MONTANA TEACHERS' RETIREMENT SYSTEM

2019 ANNUAL REPORT

TRS

A Component Unit of the State of Montana
Comprehensive Annual Financial Report
Fiscal Year Ended June 30, 2019

TRS

Montana Teachers’ Retirement System

MONTANA TEACHERS’ RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA

COMPREHENSIVE ANNUAL FINANCIAL REPORT
FISCAL YEAR ENDED JUNE 30, 2019

Shawn Graham
Executive Director

Tammy Rau
Deputy Executive Director

Prepared by:
The Montana Teachers’ Retirement System
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Helena, MT 59620-0139

http://www.trs.mt.gov

An alternative accessible format of this document will be provided upon request.

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INTRODUCTORY SECTION

Montana Teachers' Retirement System

100 North Park Avenue Suite 110
P.O. Box 200139
Helena, MT 59620-0139
406-444-3134 866-600-4045

December 13, 2019

Honorable Steve Bullock
Governor of Montana
Room 204, State Capitol
Helena, MT 59620

Dear Governor Bullock:

On behalf of the Montana Teachers' Retirement Board, we are pleased to present the Montana Teachers' Retirement System's Comprehensive Annual Financial Report (CAFR) for the fiscal year ended June 30, 2019. This report is intended to provide comprehensive information on the financial operations of the Montana Teachers' Retirement System (TRS) for the year. The issuance of the TRS CAFR satisfies the legal requirements of §19-20-201 (d) and §19-20-215, Montana Code Annotated (MCA).

TRS management is responsible for the information presented in this report and for establishing and maintaining an internal accounting control structure to reasonably assure the safekeeping of assets and the reliability of financial reporting. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute, assurance that the financial statements are free of any material misstatements.

TRS was established by state law in 1937 and has completed its 82nd year of operation. As of June 30,2019 TRS is providing services to 19,686 active members, 16,256 benefit recipients, and has a Net Position valued at approximately $4.220 billion.

Plan Qualification Certification

TRS is statutorily required to maintain its status as a qualified plan under Section 401(a) of the Internal Revenue Code (IRC). Qualified plan status provides tax-favorable treatment of contributions to and assets of the retirement system, including that TRS members and employers may make contributions to the retirement system on a pre-tax basis. TRS' qualified plan status is determined by the Internal Revenue Service (IRS) through periodic review of TRS's plan provisions and is evidenced by the IRS's issuance of a favorable "determination letter."

TRS submitted its most recent request for a qualification determination to the IRS on November 27, 2013. TRS received a favorable determination letter from the IRS on April 23, 2014. The current determination letter establishing that TRS is a tax-qualified pension plan will remain in effect unless and until TRS has a basis to request a new qualification review and a new qualification determination is issued by the IRS.

Plan Funding Status

The TRS plan's Net Funded Ratio increased from 68.19% at July 1, 2018, to 68.63% at July 1, 2019. In addition, the July 1, 2019 Actuarial Valuation shows that the current contribution rates are sufficient to pay the System's normal cost and to amortize the System's Unfunded Actuarial Accrued Liability (UAAL) in 29 years, based on the current funding methods and long term actuarial assumptions.

The total contribution rate as of July 1, 2019 was 19.71% of earned compensation. The rate was made up from employee, employer and supplemental contributions from the State of Montana. The normal cost of 9.78% is funded by the total contribution rate. The remaining 9.93% is available to fund the administrative expense load and the amortization of the UAAL. The UAAL is also funded through an annual contribution of $25 million, payable on July 1st, from the State of Montana general fund. The System's UAAL as of July 1, 2019 is $1.929 billion. Additional information regarding the financial condition of the TRS plan can be found in the Actuarial Section of this report.

Employers of the Montana University System (MUS) contribute 4.72% of pay for members of the MUS Retirement Program to fund the past service liabilities of the university system members who remained in TRS after the system was closed in 1993 to new entrants, as required under §19-20-621, MCA. The most recent MUS-RP actuarial valuation shows the MUS supplemental employer contribution rate required by this section would have to increase from 4.72% to 11.89% to maintain the amortization of the university system's past service liabilities by July 1, 2033, as required by §19-20-621, MCA.

Actuarially Determined Contribution

The Actuarially Determined Contribution (ADC) is the recommended contribution amount to the plan for the reporting period, determined by the Actuary, in conformity with Actuarial Standards of Practice. If the ADC is received by the plan through contributions, in the reporting period, the contributions received will fund benefits accrued in the current period (the normal cost) as well as amortize the system's UAAL in 30 years or less. As of the most recent actuarial valuation date of July 1, 2019, contributions to the plan are sufficient to fund the normal cost plus amortize the UAAL in 30 years or less (29 years). Therefore, the ADC is equal to the actual contributions to the plan in the amount of $220,949,305, and there is no contribution deficiency.

Investment Activity

The Montana Board of Investments (BOI) manages the State's Unified Investment Program, which includes the TRS plan investments as required by §19-20-501, MCA. The Unified Investment Program is required by law (§17-6-201, MCA) to operate under the "prudent expert principle," defined as: 1) discharging its duties with the care, skill, prudence, and diligence that a prudent person acting in a like capacity with the same resources and familiar with like matters exercises in the conduct of an enterprise of like character and like aims; 2) diversifying the holdings of each fund to minimize the risk of loss and maximize the rate of return; and 3) discharging its duties solely in the interest of and for the benefit of the funds managed.

Prior to November 2016, the asset allocation for TRS funds focused on five pools: the Montana Domestic Equity Pool, Montana International Equity Pool, Retirement Funds Bonds Pool, Montana Private Equity Pool, and the Montana Real Estate Pool. The only participants within these pools were the pension systems. In November 2016, upon recommendation from the Chief Investment Officer, the BOI Board approved that the pension asset allocation was to focus on 13 asset classes versus the five pension only pools. On March 31, 2017, the Board converted the five pension only pools into a single "Consolidated Asset Pension Pool", with 13 underlying asset classes, to align the Board's accounting and performance structure with the more detailed asset allocation as formally approved in November 2016 by the Board. CAPP's underlying asset classes are as follows: Domestic Equity, Broad Fixed Income, International Equity, US Treasury / Agency, Private Equity, Investment Grade, Natural Resources, Mortgage Backed Securities, Real Estate, High Yield, TIPS, Cash, Diversified Strategies

The TRS investment portfolio posted a positive total return of 5.69% for the fiscal year ended June 30, 2019. The System's total annualized rate of return over the last three and five years was 8.78% and 6.57% respectively. At June 30, 2019, the total annualized rate of return from the inception date (7/1/1994) was 7.67%. Below is a breakdown of the return rates for the STIP and CAPP and the underlying Pension Asset Classes (PACs). The BOI invests the TRS and other pension portfolios for the long-term and its investment strategies, are designed to provide sufficient returns over time. However, there is no guarantee of future investment performance. Performance in any given year is dependent not only on the BOI's investment performance but also on the performance of the markets themselves, which are impacted by domestic and global economic conditions, interest rates, and government policies. Please refer to the Investment Section of this report for additional detailed information regarding TRS investments.

TRS Investment Rates of Returns

	FY 2019	3-Year	5-Year	Inception to Date
Short Term Investment Pool	2.36%	1.56%	1.04%	2.46%
Consolidated Asset Pension Pool	5.81%	N/A	N/A	8.02%
Domestic Equity - PAC	6.81%	13.10%	9.56%	9.12%
International Equity - PAC	0.78%	9.47%	2.74%	4.71%
Private Equity - PAC	9.29%	12.60%	10.37%	12.16%
Natural Resources - PAC	3.80%	N/A	N/A	5.32%
Real Estate - PAC	8.41%	8.66%	10.22%	4.05%
TIPS - PAC	4.77%	N/A	N/A	2.59%
Broad Fixed Income - PAC	7.86%	2.55%	3.18%	5.92%
US Treasury & Agency - PAC	6.31%	N/A	N/A	2.80%
Investment Grade Credit - PAC	8.66%	N/A	N/A	4.32%
Mortgage-Backed - PAC	6.76%	N/A	N/A	3.60%
High Yield - PAC	7.20%	N/A	N/A	4.66%
Diversifying Strategies - PAC	*3.88%*	N/A	N/A	5.64%
Cash Equivalents - PAC	2.33%	N/A	N/A	1.86%
Total Portfolio	5.69%	8.78%	6.57%	8.37%

Awards

The Government Finance Officers Association (GFOA) of the United States and Canada awarded a Certificate of Achievement for Excellence in Financial Reporting to Teachers' Retirement System for its Consolidated Annual Financial Report for the fiscal year ended June 30, 2018. This is the twelfth consecutive year that Teachers' Retirement System has received this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized Consolidated Annual Financial Report. This report must satisfy both generally accepted accounting principles (GAAP) and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. TRS believes the current Consolidated Annual Financial Report continues to meet the Certificate of Achievement Program's requirements and this report will be submitted to GFOA to determine its eligibility for another certificate.

The Public Pension Coordinating Council (PPCC) also awarded TRS the Public Pension Standards Award for Administration for 2019 in recognition of meeting the professional standards for plan administration as set forth in the Public Pension Standards. The PPCC is a coalition of the National Association of State Retirement Administrators, the National Conference on Public Employee Retirement Systems, and the National Council on Teacher Retirement.

Independent Auditor

The financial statements contained in the TRS CAFR were audited by the State's Legislative Audit Division (LAD) in accordance with generally accepted auditing standards. The Legislative Auditor is appointed by and reports to the State's Legislative Audit Committee. The LAD issued an unmodified opinion on the TRS financial statements for the fiscal year ended June 30, 2019.

The Management's Discussion and Analysis and financial statements with accompanying notes, required supplementary information with notes, and supporting schedules can be found in the Financial Section of this report.

Conclusion

On behalf of the Board, I would like to thank the staff, the Board's advisors, and the many people whose commitment, dedication, and proficiency has directly contributed to the continued successful operation of the Montana Teachers' Retirement System. The Teachers' Retirement Board and staff look forward to continuing to serve the educators of Montana.

Sincerely,

/s/ Shawn Graham
Shawn Graham
Executive Director

INTRODUCTORY SECTION

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Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Montana Teachers' Retirement System

For its Comprehensive Annual Financial Report for the Fiscal Year Ended

June 30, 2018

Christopher P. Morrill

Executive Director/CEO

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2019

Presented to

Montana Teachers' Retirement System

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle

Alan H. Winkle
Program Administrator

Board of Directors

Kari Peiffer, Chair
Appointed by Governor
Active Public School Teacher
Kalispell, Montana
kpeiffer@mt.gov
Term expires July 1, 2022

Janice Muller
Appointed by Governor
Active Member Representative
Hamilton, Montana
jmuller@mt.gov
Term expires July 1, 2021

Scott Dubbs, Vice Chair
Appointed by Governor
Active Member Representative
Lewistown, Montana
sdubbs@mt.gov
Term expires July 1, 2023

Jeff Greenfield
Appointed by Governor
Retired Member Representative
Montana Board of Investments Member
Missoula, Montana
Jeff.Greenfield@mt.gov
Term expires July 1, 2021

Daniel Chamberlin
Appointed by Governor
Public Sector Representative
Helena, Montana
dchamberlin@mt.gov
Term expires July 1, 2020

Daniel Trost
Appointed by Governor
Public Sector Representative
Helena, Montana
dtrost@mt.gov
Term expires July 1, 2024

Professional Consultants

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IT Consultant
3625 Thousand Oaks Blvd
Thousand Oaks, CA 91362

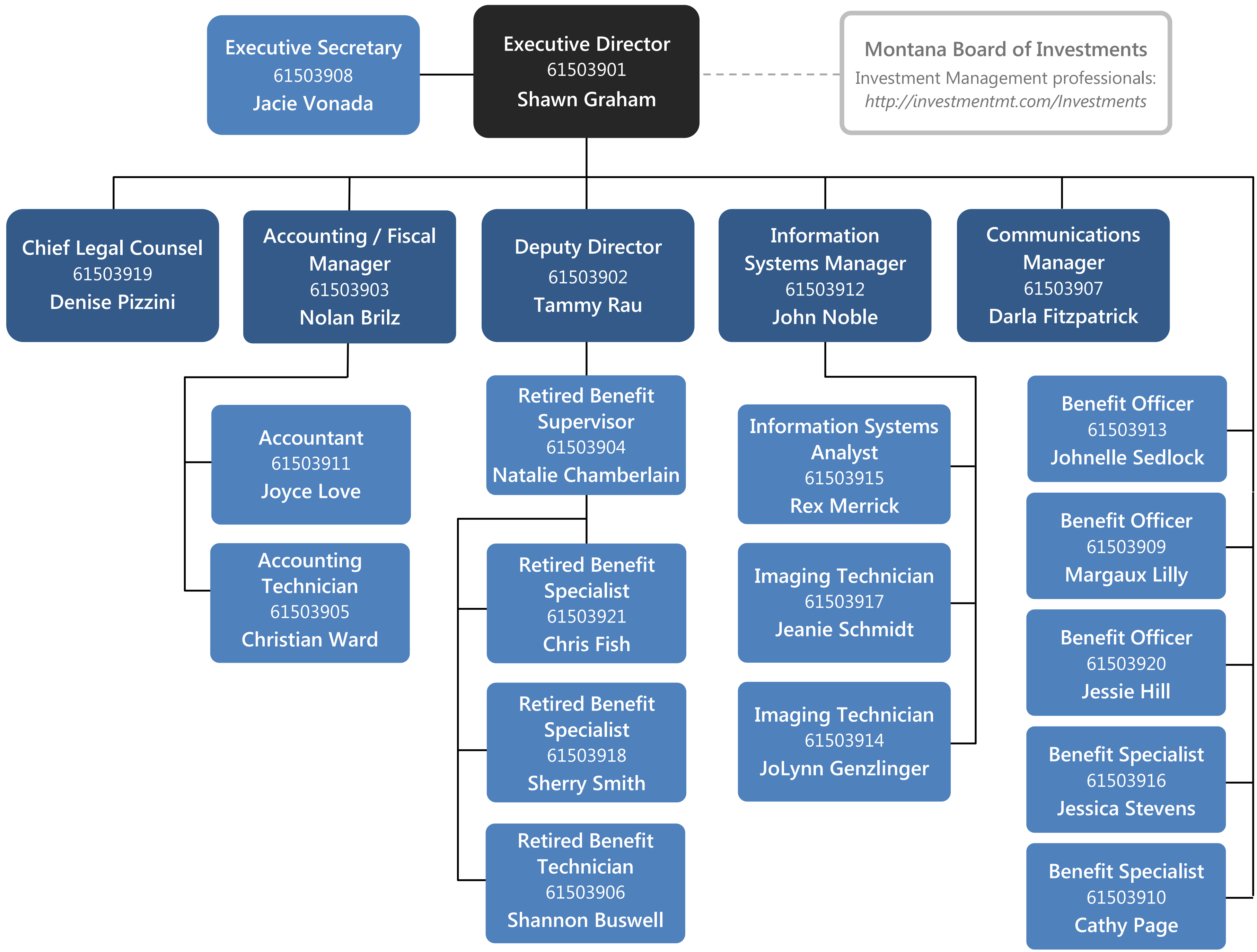
Cavanaugh Macdonald Consulting, LLC
Consulting Actuary
3550 Busbee Pky Ste 250
Kennesaw GA 30144

Amdec Software Consulting
IT Consultant
PO Box 136
Helena, MT 59624

IceMiller Legal Counsel
Legal and Business Advisors
One American Square, Ste 2900
Indianapolis, IN 46282

Rising Stars, LLC
IT Consultant
72 Warm Springs Creek Road
Clancy, MT 59634

Drake Law Firm, P.C.
Legal and Business Advisors
111 N. Last Cahnce Gulch
Helena, MT 59601



TRS ADMINISTRATIVE ORGANIZATIONAL CHART

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FINANCIAL SECTION

LEGISLATIVE AUDIT DIVISION

Angus Maciver, Legislative Auditor
Deborah F. Butler, Legal Counsel

Deputy Legislative Auditors:
Cindy Jorgenson
Joe Murray

Independent Auditor's Report

The Legislative Audit Committee
of the Montana State Legislature:

Introduction

We have audited the accompanying Statement of Fiduciary Net Position of the Teachers' Retirement System (system), prepared by the Teachers' Retirement Board (board), a fiduciary component unit of the state of Montana, as of June 30, 2019, the related Statement of Changes in Fiduciary Net Position for the fiscal year then ended, and the related notes which collectively comprise the system's basic financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this responsibility includes designing, implementing, and maintaining internal controls relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to the board's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the board's internal control, and accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of

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significant accounting estimates made by management, as well as the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Teachers' Retirement System as of June 30, 2019, and the changes in fiduciary net position for the fiscal year then ended in conformity with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis, Schedule of Changes in Net Pension Liability-TRS Plan, Schedule of the Net Pension Liability-TRS Plan, Schedule of Investment Returns-TRS Plan, Schedule of Employer and Non-Employer Contributing Entities Contributions-TRS Plan, Schedule of Proportionate Share of the Net Pension Liability-TRS as Employer of PERS Plan, Schedule of Contributions-TRS as Employer of PERS Plan, Other Post-employment Benefits Plan Information, and the related notes be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The Schedule of Administrative Expenses, Schedule of Investment Expenses, and Schedule of Payments to Consultants are presented for purposes of additional analysis and are not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

Other Information
Our audit was conducted for the purpose of forming an opinion on the basic financial statements as a whole. The Introductory, Investment, Actuarial, and Statistical sections were presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Other Reporting Required by Government Auditing Standards
In accordance with *Government Auditing Standards*, we have also issued our report dated December 13, 2019, on our consideration of the board's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the board's internal control over financial reporting and compliance. It is included in the Legislative Auditor's separately issued report (18-09B).

Respectfully submitted,

/s/ Cindy Jorgenson

Cindy Jorgenson, CPA
Deputy Legislative Auditor
Helena, MT

December 13, 2019

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Management's Discussion and Analysis

The following discussion and analysis of the Montana Teachers' Retirement System's (TRS or the System) provides a narrative overview of TRS's financial activities for the fiscal year ended June 30, 2019.

Overview of the Financial Statements

The TRS financial statements, notes to the financial statements, and required supplementary information as of June 30, 2019 were prepared in conformity with GASB Statement No. 67, Financial Reporting for Pension Plans and Statement No. 68, Accounting and Financial Reporting for Pensions.

Because of the long-term nature of a defined benefit pension plan, financial statements alone cannot provide sufficient information to properly reflect the System's ongoing plan perspective. The Statement of Fiduciary Net Position reflects the resources available to pay benefits to retirees and beneficiaries. The Statement of Changes in Fiduciary Net Position presents the changes that occurred in those resources for the fiscal year ended June 30, 2019.

The Notes to the Basic Financial Statements provide additional information that is essential to gain a full understanding of the data provided in the basic financial statements. The required supplementary information (RSI) consists of the following four schedules of the defined benefit pension plan administered by TRS: changes of employers' net pension liability, employers' net pension liability, employer contributions, and the money-weighted rate of investment returns. The RSI also contains the following two schedules of the defined benefit pension plan that TRS participates in as an employer: proportionate share of the net pension liability, employer contributions.

Financial Highlights

- The TRS fiduciary net position increased by $72 million from $4.148 billion at 06/30/18 to $4.220 billion at 06/30/19, representing an increase of 1.7% from year to year.
- The TRS plan net investment income was $227.9 million at 06/30/19 compared to $343.7 million at 06/30/18.
- The TRS plan rate of return on investments during FY 2019 was 5.7% compared with FY 2018 rate of return of 8.8%.
- The TRS benefit payments paid to benefit recipients increased 4.2% from $352.9 million to $367.8 million for FY 2019, which is consistent with previous increases.
- Withdrawals from the System increased by 12.9% from $5.3 million in FY 2018 to $6.0 million in FY 2019.

Condensed Financial Information

For comparative purposes, the Condensed Financial Information below for the fiscal year ended June 30, 2019 is presented with the previous fiscal year's financial information.

