



**PERSI**

Public Employee Retirement System of Idaho

**ACTUARIAL VALUATION**  
**July 1, 2018**

By

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Retirement Board  
Public Employee Retirement System  
State of Idaho  
State House  
Boise, ID 83720

Dear Members of the Board:

In accordance with your request, we have performed an actuarial valuation of the Public Employee Retirement System of Idaho for determining the System's financial status as of July 1, 2018. This report reflects the benefit provisions and contribution rates in effect as of July 1, 2018.

### **Certification**

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by PERSI's staff. This information includes, but is not limited to, statutory provisions, member census data, and financial information. We found this information to be reasonably consistent and comparable with data used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different and our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for the System have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the System and reasonable expectations); and which, in combination, offer our best estimate of anticipated experience affecting the System. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of the System and to reasonable expectations which, in combination, represent our best estimate of anticipated experience under the System.

This valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

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Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Retirement Board has the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. The calculations in the enclosed exhibits have been made on a basis consistent with our understanding of the System's funding requirements and goals. Determinations for purposes other than meeting this requirement may be significantly different from the results contained in this letter. Accordingly, additional determinations may be needed for other purposes.

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- (b) The System may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

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The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this letter is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and Fellows of the Society of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

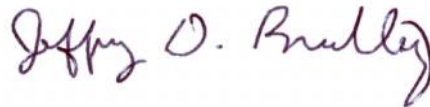
We would like to express our appreciation to Don Drum, Executive Director of the System, and to members of his staff, who gave substantial assistance in supplying the data on which this report is based.

We respectfully submit the following report and we look forward to discussing it with you.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert L. Schmidt".

Robert L. Schmidt, FSA, EA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read "Jeffrey D. Bradley".

Jeffrey D. Bradley, FSA, EA, MAAA  
Principal and Consulting Actuary

A handwritten signature in black ink, appearing to read "Mark C. Olleman".

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**Public Employee Retirement  
System of Idaho**

**Table of Contents**

	<b>Page</b>
<b>Section 1: Summary of the Findings .....</b>	<b>1</b>
Table 1: Gains and Losses for the Year Ended July 1, 2018 .....	4
Table 2: Analysis of Actuarial Gains and Losses .....	5
Table 3: Summary of Key Valuation Results .....	6
<b>Section 2: Scope of the Report .....</b>	<b>9</b>
<b>Section 3: Assets .....</b>	<b>11</b>
Table 4: Summary of Assets .....	13
Table 5: Analysis of Investments July 1, 2018 .....	14
Table 6: Reconciliation of Assets .....	15
Table 7: Analysis of Investment Yield .....	16
Table 8: Yields for Various Historical Periods, Net of Investment Expenses .....	17
<b>Section 4: Actuarial Liabilities .....</b>	<b>19</b>
Table 9: Actuarial Present Value of Future Benefits for Contributing Members and Former Contributing Members and Their Survivors .....	20
<b>Section 5: Employer Contributions .....</b>	<b>21</b>
Table 10: Unfunded Actuarial Accrued Liability .....	27
Table 11: Normal Cost Rates .....	28
Table 12: Contribution Rates as a Percentage of Total Salary .....	29
<b>Section 6: Supplemental Information .....</b>	<b>31</b>
Table 13: Cash Flow History and Projections .....	32
Table 14: Distribution of Retired Members by Calendar Year of Retirement .....	34
<b>Appendix A: Actuarial Procedures and Assumptions .....</b>	<b>35</b>
Table A-1: Summary of Valuation Assumptions .....	42
Table A-2: Future Salaries .....	44
Table A-3: Future Salaries .....	45
Table A-4: Immediate Retirement .....	46
Table A-5: Service Retirement .....	47
Table A-6: Early Retirement .....	48
Table A-7: Disablement .....	49
Table A-8A: Mortality (Base Rates for Year 2000) .....	50
Table A-8B: Mortality Projection Scales .....	51
Table A-9: Other Terminations of Employment .....	52
Table A-10: Immediate Refund of Contributions Upon Termination of Employment While Vested .....	53
<b>Appendix B: Provisions of Governing Law .....</b>	<b>55</b>
<b>Appendix C: Valuation Data and Comparative Schedules .....</b>	<b>61</b>
Table C-1: Summary of Membership Data .....	63



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Table C-2:	Summary of Age and Service Statistics .....	64
Table C-3:	Age Distribution of Active Members .....	65
Table C-4:	Membership Data .....	66
Table C-5:	Contribution Rates.....	68
Table C-6:	Investments.....	71
Table C-7:	Changes Affecting Actuarial Valuations - Statistics.....	72
Table C-8:	Changes Affecting Actuarial Valuations - Descriptions .....	74
Table C-9:	Changes in Status .....	78
Table C-10:	Reconciliation of Data Records .....	79
<b>Appendix D:</b>	<b>Glossary.....</b>	<b>81</b>



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# Public Employee Retirement System of Idaho

## Section 1: Summary of the Findings

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Our actuarial valuation of the System as of July 1, 2018 shows that the current scheduled contribution rates will meet the normal costs of the System as they accrue. The current scheduled rates are sufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) in 25 or fewer years. Therefore, the amortization period is not greater than the 25-year maximum permitted under Section 59-1322, Idaho Code.

Specifically, based on the current blended contribution rate of 18.42% of pay, and the currently scheduled increase of this contribution rate to 19.42%, the UAAL is projected to be amortized over 13.9 years if future experience matches the actuarial assumptions, excluding any potential March 1, 2019 Discretionary COLA.

One measure of the adequacy of the contribution rates is the funding ratio, which compares the value of the actuarial assets to the actuarial accrued liability. The following compares the 2017 and the 2018 valuations.

Including Effect of:	Funding Ratio	
	2017 Val	2018 Val
Discretionary COLA		
March 1, 2017	89.6%	
March 1, 2018	89.2%	91.2%
March 1, 2019		90.3%

The funding ratio reflects the current value of the assets. For the 2017 valuation, the table reflects that there was a Discretionary COLA granted at March 1, 2018.

For the 2018 valuation, the table shows the funding ratio with the automatic March 1, 2019 COLA of 1.0% (91.2%) and with a potential Discretionary COLA of 1.7% effective March 1, 2019 (90.3%).

## Summary of the Findings (continued)

The calculations in this report assume a 1.0% automatic COLA in all future years. The impact of the potential March 1, 2019 discretionary COLA is excluded in this report in all final 2018 values, except where noted for comparison. The calculations do not reflect any discretionary COLAs that may be granted beyond March 1, 2019. While the Board has granted discretionary COLAs in the past, the decision whether or not to grant each COLA is made one year at a time. If the COLA assumption used for the actuarial valuation included provision for potential future discretionary COLAs, the impact would be a material increase in the costs and liabilities reported herein.

The 2018 actuarial valuation indicates that an actuarial experience gain of \$281.8 million occurred during the fiscal year that just ended. This gain is based on the expected UAAL as of July 1, 2018 of \$1,861.9 million versus the actual UAAL of \$1,580.1 million. The gain was primarily due to investment gains, as reflected in the 8.41% investment yield (net of all expenses) for the past year. This and other components of the gain are shown in Table 1.

Table 2 illustrates the gains and losses incurred in the last three fiscal years attributable to both expected and unexpected experience, as well as changes in assumptions, benefits and methods.

**Change in Assumptions,  
Benefits or Contribution  
Rates**

At the October 2016 Board meeting, the Board approved a 1% increase to total contribution rates, to go into effect as of July 1, 2018. At the October 2017 Board meeting, the Board elected to delay this 1% increase one year, to go into effect as of July 1, 2019. Unless otherwise noted, all figures in this report reflect this rate increase and assume that it takes effect on July 1, 2019 as currently scheduled.

For the July 1, 2018 valuation, the underlying inflation assumption was changed from 3.25% to 3.00%. Also, the real wage increase assumption was changed from 0.50% to 0.75%. The combination of these two changes resulted in no change in the general wage growth assumption of 3.75%.

There have been no other changes in actuarial assumptions or plan benefits since the July 1, 2017 valuation.

**Discretionary COLAs**

The System automatically provides a 1.0% increase in retirement benefits each year if the Consumer Price Index (CPI) has increased by at least that amount. The Board is empowered to go beyond 1% and match the full increase in the CPI, up to a total of 6%, subject to rejection or amendment by the Legislature. If the increase is less than 1%, or negative, the COLA is automatic. A negative COLA cannot decrease benefits by more than 6% in one year, and each retiree's benefit cannot be less than the amount of the retirement allowance at the member's commencement date.

The CPI grew at a rate of 2.7% during the last year. The effect of the potential benefit increase beyond 1.0% is not reflected in the balance of this report, except as shown in Tables 10 and 12. The increase in actuarial liabilities due to the additional 1.7% potential discretionary COLA is \$170.4 million as of July 1, 2018.

**Public Employee Retirement  
System of Idaho**

**Table 1: Gains and Losses for the Year Ended July 1, 2018**

	Actuarial Accrued Liability <sup>(1)</sup> (in millions)	Actuarial Value of Assets	Unfunded Actuarial Accrued Liability (in millions)	Funded Ratio	Amort. Period (years)
July 1, 2017 Valuation	\$17,063.3	\$15,296.7	\$1,766.6	89.6%	16.2
March 1, 2018 Discretionary COLA of 0.90%	85.6	-	85.6		
July 1, 2017 Valuation with March 1, 2018 Discretionary COLA	\$17,148.9	\$15,296.7	\$1,852.2	89.2%	17.3
1-Year Delay to Increase in Future Contribution Rates, Starting July 1, 2019	(0.4)	-	(0.4)		
July 1, 2017 Valuation with Changes	\$17,148.5	\$15,296.7	\$1,851.8	89.2%	17.6
Expected Change Between Valuation Dates	751.0	740.9	10.1		
Expected at July 1, 2018	\$17,899.5	\$16,037.6	\$1,861.9	89.6%	16.6
<b>Effect of Actuarial Experience Gains and Losses:</b>					
• Investments [Gain]	-	237.2	(237.2)		
• Salaries [Gain]	(113.5)	-	(113.5)		
• Membership Growth [Loss]	33.2	-	33.2		
• Retired Member Experience [Gain]	(37.6)	-	(37.6)		
• Active and Inactive Member Experience [Loss]	<u>73.3</u>	<u>-</u>	<u>73.3</u>		
Total Experience Gains and Losses	(44.6)	237.2	(281.8)		
July 1, 2018 Valuation without Discretionary COLA	\$17,854.9	\$16,274.8	\$1,580.1	91.2%	13.9

(1) Amounts are net of expected future optional retirement program (ORP) Contributions.

Public Employee Retirement  
System of Idaho

**Table 2: Analysis of Actuarial Gains and Losses  
(All Dollar Amounts in Millions)**

	<u>Gain (Loss) for Period</u>		
	<u>2015-2016</u>	<u>2016-2017</u>	<u>2017-2018</u>
<b>Investment Income</b>			
Investment income was greater (less) than expected	(742.9)	772.1	237.2
<b>Pay Increases</b>			
Pay increases were less (greater) than expected	165.5	(198.0)	113.5
<b>Membership Growth &amp; Return to Employment</b>			
(Additional) liability for new members	(24.9)	(29.1)	(33.2)
<b>Death After Retirement</b>			
Retirees died younger (lived longer) than expected	11.8	17.6	37.6
<b>Cost of Living Adjustment (COLA)</b>			
Different automatic COLA than expected	NA	NA	NA
<b>Other</b>			
Miscellaneous gains (and losses) resulting from other causes <sup>(1)</sup>	<u>(44.0)</u>	<u>(68.3)</u>	<u>(73.3)</u>
<b>Total Gain (Loss) During the Period From Actuarial Experience</b>	(634.5)	494.3	281.8
<b>Contribution Income</b>			
Actual contributions were greater (less) than the normal cost and interest on the Unfunded Actuarial Accrued Liability	0.3	(42.5)	(10.1)
<b>Non-Recurring Items</b>			
Changes in actuarial assumptions caused a gain (loss) <sup>(2)</sup>	(13.2)	None	None
Changes in actuarial methods caused a gain (loss)	None	None	None
Changes in plan provisions caused a gain (loss) <sup>(3)</sup>	(68.5)	(9.0)	(85.6)
Delay of Future Contribution Rate Increases	<u>None</u>	<u>(3.3)</u>	<u>0.4</u>
<b>Composite Gain (Loss) During the Period</b>	(715.9)	439.5	186.5

Note: Effects related to losses are shown in parentheses. Numerical results are expressed as a decrease (increase) in the actuarial accrued liability.

(1) Reflects losses on active and inactive member experience.

(2) For 2015-2016, this reflects changes made to the demographic assumptions adopted according to the 2016 Experience Study.

(3) For 2015-16 this reflects the 0.80% retroactive COLA, effective March 1, 2016. For 2016-17 this reflects the 0.10% retroactive COLA, effective March 1, 2018. For 2017-18 this reflects the 0.90% retroactive COLA, effective March 1, 2018.

Public Employee Retirement  
System of Idaho

Table 3: Summary of Key Valuation Results

	July 1, 2017 Valuation <sup>(1)</sup>	July 1, 2018 Valuation <sup>(2)</sup>	Percentage Change
<b>1. Total Membership</b>			
A. Contributing Active Members	70,073	71,112	1.5%
B. Members and Beneficiaries Receiving Benefits	45,468	46,907	3.2%
C. Vested Terminated Members	12,669	13,133	3.7%
D. Non-vested Terminated Members	<u>21,482</u>	<u>24,455</u>	13.8%
E. Total Membership	149,692	155,607	4.0%
<b>2. Annual Salaries</b>			
A. Annual Total (\$Thousands)	\$ 3,040,649	\$ 3,188,316	4.9%
B. Annual Average per Active Member	\$ 43,393	\$ 44,835	3.3%
<b>3. Annual Benefits</b>			
A. Annual Benefits (\$Thousands)	\$ 836,201	\$ 884,827	5.8%
B. Annual Average Benefits	\$ 18,391	\$ 18,863	2.6%
<b>4. Actuarial Accrued Liability (\$Millions)</b>			
A. Contributing Active Members	\$ 7,491.3	\$ 7,767.9	3.7%
B. Members and Beneficiaries Receiving Benefits	\$ 8,683.2	\$ 9,136.1	5.2%
C. Terminated Members	<u>\$ 926.5</u>	<u>\$ 985.0</u>	6.3%
D. Total Actuarial Accrued Liability (AAL)	\$ 17,101.0	\$ 17,889.0	4.6%
E. Less Present Value of Future ORP Contributions	<u>\$ 37.7</u>	<u>\$ 34.1</u>	-9.5%
F. AAL Funded by PERSI Contributions	\$ 17,063.3	\$ 17,854.9	4.6%
<b>5. Value of System Assets (\$Millions)</b>			
A. Market Value	\$ 15,296.7	\$ 16,274.8	6.4%
<b>6. Funded Status (\$Millions)</b>			
A. Funding Reserve (Unfunded Actuarial Accrued Liability, UAAL) ( 5A - 4F )	\$ (1,766.6)	\$ (1,580.1)	
B. Funded Ratio ( 5A ÷ 4F )	89.6%	91.2%	
<b>7. Contribution Rates (percent of salaries)</b>			
A. Current Total Blended Contribution Rate	18.42%	18.42%	
B. Total Normal Cost Rate	<u>14.83%</u>	<u>14.94%</u>	
C. Contribution Rate Minus Normal Cost Rate ( 7A - 7B )	3.59%	3.48%	
D. Ultimate Total Blended Contribution Rate <sup>(3)</sup>	19.42%	19.42%	
E. Amortization Period for UAAL Based on Currently Scheduled Contribution Rates <sup>(3)</sup>	16.2 years	13.9 years	

(1) Results do not reflect March 1, 2018 COLA adopted after the 2017 Valuation Report was issued.

(2) Results before reflection of any Ad Hoc COLA.

(3) The Board scheduled a one-time rate increase of 1.00%, effective July 1, 2018. This increase has been included in the 2017 Actuarial Valuations. The rate increase was delayed to July 1, 2019. This delay was included in the 2018 Actuarial Valuation.

**Contribution Rates**

In November 2002, the Board approved three 1% contribution rate increases to take effect on July 1, 2004, July 1, 2005, and July 1, 2006. The total rate increase of 1% each year is split between the employer and employee contributions.

Due to the 17.63% investment return in the year ending June 30, 2004, in November 2004, the Board delayed the scheduled contribution rate increases for July 1, 2005 and July 1, 2006 to July 1, 2006 and July 1, 2007 respectively.

Due to the 10.34% investment return in the year ending June 30, 2005, in the fall of 2005, the Board delayed the contribution rate increases again, to July 1, 2007 and July 1, 2008.

Due to the 11.79% investment return in the year ending June 30, 2006, in the fall of 2006, the Board delayed the contribution rate increases again, to July 1, 2008 and July 1, 2009.

