Teachers' Retirement System of Montana

GASB Statement No. 67 Report

Prepared as of June 30, 2024

CavMac
Actuarial Consulting Services

October 8, 2024

Teachers' Retirement Board
State of Montana
P.O. Box 200139
Helena, MT 59620-0139

Members of the Board:

Presented in this report is information to assist the Teachers' Retirement System of Montana in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67. The information is presented for the period ending June 30, 2024.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of July 1, 2024. The valuation was based upon data, furnished by the Executive Director and the Teachers' Retirement System staff, concerning active, inactive and retired members along with pertinent financial information.

To the best of our knowledge, this report is complete and accurate. The necessary calculations were performed by, and under the supervision of, independent actuaries who are members of the American Academy of Actuaries with experience in performing valuations for public retirement systems.

The calculations were prepared in accordance with the principles of practice prescribed by the Actuarial Standards Board and, in our opinion, meet the requirements of GASB 67.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System and on actuarial assumptions that are, individually and in the aggregate, internally consistent and reasonably based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

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Future actuarial results may differ significantly from the current results 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. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

In order to prepare the results in this report, we have utilized actuarial models that were developed to measure liabilities and develop actuarial costs. These models include tools that we have produced and tested, along with commercially available valuation software that we have reviewed to confirm the appropriateness and accuracy of the output. In utilizing these models, we develop and use input parameters and assumptions about future contingent events along with recognized actuarial approaches to develop the needed results.

Respectfully submitted,

Todd B. Green

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TABLE OF CONTENTS

Section I – Introduction

This report has been prepared as of June 30, 2024 to assist the Montana Teachers' Retirement System in complying with the Governmental Accounting Standards Board Statement No. 67 (GASB 67), *"Financial Reporting for Pension Plans."* The material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the System as of July 1, 2024.

GASB 67 separates accounting from funding by creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System.

GASB 67 requires the determination of the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial funding method. The Net Pension Liability (NPL) is then set equal to the TPL minus the System's Fiduciary Net Position (FNP) (basically the market values of assets). The benefit provisions recognized in the calculation of the TPL are summarized in Schedule B.

Among the assumptions needed for the liability calculation is a Single Equivalent Interest Rate (SEIR), as described by GASB 67. To determine the SEIR, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan's provisions applicable to the members and beneficiaries of the System on the Measurement Date. If the FNP is not projected to be depleted at any point in the future, the long-term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the SEIR.

If, however, the FNP is projected to be depleted, the SEIR is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. Our calculations indicate that the FNP is not projected to be depleted, so the bond rate is not used in the determination of the SEIR.

The sections that follow provide the results of all the necessary calculations, presented in the order laid out in GASB 67 for note disclosure and Required Supplementary Information (RSI).

The material presented herein will follow the order presented in GASB 67. Paragraph numbers are provided for ease of reference.

Paragraphs 30.a. (1)-(3): This information will be supplied by the System.

Paragraph 30.a. (4): The data required regarding the membership of the Montana Teachers' Retirement System were furnished by the System. The following table summarizes the membership of the System as of July 1, 2024, the Valuation Date.

Membership Type	Number
Retired participants and beneficiaries currently receiving benefits	18,002
Terminated participants and beneficiaries entitled to benefits but not receiving benefits	2,339
Inactive participants*	6,512
Active participants	
Full-time	13,709
Part-time	6,429
Total	46,991

* Participants who are former employees who have an employee account balance in the plan but are not otherwise vested in an employer provided benefit. Also includes deceased members pending account settlement.

Paragraphs 30.a. (5)-(6) and Paragraphs 30.b.-f.: This information will be supplied by the System.

Paragraphs 31.a. (1)-(4): This information is provided in the following table. As stated earlier, the NPL is equal to the TPL minus the FNP. That result as of June 30, 2024 is presented in the following table.

	Fiscal Year Ending June 30, 2024
Total Pension Liability	$7,025,624,963
Fiduciary Net Position	5,151,867,830
Net Pension Liability	$1,873,757,133
Ratio of Fiduciary Net Position to Total Pension Liability	73.33%

Paragraph 31.b.: This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The set of actuarial assumptions utilized in developing the TPL are outlined in Schedule C. The total pension liability was determined based on an actuarial valuation as of July 1, 2024, using the following actuarial assumptions:

Inflation	2.75 percent
Salary increases	3.50 to 9.00 percent, including inflation for Non-University Members; 4.25 percent for University Members including inflation
Investment rate of return	7.30 percent, net of pension plan investment and administrative expenses, and including inflation

Mortality

Mortality among contributing members:

PUBT-2010 Employee mortality table projected to 2021. Projected generationally using MP-2021.

Mortality among service retired members:

PUBT-2010 Retiree mortality table projected to 2021 adjusted 102% for males and 103% for females. Projected generationally using MP-2021.

Mortality among beneficiaries:

PUB-2010 Contingent Survivor table projected to 2021. Projected generationally using MP-2021.

