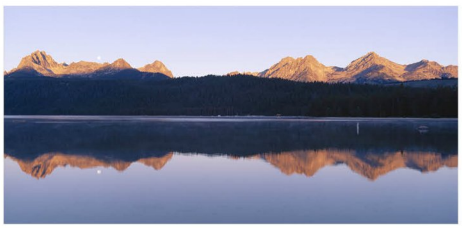
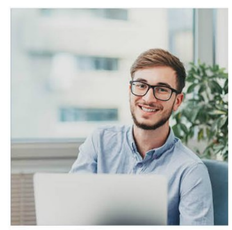


ACTUARIAL
SECTION



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October 18, 2019

Retirement Board
Public Employee Retirement System of Idaho
State of Idaho
P.O. Box 83720
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Members of the Board:

Milliman has performed annual actuarial valuations for the Public Employee Retirement System of Idaho (PERSI) since the System's inception. It is anticipated that future actuarial valuations will be performed every year with the next valuation to be as of July 1, 2019. Various benefit increases have occurred since the System was established in 1965. The most recent significant benefit changes were effective July 1, 2000.

Contribution Rates

The financing objective of the System is to establish contribution rates that will tend to remain level as percentages of payroll. From 1993 to 2019, the total contribution rate has been between 15.82% and 19.82%; year by year detail including employer and member rates is shown in the table on the following page.

At July 1, 2002, the combined overall contribution rate was 15.78%. Our July 1, 2002 valuation found that the contribution rates were not sufficient to amortize the unfunded actuarial accrued liability within 25 years of the valuation date, as required by Section 59-1322, Idaho Code. Therefore, 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. Effective July 1, 2003, the contribution rate for Fire and Police employers was also increased by 0.1% to offset the cost of the $100,000 duty related death benefit. The July 1, 2004 contribution rate increase took effect as scheduled. Due to investment gains, the other two increases were deferred and ultimately in October 2007 the Board canceled the scheduled contribution rate increases.

The July 1, 2009 valuation found that the contribution rates were insufficient to amortize the unfunded actuarial accrued liability within 25 years of the valuation date. Therefore, in December 2009, the Board approved three contribution rate increases to take effect: 1.5% on July 1, 2011, 1.5% on July 1, 2012, and 2.28% on July 1, 2013. In December 2010, these scheduled rate increases were each delayed one year. In December 2011, these scheduled rate increases were again each delayed one year. On July 1, 2013, the first contribution rate increase went into effect as scheduled. In October 2013, the remaining two scheduled rate increases were each delayed one year; in September 2014 these increases were canceled altogether.

The July 1, 2016 valuation found that the contribution rates were insufficient to amortize the unfunded actuarial accrued liability within 25 years of the valuation date. Therefore, in October 2016, the Board approved a 1.0% contribution rate increase to take effect on July 1, 2018. In October 2017, the Board delayed this rate increase until July 1, 2019. On July 1, 2019, this rate increase went into effect.

The historical changes in contribution rates since 1993 are shown in the table below. Note that weighted total values may change even if rates by group do not change.

		Weighted Total		Fire & Police		General/Teachers	
Year of Change	Total Rate	Member Rate	Employer Rate	Member Rate	Employer Rate	Member Rate	Employer Rate
1993	17.16%	6.51%	10.65%	7.82%	10.87%	6.38%	10.63%
1994	18.75	7.12	11.63	8.53	11.85	6.97	11.61
1998	17.78	6.75	11.03	8.10	11.25	6.60	11.01
2000	15.78	5.98	9.80	7.21	10.01	5.86	9.77
2003	15.82	6.01	9.81	7.21	10.11	5.86	9.77
2004	16.84	6.41	10.43	7.65	10.73	6.23	10.39
2008	16.88	6.44	10.44	7.65	10.73	6.23	10.39
2009	16.89	6.45	10.44	7.69	10.73	6.23	10.39
2013	18.39	7.03	11.36	8.36	11.66	6.79	11.32
2019	19.42	7.43	11.99	8.81	12.28	7.16	11.94

Our July 1, 2019 actuarial valuation found that the System's current rates are sufficient to pay the System's normal cost rate of 14.91%. As of July 1, 2019, there is an unfunded actuarial liability of $1,391.1 million. The contribution rates as currently scheduled are sufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) in 10.6 years, which is lower than the 25-year amortization period required by statute.

Funding Status

Based on the July 1, 2019 actuarial valuation, the unfunded actuarial accrued liability was decreased by $185.6 million due to an asset gain recognized as of July 1, 2019. Specifically, the System's assets earned a net return after expenses of 8.02%, which is 1.02% above the actuarial assumption of 7.00%. All other actuarial experience gains and losses decreased the actuarial accrued liability by $6.7 million. Thus, the total experience gain for the year was $178.9 million.

The UAAL also decreased by $10.0 million because actual contributions plus assumed investment returns were greater than the normal cost and the interest on the UAAL.

All of these items resulted in a total actuarial gain of $188.9 million and a change in funding status from an 91.2% funding ratio on July 1, 2018 to 91.5% on June 30, 2019. The funding ratio is the ratio of the actuarial value of the assets over the value of the actuarial accrued liability.

Comparison to GASB Statement No. 67 Liabilities

The long-term expected rate of return on investments is 7.05%, net of investment expenses. This figure includes 0.05% for expected administrative expenses. For purposes of determining the System's funding status and UAAL, we use a discount rate that is net of all expenses (7.00%). All figures shown in this report have been calculated using this discount rate.

This is in contrast to the discount rate used to determine the Total Pension Liability (TPL) and Net Pension Liability (NPL) for purposes of GASB reporting. According to GASB Statement 67, the discount rate used to calculate TPL and NPL must be net of investment expenses but not administrative expenses. Therefore, TPL and NPL have been determined using a discount rate of 7.05%. Results and further details on these items can be found in our GASB 67 Report.

Assumptions

Our July 1, 2019 actuarial valuation report presented summaries of the actuarial assumptions and methods used in the valuation. The last major experience study, completed in June 2018, covered the period July 1, 2011 through June 30, 2017. The next major experience study, to be completed in 2022, will cover the period July 1, 2017 through June 30, 2021.

Certification Statement

In preparing this letter, 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. We believe that all of these assumptions and methods meet the parameters set by Actuarial Standards of Practice (ASOPs).

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. Actuarial computations under GASB Statements No. 67 and 68 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. 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 these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to identify risks that are significant to any actuarial calculation or communication. Probably the most notable risk is Investment Risk - the potential for plan assets to grow at a rate lower than assumed in the actuarial valuation. If valuation performance is worse than expected, then additional funding may be required. There is also Maturity Risk - the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time - is pertinent to the contents of this letter because as the System's assets and liabilities continue to grown, the impact of any gains or losses on the assets or liabilities also becomes larger. A third risk is Demographic Risk -

the potential for members experience to differ from our Actuarial assumptions, including (but not limited to) retirement, withdrawal, salary growth, and mortality. If member experience is different than anticipated by the actuarial assumptions, additional System funding may be required. Please refer to our funding valuation report dated October 18, 2019 for more detailed discussion of risk.

Milliman's work is prepared solely for the internal business use of the System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

(a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

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

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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.

The enclosed Exhibits 1 through 9 provide further related information. Milliman is completely responsible for these exhibits. Specifically, they are:

- Exhibit 1 Summary of Actuarial Assumptions and Methods
- Exhibit 2 Schedule of Active Member Valuation Data
- Exhibit 3 Schedule of Retiree and Beneficiary Valuation Data
- Exhibit 4 Schedule of Funding Progress
- Exhibit 5 Solvency Test
- Exhibit 6 Analysis of Actuarial Gains or Losses
- Exhibit 7 Schedule of Contributions from the Employer and All Other Contributing Entities
- Exhibit 8 Schedule of Contributions from the Employer Expressed as a Percentage of Payroll
- Exhibit 9 Provisions of Governing Law

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.

Respectfully submitted,

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Principal and Consulting Actuary

Jeffrey D. Bradley, F.S.A., M.A.A.A.
Principal and Consulting Actuary

RLS/JDB/rc

EXHIBIT 1: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS EFFECTIVE JULY 1, 2019

1. Investment Return (Adopted July 1, 2018)

The annual rate of investment return on the assets of the System, net of investment expenses, is assumed to be 7.05% (including 0.05% for administrative expenses) compounded annually.

2. Actuarial Value of Assets (Adopted July 1, 1994)

All assets are valued at market as of the valuation date.

3. Actuarial Assumptions

The actuarial assumptions and methods were adopted by the Board based upon recommendations from the retained actuary. The actuarial assumptions are based on periodic studies of the System's actual experience.

4. Mortality (Adopted July 1, 2014)

Contributing Members, Service Retirement Members, and Beneficiaries

- **Teachers**

  Males RP-2000 Combined Table for Healthy Individuals for males, set back three years.

  Females RP-2000 Combined Table for Healthy Individuals for females, set back three years.

- **Fire & Police**

  Males RP-2000 Combined Table for Healthy Individuals for males, with no offset.

  Females RP-2000 Combined Table for Healthy Individuals for females, set forward one year.

  10% of Fire and Police active member deaths are assumed to be duty related**.** This assumption was adopted July 1, 2008.

- **General *Employees and All Beneficiaries***

  Males RP-2000 Combined Table for Healthy Individuals for males, set back one year.

  Females 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 of the July 1, 2019 valuation report. The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.

- ***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.

  All mortality tables are adjusted with generational mortality adjustments using projection scale AA as shown in Table A-8B of the July 1, 2019 valuation report. The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.

5. Service Retirement (Adopted July 1, 2016)

Annual rates of retirement assumed to occur among persons eligible for a service retirement are illustrated in the following table:

	Fire & Police		General Employees			
			Male		Female	
Age	First Year Eligible	There after	First Year Eligible	There after	First Year Eligible	There after
55	21%	18%	22%	10%	26%	18%
60	17	22	26	17	26	18
65	40	40	33	50	37	52
70	*	*	18	20	18	21

	Teachers			
	Male		Female	
Age	First Year Eligible	Thereafter	First Year Eligible	Thereafter
55	19%	5%	10%	10%
60	30	18	26	18
65	36	46	49	49
70	*	*	*	*

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

6. **Early Retirement (Adopted July 1, 2016)**

Annual rates of retirement assumed to occur among persons eligible for a reduced early retirement benefit are illustrated in the following table:

		General Employees		Teachers	
Age	Fire & Police	Male	Female	Male	Female
50	4%	*	*	*	*
55	5%	3%	3%	6%	6%
60		5	6	14	12

* *For all ages younger than the age indicated, withdrawal is assumed to occur (see Section 7).*

7. Other Terminations of Employment (Adopted July 1, 2016)

Assumed annual rates of termination are illustrated below. Rates are based only on years of service.

Years of Service	Fire and Police	General Employees Male	General Employees Female	Teachers Male	Teachers Female
5	6.6%	8.8%	10.3%	5.5%	6.0%
10	4.2	5.5	6.4	3.1	3.1
15	2.8	3.5	4.0	1.9	1.8
20	1.7	2.4	2.9	1.3	1.3
25	1.5	1.7	2.5	1.2	1.2
30	1.5	1.5	2.5	1.2	1.2

8. Disability Retirement (Adopted July 1, 2016)

Annual rates assumed for disability retirement are illustrated in the following table:

Age	Fire & Police	General Employees Male	General Employees Female	Teachers Male	Teachers Female
25	.01%	.01%	.01%	.01%	.05%
35	.03	.03	.01	.02	.04
45	.10	.11	.10	.07	.07
55	.61	.32	.28	.20	.30

25% of Fire and Police active member disabilities are assumed to be duty related**.** This assumption was adopted July 1, 2009.

9. Future Salaries (Adopted July 1, 2016)

In general, the total annual rates at which salaries are assumed to increase include 3.75% per annum for increase in the general wage level of the membership plus increases due to promotions and longevity. The general wage level increases are due to inflation and increases in productivity. The total ultimate rates assumed are illustrated below.

Years of Service	Fire and Police	General Employees Male	General Employees Female	General Employees Male	General Employees Female
5	7.02%	6.03%	6.45%	7.07%	7.17%
10	5.57	5.10	5.46	7.17	7.38
15	4.89	4.63	4.68	5.20	5.33
20	4.42	4.37	4.42	4.48	4.56

10. Vesting (Adopted July 1, 2016)

The following table illustrates the assumed probability that vested terminating members will elect to receive deferred benefits instead of withdrawing accumulated contributions.

Age	Fire and Police	General Employees		Teachers	
		Male	Female	Male	Female
25	48%	52%	61%	75%	84%
35	53	71	70	79	88
45	65	76	73	82	85
55	—	—	—	—	—

11. Growth in Membership (Adopted July 1, 2012)

In general, the combined effects of stable active membership and salary levels are assumed to produce a 3.75% average annual expansion in the payroll of covered members.

12. Interest on Employee Contributions (Adopted July 1, 2016)

The credited interest rate on employee contributions is assumed to be 8.50%.

13. Postretirement Benefit Increases (Cost of Living Adjustments)

A nondiscretionary postretirement increase of 1% per year is assumed for the valuation. See Exhibit 3 for total discretionary and nondiscretionary increases granted by the Board for the past ten years.

14. Actuarial Cost Method

The individual entry age actuarial cost method is used. The normal cost rates used in this valuation were calculated based on all current active members as of July 1, 2019, for each sex and type of employee in the valuation. The normal costs and projected fiscal year 2019 salaries for all active members were calculated. The ratio of the two is the aggregate normal cost rate. We anticipate that the normal cost rate will be adopted in November, 2019 in conjunction with the July 1, 2019 actuarial valuation.

The unfunded actuarial accrued liability (UAAL) created by this method, including gains and losses, is amortized as a level percentage of the System's projected payroll.

Commencing July 1, 2007, 1.49% of the payroll of higher education faculty covered by the Optional Retirement Program (ORP) is payable to PERSI until July 1, 2025. Commencing July 1, 1997, 3.83% of the payroll of community college and post-secondary vocational educational institutions covered by the ORP was payable to PERSI until July 1, 2011. The difference between the future ORP contributions and the actuarial accrued liability computed under the actuarial cost method is the portion of the actuarial accrued liability used to determine the UAAL, or funding reserve, for PERSI.