Due to continued improvements in the funded status, including exceeding a 100% funded ratio by July 1, 2007, the Board cancelled the contribution rate increases in the fall of 2007.

In December 2009, due to a significant drop in funded status because of investment losses in the year ending June 30, 2009, the Board approved three contribution rate increases: 1.5% at July 1, 2011, 1.5% at July 1, 2012, and 2.28% at July 1, 2013.

Due to the 12.01% investment return in the year ending June 30, 2010, in December 2010, the Board delayed the scheduled contribution rate increases for July 1, 2011, July 1, 2012, and July 1, 2013, to July 1, 2012, July 1, 2013, and July 1, 2014, respectively.

Due to the 20.25% investment return in the year ending June 30, 2011, in December 2011, the Board delayed the scheduled contribution rate increases for July 1, 2012, July 1, 2013, and July 1, 2014, to July 1, 2013, July 1, 2014, and July 1, 2015, respectively.

On July 1, 2013, the first of three scheduled contribution rate increases went into effect. The total rate increase of 1.5% is split between the employer and employee contributions.

In October 2013 the Board delayed the scheduled contribution rate increases for July 1, 2014 and July 1, 2015, to July 1, 2015 and July 1, 2016, respectively.

## Summary of the Findings (continued)

Due to the 16.77% investment return in the year ending June 30, 2014, in September 2014 the Board cancelled the contribution rate increases scheduled for July 1, 2015 and July 1, 2016.

In October 2016, due to a drop in funded status because of investment losses in the two preceding fiscal years, the Board approved a contribution rate increase from 18.42% to 19.42%, scheduled to go into effect at July 1, 2018.

In October 2017, due to an increase in funded status from investment gains in the prior fiscal year, the Board approved a delay in the contribution rate increase from July 1, 2018 to July 1, 2019.

The currently scheduled contribution rates are sufficient to amortize the UAAL in 13.9 years. This is under the 25-year amortization period limit required under Section 59-1322, Idaho Code.

### Gain Sharing

Beginning in 2000, under Section 59-1309, Idaho Code, the Board may allocate all or a portion of “extraordinary gains” to active and retired members and employers as Gain Sharing. Extraordinary gains are defined as the excess, if any, at the close of the fiscal year of the Assets over Actuarial Accrued Liabilities plus an amount necessary to absorb a one standard deviation market event without increasing contribution rates, as determined by the Board. Under the Board’s current investment policy, assets in excess of a 114% funded ratio are considered extraordinary gains. Therefore, no assets are available for gain sharing as of July 1, 2018.



# Public Employee Retirement System of Idaho

## Section 2: Scope of the Report

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This report presents the actuarial valuation of the Public Employee Retirement System of Idaho as of July 1, 2018. This valuation was requested by the System's Board.

Your particular attention is called to in reading our cover letter, where we refer to the guidelines employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings depend. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the System. Sections 4 and 5 describe how the obligations of the System are to be met under the actuarial cost method in use. Section 6 of this report shows the estimated cash flow of future retirement benefit payments, based on the actuarial assumptions and a distribution of retired members by year of retirement.

This report includes several appendices:

- Appendix A A summary of the actuarial procedures and assumptions.
- Appendix B A summary of the current benefit structure based on governing law on July 1, 2018.
- Appendix C Schedules of valuation data classified by various categories; a brief summary of the System's recent experience; and comparative statistics since June 30, 1968.
- Appendix D A glossary of actuarial terms used in this report.



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# Public Employee Retirement System of Idaho

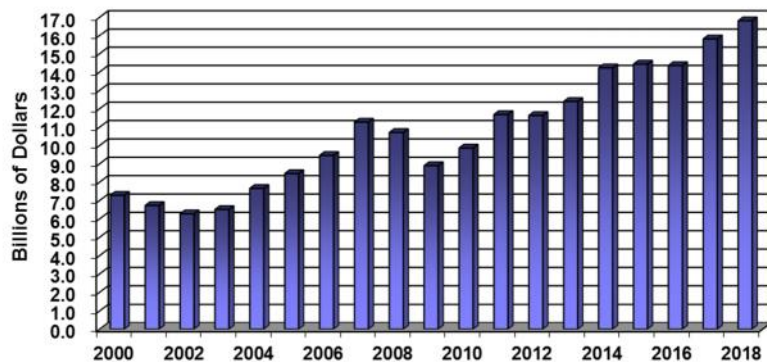
## Section 3: Assets



In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is July 1, 2018. On that date, the assets available for the payment of benefits are appraised. These assets are compared with the actuarial liabilities, which are generally well in excess of the assets. The actuarial process thus leads to a method of determining what contributions by members and their employers are needed to strike a balance.

This section of the report deals with the asset determination. In the next section, the actuarial liabilities will be discussed. Section 5 deals with the process for determining required contributions based on the relationship between the assets and actuarial liabilities.

**Total Actuarial Assets**



For all years shown in this table, the actuarial value of assets has been equal to the Market Value of Assets on the valuation date.

At July 1, 2018, the actuarial value of assets was \$16.799 billion. Table 4 presents a summary of the System's assets, and Table 5 presents an analysis of the investments.

The actuarial value of total assets has increased 131% over the value in 2000. The chart on the previous page illustrates this growth.

Tables 4 through 7 are derived from data furnished to us by the System. We have accepted these tables for use in this report without audit, but we have reviewed them for reasonableness and consistency with previous reports.

The net assets at June 30, 2018 of \$16,799,020,511 shown in Tables 4 and 6 include assets used in plan operations and assets held for the Firefighters' Retirement Fund, the Judges' Retirement Fund, and the Idaho Falls Policemen's Retirement Fund. The allocation of the fund is shown at the bottom of Table 4.

The yield rates shown at the top of Table 7 on both a market and an actuarial valuation basis are net of investment expenses, but not net of administrative expenses. The summary at the bottom of Table 7 shows the annual yields before expenses, net of investment expenses, and net of both investment and administrative expenses. Each yield should be compared with the appropriate actuarial assumption shown in the left column. The yield on the actuarial valuation basis, net of all expenses, is 8.41% for the year ending June 30, 2018, which is compared with the actuarial assumption, net of all expenses, of 7.00% for the fiscal year ended June 30, 2018.

**Public Employee Retirement  
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**Table 4: Summary of Assets**

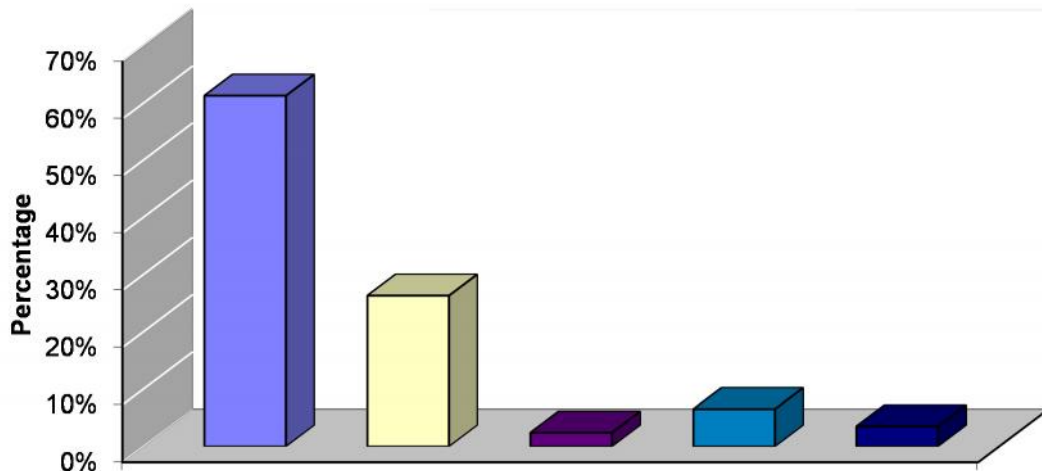
	<u>July 1, 2018</u>	<u>July 1, 2017</u>
<b>Assets</b>		
Cash	\$ 8,777,194	\$ 3,028,145
Investments at Fair Value	16,763,789,221	15,713,202,607
Investments Sold	73,538,992	73,087,813
Contributions	3,414,608	3,535,536
Interest and Dividends	56,323,375	48,882,466
Assets Used in Plan Operations, Net	11,493,186	11,981,951
Retiree Payroll in Process	72,871,636	68,432,153
Other Prepays	<u>16,264</u>	<u>14,465</u>
Total Assets	\$ 16,990,224,476	\$ 15,922,165,136
<b>Liabilities</b>		
Accrued Liabilities	\$ 11,744,013	\$ 11,521,613
Benefits and Refunds Payable	528,872	385,133
Due to Other Funds	2,173,560	2,123,036
Investments Purchased	<u>176,757,520</u>	<u>114,075,579</u>
Total Liabilities	\$ 191,203,965	\$ 128,105,361
<b>Net Assets</b>	<b>\$ 16,799,020,511</b>	<b>\$ 15,794,059,775</b>
<b>Allocation of Net Assets</b>		
Total Assets Held for PERSI Pension Benefits	\$ 16,274,830,459	\$ 15,296,682,365
Firefighters' Retirement Fund Assets	395,048,552	375,177,883
Judges' Retirement Fund Assets	88,071,493	82,936,029
Idaho Falls Police Retirement Fund Assets	29,576,821	27,281,547
Assets Used in Plan Operations	<u>11,493,186</u>	<u>11,981,951</u>
Total Assets Held by PERSI	\$ 16,799,020,511	\$ 15,794,059,775

**Public Employee Retirement  
System of Idaho**

**Table 5: Analysis of Investments July 1, 2018**

	<u>Valuation Basis<sup>(1)</sup></u>	<u>Percentage</u>
Fixed Income Investments		
Domestic	\$ 3,749,732,729	22.4%
International	10,511,077	0.1%
Idaho Commercial Mortgages	<u>678,811,218</u>	<u>4.0%</u>
Total Fixed Income	4,439,055,024	26.5%
Short Term Investments	258,705,198	1.5%
Real Estate	666,569,487	4.0%
Equity Securities		
Domestic	6,930,492,124	41.3%
International	<u>3,450,441,614</u>	<u>20.6%</u>
Total Equities	10,380,933,738	61.9%
Private Equity	1,018,525,774	6.1%
Total Investments	\$ 16,763,789,221	100.0%

(1) The actuarial valuation basis for all types of assets was set equal to the market value effective June 30, 1994.



Total Equities	Fixed Income	Short-Term Investments	Private Equity	Real Estate
61.9%	26.5%	1.5%	6.1%	4.0%

**Public Employee Retirement  
System of Idaho**

**Table 6: Reconciliation of Assets**

	<u>Inception to June 30, 2017</u>	<u>July 1, 2017 to June 30, 2018</u>	<u>Inception to June 30, 2018</u>
Investment Return:			
Income from Stock	\$ 3,068,788,108	\$ 225,274,166	\$ 3,294,062,274
Interest	3,279,300,417	122,083,876	3,401,384,293
Capital Gains (realized and unrealized)	10,293,865,346	1,005,044,027	11,298,909,373
Other Investment Income	<u>298,576,924</u>	<u>18,484,394</u>	<u>317,061,319</u>
Total Investment Return	\$16,940,530,795	\$ 1,370,886,463	\$18,311,417,259
Employer Contributions	\$ 7,361,258,057	\$ 381,124,335	\$ 7,742,382,392
Member Contributions	4,419,643,322	244,669,826	4,664,313,148
Miscellaneous	11,246,936	46,327	11,293,263
Transfers In	<u>75,881,201</u>	<u>-</u>	<u>75,881,201</u>
Total Revenue	\$28,808,560,311	\$ 1,996,726,951	\$30,805,287,263
Administrative Expense	\$ 165,176,908	\$ 9,057,117	\$ 174,234,025
Investment Expense	845,831,515	47,369,905	893,201,420
Benefit Payments and Refunds	11,946,910,000	935,339,193	12,882,249,193
Transfers Out	<u>56,582,114</u>	<u>-</u>	<u>56,582,114</u>
Total Expenditures	\$13,014,500,537	\$ 991,766,215	\$14,006,266,752
Net Assets, Beginning of Period	\$ -	\$ 15,794,059,775	\$ -
Total Revenue	<u>28,808,560,312</u>	<u>1,996,726,951</u>	<u>30,805,287,263</u>
	\$28,808,560,312	\$ 17,790,786,726	\$30,805,287,263
Less Total Expenditures	<u>13,014,500,537</u>	<u>991,766,215</u>	<u>14,006,266,752</u>
Net Assets, End of Period	\$15,794,059,775	\$ 16,799,020,511	\$ 16,799,020,511

**Public Employee Retirement  
System of Idaho**

**Table 7: Analysis of Investment Yield**

	<b>July 1, 2017 to June 30, 2018</b>			
	<b>Actuarial Basis</b>		<b>Market Basis</b>	
Investment Return	\$	1,370,886,462	\$	1,370,886,462
Less Investment Expenses		<u>47,369,904</u>		<u>47,369,904</u>
Net Return	\$	1,323,516,558	\$	1,323,516,558
Mean Assets for Period	\$	15,623,044,296	\$	15,623,044,296
Annual Yield		8.47%		8.47%

Analysis of Investment Yield - Net of All Expenses

	<b>Summary of Annual Yields for Year Ending June 30, 2018</b>		
<b>Expense Basis</b>	<b>Actuarial Assumption</b>	<b>Actuarial Basis</b>	<b>Market Basis</b>
Gross – Before Expenses		8.79%	8.79%
Net of Investment Expenses	7.05%	8.47%	8.47%
Net of All Expenses	7.00%	8.41%	8.41%

*Notes:*

1. *Investment return: See Tables 3, 4, and 5 for data used in this table.*
2. *Mean assets for period = 1/2 (beginning net assets + ending net assets - net return). Net assets exclude assets used in plan operations.*
3. *Total yield = (Total investment return less investment expenses)/mean assets.*
4. *Plan assets differ for each expense basis, so differences between bases are not comparable.*



**Public Employee Retirement  
System of Idaho**

**Table 8: Yields for Various Historical Periods, Net of Investment Expenses**

Period Ended	1 Year	10 Years <sup>(1)</sup>	20 Years <sup>(1)</sup>	Since 1968 <sup>(1)</sup>
2018	8.5	6.4	6.4	7.7
2017	12.3	5.0	6.8	
2016	1.5	5.7	7.1	
2015	2.7	6.7	7.9	
2014	16.8	7.5	8.5	
2013	8.7	7.5	7.8	
2012	1.2	7.0	7.9	
2011	20.3	6.1	8.3	
2010	12.5	3.4	7.7	
2009	-16.0	3.5	7.6	
2008	-4.6	6.4	9.4	
2007	19.5	8.6	9.4	
2006	11.8	8.6	9.0	
2005	10.3	9.2	9.3	
2004	17.6	9.5	9.8	
2003	3.3	8.1	9.3	
2002	-7.4	8.8	9.9	
2001	-6.4	10.5	10.7	
2000	12.9	12.1	11.7	
1999	11.2	11.9	12.0	
1998	17.2	12.5	11.8	
1997	19.1	10.1	11.1	
1996	17.8	9.4	10.5	
1995	14.3	9.4	10.4	
1994	2.8	10.1	8.9	
1993	10.7	10.5	8.0	
1992	8.1	11.0	7.7	
1991	7.9	11.0	7.9	
1990	10.6	11.4	7.7	
1989	17.6	12.1	7.3	
1988	-5.6	11.1		
1987	12.0	12.1		
1986	17.2	11.6		
1985	22.8	11.4		
1984	6.0	7.6		
1983	16.3	5.6		
1982	7.5	4.5		
1981	12.1	5.0		
1980	18.2	4.1		
1979	7.2			
1978	2.8			
1977	7.9			
1976	14.4			
1975	-12.6			
1974	-12.4			
1973	4.9			
1972	12.6			
1971	3.0			
1970	2.9			
1969	6.3			
1968	8.1			

*Note: Credible data unavailable for 1966 and 1967*

*(1) Annualized time-weighted average.*



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## Public Employee Retirement System of Idaho

### Section 4: Actuarial Liabilities

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In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of assets of the System as of the valuation date, July 1, 2018. In this section, the discussion will focus on the commitments of the System which are referred to as its actuarial liabilities.

Table 9 contains an analysis of the actuarial present value of all future benefits for contributing members and for former contributing members and their survivors. The analysis is given by type of benefit, by gender, and by class of membership.

The actuarial liabilities summarized in Table 9 include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits to be earned. For all members, active and retired, the value extends over benefits earnable and payable for the rest of their lives and, if an optional benefit is chosen, for the lives of the surviving beneficiaries.

The actuarial assumptions are based on the results of the 2018 Active Member Experience Study. The demographic assumptions from this report are consistent with those from the prior study, which was adopted by the Board effective July 1, 2016.

All liabilities reflect the benefits in effect as of July 1, 2018. No future increases are considered in determining the liabilities shown.

