,419	198,633,790	901,744,209	129,788,195
Repayment and purchase of service	42,508,492	24,721,936	67,230,428	61,736,428
Contribution income	$1,448,664,764	$422,054,082	$1,870,718,846	$1,761,234,219
Investment income:				
Interest	$210,880,421	$0	$210,880,421	$191,695,946
Dividends	571,620,668	-	571,620,668	552,629,496
Net appreciation	3,218,838,653	-	3,218,838,653	-96,795,475
Other	120,178,514	-	120,178,514	139,896,529
Transfer of annual investment income	-916,589,331	916,589,331	-	-
Securities lending income	5,206,183	-	5,206,183	5,823,399
Other income	1,577,875	565,803	2,143,678	1,944,374
Change in unrecognized return	-666,241,820	-194,929,268	-861,171,088	1,787,008,782
Less investment fees	-16,458,380	-	-16,458,380	-14,553,031
Net investment income	$2,529,012,783	$722,225,866	$3,251,238,649	$2,567,650,020
Total income available for benefits	$3,977,677,547	$1,144,279,948	$5,121,957,495	$4,328,884,239
Less operating expenses:				
Retirement and survivor benefits	-$1,720,002,069	-$432,854,750	-$2,152,856,819	-$2,007,720,431
Disability benefits	-81,509,847	-23,847,527	-105,357,374	-104,125,858
Post-retirement increases	-10,862	-160	-11,022	-12,091
Refunds to members	-24,452,029	-5,936,145	-30,388,174	-26,757,635
Administrative expenses	-8,817,134	-1,053,150	-9,870,284	-10,573,149
Transfer to JRS	-418,673	-	-418,673	-
Other Expenses	4,129[3]	-5,864[3]	-1,735	-1,377,571
Net operating expenses	-$1,835,206,485	-$463,697,596	-$2,298,904,081	-$2,150,566,735
Interfund transfer	$1,824,016	-$1,824,016	$0	$0
Change in reserve for future benefits	$2,144,295,078	$678,758,336	$2,823,053,414	$2,178,317,504
Net assets at actuarial value at the end of the year	$30,060,747,596	$8,658,553,098	$38,719,300,694	$35,896,247,280

(1) *Starting in the year ended June 30, 2017, pursuant to GASB Statement No. 82, the financial statements recognize half of the employer contributions made on behalf of Employer-Pay members as member contributions.*

(2) *See cost-sharing mechanisms in NRS 286.410 and NRS 286.421*

(3) *Reflects revision from the 2016 unaudited financial statements of $5,863 re-allocated from Regular to Police/Fire.*

EXHIBIT E

Summary Statements of Assets *(based on unaudited financial statements)*

		Year Ended June 30, 2017		Year Ended June 30, 2016
Cash equivalents		$155,681,189		$209,333,614
Accounts receivable:				
Contributions receivable	$163,139,100		$134,973,348	
Pending trades receivable	198,725,111		120,155,081	
Accrued investment income	109,058,611		97,208,833	
Total accounts receivable		470,922,822		352,337,262
Investments:				
Fixed income securities	$10,504,305,561		$9,815,487,784	
Marketable equity securities	16,031,517,896		15,156,704,122	
International securities	8,259,056,692		6,627,477,668	
Real estate	1,789,219,998		1,584,377,325	
Private equity	1,677,291,420		1,433,191,372	
Total investments at market value		38,261,391,567		34,617,238,271
Collateral on loaned securities		377,917,975		411,128,913
Property and equipment		4,614,071		3,872,142
Other assets		3,352,174		2,916,621
Total assets		$39,273,879,798		$35,596,826,823
Liabilities:				
Accounts payable	-$12,909,341		-$11,279,040	
Pending trades payable	-196,799,074		-172,389,964	
Obligations under securities lending activities	-377,917,975		-411,128,913	
Total liabilities		-$587,626,390		-$594,797,917
Net assets at market value		$38,686,253,408		$35,002,028,906
Net assets at actuarial value		$38,719,300,694		$35,896,247,280

EXHIBIT F

Development of the Fund Through June 30, 2017

Year Ended June 30	Employer Contributions*	Member Contributions*	Other Contributions	Net Investment Return**	Administrative Expenses	Benefit Payments***	Actuarial Value of Assets at End of Year
2007							$21,359,026,885
2008	$1,167,392,913	$88,013,888	$43,287,531	$1,641,283,986	$8,723,601	$1,052,629,998	23,237,651,604
2009	1,213,067,534	93,648,004	28,116,522	621,100,111	9,714,463	1,211,993,461	23,971,875,851
2010	1,281,714,847	99,683,851	26,890,242	678,751,770	11,118,633	1,322,333,219	24,725,464,709
2011	1,264,759,603	97,033,823	31,547,354	1,201,272,733	10,579,998	1,438,358,514	25,871,139,710
2012	1,332,320,660	98,183,663	37,993,705	1,651,468,456	10,002,855	1,582,118,483	27,398,984,856
2013	1,310,082,859	99,230,935	46,467,628	1,971,170,711	9,560,240	1,707,835,385	29,108,541,364
2014	1,405,006,553	109,656,492	42,752,491	2,649,964,116	9,592,570	1,840,771,509	31,465,556,937
2015	1,436,652,815	114,302,545	82,485,688	2,614,811,974	9,648,626	1,986,231,557	33,717,929,776
2016	1,569,709,596	129,788,195	61,736,428	2,567,650,020	11,950,720	2,138,616,015	35,896,247,280
2017	901,744,209	901,744,209	67,230,428	3,251,238,649	9,872,019	2,289,032,062	38,719,300,694