15. Experience Studies

The last experience study was completed in 2018 for the period July 1, 2011 through June 30, 2017 and reviewed economic assumptions, mortality and all demographic assumptions. These assumptions will be studied in 2022 for the period from July 1, 2017 through June 30, 2021. Assumptions were adopted as noted.

16. Recent Changes

The 2019 valuation results reflect the contribution rate effective on July 1, 2019.

EXHIBIT 2: SCHEDULE OF ACTIVE MEMBER VALUATION DATA

		Annual Salaries*		
Valuation Date July 1	Number	Annual Valuation Payroll	Average Annual Pay	% Increase in Average Annual Pay
2010	67,020	$ 2,622,461,000	$ 39,130	0.3%
2011	65,798	2,572,044,000	39,090	-0.1
2012	65,270	2,567,659,000	39,339	0.6
2013	65,535	2,634,566,000	40,201	2.2
2014	66,223	2,676,344,000	40,414	0.5
2015	67,008	2,756,913,000	41,143	1.8
2016	68,517	2,833,369,000	41,353	0.5
2017	70,073	3,040,649,000	43,393	4.9
2018	71,112	3,188,316,000	44,835	3.3
2019	72,502	3,356,492,000	46,295	3.3

* *Actuarial valuation payroll is computed as the sum of the annualized salaries for all active members, and differs from the actual payroll shown in the financial section of the annual report.*

Public Employee Retirement System of Idaho

EXHIBIT 3: SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA [1]

Valuation Date July 1	Number Total	Number Added	Number Removed	COLA Percentage Increases Granted Previous March 1
2010	33,625	2,335	907	-1.48% + 2.48% Partial Restoration
2011	35,334	2,652	943	1.0
2012	37,150	2,769	953	1.0
2013	38,947	2,815	1,018	1.0
2014	40,776	2,852	1,023	1.0
2015	42,657	2,889	1,008	1.70% + 2.30% Partial Restoration
2016	44,181	2,634	1,110	0.20% + 0.80% Partial Restoration
2017	45,468	2,746	1,459	1.1
2018	46,907	2,657	1,218	1.9
2019	48,120	2,572	1,359	1.0

Valuation Date July 1	Annual Benefits Total Rolls End of Year	Added to Rolls [2]	Removed from Rolls	Average	% Increase in Average
2010	$ 526,020,000	$ 43,382,000	$ 9,308,000	$ 15,644	2.4%
2011	567,933,000	51,647,000	9,734,000	16,073	2.7
2012	611,045,000	53,184,000	10,072,000	16,448	2.3
2013	651,466,000	51,630,000	11,209,000	16,727	1.7
2014	694,946,000	54,963,000	11,483,000	17,043	1.9
2015	754,201,000	70,985,000	11,730,000	17,681	3.7
2016	793,277,000	52,788,000	13,712,000	17,955	1.5
2017	836,201,000	60,924,000	18,000,000	18,391	2.4
2018	884,827,000	64,770,000	16,144,000	18,863	2.6
2019	922,112,000	59,048,000	21,763,000	19,163	1.6

(1) Information regarding the number of retirees and beneficiaries added to, and removed from, the rolls was not used in the actuarial valuations.
(2) Includes postretirement increases.

Public Employee Retirement System of Idaho

EXHIBIT 4: SCHEDULE OF FUNDING PROGRESS
(ALL DOLLAR AMOUNTS IN MILLIONS)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liabilities (AAL) [1]	Present Value of Future ORP Contributions	Unfunded Actuarial Accrued Liabilities (UAAL) [2]	Funded Ratio [3]	Covered Payroll [4]	UAAL as a Percentage of Covered Payroll
July 1, 2010	$ 9,579.8	$ 12,187.9	$ 52.3	$ 2,555.8	78.9%	$ 2,684.4	95.2%
July 1, 2011	11,360.1	12,641.2	48.5	1,232.6	90.2	2,627.9	46.9
July 1, 2012	11,306.2	13,396.7	47.0	2,043.5	84.7	2,619.6	78.0
July 1, 2013	12,053.5	14,172.9	45.3	2,074.1	85.3	2,697.6	76.9
July 1, 2014	13,833.1	14,928.1	42.7	1,052.3	92.9	2,702.9	38.9
July 1, 2015	13,956.7	15,488.2	41.3	1,490.2	90.4	2,791.1	53.4
July 1, 2016	13,884.2	16,128.3	38.0	2,206.1	86.3	2,909.3	75.8
July 1, 2017	15,296.7	17,101.0	37.7	1,766.6	89.6	3,089.6	57.2
July 1, 2018	16,274.8	17,889.0	34.1	1,580.1	91.2	3,200.4	49.4
July 1, 2019	17,239.5	18,661.7	31.0	1,391.2	92.5	3,382.1	41.1

(1) Actuarial present value of benefits less actuarial present value of future normal costs based on entry age actuarial cost method.

(2) Actuarial accrued liabilities less actuarial value of assets and present value of future ORP contributions. Amounts reported in this table do not include the value of any discretionary COLA or Gain Sharing allocations granted after the valuation date. If negative, amount is referred to as a funding reserve.

(3) Funded Ratio is the ratio of the actuarial value of assets over the actuarial accrued liabilities less the present value of future ORP contributions.

(4) Covered Payroll includes compensation paid to all active employees on which contributions are calculated. Covered Payroll differs from the Active Member Valuation Payroll shown in Exhibit 2, which is an annualized compensation of only those members who were active on the actuarial valuation date.

EXHIBIT 5: SOLVENCY TEST
(ALL DOLLAR AMOUNTS IN MILLIONS)

		Actuarial Accrued Liabilities For			Portion of Actuarial Accrued Liabilities Covered by Assets		
Actuarial Valuation Date	Actuarial Value of Assets	Active Member Contributions (A)	Retirees and Beneficiaries (B)	Active Members (Employer Financed Portion) (C)	(A)	(B)	(C)
July 1, 2010	$ 9,579.8	$ 2,813.7	$ 5,820.0	$ 3,554.2	100.0	100.0	26.6%
July 1, 2011	11,360.1	2,838.9	6,284.8	3,517.5	100.0	100.0	63.6
July 1, 2012	11,306.2	3,114.9	6,925.0	3,356.8	100.0	100.0	37.7
July 1, 2013	12,053.5	3,304.1	7,425.2	3,443.6	100.0	100.0	38.5
July 1, 2014	13,833.1	3,268.7	8,125.8	3,533.6	100.0	100.0	69.0
July 1, 2015	13,956.7	3,468.5	8,565.6	3,454.1	100.0	100.0	55.7
July 1, 2016	13,884.2	3,652.6	9,097.0	3,378.7	100.0	100.0	33.6
July 1, 2017	15,296.7	3,554.1	9,609.7	3,937.2	100.0	100.0	54.2
July 1, 2018	16,274.8	3,611.4	10,121.1	4,156.5	100.0	100.0	61.2
July 1, 2019	17,237.5	3,817.2	10,559.3	4,285.2	100.0	100.0	66.8

EXHIBIT 6: ANALYSIS OF ACTUARIAL GAINS OR LOSSES
(ALL DOLLAR AMOUNTS IN MILLIONS)

	Gain(Loss) for Period		
	2016-2017	**2017-2018**	**2018-2019**
Investment Income			
Investment income was greater (less) than expected.	$ 772.1	$ 237.2	$ 185.6
Pay Increases			
Pay increases were less (greater) than expected.	(198)	113.5	16.8
Membership Growth & Return to Employment			
(Additional) liability for new members.	(29.1)	(33.2)	(34.9)
Death After Retirement			
Retirees died younger (lived longer) than expected.	17.6	37.6	48.5
Cost of Living Adjustment (COLA)			
Different Automatic COLA than expected.	NA	NA	NA
Other			
Miscellaneous gains (and losses) resulting from other causes. (2)	(68.3)	(73.3)	(73.3)
Total Gain (Loss) During the Period From Actuarial Experience	$ 494.3	$ 281.8	$ 178.9
Contribution Income			
Actual contributions were greater (less) than the normal cost and interest on the Unfunded Actuarial Accrued Liability.	(42.5)	(10.1)	10.0
Non-Recurring Items			
Changes in actuarial assumptions caused a gain (loss)	None	None	None
Changes in actuarial methods caused a gain (loss)	None	None	None
Changes in plan provisions caused a gain (loss) (1)	(9.0)	(85.6)	None
Changes to Contribution Rate Increase Schedule	(3.3)	0.4	None
Composite Gain (Loss) During the Period	$ 439.5	$ 186.5	$ 188.9

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

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

(2) For 2016-17, this reflects changes made to the demographic assumptions adopted to the 2016 Experience Study.

Public Employee Retirement System of Idaho

EXHIBIT 7: SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER AND ALL OTHER CONTRIBUTING ENTITIES (ALL DOLLAR AMOUNTS IN MILLIONS)

Fiscal Year Ending	Covered Employee Payroll (1)	Actual PERSI Employer Contributions Dollar Amount (2)	Actual ORP Contributions Dollar Amount	Total Actual Employer Contributions	Actuarially Determined Contribution (ADC) (3)	Percentage of ADC Dollars Contributed
06/30/10	$2,684.4	$280.2	$4.7	$284.9	$260.3	109%
06/30/11	2,627.9	274.3	4.8	279.1	326.5	85
06/30/12	2,619.6	273.5	3.7	277.2	327.9	84
06/30/13	2,697.6	281.6	3.8	285.4	295.5	97
06/30/14	2,702.9	307.1	3.9	311.0	325.0	96
06/30/15	2,791.1	317.0	4.2	321.2	327.1	98
06/30/16	2,909.3	331.1	4.5	335.6	298.7	112
06/30/17	3,089.6	351.6	4.8	356.4	337.2	106
06/30/18	3,200.4	364.2	4.9	369.1	388.3	95
06/30/19	3,382.1	384.9	5.2	390.1	382.6 (4)	102

(1) *Computed as the dollar amount of the actual PERSI employer contribution made as a percentage of payroll divided by the Actual PERSI contribution rate expressed as a percentage of payroll.*

(2) *The actual PERSI employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes. Dollar amounts shown exclude additional receipts due to merger of retirement systems.*

(3) *For PERSI employers, the ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus a 25-year amortization of any Unfunded Actuarial Accrued Liability or minus a 25-year amortization of any Funding Reserve amount. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date. For Optional Retirement Plan (ORP) employers, the ADC is equal to 1.49% of salaries of university members in the ORP until 2025 and 3.83% of salaries of junior college members in the ORP until 2011.*

(4) *The ADC for the PERSI fiscal year ending June 30, 2019 is based on 11.16% of covered payroll as computed in the 2017 valuation. For valuations prior to 2012, the ADC rate determined as of the valuation date was applicable for employer fiscal years commencing October 1 of the calendar year following the valuation date.*

EXHIBIT 8: SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER EXPRESSED AS A PERCENTAGE OF PAYROLL

Fiscal Year Ending	Actual PERSI Employer Contribution % (1)	Actuarially Determined Contribution (ADC) % (2)	Percentage of ADC Contributed
6/30/10	10.44%	9.523%	109%
6/30/11	10.44	12.243	85
6/30/12	10.44	12.375	84
6/30/13	10.44	10.813	97
6/30/14	11.36	11.880	96
6/30/15	11.36	11.570	98
6/30/16	11.38	10.110	113
6/30/17	11.38	10.760	106
6/30/18	11.38	11.980	95
6/30/19	11.38	11.160 (3)	102

(1) *The actual PERSI employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes. Dollar amounts shown exclude additional receipts due to merger of retirement systems.*

(2) *For PERSI employers, the ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus a 25-year amortization of any Unfunded Actuarial Accrued Liability or minus a 25-year amortization of any Funding Reserve amount. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date. For Optional Retirement Plan (ORP) employers, the ADC is equal to 1.49% of salaries of university members in the ORP until 2025 and 3.83% of salaries of junior college members in the ORP until 2011.*

(3) *The ADC for the PERSI fiscal year ending June 30, 2019 is based on 11.16% of covered payroll as computed in the 2017 valuation. For valuations prior to 2012, the ADC rate determined as of the valuation date was applicable for employer fiscal years commencing October 1 of the calendar year following the valuation date.*

EXHIBIT 9: PROVISIONS OF GOVERNING LAW

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, 2019. 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, 2019 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, 2019 is 7.16% (8.81%) of salary.

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). The current rates of 11.94% (12.28%) 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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October 18, 2019

Retirement Board
Public Employee Retirement System of Idaho State of Idaho
P.O. Box 83720
Boise, ID 83720

Members of the Board:

Milliman has performed annual actuarial valuations of the Idaho Firefighters' Retirement Fund (FRF) from 1981 through 1988 and biennial valuations from July 1, 1990 to July 1, 2000. Starting with the July 1, 2001 valuation, actuarial valuations occurred annually through the July 1, 2007 valuation. From July 1, 2007 through July 1, 2013 the valuations were again biennial. Beginning with the July 1, 2014 valuation they have been performed annually once again. The most recent actuarial valuation was for July 1, 2019; the next is scheduled for July 1, 2020.

Contribution Rates

FRF covers a closed group of firefighters who were hired before October 1, 1980 and who receive benefits in excess of those provided under the Public Employee Retirement System of Idaho (PERSI). The cost of these excess benefits is paid by member contributions, employer contributions, and receipts from a fire insurance premium tax. Employer contributions comprise two elements: 8.65% of the salaries of covered members and an additional rate applied to the salaries of all firefighters of the employer. The additional rate is designed to meet the costs of the Fund not covered by other resources. Idaho Code Section 59-1394 requires the cost of the excess benefits to be retired by the schedule of contributions over a given period of time not to exceed 50 years.

On September 16, 2014 the PERSI Board moved to reduce the Additional Employer Contribution Rate from the current 17.24% to 5.00%. In accordance with this decision, the additional employer contribution rate for excess benefits (shown in Exhibit 8) was reduced to a rate of 5.00% of payroll, effective January 1, 2015.

FRF benefits were offset by PERSI benefits effective October 1, 1980. Effective July 1, 1990, all members hired after June 30, 1978 are to receive the same FRF benefits as members hired earlier.

