



Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

GASB Statement No. 67 Report

For the

**Montana Highway Patrol
Officers' Retirement System**

Prepared as of

June 30, 2020





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

September 22, 2020

Public Employees' Retirement Board
100 North Park, Suite 200
Helena, MT 59620-0139

Members of the Board:

Presented in this report is information to assist the Montana Highway Patrol Officers' Retirement System of the State of Montana (HPORS) in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 67. The information is presented for the period ending June 30, 2020.

The annual actuarial valuation used as a basis for much of the information presented in this report was performed as of June 30, 2019. The valuation was based upon data, furnished by the MPERA staff, concerning active, inactive and retired members along with pertinent financial information.

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

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

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



Board of Trustees
September 22, 2020
Page 2

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.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Todd B. Green' followed by a horizontal flourish.

Todd B. Green, ASA, FCA, MAAA
President

A handwritten signature in blue ink that reads 'Beverly V. Bailey' in a cursive style.

Beverly V. Bailey, ASA, EA, FCA, MAAA
Senior Actuary



TABLE OF CONTENTS

<u>Section</u>	<u>Item</u>	<u>Page No.</u>
	Board Summary	1
I	Introduction	3
II	Financial Statement Notes	5
III	Required Supplementary Information	10
<u>Schedule</u>		
A	Required Supplementary Information Tables	14
B	Plan Provisions	17
C	Actuarial Assumptions and Methods	24
D	Glossary of Terms	33



REPORT OF THE ANNUAL GASB STATEMENT NO. 67

REQUIRED INFORMATION FOR HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM OF THE STATE OF MONTANA

PREPARED AS OF JUNE 30, 2020

BOARD SUMMARY

This report provides information required by the Highway Patrol Officers' Retirement System (HPORS) in connection with the Governmental Accounting Standards Board (GASB) Statement No. 67 "Financial Reporting for Pension Plans." The information provided herein was prepared for the purpose of assisting HPORS to comply with the financial reporting and disclosure requirements of GASB No. 67 and is not applicable for purposes of funding the System. A calculation of the System's liability for purposes other than GASB No. 67 may produce significantly different results.

The Total Pension Liability (TPL), Fiduciary Net Position (FNP), Net Pension Liability (NPL) and certain sensitivity information shown in this report are based on an actuarial valuation performed as of June 30, 2019. The total pension liability as of the end of the plan year, June 30, 2020, was determined using standard roll forward procedures, which are detailed in Section II of this report.

The System's FNP is projected to cover all future benefit payments of current plan members. Therefore, the discount rate used to measure the TPL is the long-term expected rate of return on pension plan investments of 4.43%.

As of June 30, 2020, the TPL is \$385,799,083 and the FNP is \$151,967,709. The NPL, which is determined by subtracting the FNP from the TPL, is equal to \$233,831,374. Also included in this report is a sensitivity analysis of the NPL, which shows results using both a 1% increase in the discount rate and 1% decrease in the discount rate. A higher discount rate reduces the NPL while a lower discount increases the NPL.

Schedule A shows three tables of required supplementary information. The first table details the changes in the NPL for the year ending June 30, 2020, with a comparison to the prior six years. The second table shows the ratio of the FNP to the TPL and a ratio of the NPL to the covered-employee payroll for the same seven-year period. The final Schedule A table shows a history of the schedule of employer contributions.

The table on the following page highlights information required by GASB No. 67 as of June 30, 2020.



REPORT OF THE ANNUAL GASB STATEMENT NO. 67

**REQUIRED INFORMATION FOR
HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM
OF THE STATE OF MONTANA**

PREPARED AS OF JUNE 30, 2020

2020	
Valuation Date (VD):	June 30, 2019
Prior Measurement Date:	June 30, 2019
Measurement Date (MD):	June 30, 2020
Membership Data:	
Retirees and Beneficiaries	342
Inactive Members	43
Active Employees	<u>232</u>
Total	617
Discount Rate:	
Long-Term Expected Rate of Return	7.34%
Municipal Bond Index Rate at Prior Measurement Date	3.50%
Municipal Bond Index Rate at Measurement Date	2.19%
Fiscal Year in which Fiduciary Net Position is Projected to be Depleted	2057
Discount Rate at Prior Measurement Date	7.65%
Discount Rate at Measurement Date	4.43%
Net Pension Liability:	
Total Pension Liability (TPL)	\$ 385,799,083
Fiduciary Net Position (FNP)	<u>151,967,709</u>
Net Pension Liability (NPL = TPL – FNP)	\$233,831,374
FNP as a percentage of TPL	39.39%



Section I - Introduction

REPORT OF THE ANNUAL GASB STATEMENT NO. 67 REQUIRED INFORMATION FOR THE MONTANA HIGHWAY PATROL OFFICERS' RETIREMENT SYSTEM OF THE STATE OF MONTANA PREPARED AS OF JUNE 30, 2020

This report was prepared as of June 30, 2020 to assist the Montana Highway Patrol Officers' Retirement System in complying with Governmental Accounting Standards Board Statement No. 67 (GASB 67), "*Financial Reporting For Pension Plans*". Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the Montana Highway Patrol Officers' Retirement System of the State of Montana as of June 30, 2019.