* *Starting in the year ended June 30, 2017, pursuant to GASB Statement No. 82, the financial statements recognize half of the employer contributions made on behalf of Employer-Pay members as member contributions.*

** *Net of investment fees*

*** *Includes transfers in/out of the System (e.g. to the Judicial Retirement System) that correspond to transfers of liability.*

EXHIBIT G

Development of Unfunded Actuarial Accrued Liability for Year Ended June 30, 2017

	Regular	Police/Fire	Total
1. Unfunded actuarial accrued liability at beginning of year	$10,197,929,802	$2,364,984,488	$12,562,914,290
2. Normal cost at beginning of year	848,295,779	259,213,964	1,107,509,743
3. Actual total contributions, excluding purchase of service	-1,406,156,272	-397,332,146	-1,803,488,418
4. Actual administrative expenses	8,813,005	1,059,014	9,872,019
5. Interest			
(a) For whole year on (1) + (2)	$883,698,047	$209,935,876	$1,093,633,923
(b) For a half year on (3) + (4)	-55,893,731	-15,850,925	-71,744,656
(c) Total interest	827,804,316	194,084,951	1,021,889,267
6. Expected unfunded actuarial accrued liability	$10,476,686,630	$2,422,010,271	$12,898,696,901
7. Changes due to[1]			
(a) Investment gain	-$311,085,290	-$85,580,986	-$396,666,276
(b) Post-retirement benefit increases lower than expected	-242,347,659	-63,326,221	-305,673,880
(c) Individual salary increases lower than expected	-182,646,032	-9,947,766	-192,593,798
(d) Other experience	123,384,366	93,636,040	217,020,406
(e) Assumption changes	726,911,246	319,102,199	1,046,013,445
(f) Total changes	$114,216,631	$253,883,266	$368,099,897
8. Unfunded actuarial accrued liability at end of year	$10,590,903,261	$2,675,893,537	$13,266,796,798

[1] *For Regular, does not include separate item showing effect of contribution loss of $93,467,604, which resulted from actual contributions for the year falling short of those expected. This in turn was due to the net effect of a) lower than expected payroll growth, b) statutory contribution rates lower than the actuarially determined contribution rates, and c) timing effect of actuarially determined contributions payable at the beginning of the year vs. actual contributions payable throughout the year.*

For Police/Fire, does not include separate item showing effect of contribution loss of $7,976,201, which resulted from actual contributions for the year falling short of those expected. This in turn was due to the net effect of a) lower than expected payroll growth, b) statutory contribution rates higher than the actuarially determined contribution rates, and c) timing effect of actuarially determined contributions payable at the beginning of the year vs. actual contributions payable throughout the year.

EXHIBIT H
Table of Amortization Bases

Date Established	Initial Years	Initial Amount	Current Annual Payment[1]	Years Remaining	Outstanding Balance
Regular					
06/30/2004	30	$3,306,492,730	$315,156,401	17	$4,629,813,314
06/30/2005	30	825,676,847	74,056,091	18	1,141,738,602
06/30/2006	30	376,199,046	31,750,813	19	512,152,748
06/30/2007	30	-325,346,914	-25,838,346	20	-434,866,648
06/30/2008	30	597,061,087	44,618,197	21	781,584,120
06/30/2009	30	1,396,781,607	98,218,066	22	1,786,710,350
06/30/2010	30	804,325,423	53,218,015	23	1,003,309,542
06/30/2011	30	322,201,646	20,059,174	24	391,195,360
06/30/2012	23	-31,427,931	-2,259,765	18	-34,839,286
06/30/2013	22	1,365,091,459	95,716,494	18	1,475,681,667
06/30/2014	21	-430,228,451	-29,477,649	18	-454,463,224
06/30/2015	20	-351,958,978	-23,617,467	18	-364,115,538
06/30/2016	20	-50,637,913	-3,197,448	19	-51,576,065
06/30/2017	20	208,578,319	12,393,038	20	208,578,319
Subtotal			$660,795,614	18.9[2]	$10,590,903,261

[1] *Level percentage of payroll with payroll expected to increase 5.5% per year for Regular and 6.5% per year for Police/Fire. Payments shown as of beginning of year.*