Fiduciary Net Position
(in millions)

	FY2019	FY2018	Percent Change
Cash/Short-Term Investments	$ 137.7	$ 93.5	47.4%
Receivables	16.5	21.7	(23.8%)
Investments (Fair Value)	4,084.6	4,058.5	0.6%
Other Assets (Net)	2.6	2.5	(2.3%)
Total Assets	4,241.4	4,176.2	1.6%
Deferred Outflows	0.4	0.5	(19.8%)
Liabilities	21.3	28.4	(2%)
Deferred Inflows	0.3	0.1	1656.0%
Net Position	$ 4,220.3	$ 4,148.3	1.7%

Change in Fiduciary Net Position
(in millions)

	FY2019	FY2018	Percent Change
Additions:			
Employer Contributions	$ 97.3	$ 94.2	3.3%
Plan Member Contributions	78.2	75.6	3.4%
Other Contributions	45.5	45.0	1.1%
Net Investment Income	227.9	343.7	(33.7%)
Total Additions	448.9	558.5	(19.6%)
Deductions:			
Benefit Payments	367.8	352.9	4.2%
Withdrawals	6.0	5.3	12.9%
Administrative and Other Expenses	3.2	3.0	3.8%
Total Deductions	377.0	361.2	4.4%
Change in Net Position	$ 72.0	$ 197.3	(63.5%)

Financial Analysis

- The increase in Employer Contributions was due in part to HB 377 provisions that took effect in FY 2014, which increase Employer contribution rates by 0.10% each year for ten years.
- The increase in Employer, Plan Member, and Other Contributions are also due do to an increase in Reportable Compensation of the System as a whole.
- The US economy and capital market conditions experienced a positive return in FY 2019. However, FY 2018 was much stronger for capital market conditions. Therefore the Net Investment Income decreased year over year.
- Net investment income for FY 2019 was down from the previous fiscal year largely due to lower returns in domestic, foreign and private equities.
- The increase in benefit payments from year-to-year reflects an increase in the number of retirees and beneficiaries,

plus the 1.5% guaranteed annual benefit adjustment. The increase is comparable to previous fiscal years.

- Administrative Expenses for FY 2019 were 0.73% of Benefit Payments. By the laws set forth in the Montana Code Annotated, TRS is required to keep Administrative Expenses under 1.5% of Benefit Payments.

Overview of the Actuarial Funding

An actuarial valuation of the System is performed annually. As a result of the actuarial valuation of the benefits in effect under the Montana Teachers' Retirement System as of July 1, 2019, the statutory employer contributions are sufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) of the Retirement System within 29 years. The Funded Ratio is 68.63%.

MCA 19-20-201 requires the Valuation report to show how market performance is affecting the actuarial funding of the Retirement System. The July 1, 2019 market value of assets is $0.8 million greater than the actuarial value of assets. This is due to the smoothing of investment gains and losses over a four year period. If the market value of assets was used, the amortization period would be 29 years, and the Funded Ratio would be 68.64%.

The market assets earned 5.69% net of investment and operating expenses. As a result of cumulative unrecognized losses, the actuarial assets earned 7.00% which is 0.50% less than the actuarial assumption of 7.50%. The return on the actuarial assets differs from the return on market assets because the actuarial value of assets spreads gains and losses over four years.

The following table compares the annual returns for the past three fiscal years.

Fiscal Year	Market Return	Actuarial Return	Actuarial Return Over/(Under) Assumption 7.50%
7/01/2016-6/30/2017	11.92%	8.24%	0.49%
7/01/2017-6/30/2018	8.82%	6.85%	(0.90)%
7/01/2018-6/30/2019	5.69%	7.00%	(0.50)%

Asset gains or losses result when the return on the actuarial value of assets differs from the actuarial investment return assumption of 7.50% effective July 1, 2018.

On a market value basis the System earned $43.3 million greater than anticipated by the 7.75% assumption in the year ended June 30, 2018 and $77.4 million less than anticipated by the 7.50% assumption in the year ended June 30, 2019. The net result as of July 1, 2019 is that the market value of assets is $0.8 million greater than the actuarial value of assets. This $0.8 million in unrecognized asset gains will either offset any future investment losses or if there are none, decrease the amortization period of the UAAL in future valuations.

As of July 1, 2019, the System's Actuarial Value of Assets increased by $125 million from $4.094 billion at July 1, 2018 to $4.220 billion at July 1, 2019. The Actuarial Accrued Liability at July 1, 2019 was $6.149 billion. This resulted in an Unfunded Actuarial Accrued Liability (UAAL) of $1.929 billion at July 1, 2019. This was a net increase in the unfunded position of $19 million compared to July 1, 2018.

TEACHERS' RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA
STATEMENT OF FIDUCIARY NET POSITION
AS OF JUNE 30, 2019

	2019
Assets	
Cash/Cash Equivalents-Short Term Investment Pool (Note B)	$137,714,031
Receivables:	
Accounts Receivable	16,252,285
Interest Receivable	273,021
Total Receivables	$16,525,306
Investments, at Fair Value: (Note B)	
Equity in Pooled Investments	$4,065,250,746
Securities Lending Collateral (Note B)	19,323,932
Total Investments	$4,084,574,678
Assets Used in Plan Operations:	
Land and Buildings	$193,844
Less: Accumulated Depreciation	(150,545)
Equipment and Intangible Assets	1,061,155
Less: Accumulated Depreciation	(16,286)
Construction Work in Progress	1,505,103
Total Other Assets	2,593,271
Total Assets	$4,241,407,286
Pension Deferred Outflows (Note E)	$331,069
OPEB Deferred Outflows (Note G)	$116,631
Liabilities	
Accounts Payable	$247,796
Securities Lending Liability (Note B)	19,323,932
Compensated Absences (Note B)	168,204
OPEB Implicit Rate Subsidy (Note G)	135,851
Net Pension Liability (Note E)	1,443,205
Total Liabilities	$21,318,987
Pension Deferred Inflows (Note E)	$250,248
OPEB Deferred Inflows (Note G)	-
Net Position Restricted for Pension Benefits	$4,220,285,752

The accompanying Notes to the Financial Statements is an integral part of this financial statement.

TEACHERS' RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA
STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEAR ENDED JUNE 30, 2019

	2019
Additions	
Contributions:	
Employer	$97,303,048
Plan member	78,150,923
Other	45,495,334
Total Contributions	$220,949,305
Miscellaneous Income	$31,040
Investment Income:	
Net Appreciation/(Depreciation) in Fair Value of Investments	$250,387,940
Investment Earnings	2,647,387
Security Lending Income (Note B)	1,035,829
Investment Income/(Loss)	254,071,155
Less: Investment Expense	(25,659,055)
Less: Security Lending Expense (Note B)	(519,813)
Net Investment Income/(Loss)	227,892,287
Total Additions	448,872,632
Deductions	
Benefit Payments	$367,779,905
Withdrawals	6,008,447
Administrative Expense	2,947,109
OPEB Expense (Note G)	6,987
Pension Expense (Note E)	167,489
Total Deductions	$376,909,937
Net Increase (Decrease) in Fiduciary Net Position	$71,962,695
Net Position Restricted for Pension Benefits Beginning of the Year	$4,148,324,206
Prior Period Adjustment (Note B)	(1,149)
Net Position End of Year	$4,220,285,752

The accompanying Notes to the Financial Statements is an integral part of this financial statement.

TEACHERS' RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA
NOTES TO THE FINANCIAL STATEMENTS
FISCAL YEAR ENDED JUNE 30, 2019

Note A. Description of the Plan

Teachers' Retirement System (TRS or the System) is a mandatory-participation multiple-employer cost-sharing defined-benefit public pension plan that provides retirement services to individuals employed as teachers, administrators, and in other professional and skilled positions employed in public education in Montana.

The Teachers' Retirement System Board (the Board) and staff administer the retirement system in conformity with the laws set forth in Title 19, chapter 20 of the Montana Code Annotated, and administrative rules set forth in Title 2, chapter 44 of the Administrative Rules of Montana. Additional information pertaining to membership, benefit structure, and prior years' actuarial valuations, as well as links to applicable statutes and administrative rules may be obtained by visiting the TRS web site at www.trs.mt.gov.

The Board is the governing body of the System. The System was established by the State of Montana in 1937 to provide retirement, death, and disability benefits to individuals employed in public education in Montana. TRS as an employer does not participate in the plan and acts only as the administrator of the plan.

Board Composition

The Board consists of six members, all appointed by the Governor. Three Board members must be teaching professionals who, when appointed, are active members of TRS; at least one of the active members must be an active classroom teacher. One Board member must be a retired teacher who was a member of TRS at the time of retirement. Two Board members are appointed from the public at large. TRS Board members serve staggered five-year terms. Three Board members constitutes a quorum.

Reporting Entities

At June 30, 2019, the number and type of reporting entities participating in the system were as follows:

Local School Districts, Counties, and Co-ops	353
Community Colleges	3
University System Units	2
State Agencies	8
Total	366

System Membership

At July 1, 2019, the date of the most recent actuarial valuation, system membership consisted of the following:

Retirees and Beneficiaries Currently Receiving Benefits	16,256
Terminated Members:	
Vested	1,791
Non-vested	14,261
Active Plan Members:	
Full-Time	13,196
Part-Time	6,490
Total Membership	51,994

Summary of Benefits

Through June 30, 2013, all members enrolled in TRS participated in a single-tiered plan (Tier One). In the Tier One plan, employees with a minimum of 25 years of service or who have reached age 60 with 5 years of service are eligible to receive an annual retirement benefit equal to creditable service years divided by 60 times the average final compensation. Final compensation is the average of the highest three consecutive years of earned compensation. Benefits fully vest after 5 years of creditable service. Vested employees may retire at or after age 50 and receive reduced retirement benefits.

Beginning July 1, 2013, new members in TRS participate in a second benefit tier (Tier Two), which differs from Tier One as follows:

- Tier Two uses a 5-year average final compensation (AFC) (as opposed to 3-year AFC in Tier One);
- Tier Two provides for unreduced service retirement benefits at age 60 with 5 years of creditable service or at age 55 with at least 30 years of creditable service (rather than at age 60 with 5 years of service or at any age with creditable service in 25 years in Tier One);
- Tier Two provides for early retirement benefits with 5 years of creditable service at age 55 (rather than age 50 in Tier One);
- Tier Two has a one percent higher normal employee contribution rate (though a temporary 1% supplemental employee contribution rate is also now currently in place for Tier One members), and
- Tier Two provides for an enhanced benefit calculation - 1.85% x AFC x years of creditable service — for members retiring with at least 30 years of creditable service and at least 60 years of age (rather than 1.6667% x AFC x years of creditable service).

A guaranteed annual benefit adjustment (GABA) is payable on January 1st of each calendar year for each retiree who has received at least 36 monthly retirement benefit payments prior to that date. The GABA is applicable to both Tier One and Tier Two members. The GABA is calculated at 1.5% of the benefit payable as of January 1st. For Tier Two members, the GABA to be calculated each year may vary from 0.5% to 1.5% based on the retirement system's funding status and the period required to amortize any unfunded accrued actuarial liability as determined in the prior actuarial valuation.

Overview of Contributions

The TRS funding policy provides for monthly employee and employer contributions at rates specified by state law. Plan members, for the fiscal year ending June 30, 2019, were required to contribute 8.15% of their earned compensation. School district and community college employers were required to contribute 8.97% of earned compensation. University System and State Agency employers were required to contribute 11.35% of earned compensation.

The TRS funding policy also provides for monthly supplemental contributions at rates specified by state law. The State's general fund contributes an additional 2.38% of earned compensation for school district and community college employees each month. The State's general fund also contributes an additional 0.11% of total earned compensation for all TRS members each month. These monthly general fund contributions along with an annual lump-sum contribution of $25 million from the general fund make up the "Other" contribution category on the financial statements.

Each employer in the Montana University System contributes to TRS a supplemental employer contribution currently at a rate of 4.72% of the total compensation for employees participating in the Montana University System Retirement Program (MUS-RP).

Contribution rates for FY 2018, 2019, and 2020 for school district and community college employers are listed below.

Fiscal Year	Members	Employers	General Fund	Total
July 1, 2017–June 30, 2018	8.15%	8.87%	2.49%	19.51%
July 1, 2018–June 30, 2019	8.15%	8.97%	2.49%	19.61%
July 1, 2019–June 30, 2020	8.15%	9.07%	2.49%	19.71%

Contribution rates for FY 2018, 2019, and 2020 for state agencies and university system employers are listed below.

Fiscal Year	Members	Employers	General Fund	Total
July 1, 2017–June 30, 2018	8.15%	11.25%	0.11%	19.51%
July 1, 2018–June 30, 2019	8.15%	11.35%	0.11%	19.61%
July 1, 2019–June 30, 2020	8.15%	11.45%	0.11%	19.71%

Pursuant to §19-20-609, MCA, the employer contribution rate will increase by 0.10% each year beginning July 1, 2014 through fiscal year 2024.

Note B. Summary of Significant Accounting Policies

Basis of Accounting

TRS, a fiduciary component unit Pension Trust Fund of the State of Montana financial reporting entity, prepares its financial statements using the accrual basis of accounting. Employee and employer contributions are recognized as revenues in the period when due pursuant to statutory requirements and investment income is recognized when earned. Benefit and withdrawal payments are recorded in the period in which the liabilities are due and payable.

The System adheres to all applicable Governmental Accounting Standards Board (GASB) Statements.

GASB Statement No. 67 addresses accounting and financial reporting requirements for pension plans. The statement was first implemented for the year ended June 30,2014. The statement required changes in presentation of the financial statements, notes to the financial statements, and required supplementary information. Significant changes included an actuarial calculation of total and net pension liability. It also included comprehensive footnote disclosures regarding the pension liability, the sensitivity of the net pension liability to the discount rate, and increased investment activity disclosures. The implementation of GASB Statement No. 67 did not significantly impact the accounting for accounts receivable and investment balances. The total pension liability, determined in accordance with GASB Statement No. 67, is presented in Note D.

Prior Period Adjustments

Prior period adjustments relate to corrections of errors and changes in accounting policy from prior periods. The System had an immaterial prior period adjustment recorded for the fiscal year ended June 30, 2019. The adjustment was recorded for the correction of TRS's Pension Deferred Outflows from Fiscal Years 2017 - 2018. DOA State Accounting Bureau discovered an error in the calculation of Pension Deferred Outflows that required a correcting entry to the outflows and corresponding equity account. This increase in the Pension Deferred Outflows decreased the TRS Net Position in the amount of $1,149.

Compensated Absences

Compensated absences represent 100 percent of accrued vacation and 25 percent of accrued sick leave for TRS personnel. Compensated absences were recorded as a liability of $168,204 at June 30, 2019.

Investments

The Montana Board of Investments (MBOI) manages the State's Unified Investment Program, which includes the TRS plan investments as required by §19-20-501, MCA. Per the Montana Constitution, Article VIII Section 13(3), investment of TRS assets shall be managed in a fiduciary capacity in the same manner that a prudent expert acting in a fiduciary capacity and familiar with the circumstances would use in the conduct of an enterprise of a similar character with similar aims. Investments administered by MBOI for TRS are subject to MBOI's investment risk policies. MBOI's stand-alone financial statements and information on investment policies, investment activity, investment management fees, and a listing of specific investments owned by the pooled asset accounts can be obtained from the Montana Board of Investments, P.O. Box 200126, Helena, MT 59620-0126. The MBOI website can be found at investmentmt.com.

At June 30, 2019, TRS investments include the Short-Term Investment Pool (STIP) and the Consolidated Asset Pension Pool (CAPP).

Short-Term Investment Pool (STIP)
The Montana Public Retirement Plans investment in the Short-Term Investment Pool (STIP) will provide the Plans with exposure to Cash related investments. STIP will be managed internally by MBOI utilizing an active investment strategy. STIP invests primarily in short-term, high quality, fixed income securities with a maximum maturity of 397 days or less. Variable securities shall have a maximum maturity of 2 years. STIP shall maintain a dollar-weighted average portfolio maturity of 60 days or less. This Pool is managed to preserve principal while providing 24-hour liquidity for state agency and local government participants.

Consolidated Asset Pension Pool (CAPP)
CAPP invests directly in the underlying Pension Asset Classes (PACs) on behalf of the nine retirement systems within the MBOI Board-approved asset allocation ranges. Each PAC has an underlying set of MBOI Board-approved investment objectives and investment guidelines. Below is a short description of each PAC within the CAPP. For liquidity purposes, each PAC and external manager has a limited amount of cash/cash equivalents. With the exception of the Cash PAC, it is invested in the State Street Short Term Investment Fund (STIF), which invests in high quality short-term securities. For external managers, it is invested per Board established guidelines.

Domestic Equity PAC
Invests primarily in US traded equity securities such as common stock. The type of portfolio structures utilized are separately managed accounts, commingled accounts, and exchange traded funds.

International Equity PAC
Invests primarily in international equity securities that trade on foreign exchanges in developed and emerging markets. The type of portfolio structures utilized are separately managed accounts, commingled accounts, and exchange traded funds.

Private Equities PAC
Invests in the entire capital structure of private companies. Investments are made via Limited Partnerships managed by a General Partner. The Limited Partnerships typically have well-defined strategies such as buyout, venture, or distressed debt. Private Equity investments are considered long-term. Exchange traded funds are utilized to minimize the cash position.

Real Estate PAC
Invests primarily in real estate properties. Transactions are privately negotiated by a General Partner via a Limited Partnership or an open-end fund. The funds typically have well-defined strategies such as core, value-add, or opportunistic. Private Real Estate investments are considered long-term. Exchange traded funds are utilized to minimize the cash position.

Natural Resources PAC
Invests primarily in energy and timber investments, but could include agriculture, water or commodity related funds. The investments are made via Limited Partnerships managed by a General Partner, and the funds are considered long-term. Potential Investment vehicles could include open-end funds, master limited partnerships and exchange traded funds.

U.S. Treasury Inflation Protected Securities (TIPS) PAC
Invests primarily in intermediate U.S. TIPS or Treasury securities that are indexed to Inflation.

U.S. Treasury/Agency PAC
Invests primarily in debt obligations of the U.S. government including its agencies and instrumentalities.

Broad Fixed Income PAC
Invests primarily in core fixed income securities as represented in the Bloomberg Barclays U.S. Aggregate Bond Index. The type of portfolio structures utilized are separately managed accounts, commingled accounts, and potentially exchange traded funds.

Investment Grade PAC
Invests primarily in intermediate investment grade corporate bonds typically found in the Bloomberg Barclays U.S. Corporate Bond Index. It includes U.S. dollar denominated securities publicly issued by U.S. and non-U.S. industrial, utility, and financial issuers.

Agency Mortgage-Backed Securities PAC
Invests primarily in agency mortgage backed securities, asset backed securities and commercial mortgage backed securities.

High Yield PAC
Invests primarily in U.S. dollar denominated corporate bonds that are classified as high yield according to the major ratings agencies. The type of portfolio structures utilized are separately managed accounts and potentially commingled accounts or exchange traded funds.

Cash PAC
Invests primarily in highly liquid, money-market type securities via STIP or STIF.

Diversifying Strategies PAC
The Diversifying Strategies Asset Class invests in a wide spectrum of global public securities investment types (including, but not limited to, equities, commodities, currencies, preferred stocks, convertible bonds, fixed income, and cash equivalents).

TRS Investment Portfolio
June 30, 2019

Investment		Book Value		Fair Value
Short-Term Investment Pool	$	125,437,736	$	125,455,317
Consolidated Asset Pension Pool		3,424,220,468		4,065,250,746
Total	$	3,549,658,204	$	4,190,706,063

Consolidated Asset Pension Pool (CAPP)
CAPP is an internal investment pool managed and administered under the direction of the Montana Board of Investments (MBOI) as statutorily authorized by the Unified Investment Program. CAPP is a commingled internal investment pool and only the retirement systems can participate in CAPP. As necessary, redemptions are processed by MBOI in order to maintain required asset allocations and to provide liquidity for retirement benefits. The fair values of the investments in this category have been determined using the NAV per share (or its equivalent) of the investment.

Short Term Investment Pool (STIP)
STIP is an external investment pool managed and administered under the direction of MBOI as statutorily authorized by the Unified Investment Program. It is a commingled pool for investment purposes and participant requested redemptions from the pool are redeemed the next business day. The fair values of the investments in this category have been determined using the net asset value (NAV) per share (or its equivalent) of the investment.

Refer to the fair value measurement note disclosures within MBOI's annual financial statements for the underlying investments within the fair value hierarchy. The hierarchy is no longer specific to pools. BOI displays the hierarchy in the aggregate for all investment pools.