Effective October 1, 1994, the PERSI benefits and contributions were increased. The FRF additional contribution rate to fund the excess benefits was decreased to 15.40% and the total employer contributions for FRF members remained fixed at 35.90% for Class A & B firefighters and 27.25% for Class D firefighters.

The Retirement Board lowered the PERSI contribution rates starting October 31, 1997 and made the reduction permanent as of April 25, 2000. The FRF excess contribution rate was increased to 17.24% since the total employer contributions for FRF members remained fixed at the 35.90%/ 27.25% rates.

The Retirement Board raised the PERSI contribution rates, with the first increase effective July 1, 2004, and additional increases effective July 1, 2005 and July 1, 2006 an additional 0.1% contribution was added to provide for a $100,000 death benefit for duty related deaths. The FRF excess contribution rate was maintained at 17.24%. The July 1, 2004 rate increase took effect as scheduled, but the other two rate increases were delayed by the Board to July 1, 2006 and July 1, 2007.

After the July 1, 2006 PERSI and FRF valuation reports were completed, the PERSI Board delayed the effective date of the scheduled contribution rate increases to July 1, 2008 and July 1, 2009. In October 2007, the Board canceled the remaining scheduled contribution rate increases.

After the July 1, 2009 PERSI and FRF valuation reports were completed, the PERSI Board approved three new contribution rate increases scheduled for July 1, 2011, July 1, 2012, and July 1, 2013. These were adopted in December 2009 due to a significant drop in funded status because of investment losses in the year ending June 30, 2009.

Due to the 12.01% investment return in the year ending June 30, 2010, in December 2010, the PERSI 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. This raised the member contribution for Class D Firefighters from 7.69% to 8.36%. It also increased the PERSI Rate employer contribution from 10.73% to 11.66% for all firefighter groups.

In December 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

In September 2014 the scheduled contribution rate increases scheduled for July 1, 2015 and July 1, 2016 were canceled.

On January 1, 2015, the additional employer contribution rate was decreased from 17.24% to 5.00%.

After the July 1, 2016 PERSI and FRF valuation reports were completed, the PERSI Board approved a contribution rate increase scheduled for July 1, 2018. This was adopted in October 2016 due to a drop in funded status because of low investment returns in the fiscal years 2015 and 2016. In 2017, the rate increase was delayed one year: from July 1, 2018 to July 1, 2019.

On July 1, 2019, the member contribution for Class D Firefighters from 8.36% to 8.81%. The PERSI Rate employer contribution increased from 11.66% to 12.28% for all firefighter groups.

Funding Status

Based on the July 1, 2019 actuarial valuation, there is currently no Unfunded Actuarial Accrued Liability (UAAL) to amortize. This is consistent with the results from the July 1, 2018 valuation. The Fund's original funding goal is to amortize the liabilities by June 30, 2018 (40 years from July 1, 1978). The current amortization period of zero is less than the statutory maximum of 50 years.

The UAAL was decreased by $1.6 million due to an asset gain partially recognized as of July 1, 2019. Specifically, the Fund's assets earned an annual average net return after expenses of 8.20% for the 2018-19 fiscal year which was more than the actuarial assumption of 7.00%. The UAAL was also reduced by $1.9 million due to the February 1, 2019 FRF COLA being 3.13%, which was less than the actuarial assumption of 3.75%.

All experience gains and losses (including the asset loss) over the one-year period since the prior valuation resulted in the UAAL being decreased by $11.2 million. The UAAL decreased by $23.9 million because actual contributions plus assumed investment returns were more than the normal cost and the interest on the UAAL.

The funding status increased from a 136.6% funding ratio on July 1, 2018, to 150.2% on June 30, 2019. The funding ratio is the ratio of the actuarial value of the assets over the value of the actuarial accrued liability.

Comparison to GASB Statement No. 67 Liabilities

The long-term expected rate of return on investments is 7.05%, net of investment expenses. This figure includes 0.05% for expected administrative expenses. For purposes of determining the Fund's funding status and UAAL, we use a discount rate that is net of all expenses (7.00%). The figures shown in this report have been calculated using this discount rate.

This is in contrast to the discount rate used to determine the Total Pension Liability (TPL) and Net Pension Liability (NPL) for purposes of GASB reporting. According to GASB Statement 67, the discount rate used to calculate TPL and NPL must be net of investment expenses but not administrative expenses. Therefore, TPL and NPL have been determined using a discount rate of 7.05%.

For the July 1, 2019 valuation, 3-year smoothing is used to calculate the actuarial value of plan assets. This is in contrast to the Fiduciary Net Position (FNP) used for purposes of GASB reporting. According to GASB Statement 67, the FNP must be based on the plan's fair value of assets at the valuation date. Therefore, FNP has been determined without any asset smoothing.

Results and further details on these items can be found in our GASB 67 Report.

Assumptions

Our July 1, 2019 actuarial valuation report presented summaries of the actuarial assumptions and methods used in the valuation. The FRF assumptions generally reflect the assumptions used for the PERSI Fire and Police members, but are modified to reflect the characteristics expected of the closed group of FRF members.

The mortality assumptions for the plan were changed on July 1, 2014, in conjunction with changes to the assumptions for the PERSI Base Plan, as described in Appendix A of the July 1, 2014 valuation. The next major PERSI experience study, to be completed in 2022, will cover the period July 1, 2017 through June 30, 2021.

Certification Statement

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by the PERSI staff. This information includes, but is not limited to; benefit descriptions, employee data, and financial information. In our examination of such data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing or if our assumptions regarding incomplete data are incorrect. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

All costs, liabilities rates of interest, and other factors have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of the Fund and reasonable expectations) and which in combination, offer our best estimate of anticipated experience affecting the Fund. 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. We believe that all of these assumptions and methods meet the parameters set by Actuarial Standards of Practice (ASOPs).

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.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the Fund. Actuarial computations under GASB Statements No. 67 and 68 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed exhibits have been made on a basis consistent with our understanding of the Fund's funding requirements and goals. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Actuarial Standard of Practice No. 51 (ASOP 51) directs actuaries to identify risks that are significant to any actuarial calculation or communication. Probably the most notable risk is Investment Risk - the potential for plan assets to grow at a rate lower than assumed in the actuarial valuation. If investment performance is worse than expected, then additional funding may be required. There is also Maturity Risk - the potential for total plan liabilities to become more heavily weighted toward inactive liabilities over time - is pertinent to the contents of this letter because as the System's assets and liabilities continue to grow, the impact of any gains or losses on the assets or liabilities also becomes larger. A third risk is Demographic Risk - the potential for members experience to differ from our Actuarial assumptions, including (but not limited to) retirement, withdrawal, salary growth, and mortality. If member experience is different than anticipated by the actuarial assumptions, additional System funding may be required. Please refer to our funding valuation report dated October 18, 2019 for more detailed discussion of risk.

Milliman's work is prepared solely for the internal business use of the Fund. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

(a) The Fund may provide a copy of Milliman's work, in its entirety, to the Fund's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the Fund.

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

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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.

The enclosed Exhibits 1 through 9 provide further related information. Milliman is completely responsible for these exhibits. Specifically, they are:

Exhibit 1	Summary of Actuarial Assumptions and Methods
Exhibit 2	Schedule of Active Member Valuation Data
Exhibit 3	Schedule of Retiree and Beneficiary Valuation Data
Exhibit 4	Schedule of Funding Progress
Exhibit 5	Solvency Test
Exhibit 6	Analysis of Actuarial Gains or Losses
Exhibit 7	Schedule of Contributions from the Employer and All Other Contributing Entities
Exhibit 8	Contribution Rates as a Percent of Pay
Exhibit 9	Provisions of Governing Law

Respectfully submitted,

Robert L. Schmidt, F.S.A., M.A.A.A.
Principal and Consulting Actuary

Jeffrey D. Bradley, F.S.A., M.A.A.A.
Principal and Consulting Actuary

RLS/JDB/rc/tn

Idaho Firefighters' Retirement Fund

EXHIBIT 1: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS EFFECTIVE JULY 1, 2019

1. Investment Return (Adopted July 1, 2012)

The annual rate of investment return on the assets, net of investment expenses, for the Fund is assumed to be 7.05% (including 0.05% for administrative expenses), compounded annually.

2. Actuarial Value of Assets (Adopted September 2014)

For the July 1, 2014 valuation, all assets are valued at market as of the valuation date. Use of 3-year smoothing to calculate the actuarial value of plan assets is being implemented prospectively: the July 1, 2015 valuation used a 2-year smoothing; subsequent valuations have used a 3-year smoothing.

3. Actuarial Assumptions

The actuarial assumptions and methods were adopted by the PERSI Board based upon recommendations from the retained actuary. The actuarial assumptions are based on periodic studies of the PERSI total fund's actual experience.

4. Service Retirement, Disability Retirement, and Termination (Adopted July 1, 2016)

The actively employed members of FRF are fully eligible for unreduced service retirement. They are assumed to retire at the valuation date. No future withdrawals or disabilities are anticipated.

5. Mortality (Adopted July 1, 2014)

The mortality rates used for all members of the Fund, active and retired, are from the RP- 2000 Combined Mortality Table for males with generational mortality adjustments with ages unadjusted. The mortality rates assumed for spouses are from the RP-2000 Combined Mortality Table for females with generational mortality adjustments; with ages set back one year. For disabled members, the mortality rates used in the valuation are from the RP-2000 Mortality Table for disabled males with generational mortality adjustments, set back one year. These tables are illustrated in Table A-2A of the July 1, 2019 valuation report.

The Generational mortality adjustments provide a margin for future mortality improvements. The adjustments are applied from the base year of the tables (2000) to the year in which the mortality assumption is applied. The adjustments are done using the standard RP-2000 projection scale (Scale AA). These tables are illustrated in Tables A-2A and A-2B of the July 1, 2019 valuation report.

6. Future Salaries (Adopted July 1, 2016)

This assumption is not applicable since all remaining actively employed members are assumed to retire at the valuation date. No future withdrawals, disabilities, or salary increases are anticipated.

7. Replacement of Terminated Members

The FRF is a closed group. No new members are permitted. The total number of firefighters in PERSI (including those hired October 1, 1980 and later) is assumed to remain unchanged from year to year.

8. Postretirement Benefit Increases (Cost of Living Adjustments) (Adopted July 1, 2013)

FRF benefits are based on paid salary and are assumed to increase at the same rate as the average paid firefighter's salary, or 3.75% per year. For members whose FRF benefits are offset by their PERSI benefits, the PERSI benefits are assumed to have post-retirement benefit increases of 1.00% per year. The assumptions regarding PERSI future post-retirement benefit increases is part of the funding policy for the FRF.

9. Probability of Marriage

It is assumed that there is an 85% probability that the member has an eligible spouse. The spouse's age is assumed to be three years younger than the member's.

10. Fire Insurance Premiums (Adopted July 1, 2004)

The fire insurance premiums received for the plan year ending June 30, 2019, amounted to $4,320,912 or approximately 5.5% of all firefighters' covered compensation during the same period. Future fire insurance premiums are expected to provide contributions as a decreasing percentage of compensation, due to the assumption that the firefighters' covered compensation (including Class D members) will increase at the rate of 3.75% per year, but future fire insurance premiums are assumed to increase at a rate of only 3.00% per year. The rate for the increase for covered compensation was adopted July 1, 2012. The rate for the increase of fire insurance premiums was adopted July 1, 2018.

11. Actuarial Cost Method (Adopted July 1, 1998)

Costs are determined based on the entry age normal cost method. The actuarial present value of future benefits not provided by PERSI less the present value of future normal costs equals the actuarial accrued liability. The UAAL is equal to the actuarial accrued liability less the actuarial value of the assets. The UAAL is amortized as a level dollar amount over a fixed amortization period. The current amortization period is zero since the UAAL at July 1, 2019 is negative.

The Actuarially Determined Contribution (ADC) is then the total of the normal cost allocated to the current plan year plus the amortization payment on the UAAL. Prior to July 1, 2006, the UAAL was amortized over a closed 40-year period from July 1, 1996. This assumption was adopted July 1, 1998, but applied retroactively to the July 1, 1996 valuation.

12. Experience Studies

The last experience study was for the period July 1, 2011, through June 30, 2017, and reviewed economic assumptions, mortality and all demographic assumptions. These assumptions will be studied in 2022 for the period from July 1, 2017, through June 30, 2021. The FRF assumptions generally reflect the assumptions used for the PERSI Fire and Police members, but are modified to reflect the characteristics expected of the closed group of FRF members.

13. Recent Changes

The results reflect the PERSI Base Plan Discretionary COLA of 0.90% which went into effect March 1, 2018.

Idaho Firefighters' Retirement Fund

EXHIBIT 2: SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Valuation Date July 1	Number	Annual Salaries: Total [1]	Annual Salaries: Average	Annual Salaries: Annual Increase in Average
2007	10	$ 791,125	$ 79,113	5.2%
2009	5	437,818	87,564	2.6
2011	4	(2)	(2)	(2)
2013	3	(2)	(2)	(2)
2014	2	(2)	(2)	(2)
2015	2	(2)	(2)	(2)
2016	2	(2)	(2)	(2)
2017	1	(2)	(2)	(2)
2018	1	(2)	(2)	(2)
2019	1	(2)	(2)	(2)

(1) Annualized average salaries for covered members for the 12-month period commencing July 1 to June 30 of the previous calendar year.

(2) Salary information is not shown for years in which there are fewer than 5 active members.