[2] *Effective average amortization period. Combined Regular and Police/Fire average amortization period is 18.7.*

EXHIBIT H

Table of Amortization Bases (continued)

Date Established	Initial Years	Initial Amount	Current Annual Payment[1]	Years Remaining	Outstanding Balance
Police/Fire					
06/30/2004	30	$1,248,577,900	$120,706,082	17	$1,906,173,067
06/30/2005	30	166,690,723	14,988,984	18	249,490,968
06/30/2006	30	145,811,902	12,195,451	19	213,299,873
06/30/2007	30	-52,497,545	-4,083,991	20	-74,849,024
06/30/2008	30	130,126,655	9,415,641	21	180,374,791
06/30/2009	30	204,577,462	13,768,164	22	275,070,410
06/30/2010	30	144,950,584	9,073,393	23	188,661,961
06/30/2011	30	585,886	34,111	24	736,773
06/30/2012	23	-101,888,427	-6,972,889	18	-116,063,426
06/30/2013	22	-14,571,831	-965,347	18	-16,068,157
06/30/2014	21	-245,329,185	-15,802,381	18	-263,029,933
06/30/2015	20	-122,710,590	-7,702,728	18	-128,211,555
06/30/2016	20	-1,048,428	-61,358	19	-1,073,157
06/30/2017	20	261,380,946	14,261,743	20	261,380,946
Subtotal			$158,854,875	18.2[2]	$2,675,893,537
Grand Total					$13,266,796,798

(1) *Level percentage of payroll with payroll expected to increase 5.5% per year for Regular and 6.5% per year for Police/Fire. Payments shown as of beginning of year.*

(2) *Effective average amortization period. Combined Regular and Police/Fire average amortization period is 18.7.*

EXHIBIT I
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 Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan 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) Turnover 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 level cost 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 Plan exceeds the assets of the Plan.

Amortization of the Unfunded Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.
Investment Return:	The rate of earnings of the Plan 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 6,931 beneficiaries and survivors in pay status)	64,130
2.	Members inactive during year ended June 30, 2017 with vested rights	16,668
3.	Members active during the year ended June 30, 2017	105,801
4.	Total members	186,599

The actuarial factors as of the valuation date are as follows:

1.	Normal cost[1]		
	Regular members	$867,123,177	
	Police/Fire members	266,958,346	
	Total normal cost		$1,134,081,523
2.	Actuarial accrued liability		
	Retired members and beneficiaries	$29,072,261,943	
	Inactive members with vested rights	1,420,525,965	
	Active members	21,493,309,584	
	Total actuarial accrued liability		51,986,097,492
3.	Actuarial value of assets ($38,686,253,408 at market value as reported by Retirement Office)		38,719,300,694
4.	Unfunded actuarial accrued liability (2. – 3.)		$13,266,796,798
5.	Total rate payroll		$6,237,158,079

[1] *Does not include administrative expenses*

EXHIBIT II
Actuarial Assumptions and Methods

Rationale for Assumptions

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the Actuarial Experience Study dated October 16, 2017.

Economic Assumptions

Net Investment Return: 7.50% (including 2.75% for inflation).

Consumer Price Index: Increase of 2.75% per year.

Administrative Expenses: 0.15% of payroll added to Normal Cost.

Salary Increases:

Inflation: 2.75% Plus

Productivity pay increases: 0.50% Plus

Promotional and merit salary increases:

Years of Service	Regular	Police/Fire
Less than 1	5.90%	10.65%
1	4.80	7.15
2	4.00	5.20
3	3.60	4.60
4	3.30	4.30
5	3.00	4.15
6	2.80	3.90
7	2.70	3.50
8	2.50	3.15
9	2.35	2.90
10	2.15	2.50
11	1.75	1.90
12	1.50	1.50
13	1.25	1.30
14	1.10	1.30
15 or More	1.00	1.30

Total Payroll Growth:

Assumed payroll growth rates are used to compute the unfunded actuarial accrued liability amortization payments as a level percentage of projected payroll. For this valuation, the payroll for the coming year is based on actual annualized payroll for the actives as of the valuation date and projected by the salary scale. For the purpose of calculating the actuarially determined contribution rate, the total payroll growth assumption for future years is 5.50% per year for Regular and 6.50% for Police/Fire.

The payroll growth assumptions are set by the Board and affect the timing of payments toward the unfunded liabilities. Considerations for setting these assumptions include future financial conditions that are difficult for Segal to evaluate. In recent years, payroll growth has been less than assumed. This has the effect of delaying contributions toward the unfunded liabilities and could result in increases to required contributions in future years. We recommend that the Board closely monitor actual payroll growth to verify that the assumptions remain valid.