Investments Measured at Fair Value

Investments	6/30/2019	Fair Value Measurements Using "Quoted Prices in Active Markets for Identical Assets (Level 1)"	"Significant Other Observable Inputs (Level 2)"	"Significant Unobservable (Level 3)"
Total Investments by fair value level	$ -	$ -	$ -	$ -
Investments measured at the NAV				
Consolidated Asset Pension Pool (CAPP)	4,065,250,746			
Short Term Investment Pool (STIP)	125,455,317			
Total investments measured at the NAV	4,190,706,063			

Investments Measured at Net Asset Value

Investments		Fair Value	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Consolidated Asset Pension Pool (CAPP)		4,065,250,746	-	Monthly	30 days
Short Term Investment Pool (STIP)		125,455,317	-	Daily	1 day
Total investments measured at the NAV	$	4,190,706,063			

Investment Risks

The investment risks for the pooled investments that TRS participates in are described in the following paragraphs. Investments are administered by MBOI for TRS as part of the State of Montana's Unified Investment Program. The MBOI Board approves all Investment Policy Statements (IPS), including risk policies. MBOI's stand-alone financial statements detail the investment risks associated with the securities held by the pools.

Custodial Credit Risk

Custodial credit risk is the risk that, in the event of the failure of the counterparty to a transaction, the entity will not be able to recover the value of the investment or collateral securities that are in the possession of an outside party. All investments were recorded under the MBOI's name at their custodial bank, which met MBOI's minimum rating requirement.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributable to the magnitude of any single investment per issuer name. Investments explicitly guaranteed by the U.S. Government are excluded from the concentration of credit risk requirement. Concentration of credit risk is addressed within all IPS's as set by the MBOI Board.

Credit Risk

Credit risk is defined as the risk that an issuer or other counter-party to an investment will not fulfill its obligation. With the exception of U.S. Government securities, the fixed income instruments in the investment pool has credit risk as measured by major credit rating services. MBOI manages credit risk by constraining portfolio purchases within MBOI Board approved IPS's.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. Per MBOI policy, there are maximum restrictions that can be held on non-US securities in a foreign currency and only CAPP is allowed to have foreign currency exposure.

TRS' position in CAPP is approximately 35.4% at June 30, 2019. The Montana BOI CAPP investments in EURO cash and securities had a fair value of approximately $200,992,000 at June 30, 2019. The Montana BOI CAPP had cash and securities with a foreign currency value of approximately $708,295,000 at June 30, 2019.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. CAPP uses effective duration as a measure of interest rate risk for all fixed income portfolios and STIP uses the weighted average maturity.

According to the STIP investment policy "the STIP portfolio will minimize interest rate risk by:

- Structuring the investment portfolio so securities mature to meet cash requirements for ongoing operations thereby normally avoiding the need to sell securities on the open market prior to maturity;
- Maintaining a dollar-weighted average portfolio maturity (WAM) of 60 days or less (for this purpose, the date to the next coupon reset date will be used for all floating or variable rate securities), and
- STIP will maintain a reserve account."

The TRS investments subject to credit and interest rate risk at June 30, 2019 are categorized in the following table:

Investment	Fair Value 6/30/19	Credit Quality Rating 6/30/19	Weighted Average Maturity 6/30/19
CAPP	4,065,250,746	NR	N/A
STIP	125,455,317	NR	0.11 yrs

With the exception of the U.S. Government securities, the fixed income instruments have credit risk as measured by major credit rating services. Obligations of the U.S. Government or obligation explicitly guaranteed by the U.S. Government are not considered to have credit risk and do not require disclosure of credit quality. For a more complete picture of the interest rate risk associated with CAPP please see the MBOI financial statements and IPSs. Interest rate risk is addressed within all IPS's as set by the MBOI Board. CAPP and STIP investments have been rated by investment security type. However, CAPP and STIP as external investment pools, have not been rated.

Securities Lending

The MBOI is authorized by law to lend its securities and has contracted with the custodial bank, to lend the MBOI's securities to broker-dealers and other entities with a simultaneous agreement to return the collateral for the same securities in the future. The custodial bank is required to maintain collateral equal to 102 percent of the fair value of domestic securities and 105 percent of the fair value of international securities while the securities are on loan. On any day, including June 30th, the markets may move in a positive or negative direction resulting in under or over collateralization. The custodial bank compensates for market movement by recalculating on the following business day to meet the collateralization requirements. The MBOI and the custodial bank split the earnings 80% and 20% respectively, on securities lending activities. The MBOI retains all rights and risks of ownership during the loan period. The custodial bank indemnifies the MBOI's credit risk exposure to the borrowers. Only CAPP participates in security lending.

Note C. Property and Equipment

Property and equipment consist of the amounts shown in the following table as of June 30, 2019. Assets under $5,000 are expensed in the year purchased. Assets valued at $5,000 or more are recorded at cost less straight-line depreciation over the estimated useful life of five to ten years. There were no significant leases as of June 30, 2019. TRS completed Phase II of its upgrade to the pension administration system project (M-Trust) in FY 2017. The system upgrade was implemented on a modular basis with all modules completed by February 2017. The cost of implementing Phase II of the M-Trust project less Accumulated Depreciation as of June 30, 2019 is shown below and on the Basic Financial Statements in the Intangible Assets line item.

In FY 2017 TRS initiated Phase III of the upgrade to the pension administration system project (M-Trust). The system upgrade will be completed by December 2019. The cost of implementing Phase III of the M-Trust project as of June 30, 2019 was $1,376,450 and is shown below and on the Basic Financial Statements as part of the Construction Work In Progress line item. The upgrade will be amortized once the project is complete. The Board approved a $1.3 million investment in the Phase III system upgrade in the spring of 2017. The Board approved an additional $0.5 million in the summer of 2018 bringing the Phase III total budget to $1.8 million.

In July 2019 TRS will move to a new location. As part of the move construction costs were incurred for FY 2019 at the new location to bring the office space up to TRS business standards. The cost of the construction at June 30, 2019 was $128,653 and is shown below and on the Basic Financial Statements as part of the Construction Work In Progress line item. The leasehold improvements will be amortized once the project is complete. The total cost of the improvements are expected to be approximately $230,000 and the project will be completed and capitalized in FY 2020.

Property and Equipment		2019
Land and Buildings	$	193,844
Less: Accumulated Depreciation		(150,545)
Equipment		16,286
Less: Accumulated Depreciation		(16,286)
Intangible Assets		2,639,669
Less: Accumulated Depreciation		(1,594,800)
Construction Work in Progress		1,505,103
Net Property and Equipment	$	2,593,271

Operating Lease

Operating leases are rental agreements where the payments are chargeable as rent and recorded as administrative expenses. TRS negotiated a 19-year lease for office space in February 2019, at the location of 100 North Park Avenue, Helena, MT. The lease is payable monthly and includes inflationary adjustments over the period of the lease. The lease agreement contains a termination clause whereby TRS can terminate the lease for any reason after June 30, 2022, by providing 729 days notice. The first lease payment does not take affect until August 1, 2019 (FY 2020). The following table shows the lease payments for the next five fiscal years.

Fiscal Year Ended June 30:		Total Lease Payments
2020	$	99,240
2021	$	108,262
2022	$	149,711
2023	$	154,202
2024	$	158,828

Note D. Net Pension Liability — TRS Plan Reporting

Net Pension Liability — TRS Plan

Fiscal Year Ending June, 30 2019		
Total Pension Liability	$	6,148,556,456
Fiduciary Net Position	$	4,220,285,752
Net Pension Liability	$	1,928,270,704
Ratio of Fiduciary Net Position to Total Pension Liability		68.64%

The net pension liability is the retirement system's total pension liability (TPL) determined in accordance with GASB No. 67 less the fiduciary net position (FNP). As of June 30, 2019, the TRS net pension liability is $1,928,270,704. July 1, 2019 is the date of the actuarial valuation upon which the TPL is based. Roll forward procedures were not used.

Actuarial valuation of the ongoing System involves estimates of the reported amounts and assumptions about probability of occurrence of events far into the future. Examples include assumptions about future employment, mortality, and future salary increases. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. The most recent experience study was performed in the spring of 2018 for the five year period ending July 1, 2017. The Schedule of Net Pension Liability presents multi-year trend information about whether the plan's fiduciary net position is increasing or decreasing over time relative to the total pension liability. This schedule is presented in the Required Supplementary Information section.

Summary of Actuarial Assumptions – TRS Plan

The TPL as of June 30, 2019, is based on the results of an actuarial valuation date of July 1, 2019. There were several significant assumptions and other inputs used to measure the total pension liability. The actuarial assumptions used in the July 1, 2019, valuation were based on the results of the last actuarial experience study, dated May 3, 2018. Among those assumptions were the following:

Salary Increases*	3.25% to 7.76%
Investment Return	7.50%
Price Inflation	2.50%
Growth in Membership	0.00%
Post-retirement Benefit Increases (Starting Three Years After Retirement) - Tier 1 members	1.50%
Post-retirement Benefit Increases (Starting Three Years After Retirement) - Tier 2 members	0.50%
Interest on Member Accounts	5.00%

**Total Wage Increases include 3.25% general wage increase assumption and a range of 0.00% to 4.51% merit and longevity increases based on years of service.*

Target Allocations – TRS Plan

Asset Class	Target Asset Allocation (a)	Long-Term Expected Real Rate of Return Arithmetic Basis (b)	Portfolio Long-Term Expected Rate of Return* (a) x (b)
Domestic Equity	35.00%	6.05%	2.12%
International Equity	18.00%	7.01%	1.26%
Private Equity	10.00%	10.53%	1.05%
Natural Resources	3.00%	4.00%	0.12%
Core Real Estate	7.00%	5.65%	0.40%
TIPS	3.00%	1.40%	0.04%
Intermediate Duration Bonds	19.00%	2.17%	0.41%
High Yield Bonds	3.00%	4.09%	0.12%
Cash	2.00%	0.78%	0.02%
Totals	100.00%		5.54%
		Inflation	2.50%
		Portfolio long-term expected rate of return	*8.04%*

**The portfolio long-term expected rate of return above of 8.04% differs from the total TRS long-term rate of return assumption of 7.50% (Discount Rate). The assumed rate of 7.50% is comprised of a 2.50% inflation rate and an expected long-term real rate of return of 5.00%.*

The long-term expected return on plan assets is reviewed as part of the regular experience studies prepared for the System. The most recent analysis, performed for the period covering fiscal years 2013 through 2017, is outlined in a report dated May 3, 2018. 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). Estimates of variability and correlations for each asset class, were developed by the System's investment consultant. 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 long-term rate of return 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 inflation assumption, or a fundamental change in the market that alters expected returns in future years. The average long term capital market assumptions published in the Survey of Capital Market Assumptions 2019 Edition by Horizon Actuarial Service, LLC, yield a median real return of 4.91%. Based on this information, the TRS Board's adopted assumption of 5.00% for the real return reflects granting each source some degree of credibility. Combined with the 2.50% inflation assumption, the adopted assumed nominal return and discount rate is 7.50%.

The discount rate (long-term rate of return assumption) used to measure the total pension liability was 7.50%. The projection of cash flows used to determine the discount rate assumed that contributions from participating plan members, employers, and non-employer contributing entities will be made based on the Board's funding policy, which establishes the contractually required rates under Montana State Code. These rates are shown in the following tables. In addition to these contributions the State general fund will contribute $25 million annually to the System payable July 1st of each year. Based on those assumptions, the System's fiduciary net position was projected to be adequate to make all the projected future benefit payments of current plan members through the year 2124. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability. No municipal bond rate was used in determining the discount rate.

History of Legislated Contributions – School District and Other Employers by Percent of Covered Payroll

	Members	Employers	General Fund	Total
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
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%

Pursuant to §19-20-609, MCA, the employer contribution rate will increase by 0.10% each year beginning July 1, 2014, through fiscal year 2024.

Sensitivity Analysis – TRS Plan

	1.0% Decrease (6.50%)	Current Discount Rate	1.0% Increase (8.50%)
Net Pension Liability	$ 2,637,387,167	$ 1,928,270,704	$ 1,334,146,801

In accordance with GASB 67 regarding the disclosure of the sensitivity of the net pension liability to changes in the discount rate, the above table presents the net pension liability calculated using the discount rate of 7.50%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1.00% lower (6.50%) or 1.00% higher (8.50%) than the current rate.

Schedule of Investment Returns – TRS Plan

TRS Plan Schedule of Investment Returns

	2019
Annual Money Weighted Rate Return, Net of Investment Expense	5.611%

The annual money-weighted rate of return on pension plan investments expresses investment performance, net of pension plan investment expense, adjusted for the changing amounts actually invested.

Note E. Net Pension Liability – Employer Reporting

In accordance with GASB Statement 68, Accounting and Financial Reporting for Pensions, TRS is required to recognize and report certain amounts associated with their participation in the Public Employees' Retirement System (PERS). Statement 68 includes requirements to record and report employers' proportionate share of the collective Net Pension Liability, Pension Expense, Deferred Inflows and Deferred Outflows of resources associated with pensions.

In accordance with Statement 68, the State of Montana has a funding situation that is Special Funding whereby the State general fund provides statutorily required contributions to the PERS plan. Due to the existence of a special funding situation, TRS is required to report the portion of the State of Montana's proportionate share of the collective Net Pension Liability that is associated with TRS. The following table displays the amounts and the percentages of Net Pension Liability for the fiscal years ended June 30, 2019 and June 30, 2018 (reporting dates).

Net Pension Liability – TRS as an Employer of PERS Plan

	Net Pension Liability as of 6/30/19	Net Pension Liability as of 6/30/18	Percent of Collective NPL as 6/30/19	Percent of Collective NPL as 6/30/18	Change in Percent of Collective NPL
TRS Proportionate Share	$ 1,443,205	$ 1,745,607	0.0691%	0.0896%	(0.0205)%
State of Montana Proportionate Share Associated with TRS	$ 464,136	$ 0	0.0222%	0.0000%	0.0222%
Total	$ 1,907,341	$ 1,745,607	0.0913%	0.0896%	0.0017%

At June 30, 2019, TRS recorded a liability of $1,443,205 for its proportionate share of the Net Pension Liability. The Net Pension Liability was measured as of June 30, 2018, and the Total Pension Liability (TPL) used to calculate the Net Pension Liability was determined by an actuarial valuation as of June 30, 2017, with update procedures to roll forward the TPL to the measurement date of June 30, 2018. The roll forward procedure uses a calculation that adds the annual normal cost (also called the service cost), subtracts the actual benefit payments and refunds for the plan year, and then applies the expected investment rate of return for the year. The roll forward procedure will include the effects of any assumption changes and legislative changes. The update procedures are in conformity with Actuarial Standards of Practice issued by the Actuarial Standards Board.

TRS' proportion of the Net Pension Liability was based on the employer contributions received by PERS during the measurement period July 1, 2017 through June 30, 2018, relative to the total employer contributions received from all of PERS' participating employers. At June 30, 2019, the TRS' proportion was 0.0691 percent.

Summary of Actuarial Assumptions – PERS Plan

Changes in actuarial assumptions and methods:

- There were no changes in assumptions or other inputs that affected the measurement of the TPL.

Changes in benefit terms:

- There have been no changes in benefit terms since the previous measurement date.

Changes in proportionate share:

- There were no changes between the measurement date of the collective Net Pension Liability and TRS's reporting date that are expected to have a significant effect on the TRS's proportionate share of the collective NPL.

Pension Expense – TRS as an Employer of PERS Plan

		Pension Expense as of 6/30/19
TRS Proportionate Share	$	136,513
Proportionate Share of Montana State General Fund Appropriation Associated with TRS	$	30,976
Total	$	167,489

At June 30, 2019, TRS recognized a Pension Expense of $167,489 for its proportionate share of the PERS' pension expense. TRS also recognized grant revenue of $30,976 for the support provided by the State of Montana for the proportionate share of the general fund contributions made to PERS that are associated with TRS.

Deferred Inflows and Outflows - TRS as an Employer of PERS Plan

At June 30, 2019, TRS reported its proportionate share of deferred outflows of resources and deferred inflows of resources related to TRS from the following sources:

		Deferred Outflows of Resources		Deferred Inflows of Resources
Differences Between Expected and Actual Economic Experience	$	109,746	$	0
Changes in Actuarial Assumptions	$	122,723	$	0
Difference Between Projected and Actual Investment Earnings	$	0	$	22,413
Changes in Proportion and Differences Between TRS Contributions and Proportionate Share of Contributions	$	0	$	227,835
*Contributions Paid to PERS Subsequent to the Measurement Date—FY 2019 Contributions	$	98,599	$	0
Total	$	331,069	$	250,248

**Amounts reported as deferred outflows of resources related to pensions resulting from TRS's contributions in FY 2019 subsequent to the measurement date will be recognized as a reduction of the net pension liability in the year ended June 30, 2020. Other amounts reported as deferred outflows and inflows of resources related to pensions will be recognized in pension expense as follows:*

Fiscal Year Ended June 30:		Amount Recognized as an Increase (or Decrease) to Pension Expense in Future Years
2020	$	61,119
2021	$	23,184
2022	$	(92,872)
2023	$	(9,209)
2024	$	–
Thereafter		–

Plan Description – PERS Plan

The PERS-Defined Benefit Retirement Plan (DBRP), administered by the Montana Public Employee Retirement Administration (MPERA), is a multiple-employer, cost-sharing plan established July 1, 1945, and governed by Title 19, chapters 2 and 3, MCA. This plan provides retirement benefits to covered employees of the State, local governments, certain employees of the Montana University System, and school districts.

All new members are initially members of the PERS-DBRP and have a 12-month window during which they may choose to remain in the PERS-DBRP or join the PERS-DCRP by filing an irrevocable election. Members may not be members of both the defined contribution and defined benefit retirement plans. All new members from the universities also have a third option to join the university system's Montana University System Retirement Program (MUS-RP). For members that choose to join the PERS-DCRP or the MUS-RP, a percentage of the employer contributions will be used to pay down the liability of the PERS-DBRP.

The PERS-DBRP provides retirement, disability, and death benefits to plan members and their beneficiaries. Benefits are established by state law and can only be amended by the Legislature. Benefits are based on eligibility, years of service, and highest average compensation. Member rights are vested after five years of service.

Summary of Benefits – PERS Plan

Eligibility for Benefit

Service retirement:

Hired prior to July 1, 2011:
- Age 60, 5 years of membership service;
- Age 65, regardless of membership service, or
- Any age, 30 years of membership service.

Hired on or after July 1, 2011:
- Age 65, 5 years of membership service;
- Age 70, regardless of membership service.

For PERS-DCRP Plan members are eligible for benefit at termination of service.

Early retirement, actuarially reduced:

Hired prior to July 1, 2011:
- Age 50, 5 years of membership service, or
- Any age, 25 years of membership service.

Hired on or after July 1, 2011:

- Age 55, 5 years of membership service.

Vesting

Five years of membership service

For PERS-DCRP Plan, members are vested immediately for participant's contributions and attributable income. Member's must have 5 years of membership to become eligible for the employer's contributions to individual accounts and attributable income.

Member's Highest Average Compensation (HAC)

Hired prior to July 1, 2011 - highest average compensation during any consecutive 36 months;

Hired on or after July 1, 2011 - highest average compensation during any consecutive 60 months;

Hired on or after July 1, 2013 - 110% annual cap on compensation considered as part of a member's highest average compensation.

Monthly Benefit Formula

<u>Members hired prior to July 1, 2011:</u>

Less than 25 years of membership service:
- 1.785% of HAC per year of service credit;

25 years of membership service or more:
- 2% of HAC per year of service credit.

<u>Members hired on or after July 1, 2011:</u>

Less than 10 years of membership service:
- 1.5% of HAC per year of service credit.

10 years or more, but less than 30 years of membership service:
- 1.785% of HAC per year of service credit.

30 years or more of membership service:
- 2% of HAC per year of service credit.

For PERS-DCRP Plan member's benefit depend entirely on vesting and individual account balance. Various payout options are available, including: taxable lump-sum payouts, periodic payments, per member instructions and IRS permitted rollovers.

Guaranteed Annual Benefit Adjustment (GABA)

After the member has completed 12 full months of retirement, the member's benefit increases by the applicable percentage (provided below) each January, inclusive of other adjustments to the member's benefit.
- GABA is 3% for members hired prior to July 1, 2007.
- GABA is 1.5% for members hired on or after July 1, 2007
- Members hired on or after July 1, 2013:
- (a) 1.5% for each year PERS is funded at or above 90%;
- (b) 1.5% reduced by 0.1% for each 2.0% PERS is funded below 90%; and
- (c) 0% whenever the amortization period for PERS is 40 years or more.

Overview of Contributions – PERS Plan

Rates are specified by state law for periodic member and employer contributions and are a percentage of the member's compensation. Contributions are deducted from each member's salary and remitted by participating employers. The State legislature has the authority to establish and amend contribution rates to the plan.

1. Member contributions to the system of 7.9% are temporary and will be decreased to 6.9% on January 1, following actuary valuation results that show the amortization period has dropped below 25 years and would remain below 25 years following the reduction of both the additional employer and additional member contribution rates.