Idaho Firefighters' Retirement Fund

EXHIBIT 3: SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA [1]

Valuation Date July 1	Number			COLA Increases Granted Previous January 1
	Total	Added	Removed	
2007	590	5	12	2.42%
2009	573	6	23	5.10
2011	566	14	21	3.30
2013	551	3	18	2.18
2014	545	3	9	2.48
2015	535	1	11	(0.34)
2016	524	3	14	1.73
2017	517	2	9	2.85
2018	507	1	11	1.88
2019	486	5	26	3.13

Valuation Date July 1	Annual Benefits				
	Total [2]	Added [3]	Removed	Average	Annual Increase in Average
2007	$ 22,992,269	$ 754,703	$ 399,364	$ 38,970	2.8%
2009	24,598,935	2,442,928	836,262	42,930	5.0
2011	25,998,263	2,147,165	747,837	45,933	3.4
2013	26,499,035	1,255,415	754,643	48,093	2.3
2014	26,856,909	784,008	426,134	49,279	2.5
2015	26,319,030	(33,958)	503,921	49,194	(2.0)
2016	26,285,792	576,922	610,160	50,164	2.0
2017	26,687,801	815,356	413,347	51,621	2.9
2018	26,650,120	515,311	552,992	52,564	1.8
2019	26,400,434	964,724	1,214,411	54,322	3.3

(1) Information regarding the number of retirees and beneficiaries added to, and removed from, the rolls was not used in the actuarial valuations.

(2) Combined annual benefits from FRF and PERSI. The FRF benefits comprised $18,962,807 of the 2019 total.

(3) Includes postretirement increases (or decreases, if applicable) for all retirees and beneficiaries.

Idaho Firefighters' Retirement Fund

EXHIBIT 4: SCHEDULE OF FUNDING PROGRESS (All Dollar Amounts in Millions)

Actuarial Valuation Date July 1	Actuarial Value of Assets [(1)]	Actuarial Accrued Liabilities (AAL) [(2)]	Unfunded Actuarial Accrued Liabilities (UAAL) [(3)]	Funded Ratio	Covered Payroll [(4)]	UAAL as a Percentage of Covered Payroll
2007	$ 291.5	$ 314.8	$ 23.3	92.6%	$ 47.6	48.9%
2009	225.3	325.3	100.0	69.3	55.7	179.5
2011	290.4	311.5	21.1	93.2	59.3	35.6
2013	307.0	321.5	14.5	95.5	63.0	23.0
2014	352.2	315.6	(36.6)	111.6	63.0	(58.1)
2015	360.4	301.9	(58.5)	119.4	63.8	(91.7)
2016	363.4	294.7	(68.7)	123.3	68.0	(101.0)
2017	369.8	292.2	(77.6)	126.6	70.6	(109.9)
2018	385.7	283.2	(102.5)	136.2	74.8	(137.0)
2019	411.5	273.9	(137.6)	150.2	78.3	(175.7)

(1) For the July 1, 2014 valuation and all preceding valuations, assets are valued at market as of the valuation date. Use of 3-year smoothing to calculate the actuarial value of plan assets has been implemented prospectively: the July 1, 2015 valuation used a 2-year smoothing; subsequent valuations use a 3-year smoothing.

(2) Actuarial present value of future excess benefits less actuarial present value of excess statutory contributions over amounts required by PERSI, for years prior to 1996. For years after 1996, the excess of the actuarial present value of future excess benefits less the present value of future normal cost contributions under the entry age cost method.

(3) Actuarial accrued liabilities less actuarial value of assets.

(4) Covered Payroll includes compensation paid to all active firefighters for whom contributions were made to FRF. Covered Payroll differs from the Active Member Valuation Payroll shown in Exhibit 2, which is an annualized compensation of only those members hired prior to October 1, 1980, who were active on the actuarial valuation date. For years prior to 1996, Covered Payroll is estimated. See footnote to Exhibit 7.

Idaho Firefighters' Retirement Fund

EXHIBIT 5: SOLVENCY TEST (All Dollar Amounts in Millions)

		Actuarial Liabilities[1] for			Portion of Actuarial Liabilities Covered by Assets		
		(A)	(B)	(C)			
Actuarial Valuation Date July 1	Actuarial Value of Assets [2]	Active Member Contributions	Retirees and Beneficiaries	Active Members (Employer Financed Portion)	(A)	(B)	(C)
2007	$ 291.5	$ 0.0	$ 312.0	$ 2.8	100.0%	93.4%	0.0%
2009	225.3	0.0	324.0	1.3	100.0	69.5	0.0
2011	290.4	0.0	310.7	0.8	100.0	93.5	0.0
2013	307.0	0.0	320.4	1.1	100.0	95.8	0.0
2014	352.2	0.0	314.9	0.7	100.0	100.0	100.0
2015	360.4	0.0	301.3	0.6	100.0	100.0	100.0
2016	363.4	0.0	294.0	0.7	100.0	100.0	100.0
2017	369.8	0.0	291.7	0.5	100.0	100.0	100.0
2018	385.7	0.0	282.7	0.5	100.0	100.0	100.0
2019	411.5	0.0	273.4	0.5	100.0	100.0	100.0

(1) Computed based on funding policy methods and assumptions.

(2) For the July 1, 2014 valuation and all preceding valuations, assets are valued at market as of the valuation date. Use of 3-year smoothing to calculate the actuarial value of plan assets has been implemented prospectively: the July 1, 2015 valuation used a 2-year smoothing; subsequent valuations use a 3-year smoothing.

Idaho Firefighters' Retirement Fund

EXHIBIT 6: ANALYSIS OF ACTUARIAL GAINS OR LOSSES (All Dollar Amounts in Millions)

	Gain (Loss) for Period		
	2015-2016	2017-2018	2018-2019
Investment Income			
Investment income was greater (less) than expected, net of asset smoothing, if applicable.	$ 5.9	$ 1.8	$ 1.6
COLAs			
COLAs were less (greater) than expected.	3.2	7.1	1.9
Other			
Miscellaneous gains (and losses) resulting from other causes including retirees dying younger (living longer) than expected.	0.0	2.8	7.7
Total Gain (Loss) During the Period From Actuarial Experience	$ 9.1	$ 11.7	$ 11.2
Contribution Income			
Actual contributions plus assumed investment returns were greater (less) than the normal cost and interest on the UAAL.	(0.2)	13.2	23.9
Non-Recurring Items			
Effect of automatic PERSI COLA.	NA	NA	NA
Changes in actuarial assumptions and benefits caused a gain (loss).	NA	NA	NA
PERSI Restoration of Purchasing Power and Discretionary COLA.	NA	NA	NA
Composite Gain (Loss) During the Period	$ 8.9	$ 24.9	$ 35.1

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

Idaho Firefighters' Retirement Fund

EXHIBIT 7: SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER AND ALL OTHER CONTRIBUTING ENTITIES (Actual Dollar Amounts)

Fiscal Year Ending	Covered Employee Payroll (1)	Statutory Employer Contributions (2)	Additional Employer Contributions (2)	Insurance Premium Payment from the State	Total Employer Contributions	Actuarially Determined Contribution (ADC) (3)	Percentage of ADC Contributed
2010	$ 58,146,207	$ 36,937	$ 10,024,405	$ 3,480,989	$ 13,542,331	$ 7,959,238	170.1%
2011	59,337,447	31,616	10,229,773	3,052,326	13,313,715	7,959,238	167.3
2012	59,883,692	25,532	10,323,948	3,136,829	13,486,309	1,666,127	809.4
2013	62,969,139	25,617	10,855,876	3,345,821	14,227,314	1,666,127	853.9
2014	63,017,405	25,032	10,864,197	3,311,094	14,200,323	1,119,619	1,268.3
2015	63,780,545	17,259	7,720,025	3,568,189	11,305,473	0	NA
2016	68,017,833	17,723	3,400,892	3,779,982	7,198,597	0	NA
2017	70,568,501	12,273	3,638,264	3,802,450	7,452,987	0	NA
2018	74,848,287	12,226	3,731,159	3,962,841	7,706,226	0	NA
2019	78,284,032	12,715	3,914,200	4,320,912	8,247,827	0	NA

(1) *Computed as the dollar amount of the actual employer contribution made as a percentage of payroll divided by the contribution rate, expressed as a percentage of payroll.*

(2) *Employer contributions are made as a percentage of actual payroll rather than as a dollar amount. The Statutory Employer FRF contributions in excess of PERSI required contributions are payable only on Class A & B active member payroll. The Additional Employer FRF contributions are payable on Class A & B and Class D active member payrolls.*

(3) *Starting July 1, 1996, the ADC, formerly known as the Annual Required Contribution (ARC), is computed as a dollar amount based on the entry age cost method and future payroll contributions from Class A & B members only. The ADC is computed for GASB reporting purposes only. The actual employer contributions as a percentage of payroll varied from those determined by the actuarial valuation based on the funding policy as shown in Table D-2 of the actuarial valuation report. Thus, as long as the actual contributions are made as a percentage of payroll under the current funding policy methods and assumptions, as required by the most recent actuarial valuation, the actual dollar amount of the employer contributions will differ from the dollar amount of the ADC.*

Idaho Firefighters' Retirement Fund

EXHIBIT 8: CONTRIBUTION RATES AS A PERCENT OF PAY

	State Contributions	Employer Contributions				Total Employer Contributions For Members	
Year [1]	Fire Insurance Premium Tax [2]	PERSI Rate	Statutory FRF Rate	Additional Rate	Social Security	Hired Before 10/1/80 [3]	Hired After 9/30/80 [4]
Effective Date:	July 1	October 1	January 1	October 1	January 1	October 1	October 1
2007	6.90%	10.73%	8.65%	17.24%	7.65%	36.62%	35.62%
2009	5.20	10.73	8.65	17.24	7.65	36.62	35.62
2011	5.10	10.73	8.65	17.24	7.65	36.62	35.62
2013	5.30	11.66	8.65	17.24	7.65	36.62	35.62
2014	5.20	11.66	8.65	17.24 [5]	7.65	36.62	35.62
2015	5.60	11.66	8.65	5.00	7.65	36.62	35.62
2016	5.60	11.66	8.65	5.00	7.65	36.62	35.62
2017	5.20	11.66	8.65	5.00	7.65	36.62	35.62
2018	5.30	11.66	8.65	5.00	7.65	36.62	35.62
2019	5.50	12.28	8.65	5.00	7.65	25.93	24.93

(1) Rates become effective on dates shown in given year. Biennial valuations were performed 1988-2000.

(2) Rate expressed as a percentage of the value of future fire insurance premium taxes over the value of future covered compensation.

(3) PERSI rate plus Statutory FRF rate plus additional rate.

(4) PERSI rate plus additional rate plus Social Security.

(5) Effective January 1, 2015, the Additional Employer Contribution Rate decreased from 17.24% to 5.00%.

Idaho Firefighters' Retirement Fund

EXHIBIT 9: PROVISIONS OF GOVERNING LAW

This exhibit outlines our understanding of the laws governing the Idaho Firefighters' Retirement Fund (FRF), compared with the provisions that apply to firefighters of the Public Employee Retirement System of Idaho (PERSI), as contained in Sections 59-1301 through 59-1399 for PERSI and Sections 72-1401 through 72-1472 for FRF, inclusive of the Idaho Code through July 1, 2019. Each currently active firefighter hired before October 1, 1980, is entitled to receive the larger of (a) a benefit based on the FRF provisions, considering all of his service as a firefighter, and (b) a PERSI benefit, based on membership service beginning October 1, 1980, plus prior service rendered before July 1, 1965. Firemen hired October 1, 1980 and later (Class D members) are not entitled to FRF benefits.

In 1990, the law was changed to provide benefits to all members of FRF equally. Prior to the change, members hired after July 1, 1978, and before October 1, 1980, (Class C members) received a lower level of benefits. Class A members are members hired prior to July 1, 1976, who chose Option 1, where contributions are calculated on the basis of statewide average paid firefighter's salary. Benefits are based on the statewide average salary in effect at the date of retirement. Class B members are all Option 2 members hired prior to July 1, 1978, where contributions are calculated on the basis of the individual's annual average salary, but benefits are based on actual pay.

Exhibit 9 (continued)

Retirement Provisions Affecting Firefighters In Idaho

July 1, 2019

	Public Employee Retirement System	Firefighters' Retirement Fund
Member Contribution Rate	8.81% of salary.	11.45% of salary[1]
Service Retirement Allowance		
Eligibility	Age 60 with five years of service, including six months of membership service.	20 years of service[2]
Amount of annual Allowance	2.30% of the highest 3.5-year average salary for the each year of credited service	40% of final five-year average salary [1] plus 5.00% of average salary for each year of service in excess of 20 years.
Maximum Benefit	100% highest three-year average salary	65% of final five-year average salary. [1]
Minimum Benefit	For retirement during or prior to 1974, $72 annual allowance for each year of service, increasing in subsequent years at the rate of cost-of-living increases in retirement allowances.	None.

(1) *For firefighters employed prior to July 1, 1976, who chose Option 1, contributions are calculated on the basis of the statewide average paid firefighter's salary. Benefits are based on the statewide average salary in effect at the date of retirement.*

For firefighters employed prior to July 1, 1976, who chose Option 2, contributions are based on the individual members' salaries for the prior year. Benefits are based on actual pay.

(2) *Completed years of service. No partial years of service are recognized.*

Exhibit 9
(continued)

	Public Employee Retirement System	Firefighters' Retirement Fund
Non-Duty Disability Retirement Allowance		
Eligibility	Five years of membership service.	Five years of service. (2)
Amount of Annual Allowance	Projected service retirement allowance based on accrued service plus service projected to age 60 (projected service is limited to excess of 30 years over accrued service), less any amount payable under workers' compensation law.	2.00% of final five-year average salary (1) times years of service (2), or same as service retirement benefit if eligible.
Normal Form	Temporary annuity to age 60 plus any death benefit.	Payable for firefighter's lifetime, with 100% of benefit continued to eligible surviving spouse or children.
Duty Disability Retirement Allowance		
Eligibility	If hired after July 1, 1993, no service requirement, otherwise same as non-duty disability retirement.	No age or service requirements.
Amount of Annual Allowance	Same as non-duty disability retirement.	65% of final five-year average salary.
Normal Form	Same as non-duty disability retirement.	Same as non-duty disability retirement.
Special Disability Benefit		
Eligibility	Firefighters hired after October 1, 1980 and prior to July 1, 1993, with less than 10 years of service.	None.
Benefit	Same as FRF disability benefit.	None.

(1) For firefighters employed prior to July 1, 1976, who chose Option 1, contributions are calculated on the basis of the statewide average paid firefighter's salary. Benefits are based on the statewide average salary in effect at the date of retirement.

For firefighters employed prior to July 1, 1976, who chose Option 2, contributions are based on the individual members' salaries for the prior year. Benefits are based on actual pay.