**Public Employee Retirement  
System of Idaho**

**Table 9: Actuarial Present Value of Future Benefits for Contributing Members and Former Contributing Members and Their Survivors**

(All amounts in millions)

**July 1, 2018**

<b>Contributing Members</b>	<b>Fire &amp; Police</b>	<b>General Employees</b>		<b>Teachers</b>		<b>Grand Total</b>
		<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>	
Service Retirement Including Reduced Early Retirement	\$1,961.8	\$2,304.2	\$2,522.7	\$1,237.5	\$2,829.8	\$10,856.0
Deferred Vested Retirement	92.1	139.6	190.4	56.1	137.9	616.1
Disability Retirement	85.9	94.0	98.5	30.2	98.5	407.1
Death	39.9	70.4	67.5	20.0	41.7	239.5
Refunds of Member Contributions <sup>(1)</sup>	<u>39.2</u>	<u>49.6</u>	<u>63.8</u>	<u>8.0</u>	<u>18.2</u>	<u>178.8</u>
<b>Total</b>	<b>\$2,218.9</b>	<b>\$2,657.8</b>	<b>\$2,942.9</b>	<b>\$1,351.8</b>	<b>\$3,126.1</b>	<b>\$12,297.5</b>
<b>Former Contributing Members &amp; Survivors<sup>(2)</sup></b>						
Service Retirement	\$ 1,034.1	\$ 2,033.8	\$ 1,958.5	\$ 1,339.7	\$ 2,286.1	\$ 8,652.2
Disability Retirement	18.9	48.0	52.2	9.7	36.1	164.9
Survivors' Benefits	42.6	23.4	143.1	24.2	85.7	319.0
All Other Benefits	<u>85.7</u>	<u>254.9</u>	<u>388.3</u>	<u>80.3</u>	<u>175.8</u>	<u>985.0</u>
<b>Total</b>	<b>\$ 1,181.3</b>	<b>\$ 2,360.1</b>	<b>\$ 2,542.1</b>	<b>\$ 1,453.9</b>	<b>\$ 2,583.7</b>	<b>\$ 10,121.1</b>
<b>Grand Total</b>	<b>\$3,400.2</b>	<b>\$5,017.9</b>	<b>\$5,485.0</b>	<b>\$2,805.7</b>	<b>\$5,709.8</b>	<b>\$22,418.6</b>

(1) Including all benefits provided by voluntary contributions.

(2) Figures assume a March 1, 2019 COLA of 1.00%.

## Public Employee Retirement System of Idaho

### Section 5: Employer Contributions

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The previous two sections were devoted to a discussion of the assets and actuarial liabilities of the System. Comparison of Tables 4 and 9 indicates that current assets fall short of meeting the actuarial liabilities. This is expected in all but a fully closed down fund, where no further contributions of any sort are anticipated.

In an active system, there will always be a difference between the actuarial assets and liabilities. When liabilities exceed assets, this difference has to be made up out of future contributions and investment returns. An actuarial valuation method sets out a schedule of future contributions that will deal with this difference in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. For this valuation, the individual entry age actuarial cost method has been used. Under this method — or essentially any actuarial cost method — the contributions required to meet the System's needs are allocated each year between two elements:

- A normal cost amount, which ideally is relatively stable as a percentage of salary over the years; and
- The excess of the contribution rate over the normal cost; this excess is used to amortize what is called the unfunded actuarial accrued liability.

The two items described above — the normal cost and unfunded actuarial accrued liability — are the keys to understanding the actuarial cost method.

#### Normal Cost

The normal cost is the theoretical contribution rate that will meet the ongoing costs of a group of average new employees. Suppose that a group of new employees was covered under a separate fund from which all benefits and to which all contributions and associated investment returns were paid. Under the individual entry age actuarial cost method, the normal cost contribution rate is that level percentage of pay that would be exactly right to maintain this fund on a stable basis. If experience were to follow the actuarial assumptions precisely, the fund would be completely liquidated when the last payment to the last survivor of the group has been made.

**Normal Cost  
(continued)**

We have determined the normal cost rates for the System separately by class of employee and by type of benefit. These rates are summarized in Table 11. The normal cost rates in Table 11 reflect the actuarial assumptions adopted by the Board effective July 1, 2018, the plan provisions effective July 1, 2018, and the current total blended contribution rate of 18.42%, increasing to 19.42% as of July 1, 2019.

**Unfunded Actuarial  
Accrued Liability**

The term "fully funded" is often applied to a system in which contributions for everyone at the normal cost rate are sufficient to pay for the benefits of existing employees as well as for those of new employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely paid for or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, an unfunded actuarial accrued liability (UAAL) exists.

**Amortization of  
UAAL or Funding  
Reserve**

However, even if a system does not have a positive UAAL, a portion or all of the normal cost contribution payments will need to be continued in order to have sufficient funds to pay future benefits. The use of the term "fully funded" may imply no further contributions are required at all. Therefore, a better term is a "well-funded" plan. This occurs when the value of the assets exceeds the actuarial accrued liability and the difference is referred to in the PERSI funding policy as the Funding Reserve.

Table 10 shows how the UAAL or Funding Reserve was derived for the System. Line A shows the total actuarial liability for all future benefits. The portion of the future liability expected to be paid from future normal cost contributions, both employer and employee, is shown on Line B. The difference between lines A and B is the System's actuarial accrued liability as of the actuarial valuation date.

**Amortization of UAAL or Funding Reserve (continued)**

The UAAL at any date after establishment of a system is affected by any actuarial gains or losses arising when the actual experience of the system varies from the experience anticipated by the actuarial assumptions used in the valuations. To the extent actual experience, as it develops, differs from that expected according to the assumptions used, so also will the emerging costs differ from the estimated costs disclosed in this report.

**ORP Contributions**

Under Idaho Code 33-107A each institution participating in the optional retirement program (ORP) is required to pay an amount equal to 1.49% of salaries of their ORP participants to PERSI. This amount is to be paid until July 1, 2025. Likewise, under Idaho Code 33-107B each community college and post-secondary vocational education institution was required to pay an amount equal to 3.83% of salaries of their ORP participants to PERSI. This amount was paid until July 1, 2011, and has since expired. These payments from the ORP employers are in lieu of amortization payments and withdrawal contributions otherwise required under PERSI. Table 10 Line D shows the present value of these future ORP contributions. The difference between the future ORP contributions and the computed actuarial accrued liability is the portion of the actuarial accrued liability that is expected to be funded by PERSI assets and contributions.

Line F in Table 10 indicates the actuarial value of assets. The excess of the actuarial accrued liability for PERSI in Line E over the actuarial assets is the UAAL for PERSI as shown on Line G.

**Funding Adequacy**

A key consideration in determining the adequacy of the funding of the System is how the UAAL is being serviced. If the UAAL amount is positive, that is the actuarial accrued liability to be funded is greater than the assets, then the UAAL is amortized. Idaho law calls for the UAAL to be liquidated in no more than 25 years. Table C-5 (Appendix C) illustrates, for historical comparison purposes only, the contribution rates on a 30-year amortization basis through 1992 and the contribution rates on the 25-year amortization basis beginning in 1993.

**Funding Adequacy  
(continued)**

From July 1, 1998 to July 1, 2000, there was no UAAL, and the actuarial value of the assets exceeded the value of the actuarial accrued liability to be funded by PERSI, resulting in a Funding Reserve. However, asset losses for the year ending July 1, 2001, resulted in the re-emergence of a UAAL. The UAAL also grew during the years ending July 1, 2002 and July 1, 2003, due to further asset losses. The UAAL decreased during the years ending July 1, 2004, July 1, 2005, and July 1, 2006, due to asset gains. During the year ending July 1, 2007, the asset gain resulted in a Funding Reserve. During the year ending July 1, 2008, the asset loss resulted in the re-emergence of a UAAL. The UAAL grew further during the year ending July 1, 2009, due to asset losses. The UAAL decreased during the years ending July 1, 2010, and July 1, 2011, due to asset gains. During the year ending July 1, 2012, the asset loss resulted in an increase to the UAAL. The UAAL again increased during the year ending June 30, 2013. The UAAL decreased during the year ending June 30, 2014 due primarily to asset gains. The UAAL increased during the years ending June 30, 2015 and June 30, 2016 primarily due to asset losses. The UAAL decreased during the years ending June 30, 2017 and June 30, 2018, primarily due to asset gains. The dollar amount of the UAAL is \$1,580.1 prior to reflecting the potential adoption of a discretionary March 1, 2019 COLA. Granting the potential 1.7% discretionary COLA would increase the UAAL by \$170.4 million as of July 1, 2018.

**Discretionary COLA  
Increases**

The costs of providing future postretirement increases of 1% per year are included in the “Pre-Adjustments” amounts shown in Table 10. These increases are automatic as long as the increase in the CPI-U is at least 1%. The Board may, subject to modification or rejection by the Legislature, grant discretionary increases of an additional 5% per year, provided that the total percentage increase does not exceed the percentage change in the CPI and that the increase can be supported by the assets of the System. The CPI grew at a rate of 2.7% during the year ending June 30, 2018.

The March 1, 2019 potential discretionary postretirement benefit increase of 1.7% would increase the actuarial present value of all future benefits by \$170.4 million as of July 1, 2018. Thus, the July 1, 2018 Post-Adjustment amounts shown on lines A, C, E, and G in Table 10 have been increased from the Pre-Adjustment amounts by that amount.



**Gain Sharing**

The cost of providing the Gain Sharing allocation, if any, is also included in the “post-adjustments” amounts shown in Table 10. Beginning in 2000, under Section 59-1309, Idaho Code, the Board may allocate all or a portion of “extraordinary gains” to active and retired members and employers as Gain Sharing. Extraordinary gains are defined as the excess, if any, at the close of the fiscal year of the Assets over Actuarial Accrued Liabilities plus an amount necessary to absorb a one standard deviation market event without increasing contribution rates, as determined by the Board. Under the Board’s current investment policy, assets in excess of a 114% funded ratio are considered extraordinary gains. Since the funding ratio as of July 1, 2018 is less than 114%, no assets are available for consideration for Gain Sharing.

**Funding Policy**

Table 12 shows the effect on the valuation of the statutory requirement that member contribution rates must always be a fixed percentage of the employer contribution rate (72% for fire and police and 60% for other employees). Effective July 1, 2003, the employer contribution rate for fire and police members is set at 0.34% higher than for general members, reflecting 0.24% for the 1993 changes in disability provisions for fire and police members, and 0.10% for the 2003 addition of a \$100,000 death benefit for fire and police members who die in the line of duty.

The Board has scheduled the current total blended contribution rate of 18.42% to increase to 19.42% as of July 1, 2019. A continuation of a total rate in excess of the normal cost rate is expected to meet the criteria of the Board’s Funding Policy. The revised Funding Policy was adopted September 29, 1998, and establishes guidelines for the Board in setting contribution rates. Several of the funding goals under this Policy include establishing a range of safety, while maintaining a stable contribution rate and a well-funded status.

As shown in Table 12, as of July 1, 2018, the current contribution rate schedule, including the scheduled increase as of July 1, 2019, will permit the Board to achieve these goals, since the UAAL amortization period is less than 25 years.

**Employer Contributions**  
(continued)

**Funding Policy**  
(continued)

The schedule of member and employer contribution rates by class is shown in the table below.

	<b>Fire and Police</b>	<b>General and Teachers</b>	<b>Combined Mix</b>
<b>July 1, 2018 Rates</b>			
Employer	11.66%	11.32%	11.38%
Member	8.36%	6.79%	7.04%
Total	20.02%	18.11%	18.42%
<b>July 1, 2019 Rates</b>			
Employer	12.28%	11.94%	11.99%
Member	8.81%	7.16%	7.43%
Total	21.09%	19.10%	19.42%



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**Employer Contributions**  
(continued)

**Public Employee Retirement System of Idaho**

**Table 10: Unfunded Actuarial Accrued Liability**

(All amounts in millions)

	Valuation Date: <u>July 1, 2018</u>		<u>July 1, 2017</u>	
	Funding Basis: <u>Pre-Adjustments<sup>(1)</sup></u>	Post- <u>Adjustments<sup>(2)</sup></u>	Valuation	Valuation with COLA <sup>(4)</sup>
A. Actuarial Present Value of all Future Benefits for Contributing Members, Former Contributing Members, and Their Survivors	\$ 22,418.6	\$ 22,589.0	\$ 21,427.1	\$ 21,512.7
B. Actuarial Present Value of Total Future Normal Costs for Present Members	<u>4,529.6</u>	<u>4,529.6</u>	<u>4,326.1</u>	<u>4,326.1</u>
C. Actuarial Accrued Liability [A - B]	\$ 17,889.0	\$ 18,059.4	\$ 17,101.0	\$ 17,186.6
D. Present Value of Future ORP Contributions	<u>34.1</u>	<u>34.1</u>	<u>37.7</u>	<u>37.7</u>
E. Actuarial Accrued Liability Funded by PERSI Contribution [C - D]	17,854.9	18,025.3	17,063.3	17,148.9
F. Actuarial Value of Assets Available for Benefits <sup>(3)</sup>	<u>16,274.8</u>	<u>16,274.8</u>	<u>15,296.7</u>	<u>15,296.7</u>
G. UAAL (Funding Reserve) [E - F]	\$ 1,580.1	\$ 1,750.5	\$ 1,766.6	\$ 1,852.2
H. Amortization Period on Valuation Date Based on Contribution Rate Established as of Benefit Date	13.9 years	15.8 years	16.2 years	17.3 years
I. Funded Ratio [F/E]	91.2%	90.3%	89.6%	89.2%

(1) Excludes the cost of any potential discretionary portion of the on March 1, 2019 postretirement COLA increase.

(2) Based on the CPI increase from August 2017 to August 2018 of 2.7%. Recognizes the cost of the potential discretionary COLA of 1.7% on March 1, 2019: \$170.4 million.

(3) The total available assets are \$16,799.0 million, but are reduced by \$524.2 million for assets used in plan operations and funds earmarked to provide excess benefits to former members of the Firefighters' Retirement Fund, the Idaho Judges' Retirement Fund and the Idaho Falls Police Retirement Fund. See Table 4.

(4) Reflects discretionary COLA of 0.90% on March 1, 2018 and assumes 1% COLA in 2019 and all future years.



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**Public Employee Retirement System of Idaho**

**Table 11: Normal Cost Rates**

	<b>July 1, 2018<sup>(1)</sup></b>					<b>Total Rate</b>
	<b>Fire &amp; Police</b>	<b>General Employees</b>		<b>Teachers</b>		
		<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>	
Service Retirement Including Reduced Early Retirement	14.12%	9.87%	9.67%	12.75%	13.16%	11.45%
Vested Retirement	1.43	1.48	1.75	1.34	1.39	1.51
Disability Retirement	0.89	0.61	0.57	0.48	0.68	0.65
Death	0.33	0.35	0.30	0.25	0.23	0.30
Refunds of Member Contributions	<u>1.22</u>	<u>1.18</u>	<u>1.33</u>	<u>0.59</u>	<u>0.56</u>	<u>1.03</u>
<b>Total</b>	<b>17.99%</b>	<b>13.49%</b>	<b>13.62%</b>	<b>15.41%</b>	<b>16.02%</b>	<b>14.94%</b>
Less Member Contributions	<u>8.36</u>	<u>6.79</u>	<u>6.79</u>	<u>6.79</u>	<u>6.79</u>	<u>7.04</u>
<b>Employer Normal Cost Rate</b>	<b>9.63%</b>	<b>6.70%</b>	<b>6.83%</b>	<b>8.62%</b>	<b>9.23%</b>	<b>7.90%</b>

**Analysis of Member Contributions**

Member Contributions	8.36%	6.79%	6.79%	6.79%	6.79%	7.04%
Less Expected Refunds	<u>1.22</u>	<u>1.18</u>	<u>1.33</u>	<u>0.59</u>	<u>0.56</u>	<u>1.03</u>
	<u>7.14%</u>	<u>5.61%</u>	<u>5.46%</u>	<u>6.20%</u>	<u>6.23%</u>	<u>6.01%</u>

(1) Total Normal Cost Rates are based on the Individual Entry Age Normal Cost Method adopted by the Board for the July, 2013 Actuarial Valuation. The Individual Entry Age Cost Method was adopted by the Board on August 20, 2013.



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**Public Employee Retirement System of Idaho**

**Table 12: Contribution Rates as a Percentage of Total Salary**

Valuation Date	July 1, 2017		July 1, 2018		
	Funding Basis	Post-Adjustments <sup>(1)</sup>	Pre-Adjustments <sup>(2)</sup>	Post-Adjustments <sup>(3)</sup>	Minimum Contribution Rate <sup>(4)</sup>
A. Employer Contribution Rate		11.39%	11.38%	11.38%	10.91%
B. Member Contribution Rate		7.03	7.04	7.04	6.77
C. Total Contribution Rate [A + B]		18.42%	18.42%	18.42%	17.68%
D. Total Normal Cost Rate		14.83	14.94	14.94	14.90
E. Amount Available to Amortize Liability [C - D]		3.59%	3.48%	3.48%	2.78%
F. Dollar Amount of UAAL in Millions (if negative, Funding Reserve) <sup>(5)</sup>		\$1,852.2	\$1,580.1	\$1,750.5	\$1,573.3
G. Amortization Period Measured from Valuation Date		17.3 years	13.9 years	15.8 years	25.0 years

(1) *Includes* March 1, 2018 discretionary COLA. Does *not* include the contribution rate increase delay from July 1, 2018 to July 1, 2019.