Mortality among disabled members:

PUB-2010 Non-Safety Disabled Retiree mortality table projected to 2021.

The actuarial assumptions used in the July 1, 2024 valuation were based on the results of the last actuarial experience study, dated May 3, 2022.

Paragraph 31.b.(1)

(a) Discount rate. The discount rate used to measure the total pension liability was 7.30 percent.

(b) Projected cash flows: The projection of cash flows used to determine the discount rate assumed that plan member contributions and Employer contributions will be made at the current contribution rates as set out in state statute. These rates are shown on the following page. In addition to these contributions the State will contribute $25 million annually to the System payable July 1st of each year.

MCA 19-20-605 requires each employer to contribute 9.85% of total compensation paid to all re-employed TRS retirees employed in a TRS reportable position. Pursuant to MCA 19-20-609, this amount shall increase by 1.00% for fiscal year 2014 and increase by 0.10% each fiscal year through 2024 until the total employer contribution is equal to 11.85% of re-employed retiree compensation.

History of Legislated Contributions
(as a Percent of Pay)

School District and Other Employers

	Members	Employers	General fund	Total employee & employer
Prior to July 1, 2007	7.15%	7.47%	0.11%	14.73%
July 1, 2007 to June 30, 2009	7.15%	7.47%	2.11%	16.73%
July 1, 2009 to June 30, 2013	7.15%	7.47%	2.49%	17.11%
July 1, 2013 to June 30, 2014	8.15%	8.47%	2.49%	19.11%
July 1, 2014 to June 30, 2015	8.15%	8.57%	2.49%	19.21%
July 1, 2015 to June 30, 2016	8.15%	8.67%	2.49%	19.31%
July 1, 2016 to June 30, 2017	8.15%	8.77%	2.49%	19.41%
July 1, 2017 to June 30, 2018	8.15%	8.87%	2.49%	19.51%
July 1, 2018 to June 30, 2019	8.15%	8.97%	2.49%	19.61%
July 1, 2019 to June 30, 2020	8.15%	9.07%	2.49%	19.71%
July 1, 2020 to June 30, 2021	8.15%	9.17%	2.49%	19.81%
July 1, 2021 to June 30, 2022	8.15%	9.27%	2.49%	19.91%
July 1, 2022 to June 30, 2023	8.15%	9.37%	2.49%	20.01%
July 1, 2023 to June 30, 2024	8.15%	9.47%	2.49%	20.11%

State and University Employers

	Members	Employers	General fund	Total employee & employer
Prior to July 1, 2007	7.15%	7.47%	0.11%	14.73%
July 1, 2007 to June 30, 2009	7.15%	9.47%	0.11%	16.73%
July 1, 2009 to June 30, 2013	7.15%	9.85%	0.11%	17.11%
July 1, 2013 to June 30, 2014	8.15%	10.85%	0.11%	19.11%
July 1, 2014 to June 30, 2015	8.15%	10.95%	0.11%	19.21%
July 1, 2015 to June 30, 2016	8.15%	11.05%	0.11%	19.31%
July 1, 2016 to June 30, 2017	8.15%	11.15%	0.11%	19.41%
July 1, 2017 to June 30, 2018	8.15%	11.25%	0.11%	19.51%
July 1, 2018 to June 30, 2019	8.15%	11.35%	0.11%	19.61%
July 1, 2019 to June 30, 2020	8.15%	11.45%	0.11%	19.71%
July 1, 2020 to June 30, 2021	8.15%	11.55%	0.11%	19.81%
July 1, 2021 to June 30, 2022	8.15%	11.65%	0.11%	19.91%
July 1, 2022 to June 30, 2023	8.15%	11.75%	0.11%	20.01%
July 1, 2023 to June 30, 2024	8.15%	11.85%	0.11%	20.11%

(c) Long term rate of return: The long-term expected rate of return on pension plan investments of 7.30% is reviewed as part of regular experience studies prepared for the System about every five years. The current long-term rate of return is based on analysis in the experience study report dated May 3, 2022, without consideration for the administrative expense analysis shown. Several factors are considered in evaluating the long-term rate of return assumption including long-term historical data, estimates inherent in current market data, and an analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of investment expense and inflation), along with estimates of variability and correlations for each asset class. These ranges were combined to develop the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The assumption is intended to be a long-term assumption (30 to 50 years) and is not expected to change absent a significant change in the asset allocation, a change in the underlying inflation assumption, or a fundamental change in the market that alters expected returns in future years.

(d) Municipal bond rate: The discount rate determination does not use a municipal bond rate.

(e) Periods of projected benefit payments: Projected future benefit payments for all current plan members were projected through 2134.

(f) Assumed asset allocation: The target asset allocation and best estimates of arithmetic real rates of return for each major asset class as of the most recent experience study are summarized in the following table. More recent arithmetic real rates of return may be available. While not relied on to develop the long-term expected rate of return, we believe that if more recent arithmetic real rates of return were used, the current long-term expected rate of return would still be reasonable.