(2) Completed years of service. No partial years of service are recognized.

Exhibit 9
(continued)

	Public Employee Retirement System	Firefighters' Retirement Fund
Death Benefits Before Retirement		
Eligibility	Five years of service for surviving spouse's benefit.	Non-duty death: Five years of service. [2] Duty death: No service requirement. Benefits are payable to surviving spouse or, if no eligible surviving spouse, to unmarried children under 18.
Amount of Annual Allowance	1. Accumulated contribution with interest, or 2. The surviving spouse of a member with five years of service who dies while: i. contributing; ii.noncontributing, but eligible for benefits; or iii retired for disability receives an automatic joint and survivor option applied to the actuarial equivalent of the member's accrued service retirement allowance.	100% of the benefit the firefighter would have received as a duty or non-duty disability allowance, depending on cause of his death
Normal Form	Payable for member's lifetime, with death benefit determined by option selected at retirement.	Payable for firefighter's lifetime, with 100% of benefit continued to eligible surviving spouse or children.
Optional Form	Actuarial equivalent of the normal form under the options available according to the mortality and interest basis adopted by the Board.	None.
Death Benefits After Retirement		
Eligibility	Designated beneficiary or estate	Surviving spouse or, if no eligible surviving spouse, unmarried children under 18.
Amount of Annual Allowance	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.	100% of firefighter's retirement allowance.

(2) Completed years of service. No partial years of service are recognized.

Exhibit 9
(continued)

	Public Employee Retirement System	Firefighters' Retirement Fund
Early Retirement Allowance		
Eligibility	Age 50 with five years of service including six months of membership service (contributing members only).	None.
Amount of Allowance	Full accrued service retirement allowance if age plus service equals 80; otherwise, the accrued service retirement allowance reduced by 3.00% for each of the first five years by which the early retirement date precedes the date the member would be eligible to receive his full accrued benefit, and by 5.75% for each additional year.	None.
Vested Retirement Allowance		
Eligibility	Former contribution members with five years of membership service are entitled to receive benefits after attaining age 50.	Firefighters who terminate after five years of service [(2)] are entitled to receive benefits beginning at age 60.
Amount of Allowance	Same as early retirement allowance.	2.00% of final five-year average salary times years of service [(2)].
Withdrawal Benefit	Accumulated contributions with interest.	Accumulated contributions with interest
Post-Retirement Increases		
Amount of Adjustment	Increases are based o a cost-of-living factor reflecting the changes in the Consumer Price Index, subject to a maximum total increase or decrease of 6% in any year. If the Consumer Price Index increases by at least 1% from August to August, a 1.00% annual postretirement increase is effective the following March. An additional postretirement increase of up to 5.00% each year may be authorized by the Board. If the CPI-U increases by less than 1% or decreases, the COLA is automatically equal to the change in the CPI-U. A decrease cannot be more than 6%. Member benefits cannot decrease below the amount at the initial benefit date.	Benefits increase or decrease by the same percentage by which the average paid firefighter's salary increases or decreases. The change for the year is effective each February.

(2) Completed years of service. No partial years of service are recognized

Exhibit 9 (concluded)

	Public Employee Retirement System	Firefighters' Retirement Fund
Post-Retirement Increases		
Amount of Adjustment	Increases are based on a cost-of-living factor reflecting the changes in the Consumer Price Index, subject to a maximum total increase or decrease of 6.00% in any year If the Consumer Price Index increases by at least 1% from August to August, a 1.00% annual postretirement increase is effective the following March. An additional postretirement increase of up to 5.00% each year may be authorized by the Board. If the CPI-U increases by less than 1% or decreases, the COLA is automatically equal to the change in the CPI-U. A decrease cannot be more than 6%. Member benefits cannot decrease below the amount at the initial benefit date.	Benefits increase or decrease by the same percentage by which the average paid firefighter's salary increases or decreases. The change for the year is effective each February.

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October 18, 2019

Retirement Board
Public Employee Retirement System of Idaho State of Idaho
P.O. Box 83720
Boise, ID 83720

Members of the Board:

Milliman has performed annual actuarial valuations of the Judges' Retirement Fund of the State of Idaho (JRF) beginning with the June 30, 2010 actuarial valuation. Until June 30, 2014, the JRF was an independent Fund. Beginning with the July 1, 2014 actuarial valuation, the Fund has been administered by the Public Employee Retirement System of Idaho (PERSI). It is anticipated that future actuarial valuations will be performed every year with the next valuation to be as of July 1, 2020.

Contribution Rates

The financing objective of the Fund is to establish contribution rates that will tend to remain level as percentages of payroll. The current total contribution rate is 74.10%: 62.53% employer contribution rate and 11.57% employee contribution rate. Based on the July 1, 2019 valuation assumptions and valuation results, this contribution rate will be sufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) over the required 25-year period ending July 1, 2043.

Funding Status

Based on the July 1, 2019 actuarial valuation, the UAAL was decreased by $0.723 million due to an asset gain recognized as of July 1, 2019. Specifically, the Fund's assets earned a net return after accounting for all expenses of 7.83%, which is 0.83% above the actuarial assumption of 7.00%. All other experience gains and losses decreased the actuarial liability by $2.656 million. Thus, the total experience gain for the year was $1.933 million.

Also, the UAAL decreased by $0.885 million because actual contributions plus assumed investment returns were more than the normal cost and the interest on the UAAL.

The current contribution rates are adequate to amortize the Normal Cost and UAAL balance over the required 25-year period.

The funding status increased from a 82.12% funding ratio on July 1, 2018, to 82.17% on July 1, 2019. The funding ratio is the ratio of the actuarial value of the assets over the value of the actuarial accrued liability.

Comparison to GASB Statement No. 67 Liabilities

The long-term expected rate of return on investments is 7.05%, net of investment expenses. This figure includes 0.05% for expected administrative expenses. For purposes of determining the Fund's funding status and UAAL, we use a discount rate that is net of all expenses (7.00%). The figures shown in this report have been calculated using this discount rate.

This is in contrast to the discount rate used to determine the Total Pension Liability (TPL) and Net Pension Liability (NPL) for purposes of GASB reporting. According to GASB Statement 67, the discount rate used to calculate TPL and NPL must be net of investment expenses but not administrative expenses. Therefore, TPL and NPL have been determined using a discount rate of 7.05%. Results and further details on these items can be found in our GASB 67 and 68 Report.

Assumptions

Our July 1, 2019 actuarial valuation report presented summaries of the actuarial assumptions and methods used in the valuation. A demographic experience study was performed in 2019 which updated the retirement, disability, and mortality rates as well as the election rate for retirement under Paragraph (b) of section 1-2001(2), Idaho code. See our letter dated August 2, 2019 for more details. Economic and mortality assumptions generally reflect the assumptions use for the PERSI valuation.

The last major PERSI experience study, completed in 2018, covered the period July 1, 2011 through June 30, 2017.

Certification Statement

In preparing this letter, 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. We believe that all of these assumptions and methods meet the parameters set by Actuarial Standards of Practice (ASOPs).

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. Actuarial computations under GASB Statements No. 67 and 68 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. 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 these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of the System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

(a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

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

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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.

The enclosed Exhibits 1 through 9 provide further related information. Milliman is completely responsible for these exhibits. Specifically, they are:

Exhibit 1	Summary of Actuarial Assumptions and Methods
Exhibit2	Schedule of Active Member Valuation Data
Exhibit 3	Schedule of Retiree and Beneficiary Valuation Data
Exhibit 4	Schedule of Funding Progress
Exhibit 5	Solvency Test
Exhibit 6	Analysis of Actuarial Gains or Losses
Exhibit 7	Schedule of Contributions from the Employer
Exhibit 8	Schedule of Contributions from the Employer Expressed as a Percentage of Covered Payroll
Exhibit 9	Provisions of Governing Law

Respectfully submitted,

Bret D. Linton, F.S.A., M.A.A.A.
Principal and Consulting Actuary

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Principal and Consulting Actuary

BDL/JDB/rc/tn

Judges' Retirement Fund of the State of Idaho

EXHIBIT 1: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS EFFECTIVE JULY 1, 2019

1. Investment Return (Adopted July 1, 2014)

The annual rate of investment return on the assets, net of investment expenses, for the Fund is assumed to be 7.05% (including 0.05% for administrative expenses), compounded annually.

2. Actuarial Value of Assets

All assets are valued at market as of the valuation date.

3. Actuarial Assumptions

The actuarial assumptions and methods were adopted by the PERSI Board based upon recommendations from the retained actuary. The actuarial assumptions are based on periodic studies of the PERSI total fund's actual experience.

4. Service Retirement

Annual rates of retirement assumed to occur among persons eligible for a service retirement are illustrated in the following table:

Age	Rate of Retirement(1)
55	8%
60	9%
65	40%
70	71%
71	100%

(1) Eligibility occurs after 20 years of service, attained age 55 with 15 years of service, attained age 60 with 10 years of service, or attained age 65 with four years of service.

5. Mortality (Adopted July 1, 2019)

Contributing Members, Service and Disability Retirement Members, and Beneficiaries

Males	Pre-Commencement	General Pub-2010 Above Median tables for male employees
	Post-Commencement	General Pub-2010 Above Median tables for male healthy annuitants
Females	Pre-commencement	General Pub-2010 Above Median tables for female employees
	Post-Commencement	General Pub-2010 Above Median tables for female healthy annuitants

All mortality tables are adjusted with generational mortality adjustments using projection scale MP-2018.

Exhibit 1
(continued)

6. Disability Retirement

None.

7. Other Terminations of Employment

There are no other employment termination assumptions that are valued.

8. Future Salaries (Adopted July 1, 2014)

The rate of annual salary increase assumed for the purpose of the valuation is 3.75%.

9. Growth in Membership (Adopted July 1, 2014)

In general, the combined effects of stable active membership and salary levels are assumed to produce a 3.75% average annual expansion in the payroll of covered members.

10. Interest on Employee Contributions

The credited interest rate on employee contributions is assumed to be 6.50%.

11. Postretirement Benefit Increases (Cost of Living Adjustments) (Adopted July 1, 2014)

Any member who assumed office prior to July 1, 2012 is assumed to have a postretirement increase of 3.75% per year. However, for members who made an irrevocable election prior to August 1, 2012 to have their postretirement benefit increases based on Idaho Code Section 59-1355, a postretirement increase of 1.00% per year is assumed instead.

Any member who assumed office on or after July 1, 2012, is assumed to have a postretirement increase of 1.00% per year.

12. Probability of Marriage

The marriage assumption for all members is 100%. Males are assumed to be 2 years older than their spouses.

13. Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial 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 Fund 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, 2017 for each sex and type of employee in that valuation. The actuarial present values of projected benefits and of projected salaries for all active members were calculated. The ratio of the two is the aggregate normal cost rate.

Exhibit 1
(concluded)

14. Experience Studies

A demographic experience study was performed in 2019 which updated the retirement, disability, and mortality rates as well as the election rate for retirement under Paragraph (b) of section 1-2001(2), Idaho code. See our letter dated August 2, 2019, for details. The JRF economic assumptions generally reflect the assumptions used for the PERSI valuation.

15. Recent Changes

There have been no changes to the valuation assumptions since the prior valuation.

Judges' Retirement Fund of the State of Idaho

Concluded

EXHIBIT 2: SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Valuation Date July 1	Number	Annual Salaries: Total (1)	Annual Salaries: Average	Annual Salaries: Annual Increase in Average
2015	52	$ 6,543,000	$ 125,827	NA
2016	53	6,886,500	129,934	3.3%
2017	50	6,690,000	133,800	3.0%
2018	53	7,257,000	136,928	2.3%
2019	53	7,448,600	140,540	2.6%

(1) Annualized average salaries for covered members for the 12-month period commencing July 1 to June 30 of the current valuation period.

Judges' Retiree Fund of the State of Idaho

EXHIBIT 3: SCHEDULE OF RETIREE AND BENEFICIARY VALUATION DATA

Valuation Date July 1	Number			COLA Increases Granted Previous Year	
	Total	Added	Removed	JRF	PERSI
2015	92	8	2	0.0%	1.70%
2016	94	2	—	3.70%[1]	0.20%
2017	101	8	1	6.59%[1]	1.10%
2018	102	5	4	3.20%[1]	1.90%
2019	107	7	2	2.81%[1]	1.00%

Valuation Date July 1	Annual Benefits				
	Total	Added[2]	Removed	Average	Annual Increases in Average
2015	$ 5,873,186	$ 545,609	$ 121,376	$ 63,839	NA
2016	6,124,128	250,942	—	65,150	2.1%
2017	6,740,340	690,100	73,888	66,736	2.4%
2018	7,004,642	507,626	243,324	68,673	2.9%
2019	7,572,230	654,828	87,240	70,769	3.1%

(1) JRF COLA's are based on salary increase of position previously held by the retiree. Pay raises vary by position. The raises effective July 1, 2016 ranged from 0.00% to 3.70%. The raises effective July 1, 2017 ranged from 2.49% to 6.59%. The raises effective July 1, 2018 ranged from 2.63% to 3.20%. The raises effective July 1, 2019 ranged from 2.46% to 2.81%

(2) Includes postretirement increases for all retirees and beneficiaries.

Judges' Retirement Fund of the State of Idaho

EXHIBIT 4: SCHEDULE OF FUNDING PROGRESS
(All Dollar Amounts in Thousands)

Actuarial Valuation Date July 1	Actuarial Value of Assets	Actuarial Accrued Liabilities (AAL)[(1)]	Unfunded Actuarial Accrued Liabilities (UAAL)[(2)]	Funded Ratio	Covered Payroll[(3)]	UAAL as a Percentage of Covered Payroll
2015	$ 76,468	$ 97,780	$ 21,312	78.2%	$ 6,149	346.6%
2016	75,449	100,159	24,710	75.3%	6,097	405.3%
2017	82,936	104,521	21,585	79.3%	6,162	350.3%
2018	88,071	107,250	19,179	82.1%	6,178	310.4%
2019	93,199	113,426	20,227	82.2%	6,732	300.5%

(1) Actuarial present value of benefits less actuarial present value of future normal costs based on entry age actuarial cost method.