2. Employer contributions to the system:
   a. Effective July 1, 2014, following the 2013 Legislative Session, PERS-employer contributions increase an additional 0.1% a year and will continue over 10 years through 2024. The additional employer contributions including the 0.27% added in 2007 and 2009, will terminate on January 1, following an actuary valuation that shows the amortization period of the PERS-DBRP has dropped below 25 years and remains below the 25 years following the reduction of both the additional employer and member contributions rates.
   b. Effective July 1, 2013, employers are required to make contributions on working retirees' compensation. Member contributions for working retirees are not required.

3. Non-employer Contributions:
   a. Special Funding
      i. The State contributes 0.1% of members' compensation on behalf of local government entities.
      ii. The State contributes 0.37% of members' compensation on behalf of school district entities.
      iii. The state contributed a Statutory Appropriation from the General Fund of $33,454,182.

Stand-Alone Statements – PERS Plan

The PERS financial information is reported in the Public Employees' Retirement Board's (PERB) Comprehensive Annual Financial Report for the fiscal year ended. It is available from the PERB at 100 North Park, PO Box 200131, Helena MT 59620-0131, 406-444-3154.

CAFR information including PERS stand-alone financial statements and the GASB 68 report can be found on their website at http://mpera.mt.gov

The latest actuarial valuation and experience study can also be found at their website at http://mpera.mt.gov

Actuarial Assumptions – PERS Plan

The Total Pension Liability measured as of June 30, 2018, is based on the results of an actuarial valuation date of June 30, 2017, with update procedures to roll forward the TPL to June 30, 2018. There were several significant assumptions and other inputs used to measure the TPL. The actuarial assumptions used in the valuation and roll-forward procedures were based on the results of the last actuarial experience study, dated May 2017, for the six year period July 1, 2010, to June 30, 2016. Among those assumptions were the following:

General Wage Growth*	3.50%
*Includes Inflation at	2.75%
Admin Expense as % of Payroll	0.26%
Merit Wage Increases	0% to 4.80%
Investment Return	7.65%
Post-retirement Benefit Increases	
3% for Members hired prior to July 1, 2007	
1.5% for Members hired on or after July 1, 2007	

After the member has completed 12 full months of retirement, the member's benefit increases by the applicable percentage (provided below) each January, inclusive of other adjustments to the member's benefit.

- GABA is 3% for members hired prior to July 1, 2007.
- GABA is 1.5% for members hired on or after July 1, 2007
- GABA is 1.5% for members hired on or after July 1, 2013 for each year PERS is funded at or above 90%. The 1.5% is reduced by 0.1% for each 2.0% PERS is funded below 90%
- GABA is 0.0% for members hired on or after July 1, 2013 for each year the PERS amortization period is 40 years or more

Mortality assumptions among contributing members, terminated vested members, service retired members and beneficiaries based on RP 2000 Combined Employee and Annuitant Mortality Tables projected to 2020 with scale BB, males set back 1 year.

Mortality assumptions among disabled members are based on RP 2000 Combined Mortality Tables with no projections. .

Discount Rate – PERS Plan

The discount rate used to measure the Total Pension Liability was 7.65%. The projection of cash flows used to determine the discount rate assumed that contributions from participating plan members, employers, and non-employer contributing entities will be made based on the PERS Board's funding policy, which establishes the contractually required rates under Montana Code Annotated. The State contributes 0.10% of salaries for local governments and 0.37% for school districts. In addition, the State contributes a statutory appropriation from the general fund. Based on those assumptions, the PERS' fiduciary net position was projected to be adequate to make all the projected future benefit payments of current plan members through the year 2122. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability. No municipal bond rate was incorporated in the discount rate.

Target Allocations – PERS Plan

Asset Class	Target Asset Allocation	Long- Term Expected Real Rate of Return Arithmetic Basis
Cash Equivalents	2.6%	4.00%
Domestic Equity	36.0%	4.55%
Foreign Equity	18.0%	6.35%
Fixed Income	23.4%	1.00%
Private Equity	12.0%	7.75%
Real Estate	8.0%	4.00%

The long-term expected return on pension plan assets is reviewed as part of the regular experience studies prepared for the PERS. The most recent analysis, performed for the period covering fiscal years 2011 through 2016, is outlined in a report dated May 5, 2017, which is located on the MPERA website. The long-term expected return on pension plan assets is reviewed as part of the regular experience studies prepared for the Plan. Several factors are considered in evaluating the long-term rate of return assumption including historical rates of return, rate of return assumptions adopted by similar public-sector systems, and by using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2018, are summarized in the Target Allocations - PERS Plan table above.

Sensitivity Analysis – TRS as an Employer of PERS Plan

	1.0% Decrease (6.65%)	Current Discount Rate	1.0% Increase (8.65%)
TRS' Proportion of Net Pension Liability	$ 2,087,208	$ 1,443,205	$ 914,375

In accordance with GASB 68 regarding the disclosure of the sensitivity of the net pension liability to changes in the discount rate, the above table presents the net pension liability calculated using the discount rate of 7.65%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1.00% lower (6.65%) or 1.00% higher (8.65%) than the current rate.

Summary of Significant Accounting Policies – PERS Plan

The Montana Public Employee Retirement Administration (MPERA) prepares its financial statements using the accrual basis of accounting. For the purposes of measuring the Net Pension Liability, deferred inflows of resources and deferred outflows of resources related to pensions, Pension Expense, information about the fiduciary net position, and additions to/deductions from fiduciary net position have been determined on the same accrual basis as they are reported by MPERA. For this purpose, member contributions are recognized in the period in which contributions are due. Employer contributions are recognized when due and the employer has made a formal commitment to provide the contributions. Revenues are recognized in the accounting period they are earned and become measurable. Benefit payments and refunds are recognized in the accounting period when due and payable in accordance with the benefit terms. Expenses are recognized in the period incurred. Investments are reported at fair value. MPERA adheres to all applicable Governmental Accounting Standards Board (GASB) statements.

Defined Contribution Plan – PERS Plan

TRS contributed to the state of Montana Public Employee Retirement System Defined Contribution Retirement Plan (PERS-DCRP) for TRS employees that have elected the DCRP. The PERS-DCRP is administered by the Public Employees Retirement Board and is reported as a multiple-employer plan established July 1, 2002, and governed by Title 19, chapters 2 & 3, MCA.

All new PERS members are initially members of the PERS-DBRP and have a 12-month window during which they may choose to remain in the PERS-DBRP or join the PERS-DCRP by filing an irrevocable election. Members may not be participants of both the defined benefit and defined contribution retirement plans.

Member and employer contribution rates are specified by state law and are a percentage of the member's compensation. Contributions are deducted from each member's salary and remitted by participating employers. The Montana Legislature has the authority to establish and amend contribution rates. For the year ended June 30, 2019 member contributions were 7.9% of gross compensation and Employers contributed 8.67% of gross compensation on behalf of DCRP members.

Benefits are dependent upon eligibility and individual account balances. Participants are vested immediately in their own contributions and attributable income. Participants are vested after 5 years of membership service for the employer's contributions to individual accounts and the attributable income. Non-vested contributions are forfeited upon termination of employment per 19-3-2117(5), MCA. Such forfeitures are used to cover the administrative expenses of the PERS-DCRP.

At the plan level for the measurement period ended June 30, 2018, TRS did not recognize any net pension liability or pension expense for the defined contribution plan. Plan level non-vested forfeitures for the 316 employers that have participants in the PERS-DCRP totaled $746,144.

Note F. TRS Plan Contributions

The TRS funding policy provides for monthly employee and employer contributions at rates specified by state law. Plan members, for the fiscal year ending June 30, 2019, were required to contribute 8.15% of their earned compensation and the employer contribution rate for the fiscal year ending June 30, 2019, was 8.97% of earned compensation. For State Agency and University System employers, the employer contribution rate was 11.35% of members' earned compensation.

The State's general fund contributed an additional 2.38% of earned compensation for TRS members employed at school districts, community colleges, educational cooperatives, and counties in Montana. In addition, the State's general fund contributed 0.11% of earned compensation for all TRS members. The State's general fund also contributes a statutory supplemental contribution of $25 million to TRS due on July 1st each year. Each employer in the Montana University System contributed 4.72% of earned compensation for all employees participating in the Montana University System Retirement Program (MUS-RP).

The TRS actuary determines the actuarial implications of the funding requirement in annual actuarial valuations. The actuarial method used to determine the implications of the statutory funding level is the entry age actuarial cost method, with both normal cost and amortization of the accrued liability determined as a level percentage of earned compensation. Contribution rates consist of an amount for normal cost, the estimated amount necessary to finance benefits earned by the members during the current year, and an amount for amortization of the unfunded actuarial accrued liability.

Contributions made by employers and members were in accordance with actuarially computed funding requirements. Information with regard to contributions to the System, for the year ended June 30, 2019, is indicated in the Required Supplemental Information, Schedule of Employer Contributions.

Note G. Other Post-Employment Benefits

Plan Description

TRS through the State of Montana provides optional post employment healthcare benefits in accordance with Section 2-18-704, MCA to the following employees and dependents who elect to continue coverage and pay administratively established contributions: (1) employees and dependents who retire under applicable retirement provisions and (2) surviving dependents of deceased employees. Medical, dental, and vision benefits are available through this plan.
In accordance with GASB Statement No. 75, Accounting and Financial Reporting for Post Employment Benefits Other than Pensions, TRS is required to recognize and report certain amounts associated with their employees and dependents that are eligible to receive health care through the State Group Benefits Plan administered by the Montana Department of Administration. Statement 75 includes requirements to record and report employers' proportionate share of the collective Total OPEB Liability, OPEB Expense, and Deferred Outflows and Deferred Inflows of Resources associated with OPEB.

The State of Montana OPEB plan is not administered through a trust; as such, there are no plan assets accumulated to offset the total OPEB liability.

The State of Montana pays for post employment healthcare benefits on a pay-as-you-go basis. Section 2-18-811, MCA gives authority for establishing and amending the funding policy to the Department of Administration for the State group health insurance plan. Plan coverage is on a calendar year basis. For GASB Statement No. 75 reporting, the State Group Benefits Plan is considered a single-employer plan.

As of June 2019, the State Plan's administratively established retiree medical contributions vary between $448 and $1,777 per month depending on the medical plan selected, family coverage, and Medicare eligibility. Administratively established dental contributions vary between $41.10 and $70 and vision hardware contributions vary between $7.64 and $22.26 depending on the coverage selected. The plan is financed on a pay-as-you-go basis. Therefore, there are no investment objectives of the OPEB plan.

Benefits Not Included in the Actuarial Valuation: Dental and vision benefits are rated separately for retirees based on actual retiree cost, so there is no implicit subsidy; therefore, no liability for these benefits is calculated in the actuarial valuation.

Employees covered by OPEB benefit terms: At June 30, 2019 the following TRS employees were covered by the benefit terms: 13 Retired employees, 8 spouses, 0 surviving spouses; totaling 21 covered individuals.

The following estimates were prepared based on an actuarial valuation prepared as of the year ending December 31, 2017 for the Department of Administration, with update procedures to roll forward the OPEB amounts to the measurement date of March 31, 2019. The resulting State of Montana Actuarial Valuation of Other Post-Employment Benefits (OPEB) contains the TRS data and is available through the following address.

Montana Department of Administration
State Accounting Division
Room 255, Mitchell Bldg
125 N Roberts Street
PO Box 200102
Helena, MT 59620-0102

Total OPEB Liability and Changes in Total OPEB Liability

TRS' total OPEB liability as of June 30, 2019 was $135,851. TRS proportionate share of the collective Total OPEB Liability was 0.24391%. The basis on which TRS' proportionate share was calculated was by taking TRS calculated OPEB Liability as a percentage of the Total OPEB Liability.

The following table presents the Changes in the Total OPEB Liability:

Schedule of Changes in Total OPEB Liability

	TRS
Balance as of 06/30/18	$ 138,145
Changes for the Year:	
Service Cost	(2,369)
Interest	(2,780)
Diff b/w Expected and Actual Experience	-
Changes of Assumptions and other inputs	643
Benefit Payments (Contributions)	2,212
Net Changes	(2,294)
Balance as of 06/30/19	$ 135,851

Actuarial assumptions and other inputs:

The total OPEB liability in the latest actuarial valuation dated December 31, 2017, the following assumptions and other inputs, applied to all periods included in the measurement, unless otherwise specified:

- Contributions: $ 2,212
- Actuarial valuation date: December 31, 2017
- Actuarial measurement date(1): March 31, 2019
- Actuarial cost method: Entry age normal funding method
- Amortization method: Open basis
- Asset valuation method: Not applicable since no assets meet the definition of plan assets under GASB 75

- Actuarial Assumptions:
- Discount rate: 3.79%
- Projected payroll increases: 4.00%
- Participation: Future retirees 55.00%, Future eligible spouses 60.00%
- Marital status at retirement: 70.00%

(1) Update procedures were used to roll forward the total OPEB liability to the measurement date.

Mortality - Health: For the OPEB Plan, healthy mortality is assumed to follow the RP-2000 Healthy Annuitant Mortality

Table for ages 50 and above and the RP-2000 Combined Healthy Annuitant Mortality Table for ages below 50, set back four years for males, set back two years for females, with mortality improvements projected by Scale BB to 2018. For all other groups, healthy mortality is assumed to follow the RP-2000 Combined Mortality Table with improvements projected by Scale BB to 2020, set back one year for males.

Mortality - Disabled: For the OPEB Plan, disabled mortality is assumed to follow the RP-2000 Disabled Mortality Table, set forward one year for males and set forward five years for females, with mortality improvements projected by Scale BB to 2018. For all other groups, disabled mortality is assumed to follow the RP-2000 Combined Mortality Table with no projections.

Changes in actuarial assumptions and methods since last measurement date:

- Changes in actuarial assumptions include interest rate based upon the March 31, 2019, 20-year municipal bond index per GASB 75 requirements.

Changes in benefit terms since last measurement date:

- None

Sensitivity Analysis

Sensitivity of the total OPEB liability to changes in the discount rate:
The following table presents the total OPEB liability of TRS, as well as what TRS' total OPEB liability would be if it were calculated using a discount rate that is 1.00% lower (2.79%) or 1.00% higher (4.79%) than the current discount rate:

Discount Rate	1% Decrease (2.79%)	Discount Rate (3.79%)	1% Increase (4.79%)
Total OPEB Liability	$159,502	$135,851	$117,564

Sensitivity of the total OPEB liability to changes in the healthcare cost trend rates:
The following table presents the total OPEB liability of TRS, as well as what TRS' total OPEB liability would be if it were calculated using healthcare cost trend rates that are 1.00% lower (6.0%) or 1.00% higher (8.0%) than the current healthcare cost trend rates:

Healthcare Rate	1% Decrease (6.00%)	Healthcare Rate (7.00%)	1% Increase (8.00%)
Total OPEB Liability	$116,724	$135,851	$161,174

OPEB Expense

For the year ended June 30, 2019, TRS recognized an OPEB expense of $6,987.

Deferred Outflow of Resources and Deferred Inflows of Resources Related to OPEB

At June 30, 2019, TRS recorded deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

	Deferred Outflows of Resources	Deferred Inflow of Resources
Difference between expected and actual experience	$99,881	*$0*
Changes of assumptions of other inputs	$10,365	*$0*
*Benefit Payments associated with transactions subsequent to the measurement date of the total OPEB liability	$6,385	*$0*
Total	$116,631	*$0*

**Amounts reported as deferred outflows of resources related to OPEB resulting from TRS's Benefit Payments in FY 2019* (April 1, 2019 through June 30, 2019) *subsequent to the measurement date will be recognized as a reduction of the net OPEB liability in the year ended June 30, 2020. Other amounts reported as deferred outflows and inflows of resources related to OPEB will be recognized in OPEB expense as follows:*

Fiscal Year	**Amount recognized as Increase or (Decrease) to OPEB Expense**
2020	$(9,600)
2021	$(9,600)
2022	$(9,600)
2023	$(9,600)
2024	$(9,600)
Thereafter	$(58,773)

Note H. Pending Litigation

As of June 30, 2019, TRS had no pending litigation that would significantly affect the information presented in this financial report.

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TEACHERS' RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA REQUIRED SUPPLEMENTARY INFORMATION AND NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
FISCAL YEAR ENDED JUNE 30, 2019

Schedule of Changes in the Net Pension Liability – TRS Plan

	2019*	2018*
Total Pension Liability		
Service Cost	$ 75,236,616	$ 76,009,950
Interest	441,958,241	428,866,673
Benefit Changes	-	-
Difference Between Expected and Actual Experience	6,775,269	14,571,084
Changes of Assumptions	(6,059,430)	206,321,172
Benefit Payments	(367,779,905)	(352,854,025)
Refunds of Contributions	(6,008,447)	(5,322,642)
Net Change in Total Liability	144,122,344	367,592,212
Total Pension Liability Beginning	$ 6,004,434,112	$ 5,636,841,900
Total Pension Liability Ending	$ 6,148,556,456	$ 6,004,434,112
Fiduciary Net Position		
Contributions - Employer	$ 97,303,048	$ 94,233,469
Contributions - Member	78,150,923	74,594,333
Contributions - Non-Employer Contributing Entities	45,495,334	45,005,672
Miscellaneous Income	31,040	31,829
Net Investment Income	227,892,287	343,720,833
Benefit Payments	(367,779,905)	(352,854,025)
Administrative Expenses	(2,947,109)	(2,849,527)
Refund of Contributions	(6,008,447)	(5,322,642)
Other	(174,476)	(157,777)
Net Change in Fiduciary Net Position	71,962,695	197,402,165
Fiduciary Net Position - Beginning	4,148,324,206	3,950,761,443
Prior Period Adjustment	(1,149)	160,598
Fiduciary Net Position - Ending (b)	$ 4,220,285,752	$ 4,148,324,206
Net Pension Liability - Ending (a - b)	$ 1,928,270,704	$ 1,856,109,906

2017*	2016*	2015*	2014*
$ 71,429,117	$ 73,530,938	$ 73,820,438	$ 77,006,174
417,307,148	402,339,969	390,555,879	373,456,442
-	-	-	-
5,420,919	(5,245,998)	9,660,152	20,297,029
-	(12,445,656)	(4,670,553)	46,502,421
(333,633,717)	(320,810,259)	(303,675,300)	(285,182,358)
(7,355,344)	(5,086,816)	(5,368,359)	(4,788,688)
153,168,123	132,282,178	160,322,257	227,291,020
$ 5,483,673,777	$ 5,351,391,599	$ 5,191,069,342	$ 4,963,778,322
$ 5,636,841,900	$ 5,483,673,777	$ 5,351,391,599	$ 5,191,069,342
$ 91,853,678	$ 88,643,646	$ 87,290,863	$ 83,439,612
74,253,046	72,740,665	72,215,797	70,468,354
44,414,109	43,902,606	43,389,534	64,923,320
27,504	29,123	27,297	6,000
427,042,359	71,487,661	165,684,953	540,277,362
(333,633,717)	(320,810,259)	(303,675,300)	(285,182,358)
(2,459,458)	(2,318,818)	(2,035,081)	(2,022,636)
(7,355,344)	(5,086,816)	(5,368,359)	(4,788,688)
(211,532)	(142,849)	(140,631)	(58,073)
293,930,645	(51,555,041)	57,389,073	467,062,894
3,656,830,798	3,708,385,838	3,652,220,265	3,185,064,406
–	–	(1,223,501)	92,965
$ 3,950,761,443	$ 3,656,830,798	$ 3,708,385,838	$ 3,652,220,265
$ 1,686,080,457	$ 1,826,842,979	$ 1,643,005,761	$ 1,538,849,077

**Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

Note to RSI - Schedule of Changes in the Net Pension Liability and Schedule of Net Pension Liability

The TPL contained in these schedules was provided by the Systems actuary, Cavanaugh Macdonald Consulting, LLC. The NPL is measured as the TPL less the amount of the FNP of the Retirement System. Prior to the fiscal year ended June 30, 2018, the Net Investment Income, Net Change in Fiduciary Net Position, and Prior Period Adjustment items in the Schedule of Changes in Fiduciary Net Position matched the Statement of Changes in Net position. However, there was a CAFR only adjustment in FY2018 that was issued by the BOI after the Schedule of Changes in Fiduciary Net Position above had been complete. The adjustment affected the Net Investment Income, Net Change in Fiduciary Net Position, and Prior Period Adjustment items by $56,880 (the amount of the CAFR only adjustment).