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equity	30.0%	5.90%
International Equity	17.0%	7.14%
Private Investments	15.0%	9.13%
Real Assets	5.0%	4.03%
Real Estate	9.0%	5.41%
Core Fixed Income	15.0%	1.14%
Non-Core Fixed Income	6.0%	3.02%
Cash	3.0%	-0.33%
Total	100.0%	

(g): **Sensitivity analysis**: Disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of 7.30 percent, as well as what the System's net pension liability would be calculated using a discount rate that is 1-percentage-point lower (6.30 percent) or 1-percentage-point higher (8.30 percent) than the current rate:

	1% Decrease 6.30%	Current Discount Rate 7.30%	1% Increase 8.30%
System's Total Pension Liability	$7,844,919,442	$7,025,624,963	$6,341,096,510
Fiduciary Net Position	5,151,867,830	5,151,867,830	5,151,867,830
System's Net Pension Liability	$2,693,051,612	$1,873,757,133	$1,189,228,680

Paragraph 31.c.: The date of the actuarial valuation upon which the TPL is based is July 1, 2024. Roll forward procedures were not used.

There are several tables of Required Supplementary Information (RSI) that need to be included in the System's financial statements:

Paragraphs 32.a.-c.: The required tables of schedules are provided in Schedule A.
Paragraph 32.d.: The money-weighted rates of return will be supplied by the System.
Paragraph 34: The following information should be noted regarding the RSI:

Changes of benefit terms: There have been no material changes of benefit terms in the past ten years.

Changes in actuarial assumptions and methods: The following changes to the actuarial assumptions were made as identified:

2022:

- The discount rate was increased from 7.06% to 7.30%.
- The investment rate of return assumption was increased from 7.06% to 7.30%.
- The inflation rate was increased from 2.40% to 2.75%.
- Updated all mortality tables to the PUB-2010 tables for teachers.
- Updated the rates of retirement and termination.
- Updated the salary scale merit rates.

2021:

- The discount rate was lowered from 7.34% to 7.06%.
- The investment rate of return assumption was lowered from 7.34% to 7.06%.

2020:

- The discount rate was lowered from 7.50% to 7.34%.
- The investment rate of return assumption was lowered from 7.50% to 7.34%.
- The inflation rate was reduced from 2.50% to 2.40%.

2019:

- The Guaranteed Annual Benefit Adjustment (GABA) for Tier Two members is a variable rate between 0.50% and 1.50% as determined by the Board. Since an increase in the amount of the GABA is not automatic and must be approved by the Board, the assumed increase was lowered from 1.50% to the current rate of 0.50% per annum.

2018:

- Assumed rate of inflation was reduced from 3.25% to 2.50%
- Payroll growth assumption was reduced from 4.00% to 3.25%
- Investment return assumption was changed was reduced from 7.75% to 7.50%.
- Wage growth assumption was reduced from 4.00% to 3.25%
- Mortality among contributing members, service retired members, and beneficiaries was updated to the following:
    - For Males and Females: RP-2000 Healthy Combined Mortality Table projected to 2022 adjusted for partial credibility setback for two years.

      The tables include margins for mortality improvement which is expected to occur in the future.
- Mortality among disabled members was updated to the following:
    - For Males: RP 2000 Disabled Mortality Table, set back three years, with mortality improvements projected by Scale BB to 2022.
    - For Females: RP 2000 Disabled Mortality Table, set forward two years, with mortality improvements projected by Scale BB to 2022.
- Retirement rates were updated
- Termination rates were updated
- Rates of salary increases were updated

2016:

- The normal cost method has been updated to align the calculation of the projected compensation and the total present value of plan benefits so that the normal cost rate reflects the most appropriate allocation of plan costs over future compensation.

2015:

- Correctly reflect the proportion of members that are assumed to take a refund of contributions upon termination and appropriately reflect the three year COLA deferral period for Tier 2 Members.
- The 0.63% load applied to the projected retirement benefits of the university members "to account for larger than average annual compensation increases observed in the years immediately preceding retirement" is not applied to benefits expected to be paid to university members on account of death, disability and termination (prior to retirement eligibility.
- The actuarial valuation was updated to reflect the assumed rate of retirement for university members at age 60 is 8.50% as stated in the actuarial valuation report.

- The actuarial valuation was updated to reflect the fact that vested terminations are only covered by the $500 death benefit for the one year following their termination and, once again when the terminated member commences their deferred retirement annuity (they are not covered during the deferral period). Additionally, only the portion of the terminated members that are assumed to “retain membership in the System” are covered by the $500 death benefit after termination.

Method and assumptions used in calculations of actuarially determined contributions

The actuarial determined contribution rates are determined on an annual basis. The following actuarial methods and assumptions were used to determine contribution rates reported for the fiscal year ending June 30, 2024, which were based on the results of the July 1, 2023 actuarial valuation.