GASB 67 basically divorces accounting and funding, creating disclosure and reporting requirements that may or may not be consistent with the basis used for funding the System.

GASB 67 requires the determination of the Total Pension Liability (TPL) utilizing the Entry Age Normal actuarial funding method. If, as is the case here, the valuation date at which the TPL is determined is before the Measurement Date, the TPL must be rolled forward to the Measurement Date. The Net Pension Liability (NPL) is then set equal to the TPL minus the System's Fiduciary Net Position (FNP) (the market values of assets) as of the Measurement Date. The benefit provisions recognized in the calculation of the TPL are summarized in Schedule B.

Among the assumptions needed for the liability calculation is a Discount Rate. To determine the Discount Rate, the FNP must be projected into the future for as long as there are anticipated benefits payable under the plan's provision applicable to the membership and beneficiaries of the System on the Measurement Date. If the FNP is projected to not be depleted at any point in the future, the long term expected rate of return on plan investments expected to be used to finance the benefit payments may be used as the Discount Rate.



Section I - Introduction

If, however, the FNP is projected to be depleted, the Discount Rate is determined as the single rate that will generate a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion by the long term expected rate of return, and the present value determined by discounting those benefits after the date of depletion by a 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate. The rate used, if necessary, for this purpose is the monthly average of the Bond Buyers General Obligation 20-year Municipal Bond Index Rate published weekly by The Bond Buyer (www.bondbuyer.com). The Municipal Bond Index Rate as of the measurement date is 2.19%.

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



Section II – Financial Statement Notes

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

Paragraphs 30(a) (1)-(3): The information required is to be supplied by the Plan.

Paragraph 30(a) (4): The data required regarding the membership of the Montana Highway Patrol Officers' Retirement System were furnished by the System's staff. The following table summarizes the membership of the system as of June 30, 2019, the Valuation Date.

Membership

	Number
Inactive Members Or Their Beneficiaries Currently Receiving Benefits	342
Inactive Members Entitled To But Not Yet Receiving Benefits	43
Active Members	232
Total	617

Paragraphs 30(a)(5)-(6) and Paragraphs 30(b)-(f): The information required is to be supplied by the Plan.



Section II – Financial Statement Notes

Paragraphs 31(a) (1)-(4): The information is provided in the following table. The NPL is equal to the TPL minus the FNP.

	Fiscal Year Ending
	June 30, 2020
Total Pension Liability	\$385,799,083
Fiduciary Net Position	<u>151,967,709</u>
Net Pension Liability	\$233,831,374
Ratio of Fiduciary Net Position to Total Pension Liability	39.39%

Paragraph 31(b): This paragraph requires information regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions utilized in developing the TPL are outlined in Schedule C. The total pension liability was determined by an actuarial valuation as of June 30, 2019, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	2.40 percent
Salary increases	3.50 to 10.02 percent, including inflation
Investment rate of return	7.34 percent, net of pension plan investment expense, including inflation
Mortality	<p>Healthy Mortality: RP 2000 Combined Employee and Annuitant Mortality Table projected to 2020 using Scale BB, set back one year for males</p> <p>Disabled Mortality: RP-2000 Combined Employee and Annuitant Mortality Table</p>



Section II – Financial Statement Notes

Paragraph 31.b.(1)

- (a) **Discount rate:** The discount rate used to measure the total pension liability was 4.43%.
- (b) **Projected cash flows:** The projection of cash flows used to determine the discount rate assumed the System would receive contributions in the future provided for in statute.
- (c) **Long term rate of return:** The average long-term capital market assumptions published in the *Survey of Capital Market Assumptions 2020 Edition* by Horizon Actuarial Service, LLC, yield a median real return of 4.94%. Assumed inflation is based on the intermediate inflation assumption of 2.4% in the 2020 OASDI Trustees Report used by the Chief Actuary for Social Security to produce 75 year cost projections. Combining these two results yields a nominal return of 7.34%. The pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members until the plan year ending June 30, 2057. Therefore, the long-term expected rate of return on pension plan investments of 7.34% was applied to all periods of projected benefit payments through June 30, 2057 and the applicable municipal bond index rate of 2.19%, based on the Bond Buyer General Obligation 20-year Municipal Bond Index published monthly by the Board of Governors of the Federal Reserve System as of June 30, 2020, was applied to all periods of projected benefit payments after June 30, 2057. The Single Equivalent Interest Rate (SEIR) of 4.43% that discounts the entire projected benefit stream to the same amount as the sum of the present values of the two separate benefit payments streams was used to determine the total pension liability as of June 30, 2020.
- (d) **Municipal bond rate:** The municipal bond rate used is 2.19%.
- (e) **Periods of projected benefit payments:** Future benefit payments for all current plan members were projected through 2129.