Post-Retirement Benefit Increases:

For current retirees and beneficiaries, future Post-Retirement Benefit Increases reflect actual changes in historical CPI and are assumed to follow the formulas described in Exhibit III of this section. For future retirees, those hired prior to 2010 are assumed to reach the cap after 16 years of retirement. Those hired in between 2010 and 2015 are also assumed to reach the cap after 16 years of retirement. Those hired after 2015 will never receive an annual increase that exceeds 2.75%. Underlying all of these assumptions is that CPI will grow over time at a rate of 2.75% per year.

Demographic Assumptions

Mortality Rates (Regular and Police/Fire):

Healthy:	Headcount-Weighted RP-2014 Healthy Annuitant Table projected to 2020 with Scale MP-2016, set forward one year for spouses and beneficiaries. For ages less than 50[1], mortality rates are based on the Headcount-Weighted RP-2014 Employee Mortality Tables. Those mortality rates are adjusted by the ratio of the mortality rate for healthy annuitants at age 50 to the mortality rate for employees at age 50. The mortality rates are then projected to 2020 with Scale MP-2016.
Disabled:	Headcount-Weighted RP-2014 Disabled Retiree Table, set forward four years.
Pre-Retirement:	Headcount-Weighted RP-2014 Employee Table, projected to 2020 with Scale MP-2016.

The RP-2014 Headcount-Weighted Mortality Tables, set forward one year for spouses and beneficiaries, reasonably reflect the projected mortality experience of the Plan as of the measurement date. The additional projection of 6 years is a provision made for future mortality improvement.

[1] *The RP-2014 Healthy Annuitant Mortality Tables have rates only for ages 50 and later.*

Termination Rates before Retirement:

	Mortality	
	Regular and Police/Fire	
Age	**Male**	**Female**
20	0.05%	0.02%
25	0.06	0.02
30	0.06	0.03
35	0.07	0.04
40	0.08	0.05
45	0.11	0.08
50	0.19	0.13
55	0.32	0.20
60	0.55	0.30

Any mortality that occurs during the first two years of employment is assumed to be non-duty related.

Termination Rates before Retirement (continued):

	Withdrawal Rates	
Years of Service	Regular	Police/Fire
0 – 1	16.00%	15.00%
1 – 2	12.50	8.00
2 – 3	10.25	7.50
3 – 4	8.00	6.00
4 – 5	7.50	5.00
5 – 6	6.00	3.75
6 – 7	5.25	3.50
7 – 8	4.25	2.50
8 – 9	4.00	2.25
9 – 10	3.75	1.90
10 – 11	3.25	1.50
11 – 12	3.00	1.30
12 – 13	2.75	1.00
13 – 14	2.50	0.90
14 – 15	2.25	0.80
15 – 16	2.00	0.70
16 – 17	2.00	0.60
17 – 18	1.75	0.50
18 – 19	1.75	0.50
19 – 20	1.75	0.50
20 & Over	1.75	0.45

No withdrawal is assumed after a member reaches earliest unreduced retirement age.

Termination Rates before Retirement (continued):

	Disability Rates	
Age	**Regular**	**Police/Fire**
20 – 24	0.01%	0.00%
25 – 29	0.03	0.06
30 – 34	0.06	0.12
35 – 39	0.10	0.30
40 – 44	0.21	0.45
45 – 49	0.35	0.65
50 – 54	0.60	0.80
55 – 59	0.75	0.65
60 – 64	0.35	0.50
65 & Over	0.00	0.00

Disability rates are applied only for members with more than 5 years of service and less than 30 years of service for Regular members with an effective date of membership before July 1, 2015, less than 33 1/3 years of service for Regular members with an effective date of membership on or after July 1, 2015, or 25 years for Police/Fire members.

Retirement Rates:

Regular members with an effective date of membership before July 1, 2015:

	Years of Service (%)					
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30-32**	**33 or More**
45-49	0.00	0.00	0.75	6.50	16.00	16.00
50-54	0.50	1.50	1.50	8.50	18.00	18.00
55-59	1.50	3.50	5.00	12.00	20.00	20.00
60-61	6.50	11.00	17.00	22.00	22.00	22.00
62-64	9.00	13.00	17.00	22.00	22.00	22.00
65-69	20.00	20.00	22.00	25.00	25.00	25.00
70-74	30.00	30.00	40.00	40.00	40.00	40.00
75 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Regular members with an effective date of membership on or after July 1, 2015:

	Years of Service (%)					
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30-32**	**33 or More**
45-49	0.00	0.00	0.75	6.50	6.50	16.00
50-54	0.50	1.50	1.50	8.50	8.50	18.00
55-59	1.50	3.50	5.00	12.00	20.00	20.00
60-61	6.50	11.00	17.00	22.00	22.00	22.00
62-64	9.00	13.00	17.00	22.00	22.00	22.00
65-69	20.00	20.00	22.00	25.00	25.00	25.00
70-74	30.00	30.00	40.00	40.00	40.00	40.00
75 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Retirement rates (continued):

Police/Fire:

	Years of Service (%)				
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30 or More**
Less than 40	0.00	0.00	0.00	0.00	0.00
40-44	0.00	0.50	3.50	0.00	0.00
45-49	0.00	1.00	6.50	18.00	18.00
50-54	1.50	4.50	13.00	20.00	24.00
55-59	3.50	10.00	20.00	25.00	28.00
60-64	9.00	18.00	25.00	35.00	35.00
65-69	50.00	50.00	60.00	60.00	60.00
70 & Over	100.00	100.00	100.00	100.00	100.00

Retirement Age for Inactive Vested Participants:	Earliest unreduced retirement age.
Unknown Data for Participants:	Same as those exhibited by members with similar known characteristics. If not specified, Regular members are assumed to be female, and Police/Fire members are assumed to be male.
Percent Married:	Since pre-retirement death benefits are payable to a surviving beneficiary of an unmarried member, all members are assumed to have a beneficiary upon pre-retirement death. The unmodified option is a straight life annuity except for "employer-pay" Police/Fire retirees, for whom it is a 50% joint and survivor annuity. Existing "employer-pay" Police/Fire retirees with an unmodified option who retired after June 30, 1981 and before July 1, 2011 have been valued assuming no surviving spouse, pending the results of an analysis and verification of spousal information. 70% of "employer-pay" Police/Fire male members and 55% of "employer-pay" Police/Fire female members are assumed to be married at retirement.
Age of Spouse:	Male members 3 years older than their spouses, female members 2 years younger than their spouses. Spouses are assumed to be of the opposite sex of the member.
Dependent Children:	The assumption for dependent children in the actuarial valuation is one dependent child who is 28 years younger than the member.

Actuarial Methods

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 based on costs allocated as a level percentage of salary, with Normal Cost determined based on the plan provisions and benefit accrual rate applicable to that individual.

Actuarial Value of Assets: Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the actuarial value, and is recognized over a five-year period, further adjusted, if necessary, to be within 30% of the market value.

Amortization Policy: The UAAL, (i.e., the difference between the Actuarial Accrued Liability and the Valuation Value of Assets), as of June 30, 2011 shall continue to be amortized over separate 30-year period amortization layers based on the valuations during which each separate layer was previously established.

Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of June 30 will be amortized over a period equal to the truncated average remaining amortization period of all prior UAAL layers. This would occur until the average remaining amortization period is less than 20 years. At that point, amortization periods of 20 years would be used for actuarial gains and losses.

Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period equal to the truncated average remaining amortization period of all prior UAAL layers. This would occur until the average remaining amortization period is less than 20 years. At that point, amortization periods of 20 years would be used for assumption or method changes.

Unless an alternative amortization period is recommended by the Actuary and accepted by the Board based on the results of an actuarial analysis:

a. with the exception noted in b., below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 15 years;

b. the increase in UAAL that would result from a temporary retirement incentive will be pre-funded by the participating employer(s).

UAAL layers shall be amortized over "closed" amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

UAAL layers shall be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase.

If an overfunding exists (i.e., the total of all UAAL becomes negative so that there is a surplus), such surplus and any subsequent surpluses will be amortized over an "open" amortization period of 30 years. Any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized over 20 years as the first of a new series of amortization layers.

These amortization policy components will apply separately to each of the Regular and Police/Fire UAAL cost groups.

Changes in Actuarial Assumptions and Methods: Based on the June 30, 2016 Actuarial Experience Study, the following assumptions were changed. Previously, these assumptions were as follows:

Net Investment Return: 8.00% (including 3.50% for inflation).

Consumer Price Index: Increase of 3.50% per year.

Salary Increases:

Inflation: 3.50% Plus

Productivity pay increases: 0.75% Plus

Promotional and merit salary increases:

Years of Service	Regular	Police/Fire
Less than 1	5.50%	10.25%
1	4.25	6.55
2	3.50	5.15
3	3.25	4.55
4	3.00	4.25
5	2.75	4.05
6	2.40	3.75
7	2.25	3.25
8	1.85	2.75
9	1.75	2.25
10	1.50	1.75
11	1.00	1.50
12	0.80	1.25
13 or More	0.35	1.00

Total Payroll Growth:

Regular: 6.50%

Police/Fire: 7.50%

Post-Retirement Benefit Increases: For current retirees and beneficiaries, future Post-Retirement Benefit Increases reflect actual changes in historical CPI and are assumed to follow the formulas described in Exhibit III of this section. For future retirees, those hired prior to 2010 are assumed to reach the cap after 24 years of retirement. Those hired in 2010 or later are assumed to reach the cap after 39 years of retirement. Underlying all of these assumptions is that CPI will grow over time at a rate of 3.50% per year.