(2) *Based on the valuation assumption of a 1% postretirement COLA increase on March 1, 2019 and all future years.*

(3) *Includes* the cost of the potential discretionary portion of the March 1, 2019 postretirement COLA increase: 1.7% (\$170.4 million).

(4) *Per the Board's policy, the UAAL (if applicable) is amortized over a 25-year period for GASB disclosure purposes. The minimum contribution rate permitted by statute would not permit the total rate to be less than the normal cost rate.*

(5) *Reflects only the amount funded by PERSI contributions. Excludes the present rate of 1.49% of salaries of university members in the Optional Retirement Plan (ORP) until 2025. The present value of these expected contributions as of July 1, 2018 is \$34.1 million.*





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## Public Employee Retirement System of Idaho

### Section 6: Supplemental Information

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#### Cash Flow Projections

Table 13 summarizes the historical cash flows for PERSI and the projected cash flows for the next 10 years. Contributions include both employer and member contributions. The table shows that net cash flow has been decreasing in recent years. This is a typical pattern in the maturing of a retirement system. Beginning in 2007, contributions were less than benefits and the System began drawing on the fund that has been built. The cash flow is projected to be negative in each of the next ten years.

The projected cash flows include PERSI contributions, benefits, and expenses. They are based on the actuarial assumptions as stated in Appendix A. Expenses are based on the expenses for the year ended June 30, 2018 increased annually with the actuarial inflation assumption of 3.00%. Any increases in future contribution rates will increase net cash flow. The projected cash flows do not include:

- Projected contributions for ORP members
- Projected benefits payable to the spouses of disabled members
- Projected benefits to currently inactive members
- Future discretionary COLA payments
- Future discretionary Gain Sharing allocations

#### Distribution of Retired Members

Table 14 shows two charts. The top chart illustrates the average monthly benefit payment for each group of retired members, based on the year of retirement. The bottom chart illustrates the number of members receiving a monthly benefit as of July 1, 2018, based on the year of retirement. The jump in retirements in 1995-96 is believed to be an issue with imperfect retirement date data in PERSI's records. The retirement date issue does not affect the funding calculations of this valuation.

**Public Employee Retirement  
System of Idaho**

**Table 13: Cash Flow History and Projections <sup>(1)</sup>**  
**(All dollar amounts in millions)**

Year	Historical Cash Flows		
	Contributions	Benefits & Administrative Expenses	Net Cash Flow
2009	\$465	\$524	\$ (59)
2010	463	560	(97)
2011	458	603	(145)
2012	456	647	(191)
2013	470	694	(224)
2014	515	736	(221)
2015	533	777	(244)
2016	556	831	(275)
2017	593	874	(281)
2018	613	919	(306)

Year	Projected Cash Flows (PERSI Funds Only)		
	Contributions <sup>(2)</sup>	Benefits & Administrative Expenses <sup>(3)</sup>	Net Cash Flow <sup>(4)</sup>
2019	\$612	\$974	\$(362)
2020	669	1,014	(345)
2021	694	1,056	(362)
2022	720	1,097	(377)
2023	747	1,140	(393)
2024	775	1,190	(415)
2025	804	1,240	(436)
2026	834	1,291	(457)
2027	866	1,343	(477)
2028	898	1,398	(500)

(1) Historical and Projected Cash Flows exclude FRF, JRF, and IFP.

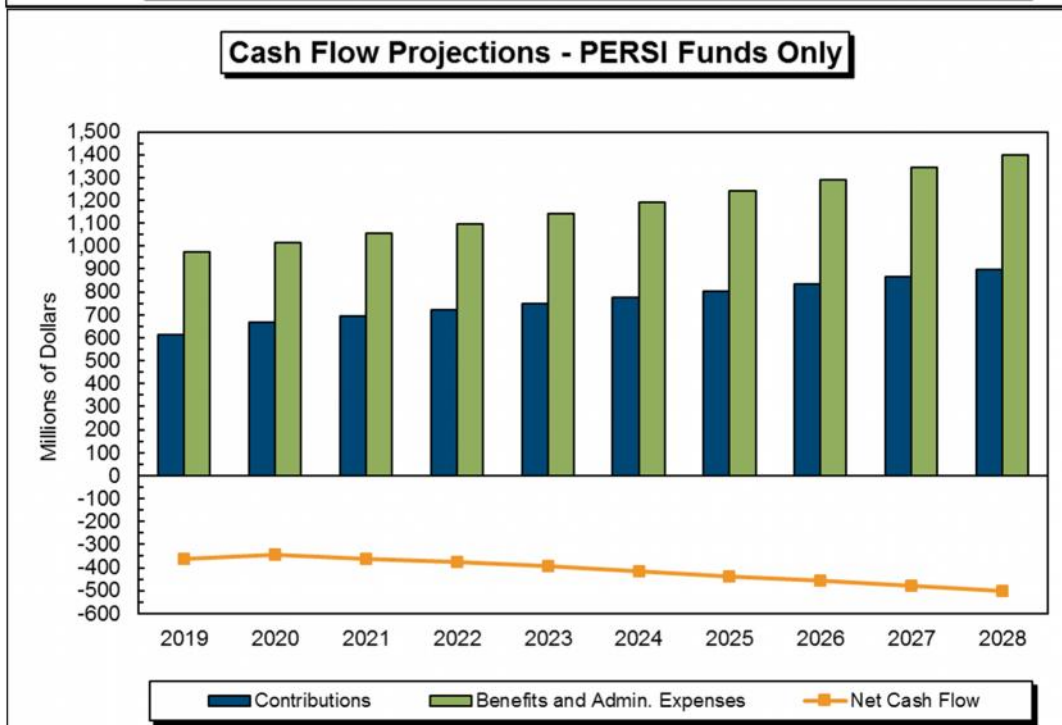
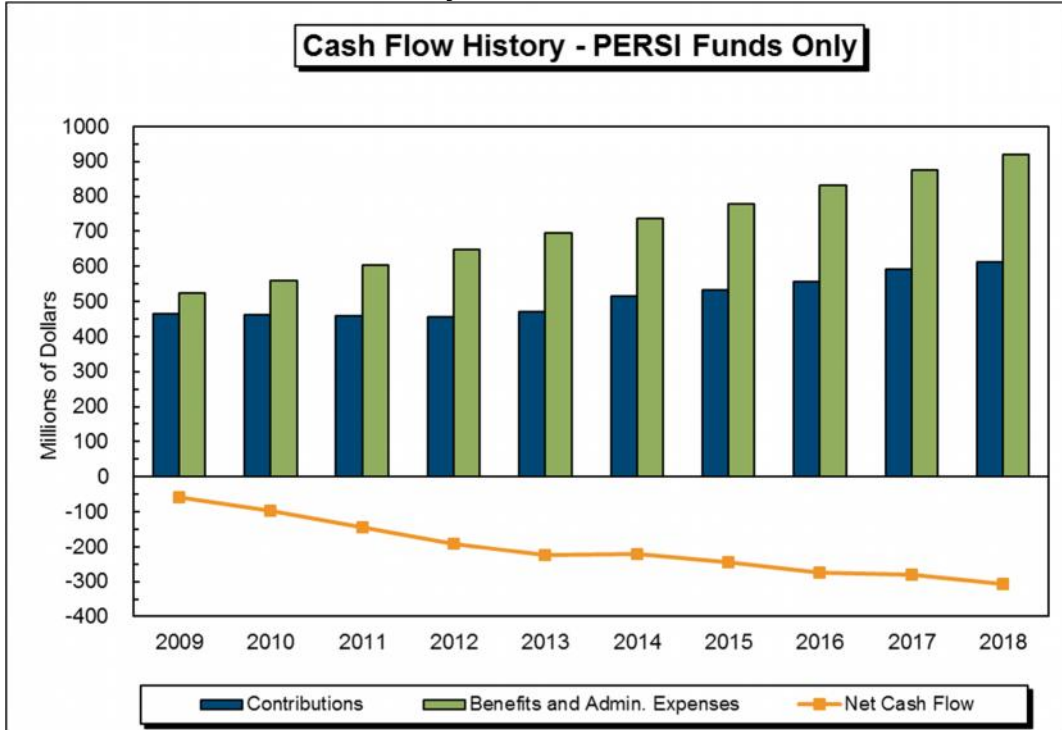
(2) Projected contributions are based on the current contribution rate schedule adopted by the Board as of October 2017.

(3) Projected expenses are based on expenses for FYE 2018 and the annual inflation assumption of 3.00%.

(4) A negative cash flow means a portion of the fund's investment income will need to be used to cover expected benefit payments. This could impact the fund's future asset allocations and asset liquidity needs.

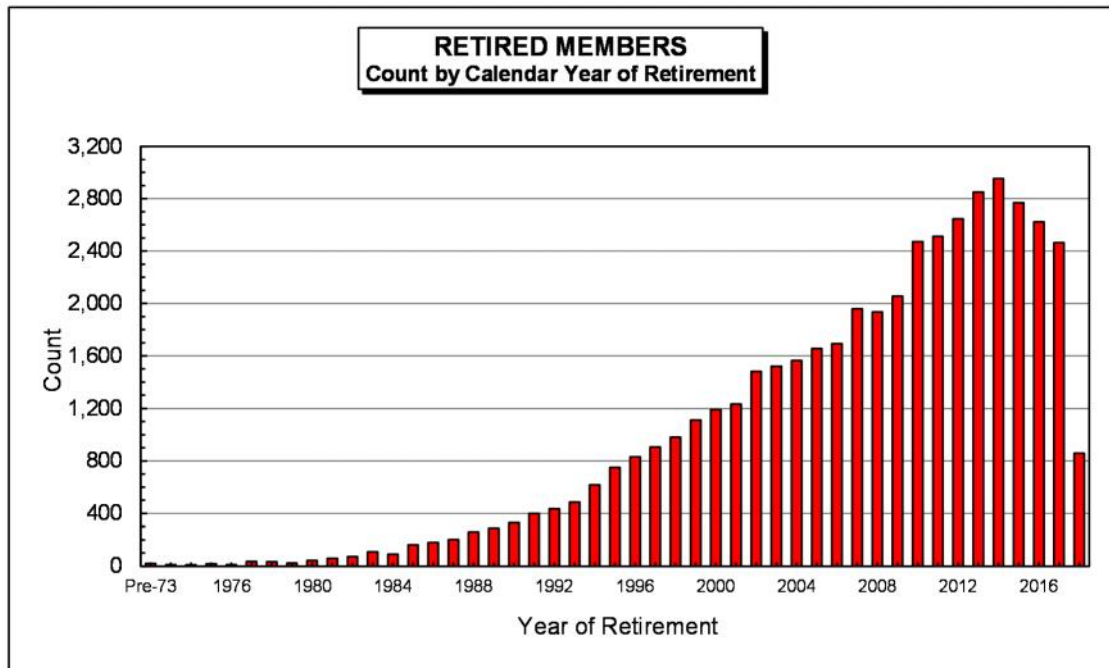
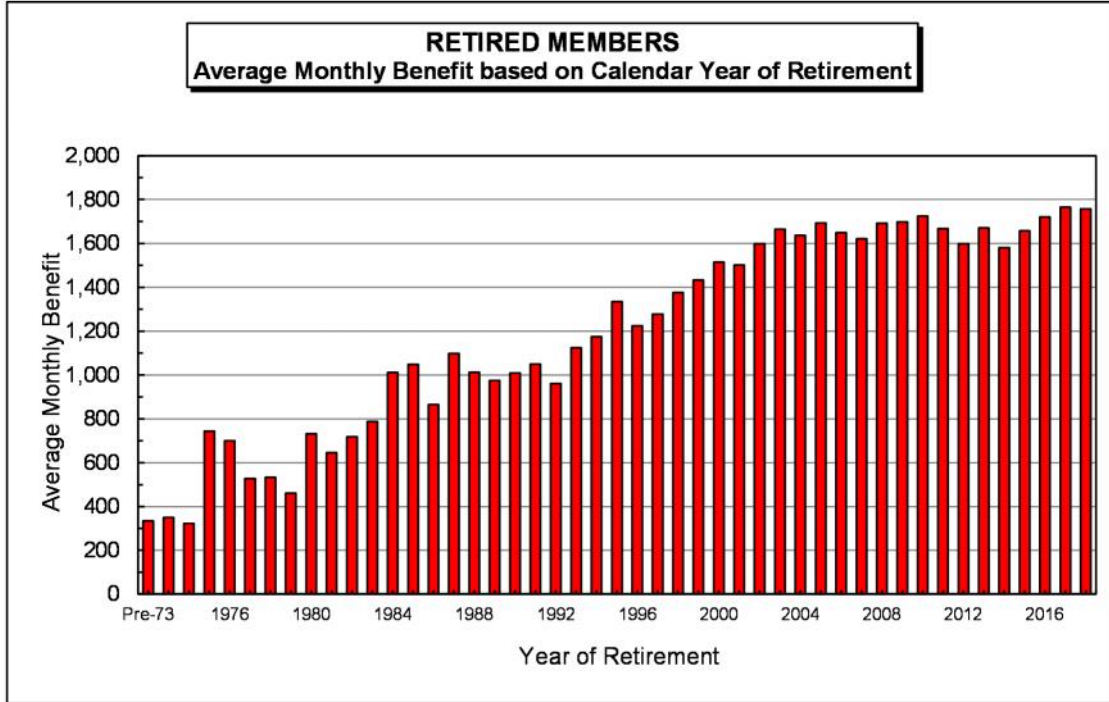


Public Employee Retirement  
System of Idaho



Public Employee Retirement  
System of Idaho

Table 14: Distribution of Retired Members by Calendar Year of Retirement



Note: 2018 reflects only a partial year of retirements.

## Public Employee Retirement System of Idaho

### Appendix A: Actuarial Procedures and Assumptions

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The actuarial procedures and assumptions used in this valuation are described in this section. The economic assumptions were changed as of July 1, 2018 based on our 2018 Investigation of Experience.

Our 2018 Investigation of Experience also examined mortality and demographic assumptions. These assumptions were not changed in 2018 as a result of this study. The mortality assumptions were changed as of July 1, 2014 based on our 2014 Investigation of Experience. The active member assumptions were changed as of July 1, 2016 based on our 2016 Active Member Experience Study.

The mortality assumptions are based on the RP-2000 Mortality Table with generational mortality adjustments, as described in this section.

The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of the System and of the System itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of the System's benefits.

Table A-1 summarizes the assumptions. The mortality rates are taken from the sources listed. The other rates were developed from the experience of the System and are illustrated in Tables A-2 through A-10, as noted.

Tables A-2 and A-3 present the expected annual percentage increase in salaries. Table A-10 presents the probability of refund of contributions upon termination. The other tables in this section give rates of decrement expressed as percentages. The rates of decrement are referred to in actuarial notation by the general symbol "q".

**Actuarial Cost Method**

The actuarial valuation is prepared using the individual entry age actuarial cost method. In August 2013 the Board adopted this new cost method. Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit. The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the unfunded actuarial accrued liability (UAAL). The UAAL, if positive, is amortized as a level percentage of the projected salaries of present and future members of the System (and ORP) during various amortization periods. In effect, this means that UAAL amortization payments are assumed to grow at the same rate as the General Wage increase assumption (currently 3.75%).

The normal cost rates used in this valuation were calculated based on all current active members as of July 1, 2018, for each sex and type of employee in that valuation. The normal cost and projected salaries for fiscal year 2019 for all active members were calculated. The ratio of the two is the aggregate normal cost rate. Separate normal cost rates for each sex and type of employee are shown in Table 11. The separate rates are for illustrative purposes and are not used otherwise in the actuarial valuation.

**Records and Data**

The data used in this valuation consist of financial information and the age, service, and income records for contributing and former contributing members and their survivors. All of the data were supplied by the System and are accepted for valuation purposes without audit but were reviewed for reasonableness.

**Growth in Membership**

For benefit determination purposes, no growth in the membership of the System is assumed. For funding purposes, the total payroll of covered members is assumed to grow due to the combined effects of future wage increases of current active members and the replacement of the current active members by new employees. No growth in the total number of active members is assumed.