Section II – Financial Statement Notes

- (f) **Assumed Asset Allocation:** The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic Equity	30.0%	6.19%
International Equity	16.0%	6.92%
Private Investments	14.0%	10.37%
Natural Resources	4.0%	3.43%
Real Estate	9.0%	5.74%
Core Fixed Income	20.0%	1.57%
Non-Core Fixed Income	5.0%	3.97%
Cash	2.0%	0.11%
Total	100.0%	

- (g) **Sensitivity analysis:** This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of 4.43 percent, as well as what the System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower and 1-percentage-point higher than the current rate:

	1% Decrease 3.43%	Current Discount Rate 4.43%	1% Increase 5.43%
System's net pension liability	\$306,955,454	\$233,831,374	\$177,819,267



Section II – Financial Statement Notes

Paragraph 31(c): June 30, 2019 is the actuarial valuation date upon which the TPL is based. An expected TPL is determined as of June 30, 2020 using standard roll forward techniques. The roll forward calculation 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 table below summarizes the calculation.

TPL Roll Forward	(1) TPL Reported for Fiscal Year End 2019	(2) Development of TPL for Fiscal Year End 2020 prior to Assumption Change	(3) Development of TPL for Fiscal Year End 2020 after Assumption Change
(a) Interest Rate	7.65%	7.65%	4.43%
(b) Valuation Date for Measurement	June 30, 2018	June 30, 2019	June 30, 2019
(c) TPL as of June 30, 2019	\$ 237,727,489	\$ 236,805,027	\$ 374,785,188
(d) Entry Age Normal Cost for the period July 1, 2019 - June 30, 2020	3,099,718	3,099,718	7,387,425
(e) Actual Benefit Payments and Refunds for the period July 1, 2019 - June 30, 2020	13,015,484	13,015,484	13,015,484
(f) TPL as of June 30, 2020 = [(c + d) * (1 + (a))] - [e * (1 + (a)/2)]	\$ 245,737,162	\$ 244,744,132	\$ 385,799,083
(g) Experience Actuarial (Gain) / Loss: = (2f) - (1f)		\$ (993,030)	
(h) Assumption Change (Gain) / Loss: = (3f) - (2f)			\$ 141,054,951



Section III – Required Supplementary Information

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

Paragraphs 32(a)-(c): The required tables are provided in Schedule A.

Paragraph 32(d): The money-weighted rates of return required are to be supplied by the Plan.

Paragraph 34: In addition the following should be noted regarding the RSI:

Changes of benefit terms: The following changes to the plan provisions were made as identified:

2015:

Effective October 1, 2015, a member who retires with at least 20 years of service will be allowed to participate in the Deferred Retirement Option Program (DROP). While the member is participating in DROP, they will continue to work while accumulating their retirement benefit with interest. The interest rate that the balance is accumulated at is the assumed rate of return which is 7.75% per year. Once the member terminates from active service they will begin to receive their monthly pension in addition to the accumulated DROP account. The maximum period a member can participate in the DROP is 60 months.

2017

1. Working Retiree Limitations - Applies to retirement system members who return on or after July 1, 2017 to covered employment in the system from which they retired.
 - Members who return for less than 480 hours in a calendar year:
 - may not become an active member in the system; and
 - are subject to a \$1 reduction in their retirement benefit for each \$3 earned in excess of \$5,000 in the calendar year.
 - Members who return for 480 or more hours in a calendar year;
 - must become an active member of the system;
 - will stop receiving a retirement benefit from the system; and
 - will be eligible for a second retirement benefit if they earn 5 or more years of service credit through their second employment.
 - Employee, employer and state contributions apply as follows:
 - Employer contributions and state contributions (if any) must be paid on all working retirees;
 - Employee contributions must be paid on working retirees who return to covered employment for 480 or more hours in a calendar year.



Section III – Required Supplementary Information

2. Second Retirement Benefit - Applies to retirement system members who return on or after July 1, 2017 to active service covered by the system from which they retired.
 - If the member works more than 480 hours in a calendar year and accumulates less than 5 years of service credit before terminating again, the member:
 - is not awarded service credit for the period of reemployment;
 - is refunded the accumulated contributions associated with the period of reemployment;
 - starting the first month following termination of service, receives the same retirement benefit previously paid to the member; and
 - does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA in January immediately following second retirement.
 - If the member works more than 480 hours in a calendar year and accumulates at least 5 years of service credit before terminating again, the member:
 - is awarded service credit for the period of reemployment;
 - starting the first month following termination of service, receives:
 - * the same retirement benefit previously paid to the member; and
 - * a second retirement benefit for the period of reemployment calculated based on the laws in effect as of the member's rehire date; and
 - does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA:
 - * on the initial retirement benefit in January immediately following second retirement; and
 - * on the second retirement benefit starting in January after receiving that benefit for at least 12 months.
 - A member who returns to covered service is not eligible for a disability benefit.
3. Refunds
 - Terminating members eligible to retire may, in lieu of receiving a monthly retirement benefit, refund their accumulated contributions in a lump sum.
 - 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.
 - Trusts, estates, and charitable organizations listed as beneficiaries are entitled to receive only a lump sum payment.
4. Interest credited to member accounts - Effective July 1, 2017, the interest rate credited to member accounts increased from 0.25% to 0.77%.
5. Lump-sum payout
 - Effective July 1, 2017, lump sum payouts in all systems are limited to the member's accumulated contributions rather than the present value of the member's benefit.



Section III – Required Supplementary Information

Changes of assumption: The following changes to the actuarial assumptions and methods:

2015:

1. DROP accounts are assumed to earn the actuarial rate of return.
2. An additional 15% of active members are assumed to elect DROP for each of the first six years following DROP eligibility. These members are assumed to elect to participate in the DROP for five years or until age 60 if earlier.