Actuarial cost method	Entry age
Amortization method	Level percentage of pay, open
Remaining amortization period	24 years
Asset valuation method	4-year smoothed market
Inflation	2.75 percent
Salary increase	3.50 to 9.00 percent, including inflation for Non-University Members; 4.25 percent for University Members including inflation
Investment rate of return	7.30 percent, net of pension plan investment and administrative expenses, and including inflation

Schedule A – Required Supplementary Information Tables

GASB 67 Paragraph 32.a.
SCHEDULE OF CHANGES IN THE NET PENSION LIABILITY

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Total pension liability										
Service cost	$97,009,415	$95,850,764	$96,144,734	$81,016,509	$76,334,643	$75,236,616	$76,009,950	$71,429,117	$73,530,938	$73,820,438
Interest	491,203,044	479,511,418	463,209,558	461,973,793	452,258,006	441,958,241	428,866,673	417,307,148	402,339,969	390,555,879
Benefit changes	0	0	0	0	0	0	0	0	0	0
Difference between expected and actual experience	32,119,659	28,621,052	21,772,825	21,712,947	22,424,700	6,775,269	14,571,084	5,420,919	(5,245,998)	9,660,152
Changes of assumptions	0	0	(238,551,692)	200,170,596	107,293,117	(6,059,430)	206,321,172	0	(12,445,656)	(4,670,553)
Benefit payments	(444,438,589)	(429,121,173)	(414,346,628)	(399,897,777)	(384,396,941)	(367,779,905)	(352,854,025)	(333,633,717)	(320,810,259)	(303,675,300)
Refunds of contributions	(8,574,536)	(7,830,941)	(10,338,308)	(8,889,937)	(5,171,751)	(6,008,447)	(5,322,642)	(7,355,344)	(5,086,816)	(5,368,359)
Net change in total pension liability	**$167,318,993**	**$167,031,120**	**$(82,109,511)**	**$356,086,131**	**$268,741,774**	**$144,122,344**	**$367,592,212**	**$153,168,123**	**$132,282,178**	**$160,322,257**
Total pension liability – beginning	**$6,858,305,970**	**$6,691,274,850**	**$6,773,384,361**	**$6,417,298,230**	**$6,148,556,456**	**$6,004,434,112**	**$5,636,841,900**	**$5,483,673,777**	**$5,351,391,599**	**$5,191,069,342**
Total pension liability – ending (a)	**$7,025,624,963**	**$6,858,305,970**	**$6,691,274,850**	**$6,773,384,361**	**$6,417,298,230**	**$6,148,556,456**	**$6,004,434,112**	**$5,636,841,900**	**$5,483,673,777**	**$5,351,391,599**
Plan fiduciary net position										
Contributions – employer	$117,432,624	$113,441,533	$109,672,148	$103,219,072	$102,420,318	$97,303,048	$94,233,469	$91,853,678	$88,643,646	$87,290,863
Contributions – non-employer	48,848,218	48,437,855	47,999,525	47,020,467	45,948,388	45,495,334	45,005,672	44,414,109	43,902,606	43,389,534
Contributions – member	89,106,467	87,024,738	85,736,884	81,120,904	80,194,548	78,150,923	75,594,333	74,253,046	72,740,665	72,215,797
Miscellaneous income	48,689	55,137	36,921	974,981	51,927	31,040	31,829	27,504	29,123	27,297
Net investment income	432,590,570	388,445,976	(207,441,090)	1,129,751,837	112,588,645	227,892,287	343,720,833	427,042,359	71,487,661	165,684,953
Benefit payments	(444,438,589)	(429,121,173)	(414,346,628)	(399,897,777)	(384,396,941)	(367,779,905)	(352,854,025)	(333,633,717)	(320,810,259)	(303,675,300)
Administrative expense	(3,696,391)	(3,745,792)	(3,555,107)	(3,936,633)	(3,767,693)	(2,947,109)	(2,849,527)	(2,459,458)	(2,318,818)	(2,035,081)
Refunds of contributions	(8,574,536)	(7,830,941)	(10,338,308)	(8,889,937)	(5,171,751)	(6,008,447)	(5,322,642)	(7,355,344)	(5,086,816)	(5,368,359)
Other	(292,335)	(313,704)	(163,969)	(353,364)	(204,156)	(174,476)	(157,777)	(211,532)	(142,849)	(140,631)
Net change in plan net position	**$231,024,717**	**$196,393,629**	**$(392,399,624)**	**$949,009,550**	**$(52,336,715)**	**$71,962,695**	**$197,402,165**	**$293,930,645**	**$(51,555,041)**	**$57,389,073**
Plan net position – beginning	**$4,920,843,113**	**$4,724,449,484**	**$5,116,849,108**	**$4,167,839,558**	**$4,220,285,752**	**$4,148,324,206**	**$3,950,761,443**	**$3,656,830,798**	**$3,708,385,838**	**$3,652,220,265**
Prior Period Adjustment	0	0	0	0	(109,479)	(1,149)	160,598	0	0	(1,223,501)
Plan net position – ending (b)	**$5,151,867,830**	**$4,920,843,113**	**$4,724,449,484**	**$5,116,849,108**	**$4,167,839,558**	**$4,220,285,752**	**$4,148,324,206**	**$3,950,761,443**	**$3,656,830,798**	**$3,708,385,838**
Net pension liability – ending (a) – (b)	**$1,873,757,133**	**$1,937,462,857**	**$1,966,825,366**	**$1,656,535,253**	**$2,249,458,672**	**$1,928,270,704**	**$1,856,109,906**	**$1,686,080,457**	**$1,826,842,979**	**$1,643,005,761**