<b>Employer Contributions</b>	The employer contribution rate has been set by the Retirement Board effective July 1, 2013 at 11.66% for fire and police members and 11.32% for general members. At the October 2016 Board meeting, the Board approved a 1% increase to total blended contribution rates, to go into effect as of July 1, 2018. At the October 2017 Board meeting, the Board approved a one-year delay in this increase, to July 1, 2019.
<b>ORP Contributions</b>	Until July 1, 2025, 1.49% of the university ORP members' salaries will be used to finance the actuarial accrued liability.
<b>Member Contributions</b>	The member contribution rate is set by law to be 60% of the employer contribution rate for all members except fire and police members, whose member contribution rate is set at 72% of the employer rate (prior to the 0.10% increase for the death benefit for fire and police members). After the 72% is applied, the safety member rates are increased by 0.04% for the member-paid lump sum duty disability benefit. As of July 1, 2013, the general member rate is 6.79% and the fire and police rate is 8.36%.
<b>Valuation of Assets</b>	All assets are valued at market as of the valuation date. The market-value valuation basis for all assets was effective July 1, 1994.
<b>Investment Earnings and Expenses</b>	The future investment earnings of the assets of the System are assumed to accrue at an annual rate of 7.05%, compounded annually. Investment earnings of 0.05% are assumed sufficient to cover the general administrative expenses of the System. These rates were adopted July 1, 2018.
<b>Postretirement Benefit Increases</b>	A nondiscretionary postretirement increase of 1% per year is assumed for the primary valuation.
<b>Cash Refund Benefits</b>	Members receiving retirement benefits will not receive less than each member's accumulated member contributions at retirement. For the active members, this is approximated in the valuation using a three year certain period for annuity retirement benefits.

**Interest on  
Employee  
Contributions**

The credited interest rate on employee contributions is assumed to be 8.50%, the current investment return assumption plus one and a half percentage points. The actual credited interest rate will depend on the returns earned by the System's assets. The Board's current policy is to credit interest during each calendar year equal to the greater of: 1) 90% of PERSI's actual rate of return, net of expenses for the prior fiscal year (ending June 30), or 2) a rate based on U.S. Treasury bills with a minimum of 1.0%.

**Gain Sharing**

The report shows the cost of Gain Sharing, if any, to be distributed. Gain Sharing is reflected as a reduction in assets. No Gain Sharing is available for 2018.

**Future Salaries**

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Tables A-2 and A-3. The current assumptions for promotions and longevity were adopted July 1, 2016. In addition to increases in salary due to promotions and longevity, this scale includes an assumed 3.75% per annum rate of increase in the general wage level of the membership, adopted July 1, 2012.

**Retirement**

After members attain age 55 (50 for fire and police) and have five years of service, they may retire early with a reduced benefit. These early retirement rates are shown in Table A-6.

During the year after first satisfying the age and service requirements for unreduced benefits, whether for service or early retirement, members are assumed to retire at the rates shown in Table A-4. After the first year of eligibility, members are assumed to retire at the rates shown in Table A-5.

All general members who attain or who have attained age 75 in active service and all other members who have attained age 70 in active service are assumed to retire immediately.

The assumptions regarding termination of employment, early retirement, and unreduced service retirement are treated as a single set of decrements with regard to a particular member. For example, a teacher member hired at age 30 could be expected to possibly withdraw from the System due to death, disability, or other termination of employment until age 55. After age 55, the member could still withdraw due to death or disability. From age 55-60, the member could also withdraw with an early retirement and a reduced benefit as shown in Table A-6. At age 60 (Rule of 90), the member is first eligible to retire with an unreduced benefit. The probability of retiring at age 60 is shown in Table A-4.

**Retirement  
(continued)**

Thereafter, the probabilities of retirement for this member are indicated in Table A-5.

Thus, in no year during the member's projected employment would more than one of the decrements shown in Tables A-9, A-4, A-5, or A-6 be applied.

Tables A-4, A-5, and A-6 were revised July 1, 2016.

**Disablement**

The rates of disablement used in the valuation are illustrated in Table A-7. These rates were revised July 1, 2016.

**Mortality – Other  
Than Disabled  
Members**

Several different sets of mortality rates are used in the valuation for contributing members, members retired for service, and beneficiaries. These rates are illustrated in Table A-8. These rates were adopted July 1, 2014.

**Teachers**

<i>Males</i>	RP-2000 Combined Table for Healthy Individuals for males, set back three years.
<i>Females</i>	RP-2000 Combined Table for Healthy Individuals for females, set back three years.

**Fire and Police**

<i>Males</i>	RP-2000 Combined Table for Healthy Individuals for males with no offset.
<i>Females</i>	RP-2000 Combined Table for Healthy Individuals for females, set forward one year.

For deaths of active Fire and Police members, 10% are assumed to be duty related. This rate was adopted July 1, 2008.

**General Employees and All Beneficiaries**

<i>Males</i>	RP-2000 Combined Table for Healthy Individuals for males, set back one year.
<i>Females</i>	RP-2000 Combined Table for Healthy Individuals for females, set back one year.

All mortality tables are adjusted with generational mortality adjustments using projection scale AA as shown in Table A-8B.

The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.



**Mortality – Disabled Members**

For disabled members, the mortality rates used in the valuation are the rates from the RP-2000 table for disabled individuals for respective sexes, with a one-year setback for males and a one-year set forward for females. These rates are illustrative in Table A-8A. These rates were adopted July 1, 2014.

All mortality tables are adjusted with generational mortality adjustments using projection scale AA as shown in Table A-8B.

The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.

**Other Employment Terminations**

Table A-9 shows the rates assumed in this valuation for future withdrawal from active service for reasons other than death, disability, or retirement with an unreduced benefit. These rates were revised July 1, 2016.

Terminating employees may withdraw their contributions immediately upon termination of employment and forfeit the right to further benefits, or they may leave their contributions with the System. Former contributing members whose contributions are on deposit may later elect to receive a refund, may return to work, or may remain inactive until becoming eligible to receive a retirement benefit.

All terminating members who are not eligible for vested benefits are assumed to withdraw their contributions immediately.

Table A-10 gives the assumed probabilities that vested members will withdraw their contributions immediately upon termination. These rates were adopted July 1, 2016.

Note: Effective July 1, 1985, certain police officers were reclassified and included in the general employee group. For this class of members, the actuarial assumptions are the same as those shown for fire and police.

**Probability of Marriage**

If death occurs in active or disability retirement status, 75% of all members were assumed to have eligible surviving spouses. The spouse is assumed to be three years younger than the male members and three years older than the female members.

**Fire and Police Duty Death and Disability**

For the Fire and Police active members, 10% of deaths and 25% of disabilities are assumed to be duty related.



**Inactive Members**

For vested inactive members not currently receiving benefits, the present value of benefits is determined based on the estimated benefit payable for retirement at the later of the member's current age or age 60 (age 53 for fire and police members). This assumption was adopted July 1, 2012.

For non-vested inactive members not currently receiving benefits, the present value of benefits is equal to the accumulated member contributions.

**Present Value of Benefits for Active Members with No Salary**

There are active members who are reported in the valuation data as active, but with no salary. Discussions with PERSI staff indicated that these members are generally terminated, but that their record has not yet been completely updated. For the valuation, we treat these members as either vested inactive or non-vested inactive members. For the vested members, we do not have sufficient benefit information to determine a liability directly. We assume that these members have a liability determined from the ratio of Present Value of Benefits to accumulated member contributions for vested inactive members. Currently that ratio is 1.35. This assumption was adopted July 1, 2016.

Public Employee Retirement  
System of Idaho

Table A-1: Summary of Valuation Assumptions  
July 1, 2018

I. Economic Assumptions	
A. General wage increases	3.75%
B. Investment earnings (including 0.05% for admin expenses)	7.05
C. Growth in membership	0.00
D. Postretirement benefit increases	1.00
E. Inflation	3.00
F. Credited Interest Rate on Employee Contributions	8.50
II. Demographic Assumptions	
A. Salary increases	Table A-2, A-3
B. Retirement	Table A-4, A-5, A-6
C. Disablement	Table A-7
D. Mortality among contributing members, service retired members, and beneficiaries	Table A-8

Base mortality rates are shown in Table A-8A.

Basis – RP-2000 Combined Mortality Table  
for respective sexes, as adjusted:

<u>Class of Members</u>	<u>Adjustment</u>
Teachers - men	-3 years
Teachers - women	-3 years
Fire and police - men	0 years
Fire and police - women	+1 year
General employees and all beneficiaries - men	-1 year
- women	-1 year

All mortality tables are adjusted with generational mortality adjustments using projection scale AA table as shown in Table A-8B.

E. Mortality among disabled members Table A-8

Base mortality rates are shown in Table A-8A.  
RP-2000 table for disabled individuals for respective sexes, as adjusted:

Men	-1 year
Women	+1 year

All mortality tables are adjusted with generational mortality adjustments using projection scale AA table as shown in Table A-8B.

F. Other terminations of employment Table A-9  
G. Refund of contributions on vested termination Table A-10

Public Employee Retirement  
System of Idaho

Table A-2: Future Salaries

Years of Service	Annual Increase in Salary Due to Promotions and Longevity				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
0	6.00%	6.00%	6.00%	5.00%	5.00%
1	5.50	4.00	4.56	5.00	5.50
2	4.80	3.30	3.84	4.00	4.00
3	4.05	2.70	3.36	3.50	3.00
4	3.55	2.40	2.88	3.25	3.20
5	3.15	2.20	2.60	3.20	3.30
6	2.75	2.00	2.35	3.40	3.40
7	2.45	1.80	2.15	3.50	3.50
8	2.25	1.60	2.00	3.50	3.50
9	1.95	1.50	1.85	3.40	3.50
10	1.75	1.30	1.65	3.30	3.50
11	1.55	1.20	1.50	3.00	3.30
12	1.35	1.10	1.30	2.50	3.00
13	1.25	1.00	1.10	2.00	2.50
14	1.20	0.90	0.98	1.60	2.00
15	1.10	0.85	0.90	1.40	1.52
16	1.05	0.80	0.85	1.20	1.30
17	0.95	0.75	0.75	1.00	1.08
18	0.85	0.70	0.70	0.80	0.98
19	0.75	0.65	0.65	0.75	0.88
20	0.65	0.60	0.65	0.70	0.78
21	0.60	0.60	0.65	0.60	0.68
22	0.60	0.60	0.65	0.60	0.58
23 or more	0.60	0.60	0.65	0.50	0.50

Public Employee Retirement  
System of Idaho

Table A-3: Future Salaries

Years of Service	Total Annual Increase in Salary <sup>(1)</sup>				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
0	9.97%	9.97%	9.97%	8.94%	8.94%
1	9.46	7.90	8.48	8.94	9.46
2	8.73	7.17	7.73	7.90	7.90
3	7.95	6.55	7.24	7.38	6.86
4	7.43	6.24	6.74	7.12	7.07
5	7.02	6.03	6.45	7.07	7.17
6	6.60	5.83	6.19	7.28	7.28
7	6.29	5.62	5.98	7.38	7.38
8	6.08	5.41	5.83	7.38	7.38
9	5.77	5.31	5.67	7.28	7.38
10	5.57	5.10	5.46	7.17	7.38
11	5.36	5.00	5.31	6.86	7.17
12	5.15	4.89	5.10	6.34	6.86
13	5.05	4.79	4.89	5.83	6.34
14	5.00	4.68	4.77	5.41	5.83
15	4.89	4.63	4.68	5.20	5.33
16	4.84	4.58	4.63	5.00	5.10
17	4.74	4.53	4.53	4.79	4.87
18	4.63	4.48	4.48	4.58	4.77
19	4.53	4.42	4.42	4.53	4.66
20	4.42	4.37	4.42	4.48	4.56
21	4.37	4.37	4.42	4.37	4.46
22	4.37	4.37	4.42	4.37	4.35
23 or more	4.37	4.37	4.42	4.27	4.27

(1) The total expected increase in salary is the increase due to promotions and longevity, shown in Table A-2, adjusted for an assumed 3.75% per annum increase in the general wage level of the membership. The total result is compounded rather than additive.

Public Employee Retirement  
System of Idaho

Table A-4: Immediate Retirement

Age	Retirement Rates in First Year Eligible for Unreduced Benefits				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
55 <sup>(1)</sup>	21%	22%	26%	19%	10%
56	21	22	26	19	18
57	21	22	26	22	26
58	21	22	26	19	26
59	21	26	26	30	26
60	17	26	26	30	26
61	17	26	26	21	26
62	29	33	37	57	40
63	17	33	30	40	40
64	17	33	30	36	40
65	40	33	37	36	49
66	33	18	18	18	33
67	22	18	18	18	33
68	37	18	18	18	33
69	37	18	18	18	33
70	(2)	18	18	(2)	(2)
71		18	18		
72		18	18		
73		18	18		
74		18	18		
75		(2)	(2)		

(1) 50% rate assumed for fire and police members eligible from age 50, 26% for age 51 and 16% from ages 52 to 54.

(2) For all ages older than the age indicated, retirement is assumed to occur immediately.

Public Employee Retirement  
System of Idaho

Table A-5: Service Retirement

Age	Retirement Rates Among Persons Who Have Been Eligible for Unreduced Benefits for At Least One Year				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
55 <sup>(1)</sup>	18%	10%	18%	5%	10%
56	16	10	18	10	10
57	16	10	18	14	14
58	16	14	18	17	14
59	16	14	18	18	18
60	22	17	18	18	18
61	17	17	22	22	22
62	29	40	33	43	42
63	17	26	26	24	31
64	17	26	26	24	32
65	40	50	52	46	49
66	33	26	32	26	37
67	22	20	22	26	30
68	37	20	21	26	30
69	37	20	21	26	30
70	(2)	20	21	(2)	(2)
71		20	21		
72		20	21		
73		20	21		
74		20	21		
75		(2)	(2)		

(1) 11% rate assumed for fire and police members eligible from age 50 to 51. 18% rate assumed from age 52 to 54.

(2) For all ages older than the age indicated, retirement is assumed to occur immediately.

Public Employee Retirement  
System of Idaho

Table A-6: Early Retirement

Age	Retirement Rates Among Persons Eligible for Reduced Early Retirement Benefits				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
50	4.2%				
51	4.2				
52	4.2				
53	4.2				
54	4.2	(1)	(1)	(1)	(1)
55	5.4	2.5%	3.1%	6.0%	5.8%
56	7.7	3.0	3.1	8.0	6.8
57	7.7	3.2	3.1	9.4	6.8
58	5.8	4.0	3.2	10.3	7.7
59	8.6	4.0	4.9	11.3	7.7
60		5.1	6.3	13.5	12.4
61		6.0	6.3	13.0	14.0
62		21.0	20.6	16.8	22.3
63		13.0	13.1	16.9	16.5
64		12.0	13.1	19.0	16.5

(1) Not eligible for retirement.



Public Employee Retirement  
System of Idaho

Table A-7: Disablement

Age	Annual Rates				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
20	0.012%	0.010%	0.010%	0.010%	0.050%
25	0.012	0.010	0.010	0.010	0.050
30	0.019	0.010	0.010	0.010	0.044
35	0.034	0.028	0.010	0.016	0.040
40	0.046	0.064	0.052	0.044	0.046
45	0.104	0.110	0.098	0.066	0.068
50	0.296	0.172	0.182	0.124	0.182
55	0.608	0.319	0.284	0.196	0.292
60	0.300	0.399	0.409	0.256	0.355
65	0.000	0.429	0.499	0.310	0.409

Public Employee Retirement  
System of Idaho

Table A-8A: Mortality (Base Rates for Year 2000)

Age	Annual Rates							
	Beneficiaries, Contributing Members, and Members Retired for Service						Disabled Members	
	Fire and Police <sup>(1)</sup>		General Employees		Teachers		Men	Women
	Men	Women	Men	Women	Men	Women		
20	0.035%	0.019%	0.033%	0.019%	0.030%	0.018%	2.257%	0.745%
25	0.038	0.021	0.038	0.020	0.037	0.019	2.257	0.745
30	0.044	0.031	0.041	0.025	0.038	0.022	2.257	0.745
35	0.077	0.051	0.070	0.044	0.056	0.035	2.257	0.745
40	0.108	0.077	0.102	0.065	0.090	0.055	2.257	0.745
45	0.151	0.122	0.140	0.103	0.122	0.085	2.257	0.818
50	0.214	0.185	0.200	0.155	0.173	0.133	2.769	1.248
55	0.362	0.309	0.320	0.242	0.267	0.202	3.415	1.760
60	0.675	0.581	0.595	0.444	0.469	0.348	4.067	2.294
65	1.274	1.095	1.128	0.862	0.876	0.666	4.831	2.959
70	2.221	1.858	1.980	1.486	1.608	1.216	5.961	4.014
75	3.783	3.097	3.390	2.546	2.728	2.067	7.751	5.578
80	6.437	5.078	5.793	4.151	4.691	3.411	10.339	7.714
85	11.076	8.638	9.978	6.952	8.049	5.629	13.492	10.710
90	18.341	14.460	16.642	11.915	13.604	9.634	16.923	14.970

(1) For Fire and Police, 10% of deaths while an active member are assumed to be duty related.