2017

1. The discount rate was lowered from 7.75% to 7.65%.
2. The inflation rate was reduced from 3.00% to 2.75%.
3. The wage inflation rate was reduced from 4.00% to 3.50%.
4. The non-disabled mortality was updated.
5. The salary merit scale was updated.

2020

1. The discount rate was lowered from 7.65% to 4.43%.
2. The investment rate of return was lowered from 7.65% to 7.34%.
3. The inflation rate was reduced from 2.75% to 2.40%.



Section III – Required Supplementary Information

Method and assumptions used in calculations of actuarially determined contributions. The actuarially determined contribution rates are determined on an annual basis. The following actuarial methods and assumptions were used to determine contribution rates reported in that schedule:

Valuation date	June 30, 2019
Timing	Actuarially determined contributions are determined on the valuation date payable in the fiscal year beginning immediately following the valuation date
Actuarial cost method	Entry age Normal
Amortization method	Level percentage of payroll, open
Remaining amortization period	30 years
Asset valuation method	4-year smoothed market
Wage Inflation	3.50 percent
Inflation	2.75 percent
Salary increase	3.50 to 10.02 percent, including inflation
Investment rate of return	7.65 percent, net of pension plan investment expense, including inflation
Mortality	Healthy Mortality: RP 2000 Combined Employee and Annuitant Mortality Table projected to 2020 using Scale BB, set back one year for males Disabled Mortality: RP-2000 Combined Employee and Annuitant Mortality Table



Schedule A – Required Supplementary Tables

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

	2020	2019	2018	2017	2016	2015	2014
Total pension liability							
Service Cost	3,336,846	3,453,066	3,643,015	3,664,857	3,798,553	3,598,464	3,464,399
Interest	17,688,311	16,926,240	16,293,615	15,121,088	14,545,022	14,112,116	13,517,924
Benefit changes	0	0	0	0	0	1,855,618	0
Difference between expected and actual experience	(993,030)	2,412,675	589,270	2,773,680	18,339	267,336	0
Changes of assumptions	141,054,951	0	0	7,892,479	0	0	0
Benefit payments	(12,684,315)	(12,062,607)	(11,545,732)	(11,036,794)	(10,482,414)	(10,000,856)	(9,443,007)
Refunds of contributions	<u>(331,169)</u>	<u>(582,438)</u>	<u>(321,840)</u>	<u>(244,597)</u>	<u>(93,811)</u>	<u>0</u>	<u>0</u>
Net change in total pension liability	148,071,594	10,146,936	8,658,328	18,170,713	7,785,689	9,832,678	7,539,316
Total pension liability - beginning	237,727,489	227,580,553	218,922,225	200,751,512	192,965,823	183,133,145	175,593,829
Total pension liability - ending (a)	385,799,083	237,727,489	227,580,553	218,922,225	200,751,512	192,965,823	183,133,145
Plan net position							
Contributions - employer	6,002,897	5,844,909	5,858,493	5,782,258	5,915,644	5,839,336	5,735,507
Contribution - non-employer	226,239	233,139	250,150	262,884	242,749	0	0
Contributions - member	2,169,955	2,002,319	2,386,526	1,949,795	1,917,487	1,624,327	1,458,042
Net investment income	4,100,741	8,268,830	12,282,824	15,098,813	2,605,256	5,738,373	18,678,284
Benefit payments	(12,684,315)	(12,062,607)	(11,545,732)	(11,036,794)	(10,482,414)	(10,000,856)	(9,443,007)
Administrative expense	(163,315)	(127,400)	(256,309)	(248,124)	(197,034)	(144,253)	(109,140)
Refunds of contributions	(331,169)	(582,438)	(321,840)	(244,597)	(93,811)	0	0
Other	<u>(130,951)</u>	<u>2,007</u>	<u>8,067</u>	<u>(466)</u>	<u>(2,276)</u>	<u>0</u>	<u>0</u>
Net change in plan net position	(809,918)	3,578,759	8,662,179	11,563,769	(94,399)	3,056,927	16,319,686
Plan net position - beginning	152,777,627	149,198,868	140,536,689	128,972,920	129,067,319	126,010,392	109,690,706
Plan net position - ending (b)	151,967,709	152,777,627	149,198,868	140,536,689	128,972,920	129,067,319	126,010,392
Net pension liability - ending (a) - (b)	233,831,374	84,949,862	78,381,685	78,385,536	71,778,592	63,898,504	57,122,753



Schedule A – Required Supplementary Tables

SCHEDULE OF THE NET PENSION LIABILITY GASB 67 Paragraph 32(b)

	2020	2019	2018	2017	2016	2015	2014
Total pension liability	385,799,083	237,727,489	227,580,553	218,922,225	200,751,512	192,965,823	183,133,145
Plan net position	<u>151,967,709</u>	<u>152,777,627</u>	<u>149,198,868</u>	<u>140,536,689</u>	<u>128,972,920</u>	<u>129,067,319</u>	<u>126,010,392</u>
Net pension liability	233,831,374	84,949,862	78,381,685	78,385,536	71,778,592	63,898,504	57,122,753
Ratio of plan net position to total pension liability	39.39%	64.27%	65.56%	64.19%	64.25%	66.89%	68.81%
Covered-employee payroll	15,607,832	15,177,612	15,251,339	14,778,975	15,275,964	14,549,378	14,149,269
Net pension liability as a percentage of covered- employee payroll	1498.17%	559.71%	513.93%	530.39%	469.88%	439.18%	403.72%