GASB 67 Paragraph 32.b.
SCHEDULE OF THE NET PENSION LIABILITY

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Total pension liability	$7,025,624,963	$6,858,305,970	$6,691,274,850	$6,773,384,361	$6,417,298,230	$6,148,556,456	$6,004,434,112	$5,636,841,900	$5,483,673,777	$5,351,391,599
Plan fiduciary net position	5,151,867,830	4,920,843,113	4,724,449,484	5,116,849,108	4,167,839,558	4,220,285,752	4,148,324,206	3,950,761,443	3,656,830,798	3,708,385,838
Net pension liability	$1,873,757,133	$1,937,462,857	$1,966,825,366	$1,656,535,253	$2,249,458,672	$1,928,270,704	$1,856,109,906	$1,686,080,457	$1,826,842,979	$1,643,005,761
Plan fiduciary net position as a percentage of the total pension liability	73.33%	71.75%	70.61%	75.54%	64.95%	68.64%	69.09%	70.09%	66.69%	69.30%
Covered payroll	$1,003,130,307	$983,749,464	$960,836,370	$922,764,585	$880,667,518	$857,467,932	$829,708,595	$818,122,561	$795,920,906	$768,718,699
Net pension liability as a percentage of covered payroll	186.79%	196.95%	204.70%	179.52%	255.43%	224.88%	223.71%	206.09%	229.53%	213.73%

GASB 67 Paragraph 32.c.
SCHEDULE OF EMPLOYER CONTRIBUTIONS

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Actuarially determined employer contribution (ADEC)	$166,280,842	$161,879,388	$157,671,673	$150,239,539	$148,368,706	$143,107,320	$139,239,141	$136,267,787	$132,546,252	$130,680,397
Actual employer contributions										
Employers	117,432,624	113,441,533	109,672,148	103,219,072	102,420,318	97,303,048	94,233,469	91,853,678	88,643,646	87,290,863
Non-Employers Contributing Entity	48,848,218	48,437,855	47,999,525	47,020,467	45,948,388	45,495,334	45,005,672	44,414,109	43,902,606	43,389,534
Total	166,280,842	161,879,388	157,671,673	150,239,539	148,368,706	142,798,382	139,239,141	136,267,787	132,546,252	130,680,397
Annual contribution deficiency/(excess)	$0	$0	$0	$0	$0	$308,938	$0	$0	$0	$0
Covered-employee payroll	$1,003,130,307	$983,749,464	$960,836,370	$922,764,585	$880,667,518	$857,467,932	$829,708,595	$818,122,561	$795,920,906	$768,718,699
Actual contributions as a percentage of covered-employee payroll	16.58%	16.46%	16.41%	16.28%	16.85%	16.65%	16.78%	16.66%	16.65%	17.00%

Effective Date

September 1, 1937.

Vesting Period

Five years. No benefits are payable unless the member has a vested right, except the return of employee contributions with interest.

Tier One Member

A person who became a member before July 1, 2013 and who has not withdrawn the member's account balance.

Tier Two Member

A person who became a member on or after July 1, 2013, or who after withdrawing the member's account balance, became a member again after July 1, 2013.

Final Compensation

Tier One Members

Average of highest three consecutive years of earned compensation.

Tier Two Members

Average of highest five consecutive years of earned compensation.

Normal Form of Benefits

Life only annuity. All benefits cease upon death; however, in no event will the member receive less than the amount of employee contributions with interest.

Normal Retirement Benefits

Tier One Members

Eligibility:	25 years of service or age 60 with five years of service.
Benefit:	The retirement benefit is equal to 1/60 of final compensation for each year of service.

Tier Two Members

Eligibility:	Age 55 with 30 years of service or age 60 with five years of service.
Benefit:	A member age 60 with at least 30 years of creditable service will receive a retirement allowance equal to 1.85% of final compensation for each year of service. Otherwise, the multiplier used to calculate the retirement allowance will equal 1/60 of final compensation for each year of service.

Early Retirement Benefits

Tier One Member

Eligibility:	Five years of service and age 50.
Benefit:	The retirement benefit is calculated in the same manner as described for normal retirement, but the benefit is actuarially reduced by the lesser of the number of years equal to the age of the participant at the early retirement subtracted from age 60 or the number of years of service at early retirement subtracted from 25 years of service.

Tier Two Member

Eligibility:	Five years of service and age 55.
Benefit:	The retirement benefit is calculated in the same manner as described for normal retirement, but the benefit is actuarially reduced by the lesser of the number of years equal to the age of the participant at the early retirement subtracted from age 60 or the number of years of service at early retirement subtracted from 30 years of service.