Mortality Rates:

Healthy:	*Regular:*	RP-2000 Combined Healthy Mortality Table projected to 2013 with Scale AA, set back one year for females (no age setback for males).
	Police/Fire:	RP-2000 Combined Healthy Mortality Table projected to 2013 with Scale AA, set forward one year.
Disabled:	*Regular and Police/Fire:*	RP-2000 Disabled Retiree Mortality Table projected to 2013 with Scale AA, set forward three years.

Termination Rates before Retirement:

	Mortality			
	Regular		**Police/Fire**	
Age	**Male**	**Female**	**Male**	**Female**
20	0.03%	0.02%	0.03%	0.02%
25	0.03	0.02	0.04	0.02
30	0.04	0.02	0.05	0.03
35	0.07	0.04	0.08	0.04
40	0.10	0.05	0.10	0.06
45	0.13	0.08	0.13	0.10
50	0.17	0.12	0.19	0.15
55	0.28	0.21	0.33	0.29
60	0.55	0.42	0.63	0.54

Any mortality that occurs during the first two years of employment is assumed to be non-duty related.

Termination Rates before Retirement (continued):

	Withdrawal Rates	
Years of Service	**Regular**	**Police/Fire**
0 – 1	16.50%	14.00%
1 – 2	12.50	6.50
2 – 3	9.70	5.75
3 – 4	7.30	4.75
4 – 5	6.60	4.25
5 – 6	5.00	3.50
6 – 7	4.00	3.00
7 – 8	3.50	2.25
8 – 9	3.25	1.90
9 – 10	3.00	1.75
10 – 11	2.75	1.50
11 – 12	2.50	1.25
12 – 13	2.25	1.00
13 – 14	2.00	0.90
14 – 15	1.75	0.80
15 & Over	1.50	0.50

No withdrawal is assumed after a member reaches earliest unreduced retirement age.

Termination Rates before Retirement (continued):

	Disability Rates	
Age	**Regular**	**Police/Fire**
20 – 24	0.01%	0.00%
25 – 29	0.02	0.06
30 – 34	0.06	0.10
35 – 39	0.09	0.18
40 – 44	0.21	0.35
45 – 49	0.35	0.56
50 – 54	0.57	0.75
55 – 59	0.75	0.50
60 – 64	0.40	0.50
65 & Over	0.00	0.00

Disability rates are applied only for members with more than 5 years of service and less than 30 years of service for Regular members with an effective date of membership before July 1, 2015, less than 33 1/3 years of service for Regular members with an effective date of membership on or after July 1, 2015, or 25 years for Police/Fire members.

Retirement Rates:

Regular members with an effective date of membership before July 1, 2015:

	Years of Service (%)					
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30-32**	**33 or More**
45-49	0.00	0.00	1.00	7.00	20.00	20.00
50-54	1.00	2.00	2.00	10.00	20.00	20.00
55-59	2.00	4.00	6.00	13.00	25.00	25.00
60-61	8.00	12.00	18.00	25.00	25.00	25.00
62-64	10.00	14.00	18.00	25.00	25.00	25.00
65-69	20.00	20.00	22.00	25.00	25.00	25.00
70-74	40.00	40.00	60.00	60.00	60.00	60.00
75 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Regular members with an effective date of membership on or after July 1, 2015:

	Years of Service (%)					
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30-32**	**33 or More**
45-49	0.00	0.00	1.00	7.00	7.00	20.00
50-54	1.00	2.00	2.00	10.00	10.00	20.00
55-59	2.00	4.00	6.00	13.00	25.00	25.00
60-61	8.00	12.00	18.00	25.00	25.00	25.00
62-64	10.00	14.00	18.00	25.00	25.00	25.00
65-69	20.00	20.00	22.00	25.00	25.00	25.00
70-74	40.00	40.00	60.00	60.00	60.00	60.00
75 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Retirement rates (continued):

Police/Fire:

	Years of Service (%)				
Age	**5-9**	**10-19**	**20-24**	**25-29**	**30 or More**
Less than 40	0.00	0.00	0.00	0.00	0.00
40-44	0.00	0.75	3.00	0.00	0.00
45-49	0.00	1.00	5.00	15.00	15.00
50-54	1.50	5.00	13.00	18.00	27.00
55-59	3.50	11.00	20.00	25.00	35.00
60-64	10.00	18.00	25.00	32.00	35.00
65-69	60.00	60.00	65.00	70.00	70.00
70 & Over	100.00	100.00	100.00	100.00	100.00

Percent Married: 75% of "employer-pay" Police/Fire male members and 60% of "employer-pay" Police/Fire female members are assumed to be married at retirement.

Age of Spouse: Females 3 years younger than males.