Schedule A – Required Supplementary Tables

SCHEDULE OF EMPLOYER CONTRIBUTIONS GASB 67 Paragraph 32(c)

	2020	2019	2018	2017	2016	2015	2014
Actuarially determined employer contribution	6,934,444	6,667,934	6,529,379	6,045,142	6,158,393	5,706,000	6,121,000
Actual employer contributions	6,002,897	5,844,909	5,858,493	5,782,258	5,915,644	5,839,336	5,735,507
Non-employer contributions	226,239	233,139	250,150	262,884	242,749	0	0
Annual contribution deficiency / (excess)	705,308	589,886	420,736	0	0	(133,336)	385,493
Covered-employee payroll	15,607,832	15,177,612	15,251,339	14,778,975	15,275,964	14,549,378	14,149,269
Actual contributions as a percentage of covered-employee payroll	39.91%	40.05%	40.05%	40.90%	40.31%	40.13%	40.54%



Schedule B – Plan Provisions

Service credit	<ul style="list-style-type: none">• Service credit is used to determine the amount of a member's retirement benefit.• One month of service credit is earned for each month where the member is paid for 160 hours. This includes certain transferred and purchased service.
Membership service	<ul style="list-style-type: none">• Membership service is used to determine eligibility for vesting, retirement or other benefits.• One month of membership service is earned for any month member contributions are made, regardless of the number of hours worked.• Eligible members in all systems may purchase service that counts toward membership service.• Additionally, eligible active and inactive Sheriffs' Retirement System (SRS) members may purchase 1 for 5 (additional) service that will count as membership service.
Contributions	<ul style="list-style-type: none">• Member contributions are made through an "employer pick-up" arrangement which results in deferral of taxes on the contributions.
Compensation	<ul style="list-style-type: none">• Compensation generally means all remuneration paid, excluding certain allowances, benefits, and lump sum payments. Compensation is specifically defined in law and differs amongst the systems.• Bonuses paid on or after July 1, 2013 to any member will not be treated as compensation for retirement purposes. No member or employer contributions will be paid on bonuses.
Withdrawal of employee contributions	<ul style="list-style-type: none">• A member is eligible for a withdrawal of their contributions when they terminate service and are either not eligible for or have not taken a retirement benefit.• The member receives the accumulated member contributions, which consists of member contributions and regular interest.• Upon receipt of a refund of accumulated contributions a member's vested right to a monthly benefit is forfeited.



Schedule B – Plan Provisions

Member contributions interest credited (regular interest)

- Interest is credited to member accounts at the rates determined by the Board.
- The current interest rate credited to member accounts is 2.39%.

Working Retiree Limitations -

Applies to retirement system members who return **on or after** July 1, 2017 to covered employment in the system from which they retired. These limits already applied to SRS members before July 1, 2017.

- Members who return for **less than 480 hours** in a **calendar** year:
 - may not become an active member in the system; and
 - are subject to a \$1 reduction in their retirement benefit for each \$3 earned in excess of \$5,000 in the calendar year.
- Members who return for **480 or more hours** in a **calendar** year;
 - must become an active member of the system;
 - will stop receiving a retirement benefit from the system; **and**
 - will be eligible for a second retirement benefit if they earn 5 or more years of service credit through their second employment.
- Employee, employer and state contributions apply as follows:
 - Employer contributions and state contributions (if any) must be paid on all working retirees;
 - Employee contributions must be paid on working retirees who return to covered employment for 480 or more hours in a calendar year.

NOTE: PERS has its own limits.

Second Retirement Benefit

Applies to retirement system members who return on or after July 1, 2017 to active service covered by the system from which they retired.

- If the member works more than 480 hours in a calendar year and accumulates less than 5 years of service credit before terminating again, the member:
 - is not awarded service credit for the period of reemployment;
 - is refunded the accumulated contributions associated with the period of reemployment;
 - starting the first month following termination of service, receives the same retirement benefit previously paid to the member; and
 - does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA in January immediately following second retirement.