Death Benefit

Eligibility:	Five years of service.
Benefit:	The death benefit is equal to 1/60 of final compensation for each year of service accrued at date of death, with an actuarial adjustment based on the relation of the member's age at death to the beneficiary's age. A monthly benefit of $200 is paid to each child until age 18. In addition, a lump-sum benefit of $500 is paid upon the death of an active or retired member.

Disability Benefit

Eligibility:	Five years of service.
Benefit:	The disability benefit is equal to 1/60 of final compensation for each year of service accrued at date of disability. The minimum benefit is 1/4 of the final compensation. A Tier Two Member is not eligible for a disability retirement if the member is or will be eligible for a service retirement on or before the member's date of determination.

Withdrawal Benefits

With less than five years of service, the accumulated employee contributions with interest are returned. With more than five years, the member may elect a refund of contributions with interest or leave the contributions and interest in the System and retain a vested right to retirement benefits.

Contributions

Tier One Member: 7.15% of compensation. Tier One members are required to contribute a Supplemental Contribution equal to an additional 1% of compensation. The Board may decrease the Supplemental Contribution if the average funded ratio of the System based on the last three actuarial valuations is equal to or greater than 90% and the period necessary to amortize the unfunded liabilities of the System based on the most recent actuarial valuation is less than 15 years. Following one or more decreases in the supplemental contribution the Board may increase the supplemental contribution to a rate not to exceed 1% if the average funded ratio of the System based on the last three annual actuarial valuations is equal to or less than 80% and the period necessary to amortize all liabilities of the System based on the most recent annual actuarial valuation is greater than 20 years.

Tier Two Member: 8.15% of compensation. The Board may require a Tier Two member to contribute a Supplemental Contribution if the average funded ratio of the System based on the last three actuarial valuations is equal to or less than 80% and the period necessary to amortize the unfunded actuarial accrued liability is greater than 20 years and a State or employer contribution rate increase or a flat dollar contribution to the System has been enacted which is equivalent to or greater than the Supplemental Contribution Rate imposed by the Board. A singe Tier Two Supplemental Contribution Rate increase cannot exceed 0.5% of compensation and in total cannot exceed 9.15% of compensation. The Board may decrease the Supplemental Contribution if the average funded ratio of the System based on the previous three annual actuarial valuations is equal to or greater than 90%; and the period necessary to amortize the unfunded actuarial accrued liability is less than 15 years.

Employer: 9.96% of compensation. Employers are required to contribute a supplemental contribution equal to 1% for fiscal year 2014 and increase by 0.1% each fiscal year through 2024. The Board may decrease the Employer Supplemental Contribution if the average funded ratio of the System based on the last three actuarial valuations is equal to or greater than 90% and the period necessary to amortize the unfunded actuarial accrued liability based on the most recent valuation is less than 15 years and the GABA has been increased to the maximum allowable. Following one or more decreases in the Supplemental Contribution Rate the Board may increase the Supplemental Contribution Rate to a rate not to exceed 1% if the average funded ratio of the System based on the last three actuarial valuations is equal to or less than 80% and the period necessary to amortize the unfunded actuarial accrued liability is greater than 20 years.

MCA 19-20-604 specifies that the employer contribution rate will be reduced by 0.11% when the amortization period of the System's UAAL is 10 years or less according to the System's latest actuarial valuation.

State Supplemental Contribution: \$25 million per year on an annual basis payable on July 1st of each year.

Re-employed Retirees: Each employer is required to contribute 9.85% of total compensation paid to all re-employed TRS retirees employed in a TRS reportable position. This amount shall increase by 1.00% for fiscal year 2014 and increase by 0.10% each fiscal year through 2024 until the total employer contribution is equal to 11.85% of re-employed retiree compensation.

Interest on Member contributions

Effective July 1, 2024, the interest credited on member contributions increased from 4.00% to 4.25% per annum.

Guaranteed Annual Benefit Adjustment (GABA)

On January 1 of each year, if the retiree has received benefits for at least 36 months prior to January 1 of the year in which the adjustment is to be made, for Tier One Members, the retirement allowance will be increased by 1.5%.

For Tier Two Members, the retirement allowance will be increased by an amount equal to or greater than 0.5% but no more than 1.5% if the most recent actuarial valuation shows the System to be at least 90% funded and the provisions of the increase is not projected to cause the funded ratio to be less than 85%.

The assumptions for investment return, price inflation, wage inflation, mortality, retirement and withdrawal have been updated to reflect the experience study for the period ending July 1, 2021 adopted by the Board on May 3, 2022.

The current asset valuation method was adopted for the July 1, 2007 valuation.

Tables C-3 through C-5 give rates of decrement for service retirement, disablement, mortality, and other terminations of employment.

Actuarial Cost Method

The actuarial valuation was prepared using the entry age actuarial cost method. Under 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 normal cost was first calculated for each individual member. The normal cost rate is defined to equal the total of the individual normal costs, divided by the total pay rate.