(2) Actuarial accrued liabilities less actuarial value of assets.

(3) Covered Payroll includes compensation paid to all active judges for whom contributions were made to JRF. Covered Payroll differs from the Active Member Valuation Payroll shown in Exhibit 2, which is an annualized compensation of only those members who were active on the actuarial valuation date.

Judges' Retirement Fund of the State of Idaho

EXHIBIT 5: SOLVENCY TEST
(All Dollar Amounts in Thousands)

		Actuarial Liabilities for			Portion of Actuarial Liabilities Covered by Assets		
		(A)	(B)	(C)			
Actuarial Valuation Date July 1	Actuarial Value of Assets	Active Member Contributions	Retirees and Beneficiaries	Active Member (Employee) Financed Portion)	(A)	(B)	(C)
2015	$ 76,468	$ 3,130	$ 70,487	$ 24,163	100.0%	100.0%	11.8%
2016	75,449	3,574	72,304	24,281	100.0%	99.4%	0.0%
2017	82,936	3,013	78,511	22,997	100.0%	100.0%	6.1%
2018	88,071	3,738	81,706	21,806	100.0%	100.0%	12.0%
2019	93,199	3,797	91,177	18,452	100.0%	98.1%	0.0%

Judges' Retirement Fund of the State of Idaho

EXHIBIT 6: ANALYSIS OF ACTUARIAL GAINS OR LOSSES (All Dollar Amounts in Thousands)

	Gain (Loss) for Period		
	2016-2017	2017-2018	2018-2019
Investment Income			
Investment income was greater (less) than expected, net of asset smoothing, if applicable.	$ 3,935	$ 1,195	$ 723
Pay Increases			
Pay increases and COLAs were less (greater) than expected.	416	692	914
Assumption Changes			
There were changes in demographic assumptions.	—	—	(3,493)
Other			
Miscellaneous gains (and losses) resulting from other causes, includes gains or losses due to retiree mortality experience.	(751)	197	(77)
Total Gain (Loss) During the Period From Actuarial Experience	$ 3,600	$ 2,084	$ (1,933)
Contribution Income			
Actual contributions plus assumed investment returns were greater (less) than the normal cost and interest on the UAAL.	(475)	322	885
Non-Recurring Items			
Effect of automatic 0.2% PERSI COLA	NA	NA	NA
Changes in actuarial assumptions and benefits caused a gain (loss).	NA	NA	NA
PERSI Restoration of Purchasing Power and Discretionary COLA	NA	NA	NA
Composite Gain (Loss) During the Period	$ 3,125	$ 2,406	$ (1,048)

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

Judges' Retirement Fund of the State of Idaho

EXHIBIT 7: SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER (Actual Dollar Amounts)

Fiscal Year Ending	Covered Employee Payroll[1]	Total Actual Employer Contributions[2]	Actuarially Determined Contribution (ADC)[3]	Percentage of ADC Dollars Contributed
6/30/15	$ 6,149,339	$ 3,595,417	$ 3,492,825	103%
6/30/16	6,097,302	3,370,587	3,463,268	97%
6/30/17	6,162,190	3,946,599	3,604,265	109%
6/30/18	6,178,081	4,278,996	3,273,147	131%
6/30/19	6,731,755	4,688,762	3,307,311	142%

(1) *Computed as the dollar amount of the actual employee contribution made as a percentage of payroll divided by the contribution rate, expressed as a percentage of payroll.*

(2) *The actual JRF employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC) employer contribution rate for GASB disclosure purposes.*

(3) *The ADC is computed as a dollar amount based on the entry age cost method and future payroll contributions from members. The ADC is computed for GASB reporting purposes only. As long as the actual contributions are made as a percentage of payroll under the current funding policy methods and assumptions, as required by the most recent actuarial valuation, the actual dollar amount of the employer contributions will differ from the dollar amount of the ADC.*

Judges' Retirement Fund of the State of Idaho

EXHIBIT 8: SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER EXPRESSED AS A PERCENTAGE OF COVERED PAYROLL

Fiscal Year Ending	Actual JRF Employer Contribution %(1)	Annual Determined Contribution (ADC) %(2)	Percentage of ADC Contributed
6/30/15	58.47%	56.80%	103%
6/30/16	55.28%	56.80%	97%
6/30/17	64.05%	58.49%	109%
6/30/18	69.26%	52.98%	131%
6/30/19	69.65%	49.13%	142%

(1) The actual JRF employer contributions are expressed as a percentage of covered payroll. Employer contributions are made as a percentage of actual payroll in accordance with the Idaho Codes. Thus, the actual employer contributions set by the Idaho Codes may differ from the computed ADC employer contribution rate for GASB disclosure purposes.

(2) The ADC is equal to the employer normal cost rate plus a 25-year amortization of any UAAL or minus a 25-year amortization of any Funding Reserve amount.

Judges' Retirement Fund of the State of Idaho

EXHIBIT 9: PROVISIONS OF GOVERNING LAW

All actuarial calculations are based on our understanding of the statutes governing the Judges' Retirement Fund of the State of Idaho, as contained in Sections 1-2001 through 1-2012, inclusive, of the Idaho Code, with amendments effective through July 1, 2019. 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. Members seeking specific plan provisions should consult their member handbook. Only those benefits in effect through July 1, 2019 are considered in this valuation.

Effective Year

The effective date of the Retirement Fund was 1947.

Member Contribution Rate

The member contribution rate effective July 1, 2019 is 11.57% of salary. Members contribute to the plan during the first 20 years of service (Section 1-2004B).

Employer Contribution Rate

The employer contribution rate effective July 1, 2019, 62.53% of salary is contributed by the State, during the first 20 years of service (Section 1-2004A).

Service Retirement Allowance

Eligibility
Age 65 with four years of service, 60 with 10 years of service, 55 with 15 years of service, or any age with 20 years of service
(Section 1-2001).

Amount of Allowance
The annual service retirement allowance is 5.0% multiplied by the number of years served as either justice or judge or both, for the first 10 years of credited service plus 2.5% multiplied by the remaining number of years of credited service as either justice or judge or both, but in any event the total shall not be greater than 75%.

For members who assumed office before July 1, 2012, the retirement allowance is multiplied by the current annual compensation of the highest office in which he or she served.

For members who assumed office on or after July 1, 2012, the initial retirement allowance is multiplied by the annual compensation at the time of retirement of the highest office in which he or she served (Section 1-2001).

Exhibit 9
(continued)

Service Retirement Allowance (continued)

Normal Form
For members who first assumed office before July 1, 2012, monthly payments for life under a fully subsidized 50% Joint and Survivor annuity.

For members who first assumed office on or after July 1, 2012, monthly payments for life under a fully subsidized 30% Joint and Survivor annuity (Section 1-2001, 1-2001b, and 1-2009).

Vested Retirement Allowance

Eligibility
Vested former contributing members are entitled to receive benefits upon reaching the eligibility age requirements in Section 1-2001.

Amount of Allowance
Accrued service retirement allowance (Section 1-2001).

Disability Retirement Allowance

Eligibility
Four years of membership service. (Section 1-2001).

Amount of Allowance
The annual service retirement allowance is 5.0% multiplied by the number of years served as either justice or judge or both, for the first 10 years of credited service plus 2.5% multiplied by the remaining number of years of credited service as either justice or judge or both, but in any event the total shall not be greater than 75%.

For members who assumed office before July 1, 2012, the annual retirement allowance is multiplied by the current annual compensation of the highest office in which he or she served.

For members who assumed office on or after July 1, 2012, the annual service retirement allowance is multiplied by the annual compensation at the time of retirement of the highest office in which he or she served (Section 1-2001).

Normal Form
For members who first assumed office before July 1, 2012, monthly payments for life under a fully subsidized 50% Joint and Survivor annuity.

For members who first assumed office on or after July 1, 2012, monthly payments for life under a fully subsidized 30% Joint and Survivor annuity (Section 1-2001, 1-2001b, and 1-2009).

Exhibit 9
(continued)

Death Benefits

After Retirement or Termination

For members who first assumed office before July 1, 2012, 50% of the judge's retirement benefit is continued to the surviving spouse.

For members who first assumed office on or after July 1, 2012, 30% of the judge's retirement benefit is continued to the surviving spouse.

Upon termination or retirement, a member may elect to have 100% of his or her accrued retirement benefit continued to his or her surviving spouse upon his or her death. Such election results in a reduction of his or her monthly benefit to the actuarial equivalent of their assumed normal retirement benefit, which is a 50% surviving spouse benefit if first assumed office before July 1, 2012, or a 30% surviving spouse benefit if first assumed office on or after July 1, 2012 (Sections 1-2001b and 1-2009).

Before Retirement or Termination

An amount equal to the benefit the judge would have received had he or she elected a 100% Joint and Survivor benefit before his or her death (Section 1-2009).

Withdrawal Benefits

Accumulated contributions with credited interest at 6.5% per annum, compounded annually (Section 1-2001).

Postretirement Increases

For members who first assumed office before July 1, 2012, postretirement benefit increases are in proportion to increases in the salary of the highest office in which the member served (Section 1-2001).

Members who assumed office before July 1, 2012, had until August 1, 2012 to make an irrevocable election to have their postretirement benefit increases based on the consumer Price Index as described in Idaho Code Section 59-1355. those that made this election will instead receive the benefit increases described below.

For members who first assumed office on or after July 1, 2012, and those who made the election described in the prior paragraph, 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 July 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 59-12355).

Exhibit 9
(concluded)

Pop-Up Benefit

Section 1-2001b, paragraph (2), provides a judge with a pop-up benefit if the named contingent annuitant predeceases the judge. This benefit equals what they wold have received had they not elected the 100% Joint and Survivor form of payment.

Retirement Under Paragraph (b)

Section 1-2001(2), paragraph (b), provides any person now serving as justice of the supreme court, a judge of the court of appeals, or a district judge of a district court an additional 2.5% multiplied by 5 years senior judge service but in any event the total shall not be greater than 75% of the current annual compensation of the highest office held while in active service. The five years of senior judge service is required for this benefit. This benefit is not available with the age 55 and 15 years of service retirement for those judges who first took office after July 1, 2012.

Postretirement Increases (continued)

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).

Pop-Up Benefit

Section 1-2001b, paragraph (2), provides a judge with a pop-up benefit if the named contingent annuitant predeceases the judge. This benefit equals what they would have received had they not elected the 100% Joint and Survivor form of payment.

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October 18, 2019

Retirement Board
Public Employee Retirement System of Idaho State of Idaho
P.O. Box 83720
Boise, ID 83720

Members of the Board:

Milliman has performed actuarial valuations for the Sick Leave of Idaho Retirement Fund (the Fund). The most recent valuation was performed as of July 1, 2019. It is anticipated that future actuarial valuations will be performed every other year with the next valuation to be as of July 1, 2021. The benefits provided by the fund are provided under Idaho Code Section 67-5333 for State employees and Section 33-1228 for School employees and administered by the Public Employee Retirement System of Idaho (PERSI).

Contribution Rates

The financing objective of the Fund is to establish contribution rates that will tend to remain level as percentages of payroll. From 1993 to 2019, the total contribution rate has been between 0.65% and 1.26%; year by year detail including employer and member rates is shown in the table on the following page.

At July 1, 1988, the contribution rates were 0.40% and 0.325% for State employers and School employers, respectively. Our July 1, 1988 valuation found that the contribution rates were not sufficient to amortize the unfunded actuarial accrued liability. Therefore, the Board approved contribution rate increases to take effect over the next few years. Effective July 1, 1993, the contribution rate for State employers was set at 0.65%. Contribution rates for School employers were also increased over this time period, settling at 1.15% as of July 1, 1996. Effective July 1, 2006, the contribution rate for School employers was increased again. The rates vary by school location between 1.16% and 1.26% according to the number of days of paid sick leave accruing during the contract year in accordance with Rule 552 of the Idaho Administrative Code.

The historical changes in contribution rates since 1992 are shown in the table on the following page.

Actual Rates			Calculated Employer Rates State					
			State			School		
Effective Date[1]	State	School	Normal Cost	Unfunded Actuarial Accrued Liability	Total	Normal Cost	Unfunded Actuarial Accrued Liability	Total
1992	0.800%	1.000%	0.30%	0.31%	0.61%	0.52%	0.57%	1.09%
1993	0.650	1.100	0.30	0.31	0.61	0.52	0.57	1.09
1994	0.650	1.100	0.30	0.31	0.61	0.52	0.57	1.09
1995	0.650	1.100	0.32	0.27	0.59	0.59	0.55	1.14
1996	0.650	1.150 [2]	0.32	0.27	0.59	0.59	0.55	1.14
1997	0.650	1.150	0.35	0.16	0.51	0.63	0.44	1.07
1999	0.650	1.150	0.42 [3]	0.10	0.52	0.60	0.22	0.82
2001	0.650	1.150	0.45 [3]	0.20	0.65	0.62	0.29	0.91
2004	0.650	1.150	0.40	0.23	0.63	0.73	0.68	1.41
2006	0.650	1.16/1.26 [4]	0.40	0.13	0.53	0.67	0.41	1.08
2008	0.650	1.16/1.26 [4]	0.39	0.16	0.55	0.66	0.48	1.14
2010	0.650	1.16/1.26 [4]	0.37	0.16	0.53	0.62	0.51	1.13
2012	0.650	1.16/1.26 [4]	0.37	NA	0.37	0.63	0.13	0.76
2015	0.650	1.16/1.26 [4]	0.35	NA	0.35	0.62	NA	0.62
2016	0.650	1.16/1.26 [4]	0.39	NA	0.39	0.65	NA	0.65
2017	0.650	1.16/1.26 [4]	0.38	NA	0.38	0.68	NA	0.68
2019	0.650	1.16/1.26 [4]	0.36	NA	0.36	0.64	NA	0.64

(1) Contribution rates are effective July 1 of the indicated year for the State program, September 1 of the indicated year for the School program.
(2) Rates are effective October 1 of indicated year.
(3) Reflects changes in benefit provisions.
(4) Contribution rates for School participants vary by school location according to the number of days of paid sick leave accruing during the contract year in accordance with Rule 552 of the Idaho Administrative Code.