Schedule B – Plan Provisions

Second Retirement Benefit (continued)	<ul style="list-style-type: none">• If the member works more than 480 hours in a calendar year and accumulates at least 5 years of service credit before terminating again, the member:<ul style="list-style-type: none">○ is awarded service credit for the period of reemployment;○ starting the first month following termination of service, receives:<ul style="list-style-type: none">* the same retirement benefit previously paid to the member; and* a second retirement benefit for the period of reemployment calculated based on the laws in effect as of the member's rehire date; and○ does not accrue post-retirement benefit adjustments during the term of reemployment but receives a GABA:<ul style="list-style-type: none">* on the initial retirement benefit in January immediately following second retirement; and* on the second retirement benefit starting in January after receiving that benefit for at least 12 months.• A member who returns to covered service is not eligible for a disability benefit.
Refunds	<ul style="list-style-type: none">• Terminating members eligible to retire may, in lieu of receiving a monthly retirement benefit, refund their accumulated contributions in a lump sum.• 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.• Trusts, estates, and charitable organizations listed as beneficiaries are entitled to receive only a lump sum payment.
Lump-sum payouts	<ul style="list-style-type: none">• Effective July 1, 2017, lump sum payouts in all systems are limited to the member's accumulated contributions rather than the present value of the member's benefit.
Type of plan	<ul style="list-style-type: none">• Single-employer defined benefit
Membership eligibility	<ul style="list-style-type: none">• All members of the Montana highway patrol including supervisors and assistant supervisors
Member contributions	<ul style="list-style-type: none">• 13% of member's compensation, not covered by GABA• 13.05% of member's compensation, covered by GABA• Effective July 1, 2014, member contributions increase 1% annually through the fiscal year ending 2017.
Employer contributions	<ul style="list-style-type: none">• 28.15% of member's compensation



Schedule B – Plan Provisions

State contributions	<ul style="list-style-type: none">• 10.18% of each member's compensation paid from the General Fund
Compensation period used in benefit calculation	<ul style="list-style-type: none">• HAC = Highest Average Compensation• HAC is average of the highest 36 consecutive months (or shorter period of total service) of compensation paid to member.• Hired on or after July 1, 2013: 110% annual cap on compensation considered as part of a member's HAC.
Service retirement eligibility and benefit	<ul style="list-style-type: none">• 20 years of membership service• 2.6% of HAC x years of service credit
Early retirement eligibility and benefit	<ul style="list-style-type: none">• Hired prior to July 1, 2013: Any age with 5 years of membership service; if discontinued from service other than for cause.• Hired on or after July 1, 2013: Any age with 10 years of membership service; if discontinued from service other than for cause.• Normal retirement benefit calculated using HAC and service credit at early retirement, and reduced to the actuarial equivalent of a service retirement benefit based on a retirement age of 60.
Disability eligibility and benefit	<p>Duty-related disability:</p> <ul style="list-style-type: none">• Any active member• Less than 20 years of membership service: 50% of HAC, or• 20 years or more of membership service: 2.6% of HAC x years of service credit <p>Regular disability:</p> <ul style="list-style-type: none">• Any vested member• The actuarial equivalent of the normal retirement benefit based on retirement age of 60.
Survivor's eligibility and benefit	<p>Duty-related deaths:</p> <ul style="list-style-type: none">• Active member• A monthly survivor benefit to the surviving spouse or dependent child: 50% of HAC of the member. <p>Non-duty-related death:</p> <ul style="list-style-type: none">• Active or inactive member• Member's spouse will receive (or, if there is no surviving spouse or after the surviving spouse dies, each dependent child for as long as they remain dependent children) will equally receive a benefit: The actuarial equivalent of the early retirement benefit. <ul style="list-style-type: none">• A beneficiary may elect to receive the present value of the



Schedule B – Plan Provisions

	<p>benefit as a single lump sum.</p> <ul style="list-style-type: none">• For retired members without a surviving spouse or dependent child, the member's designated beneficiary will receive a payment equal to the retired member's accumulated contributions reduced by any retirement benefits already paid.
Vesting eligibility and benefit	<ul style="list-style-type: none">• Hired prior to July 1, 2013: 5 years of membership service• Hired on or after July 1, 2013: 10 years of membership service.• Accrued normal retirement benefit, payable when eligible for retirement.• In lieu of a pension, a member may receive a refund of accumulated contributions.• Upon receipt of a refund of accumulated contributions, a member's vested right to a monthly benefit is forfeited.
Retirement benefits - Form of payment	<ul style="list-style-type: none">• The retirement benefit is paid for the retired member's life.• Upon the death of the retired member, the benefit is paid to the surviving spouse.• If there is no surviving spouse, or after the death of a surviving spouse, benefits are paid to the dependent children, if any, for as long as they remain dependent children.
Post retirement benefit increases	<ul style="list-style-type: none">• For retired members who either became active members on or after July 1, 1997 and before July 1, 2013, or who were hired before July 1, 1997 and elected to be covered under GABA, and who have been retired at least 12 months, a GABA will be paid each year in January equal to 3%.• For retired members who were hired prior to July 1, 1997 and did not elect GABA, the minimum monthly benefit provided is equal to 2% x service credit x the current base compensation of a probationary highway patrol officer. Such benefit may not exceed 60% of the current base compensation of a probationary highway patrol officer and the annual increase may not exceed 5% of the current benefit.• For retired members who became active members on or after July 1, 2013, and who have been retired at least 36 months, a GABA will be paid each year in January equal to 1.5%.• For non-GABA members who retired prior to July 1, 1991 and meet eligibility requirements, a supplemental lump sum payment will be made each year based on the increase in the Consumer Price Index.



Schedule B – Plan Provisions

Changes since last valuation	• None
------------------------------	--------

HPORS Deferred Retirement Option Plan (DROP)

Effective October 1, 2015, eligible members of the Highway Patrol Officers' Retirement System (HPORS) have the opportunity to participate in the DROP. The DROP allows active HPORS members to begin accumulating their retirement benefit, without terminating employment, for up to 60 months. If a member chooses to join the DROP, their monthly retirement benefit and their employee contributions will go into their individual DROP account.