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 UAAL. The UAAL is amortized as a level percentage of the projected salaries of present and future members of the System.

Records and Data

The data used in the valuation consist of financial information; records of age, sex, service, salary, contribution rates, and account balances of contributing members; and records of age, sex, and amount of benefit for retired members and beneficiaries. All of the data were supplied by the System and are accepted for valuation purposes without audit.

Replacement of Terminated Members

The ages at entry and distribution by sex of future members are assumed to average the same as those of the present members they replace. If the number of active members should increase, it is further assumed that the average entry age of the larger group will be the same, from an actuarial standpoint, as that of the present group. Under these assumptions, the normal cost rates for active members will not vary with the termination of present members.

Employer Contributions

At the time of this valuation, the total employer contribution rate for normal costs and amortization of the UAAL was 11.86% of members' salaries. The employer contribution rate will increase by 0.10% each year beginning July 1, 2014 until the total employer contribution rate equals 11.96%.

Administrative and Investment Expenses

The administrative and investment expenses of the System are assumed to be funded by investment earnings in excess of 7.30% per year.

Valuation of Assets - Actuarial Basis

The actuarial asset valuation method spreads asset gains and losses over four years. The expected return is determined each year based on the beginning of year market value and actual cash flows during the year. Any difference between the expected market value return and the actual market value return is recognized evenly over a period of four years. The actuarial value of assets is not allowed to be greater than 120% or less than 80% of the market assets. (Adopted effective July 1, 2007.)

Investment Earnings

The annual rate of investment earnings of the assets of the System is assumed to be 7.30% per year net of administrative and investment expenses, compounded annually. (Adopted effective May 2022)

Interest on Member Contributions

Interest on member contributions is assumed to accrue at a rate of 4.25% per annum, compounded annually. This assumption was set as of July 1, 2024.

Postretirement Benefit Increases

Tier 1 Members:

On January 1 of each year, the retirement allowance payable is increased by 1.5% if the retiree has received benefits for at least 36 months prior to January 1 of the year in which the adjustment is to be made.

Tier 2 Members:

On January 1 of each year, the retirement allowance payable is assumed to increase by 0.5% if the retiree has received benefits for at least 36 months prior to January 1 of the year in which the adjustment is to be made.

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table C-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 3.50% annual rate of increase in the general wage level of the membership. The merit and longevity increases for the MUS members did not show a pattern of increasing or decreasing with service at the time of our most recent study. Therefore, the MUS members have a flat 0.75% merit and longevity assumption. The general wage increase assumption and merit and longevity scales were adopted May 2022.

Montana University System (MUS) members are assumed to have a 0.63% higher average final compensation to account for the larger than average annual compensation increases observed in the years immediately preceding retirement.

Service Retirement

Table C-3 shows the annual assumed rates of retirement among members eligible for service retirement. Separate rates are used when a member is eligible for reduced benefits, for the first year a member is eligible for full benefits, and for the years following the first year a member is eligible for full benefits. The rates were adopted May 2022.

Disablement

The rates of disablement used in this valuation are illustrated in Table C-4. These rates were adopted May 2010.

Mortality

A written description of each mortality table used in this valuation is included in Table C-1. These rates were adopted May 2022.

Other Terminations of Employment

The rates of assumed future withdrawal from active service for reasons other than death, disability or retirement are shown for representative ages in Table C-5. These rates were adopted May 2022.

Part-Time Employees

The valuation data for active members identify part-time members. For part-time members earning more than $1,000, total credited service is adjusted based on the ratio of actual earnings to annualized earnings. The liability and normal cost calculations for these members are based on the adjusted service and actual earnings for the prior year.

Part-time members earning less than $1,000 during the last year were valued at their current member contribution balance.

Montana University System Retirement Program (MUS-RP)

MUS-RP payroll as of June 30, 2024 was $308,758,667.

Effective for fiscal years after June 30, 2007, the MUS-RP contribution rate is 4.72%, pursuant to MCA 19-20-621. It is our understanding the contribution will not stop unless legislative action is taken.

Buybacks, Purchase of Service, and Military Service

The active liabilities and normal cost (excluding liabilities and normal cost in respect of Return of Employee Contributions) were increased to 100.5% of their original value to fund this additional service based on a study of the System's experience for the five calendar years 1995 through 1999. Effective July 1, 2008.

Probability of Marriage & Dependent Children

If death occurs in active status, all members are assumed to have an eligible surviving spouse and two children. The spouse is assumed to be the same age as the member. For members who die prior to age 50, dependent children are assumed to be eight years old. For members who die after age 50 but prior to age 55, children are assumed to be 13 years old. Members who die after age 55 are assumed to have no dependent children under the age of 18.

Records with no Birth Date

New records with no birth date are assumed to be 25 years old. Records that are not new and have no birth date used the same birth date as the prior year's valuation.