EXHIBIT III
Summary of Plan Provisions

This exhibit summarizes the major provisions of the Nevada Public Employees' Retirement Act 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: July 1 through June 30

Service Retirement:

For members with an effective date of membership before January 1, 2010:

Requirement for Regular Members	Age 65 with five years of service, or age 60 with ten years of service, or at any age with 30 years of service.
Requirement for Police/Fire Members	Age 65 with five years of service, or age 55 with ten years of Police/Fire service, or age 50 with 20 years of Police/Fire service, or at any age with 25 years of Police/Fire service.
Benefit	2.67% of final average compensation (average of 36 highest consecutive months) per year of service earned on or after July 1, 2001 plus 2.50% of final average compensation per year of service before July 1, 2001. Maximum benefits are 90% of average compensation for individuals who became members before July 1, 1985 and 75% of average compensation for individuals who became members after June 30, 1985.

For members with an effective date of membership on or after January 1, 2010:

Requirement for Regular Members	Age 65 with five years of service, or age 62 with ten years of service, or at any age with 30 years of service.
Requirement for Police/Fire Members	Age 65 with five years of service, or age 60 with ten years of Police/Fire service, or age 50 with 20 years of Police/Fire service, or at any age with 30 years of Police/Fire service.
Benefit	2.50% of final average compensation (average of 36 highest consecutive months) per year of service. Maximum benefits are 75% of average compensation.

For Regular members with an effective date of membership on or after July 1, 2015:

Requirement	Age 65 with five years of service, or age 62 with ten years of service, or age 55 with 30 years of service, or any age with 33 1/3 years of service. Purchased service generally may not be counted toward years needed to attain eligibility.
Benefit	2.25% of final average compensation (average of 36 highest consecutive months) per year of service. Maximum benefits are 75% of average compensation.

Limitation on Compensation used in Determining Retirement Benefits

For any member with an effective date of membership on or after July 1, 2015, compensation used in determining retirement benefits is limited to $200,000. This limit shall be adjusted annually based on CPI.

Early Retirement:

Requirement	Any age with five years of service.

For members with an effective date of membership before January 1, 2010:

Benefit	Accrued retirement benefit reduced 4% per year for each year that the member is under the age required for service retirement.

For members with an effective date of membership on or after January 1, 2010:

Benefit	Accrued retirement benefit reduced 6% per year for each year that the member is under the age required for service retirement.

Disability:	
Requirement	Five years of service and totally unable to perform current job or any comparable job for which the member is qualified by training and experience, because of injury or illness of a permanent nature, provided the member is in the employ of a participating employer at the time of application for disability retirement.
Benefit	Accrued service retirement benefit without reduction for age. (System disability benefit is reduced for other benefits received on account of same disability, if such other benefits are financed by a Nevada public employer, to the extent that total disability benefits would otherwise exceed 100% of final average compensation.)
Vesting:	
Requirement	Any age with five years of service, provided the member has not received a refund of member contributions.
Benefit	Accrued service retirement benefit payable upon attainment of age 65 if member has between five and ten years of service at termination, or upon attainment of the age required for service retirement if member has ten or more years of service at termination.

Spouse's Pre-Retirement Death Benefit:

Requirement	Eligible survivors of an active member who dies receive survivor benefits if: (a) the deceased member had two years of service in the 2½ years immediately preceding death; or (b) the deceased member had ten years of service; or (c) death was caused by occupational disease or a service-connected accident regardless of the deceased member's length of service; or (d) death occurred within 18 months after termination of employment where mental or physical condition required the termination; or (e) death occurred while member was on leave of absence for training and member met requirements of (a) at time such leave began.
Benefit	a. Unmarried children under age 18, or age 18 to 23 and attending an accredited school on a full-time basis: \$400 per month per child. Payments cease upon attaining age 18 or age 23 if full-time student, unless child is incapacitated; or upon marriage, adoption, or death. b. Spouse, or survivor beneficiary of an unmarried member, of deceased member with fewer than ten years of service (and at least two years of service in the last 2½ years): \$450 per month. Payments cease upon death. c. Spouse, or survivor beneficiary of an unmarried member, of deceased member with ten but fewer than 15 years of service: greater of \$450 per month or Option 3 benefit that would have been payable if deceased member had retired on date of death without reduction for early payment. Payments cease upon death. d. Spouse, or survivor beneficiary of an unmarried member, of deceased member with 15 or more years of service: greater of \$450 per month or Option 2 benefit that would have been payable if deceased member had retired on date of death without reduction for early payment. Payments cease upon death. e. Spouse, or survivor beneficiary of an unmarried member, of deceased member eligible to retire with respect to both age and service: greater of \$450 per month, Option 2 or Option 3 benefit that would have been payable if deceased member had retired on death, without reduction for early payment. Payments cease upon death.

f. Dependent parents: $400 per month each, provided there are no other eligible survivors. Payments cease upon death.

g. Lump sum payment option: a spouse, or survivor beneficiary of an unmarried member, may waive right to monthly survivor benefits and instead receive a lump sum refund of deceased member's contributions plus half the contributions made under the Employer-Pay provisions, provided no other person is eligible for survivor benefits.