Eligibility	• Active members of HPORS with at least 20 years of membership service.
Period	• Minimum of one month up to a maximum of five years. The member will not earn additional membership service or service credit.
Member contributions	• While a member is working, the member's contributions go into the DROP Participant's DROP Account.
Member contributions interest credited	• A member's DROP account will earn an interest rate equal to the actuarial assumed rate of return. Currently the rate of return is 7.65%.
Employer contributions	• While a member is working, the member's employer and the State will pay the regular contributions to HPORS.
Terminate employment	<ul style="list-style-type: none">• When the member terminates employment at the end of the DROP Period the member will begin receiving the HPORS monthly retirement benefit. At this time, members will receive the DROP Benefit as a lump sum payment or a direct rollover to another eligible retirement plan (as allowed by the IRS). If the member does not designate a distribution method within 60 days after termination of employment, the DROP Benefit will be paid in a taxable lump sum.• If a member's HPORS-covered employment is terminated during the DROP Period, the DROP Benefit will be distributed to the member and payment of the monthly service retirement benefit will begin.
Disability	• If the member becomes disabled during the DROP Period, the member will not be eligible for HPORS disability benefits. If the member terminates service, the service retirement benefit will be paid to the member rather than to the monthly DROP



Schedule B – Plan Provisions

	Account. The member will also be eligible to receive the DROP Benefit.
Survivor Benefit	<ul style="list-style-type: none">• If a member dies before the end of the DROP Period, the member's surviving spouse or dependent children are entitled to the member's DROP Benefit and the benefit they would have received had the member retired.• If the member does not have a surviving spouse or dependent children, the member's designated beneficiary receives the balance of the member's retirement account and a lump-sum payment of the member's DROP Benefit.
Benefit	<ul style="list-style-type: none">• A member may continue to work after the DROP Period ends and remain vested in HPORS. The member will not receive the service retirement benefit or the DROP Benefit during the time the member continues working. The balance of the DROP Account will continue to earn interest.• Upon termination of employment, the member will receive the initial HPORS monthly retirement benefit; an additional benefit based on the member's service credit and highest average compensation earned after DROP participation; and the DROP Benefit.
Post retirement benefit increases	<ul style="list-style-type: none">• Members do not receive the Guaranteed Annual Benefit Adjustment (GABA) on the accrued DROP retirement benefit. GABA starts January 1 immediately following retirement for initial and subsequent retirement benefits.
Changes since last valuation	<ul style="list-style-type: none">• None



Schedule C – Actuarial Assumptions and Methods

The assumptions and methods utilized in the valuation were developed in the six-year experience study for the period ending June 30, 2016.

Tables C-3 through C-7 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 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 consists 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 has been supplied by the System and was 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.

Administrative and Investment Expenses

The investment expenses of the System are assumed to be funded by investment earnings in excess of 7.34% per year.

Administrative expenses are assumed to equal 0.18% of payroll.

Valuation of Assets

Market value of assets.

Investment Earnings

The annual rate of investment earnings of the assets of the System is assumed to be 7.34% per year net of investment expenses, compounded annually.



Schedule C – Actuarial Assumptions and Methods

Interest on Member Contributions

Interest on member contributions is assumed to accrue at a rate of 2.75% per annum, compounded annually.

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table C-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 3.5% annual rate of increase in the general wage level of the membership.

Service Retirement

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

Disablement

The rates of disablement used in this valuation are illustrated in Table C-4.

Mortality

The mortality rates used in this valuation are illustrated in Table C-5. A written description of each table used is included in Table C-1.

Other Terminations of Employment

The rates of assumed future withdrawal from active service for reasons other than death, disability or retirement are shown for representative ages in Table C-6.

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 C-7 shows the assumed probability of retaining membership in the System among members terminating with five or more years of service.

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.

Probability of Marriage & Dependent Children

If death occurs in active status, all members are assumed to have an eligible surviving spouse with no dependent children. Female spouses are assumed to be three years younger than their male spouse.

Records with no Birth Date

New records with no birth date are assumed to be 37 years old. Records that are not new and have no birth date used the same birth date as the prior year's valuation.



Schedule C – Actuarial Assumptions and Methods

Table C-1

Summary of Assumptions

I. Economic assumptions		
A.	General wage increases	3.50%
B.	Investment return	7.34%
C.	Discount Rate	4.43%
D.	Price Inflation Assumption	2.40%
E.	Growth in membership	0.00%
F.	Interest on member accounts	2.75%
G.	Interest on DROP accounts	7.65%
II. Demographic assumptions		
A.	Individual salary increase due to promotion and longevity	Table C-2
B.	Retirement	Table C-3
C.	Disablement	Table C-4
D.	Mortality among contributing members, 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 Combined Employee and Annuitant Mortality Table projected to 2020 using Scale BB, set back one year for males.	Table C-5
E.	Mortality among disabled members For Males and Females: RP 2000 Combined Employee and Annuitant Mortality Table with no projections.	Table C-5
F.	Other terminations of employment	Table C-6
G.	Probability of retaining membership in the System upon vested termination	Table C-7