Schedule of the Net Pension Liability – TRS Plan

	2019*	2018*	2017*
Total Pension Liability	$ 6,148,556,456	$ 6,004,434,112	$ 5,636,841,900
Fiduciary Net Position	4,220,285,752	4,148,324,206	3,950,761,443
Net Pension Liability	$ 1,928,270,704	$ 1,856,109,906	$ 1,686,080,457
Ratio of Fiduciary Net Position to Total Pension Liability	68.64%	69.09%	70.09%
Covered Payroll	$ 857,467,932	$ 829,708,595	$ 818,122,561
Net Pension Liability as a Percentage of Covered-Employee Payroll	224.88%	223.71%	206.09%

	2016*	2015*	2014*
Total Pension Liability	$ 5,483,673,777	$ 5,351,391,599	$ 5,191,069,342
Fiduciary Net Position	3,656,830,798	3,708,385,838	3,652,220,265
Net Pension Liability	$ 1,826,842,979	$ 1,643,005,761	$ 1,538,849,077
Ratio of Fiduciary Net Position to Total Pension Liability	66.69%	69.30%	70.36%
Covered Payroll	$ 795,920,906	$ 768,718,699	$ 750,604,063
Net Pension Liability as a Percentage of Covered-Employee Payroll	229.53%	213.73%	205.01%

**Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

Schedule of Investment Returns – TRS Plan

	2019*	2018*	2017*
Annual Money Weighted Rate Return, Net of Investment Expense	5.611%	8.880%	11.919%

	2016*	2015*	2014*
Annual Money Weighted Rate Return, Net of Investment Expense	1.986%	4.618%	17.18%

**Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

Schedule of Employer and Non-employer Contributing Entities Contributions – TRS Plan

	2019	2018	2017	2016	2015
Actuarially Determined Employer Contributions	$ 143,107,320	$ 139,239,141	$ 136,267,787	$ 132,546,252	$ 130,680,397
Actual Contributions:					
Employers	97,303,048	94,233,469	91,853,678	88,643,646	87,290,863
Non-Employer Contributing Entities	$ 45,495,334	$ 45,005,672	$ 44,414,109	$ 43,902,606	$ 43,389,534
Total	$ 142,798,382	$ 139,239,141	$ 136,267,787	$ 132,546,252	$ 130,680,397
Annual Contribution Deficiency/ (Excess)	308,938	–	–	–	–
Covered Payroll	857,467,932	829,708,595	818,122,561	795,920,906	768,718,699
Actual Contributions as a Percentage of Covered-Employee Payroll	16.65%	16.78%	16.66%	16.65%	17.00%

	2014	2013	2012	2011	2010
Actuarially Determined Employer Contributions	$ 148,362,932	$ 130,533,530	$ 108,993,492	$ 91,879,263	$ 90,967,180
Actual Contributions:					
Employers	83,439,612	74,113,191	72,422,404	72,879,950	72,179,128
Non-Employer Contributing Entities	$ 64,923,320	$ 17,521,347	$ 16,843,766	$ 17,437,366	$ 17,241,610
Total	$ 148,362,932	$ 91,634,538	$ 89,266,170	$ 90,317,316	$ 89,420,738
Annual Contribution Deficiency/ (Excess)	-	38,898,992	19,727,322	1,561,947	1,546,442
Covered Payroll	750,604,063	742,608,987	735,586,961	746,694,434	747,037,330
Actual Contributions as a Percentage of Covered-Employee Payroll	19.77%	12.34%	12.14%	12.10%	11.97%

Note to RSI - Schedule of Employer Contributions

The actuarially determined employer contributions and amount of those contributions actually made are presented in the schedule.

Note to RSI - Actuarial Assumptions – TRS Plan

The information presented in the required supplementary schedules was used in the actuarial valuation for purposes of determining the actuarially determined contribution rate. The assumptions and methods used for this actuarial valuation were recommended by the actuary and adopted by the Board. Additional information as of the latest actuarial valuation follows.

Changes of Benefit Terms – TRS Plan

The following changes to the plan provision were made as identified:

2013

The 2013 Montana Legislature passed HB 377, which provides additional revenue and creates a two-tier benefit structure. A Tier One Member is a person who first became a member before July 1, 2013, and has not withdrawn their member's account balance. A Tier Two Member is a person who first becomes a member on or after July 1, 2013, or after withdrawing their member's account balance, becomes a member again on or after July 1, 2013.

The GABA for Tier 1 members: permanent injunction limits application of the GABA reduction passed under HB 377.

The second tier benefit structure for members hired on or after July 1, 2013 is summarized below.

1. Final Average Compensation: average of earned compensation paid in five consecutive years of full-time service that yields the highest average.

2. Service Retirement: Eligible to receive a service retirement benefit if the member has been credited with at least five full years of creditable service and has attained the age of 60; or has been credited with 30 or more years of full-time or part-time creditable service and has attained age 55.

3. Early Retirement: Eligible to receive an early retirement allowance if a member is not eligible for service retirement, but has at least five years of creditable service and attained age 55.

4. Professional Retirement Option: if the member has been credited with 30 or more years of service and has attained the age of 60, the member is eligible for an enhanced allowance equal to 1.85% of average final compensation times all service at retirement. Otherwise, the multiplier used to calculate the retirement allowance will be equal to 1.67%.

5. Annual Contribution: 8.15% of member's earned compensation.

6. Supplemental Contribution Rate: On or after July 1, 2023, the TRS Board may require a supplemental contribution up to 0.5% if the following three conditions are met:
    a. The average funded ratio of the System based on the last three annual actuarial valuations is equal to or less than 80%, and
    b. The period necessary to amortize all liabilities of the System based on the latest annual actuarial valuation is greater than 20 years, and
    c. A State or employer contribution rate increase or a flat dollar contribution to the Retirement System Trust fund has been enacted that is equivalent to or greater than the supplemental contribution rate imposed by the TRS Board.

7. Disability Retirement: A member will not be eligible for a disability retirement if the member is or will be eligible for a

service retirement on the date of termination.

8. Guaranteed Annual Benefit Adjustment (GABA):
   a. If the most recent actuarial valuation shows that Retirement System liabilities are at least 90% funded and the provision of the increase is not projected to cause the System's liabilities to be less than 85% funded, the GABA may increase from the 0.5% floor up to 1.5%, as set by the Board.

HB 377 increased revenue from the members, employers, and the State by means of the following changes:

- An annual State contribution equal to $25 million paid to the System in monthly installments.
- A one-time contribution payable to the Retirement System by the trustees of a school district maintaining a retirement fund. The one-time contribution to the Retirement System shall be the amount earmarked as an operating reserve in excess of 20% of the adopted retirement fund budget for the fiscal year 2013. The amount received was $22 million in FY 2014.
- A 1% supplemental employer contribution, which will increase the current employer rates as follows:
  - School district contributions will increase from 7.47% to 8.47%.
  - Montana University System and State agency contributions will increase from 9.85% to 10.85%.
  - Supplemental employer contributions will increase by 0.1% each fiscal year for fiscal year 2014 through fiscal year 2024. For fiscal years beginning after June 30, 2024, the total supplemental employer contribution will be equal to 2%.
- Members hired prior to July 1, 2013, (Tier One) under HB 377 are required to contribute a supplemental contribution equal to an additional 1% of the member's earned compensation.
- Each employer is required to contribute 9.85% of total compensation paid to all re-employed TRS retirees employed in a TRS reportable position to the System.

Changes in Actuarial Assumptions and Methods – TRS Plan

The following changes to the actuarial assumptions were adopted in 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.

The following changes to the actuarial assumptions were adopted in 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:
  o 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:
  o For Males: RP 2000 Disabled Mortality Table, set back three years, with mortality improvements projected by Scale BB to 2022.
  o 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

The following changes to the actuarial assumptions were adopted in 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.

The following changes to the actuarial assumptions were adopted in 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.

The following changes to the actuarial assumptions were adopted in 2014:

- Assumed rate of inflation was reduced from 3.50% to 3.25%.
- Payroll Growth Assumption was reduced from 4.50% to 4.00%.
- Assumed real wage growth was reduced from 1.00% to 0.75%.
- Investment return assumption was changed from net of investment and administrative expenses to net of investment expenses only.
- Mortality among contributing members, service retired members, and beneficiaries was updated to the following:
    - For Males: RP 2000 Healthy Annuitant Mortality Table for ages 50 and above and the RP 2000 Combined Healthy Annuitant Mortality Table for ages below 50, set back four years, with mortality improvements projected by Scale BB to 2018.
    - For Females: RP 2000 Healthy Annuitant Mortality Table for ages 50 and above and the RP 2000 Combined Healthy Annuitant Mortality Table for ages below 50, set back two years, with mortality improvements projected by Scale BB to 2018.
- Mortality among disabled members was updated to the following:
    - For Males: RP 2000 Disabled Mortality Table for Males, set forward one year, with mortality improvements projected by Scale BB to 2018.
    - For Females: RP 2000 Disabled Mortality Table for Females, set forward five years, with mortality improvements projected by Scale BB to 2018.

Note to RSI - Method and Assumptions Used in Calculations of Actuarially Determined Contributions – TRS Plan

Actuarial Cost Method	Entry Age
Amortization Method	Level Percentage of Pay, Open
Remaining Amortization Period	31 years
Asset Valuation Method	4-year Smoothed Market
Inflation	2.50 Percent
Salary Increase	3.25 – 7.76 Percent, Including Inflation for Non-University Members and 4.25 Percent for University Members;
Investment Rate of Return	7.50 Percent, Net of Pension Plan Investment Expense, and Including Inflation

Schedule of Proportionate Share of the Net Pension Liability – TRS as Employer of PERS Plan

	2019	2018	2017	2016	2015
TRS' Proportion of the Net Pension Liability	0.0691%	0.0896%	0.0882%	0.0843%	0.08102%
TRS' Proportionate Share of the Net Pension Liability	$1,443,205	$1,745,606	$1,502,397	$1,177,820	$1,009,567
State of Montana's Proportionate Share of the Net Pension Liability Associated With the TRS	$464,136	$0	$0	$0	$0
Total NPL	$1,907,341	$1,745,606	$1,502,397	$1,177,820	$1,009,567
TRS' Covered-Employee Payroll	$1,123,898	$1,098,725	$1,043,891	$971,504	$905,963
TRS' Proportionate Share of the Net Pension Liability as a Percentage of Its Covered-Employee Payroll	128.4%	158.9%	143.9%	121.2%	111.4%
Fiduciary Net Position as a Percentage of the Total Pension Liability	73.5%	73.8%	74.7%	78.4%	79.9%

The amounts presented above for each fiscal year were determined as of June 30th, the measurement date. Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.

Schedule of Contributions – TRS as Employer of PERS Plan

	2019	2018	2017	2016	2015
Contractually Required Contributions	$98,599	$95,649	$93,731	$89,396	$82,288
Contributions in Relation to the Contractually Required Contributions	$98,599	$95,649	$93,731	$89,396	$82,288
Contribution Deficiency (Excess)	$0	$0	$0	$0	$0
Employer's Covered-Employee Payroll	$1,241,460	$1,123,898	$1,098,725	$1,043,891	$971,504
Contributions as a Percentage of Covered-Employee Payroll	7.94%	8.51%	8.53%	8.56%	8.47%

The amounts presented above for each fiscal year were determined as of June 30th, the most recent fiscal year end. Schedule is intended to show information for 10 years. Additional years will be displayed as they become available

Note to RSI - Changes of Benefit Terms – PERS Plan

The following changes to the plan provision were made as identified:

2013 Legislative Changes:

Working Retirees - House Bill 95

- The law requires employer contributions on working retiree compensation.
- Member contributions are not required.
- Working retiree limitations are not impacted. PERS working retirees may still work up to 960 hours a year, without impacting benefits.

Highest Average Compensation (HAC) Cap - House Bill 97, effective July 1, 2013

- All PERS members hired on or after July 1, 2013, are subject to a 110% annual cap on compensation considered as part of a member's highest or final average compensation.
- All bonuses paid to PERS members on or after July 1, 2013, will not be treated as compensation for retirement purposes.

House Bill 454 - Permanent Injunction Limits Application of the GABA Reduction passed under HB 454

Guaranteed Annual Benefit Adjustment (GABA)

- After the member has completed 12 full months of retirement, the member's benefit increases by the applicable percentage (provided below) each January, inclusive of all other adjustments to the member's benefit.

- 3% for members hired prior to July 1, 2007.
- 1.5% for members hired on or after July 1, 2007, and before July 1, 2013.
- Members hired on or after July 1, 2013:
  b. 1.5% each year PERS is funded at or above 90%;
  c. 1.5% is reduced by 0.1% for each 2% PERS is funded below 90%, and
  d. 0% whenever the amortization period for PERS is 40 years or more.

2015 Legislative Changes:

General Revisions - House Bill 101, effective January 1, 2016

Second Retirement Benefit

1. Applies to PERS members who return to active service on or after January 1, 2016. Members who retire before January 1, 2016, return to PERS-covered employment and accumulate less than 2 years of service credit before retiring again:
   - refund of member's contributions from second employment plus regular interest (currently 0.25%);
   - no service credit for second employment;
   - start same benefit amount the month following termination, and
   - GABA starts again in the January immediately following second retirement.

2. For members who retire before January 1, 2016, return to PERS-covered employment and accumulate two or more years of service credit before retiring again:
   - member receives a recalculated retirement benefit based on laws in effect at second retirement, and
   - GABA starts in the January after receiving recalculated benefit for 12 months.

3. For members who retire on or after January 1, 2016, return to PERS-covered employment and accumulate less than 5 years of service credit before retiring again:
   - refund of member's contributions from second employment plus regular interest (currently 0.25%);
   - no service credit for second employment;
   - start same benefit amount the month following termination, and
   - GABA starts again in the January immediately following second retirement.

4. For members who retire on or after January 1, 2016, return to PERS-covered employment and accumulate five or more years of service credit before retiring again:
   - member receives same retirement benefit as prior to return to service;
   - member receives second retirement benefit for second period of service based on laws in effect at second retirement, and
   - GABA starts on both benefits in January after member receives original and new benefit for 12 months.

Employer Contributions and the Defined Contribution Plan

The Plan Choice Rate (PCR) was paid off effective March 2016 and the contributions of 2.37%, .47%, and the 1.0% increase previously directed to the PCR are now directed to the Defined Contribution or MUS-RP member's account.

2017 Legislative Changes:

Working Retiree Limitations
If a PERS retiree returns as an independent contractor to what would otherwise be PERS-covered employment, general contractor overhead costs are excluded from PERS working retiree limitations.

Refunds
1. Terminating members eligible to retire may, in lieu of receiving a monthly retirement benefit, refund their accumulated contributions in a lump sum.

2. Terminating members with accumulated contributions between $200 and $1,000 who wish to rollover their refund must do so within 90 days of termination of service.
3. Trusts, estates, and charitable organizations listed as beneficiaries are entitled to receive only a lump-sum payment.

Interest credited to member accounts
Effective July 1, 2017, the interest rate credited to member accounts increased from 0.25% to 0.77%.

Lump-sum payouts
Effective July 1, 2017, lump-sum payouts in all systems are limited to the member's accumulated contributions rate than the present value of the member's benefit.

Disabled PERS Defined Contribution (DC) Members
PERS members hired after July 1, 2011 have a normal retirement age of 65. PERS DC members hired after July 1, 2011 who became disabled were previously only eligible for a disability benefit until age 65. Effective July 1, 2017, these individuals will be eligible for a disability benefit until they reach 70, thus ensuring the same 5-year time period available to PERS DC disabled members hired prior to July 1, 2011 who have a normal retirement age of 60 and are eligible for a disability benefit until age 65.

PERS Statutory Appropriation – House Bill 648, effective July 1, 2017
Revenue from coal severance taxes and interest income from the coal severance tax permanent fund previously statutorily-appropriated to the PERS defined benefit trust fund will be replaced with the following statutory appropriations:

1. FY2018 - $31.386 million
2. FY2019 - $31.958 million
3. Beginning July 1, 2019 through at least June 30, 2025, 101% of the contribution from the previous year from the general fund to the PERS defined benefit trust fund, as follows:
    a. FY2020 - $32.277 million
    b. FY2021 - $32.6 million
    c. FY2022 - $32.926 million
    d. FY2023 - $33.255 million
    e. FY2024 - $33.588 million
    f. FY2025 - $33.924 million

Note to RSI – Changes in Actuarial Assumptions and Methods - PERS Plan

Method and assumptions used in calculations of actuarially determined contributions
The following Actuarial Assumptions were adopted from the June 30, 2017 actuarial valuation:

General Wage Growth*	3.50%
Investment Rate of Return*	7.65%
*Includes inflation at	2.75%
Merit salary increases	0% to 4.80%
Asset valuation method	4-year smoothed market
Actuarial cost method	Entry age Normal
Amortization method	Level percentage of payroll, open
Remaining amortization period	30 years
Mortality (Healthy members)	For Males and Females: RP 2000 Combined Employee and Annuitant Mortality Table projected to 2020 using Scale BB, males set back 1 year
Mortality (Disabled members)	For Males and Females: RP 2000 Combined Mortality Table
Admin Expense as % of Payroll	0.26%

Administrative expenses are recognized by an additional amount added to the normal cost contribution rate for the System. This amount varies from year to year based on the prior year's actual administrative expenses.

The following addition to the actuarial assumptions was adopted in 2014 based upon implementation of GASB Statement 68:

Admin Expense as % of Payroll	0.27%

The following changes were adopted in 2013 based on the 2013 Economic Experience study:

General Wage Growth*	4.00%
*Includes inflation at	3.00%
Investment rate of return	7.75%, net of pension plan investment expense, and including inflation

The following Actuarial Assumptions are from the June 2010 Experience Study:

General Wage Growth*	4.25%
*Includes inflation at	3.00%
Merit increase	0% to 7.3%
Investment rate of return	8.00%, net of pension plan investment expense, and including inflation
Asset valuation method	4-year smoothed market
Actuarial cost method	Entry age
Amortization method	Level percentage of pay, open

Other Post-employment Benefits Plan Information

	2019*	2018*
TRS Proportionate Share of the Total OPEB Liability	0.24391%	0.27378%
TRS Total OPEB Liability	$135,851	$138,145
TRS' covered employee payroll	$1,123,898	$1,098,725
TRS Total OPEB Liability as a percentage of covered payroll	12.09%	12.57%

** The amounts presented above for each fiscal year were determined as of June 30th, the measurement date. Schedule is intended to show information for 10 years. Additional years will be displayed as they become available.*

Note to RSI – OPEB Information

The State of Montana OPEB plan is not administered through a trust; as such, there are no plan assets accumulated to offset the total OPEB liability.

Actuarial assumptions and other inputs:
The total OPEB liability in the latest actuarial valuation dated December 31, 2017, the following assumptions and other inputs, applied to all periods included in the measurement, unless otherwise specified:

- Contributions: $ 2,212
- Actuarial valuation date: December 31, 2017
- Actuarial measurement date(1): March 31, 2019
- Actuarial cost method: Entry age normal funding method
- Amortization method: Open basis
- Asset valuation method: Not applicable since no assets meet the definition of plan assets under GASB 75

- Actuarial Assumptions:
- Discount rate: 3.79%
- Projected payroll increases: 4.00%
- Participation: Future retirees 55.00%, Future eligible spouses 60.00%
- Marital status at retirement: 70.00%

(1) Update procedures were used to roll forward the total OPEB liability to the measurement date.

Mortality - Health: For the OPEB plan, healthy mortality is assumed to follow the RP-2000 Healthy Annuitant Mortality Table for ages 50 and above and the RP-2000 Combined Healthy Annuitant Mortality Table for ages below 50, set back four years for males, set back two years for females, with mortality improvements projected by Scale BB to 2018. For all other groups, healthy mortality is assumed to follow the RP-2000 Combined Mortality Table with improvements projected by Scale BB to 2020, set back one year for males.

Mortality - Disabled: For The OPEB Plan, disabled mortality is assumed to follow the RP-2000 Disabled Mortality Table, set forward one year for males and set forward five years for females, with mortality improvements projected by Scale BB to 2018. For all other groups, disabled mortality is assumed to follow the RP-2000 Combined Mortality Table with no projections.