Public Employee Retirement  
System of Idaho

Table A-8B: Mortality Projection Scales  
Apply from 2000 to Year of Decrement

Age	Annual Rates							
	Beneficiaries, Contributing Members, and Members Retired for Service						Disabled Members	
	Fire and Police		General Employees		Teachers		Men	Women
	Men	Women	Men	Women	Men	Women		
20	1.9%	1.7%	1.9%	1.5%	1.9%	1.4%	1.9%	1.7%
25	1.0	1.2	1.3	1.5	1.7	1.7	1.3	1.2
30	0.5	0.8	0.5	1.2	0.5	1.2	0.5	0.8
35	0.5	1.2	0.5	1.0	0.5	0.8	0.5	1.2
40	0.8	1.5	0.7	1.5	0.5	1.3	0.7	1.5
45	1.3	1.7	1.2	1.5	1.0	1.5	1.2	1.7
50	1.8	1.6	1.7	1.8	1.5	1.8	1.7	1.6
55	1.9	0.6	2.0	1.0	2.0	1.4	2.0	0.6
60	1.6	0.5	1.6	0.5	1.7	0.5	1.6	0.5
65	1.4	0.5	1.4	0.5	1.5	0.5	1.4	0.5
70	1.5	0.6	1.4	0.5	1.3	0.5	1.4	0.6
75	1.4	0.8	1.5	0.7	1.5	0.6	1.5	0.8
80	1.0	0.7	1.1	0.7	1.3	0.7	1.1	0.7
85	0.7	0.5	0.7	0.7	0.8	0.7	0.7	0.5
90	0.4	0.3	0.5	0.3	0.6	0.4	0.5	0.3

These rates are applied to reduce the assumed mortality rate for each year from the base year (2000) to the year in which a probability of death is being determined for a participant.

Public Employee Retirement  
System of Idaho

Table A-9: Other Terminations of Employment

Years of Service	Annual Rates				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
0	14.8%	16.5%	17.8%	11.0%	12.2%
1	12.2	14.3	16.8	10.9	11.3
2	9.1	12.5	14.2	8.6	9.5
3	8.6	11.3	12.0	6.8	7.7
4	7.7	10.9	11.8	6.3	6.8
5	6.6	8.8	10.3	5.5	6.0
6	6.0	8.0	9.2	4.7	5.2
7	5.4	6.8	8.2	3.9	4.4
8	5.0	6.2	7.4	3.6	4.0
9	4.6	5.6	6.7	3.3	3.6
10	4.2	5.5	6.4	3.1	3.1
11	3.8	5.0	5.6	2.8	2.7
12	3.4	4.4	4.9	2.5	2.3
13	3.1	4.1	4.6	2.3	2.1
14	2.7	3.8	4.3	2.1	2.0
15	2.8	3.5	4.0	1.9	1.8
16	2.4	3.2	3.7	1.7	1.6
17	2.0	3.0	3.4	1.5	1.5
18	1.9	2.8	3.2	1.4	1.4
19	1.8	2.6	3.1	1.4	1.4
20	1.7	2.4	2.9	1.3	1.3
21	1.6	2.2	2.7	1.3	1.3
22	1.5	2.0	2.5	1.2	1.2
23	1.5	1.9	2.5	1.2	1.2
24	1.5	1.8	2.5	1.2	1.2
25	1.5	1.7	2.5	1.2	1.2
26	1.5	1.6	2.5	1.2	1.2
27	1.5	1.5	2.5	1.2	1.2
28	1.5	1.5	2.5	1.2	1.2
29	1.5	1.5	2.5	1.2	1.2
30 or more	1.5	1.5	2.5	1.2	1.2

Public Employee Retirement  
System of Idaho

Table A-10: Immediate Refund of Contributions Upon Termination of Employment  
While Vested

Age	Probabilities of Immediate Refund				
	Fire and Police	General Employees		Teachers	
		Men	Women	Men	Women
25	52%	48%	39%	25%	16%
30	50	37	33	17	15
35	47	29	30	21	12
40	39	29	31	24	16
45	35	24	27	18	15
50	0	24	22	10	9
55	0	0	0	0	0



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## Public Employee Retirement System of Idaho

### Appendix B: Provisions of Governing Law

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All actuarial calculations are based on our understanding of the statutes governing the Public Employee Retirement System of Idaho, as contained in Sections 59-1301 through 59-1399, inclusive, of the Idaho Code, with amendments effective through July 1, 2018. The benefit and contribution provisions of this law are summarized briefly below, along with corresponding references to the Idaho Code. This summary does not attempt to cover all the detailed provisions of the law. Only those benefits in effect through July 1, 2018 are considered in this valuation. The items in parentheses are the provisions applicable to firefighters and police officers.

#### Effective Date

The effective date of the Retirement System was July 1, 1965.

#### Member Contribution Rate

The member contribution rate effective July 1, 2018 is 6.79% (8.36%) of salary. As described in Section 5, there is a rate increase scheduled for July 1, 2019.

The member contribution rate is fixed at 60% (72%) of the employer contribution rate. For firefighters and police officers, the 72% adjustment is applied after reducing the employer rate by 0.10% for the 2003 addition of a \$100,000 death benefit for fire and police members who die in the line of duty. After the 72% is applied, the resulting rate is increased by 0.04% for the lump sum duty disability benefit. Member contributions have been “picked up” on a pre-tax basis by the employer since June 30, 1983 (Sections 59-1331 and 59-1332).

#### Employer Contribution Rate

The employer contribution rate is set by the Retirement Board (Section 59-1322). As described in Section 5, there are no longer any future scheduled rate increases. The current rates are reflected in this valuation

#### Service Retirement Allowance

##### Eligibility

Age 65 (60) with five years of service, including six months of membership service (Section 59-1341).

##### Amount of Allowance

For each year of credited service, the annual service retirement allowance is 2.0% (2.3%) of the highest 42-month average salary (Section 59-1342).

**Service Retirement Allowance (continued)**

**Minimum Benefit**

\$60 (\$72) annual allowance for each year of service. The dollar amounts increase after 1974 according to the rate of cost of living increases in retirement allowances (Section 59-1342).

**Maximum Benefit**

In no case may a member's regular retirement benefit exceed the highest three-year average salary of the member (Section 59-1342).

**Normal Form**

Straight life retirement allowance plus any death benefit (Section 59-1351).

**Optional Form**

Actuarial equivalent of the normal form under the options available, according to the mortality and interest basis adopted by the Board (Section 59-1351).

**Early Retirement Allowance**

**Eligibility**

Age 55 (50) with five years of service, including six months of membership service (contributing members only) (Section 59-1345).

**Amount of Allowance**

Full accrued service retirement allowance if age plus service equals 90 (80); otherwise, the accrued service retirement allowance, reduced by 3% for each of the first five years by which the early retirement date precedes the date the member would be eligible to receive the full accrued benefit, and by 5.75% for each additional year (Section 59-1346).

**Vested Retirement Allowance**

**Eligibility**

Former contributing members with five years of membership service are entitled to receive benefits after attaining age 55 (50) (Section 59-1345).

**Amount of Allowance**

Same as early retirement allowance (Section 59-1345).



**Disability Retirement Allowance**

**Eligibility**

Five years of membership service. For a police officer or a firefighter hired after July 1, 1993, who is disabled from an occupational cause, there is no service requirement (Section 59-1352).

**Amount of Allowance**

Projected service retirement allowance based on accrued service plus service projected to age 65 (60) (latter limited to excess of 30 years over accrued service) less any amount payable under workers' compensation law (Section 59-1353).

**Normal Form**

Temporary annuity to age 65 (60) plus any death benefit. Service retirement allowance becomes payable at age 65 (60) (Section 59-1354).

**Safety Member Lump Sum Duty Disability Benefit**

Fire and Police members who are disabled in the line of duty are eligible for a \$100,000 lump sum benefit, in addition to the annuity benefits discussed above (Section 59-1352A).

**Death Benefits**

**After Retirement**

Under the normal form of the retirement allowance, the excess, if any, of the member's accumulated contributions with interest at retirement over all payments received. Otherwise, payable according to the option elected (Section 59-1361).

**Before Retirement**

A. An automatic joint and survivor option applied to the actuarial equivalent of the member's accrued service retirement allowance is paid to the surviving spouse of a member with at least five years of service who dies while:

- i. contributing;
- ii. not contributing, but eligible for benefits; or
- iii. retired for disability,

or

B. If a member with at least five years of service has no spouse, a lump sum payment is made equal to twice the accumulated contributions with interest (Section 59-1361).

or

C. If a member with at least five years of service has no spouse, a lump sum payment is made equal to twice the accumulated contributions with interest (Section 59-1361).

Fire and police members are entitled to an additional \$100,000 payment if death occurs in the line of duty. (Section 59-1361 A).

**Withdrawal Benefits**

Accumulated contributions with interest (Section 59-1358). The interest rate is determined by the Board (Section 59-1301(26)).

**Postretirement  
Increases**

Postretirement benefit increases are based on changes in the Consumer Price Index. The measurement period for changes in the CPI-U is August to August. The COLA changes are implemented effective on the March 1 following the measurement period.

If the CPI-U increases by at least 1%, the COLA is at least 1%. If the CPI-U increases by more than 1%, an additional postretirement increase of up to 5% each year (but not more than the increase in the CPI-U) may be authorized by the Board, subject to the approval of the Legislature.

If the CPI-U increases by less than 1% or decreases, the COLA is automatic, based on the change in the CPI. If a negative COLA is applicable, the negative COLA cannot decrease benefits by more than 6%. Additionally, a negative COLA cannot decrease a member's benefit below the amount of the benefit at the initial benefit date.

If a COLA is implemented that is less than the increase in the CPI-U, members' benefits will not retain their full inflation-adjusted purchasing power. In such cases the Board may implement a Restoration of Purchasing Power (ROPP) COLA at a later date to bring those members closer to 100% of inflation-adjusted purchasing power. As with a discretionary COLA, a ROPP is subject to approval of the Legislature (Section 59-1355).

**Gain Sharing**

Beginning in 2000, under Section 59-1309, Idaho Code, the Board may allocate all or a portion of “extraordinary gains” to active and retired members and employers as Gain Sharing.

Extraordinary gains are defined as the excess, if any, at the close of the fiscal year of the Assets over Actuarial Accrued Liabilities plus an amount necessary to absorb a one standard deviation market event without increasing contribution rates, as determined by the Board. Under the Board’s current investment policy, assets in excess of a 113% funded ratio are considered extraordinary gains. The Board has the authority to rescind the Gain Sharing up to the date of distribution.



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## Public Employee Retirement System of Idaho

### Appendix C: Valuation Data and Comparative Schedules

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This valuation is based on the membership of the System as of June 30, 2018. We relied on data supplied by the System. If there are material defects in the data, it is possible they would be uncovered by a detailed, systematic review and comparison of the data to search for data values that are questionable or relationships that are materially inconsistent. Such a review was beyond the scope of our assignment.

The membership of the System includes employees of the State of Idaho and participating political subdivisions. The membership is divided into three categories:

1. *Fire and Police*

State police officers, most local police officers and sheriffs, local firefighters, penitentiary employees, employees of the Youth Services Center, and employees of the adjutant general and military department.

2. *Teachers*

Faculty members of local school districts and institutions of higher learning who are not members of an Optional Retirement Program.

3. *General Employees*

Other state employees and general employees of the political subdivisions, local school districts, and colleges and universities.

The data for all contributing members, former contributing members, and their survivors are summarized in Table C-1. Table C-2 summarizes their age and service statistics. Table C-3 summarizes the active members by age groups.

Detailed statistics regarding the distributions of members receiving service or disability retirement benefits, beneficiaries of deceased members, and active members in each category of membership have been reported separately to the System.

Tables C-4 through C-7 summarizes the experience of the System since June 30, 1968. Earlier data are not comparable, since the Idaho Teachers' Retirement System merged with the Public Employee Retirement System of Idaho just prior to that date.

Table C-4 shows a summary of the active members and the annuitants covered as of the various valuation dates.

Table C-5 summarizes the contribution rates, the amortization period, and the UAAL determined at each annual actuarial valuation.

Table C-6 presents a brief history of the financial experience of the System's investments.

Any review of these comparative schedules should be made in the light of Tables C-7 and C-8, which show the significant changes affecting the actuarial valuations in recent years.

Table C-9 summarizes changes in status for active and inactive numbers and annuitants between July 1, 2017 and July 1, 2018.

Table C-10 reconciles the member records received from PERSI with the records used in the valuation.

The total salaries paid to ORP members who are contributing 1.49% for the year ending June 30, 2018 was \$331 million. As of July 1, 2012, the ORP members who had been contributing 3.83% of salary are no longer required to contribute anything. These contributions are used to finance the UAAL.

Public Employee Retirement System of Idaho

Table C-1: Summary of Membership Data

	Active Members			Annuitants		
	Number <sup>(1)</sup>	Annual Salaries in Thousands	Average Annual Salaries	Number	Annual Benefits in Thousands	Average Annual Benefits
<b>July 1, 2018</b>						
Fire and Police	7,553	\$474,251	\$62,790	3,539	\$100,885	\$28,507
General Employees:						
Male	17,794	803,482	45,155	12,120	208,192	17,178
Female	27,001	910,338	33,715	17,744	215,045	12,119
Teachers:						
Male	5,044	298,143	59,108	4,417	134,255	30,395
Female	13,720	702,103	51,174	9,087	226,450	24,920
Total	71,112	\$3,188,317	\$44,835	46,907	\$884,827	\$18,863
<b>July 1, 2017</b>						
Fire and Police	7,565	\$455,780	\$60,249	3,435	\$94,560	\$27,528
General Employees:						
Male	17,539	768,236	43,802	11,737	194,102	16,538
Female	26,460	865,449	32,708	16,981	196,942	11,598
Teachers:						
Male	5,026	286,193	56,942	4,417	132,605	30,022
Female	13,483	664,991	49,321	8,898	217,991	24,499
Total	70,073	\$3,040,649	\$43,393	45,468	\$836,200	\$18,391

(1) Not included in these figures are the following:

	Vested Inactive Members Not Currently Receiving Benefits			Non-Vested Inactive Members	Other Inactive Members <sup>(3)</sup>	Total Inactive Members
	Number	Annual Benefits in Thousands <sup>(2)</sup>	Average Annual Benefits			
2018	13,113	\$87,398	\$6,665	24,455	20	37,588
2017	12,655	\$82,068	\$6,485	21,482	14	34,151

(2) At assumed retirement date.

(3) These members were active with at least 5 years of service as of the valuation date, but PERSI reported their salary as zero. They were treated as vested inactive members, and their liability was estimated as 1.35 times the accumulated employee contributions.

Note: In 2018, 102 vested annuitants of the Firefighters' Retirement Fund were not eligible for a PERSI benefit. In 2017, 115 were not eligible.



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Public Employee Retirement System of Idaho

Table C-2: Summary of Age and Service Statistics

	Active Members			Average Current Age	Average Current Service	Inactive Members Not Currently Receiving Benefits	Members Receiving Service or Early Retirement Benefits <sup>(1)</sup>			
	Vested	Non-vested	Total				Number	Average Current Age	Average Retirement Age	Average Service
<b>July 1, 2018</b>										
Fire and Police	4,722	2,831	7,553	40.8	10.0	753	3,539	68.2	57.3	18.9
General Employees:										
Male	10,174	7,620	17,794	47.8	9.3	3,732	12,120	73.1	63.1	18.6
Female	14,634	12,367	27,001	47.2	8.9	5,852	17,744	72.9	62.7	17.7
Teachers:										
Male	3,656	1,388	5,044	45.3	12.7	734	4,417	73.1	61.2	25.7
Female	9,351	4,369	13,720	44.6	11.5	2,042	9,087	71.9	61.3	23.6
Total	42,537	28,575	71,112	46.0	9.9	13,113	46,907	72.4	62.0	19.9
<b>July 1, 2017</b>										
Fire and Police	4,718	2,847	7,565	45.6	9.9	689	3,435	68.0	57.2	18.7
General Employees:										
Male	10,170	7,369	17,539	47.9	9.4	3,602	11,737	72.9	62.9	18.5
Female	14,669	11,791	26,460	47.3	9.0	5,704	16,981	72.8	62.6	17.5
Teachers:										
Male	3,608	1,418	5,026	45.3	12.7	706	4,417	72.6	61.1	25.8
Female	9,182	4,301	13,483	44.7	11.6	1,954	8,898	71.5	61.2	23.6
Total	42,347	27,726	70,073	46.6	9.9	12,655	45,468	72.2	61.8	19.8

(1) Beneficiaries of Teachers and Fire and Police members are listed under General.

Note: The averages shown in this table are for general information purposes. The valuation results depend upon the personnel data underlying the averages, rather than upon the averages themselves.