Our July 1, 2019 actuarial valuation found that the Fund's current rates are sufficient to pay the normal cost rate. As of July 1, 2019, there is no unfunded actuarial liability.

Funding Status

The most recent valuation was performed as July 1, 2019. Based on this valuation, there is currently no unfunded actuarial accrued liability to amortize. This is consistent with the July 1, 2017 actuarial valuation. As of July 1, 2019 there is a funding excess (assets exceed actuarial accrued liability) of $125.9 million for State employers and $95.2 million for School employers.

The Fund's assets earned a net return after expenses of 9.2% during Fiscal Year 2017-18, which is above and 7.8% during Fiscal Year 2018-2019, both of which are above the actuarial assumption of 7.00%. All other actuarial experience gains and losses increased the actuarial accrued liability (AAL) by $2.2 million for State employers and increased AAL by $4.2 million for School employers.

All of these items resulted in a change in funding status for State employers from a 217.1% funding ratio on July 1, 2017 to 226.6% on July 1, 2019. All of these items resulted in a change in funding status for School employers from a 129.5% funding ratio on July 1, 2017 to 138.2% on July 1, 2019. The funding ratio is the ratio of the actuarial value of the assets over the value of the actuarial accrued liability.

Comparison to GASB Statement No. 74 Liabilities

The long-term expected rate of return on investments is 7.05%, net of investment expenses. This figure includes 0.05% for expected administrative expenses. For purposes of determining the System's funding status and UAAL, we use a discount rate that is net of all expenses (7.00%). All figures shown in this report have been calculated using this discount rate.

This is in contrast to the discount rate used to determine the Total OPEB Liability (TOL) and Net OPEB Liability (NOL) for purposes of GASB reporting. According to GASB Statement 74, the discount rate used to calculate TOL and NOL must be net of investment expenses but not administrative expenses. Therefore, TOL and NOL have been determined using a discount rate of 7.05%. Results and further details on these items can be found in our GASB 74/75 Report.

Assumptions

Our July 1, 2019 actuarial valuation report presented summaries of the actuarial assumptions and methods used in the valuation. The last major experience study for PERSI, completed in June 2018, covered the period July 1, 2011 through June 30, 2017. The next major experience study, to be completed in 2022, will cover the period July 1, 2017 through June 30, 2021.

Certification Statement

In preparing this letter, 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. We believe that all of these assumptions and methods meet the parameters set by Actuarial Standards of Practice (ASOPs).

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 Standard of Practice No. 51 (ASOP 51) directs actuaries to identify significant risks inherent in pension actuarial calculations or communications. Probably the most notable risk is Investment Risk - the potential for plan assets to grow at a rate lower than assumed in the actuarial valuation. If investment performance is worse than expected, then additional funding may be required. Another risk is Demographic Risk - the potential for members experience to differ from our Actuarial assumptions, including (but not limited to) retirement, withdrawal, salary growth, and mortality. If member experience is different than anticipated by the actuarial assumptions, additional System funding may be required.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts for the System. Actuarial computations under GASB Statements No. 74 and 75 are for purposes of fulfilling financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. 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 these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of the System. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exception(s):

(a) The System may provide a copy of Milliman's work, in its entirety, to the System's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit the System.

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

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

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.

The enclosed Exhibits 1 through 9 provide further related information. Milliman is completely responsible for these exhibits. Specifically, they are:

- Exhibit 1 Summary of Actuarial Assumptions and Methods
- Exhibit 2 Schedule of Active Member Valuation Data
- Exhibit 3 Schedule of Retiree and Beneficiary Valuation Data
- Exhibit 4 Schedule of Funding Progress
- Exhibit 5 Solvency Test
- Exhibit 6 Analysis of Actuarial Gains or Losses
- Exhibit 7 Schedule of Contributions from the Employer All Other Contributing Entities
- Exhibit 8 Schedule of Contributions from the Employer Expressed as a Percentage of Covered Payroll
- Exhibit 9 Provisions of Governing Law

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

Respectfully submitted,

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Principal and Consulting Actuary

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RLS/JDB/rc

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 1: SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS EFFECTIVE JULY 1, 2019

1. Investment Return (Adopted July 1, 2018)

The annual rate of investment return on the assets of the System, net of investment expenses, is assumed to be 7.05% (including 0.05% for administrative expenses) compounded annually.

2. Actuarial Value of Assets (Adopted July 1, 1994)

All assets are valued at market as of the valuation date.

3. Actuarial Assumptions

The actuarial assumptions and methods were adopted by the Board based upon recommendations from the retained actuary. The actuarial assumptions are based on periodic studies of the System's actual experience.

4. Mortality (Adopted July 1, 2014)

Contributing Members, Service Retirement Members, and Beneficiaries

- **Teachers**

  Males RP-2000 Combined Table for Healthy Individuals for males, set back three years.

  Females RP-2000 Combined Table for Healthy Individuals for females, set back three years.

- **General *Employees and All Beneficiaries***

  Males RP-2000 Combined Table for Healthy Individuals for males, set back one year.

  Females 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 of the July 1, 2019 valuation report. The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.

- ***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.

  All mortality tables are adjusted with generational mortality adjustments using projection scale AA as shown in Table A-8B of the July 1, 2017 valuation report. The projection scale is applied from the year 2000 to the year in which the mortality assumption is being applied.

Exhibit 1
(continued)

5. Service Retirement (Adopted July 1, 2016)

Annual rates of retirement assumed to occur among persons eligible for a service retirement are illustrated in the following table:

	General Employees			
	Male		Female	
Age	First Year Eligible	Thereafter	First Year Eligible	Thereafter
55	22%	10%	26%	18%
60	26	17	26	18
65	33	50	37	52
70	18	20	18	21

	General Employees			
	Male		Female	
Age	First Year Eligible	Thereafter	First Year Eligible	Thereafter
55	19%	5%	10%	10%
60	30	18	26	18
65	36	46	49	49
70	*	*	*	*

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

6. Early Retirement (Adopted July 1, 2016)

Annual rates of retirement assumed to occur among persons eligible for a reduced early retirement benefit are illustrated in the following table:

	General Employees		Teachers	
	Male		Female	
Age	First Year Eligible	Thereafter	First Year Eligible	Thereafter
50	*	*	*	*
55	3%	3%	6%	6%
60	5	6	14	12

* *For all ages younger than the age indicated, withdrawal is assumed to occur (see Section 7).*

Exhibit 1
(continued)

7. Other Terminations of Employment (Adopted July 1, 2016)

Assumed annual rates of termination are illustrated below. Rates are based only on years of service.

Years of Service	General Employees Male	General Employees Female	Teachers Male	Teachers Female
5	8.8%	10.3%	5.5%	6.0%
10	5.5	6.4	3.1	3.1
15	3.5	4.0	1.9	1.8
20	2.4	2.9	1.3	1.3
25	1.7	2.5	1.2	1.2
30	1.5	2.5	1.2	1.2

8. Disability Retirement (Adopted July 1, 2016)

Annual rates assumed for disability retirement are illustrated in the following table:

Age	General Employees Male	General Employees Female	Teachers Male	Teachers Female
25	.01%	.01%	.01%	.05%
35	.03	.01	.02	.04
45	.11	.10	.07	.07
55	.32	.28	.20	.30

9. Future Salaries (Adopted July 1, 2016)

In general, the total annual rates at which salaries are assumed to increase include 3.75% per annum for increase in the general wage level of the membership plus increases due to promotions and longevity. The general wage level increases are due to inflation and increases in productivity. The total ultimate rates assumed are illustrated below.

Years of service	General Employees Male	General Employees Female	Teachers Service Male	Teachers Service Female
5	6.03%	6.45%	7.07%	7.17%
10	5.10	5.46	7.17	7.38
15	4.63	4.68	5.20	5.33
20	4.37	4.42	4.48	4.56

Exhibit 1
(continued)

10. Vesting (Adopted July 1, 2016)

The following table illustrates the assumed probability that vested terminating members will elect to receive deferred benefits instead of withdrawing accumulated contributions.

	General Employees		Teachers	
Age	Male	Female	Male	Female
25	52%	61%	75%	84%
35	71	70	79	88
45	76	73	82	85
55	—	—	—	—

11. Growth in Membership (Adopted July 1, 2012)

In general, the combined effects of stable active membership and salary levels are assumed to produce a 3.75% average annual expansion in the payroll of covered members.

12. Actuarial Cost Method

The individual entry age actuarial cost method is used. This cost method was adopted as of July 1, 2013 by the Board in order to be consistent with the cost method required by GASB Statements 74 and 75.

The normal cost rates used in the July 1, 2019 valuation were calculated based on all current active members as of July 1, 2019, for each sex and type of employee in the valuation. The normal costs and projected fiscal year 2019 salaries for all active members were calculated. The ratio of the two is the aggregate normal cost rate. The current normal cost rate was adopted in October, 2019 in conjunction with the July 1, 2019 actuarial valuation.

The unfunded actuarial accrued liability (UAAL) created by this method, including gains and losses, is amortized as a level percentage of the System's projected payroll.

13. Experience Studies

The last experience study was completed in 2018 for the period July 1, 2011 through June 30, 2017 and reviewed economic assumptions, mortality and all demographic assumptions. These assumptions will be studied in 2022 for the period from July 1, 2017 through June 30, 2021. Assumptions were adopted as noted.

14. Assumed Rates of Accrual for Sick Leave Hours and Days

The sick leave hours and days assumptions were set based on a study of actual member sick leave hours and days, as of July 1, 2004. The member's current salary was compared against $40,000 for State participants $50,000 for School participants. If the salary was larger than the indexed amount, his or her current sick leave hours were projected forward based on the higher accrual scale.

Exhibit 1
(continued)

State Hours Assumptions

	Salary Under $40,000		Salary Over $40,000	
Service	**Males**	**Females**	**Males**	**Females**
2	118.5	50.0	100.5	130.0
3	156.2	75.8	148.7	163.6
4	193.7	101.6	196.8	197.2
5	231.2	127.4	245.0	230.8
6	268.7	153.2	293.1	264.4
7	306.2	179.0	341.3	298.0
8	343.6	204.8	389.4	331.6
9	381.1	230.6	437.6	365.2
10	418.6	256.4	485.7	398.8
11	456.1	282.2	533.9	432.4
12	493.6	308.0	582.0	466.0
13	531.1	333.8	630.2	499.6
14	568.6	359.6	678.4	533.2
15	606.1	385.4	726.5	566.8
16	643.6	411.2	774.7	600.4
17	681.0	437.0	822.8	634.0
18	718.5	462.8	871.0	667.6
19	756.0	488.7	919.1	701.2
20	793.5	514.5	967.3	734.8
21	831.0	540.3	1,015.4	768.4
22	868.5	566.1	1,063.6	802.0
23	906.0	591.9	1,111.7	835.6
24	943.5	617.7	1,159.9	869.2
25	980.9	643.5	1,208.0	902.8
26	1,018.4	669.3	1,256.2	936.4
27	1,055.9	695.1	1,304.4	970.0
28	1,093.4	720.9	1,352.5	1,003.6
29	1,130.9	746.7	1,400.7	1,037.2
30	1,168.4	772.5	1,448.8	1,070.8
31	1,206.1	798.3	1,496.9	1,104.4
32	1,243.7	824.1	1,545.1	1,138.0
33	1,281.4	849.9	1,593.2	1,171.6
34	1,319.0	875.7	1,641.4	1,205.2
35	1,356.7	901.5	1,689.5	1,238.8
36	1,394.4	927.3	1,737.6	1,272.4
37	1,432.0	953.1	1,785.8	1,306.0
38	1,469.7	978.9	1,833.9	1,339.6
39	1,507.3	1,004.7	1,882.1	1,373.2
40	1,545.0	1,030.5	1,930.2	1,406.8

Exhibit 1
(concluded)

School Days Assumptions

	Salary Under $50,000		Salary Over $50,000	
Service	**Males**	**Females**	**Males**	**Females**
2	28.5	16.4	30.0	22.8
3	33.5	20.3	36.2	27.3
4	38.6	24.2	42.4	31.8
5	43.6	28.0	48.7	36.3
6	48.7	31.9	54.9	40.8
7	53.7	35.8	61.1	45.4
8	58.8	39.6	67.4	49.9
9	63.8	43.5	73.6	54.4
10	68.9	47.3	79.8	58.9
11	73.9	51.2	86.0	63.4
12	78.9	55.1	92.3	67.9
13	84.0	58.9	98.5	72.5
14	89.0	62.8	104.7	77.0
15	94.1	66.7	110.9	81.5
16	99.1	70.5	117.2	86.0
17	104.2	74.4	123.4	90.5
18	109.2	78.3	129.6	95.0
19	114.2	82.1	135.8	99.6
20	119.3	86.0	142.1	104.1
21	124.3	89.9	148.3	108.6
22	129.4	93.7	154.5	113.1
23	134.4	97.6	160.7	117.6
24	139.5	101.5	167.0	122.1
25	144.5	105.3	173.2	126.7
26	149.5	109.2	179.4	131.2
27	154.6	113.1	185.6	135.7
28	159.6	116.9	191.9	140.2
29	164.7	120.8	198.1	144.7
30	169.7	124.6	204.3	149.3
31	174.7	128.5	210.5	153.8
32	179.8	132.3	216.8	158.3
33	184.8	136.2	223.0	162.9
34	189.9	140.0	229.2	167.4
35	194.9	143.9	235.5	171.9
36	199.9	147.8	241.7	176.4
37	205.0	151.6	247.9	180.9
38	210.0	155.5	254.1	185.5
39	215.1	159.3	260.4	190.0
40	220.1	163.2	266.6	194.5

15. Recent Changes

There were no changes to actuarial assumptions or methods between the 2017 valuation and the 2019 valuation.