Schedule C – Actuarial Assumptions and Methods

Table C-2

Future Salaries

	(a)	(b)	(1+(a))*(1+(b))
Years of Service	Individual Merit & Longevity	General Wage Increase	Total Salary Increase
1	6.30%	3.50%	10.02%
2	4.70	3.50	8.36
3	3.50	3.50	7.12
4	2.70	3.50	6.29
5	2.00	3.50	5.57
6	1.40	3.50	4.95
7	0.90	3.50	4.43
8	0.50	3.50	4.02
9	0.20	3.50	3.71
10 & Up	0.00	3.50	3.50



Schedule C – Actuarial Assumptions and Methods

Table C-3

**Retirement
Annual Rates**

Age	20 or More Years of Service
Less than 50	12.0%
50	16.0%
51	16.0
52	16.0
53	16.0
54	16.0
55	20.0
56	20.0
57	20.0
58	20.0
59	20.0
60 & Over	100.0

Vested terminations are assumed to retire at their earliest unreduced eligibility.

An additional 15% are assumed to retire and enter the DROP for each of the first six years following DROP eligibility.



Schedule C – Actuarial Assumptions and Methods

Table C-4
Disablement
Annual Rates

Age	All Members
22	.00%
27	.10
32	.10
37	.10
42	.40
47	.40
52	.40
57	.40
62	.00

75% of all disabilities are assumed to be duty related, and all disabilities are assumed to be permanent and without recovery.



Schedule C – Actuarial Assumptions and Methods

Table C-5

**Mortality
Annual Rates**

Age	Contributing Members, Service Retired Members and Beneficiaries		Disabled Members	
	Men	Women	Men	Women
25	0.0354%	0.0195%	0.0376%	0.0207%
30	0.0388	0.0249	0.0444	0.0264
35	0.0661	0.0447	0.0773	0.0475
40	0.0961	0.0665	0.1079	0.0706
45	0.1316	0.1058	0.1508	0.1124
50	0.1879	0.1578	0.2138	0.1676
55	0.3010	0.2458	0.3624	0.2717
60	0.5271	0.4135	0.6747	0.5055
65	0.9041	0.7624	1.2737	0.9706
70	1.4636	1.3151	2.2206	1.6742
75	2.5057	2.2077	3.7834	2.8106
80	4.2816	3.6037	6.4368	4.5879
85	7.3750	6.0833	11.0757	7.7446
90	13.0721	10.5549	18.3408	13.1682
95	21.7835	17.2452	26.7491	19.4509

70% of deaths from active service are assumed to be duty related.



Schedule C – Actuarial Assumptions and Methods

Table C-6

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

Years of Service	All Members
0	12.0%
1	7.5
2	7.5
3	7.5
4	7.5
5	5.0
6	5.0
7	5.0
8	5.0
9	5.0
10	3.0
11	3.0
12	3.0
13	3.0
14	3.0
15	1.0
16	1.0
17	1.0
18	1.0
19	1.0



Schedule C – Actuarial Assumptions and Methods

Table C-7

**Probability of Retaining Membership in the System
Upon Vested Termination**

<u>Age</u>	<u>Probability of Retaining Membership</u>
Under 35	60%
35	60
36	60
37	60
38	60
39	60
40	60
41	60
42	60
43	60
44	60
45	70
46	70
47	70
48	70
49	70
50 & Over	100



Schedule D – Glossary of Terms

Actuarial Present Value of Projected Benefit Payments

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial Valuation

The determination, as of a point in time (the actuarial valuation date), of the service cost, total pension liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice, unless otherwise specified by the GASB.

Actuarial Valuation Date

The date as of which an actuarial valuation is performed.

Actuarially Determined Contribution

A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice and based on the most recent measurement date available when the contribution for the reporting period was adopted.

Cost-Sharing Multiple Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan)

A multiple-employer defined benefit pension plan in which the pension obligation to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered Employee Payroll

The payroll on which contributions to a pension plan are based.



Schedule D – Glossary of Terms

Discount Rate

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's fiduciary net position is projected (under the requirements of Statement 67) to be greater than the benefit payments that are projected to be made in the period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Entry Age Actuarial Cost Method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of the actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.

Money-Weighted Rate of Return

A method of calculating period-by-period returns on pension plan investments that adjust for the changing amounts actually invested. For purpose of Statement 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Net Pension Liability

The liability of employers and nonemployer contributing entities to plan members for benefits provided through a defined benefit pension plan. It is calculated by subtracting the plan's fiduciary net position from the plan's total pension liability.

Nonemployer Contributing Entity

Entities that make contributions to a pension plan that is used to provide pensions to the employees of other entities. For purposes of Statement 67, plan members are not considered nonemployer contributing entities.



Schedule D – Glossary of Terms

Plan Members

Individuals that are covered under the terms of a pension plan. Plan Members generally included (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).

Projected Benefit Payments

All benefits estimated to be payable through the pension plan to current active and inactive plan members as a result of their past service and their expected future service.

Real Rate of Return

The rate of return on an investment after adjustment to eliminate inflation.

Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to a valuation year.

Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan)

A defined benefit pension plan that is used to provide pensions to employees of only one employer.

Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service in conformity with the requirements of Statement 67.