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Public Employee Retirement System of Idaho

Table C-3: Age Distribution of Active Members

	Age Groups					Total
	0-29	30-39	40-49	50-59	60+	
<b>July 1, 2018</b>						
Fire and Police	1,291	2,295	2,295	1,363	309	7,553
General Employees:						
Male	1,646	3,547	4,089	4,888	3,624	17,794
Female	2,628	5,067	6,652	7,990	4,664	27,001
Teachers:						
Male	332	1,291	1,586	1,377	458	5,044
Female	1,436	3,260	4,228	3,511	1,285	13,720
Total	7,333	15,460	18,850	19,129	10,340	71,112
Percentage of Total	10.31%	21.74%	26.51%	26.90%	14.54%	100.00%
<b>July 1, 2017</b>						
Fire and Police	1,287	2,301	2,309	1,337	331	7,565
General Employees:						
Male	1,623	3,372	4,004	4,954	3,586	17,539
Female	2,463	4,885	6,618	7,947	4,547	26,460
Teachers:						
Male	332	1,265	1,617	1,348	464	5,026
Female	1,410	3,209	4,100	3,435	1,329	13,483
Total	7,115	15,032	18,648	19,021	10,257	70,073
Percentage of Total	10.15%	21.45%	26.61%	27.14%	14.65%	100.00%



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Public Employee Retirement System of Idaho

Table C-4: Membership Data

Valuation Date (July 1)	Active Members					Annuitants			
	Number	Annual Salaries in Millions	Average Annual Salary	Average Age	Average Years of Service	Number	Annual Benefits in Thousands	Average Annual Benefit	Average Age <sup>(2)</sup>
1968	16,014	\$ 95	\$ 5,906	(1)	(1)	2,498	\$ 3,207	\$ 1,284	(1)
1969	19,796	124	6,247	(1)	(1)	2,977	4,351	1,462	(1)
1970	21,048	140	6,672	(1)	(1)	3,565	5,261	1,476	(1)
1971	23,505	160	6,805	(1)	(1)	4,298	6,442	1,499	(1)
1972	29,648	203	6,832	(1)	(1)	4,862	7,255	1,492	(1)
1973	30,174	219	7,255	(1)	(1)	5,659	8,494	1,501	(1)
1974	30,603	243	7,953	41.6	6.3	6,301	12,993	2,062	69.7
1975	32,545	286	8,771	41.2	6.2	7,058	15,098	2,139	69.7
1976	35,658	342	9,596	40.3	6.7	7,745	16,981	2,193	69.3
1977	37,559	381	10,135	40.1	6.7	8,573	20,172	2,353	69.5
1978	38,122	418	10,967	40.8	6.7	9,235	23,176	2,510	70.8
1979	38,848	459	11,826	40.9	6.8	9,982	26,593	2,664	71.0
1980	39,510	497	12,580	41.1	7.0	10,606	29,876	2,817	71.2
1981	40,722	550	13,518	41.2	7.0	11,279	34,073	3,021	71.3
1982	40,537	596	14,700	41.4	7.3	12,035	39,103	3,249	72.3
1983	40,495	630	15,557	41.6	7.6	12,766	44,597	3,493	71.5
1984	41,779	678	16,234	41.8	7.7	13,336	48,784	3,658	71.8
1985	42,626	739	17,336	42.0	7.9	13,955	54,583	3,911	71.9
1986	43,030	768	17,855	42.2	8.1	14,615	59,182	4,049	72.1
1987	43,843	797	18,187	42.4	8.2	15,281	64,558	4,225	72.3
1988	45,262	859	18,969	42.6	8.3	15,801	69,416	4,393	72.5
1989	46,106	911	19,763	42.9	8.4	16,344	74,809	4,572	72.7
1990	48,251	961	19,919	43.0	8.4	16,880	82,262	4,873	72.9

(1) Not calculated.

(2) Excludes survivors and disabled members.



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**Table C-4**  
(continued)

Valuation Date (July 1)	Active Members					Annuitants			
	Number	Annual Salaries in Millions	Average Annual Salary	Average Age	Average Years of Service	Number	Annual Benefits in Thousands	Average Annual Benefit	Average Age <sup>(2)</sup>
1991	49,854	\$1,039	\$20,842	43.1	8.4	17,464	\$92,040	\$5,270	73.2
1992	51,557	1,134	21,994	43.3	8.6	17,847	100,854	5,651	73.3
1993	52,532	1,191	22,663	43.7	8.9	18,283	111,545	6,101	73.5
1994	53,763	1,254	23,322	43.9	9.0	18,683	124,254	6,651	73.4
1995	55,811	1,388	24,866	43.9	9.0	19,272	136,327	7,074	73.6
1996	56,802	1,452	25,558	44.1	9.2	19,903	148,740	7,473	73.5
1997	57,237	1,511	26,403	44.3	9.5	20,499	160,908	7,850	73.2
1998	57,528	1,562	27,156	44.6	9.7	21,134	173,519	8,210	73.2
1999	59,248	1,673	28,243	44.8	9.8	21,756	193,441	8,891	73.1
2000	60,388	1,798	29,778	45.0	9.8	22,456	209,549	9,332	73.1
2001	62,125	1,924	30,976	45.1	9.7	23,253	235,269	10,118	72.7
2002	62,376	2,036	32,641	45.4	10.0	24,018	255,374	10,633	72.7
2003	62,385	2,064	33,079	45.7	10.2	24,991	279,219	11,173	72.5
2004	63,385	2,124	33,510	45.9	10.2	26,043	307,410	11,804	72.3
2005	64,391	2,197	34,126	46.0	10.2	27,246	343,077	12,592	72.1
2006	64,762	2,294	35,427	46.2	10.4	28,438	381,677	13,421	72.0
2007	65,800	2,397	36,436	46.2	10.3	29,619	422,196	14,254	71.8
2008	66,765	2,541	38,052	46.2	10.3	30,912	459,077	14,851	71.8
2009	67,813	2,645	38,999	46.5	10.4	32,197	491,946	15,279	71.8
2010	67,020	2,622	39,130	46.7	10.6	33,625	526,020	15,644	71.3
2011	65,798	2,572	39,090	46.9	10.8	35,334	567,933	16,073	71.5
2012	65,270	2,568	39,339	46.9	10.8	37,150	611,045	16,448	71.6
2013	65,535	2,635	40,201	46.8	10.7	38,947	651,466	16,727	71.6
2014	66,223	2,676	40,414	46.6	10.5	40,776	694,946	17,043	71.7
2015	67,008	2,757	41,143	46.5	10.4	42,657	754,201	17,681	71.6
2016	68,517	2,833	41,353	46.8	10.1	44,181	793,277	17,955	71.8
2017	70,073	3,041	43,393	46.6	9.9	45,468	836,201	18,391	72.1
2018	71,112	3,188	44,835	46.1	10.0	46,907	884,827	18,863	72.3

(1) Not calculated.

(2) Excludes survivors and disabled members.



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Public Employee Retirement System of Idaho

Table C-5: Contribution Rates

Valuation Date (July 1)	Calculated Statutory Minimum Employer Rates			GASB Determined ARC <sup>(9)</sup>	Actual Rates			Prior to Subsequent Year COLA Adjustment	
	25/30-Year Funding <sup>(8)</sup>				Employee <sup>(1)</sup>			Amortization Period (Years)	Unfunded Actuarial Accrued Liability <sup>(5)</sup> (in Millions)
	Current Normal Cost Rate <sup>(1)</sup>	Amortization Payment Rate	Total Rate <sup>(2)</sup>		Employer <sup>(2)</sup>	Fire & Police	General & Teacher		
1968	2.01%	4.68%	6.69%	NA	7.25%	(3)	(4)	under 30 <sup>(6)</sup>	\$ 72.2
1969	2.53	5.17	7.70	NA	7.25	(3)	(4)	under 50 <sup>(6)</sup>	106.4
1970	2.51	4.71	7.22	NA	7.25	(3)	(4)	under 30 <sup>(6)</sup>	110.1
1971	3.26	4.96	7.33	NA	6.80	(3)	(4)	41	132.1
1972	3.40	3.65	7.05	NA	6.80	(3)	(4)	36	123.0
1973	3.31	3.43	6.74	NA	6.78	(3)	(4)	30	125.0
1974	2.45	4.09	6.54	NA	6.80	5.40	4.50	28	216.3
1975	2.43	4.14	6.57	NA	6.80	5.40	4.50	28	256.5
1976	3.38	3.58	6.96	NA	6.81	5.40	4.50	28	306.8
1977	5.76	4.11	9.87	NA	7.11	5.40	4.50	-- (7)	392.2
1978	4.92	4.04	8.96	NA	7.11	5.40	4.50	28	423.1
1979	4.93	4.02	8.95	NA	8.36	5.40	4.50	27	462.9
1980	5.20	4.43	9.63	NA	9.50	5.60	4.67	31	553.1
1981	5.20	4.21	9.41	NA	9.50	5.80	4.84	29	582.8
1982	5.07	4.39	9.46	NA	9.05	6.05	5.05	32	653.5
1983	5.11	4.22	9.33	NA	8.75	6.30	5.26	34	664.6
1984	5.09	4.30	9.39	NA	8.82	6.35	5.30	35	729.4
1985	6.02	3.29	9.31	NA	8.89	6.40	5.34	35	614.8
1986	5.97	2.84	8.84	NA	8.89	6.40	5.34	29	555.7
1987	5.97	2.60	8.67	NA	8.89	6.40	5.34	26	526.7
1988	5.85	3.21	9.01	NA	8.89	6.40	5.34	32	699.1
1989	5.86	2.53	8.54	NA	8.89	6.40	5.34	24	589.1
1990	6.07	2.34	8.41	NA	8.89	6.40	5.34	22	578.7
1991	6.07	2.34	8.41	NA	8.89	6.40	5.34	22	622.7
1992	6.77	2.44	9.21	NA	9.75	7.02	5.84	21	677.3



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**Table C-5**  
(continued)

Valuation Date (July 1)	Calculated Statutory Minimum Employer Rates 25/30-Year Funding <sup>(8)</sup>				GASB Determined ARC <sup>(9)</sup>	Actual Rates			Prior to Subsequent Year COLA Adjustment	
	Current Normal Cost Rate <sup>(1)</sup>	Amortization Payment Rate	Total Rate <sup>(2)</sup>	Employee <sup>(1)</sup>		Fire & Police	General & Teacher	Amortization Period (Years)	Unfunded Actuarial Accrued Liability <sup>(5)</sup> (in Millions)	
										Employer <sup>(2)</sup>
1993	7.13%	2.94%	10.07%	NA	10.65%	7.82%	6.38%	18	\$ 740.0	
1994	7.47	3.91	11.38	NA	11.63	8.53	6.97	22	1,040.6	
1995	7.68	3.23	10.91	NA	11.63	8.53	6.97	18	952.1	
1996	8.37	2.25	10.62	10.413	11.64	8.53	6.97	13	639.5	
1997	8.98	0.45	9.43	9.80	11.64 <sup>(10)</sup>	8.53 <sup>(10)</sup>	6.97 <sup>(10)</sup>	2	128.9	
1998	9.22	(1.40)	9.22	7.82	11.03 <sup>(10)</sup>	8.10 <sup>(10)</sup>	6.60 <sup>(10)</sup>	N/A	(493.9)	
1999	9.44	(2.06)	9.44	7.38	11.03 <sup>(10)</sup>	8.10 <sup>(10)</sup>	6.60 <sup>(10)</sup>	N/A	(704.0)	
2000	10.04	(2.72)	10.04	7.32	9.80	7.21	5.86	N/A	(998.3)	
2001	8.94	0.50	9.44	9.44	9.80	7.21	5.86	10	186.3	
2002	7.37	2.94	10.31	10.31	9.80	7.21	5.86	39	1,075.7	
2003	7.27	3.23	10.50	10.50	11.04 <sup>(11)</sup>	8.09 <sup>(11)</sup>	6.60 <sup>(11)</sup>	19	1,214.6	
2004	7.88	1.80	9.68	9.68	11.66 <sup>(11)</sup>	8.53 <sup>(11)</sup>	6.97 <sup>(11)</sup>	8	671.1	
2005	8.03	1.34	9.37	9.37	11.66 <sup>(11)</sup>	8.53 <sup>(11)</sup>	6.97 <sup>(11)</sup>	6	508.6	
2006	8.53	1.13	9.66	9.66	10.43	7.65	6.23	10	461.7	
2007	9.33	(1.24)	9.33	8.09	10.44	7.65	6.23	N/A	(573.4)	
2008	8.37	1.63	10.00	10.00	10.44	7.65	6.23	16	748.9	
2009	8.17	6.16	14.33	12.99	10.44	7.69	6.23	Over 100	3,026.6	
2010	6.55	5.62	12.17	12.17	13.70 <sup>(11)</sup>	10.04 <sup>(11)</sup>	8.19 <sup>(11)</sup>	18	2,555.8	
2011	7.51	2.85	10.36	10.36	13.70 <sup>(11)</sup>	10.04 <sup>(11)</sup>	8.19 <sup>(11)</sup>	8	1,232.6	
2012	7.08	4.80	11.88	11.88	13.69 <sup>(11)</sup>	10.03 <sup>(11)</sup>	8.18 <sup>(11)</sup>	15	2,043.5	
2013	7.05	4.52	11.57	11.57	13.69 <sup>(11)</sup>	10.03 <sup>(11)</sup>	8.18 <sup>(11)</sup>	13	2,074.1	
2014	7.97	2.14	10.11	NA	11.36 <sup>(11)</sup>	8.36 <sup>(11)</sup>	6.79 <sup>(11)</sup>	11.6	1,052.3	
2015	7.66	3.10	10.76	NA	11.36 <sup>(11)</sup>	8.36 <sup>(11)</sup>	6.79 <sup>(11)</sup>	17.4	1,490.2	
2016	7.66	4.47	11.98	NA	11.38	8.36	6.79	36.6	2,206.1	
2017	7.90	3.26	11.16	NA	11.38	8.36	6.79	16.2	1,766.6	
2018	8.13	2.78	10.91	NA	11.38	8.36	6.79	13.9 <sup>(12)</sup>	1,580.1 <sup>(12)</sup>	



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**Notes on Table C-5**

- (1) Normal cost rates and employee rates prior to 1986 are based on actual employer rates. They would vary from the rates shown if employer rates were changed.
- (2) Excludes additional administrative contributions required before 1980. Aggregate weighted employer rate since 1993. Cannot be less than the normal cost rate.
- (3) 3.6% of annual salary up to \$4,800, plus 7.2% of excess.
- (4) 3.0% of annual salary up to \$4,800, plus 6.0% of excess.
- (5) Calculated as of the valuation date, prior to any COLA adjustment or Gain Sharing allocation. Beginning in 1991, amounts funded by ORP contributions are not included in the UAAL.
- (6) For actuarial valuations prior to 1971, an explicit amortization period was not calculated. The current employer contribution rate was compared to a contribution rate based on either a 30 or 50 year amortization period.
- (7) Based on the results of the 1977 experience study, the valuation results indicated that the employer contribution rate in effect at the time of the valuation would be insufficient to amortize the UAAL over a reasonable period. Subsequent increases in the employer contribution rate in 1979 and 1980 resulted in a reasonable amortization period.
- (8) Amortization rates in 1992 and before represent 30-year funding. Amortization rates in 1993 and after represent 25-year funding.
- (9) GASB required an ARC to be computed for all plan years after June 15, 1996. As long as a positive UAAL exists and is being amortized over a reasonable period of time, generally less than 30 years, the ARC is equal to the actual contribution rate set by the Board. If a Funding Reserve exists, GASB requires the amortization of the reserve and a calculated ARC less than the normal cost rate. The actual PERSI rate cannot be less than the normal cost rate under the statutory requirements. The ARC calculated as of the valuation date is applicable to the employer fiscal year commencing October 1 of the calendar year following the valuation date. The ARC includes the discretionary COLA increases if approved by the Board prior to the completion of the valuation report.  
  
*Beginning with the 2014 valuation, the ARC will no longer be reported. A separate accounting valuation report will be issued in accordance to the new GASB 67 and 68 reporting standards.*
- (10) Permanent rate is shown; temporary rate of 9.80% was effective November 1, 1997 until Board adopted permanent 9.80% rate April 2000.
- (11) The highest scheduled contribution rate that is reflected in the valuation is shown.
- (12) For 2018, the amortization period and UAAL reflect the automatic COLA of 1.00% based on the increase in CPI. No discretionary COLA for March 1, 2019 is reflected.