TEACHERS' RETIREMENT SYSTEM
A COMPONENT UNIT OF THE STATE OF MONTANA
SUPPORTING SCHEDULES / SUPPLEMENTARY INFORMATION
FISCAL YEAR ENDED JUNE 30, 2019

SCHEDULE OF ADMINISTRATIVE EXPENSES

Expenses for the administration of the plan, excluding compensated absences, depreciation and amortization are budgeted and approved by the TRS Board. The administrative costs of the TRS are financed through realized investment income. The expenses, less amortization of assets, may not exceed 1.5% of retirement benefits paid. Administrative expenses for the fiscal year ended June 30, 2019, were 0.80% of benefits paid. The administrative expenses by category are outlined below:

Administrative Expenses

		2019
Personal Services:		
Salaries	$	1,028,597
Other Compensation		2,800
Employee Benefits		485,393
Total Budgeted Personal Services	**$**	**1,516,790**
Operating Expenses:		
Contracted Services	$	584,037
Supplies and Material		137,806
Communications		82,017
Travel		18,408
Rent		70,752
Repair and Maintenance		9,497
Other Expenses		(41,087)
Total Budgeted Operating Expenses	**$**	**861,430**
Non-Budgeted Expenses:		
OPEB Contribution Expense	$	2,212
OPEB Contribution Offset		(6,385)
Pension Contribution Offset		(98,599)
Compensated Absences		11,744
Amortization Expense		659,917
Total Non-Budgeted Expenses	**$**	**568,888**
Total Administrative Expenses	**$**	**2,947,109**

SCHEDULE OF INVESTMENT EXPENSES

Investment	BOI	Custodial Bank	External Managers	Other	Total
Short-Term Investment Pool	$ 15,900	$ 7,843	N/A	$ 145,374	$ 169,118
Consolidated Asset Pension Pool	$ 1,713,726	$ 446,418	$ 17,058,359	$ 6,271,435	$ 25,489,937
Totals	**$ 1,729,625**	**$ 454,261**	**$ 17,058,359**	**$ 6,416,809**	**$ 25,659,055**

SCHEDULE OF PAYMENTS TO CONSULTANTS

Costs included in the table below are a result of administrative expenses, as well as several costs associated with the M-Trust project as of June 30, 2019.

		2019
Actuarial Services	$	123,741
Project Consulting Services		90,687
Legal Services		9,088
Audit Services		31,733
Medical Evaluations		275
IT Contracts		9,497
Non-Project IT Services and Consulting		144,000
Project IT Services and Consulting		266,980
Total Consultant Payments	**$**	**676,000**

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INVESTMENT SECTION

MONTANA BOARD OF INVESTMENTS

Department of Commerce

Street Address:
2401 Colonial Drive, 3rd Floor
Helena, MT 59601

Mailing Address:
PO Box 200126
Helena, MT 59620-0126

Phone: 406/444-0001
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Website: www.investmentmt.com

Consolidated Asset Pension Plan Investment Letter

For the fiscal year ended June 30, 2019

Fiscal year 2019 saw net growth in the Consolidated Asset Pension Pool (CAPP) of 5.8% for the tenth consecutive year of positive returns. The since inception return performance for the Public Employee Retirement System (PERS) and Teachers Retirement System (TRS), by far the two largest systems, are 7.66% and 7.67% respectively. The net asset value (NAV) of CAPP grew by $165.2 million over the fiscal year.

The asset allocation established by the Board of Investments is meant to facilitate accomplishing the investment objectives of the respective CAPP participants by minimizing losses and maximizing gains in line with the Board's fiduciary obligations. This asset mix ensures diversification to protect against losses but also ensures gains are to the benefit of pensioners. Leading asset classes for FY2019 were Private Equity (9.3%), Investment Grade Credit (8.7%), Real Estate (8.4%), and High Yield (7.2%). TIPS (4.8%), Broad Fixed Income (7.9%), US Treasury and Agency (6.3%), Mortgage-Backed Securities (6.8%), and Diversifying Strategies (3.9%) all posted positive returns for the year. International Equity (.8%), Cash (2.3%), and Natural Resources (3.8%) returns blunted overall gains but did ensure broad market exposure to ensure positive returns over the long-term. Domestic Equity, the largest asset class, had a 6.8% return despite significant market volatility beginning in the first and second quarter of FY2019.

Moving forward, the Board will have the opportunity to invest in longer duration assets which will carry an additional inherent premium. Investments in Real Estate, Private Equity, and Natural Resources may be a focus. Equities will remain the vast majority of the portfolio into the future, led by US Domestic Equities.

Returns may be challenged by prolonged international trade disputes, a global economic slowdown, and worldwide political uncertainty. Consumer spending will continue to buoy the US economy and changes in sentiment could pose risks to the economy and, thus, CAPP returns.

The Board will continue to examine its asset allocation, liquidity of individual pension plans, and economic conditions for opportunities to improve performance.

Respectfully submitted,

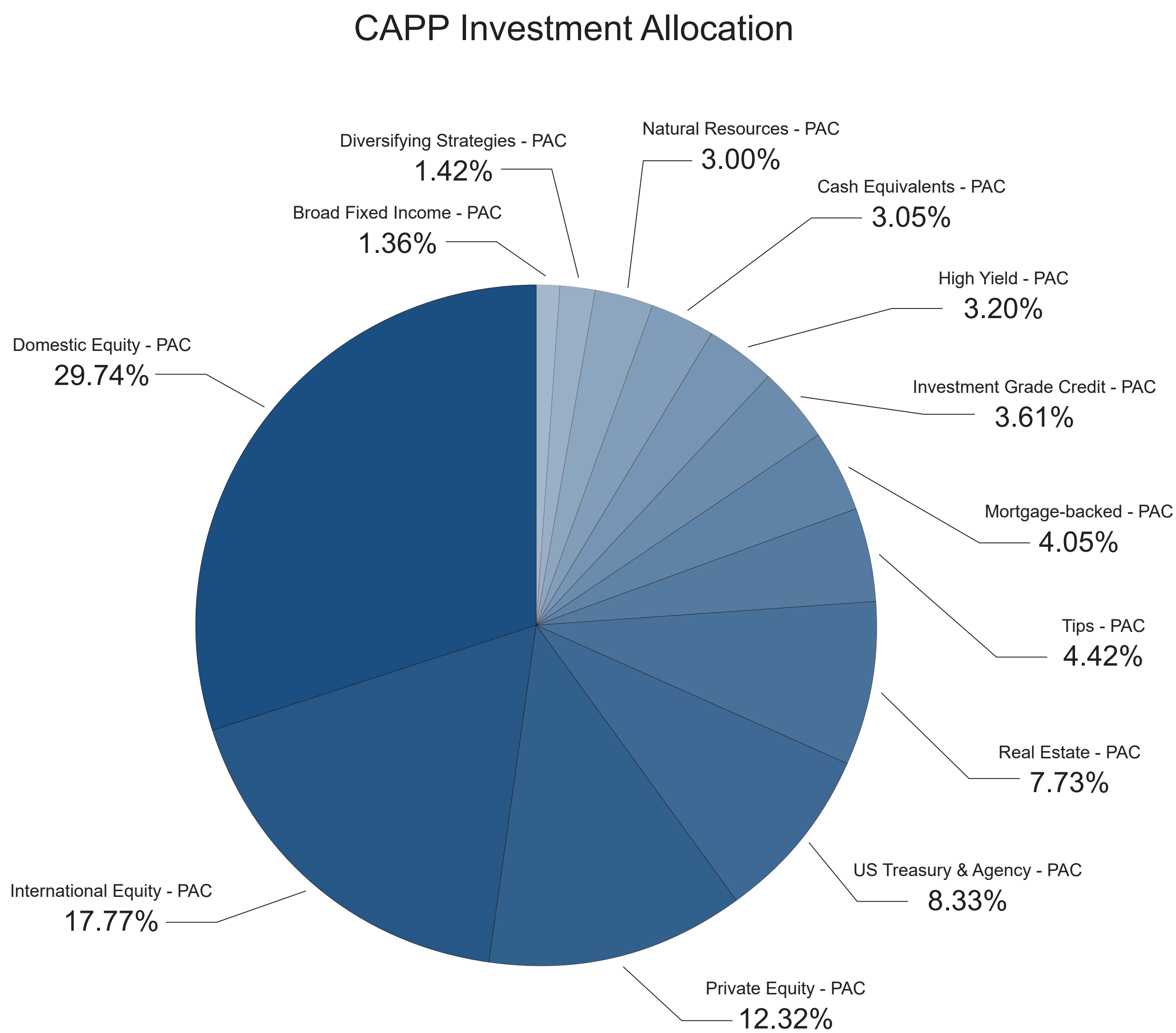
DAN VILLA
Executive Director, Acting Chief Investment Officer
Montana Board of Investments

*The investment returns are based on data made available by the investment custodian, State Street Bank. Performance calculations were prepared using time-weighted rates of return and are net-of-fees.

Investment Policy

BOI manages the State's Unified Investment Program, which includes TRS plan investments as required by §19-20-501, MCA. The Unified Investment Program is required by law to operate under the "prudent expert principle," defined as: 1) discharging its duties with the care, skill, prudence, and diligence that a prudent person acting in a like capacity with the same resources and familiar with like matters exercises in the conduct of an enterprise of like character and like aims; 2) diversifying the holdings of each fund to minimize the risk of loss and maximize the rate of return, and 3) discharging its duties solely in the interest of and for the benefit of the funds managed.

Basis of Presentation



The BOI provides the investment returns for the Investment Pools based on data made available by the fund's custodian, State Street Bank. Performance calculations were prepared using time-weighted rates of return and are net-of-fees unless otherwise indicated.

INVESTMENT RESULTS

TRS Rates of Returns

	FY 2019	3-Year	5-Year	ITD
Short-term Investment Pool	2.36%	1.56%	1.04%	2.46%
- Short Term Custom Benchmark	*2.27%*	*1.53%*	*1.02%*	*2.39%*
Consolidated Asset Pension Pool	5.81%	N/A	N/A	8.02%
- CAPP Custom Benchmark	*5.72%*	*N/A*	*N/A*	*7.89%*
Domestic Equity - PAC	6.81%	13.10%	9.56%	9.12%
- Domestic Equity PAC Custom Blend	*8.96%*	*13.91%*	*10.45%*	*9.91%*
Internnational Equity - PAC	0.78%	9.47%	2.74%	4.71%
- International Equity PAC Custom Blend	*0.26%*	*9.17%*	*2.25%*	*5.02%*
Private Equity - PAC	9.29%	12.60%	10.37%	12.16%
- Private Equity PAC Custom	*0.40%*	*11.35%*	*11.08%*	*10.87%*
Natural Resources - PAC	3.80%	N/A	N/A	5.32%
- MSCI AC World Commodity Prod Net	*(4.60%)*	*N/A*	*N/A*	*6.68%*
Real Estate - PAC	8.41%	8.66%	10.22%	4.05%
- Real Estate PAC Custom Blend	*11.06%*	*7.32%*	*9.37%*	*6.08%*
TIPS - PAC	4.77%	N/A	N/A	2.59%
- BBG Barclays US Intermediate TIPS	*4.67%*	*N/A*	*N/A*	*2.53%*
Broad Fixed Income - PAC	7.86%	2.55%	3.18%	5.92%
- Broad Fixed Income PAC Custom Blend	*7.87%*	*2.31%*	*2.95%*	*5.21%*
US Treasury & Agency - PAC	6.31%	N/A	N/A	2.80%
- BBG BARC TSY INT (Daily)	*6.19%*	*N/A*	*N/A*	*2.66%*
Investment Grade Credit - PAC	8.66%	N/A	N/A	4.32%
- BBG BARC US CORP INT INV GRD IDX	*8.57%*	*N/A*	*N/A*	*4.22%*
Mortgage-Backed - PAC	6.76%	N/A	N/A	3.60%
BBG BARC US MBS IDX	*6.22%*	*N/A*	*N/A*	*3.18%*
High Yield - PAC	7.20%	N/A	N/A	4.66%
- BBG BARC US HY - 2% ISSR CAP	*7.48%*	*N/A*	*N/A*	*5.45%*
Diversifiying Strategies - PAC	3.88%	N/A	N/A	5.64%
- BBG BARC Tsy Int (Dly)	*6.19%*	*N/A*	*N/A*	*4.97%*
Cash Equivalents - PAC	2.33%	N/A	N/A	1.86%
- Short Term Custom Benchmark	*2.27%*	*N/A*	*N/A*	*1.85%*
TOTAL PORTFOLIO RETURN	**5.69%**	**8.78%**	**6.57%**	**8.37%**

INVESTMENT SUMMARY AND ASSET ALLOCATION

TRS Cash Equivalent and Investment Portfolio
June 30, 2019

Investment	Book Value	Fair Value
Short-term Investment Pool	$ 125,437,736	$ 125,455,317
Consolidated Asset Pension Pool	3,424,220,468	4,065,250,746
Total	$ 3,549,658,204	$ 4,190,706,063

Investment Pool Holdings at June 30, 2019

Broad Fixed Income Pension Asset Class Total	*Market Value*
US TREASURY N/B	*43,352,122*
TREASURY BILL	*23,700,332*
FNMA TBA 30 YR 4.5	*13,779,994*
SP9FDCSL7 CDS USD R F 1.00000	*12,020,610*
SHORT TERM INVESTMENT FUND	*11,210,246*
FNMA TBA 30 YR 5	*7,577,055*
FNMA TBA 30 YR 3.5	*7,058,360*
FNMA TBA 30 YR 3	*6,897,090*
FANNIEMAE ACES	*5,232,537*
FNMA POOL AN1614	*3,762,399*

Domestic Equity Pension Asset Class Total	*Market Value*
DIMENSIONAL FUND ADVISORS INC	*165,918,145*
MICROSOFT CORP	*117,168,248*
BLK MSCI USA SMALL CAP EQ	*98,537,222*
AMAZON.COM INC	*94,584,925*
APPLE INC	*91,289,017*
STATE STREET BANK + TRUST CO	*69,410,866*
ALPHABET INC CL C	*48,724,180*
FACEBOOK INC CLASS A	*43,651,582*
ALPHABET INC CL A	*34,874,822*
MASTERCARD INC A	*34,874,048*

High Yield Pension Asset Class Total	*Market Value*
SHORT TERM INVESTMENT FUND	*20,983,028*
CCO HLDGS LLC/CAP CORP	*7,022,960*
CSC HOLDINGS LLC	*6,679,206*
SPRINT CORP	*6,484,857*
BAUSCH HEALTH COS INC	*5,945,345*
SIRIUS XM RADIO INC	*5,274,705*
TENET HEALTHCARE CORP	*4,021,739*
REYNOLDS GRP ISS/REYNOLD	*3,911,620*
BERRY GLOBAL INC	*3,684,379*
SPRINGLEAF FINANCE CORP	*3,682,578*

International Equity Pension Asset Class Total	Market Value
ACWI EX US SUPERFUN	869,250,416
DFA INTERNATIONAL SMALL COMPAN	89,031,701
SHORT TERM INVESTMENT FUND	71,097,746
BLACKROCK ACWI EX US SMALL -INDEX	57,159,552
DFA EMERGING MARKETS SMALL CAP	28,365,899
SAP SE	11,267,415
NOVARTIS AG REG	10,500,167
ROYAL DUTCH SHELL PLC A SHS	10,064,226
RELX PLC	9,312,656
MSCI EMF	8,432,328

Investment Grade Credit Pension Asset Class Total	Market Value
CITIBANK CREDIT CARD ISSUANCE	10,066,524
JPMORGAN CHASE + CO	9,422,666
HSBC HOLDINGS PLC	8,482,282
GOLDMAN SACHS GROUP INC	7,676,955
VERIZON COMMUNICATIONS	7,567,796
ALTRIA GROUP INC	7,524,798
AIR LIQUIDE FINANCE	7,440,745
FEDEX CORP	7,434,245
WELLTOWER INC	7,375,277
COMCAST CORP	7,328,265

Mortgage Backed Pension Asset Class Total	Market Value
GOVERNMENT NATIONAL MORTGAGE A	26,262,076
FREDDIE MAC	21,246,052
NEW RESIDENTIAL MORTGAGE LOAN	20,957,483
SHORT TERM INVESTMENT FUND	18,011,639
COMM MORTGAGE TRUST	17,414,676
FNMA POOL BJ7881	15,102,524
FANNIE MAE	12,479,438
FED HM LN PC POOL G08732	12,169,839
FED HM LN PC POOL C91856	11,833,860
FED HM LN PC POOL C91782	11,562,258

Private Equity Pension Asset Class Total	*Market Value*
HCI EQUITY PARTNERS IV LP	*44,847,697*
NORTHGATE V LP	*44,788,170*
DEERPATH CAPITAL ADVANTAGE IV	*43,096,339*
OCP ASIA FUND III LP	*41,001,356*
VIDA INSURANCE CRD OPP FD II	*37,348,094*
ORCHARD LANDMARK II LP	*36,559,149*
AXIOM ASIA PRIVATE CAP FND III	*36,007,842*
AXIOM ASIA IV LP	*32,896,513*
BDCM OPPORTUNITY FUND III LP	*31,387,452*
PINE BROOK FUND II, L.P	*29,177,394*

Natural Resources Pension Asset Class Total	*Market Value*
MOLPUS WOODLANDS FUND III LP	*44,894,420*
ORM TIMBER FUND III LLC	*32,912,082*
EIF US POWER FUND IV LP	*23,759,946*
WARWICK PARTNERS III, L.P.	*22,533,335*
MOUNTAIN CAPITAL PARTNERS, LP	*19,666,295*
ARCLIGHT ENERGY PART FD VI LP	*18,737,083*
RMS FOREST GROWTH III LP	*18,319,698*
WHITE DEER ENERGY II LP	*17,714,535*
TRILANTIC ENERGY	*15,714,681*
ORM TIMBER FUND IV LLC	*10,776,071*

Real Estate Pension Asset Class Total	*Market Value*
HEITMAN AMERICA RE TRUST LP	*80,941,189*
FIDELITY ADVISOR SER IV	*51,699,786*
CENTERSQUARE DOMESTIC REIT MU6	*40,103,558*
CBRE STRATEGIC PART US VALUE 8	*22,588,463*
SHORT TERM INVESTMENT FUND	*21,902,374*
STOLTZ REAL ESTATE FUND V	*21,719,896*
DRA GROWTH AND INCOME VIII	*19,973,685*
STOCKBRIDGE VALUE FUND II	*19,956,663*
AG REALTY REALTY FUND IX LP	*18,920,595*
EQUUS INVT PARTNERSHIP X LP	*18,728,775*

TIPS Pension Asset Class	*Market Value*
TSY INFL IX N/B	*496,524,704*
SHORT TERM INVESTMENT FUND	*10,310,753*

US Treasury Pension Asset Class Total	Market Value
US TREASURY N/B	708,325,582
FEDERAL HOME LOAN BANK	95,163,760
FEDERAL FARM CREDIT BANK	24,555,650
FANNIE MAE	21,775,776
FNMA POOL BM4550	20,838,336
FNMA POOL 471456	11,095,889
FNMA POOL AN4415	10,335,743
FRESB MULTIFAMILY MORTGAGE PAS	9,840,646
FNMA POOL 466675	9,795,458
FNMA POOL 469739	6,427,530

Diversified Strategies	Market Value
US TREASURY N/B	55,809,141
PIMCO ALL ASSET FUND	53,151,123
GMO BENCHMARK FREE ALLOCATION	51,534,701
SHORT TERM INVESTMENT FUND	2,065,907

Cash Equivalents	Market Value
SHORT TERM INVESTMENT FUND	306,417,865
SHORT TERM INVESTMENT POOL	43,136,482

The holdings in the Pension Asset Classes above represent the BOI overall holdings in the CAPP and STIP pools. TRS owns a portion of each pool (approximately 35.44%). A complete list of the portfolio holdings is available upon request from BOI.

Investment Management Fees

The Legislature sets the maximum management fee the BOI may charge the accounts it manages. The maximum fee is set at the aggregate level and at the beginning of each fiscal year. The BOI allocates the aggregate fees across the Pools. Custodial bank fees are paid by a statutory appropriation from the state general fund. The BOI allocates custodial bank fees across the Pools and accounts invested outside the Pools and deposits the proceeds in the general fund. The State Treasurer then pays the monthly custodial bank fees from the general fund. External manager fees are paid directly from the accounts they manage. TRS investment management fees charged to each Pool are shown below:

Schedule of Investment Expenses as of 6/30/19

Investment	BOI	Custodial Bank	External Managers	Other	Total
Short-term Investment Pool	$ 15,900	$ 7,843	N/A	$ 145,374	$ 169,117
Consolidated Asset Pension Pool	$ 1,713,726	$ 446,417	$ 17,058,359	$ 6,271,435	$ 25,489,937
Totals	$ 1,729,626	$ 454,260	$ 17,058,359	$ 6,416,809	$ 25,659,055

INVESTMENT SECTION

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ACTUARIAL SECTION

ACTUARY'S CERTIFICATION LETTER

EXHIBITS

1. SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS
2. SCHEDULE OF ACTIVE MEMBER VALUATION DATA
3. SCHEDULE OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
4. SOLVENCY TEST
5. ANALYSIS OF FINANCIAL EXPERIENCE
6. PROVISIONS OF GOVERNING LAW
7. SCHEDULE OF FUNDING PROGRESS
8. SCHEDULE OF CONTRIBUTIONS FROM EMPLOYERS AND OTHER CONTRIBUTING ENTITIES

Teachers' Retirement Board
State of Montana
1500 Sixth Avenue
Helena, MT 59620-0139

Members of the Board:

We have completed the annual valuation of the Teachers' Retirement System of the State of Montana as of July 1, 2019. The purpose of this valuation is to determine the financial status of the Retirement System. To achieve this purpose, an actuarial valuation is made at the beginning of each fiscal year as required by MCA 19-20-201.