Table C-1

Summary of Valuation Assumptions

I.	Economic assumptions		
	A.	General wage increases*	3.50%
	B.	Investment return	7.30%
	C.	Price Inflation Assumption	2.75%
	D.	Payroll Growth Assumption	3.25%
	E.	Growth in membership	0.00%
	F.	Postretirement benefit increases (Starting three years after retirement)	
		Tier One	1.50%
		Tier Two	0.50%
	G.	Interest on member accounts	4.25%
II.	Demographic assumptions		
	A.	Individual salary increase due to promotion and longevity	Table C-2
	B.	Retirement	Table C-3
	C.	Disablement	Table C-4
	D.	Mortality among contributing members. PUBT-2010 Employee mortality table projected to 2021. Projected generationally using MP-2021.	
	E.	Mortality among service retired members. PUBT-2010 Retiree mortality table projected to 2021 adjusted 102% for males and 103% for females. Projected generationally using MP-2021.	
	F.	Mortality among beneficiaries. PUB-2010 Contingent Survivor table projected to 2021. Projected generationally using MP-2021.	
	G.	Mortality among disabled members. PUB-2010 Non-Safety Disabled Retiree mortality table projected to 2021.	
	H.	Other terminations of employment	Table C-5

* Montana University System (MUS) members are assumed to have a 0.63% higher average final compensation to account for the larger than average annual compensation increases observed in the years immediately preceding retirement.

Table C-2

Future Salaries

	General Members			University Members		
Years of Service	Individual Merit & Longevity	General Wage Increase	Total Salary Increase	Individual Merit & Longevity	General Wage Increase	Total Salary Increase
1	5.50%	3.50%	9.00%	0.75%	3.50%	4.25%
2	4.50	3.50	8.00	0.75	3.50	4.25
3	3.50	3.50	7.00	0.75	3.50	4.25
4	3.50	3.50	7.00	0.75	3.50	4.25
5	2.50	3.50	6.00	0.75	3.50	4.25
6	2.50	3.50	6.00	0.75	3.50	4.25
7	2.50	3.50	6.00	0.75	3.50	4.25
8	1.50	3.50	5.00	0.75	3.50	4.25
9	1.50	3.50	5.00	0.75	3.50	4.25
10	1.50	3.50	5.00	0.75	3.50	4.25
11	1.50	3.50	5.00	0.75	3.50	4.25
12	1.50	3.50	5.00	0.75	3.50	4.25
13	0.50	3.50	4.00	0.75	3.50	4.25
14	0.50	3.50	4.00	0.75	3.50	4.25
15	0.50	3.50	4.00	0.75	3.50	4.25
16	0.50	3.50	4.00	0.75	3.50	4.25
17	0.50	3.50	4.00	0.75	3.50	4.25
18	0.00	3.50	3.50	0.75	3.50	4.25
19	0.00	3.50	3.50	0.75	3.50	4.25
20	0.00	3.50	3.50	0.75	3.50	4.25
21	0.00	3.50	3.50	0.75	3.50	4.25
22 & Up	0.00	3.50	3.50	0.75	3.50	4.25

Table C-3

Retirement
Annual Rates

All Members			
Age	Eligible for Reduced Benefits	First Year Eligible for Full Benefits	Thereafter
45		7.0%	8.0%
46		7.0	8.0
47		7.0	8.0
48		7.0	8.0
49	*	7.0	6.0
50	5.0%	7.0	6.0
51	5.0	7.0	6.3
52	5.0	7.0	9.0
53	5.0	7.0	9.0
54	5.0	7.0	9.0
55	5.0	8.0	10.0
56	5.0	8.0	11.3
57	5.0	15.0	12.5
58	5.0	15.0	13.1
59	5.0	15.0	14.8
60	*	13.5	20.0
61		18.0	24.0
62		18.0	23.0
63		18.0	23.0
64		35.0	27.5
65		35.0	39.0
66		30.0	25.0
67		30.0	25.0
68		30.0	25.0
69		30.0	25.0
70		**	**

* All benefits are unreduced after attaining age 60. Reduced benefits are not available before age 50.

** Immediate retirement is assumed at age 70 or over.

Table C-4

Disablement
Annual Rates

Age	All Members
25	0.005%
30	0.005
35	0.008
40	0.028
45	0.044
50	0.063
55	0.084
60	0.100

Table C-5

Other Terminations of Employment
Among Members Not Eligible to Retire
Annual Rates

Years of Service	Full-Time Members	Part-Time Members
Less than 1	28.0%	30.0%
1	16.0	23.0
2	12.0	19.0
3	9.0	16.0
4	7.0	13.0
5	6.0	11.5
6	5.0	10.5
7	4.0	10.0
8	3.0	9.0
9	3.0	9.0
10	3.0	9.0
11	2.0	9.0
12	2.0	8.0
13	2.0	8.0
14	2.0	8.0
15	2.0	8.0
16	2.0	8.0
17	2.0	8.0
18	2.0	8.0
19	1.0	8.0
20	1.0	8.0
21	1.0	8.0
22	1.0	8.0
23	1.0	8.0
24	1.0	8.0