Public Employee Retirement  
System of Idaho

Table C-6: Investments  
(Dollar Amounts in Millions)

Valuation Date (July 1)	Total Investments Held on Valuation Date		Yield Net of Investment Expenses During Previous Year	
	Market Basis	Valuation Basis	Market Basis	Valuation Basis
1968	\$ 30.6	\$ 30.6	6.38%	6.38%
1973	102.4	111.0	(7.39)	4.85
1978	211.2	213.0	1.61	2.80
1983	658.5	628.6	40.36	16.33
1988	1,294.4	1,265.7	(0.60)	(5.60)
1993	2,531.7	2,525.0	12.60	10.66
1994	2,674.7	2,674.7	2.50	2.76
1995	3,237.9	3,237.9	14.34	14.34
1996	3,853.8	3,853.8	17.83	17.83
1997	4,728.5	4,728.5	19.11	19.11
1998	5,741.0	5,741.0	17.19	17.19
1999	6,450.9	6,450.9	11.18	11.18
2000	7,285.3	7,285.3	12.93	12.93
2001	6,732.4	6,732.4	(6.40)	(6.40)
2002	6,256.3	6,256.3	(7.36)	(7.36)
2003	6,544.8	6,544.8	3.32	3.32
2004	7,702.0	7,702.0	17.63	17.63
2005	8,707.5	8,707.5	10.34	10.34
2006	9,800.2	9,800.2	11.79	11.79
2007	11,505.1	11,505.1	19.54	19.54
2008	11,010.0	11,010.0	(4.60)	(4.60)
2009	8,983.7	8,983.7	(16.35)	(16.35)
2010	9,969.1	9,969.1	12.01	12.01
2011	11,754.3	11,754.3	20.25	20.25
2012	11,725.2	11,725.2	1.22	1.22
2013	12,496.2	12,496.2	8.69	8.69
2014	14,230.4	14,230.4	16.77	16.77
2015	14,428.4	14,428.4	2.70	2.70
2016	14,344.6	14,344.6	1.43	1.43
2017	15,713.2	15,713.2	12.25	12.25
2018	16,763.8	16,763.8	8.41	8.41

Public Employee Retirement  
System of Idaho

Table C-7: Changes Affecting Actuarial Valuations - Statistics

Valuation Date <sup>(1)</sup>	Minimum Benefit <sup>(2)</sup>	Postretirement Increase <sup>(1)</sup>		Regular Interest <sup>(3)</sup>
		Maximum	Granted	
1967	N/A	N/A	N/A	4.00%
1968	N/A	N/A	N/A	4.25
1969	N/A	3.0%	3.0%	4.375
1970	N/A	3.0	3.0	4.75
1971	N/A	3.0	3.0	5.00
1972	N/A	3.0	3.0	5.00
1973	N/A	3.0	3.0	5.50
1974	\$5.00	3.0	3.0	6.00
1975	5.15	3.0	3.0	6.00
1976	5.30	3.0	3.0	6.00
1977	5.62	5.3	6.0 <sup>(4)</sup>	6.50
1978	5.96	6.0	6.0	6.50
1979	6.32	6.0	6.0	6.50
1980	6.70	6.0	6.0	6.50
1981	7.10	6.0	6.0	7.00
1982	7.53	6.0	6.0	7.50
1983	7.92	5.1	5.1	8.00
1984	8.14	2.9	2.9	8.50
1985	8.48	4.2	4.2	9.00
1986	8.57	3.2	1.0	9.00
1987	8.70	1.5	1.5	7.50
1988	8.78	4.5	1.0	6.50
1989	8.87	4.2	1.0	6.50
1990	9.29	4.7	4.7	7.00
1991	9.81	5.6	5.6	7.37
1992	10.59	3.8	3.8	5.75
1993	12.48	3.1	3.1	4.25
1994	14.43	2.8	2.8	4.00
1995	14.85	2.9	2.9	4.75
1996	15.23	2.6	2.6	5.75
1997	15.67	2.9	2.9	5.13
1998	16.02	2.2	2.2	5.38
1999	18.06	1.6	1.6	5.00
2000	18.47	2.3	2.3	7.93
2001	19.10	3.4	3.4	11.985



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Valuation Date <sup>(1)</sup>	Minimum Benefit <sup>(2)</sup>	Postretirement Increase <sup>(1)</sup>		Regular Interest <sup>(3)</sup>
		Maximum	Granted	
2002	19.62	2.7	2.7	8.84
2003	19.81	1.8	1.0	3.36
2004	20.25	2.2	2.2	2.56
2005	20.96	2.7	3.5 <sup>(5)</sup>	10.365
2006	21.71	3.6	3.6	13.875
2007	22.54	3.8	3.8	10.965
2008	22.99	2.0	2.0	14.602
2009	23.22	5.4	1.0	9.257
2010	23.44	-1.48	1.0 <sup>(6)</sup>	1.000
2011	23.68	1.15	1.0	5.90
2012	23.92	3.77	1.0	14.52
2013	24.15	1.69	1.0	9.63
2014	24.39	1.52	1.0	4.41
2015	25.37	1.70	4.0 <sup>(7)</sup>	11.40
2016	25.62	0.20	1.0 <sup>(8)</sup>	8.71
2017	25.90	1.1	1.1	1.84
2018	26.40	1.9	1.9	6.16

- (1) Valuations as of July 1. Postretirement increase effective previous January 1 for years prior to 1987, previous March 1 for 1987 and after.
- (2) Minimum monthly benefit per year of service; benefit levels for fire and police members are 20% greater than amount shown.
- (3) Average rate credited on member contributions during year prior to valuation date, actual rates may vary during the year.
- (4) 5.3% for 1976 retirees.
- (5) The March 1, 2005 COLA was 2.70% with a Restoration of Purchasing Power (ROPP) adjustment of 0.80% for a net COLA of 3.50%.
- (6) The March 1, 2010 COLA was -1.48% with a Restoration of Purchasing Power (ROPP) adjustment of 2.48% for a net COLA of 1%.
- (7) The March 1, 2015 COLA was 1.70% with a Restoration of Purchasing Power (ROPP) adjustment of 2.3% for a net COLA of 4%.
- (8) The March 1, 2016 COLA was 0.20% with a Restoration of Purchasing Power (ROPP) adjustment of 0.80% for a net COLA of 1%.

Public Employee Retirement  
System of Idaho

Table C-8: Changes Affecting Actuarial Valuations - Descriptions

Valuation Date	Change
1968	Actuarial assumptions were revised to reflect actual experience for the study period from inception to June 30, 1967.
1969	Discretionary cost-of-living increases and death benefit provisions were adopted.
1971	Vesting, early retirement, and death benefits were improved.
1974	Major changes in actuarial assumptions and a new retirement benefit formula were adopted.
1976	Actuarial assumptions for investment earnings, future salaries, and service retirement were changed. Changes in the compulsory retirement provisions, death benefit eligibility, and the maximum discretionary cost-of-living increases, including funding for an automatic 1% annual increase in postretirement benefits.
1977	Major changes in actuarial assumptions as a result of a study of the System's actual experience. These revisions were tentative, made on the basis of limited experience data.
1978	The termination of employment and the retired mortality assumptions were revised based on an update of the study of the System's actual experience.
1979	Reflects the maximum 40-year funding period enacted in 1979 legislation.
1980	Actuarial assumptions for investment earnings, salary growth, and disabled members' mortality assumptions were changed. Reduction factors for early retirement were modified and employee contribution rates were increased. The bond valuation method was revised, generating a one-time investment gain.
1982	Actuarial assumptions were revised to reflect the results of the System's experience over the three-year period ending June 30, 1981. The early retirement "Rule of 90(80)" and graded increase in both employee and employer contribution rates were implemented.
1983	The asset valuation method for mortgages was changed.
1985	Actuarial assumptions were revised based on the experience study for the period July 1, 1981 through June 30, 1984.
1988	Actuarial assumptions were revised based on the experience study for the period July 1, 1984 through June 30, 1987.

<b>Valuation Date</b>	<b>Change</b>
<b>1992</b>	Actuarial assumptions were revised based on the 1992 Investigation of Experience Study. Benefits and contributions were increased effective October 1, 1992. The benefit percentage factor was increased, the averaging period used in determining average monthly salary was decreased, and the early retirement reduction factors were decreased.
<b>1993</b>	Disability eligibility provisions for fire and police members were changed and contribution rates were increased to reflect this change. Benefits and contributions were increased effective October 1, 1993. The benefit percentage factor was increased, the averaging period used in determining average monthly salary was decreased, and the early retirement reduction factors were decreased.
<b>1994</b>	Actuarial assumptions were revised based on the 1994 Investigation of Experience Study. Benefits and contributions were increased effective October 1, 1994. The benefit percentage factor was increased, the averaging period used in determining average monthly salary was decreased, and the early retirement reduction factors were decreased.
<b>1996</b>	Actuarial assumptions were revised based on the 1996 Investigation of Experience Study.
<b>1998</b>	Mortality and Salary increase assumptions were revised based on the 1998 Investigation of Experience Study. The benefits for all annuitants were restored to 100% of purchasing power at the original retirement date.
<b>2000</b>	The permanent total contribution rate was reduced effective November 1, 2000. Benefits were increased and disability eligibility service requirements were reduced effective July 1, 2000. The interest crediting rate on employee contributions was changed to the actual return of the System. Retirement and disablement assumptions were revised based on the 2000 Investigation of Experience Study.
<b>2001</b>	A Gain Sharing allocation of \$155.4 million was granted by the Board.
<b>2002</b>	Salary increase and termination of employment assumptions were revised based on the 2002 Investigation of Experience Study.
<b>2003</b>	Scheduled contribution rate increases at July 1, 2004 and July 1, 2005 reflected. \$100,000 death benefit for Fire and Police duty deaths added along with 0.1% increase in Fire and Police Employer Contribution rate.

<b>Valuation Date</b>	<b>Change</b>
<b>2004</b>	Scheduled contribution rate increases at July 1, 2006 reflected. Assumption changes based on 2004 Investigation of Experience Study.
<b>2005</b>	Contribution rate increases scheduled for July 1, 2005 and July 1, 2006 were delayed to July 1, 2008 and July 1, 2009. In addition to a full 2.7% COLA, retirees received a 0.8% Restoration of Purchasing Power benefit on March 1, 2005, to restore the portion of the March 1, 2003 COLA that was not originally granted.
<b>2006</b>	The mortality assumptions were changed to generational mortality as described in the 2006 Investigation of Experience report (dated May 15, 2006). Future scheduled rate increases are not included in the ARC or in the valuation results except where noted.
<b>2007</b>	Final Average Earnings (FAE) used to calculate benefits was changed to the greater of current FAE (provided by the PERSI) and estimated FAE. Future scheduled rate increases are not included in the ARC or in the valuation results.  The contribution rate for university members of the optional retirement plan (ORP) was changed to 1.49% of members' salaries through July 1, 2025. In the previous valuation, the rate was 3.03% to be paid through July 1, 2015.
<b>2008</b>	Demographic actuarial assumptions were revised based on the 2009 Investigation of Experience Study.
<b>2009</b>	The contribution rate for Fire & Police Members was changed from 7.65% to 7.69%. \$100,000 disability benefit for Fire and Police duty disabilities added.
<b>2010</b>	Mortality and economic actuarial assumptions were revised based on the 2010 Investigation of Experience Study. Contribution rate increases were added at July 1, 2011, July 1, 2012, and July 1, 2013.  Retirees received a 2.48% Restoration of Purchasing Power benefit on March 1, 2010, to restore a portion of the March 1, 2009 COLA that was not originally granted.
<b>2011</b>	New Contingent Annuitant actuarial equivalence factors were adopted for members retiring on or after July 1, 2011. Scheduled contribution rate increases on July 1, 2011, July 1, 2012, and July 1, 2013 were all delayed one year.
<b>2012</b>	Demographic and Economic actuarial assumptions were revised based on the 2012 Active Experience Study.
<b>2013</b>	Change in the actuarial cost method, from aggregate entry age to individual entry age.

<b>Valuation Date</b>	<b>Change</b>
<b>2014</b>	<p>Mortality assumptions were revised based on the 2014 Investigation of Experience Study. Scheduled contribution rate increases were cancelled.</p> <p>Retirees were granted a 2.30% Restoration of Purchasing Power benefit, effective on March 1, 2015, to restore a portion of the prior years' COLAs that were not originally granted.</p>
<b>2015</b>	No changes to assumptions or plan provisions.
<b>2016</b>	<p>Demographic actuarial assumptions were revised based on the 2016 Active Experience Study.</p> <p>Retirees were granted a 0.80% Restoration of Purchasing Power benefit, effective on March 1, 2016, to restore a portion of the prior years' COLAs that were not originally granted.</p>
<b>2017</b>	<p>Retirees were granted a 0.10% Discretionary COLA, effective on March 1, 2017.</p> <p>A contribution rate increase was put in place, scheduled to take effect July 1, 2018. This rate change will increase the total (employer plus member) blended contribution rate from 18.42% to 19.42%.</p>
<b>2018</b>	<p>Retirees were granted a 0.90% Discretionary COLA, effective on March 1, 2018.</p> <p>The contribution rate increase scheduled to take effect July 1, 2018 was delayed one year to July 1, 2019.</p>

Public Employee Retirement  
System of Idaho

Table C-9: Changes in Status

	Active Contributing Members	Non-Contributing Members	Annuitants
<b>July 1, 2017 Valuation</b>	70,073	34,151	45,468
Termination without Refund	(4,698)	4,698	-
Service Retirement	(1,849)	(651)	2,500
Disability Retirement	(32)	(26)	58
Death with Beneficiary <sup>(1)</sup>	(18)	(2)	20
Other Death or Departure <sup>(2)</sup>	(1,075)	(291)	(1,195)
New Entrants	8,314	76	-
Rehires	397	(374)	(23)
Other	-	7	79
<b>Total Change</b>	<u>1,039</u>	<u>3,437</u>	<u>1,439</u>
<b>July 1, 2018 Valuation</b>	71,112	37,588	46,907

(1) Only deaths of active members and vested inactive members are shown.

(2) Includes events such as Termination with Refund and Death without Beneficiary.

Public Employee Retirement  
System of Idaho

Table C-10: Reconciliation of Data Records

	Active	Vested Inactive	Non-Vested Inactive	Annuitants
<b>Original Records Received</b>	71,302	13,324	33,967	48,130
Duplicated Member IDs	-	(206)	-	(1,085)
Annuitants of Firefighters' Retirement Fund Not Eligible for a PERSI Benefit	-	-	-	(98)
Idaho Falls Police Annuitants Not Eligible for a PERSI Benefit	-	-	-	-
Other Annuitant Records with Zero PERSI Benefit	-	(5)	-	(40)
Non-Vested Inactive Records with Zero Accumulated Employee Contributions	-	-	(9,553)	-
Active Records with Zero Salary that were Treated as Inactive for the Valuation	(190)	20	170	-
Active Records with Zero Salary and Zero Accumulated Employee Contributions	-	-	(129)	-
<b>Records Used for Valuation</b>	71,112	13,133	24,455	46,907

The table above describes record changes affecting the number of members who were included in the valuation. Milliman made minor data adjustments to correct records with an invalid date of birth, date of hire, gender, or class. There were fewer than 100 records with invalid fields.



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## Public Employee Retirement System of Idaho

### Appendix D: Glossary

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The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases, the definitions have been modified for specific applicability to the Public Employee Retirement System of Idaho. Defined terms are capitalized throughout this Appendix.

**Actuarial Assumptions**

Assumptions as to the occurrence of future events affecting pension costs such as: mortality, withdrawal, disablement, and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

**Actuarial Cost Method**

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods usually in the form of a Normal Cost and an Actuarial Accrued Liability.

**Actuarial Gain (Loss)**

A measure of the difference between actual experience and that expected based on a set of Actuarial Assumptions during the period between two Actuarial Valuation dates as determined in accordance with a particular Actuarial Cost Method.

**Actuarial Present Value**

The value of an amount or series of amounts payable or receivable at various times determined as of a given date by the application of a particular set of Actuarial Assumptions.

**Actuarial Valuation**

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

**Actuarial Value of Assets**

The value of cash, investments and other property belonging to a pension plan as used by the actuary for the purpose of an Actuarial Valuation.

**Actuarially Equivalent**

Of equal Actuarial Present Value determined as of a given date with each value based on the same set of Actuarial Assumptions.

<b>Amortization Payment</b>	That portion of the pension plan contribution that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<b>Entry Age Actuarial Cost Method</b>	A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.
<b>Funding Reserve</b>	The excess of the Actuarial Value of Assets over the Actuarial Accrued Liability. Standard actuarial terminology defines this as the "Funding Excess." PERSI uses the term Funding Reserve.
<b>Normal Cost</b>	That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.
<b>Actuarial Accrued Liability</b>	That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.
<b>Unfunded Actuarial Accrued Liability</b>	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.
<b>Accrued Benefit</b>	The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.
<b>Projected Benefits</b>	Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.
<b>Restoration of Purchasing Power Benefit</b>	The Board has discretion to provide a Cost of Living Adjustment (COLA) that is less than amount needed to maintain the purchasing power of the retirees' benefits. The Board may then choose to increase the retirees' benefits at a later date to fully or partially restore the benefit level that the retirees would have had if the Board had given them a full discretionary COLA in all previous years. Such an increase is a Restoration of Purchasing Power Benefit (ROPP).