The purpose of this letter is to provide the Actuarial Section, the Schedule of Funding Progress, and the Schedule of Contributions from the Employers and Other Contributing Entities for the System's Comprehensive Annual Financial Report.

The funding objective of the System is to establish contribution rates that will tend to remain level as a percentage of payroll. The contribution rates are:

History of Legislated Contributions
(as a Percent of Pay)

School District and Other Employers

	Members	Employers	General Fund	Total
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
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%

In addition to these rates, the System receives $25 million annually payable on July 1st each year.

Finally, employers are now required to contribution 9.85% of total compensation plus the supplemental contribution required under 19-20-609, MCA, of re-employed retirees who are employed in TRS covered positions. Pursuant to MCA 19-20-609, the 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.

The July 1, 2019 actuarial valuation indicates that the current employer rate of 11.56% including the anticipated increases in the employer rate is sufficient to pay the System's normal cost and to amortize the System's Unfunded Actuarial Accrued Liability (UAAL) over a 29-year period. The normal cost of 9.78% of pay consists of 1.63% employer contributions and 8.15% employee contributions. The employer rate also includes 0.36% of payroll which is a load for administrative expenses that occur during the year. The remaining contribution of 9.57% plus the previously mentioned cash contributions go toward funding the amortization of the UAAL, which is $1,929.0 million as of July 1, 2019.

A funding measurement that may be considered is the funding ratio of the Actuarial Accrued Liability to Assets. This ratio is shown in the Schedule of Funding Progress. As the actuarial experience varies from year to year, the funding ratio will reflect actuarial gains and losses. The Actuarial Accrued Liability represents the portion of the total plan benefits and expenses which is not provided for by future Normal Cost contributions.

The actuarial assumptions used in our 2019 actuarial valuation are summarized in Exhibit 1. Adoption dates vary by assumption and are provided in Exhibit 1.

In preparing our actuarial valuation reports, we relied, without audit, on the financial statements prepared by the staff of the System. We also relied upon the employee and beneficiary data provided to us by the staff. We compared the data for the July 1, 2019 actuarial valuation with corresponding information from the prior valuation and tested for missing or incomplete items, such as birth dates and hire dates. Based on these tests, we believe the data to be sufficient and reliable for the purposes of our calculations. It should be noted that if any data or other information is inaccurate or incomplete, our calculations might need to be revised.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Actuarial Standards of Practice promulgated by the Actuarial Standards Board and the applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

The assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice. The assumptions represent our best estimate of future conditions affecting the System, and we believe they are reasonably related to the past experience of the System. Nevertheless, the emerging costs of the System will vary from those presented in our report to the extent that actual experience differs from that projected by the actuarial assumptions. Gains or losses in future experience may result in changes in future contribution rates. The current actuarial asset method smoothed investment gains and losses over a four year period.

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.

Funding and Benefits Policy

The Teachers' Retirement System has adopted a Funding and Benefits Policy to provide general guidelines to help ensure decisions are made based on sound, consistent, and thoroughly examined criteria. The Funding and Benefits Policy includes guidance on the following topics:

1) Additional Funding
    a) The Funding and Benefits Policy states:
        "1. If the amortization period is greater than 30 years, the actuary will recommend the single contribution rate increase that can reasonably expect to fully amortize the UAAL over a closed 30-year period effective July 1, following the next regular legislative session.
        2. If the amortization period is less than 30 years, but greater than 0, and it is projected to continue to decline over the remainder of the closed period, the actuary will not recommend a change in the statutory contribution rates.
        3. If the amortization period is less than 30 years, but has increased over prior valuations and is projected to continue to grow, the actuary will recommend a contribution rate increase that is reasonably expected to reverse the recent trend and reestablish a closed amortization period equal to that of the last valuation."
2) Analysis: The amortization period as of July 1, 2019 is 29 years based on actuarial assets and 29 years based on market assets. Assuming experience follows the actuarial assumptions, the amortization period is projected to decline.

3) Ultimate Goal

   a) The Funding and Benefits Policy states: “It is the desire of the Board to fully fund the System. However, until the System becomes fully funded, any unfunded will be amortized over a closed period of no more than 30 years and funded as a level percent of pay. At such time as the System becomes fully funded and has a stabilization reserve of at least 10% of the actuarial accrued liability, the allowed amortization period for any subsequent unfunded liabilities will be reduced to a closed period of not greater than 20 years.”

   b) Analysis: The amortization period on an actuarial value of asset basis is 29 years and is anticipated to decline. It is important to note that the normal cost rate for members hired on or after July 1, 2013 is less than the rate for members hired before July 1, 2013. As members hired before July 1, 2013 terminate or retire and are replaced with members with a lower normal cost rate, more of the employer contribution will be available to amortize the UAAL. As a result, the effective amortization period is less than the amortization period calculated in the actuarial valuation, which does not reflect new hires.

4) Benefit Enhancements

   a) The Funding and Benefits Policy states: “Any recommendation for a benefit enhancement must include recommendations for necessary additional funding or other benefit reduction to cover any increase in normal cost arising from the recommended enhancement and to amortize any increase in the unfunded actuarial accrued liabilities arising from the recommended enhancement over a period not to exceed 25 years.

      The Board will determine its position with respect to supporting or opposing legislation, on a case-by-case basis, and will apply this policy, actuarial funding standards, and other industry-standard information and resources if finds persuasive, as decision guides. The Board may not support legislation to enhance benefits if the funded ratio is less than 85%, and the amortization period is greater than 20 years.”

   b) Analysis: Since the funded ratio at July 1, 2019 of 68.63% is below 80% the Board’s Funding and Benefits policy does not currently support enhanced benefits.

Assumption Changes

There have been no assumption changes since the previous valuation.

Benefit Changes

There have been no benefit changes since the previous valuation that would have a material effect on the liabilities of the System.

Contribution Changes

An employer supplemental contribution of 1% of compensation is required beginning in fiscal year 2014 which will increase by 0.10% each subsequent fiscal year through 2024. For fiscal years beginning after June 30, 2024, the supplemental employer contribution will equal 2.00% of compensation.

Method Changes

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, we have lowered the assumed increase from 1.50% to the current rate of 0.50% per annum.

Impact of Changes

The following table summarizes how experience has changed the UAAL since the July 1, 2018 Actuarial Valuation.

Changes in the Unfunded Actuarial Accrued Liability (UAAL)
(In millions)

July 1, 2018 Valuation UAAL	$ 1,910.0
Expected Increase	(1.7)
Expected July 1, 2019 UAAL	$ 1,908.3
Experience Loss on Actuarial Liabilities	$ 6.7
Experience Gain on Actuarial Assets	20.1
Assumption & Method Changes	(6.1)
Plan Changes	0.0
Total Gain	$ 20.7
July 1, 2019 Valuation UAAL	$ 1,929.0

Contributions

As shown in the "History of Legislated Contributions" at the beginning of this section, the employer contributions from the General Fund have increased to 2.49% of pay as of July 1, 2009. The supplemental contribution to ensure university member benefits are funded by university employers was increased from 4.04% to 4.72% of Montana University System Retirement Program (MUS-RP) member pay at July 1, 2007. The valuation that determined the 4.72% contribution rate of MUS-RP member pay was based on the valuation completed as of July 1, 2006. It is our understanding the contribution will not stop unless legislative action is taken. The most recent MUS-RP valuation completed as of July 1, 2018 indicated an increase is needed in the supplemental contribution rate from 4.72% to 11.89% of MUS-RP member compensation rate.

MCA 19-20-608 and MCA 19-20-609 dictate that employers and members are required to make supplemental contributions if the funded ratio of the System is less than 90%. Since the funded ratio is currently 68.19%, Tier One Members are required to contribute an additional 1% of compensation. The individual employers are required to contribute an additional 1% of compensation. The employer contribution shall increase by 0.1% each year following July 1, 2013 until the total employer supplemental contribution is equal to 2% of compensation.

MCA 19-20-607 requires the State to contribute $25 million annually each July 1st to the System.

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.

The following exhibits provide further information.

Exhibit 1	Summary of Actuarial Assumptions and Methods
Exhibit 2	Schedule of Active Member Valuation Data
Exhibit 3	Schedule of Retirees and Beneficiaries Added to and Removed from Rolls
Exhibit 4	Solvency Test
Exhibit 5	Analysis of Financial Experience
Exhibit 6	Provisions of Governing Law
Exhibit 7	Schedule of Funding Progress
Exhibit 8	Schedule of Contributions from Employers and other Contributing Entities

Todd B. Green is a member of the American Academy of Actuaries and a Fellow of the Conference of Consulting Actuaries, and an Associate of the Society of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely,

/s/ Todd Green

Todd Green, ASA, FCA, MAAA
President

TBG/jw

Enclosures

Exhibit 1

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions for investment return, price inflation, wage inflation, mortality, retirement and withdrawal have been updated to reflect the four-year experience study for the period ending July 1, 2017 adopted by the Board on May 18, 2018.

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

Tables A-3 through A-6 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.

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Employer Contributions

At the time of this valuation, the total employer contribution rate for normal costs and amortization of the UAAL was 11.56% 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 investment expenses of the System are assumed to be funded by investment earnings in excess of 7.50% per year.

Administrative expenses are assumed to equal 0.36% of payroll.

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 7.50% per year net of investment expenses, compounded annually. (Adopted effective May 18, 2018)

Interest on Member Contributions

Interest on member contributions is assumed to accrue at a rate of 5% per annum, compounded annually. This assumption was set as of July 1, 2004.

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.

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table A-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 3.25% 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 1% merit and longevity assumption. The general wage increase assumption was adopted May 18, 2018 and the merit and longevity scales were adopted July 1, 2002.

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 A-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 for General Members were adopted May 18, 2018. The rates for University Members were adopted May 18, 2018.

Disablement

The rates of disablement used in this valuation are illustrated in Table A-4. These rates were adopted May 13, 2010.

Mortality

The mortality rates used in this valuation are illustrated in Table A-5. A written description of each table used is included in Table A-1. These rates were adopted May 18, 2018.

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 A-6. These rates were adopted May 18, 2018.

Benefits for Terminating Members

Members terminating with less than five years of service are assumed to request an immediate withdrawal of their contributions with interest. Table A-7 shows the assumed probability of retaining membership in the System among members terminating with five or more years of service. These rates were adopted July 1, 2002.

We estimated the present value of future benefits for terminated vested members based on the greater of the present value of their deferred benefit at age 60 or their available contribution account.

Exhibit 1
(Continued)

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, 2019 was $253,437,972.

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.

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS
Table A-1
Summary of Valuation Assumptions

I.	Economic assumptions		
	A.	General wage increases* (Adopted May 18, 2018)	3.25%
	B.	Investment return (Adopted May 18, 2018)	7.50%
	C.	Price Inflation Assumption (Adopted May 18, 2018)	2.50%
	D.	Growth in membership	0.00%
	E.	Postretirement benefit increases (Starting three years after retirement)	
		Tier One	1.50%
		Tier Two	0.50%
	F.	Interest on member accounts (Adopted July 1, 2004)	5.00%
II.	Demographic assumptions		
	A.	Individual salary increase due to promotion and longevity (General Member assumptions adopted July 1, 2002) (University Member assumptions adopted July 1, 2000)	Table A-2
	B.	Retirement (adopted May 18, 2018)	Table A-3
	C.	Disablement (adopted May 13, 2010)	Table A-4
	D.	Mortality among contributing members, service retired members, and beneficiaries. The tables include margins for mortality improvement which is expected to occur in the future. For Males and Females: RP-2000 Healthy Combined Mortality Table projected to 2022 adjusted for partial credibility setback for two years (adopted May 18, 2018).	Table A-5
	E.	Mortality among disabled members For Males: RP-2000 Disabled Mortality Table, set back three years, with mortality improvements projected by Scale BB to 2022 (adopted May 18, 2018). For Females: RP-2000 Disabled Mortality Table, set forward two years, with mortality improvements projected by Scale BB to 2022 (adopted May 18, 2018).	Table A-5
	F.	Other terminations of employment (adopted May 18, 2018)	Table A-6
	G.	Probability of retaining membership in the System upon vested termination (adopted July 1, 2002)	Table A-7

* 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.

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Table A-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	4.51%	3.25%	7.76%	1.00%	3.25%	4.25%
2	4.09	3.25	7.34	1.00	3.25	4.25
3	3.46	3.25	6.71	1.00	3.25	4.25
4	2.94	3.25	6.19	1.00	3.25	4.25
5	2.52	3.25	5.77	1.00	3.25	4.25
6	2.21	3.25	5.46	1.00	3.25	4.25
7	1.89	3.25	5.14	1.00	3.25	4.25
8	1.68	3.25	4.93	1.00	3.25	4.25
9	1.47	3.25	4.72	1.00	3.25	4.25
10	1.31	3.25	4.56	1.00	3.25	4.25
11	1.16	3.25	4.41	1.00	3.25	4.25
12	1.00	3.25	4.25	1.00	3.25	4.25
13	0.84	3.25	4.09	1.00	3.25	4.25
14	0.68	3.25	3.93	1.00	3.25	4.25
15	0.58	3.25	3.83	1.00	3.25	4.25
16	0.47	3.25	3.72	1.00	3.25	4.25
17	0.37	3.25	3.62	1.00	3.25	4.25
18	0.26	3.25	3.51	1.00	3.25	4.25
19	0.21	3.25	3.46	1.00	3.25	4.25
20	0.16	3.25	3.41	1.00	3.25	4.25
21	0.11	3.25	3.36	1.00	3.25	4.25
22 & Up	0.00	3.25	3.25	1.00	3.25	4.25

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA
SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS
Table A-3

Retirement
Annual Rates

	General Members			University Members		
Age	Eligible for Reduced Benefits	First Year Eligible for Full Benefits	Thereafter	Eligible for Reduced Benefits	First Year Eligible for Full Benefits	Thereafter
45		16.0%	8.0%		17.0%	8.0%
46		16.0	8.0		17.0	8.0
47		16.0	8.0		17.0	8.0
48		16.0	8.0		17.0	8.0
49	*	16.0	6.0	*	17.0	8.0
50	6.0%	9.0	5.5	7.0%	17.0	8.0
51	6.0	6.0	6.3	7.0	17.0	8.0
52	6.0	6.0	8.0	7.0	17.0	8.0
53	6.0	6.0	7.3	7.0	17.0	8.0
54	7.0	6.0	8.2	7.0	17.0	8.0
55	7.0	6.0	9.8	7.0	15.0	8.0
56	7.0	9.0	11.3	7.0	15.0	8.0
57	7.0	13.5	12.5	7.0	15.0	8.0
58	7.0	18.5	13.1	7.0	15.0	8.0
59	7.0	18.5	14.8	7.0	15.0	8.0
60	*	13.5	20.0	*	15.0	8.5
61		21.0	24.0		14.0	15.0
62		21.0	23.0		20.0	15.0
63		21.0	23.0		14.0	15.0
64		30.0	27.5		20.0	19.5
65		30.0	39.0		28.0	26.0
66		30.0	25.0		21.0	19.5
67		30.0	25.0		21.0	21.5
68		30.0	25.0		21.0	19.5
69		30.0	25.0		21.0	19.5
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.

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Table A-4

Disablement
Annual Rates

Age	All Members
25	.005%
30	.005
35	.008
40	.028
45	.044
50	.063
55	.084
60	.100

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Table A-5
Mortality Annual Rates

	Contributing Members, Service Retired Members and Beneficiaries		Disabled Members	
Age	Men	Women	Men	Women
25	0.03%	0.02%	2.11%	0.70%
30	0.04	0.02	2.11	0.70
35	0.06	0.03	2.11	0.70
40	0.09	0.05	2.11	0.70
45	0.12	0.08	2.11	0.84
50	0.17	0.12	2.34	1.26
55	0.26	0.19	2.95	1.59
60	0.45	0.31	3.47	1.82
65	0.76	0.54	3.65	2.37
70	1.22	0.96	3.94	3.25
75	2.07	1.64	4.90	4.51
80	3.55	2.68	6.51	6.23
85	6.11	4.45	8.61	8.67
90	10.72	7.65	11.22	12.99
95	18.58	13.27	17.59	19.63

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Table A-6

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

Years of Service	Full-time Members	Part-time Members
1	31.7%	36.0%
2	17.4	26.7
3	11.4	24.0
4	10.5	22.0
5	8.0	20.5
6	6.7	19.3
7	5.5	18.2
8	4.1	16.9
9	3.7	15.1
10	3.3	14.2
11	3.0	13.5
12	2.7	12.5
13	2.5	12.0
14	2.3	11.0
15	2.2	10.1
16	2.0	10.1
17	1.9	9.9
18	1.8	9.1
19	1.7	9.0
20	1.6	9.0
21	1.5	9.0
22	1.4	9.0
23	1.4	9.0
24	1.3	9.0

Exhibit 1
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SUMMARY OF ACTUARIAL ASSUMPTIONS AND METHODS

Table A-7

Probability of Retaining Membership in the System Upon Vested Termination

Age	Probability of Retaining Membership
25	54%
30	54
35	58
40	58
45	60
50	70
55	75

Exhibit 2

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SCHEDULE OF ACTIVE MEMBER VALUATION DATA

Full-Time Members

Valuation Date	Number	Annual Payroll	Average Annual Payroll	Annualized % of Increase in Average Pay
July 1, 2010	12,711	630,444,000	49,598	2.5%
July 1, 2011	12,506	633,005,000	50,616	2.1%
July 1, 2012	12,202	622,140,000	50,987	0.7%
July 1, 2013	12,229	628,832,000	51,421	0.9%
July 1, 2014	12,286	638,467,000	51,967	1.1%
July 1, 2015	12,468	655,204,000	52,551	1.1%
July 1, 2016	12,769	673,891,000	52,776	0.4%
July 1, 2017	12,808	689,638,000	53,844	2.0%
July 1, 2018	13,027	706,351,000	54,222	0.7%
July 1, 2019	13,196	728,831,000	55,231	1.9%

Part-Time Members*

Valuation Date	Number	Annual Payroll	Average Annual Payroll	Annualized % of Increase in Average Pay
July 1, 2010	5,642	74,571,000	13,217	(0.4)%
July 1, 2011	5,400	73,275,000	13,569	2.7%
July 1, 2012	5,534	73,788,000	13,334	(1.7)%
July 1, 2013	5,387	73,430,000	13,631	2.2%
July 1, 2014	5,428	74,300,000	13,688	0.4%
July 1, 2015	5,337	74,449,000	13,950	1.9%
July 1, 2016	5,563	81,141,000	14,586	4.6%
July 1, 2017	5,576	86,293,000	15,476	6.1%
July 1, 2018	5,619	86,148,000	15,332	(0.9)%
July 1, 2019	5,798	90,073,000	15,535	1.3%

** Excludes part-time active members with annual compensation less than $1,000.*

Exhibit 3

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SCHEDULE OF RETIREES AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS

	Added to Rolls		Removed from Rolls		Rolls End of Year			
Year Ended	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances	% Increases in Annual Allowances	Average Annual Allowances
June 30, 2010	698	16,124,000	294	1,343,000	12,440	234,048,000	6.7%	18,814
June 30, 2011	789	20,846,000	330	4,394,000	12,899	250,500,000	7.0%	19,420
June 30, 2012	777	22,108,000	313	4,757,000	13,363	267,851,000	6.9%	20,044
June 30, 2013	834	21,500,000	329	5,018,000	13,868	284,333,000	6.2%	20,503
June 30, 2014	792	24,241,000	312	5,054,489	14,349	303,520,000	6.7%	21,153
June 30, 2015	864	24,213,000	374	6,222,000	14,839	321,511,000	5.9%	21,667
June 30, 2016	767	22,328,000	442	7,374,000	15,164	336,465,000	4.7%	22,188
June 30, 2017	779	22,320,000	377	6,780,000	15,566	352,005,000	4.6%	22,614
June 30, 2018	784	23,386,000	417	7,401,000	15,933	367,990,000	4.5%	23,096
June 30, 2019	741	23,163,000	418	7,658,000	16,256	383,495,000	4.2%	23,591

Exhibit 4

TEACHERS' RETIREMENT SYSTEM OF MONTANA

SOLVENCY TEST

($ in millions)

Actuarial Valuation Date	Actuarial Value of Assets	Aggregate Accrued Liabilities For			Portion of Accrued Liabilities Covered by Reported Asset		
		(1) Active Member Contributions	(2) Retirants and Beneficiaries	(3) Active Members (Employer Financed Portion)	(1)	(2)	(3)
July 1, 2011	2,866.5	803.3	2,721.4	1,133.8	100.0%	75.8%	0.0%
July 1, 2012	2,852.0	780.7	2,898.9	1,135.1	100.0%	71.5%	0.0%
July 1, 2013	3,067.9	756.9	2,828.6	1,007.2	100.0%	81.7%	0.0%
July 1, 2014	3,397.4	741.7	3,354.6	1,094.7	100.0%	79.2%	0.0%
July 1, 2015	3,609.8	727.1	3,527.6	1,096.7	100.0%	81.7%	0.0%
July 1, 2016	3,798.9	724.0	3,662.2	1,097.5	100.0%	84.0%	0.0%
July 1, 2017	3,973.5	728.2	3,797.8	1,110.8	100.0%	85.5%	0.0%
July 1, 2018	4,094.4	734.7	4,083.7	1,186.0	100.0%	82.3%	0.0%
July 1, 2019	4,219.5	746.2	4,221.8	1,180.6	100.0%	82.3%	0.0%

Exhibit 5

TEACHERS' RETIREMENT SYSTEM OF MONTANA

ANALYSIS OF FINANCIAL EXPERIENCE

An analysis of financial experience is performed in conjunction with all regularly scheduled valuations.