Benefit Limitations

Total survivor benefits, including any other survivor benefit received from any other source, shall not exceed final average compensation (a) if the other benefit was provided or purchased by a public employer, except for lump sum payments under a group insurance program; and (b) to the extent that the total of the allowance and the other benefit would otherwise exceed the deceased member's final average compensation.

Benefit for certain spouses

A member who begins receiving service or disability retirement benefits from the Police/Fire members retirement fund after June 30, 1981, is eligible to receive an unreduced service retirement allowance. Upon the death of such a retired member, a spouse who was the retired member's spouse at the time of retirement is entitled to receive 50% of the unreduced allowance; this benefit is payable to the surviving spouse beginning at age 50. A surviving spouse is not eligible to receive this 50% spouse's benefit if the retired member elects an optional benefit form at the time of retirement. Service performed after July 1, 1981, in positions other than as a Police/Fire member, except military service, is not credited toward this 50% spouse's benefit. Existing "employer-pay" Police/Fire retirees who retired after June 30, 1981 and before July 1, 2011 have been valued assuming no surviving spouse, pending the results of an analysis and verification of spousal information.

Benefit for Spouses of Members Killed in the Line of Duty:

The spouse of a member who is a police officer or firefighter killed in the line of duty on or after July 1, 2013, or the spouse of any other member killed in the course of employment on or after July 1, 2013, is entitled to receive a monthly allowance equal to the greater of:

a. 50% of the salary of the member on the date of the member's death; or
b. 100% of the retirement allowance that the member was eligible to receive based on the member's years of service obtained before the member's death without any reduction for age for the deceased member.

The spouse may elect to receive this benefit in lieu of any other available death benefit.

This benefit is also available to a survivor beneficiary of an unmarried member.

Post-Retirement Benefit Increases:

For members with an effective date of membership before January 1, 2010:

Benefit — The lesser of

(a) 2% per year following the third anniversary of the commencement of benefits, 3% per year following the sixth anniversary, 3 ½% per year following the ninth anniversary, 4% per year following the twelfth anniversary and 5% per year following the fourteenth anniversary, or

(b) The annual benefit increase is equal to the average percentage increase in the Consumer Price Index (or other Board approved index) for the three preceding years.

In any event, a member's benefit must be increased by the percentages in paragraph (a) if their benefit has not been increased at a rate greater than or equal to the average of the Consumer Price Index (All Items) (or other Board approved index) for the period between retirement and the date of increase.

For members with an effective date of membership on or after January 1, 2010 and prior to July 1, 2015:

Benefit — Same as above, except the increases do not exceed 4% per year.

For members with an effective date of membership on or after July 1, 2015:

Benefit	2.0% per year following the third through fifth anniversaries of the commencement of benefits; 2.5% per year following the sixth through eighth anniversaries. On succeeding anniversaries the annual increase shall be the lesser of 3.0% or the CPI for the preceding calendar year.

Optional Benefit Forms

Regular and disability retirees may elect one of the optional benefit plans:

- Option 1 - Single life annuity except for:
  Police/Fire members who contribute under the "employer pay" contribution plan, Option 1 is a 50% joint and survivor annuity
- Option 2 - 100% joint and survivor
- Option 3 - 50% joint and survivor
- Option 4 - 100% joint and survivor, with payments to beneficiary commencing at age 60
- Option 5 - 50% joint and survivor, with payments to beneficiary commencing at age 60
- Option 6 - specific sum option up to 100% of allowance paid to retiree
- Option 7 - specific sum option up to 100% of allowance paid to retiree, with payments to beneficiary commencing at age 60.

If the beneficiary predeceases the retired member, the optional allowance reverts to the unmodified allowance.

Contribution Rates

For the fiscal years July 1, 2017 through June 30, 2019, statutory contribution rates as a percentage of compensation are as follows:

	Regular	Police/Fire
Employer-Pay	28.00%	40.50%
Employee/Employer	14.50%/14.50%	20.75%/20.75%

Total contribution rates are adjusted at the beginning of each odd-numbered fiscal year, based on the actuarially determined rates indicated in the actuarial valuation report for the immediately preceding year. Rates are only adjusted upward if the new rates are more than 0.50% higher than the existing rate for Employer-Pay and more than 0.25% higher for Employee/Employer. Rates are only adjusted downward if the new rates are more than 2.00% lower than the existing rate for Employer-Pay (and adjusted only by the amount in excess of 2.00%) and more than 1.00% lower than the existing rate for Employee/Employer (and adjusted only by the amount in excess of 1.00%). Rates are rounded to the nearest 0.25% of payroll.

Under the Employer-Pay provisions, the contributions made by employers on behalf of members are not credited to member accounts and are not refunded upon termination. For members covered by the Employer-Pay provisions, final average compensation is increased by half the total contribution made by the public employer and may not be less than it would have been if contributions had been made by the member and the employer separately.

Changes in Plan Provisions:

There were no changes in plan provisions since the last actuarial valuation.

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