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 2: SCHEDULE OF ACTIVE MEMBER VALUATION DATA

	State Coverage - ORP		State Coverage - Other		School Coverage		Total	
	Members	Annual Salaries In Thousands	Members	Annual Salaries In Thousands	Members	Annual Salaries In Thousands	Members	Annual Salaries In Thousands
July 1, 2004	(1)	(2)	18,881	$ 642,516	28,041	$ 933,726	46,922	$ 1,576,242
July 1, 2006	(1)	$ 206,061	18,854	$ 690,750	28,924	$ 997,211	47,778	$ 1,894,022
July 1, 2008	(1)	$ 241,822	18,954	$ 744,319	29,672	$ 1,083,264	48,625	$ 2,069,405
July 1, 2010	(1)	$ 263,868	18,100	$ 722,064	30,290	$ 1,134,279	48,389	$ 2,120,211
July 1, 2012	(1)	$ 276,912	17,856	$ 729,030	28,843	$ 1,051,824	46,698	$ 2,057,766
July 1, 2015	(1)	$ 310,128	18,159	$ 775,085	29,879	$ 1,121,478	48,037	$ 2,206,691
July 1, 2016	3,978	$ 242,292	18,291	$ 779,043	30,464	$ 1,150,959	52,733	$ 2,172,294
July 1, 2017	3,859	$ 257,426	16,863	$ 803,788	31,558	$ 1,238,143	52,280	$ 2,299,357
July 1, 2019	4127	$ 281,937	16,932	$ 839,989	33,114	$ 1,380,543	54,173	$ 202,469

(1) *Detailed individual data for ORP members was not provided before the 2016 valuation.*

(2) *Compensation data for ORP members was not provided before the 2006 valuation.*

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 3: SCHEDULE OF RETIREE VALUATION DATA

	State Coverage		School Coverage		Total	
Valuation Date	Retired Members	Remaining Entitlement Balance in Thousands	Retired Members	Remaining Entitlement Balance in Thousands	Retired Members	Remaining Entitlement Balance in Thousands
July 1, 2006	2,337	$9,369	3,506	$23,389	5,843	$32,758
July 1, 2008	2,504	$11,764	3,547	$28,039	6,051	$39,803
July 1, 2010	2,937	$13,308	4,045	$32,428	6,982	$45,736
July 1, 2012	3,384	$15,061	4,775	$38,652	8,159	$53,713
July 1, 2015	4,027	$16,946	5,724	$43,602	9,751	$60,548
July 1, 2016	4,145	$17,014	5,910	$44,031	10,055	$61,045
July 1, 2017	4,301	$17,635	5,946	$43,418	10,247	$61,053
July 1, 2019	5,232	$25,226	6,229	$44,721	11,461	$69,947

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 4: SCHEDULE OF FUNDING PROGRESS (ALL DOLLAR AMOUNTS IN MILLIONS)

State Sick Leave Program

Valuation Date	Actuarial Accrued Liability	Plan Assets	Unfunded Actuarial Accrued Liability	Funding Percentage	Covered Payroll	UAAL as a Percent of Cov. Payroll
July 1, 2006	$ 86.8	$ 75.2	$ 11.6	87%	$ 896.8	1%
July 1, 2008	94.1	79.3	14.8	84%	986.1	2%
July 1, 2010	97.1	82.8	14.3	85%	890.9	2%
July 1, 2012	100.1	108.3	(8.2)	108%	891.3	-1%
July 1, 2015	91.3	157.7	(66.4)	173%	976.6	-7%
July 1, 2016	86.5	162.9	(76.4)	188%	1,046.8	-7%
July 1, 2017	85.9	186.5	(100.6)	217%	1,098.0	-9%
July 1, 2019	99.3	225.2	(125.9)	227%	1,153.5	-11%

School Sick Leave Program

Valuation Date	Actuarial Accrued Liability	Plan Assets	Unfunded Actuarial Accrued Liability	Funding Percentage	Covered Payroll	UAAL as a Percent of Cov. Payroll
July 1, 2006	$ 166.9	$ 123.9	$ 43.0	74%	$ 997.2	4%
July 1, 2008	183.4	131.2	52.2	72%	1,083.3	5%
July 1, 2010	193.7	137.8	55.9	71%	1,164.3	5%
July 1, 2012	194.1	175.2	18.9	90%	1,081.2	2%
July 1, 2015	194.6	246.6	(52.0)	127%	1,136.3	-5%
July 1, 2016	200.8	250.9	(50.1)	125%	1,174.7	-4%
July 1, 2017	220.5	285.5	(65.0)	129%	1,240.6	-5%
July 1, 2019	249.3	344.5	(95.2)	138%	1,380.9	-7%

Notes:

Actuarial present value of benefits less actuarial present value of future normal costs based on entry age actuarial cost method.

Funded Ratio is the ratio of the actuarial value of assets over the actuarial accrued liabilities.

Covered Payroll includes compensation paid to all active employees on which contributions are calculated. Covered Payroll differs from the Active Member Valuation Payroll shown in Exhibit 2 which is an annualized compensation of only those members who were active on the actuarial valuation date.

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 5: SOLVENCY TEST (ALL DOLLAR AMOUNTS IN MILLIONS)

State Sick Leave Program

		Actuarial Accrued Liabilities for					
Valuation Date	Plan Assets	Active Member Contributions (A)	Retirees and Beneficiaries (B)	Active Members (Employer Financed) (C)	Portion Covered by Assets (A)	Portion Covered by Assets (B)	Portion Covered by Assets (C)
July 1, 2006	$ 75.2	$ —	$ 9.4	$ 77.4	100%	100%	85%
July 1, 2008	79.3	—	11.8	82.3	100%	100%	82%
July 1, 2010	82.8	—	13.3	83.8	100%	100%	83%
July 1, 2012	108.3	—	15.1	85.0	100%	100%	100%
July 1, 2015	157.7	—	16.9	74.4	100%	100%	100%
July 1, 2016	162.9	—	17.0	69.5	100%	100%	100%
July 1, 2017	186.5	—	17.6	68.3	100%	100%	100%
July 1, 2019	225.2	—	25.2	74.1	100%	100%	100%

School Sick Leave Program

		Actuarial Accrued Liabilities for					
Valuation Date	Plan Assets	Active Member Contributions (A)	Retirees and Beneficiaries (B)	Active Members (Employer Financed) (C)	Portion Covered by Assets (A)	Portion Covered by Assets (B)	Portion Covered by Assets (C)
July 1, 2006	$ 123.9	$ —	$ 23.4	$ 143.5	100%	100%	70%
July 1, 2008	131.2	—	28.0	155.4	100%	100%	66%
July 1, 2010	137.8	—	32.4	161.3	100%	100%	65%
July 1, 2012	175.2	—	38.7	155.4	100%	100%	88%
July 1, 2015	246.6	—	43.6	151.0	100%	100%	100%
July 1, 2016	250.9	—	44.0	156.8	100%	100%	100%
July 1, 2017	285.5	—	43.4	177.1	100%	100%	100%
July 1, 2019	344.5	—	44.7	204.6	100%	100%	100%

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 6: ANALYSIS OF ACTUARIAL GAINS OR LOSSES (ALL DOLLAR AMOUNTS IN MILLIONS)

State Sick Leave Program

	2016-2017	2017-2019
Investment gain (or loss)	$ 10.1	$ 5.9
Miscellaneous gains (or losses)(1)	5.8	(2.2)
Subtotal: Actuarial Experience	15.9	3.7
Passage of Time	8.3	21.6
Assumption Changes	0.0	0.0
Actuarial Method Changes	0.0	0.0
Changes in Plan Provisions	0.0	0.0
Total Gain (Loss) During the Period	$ 24.2	$ 25.3

School Sick Leave Program

	2016-2017	2017-2019
Investment gain (or loss)	$ 15.3	$ 9.1
Miscellaneous gains (or losses)(1)	(11.0)	(4.2)
Subtotal: Actuarial Experience	4.3	4.9
Passage of Time	10.6	25.3
Assumption Changes	0.0	0.0
Actuarial Method Changes	0.0	0.0
Changes in Plan Provisions	0.0	0.0
Total Gain (Loss) During the Period	$ 14.9	$ 30.2

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.

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 7a: STATE EMPLOYERS

SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER AND ALL OTHER CONTRIBUTING ENTITIES (ALL DOLLAR AMOUNTS IN MILLIONS)

Fiscal Year Ending	Covered Employee Payroll (1)	Actual PERSI Employer Contributions Dollar Amount (2)	Actuarially Determined Contribution (ADC)(3)	Percentage of ADC Dollars Contributed
6/30/10	$ 890.9	$ 5.8	$ 4.9	118%
6/30/11	873.2	5.7	4.6	123
6/30/12	891.3	5.8	4.7	123
6/30/13	930.7	6.0	3.4	176
6/30/14	936.7	6.1	3.5	176
6/30/15	976.6	6.3	3.6	176
6/30/16	1,046.8	6.8	3.7	186
6/30/17	1,098.0	7.1	4.3	167
6/30/18	1,101.7	7.2	4.2	171
6/30/19	1,153.5	7.5	4.4	170

(1) *Computed as the dollar amount of the actual PERSI employer contribution made as a percentage of payroll divided by the Actual PERSI contribution rate expressed as a percentage of payroll.*

(2) *The actual Sick Leave employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes. Dollar amounts shown exclude additional receipts due to merger of retirement systems.*

(3) *The ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus an amortization of any Unfunded Actuarial Accrued Liability over the remaining lifetime of the covered members. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date.*

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 7b: SCHOOL EMPLOYERS

SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER AND ALL OTHER CONTRIBUTING ENTITIES (ALL DOLLAR AMOUNTS IN MILLIONS)

Fiscal Year Ending	Covered Employee Payroll (1)	Actual PERSI Employer Contributions Dollar Amount (2)	Actuarially Determined Contribution (ADC)(3)	Percentage of ADC Dollars Contributed
6/30/10	$ 1,164.3	$ 13.9	$ 13.3	104%
6/30/11	1,118.3	13.3	12.6	105
6/30/12	1,081.2	12.9	12.2	105
6/30/13	1,124.4	13.4	8.5	157
6/30/14	1,114.7	13.3	8.5	157
6/30/15	1,136.3	13.5	8.6	157
6/30/16	1,174.7	14.0	7.3	192
6/30/17	1,240.6	14.8	8.1	183
6/30/18	1,310.9	15.6	8.9	175
6/30/19	1,380.9	16.4	9.4	174

(1) Computed as the dollar amount of the actual PERSI employer contribution made as a percentage of payroll divided by the Actual PERSI contribution rate expressed as a percentage of payroll.

(2) The actual Sick Leave employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributio ns set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes. Dollar amounts shown exclude additional receipts due to merger of retirement systems.

(3) The ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus an amortization of any Unfunded Actuarial Accrued Liability over the remaining lifetime of the covered members. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date.

EXHIBIT 8a: STATE EMPLOYERS

SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER EXPRESSED AS A PERCENTAGE OF PAYROLL

Fiscal Year Ending	Actual PERSI Employer Contribution % (1)	Actuarially Determined Contribution (ADC) %(2)	Percentage of ADC Contributed
6/30/10	0.65%	0.55%	118%
6/30/11	0.65	0.55	118
6/30/12	0.65	0.53	123
6/30/13	0.65	0.37	176
6/30/14	0.65	0.37	176
6/30/15	0.65	0.37	176
6/30/16	0.65	0.37	176
6/30/17	0.65	0.35	186
6/30/18	0.65	0.39	167
6/30/19	0.65	0.38	171

(1) The actual Sick Leave employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes.

(2) The ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus an amortization of any Unfunded Actuarial Accrued Liability over the remaining lifetime of the covered members. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date.

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 8b: STATE EMPLOYERS

SCHEDULE OF CONTRIBUTIONS FROM THE EMPLOYER EXPRESSED AS A PERCENTAGE OF PAYROLL

Fiscal Year Ending	Actual PERSI Employer Contribution %(1)	Actuarially Determined Contribution (ADC) % (2)	Percentage of ADC Contributed
6/30/10	1.19%	1.14%	104%
6/30/11	1.19	1.14	104
6/30/12	1.19	1.13	105
6/30/13	1.19	1.13	105
6/30/14	1.19	0.76	157
6/30/15	1.19	0.76	157
6/30/16	1.19	0.76	157
6/30/17	1.19	0.62	192
6/30/18	1.19	0.65	183
6/30/19	1.19	0.68	175

(1) The actual Sick Leave employer contributions are expressed as a percentage of payroll. Employer contributions are made as a percentage of actual payroll in accordance with statute and the Board's Funding Policy. Thus, the actual employer contributions set by both statute and the Board's Funding Policy may differ from the computed Actuarially Determined Contribution (ADC), employer contribution rate for GASB disclosure purposes.

(2) The ADC, formerly known as the Annual Required Contribution (ARC), is equal to the normal cost rate plus an amortization of any Unfunded Actuarial Accrued Liability over the remaining lifetime of the covered members. The ADC determined as of the valuation date is applicable for employer fiscal years commencing July 1 of the calendar year following the valuation date.

Sick Leave of Idaho Retirement Fund
Public Employee Retirement System of Idaho

EXHIBIT 9: PROVISIONS OF GOVERNING LAW

All actuarial calculations are based on our understanding of the statutes governing the use of unused sick leave benefits administered by the Public Employee Retirement System of Idaho, as contained in Section 67-5333 for State employees and Section 33-1228 for School employees of the Idaho Code. The benefit and contribution provisions of this law are summarized briefly below. The items in parentheses are the provisions applicable to school employees.

Benefits

Upon separation from State (public school) employment for retirement reasons, a member's unused sick leave earned subsequent to July 1, 1976, is determined and reported to PERSI. The monetary value of one-half of the unused sick leave is transferred from the sick leave account to the member's retirement account (the entitlement balance). The monetary value of the unused sick leave is based upon the rate of pay of the employee at the time of retirement.

Effective July 1, 2001, the maximum amount transferred shall be limited for State covered members only, based on the number of hours of credited State service as follows:

Years of State Service	Maximum Unused Sick Leave
Less than 5*	420 Hours
5-10	480
10-15	540
16 or more	600

** All members who are eligible for retirement benefits have at least 5 years of service.*

The transferred monies to the member's retirement account are used for the payment of group health, accident, and life insurance premiums under programs maintained by the State (school district). Upon a retired covered member's death, any remaining entitlement balance reverts to the sick leave account.

Contributions

Each State government (public school) employer contributes a percentage of covered members' salaries to the sick leave account maintained by the System. The System's board determines the contribution rate.

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