The results of our analysis of the financial experience of the System in the two most recent regular actuarial valuations are presented in this Exhibit 5. Each gain or loss shown represents our estimate of how much the given type of experience caused the Unfunded Actuarial Accrued Liability or Funding Reserve to change in the period since the previous actuarial valuation.

Gains and losses shown due to demographic sources are approximate. Demographic experience is analyzed in greater detail in our periodic assumption studies.

Non-recurring gains and losses result from changes in the actuarial assumptions and benefit improvements.

Exhibit 5
(Continued)

TEACHERS' RETIREMENT SYSTEM OF MONTANA
ANALYSIS OF FINANCIAL EXPERIENCE
($ in millions)

	UAAL (Gain)/Loss		
	June 30, 2019	**June 30, 2018**	**June 30, 2017**
Investment Income			
Investment income was (greater) less than expected based on actuarial value of assets.	$ 20.1	$ 35.1	$ (18.2)
Pay Increases			
Pay increases were (less) greater than expected.	0.1	(24.2)	(14.6)
Age & Service Retirements			
Members retired at (older) younger ages or with (less) greater final average pay than expected	22.1	22.4	4.8
Disability Retirements			
Disability claims were (less) greater than expected	0.2	0.3	0.6
Death-in-Service Benefits			
Survivor claims were (less) greater than expected	(1.1)	(2.6)	(3.9)
Withdrawal From Employment			
(More) less reserves were released by withdrawals than expected	16.7	8.0	6.5
Death After Retirement			
Retirees (died younger) lived longer than expected	12.2	12.6	13.8
Data Adjustments and Benefit Payment Timing			
Service purchases, data corrections, etc.	(43.6)	(0.4)	(1.3)
Other			
Miscellaneous (gains) and losses	0.1	1.5	(0.9)
Total (Gain) or Loss During Period From Financial Experience	$ 26.8	$ 52.7	$ (13.2)
Non-Recurring Items.			
Changes in actuarial assumptions and methods	(6.1)	206.3	-
Changes in benefits caused a (gain) loss	-	-	-
Composite (Gain) Loss During Period	$ 20.7	$ 259.0	$ (13.2)

Exhibit 6

TEACHERS' RETIREMENT SYSTEM OF MONTANA

PROVISIONS OF GOVERNING LAW

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.

Exhibit 6
(Continued)

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.

Exhibit 6
(Continued)

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.

Exhibit 6
(Continued)

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.

Exhibit 6
(Continued)

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, 2019, the interest credited on member contributions increased from 1.40% to 2.30% 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%.

Exhibit 7

TRS PLAN
SCHEDULE OF FUNDING PROGRESS
($ in millions)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liabilities (AAL)[1]	Unfunded Actuarial Accrued Liabilities (UAAL)[2]	Funded Ratio[3]	Covered Payroll[4]	UAAL as a Percentage of Covered Payroll
July 1, 2019	$4,219.6	$6,148.6	$1,929.0	68.6%	$857.5	225.0%
July 1, 2018	4,094.4	6,004.4	1,910.0	68.2%	829.7	230.2%
July 1, 2017	3,973.5	5,636.8	1,663.3	70.5%	818.1	203.3%
July 1, 2016	3,798.9	5,483.6	1,684.7	69.3%	795.9	211.7%
July 1, 2015	3,609.8	5,351.4	1,741.6	67.5%	768.7	226.6%
July 1, 2014	3,397.4	5,191.1	1,793.6	65.5%	750.6	239.0%
July 1, 2013	3,067.9	4,592.7	1,524.8	66.8%	742.6	205.3%
July 1, 2012	2,852.0	4,814.7	1,962.7	59.2%	735.6	266.8%
July 1, 2011	2,866.5	4,658.6	1,792.1	61.5%	746.7	240.0%
July 1, 2010	2,956.6	4,518.2	1,561.6	65.4%	747.0	209.0%

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 university supplemental contributions.*
3) *Funded Ratio is the ratio of the actuarial value of assets over the actuarial accrued liabilities less the present value of future university supplemental contributions. .*
4) *Covered Payroll includes compensation paid to all active employees on which contributions are calculated.*

TRS PLAN
SCHEDULE OF CONTRIBUTIONS FROM EMPLOYERS AND OTHER CONTRIBUTING ENTITIES

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Actuarially determined employer contribution	$143,107,320	$139,239,141	$136,267,787	$132,546,252	$130,680,397	$148,362,932	$130,533,530	$108,993,492	$ 91,879,263	$ 90,967,180
Actual contributions										
Employers	$ 97,303,048	$ 94,233,469	$ 91,853,678	$ 88,643,646	$ 87,290,863	$ 83,439,612	$ 74,113,191	$ 72,422,404	$ 72,879,950	$ 72,179,128
Non-employer contributing entities	45,495,334	45,005,672	44,414,109	43,902,606	43,389,534	64,923,320	17,521,347	16,843,766	17,437,366	17,241,610
Total	$142,798,382	$139,239,141	$136,267,787	$132,546,252	$130,680,397	$148,362,932	$ 91,634,538	$ 89,266,170	$ 90,317,316	$ 89,420,738
Annual contribution deficiency (excess)	$ 308,938	$ -	$ -	$ -	$ -	$ -	$ 38,898,992	$ 19,727,322	$ 1,561,947	$ 1,546,442
Covered-employee payroll	$857,467,932	$829,708,595	$818,122,561	$795,920,906	$768,718,699	$750,604,063	$742,608,987	$735,586,961	$746,694,434	$747,037,330
Actual contributions as a percentage of covered-employee payroll	16.65%	16.78%	16.66%	16.65%	17.00%	19.77%	12.34%	12.14%	12.10%	11.97%

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STATISTICAL SECTION

Schedule of Changes in Net Position - Last Ten Fiscal Years
(in thousands)

	2019	2018	2017	2016	2015
Additions:					
Member Contributions	78,151	75,594	74,253	88,644	87,291
Employer Contributions	97,303	94,233	91,854	72,741	72,216
Other Contributions	45,495	45,006	44,414	43,903	43,389
Misc Income	31	32	28	29	27
Net Investment Income	227,892	343,664	427,042	71,488	165,685
Total Additions	448,872	558,529	637,591	276,804	368,608
Deductions:					
Benefit Payments:					
Retirees	339,908	325,932	307,158	297,199	281,920
Beneficiaries	24,306	23,564	21,411	20,399	18,702
Disabilities	3,566	3,434	3,261	3,212	3,052
Withdrawals	6,008	5,323	7,355	5,087	5,369
Administrative Expenses	2,947	2,850	2,459	2,319	2,035
Other	174	158	2,016	143	141
Total Deductions	376,910	361,184	343,660	328,359	311,219
Change in Net Position	71,963	197,345	293,931	(51,555)	57,389

	2014	2013	2012	2011	2010
Additions:					
Member Contributions	70,468	62,850	62,746	62,993	62,845
Employer Contributions	83,440	74,113	72,422	72,880	72,179
Other Contributions	64,923	17,521	16,844	17,437	17,242
Misc Income	6	8	10	17	65
Net Investment Income	540,277	373,722	66,341	539,028	294,954
Total Additions	759,114	528,214	218,363	692,355	447,285
Deductions:					
Benefit Payments:					
Retirees	277,012	260,791	244,071	227,840	213,130
Beneficiaries	5,055	4,416	4,336	4,399	4,173
Disabilities	3,115	3,044	3,004	2,884	2,890
Withdrawals	4,789	5,119	5,295	4,365	4,166
Administrative Expenses	2,023	1,934	1,830	1,843	1,905
Other	58	48	46	49	47
Total Deductions	292,052	275,352	258,582	241,380	226,311
Change in Net Position	467,062	252,862	(40,219)	450,975	220,974

Schedule of Average Benefit Payments by Fiscal Year Ten Years Ended June 30, 2019

Shown is the number of retirees with X years of credited service grouped by five-year periods of time and the retirees' average final compensation (Average AFC) and average monthly benefit (Average Benefit) in nominal dollar amounts.

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Number of Retirees										
5-9	28	64	60	58	74	70	78	71	75	60
10-14	60	63	82	78	72	66	80	59	69	64
15-19	67	65	67	61	73	80	68	60	66	49
20-24	73	96	97	83	108	93	103	75	84	67
25-29	150	118	135	115	126	141	132	146	130	129
30+	181	202	200	233	254	270	275	258	247	248
Average AFC										
5-9	3,086	2,887	2,416	2,645	2,767	2,677	2,309	2,567	2,336	2,535
10-14	3,202	3,221	3,569	2,940	3,012	3,325	3,430	3,125	2,888	3,015
15-19	4,138	4,350	3,493	3,720	3,673	3,910	3,749	3,802	3,851	3,551
20-24	5,377	4,857	4,474	4,600	4,674	4,538	4,593	4,433	4,664	4,379
25-29	5,938	5,593	5,355	5,582	5,541	5,279	5,237	5,251	4,984	5,010
30+	6,610	6,572	6,309	6,127	6,218	6,046	5,787	5,963	5,978	5,630
Average Benefit										
5-9	330	318	306	317	324	339	266	312	273	291
10-14	628	614	694	610	556	631	669	604	575	588
15-19	1,125	1,196	976	1,033	1,018	1,019	989	972	1,028	957
20-24	1,910	1,704	1,668	1,601	1,655	1,640	1,637	1,571	1,630	1,493
25-29	2,570	2,408	2,315	2,408	2,360	2,296	2,260	2,278	2,152	2,137
30+	3,662	3,711	3,486	3,382	3,478	3,365	3,210	3,269	3,348	3,128

Schedule of Membership for Active and Inactive Members

Ten Years Ended June 30, 2019

Period Ended	Active Members	Inactive Vested Members	Inactive Non-vested	Total
June 30, 2019	19,686	1,791	14,261	35,738
June 30, 2018	19,267	1,772	13,967	35,006
June 30, 2017	18,917	1,779	13,712	34,408
June 30, 2016	19,048	1,704	12,888	33,640
June 30, 2015	18,316	1,664	12,839	32,819
June 30, 2014	18,272	1,654	12,308	32,234
June 30, 2013	18,249	1,566	11,710	31,525
June 30, 2012	18,372	1,566	11,172	31,110
June 30, 2011	18,484	1,580	10,727	30,791
June 30, 2010	18,953	1,553	10,304	30,810

Retired Members and Benefit Recipients

Ten Years Ended June 30, 2019

Period Ended	Service Retirements & Surviving Beneficiaries	Survivors of Active Deceased Members	Disability Retirements	Total
June 30, 2019	15,589	468	199	16,256
June 30, 2018	15,243	489	201	15,933
June 30, 2017	14,878	485	203	15,566
June 30, 2016	14,478	480	206	15,164
June 30, 2015	14,164	471	204	14,839
June 30, 2014	13,685	460	204	14,349
June 30, 2013	13,206	459	203	13,868
June 30, 2012	12,703	457	203	13,363
June 30, 2011	12,247	445	207	12,899
June 30, 2010	11,620	504	316	12,440

Schedule of Retired Members and Beneficiaries by Type of Benefit as of June 30, 2019

Amount of Monthly Benefit	Total Benefit Recipients	Retirees	Beneficiaries	Disability
$0 - 500	2,376	1,927	386	63
501 - 1,000	2,062	1,585	348	129
1,001 - 1,500	1,958	1,577	301	80
1,501 - 2,000	2,646	2,380	232	34
2,001 - 2,500	2,574	2,410	147	17
2,501 - 3,000	2,047	1,962	84	1
3,001 - 3,500	1,304	1,251	53	-
3,501 - 4,000	765	731	34	-
4,001 - 4,500	447	429	18	-
4,501 - 5,000	192	183	9	-
Over 5,000	291	280	10	1
Totals	16,662	14,715	1,622	325
Total Benefit Payments	$367,779,905	$339,908,000	$24,305,949	$3,565,956

Schedule of Principal Participating Employers
as of June 30, 2019

Employer	Active Members	Percent of Total Active Members
Billings Public Schools	1,629	8.26%
Great Falls Public Schools	1,215	6.16%
Missoula County Public Schools	1,113	5.64%
Helena Public Schools	975	4.94%
Bozeman Public Schools	855	4.33%
Kalispell Public Schools	674	3.42%
Butte Public Schools	387	1.96%
Belgrade Public Schools	375	1.90%
Browning Public Schools	331	1.68%
Hardin Public Schools	289	1.46%
Columbia Falls Public Schools	273	1.38%
Havre Public Schools	244	1.24%
Laurel Public Schools	229	1.16%
Flathead Community College	223	1.13%
Miles City Public Schools	222	1.13%
Whitefish Public Schools	206	1.04%
Sidney Public Schools	197	1.00%
Hamilton Public Schools	192	0.97%
Ronan Public Schools	190	0.96%
Polson Public Schools	189	0.96%

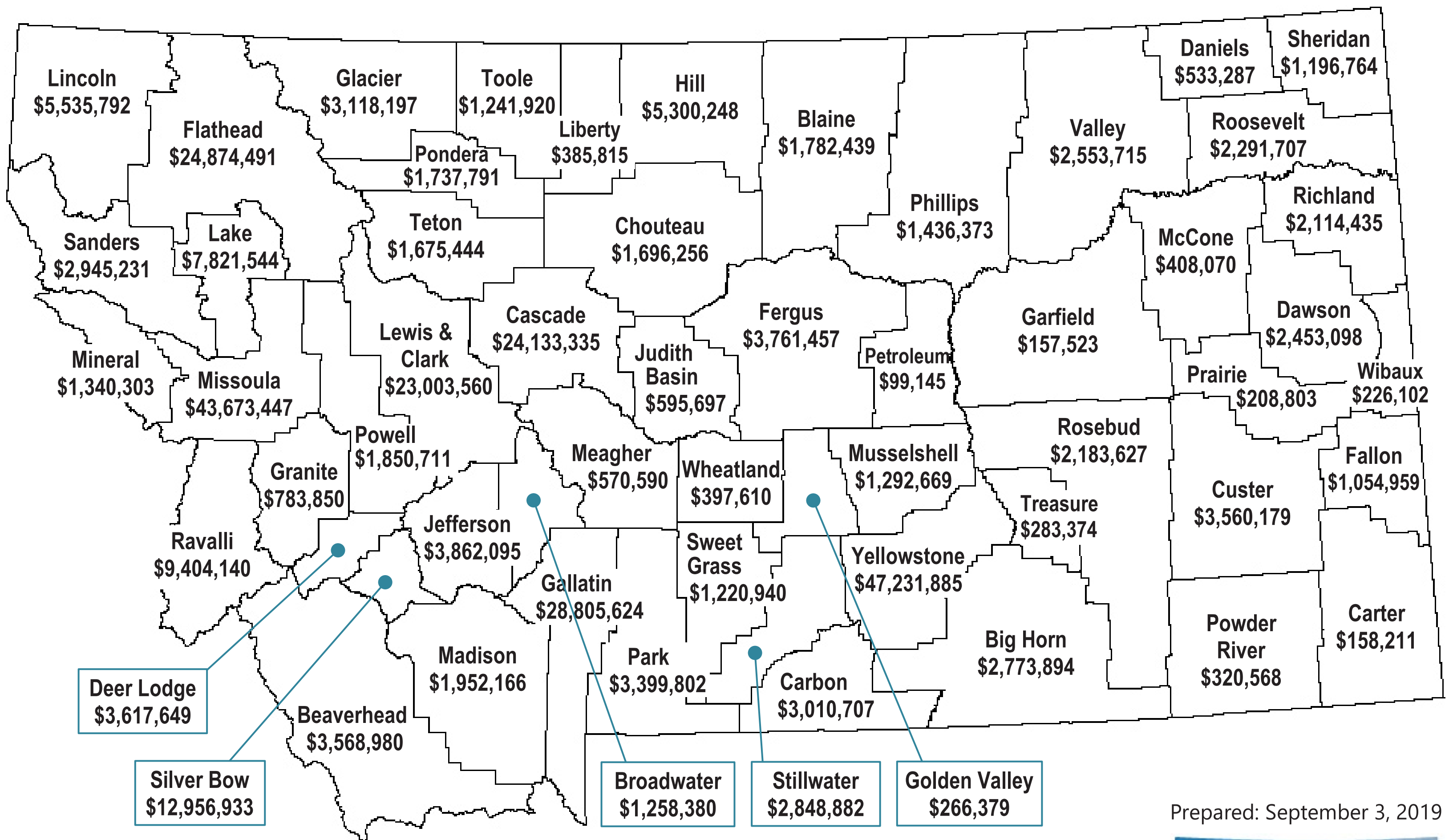
Location of Benefit Recipients by Country and State
as of June 30, 2019

Country	State	Gross Benefit (in dollars)	Count
Australia		13,064	2
Belgium		3,899	1
Canada		175,840	17
Switzerland		8,858	1
Costa Rica		6,341	1
United Kingdom		76,139	3
Israel		48,949	2
Netherlands		711	1
New Zealand		8,125	1
Thailand		17,352	2
United States	AE	30,647	2
United States	AK	615,199	42
United States	AL	72,280	7
United States	AR	173,877	14
United States	AP	68,556	2
United States	AZ	12,197,402	548
United States	CA	3,150,788	175
United States	CO	2,974,680	166
United States	CT	79,686	7
United States	DC	38,833	4
United States	DE	31,310	2
United States	FL	1,782,048	99
United States	GA	192,892	15
United States	HI	216,754	16
United States	IA	356,262	22
United States	ID	3,513,953	200
United States	IL	343,736	22
United States	IN	267,871	19
United States	KS	229,321	16
United States	KY	277,066	12
United States	LA	96,924	9
United States	MA	248,505	14
United States	MD	140,198	12
United States	ME	127,148	7
United States	MI	623,107	31
United States	MN	2,177,518	129
United States	MO	449,513	35
United States	MS	158,822	6
United States	MT	307,328,768	13,278
United States	NC	534,262	33
United States	ND	2,182,835	123
United States	NE	302,609	22
United States	NH	129,107	5
United States	NJ	64,061	5
United States	NM	794,725	41
United States	NV	2,640,874	138
United States	NY	229,263	16
United States	OH	306,005	18

United States	OK	292,423	22
United States	OR	4,335,276	239
United States	PA	359,694	21
United States	RI	29,691	2
United States	SC	272,609	17
United States	SD	1,478,519	83
United States	TN	404,727	25
United States	TX	1,742,249	110
United States	UT	1,581,074	88
United States	VA	372,711	27
United States	VT	152,548	5
United States	WA	8,611,774	499
United States	WI	439,736	38
United States	WV	22,070	3
United States	WY	2,178,122	140

Retirement Benefits Paid by County – Fiscal Year 2019

Montana Teachers' Retirement System



Prepared: September 3, 2019

Total Benefits Paid in Montana: $306,936,791
Total Recipients in Montana: 13,278

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