



Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

October 21, 2016

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

Members of the Board:

We are submitting the results of the annual valuation of the assets and liabilities of the Public Employees' Retirement System of the State of Montana Long-Term Disability Plan under the Defined Contribution Retirement Plan (PERS-DCRP), prepared as of June 30, 2016. The purpose of this letter is to disclose differences between the valuation report issued on October 3, 2016, which was presented at the October 6, 2016 Board meeting, and the valuation report issued October 21, 2016. These differences reflect changes made by Cavanaugh MacDonald LLC and such changes are made through no fault of the Montana Public Employee Retirement Administration (MPERA).

The participant demographic information disclosed in the Summary of Results, Appendix D and Appendix E has been changed to correct a rounding difference in the average annual benefit of the disabled retirees and to maintain consistency between the Appendices.

The changes mentioned above have no material impact. The funded ratio and the remaining amortization period of the unfunded actuarial accrued liability were unchanged.

Respectfully submitted,

Edward A. Macdonald, ASA, FCA, MAAA
President

Todd B. Green, ASA, FCA, MAAA
Principal and Consulting Actuary

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Cavanaugh Macdonald
CONSULTING, LLC

The experience and dedication you deserve

**Public Employees' Retirement System
of the State of Montana**

**Long Term Disability Plan
under the Defined Contribution Retirement Plan**

**Actuarial Valuation
As of June 30, 2016**

Issued as of October 21, 2016





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October 21, 2016

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

Members of the Board:

In this report are submitted the results of the annual valuation of the assets and liabilities of the Public Employees' Retirement System of the State of Montana Long-Term Disability Plan under the Defined Contribution Retirement Plan (DCRP), prepared as of June 30, 2016.

The purpose of this report is to provide a summary of the funded status of the Plan as of June 30, 2016. While not verifying the data at source, the actuary performed tests for consistency and reasonability. The valuation indicates that the statutory contribution rate is not sufficient to amortize the unfunded accrued liability.

The promised benefits of the Plan are included in the actuarially calculated contribution rates which are developed using the Entry Age Normal Cost Method. Gains and losses are reflected in the unfunded accrued liability that is being amortized by regular annual contributions as a level percentage of payroll, on the assumption that payroll will increase by 4.00% annually. The assumptions recommended by the actuary and adopted by the Board are, in the aggregate, reasonably related to the experience under the Fund and to reasonable expectations of anticipated experience under the Fund.

This is to certify that Edward Macdonald and Todd Green, Principal and Consulting Actuaries for Cavanaugh Macdonald Consulting, are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. This also certifies that the undersigned have experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the Plan and on actuarial assumptions that are internally consistent and reasonably based on the actual experience of the Plan.



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.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Edward Macdonald'.

Edward A. Macdonald, ASA, FCA, MAAA
President

A handwritten signature in blue ink, appearing to read 'Todd B. Green'.

Todd B. Green, ASA, FCA, MAAA
Principal and Consulting Actuary

A handwritten signature in blue ink, appearing to read 'Joseph A. Nichols'.

Joseph A. Nichols, ASA, EA, FCA, MAAA, MSPA
Senior Actuary

A handwritten signature in blue ink, appearing to read 'Matthew Yonz'.

Matthew Yonz, ASA
Senior Actuarial Analyst



Montana Public Employees' Retirement System DCRP Long-Term Disability Plan

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Section I: Summary of Results

For convenience of reference, the principal results of the valuation and a comparison with the preceding year's results are summarized below:

VALUATION DATE	June 30, 2016	June 30, 2015
Active members	2,409	2,284
Disabled Members	6	6
Retirees and Beneficiaries	0	0
Terminated Vested Members	0	0
Terminated Non-Vested Members	0	0
Total	<u>2,415</u>	<u>2,290</u>
Covered Payroll of Active Members	\$ 114,883,091	\$ 106,518,524
Average Salaries from Covered Payroll	\$ 47,689	\$ 46,637
Annual Retirement Allowances for Disabled Members	\$ 49,269	\$ 43,296
Assets		
Market Value of Assets	\$ 3,118,397	\$ 2,781,120
Actuarial Accrued Liability (AAL)	\$ 3,591,249	\$ 3,235,065
Unfunded Actuarial Accrued Liability	\$ 472,852	\$ 453,945
Funded Ratio	86.83%	85.97%
Market Value Rate of Return	0.38%	0.13%
Annual Cost		
Statutory Funding Rate	0.30%	0.30%
Total Normal Rate	0.30%	0.32%
Employee Contribution Rate	<u>0.00%</u>	<u>0.00%</u>
Employer Normal Rate	0.30%	0.32%
Employer Contribution Rate		
Normal Rate	0.30%	0.32%
Administrative Expense Load	0.00%	0.00%
UAAL Rate	<u>0.00%</u>	<u>(0.02%)</u>
Total Rate	0.30%	0.30%
Amortization Period	Does not amortize	Does not amortize
Employer Contribution Rate Necessary to Amortize UAAL over 30 Years		
Normal Rate	0.30%	0.32%
Administrative Expense Load	0.00%	0.00%
UAAL Rate (30-Year Rate)	<u>0.01%</u>	<u>0.01%</u>
Total Rate	0.31%	0.33%
Shortfall/(Surplus)	0.01%	0.03%



Section I: Summary of Results

As a result of this actuarial valuation of the benefits in effect under the DCRP Long-Term Disability Plan as of June 30, 2016, the statutory employer contributions are not sufficient to amortize the Unfunded Actuarial Accrued Liability (UAAL) of the Plan. The Funded Ratio is 86.83%.

Calculations based on the Market Value of Assets

MCA 19-2-407 requires this report to show how market performance is affecting the actuarial funding of the Plan. This report uses the market value of assets for all calculations.

Additional Details

MCA 19-3-2117 requires each employer to contribute 0.30% of total compensation paid to the long-term disability plan trust fund.

The actuarial costs are calculated using the entry age actuarial cost method. This is the method used by most public plans. It is designed to provide a stable contribution rate as a percent of member pay. This actuarial valuation measures the adequacy of the contribution rates set in Montana State Law.

Investment Experience

The market assets earned 0.38% net of investment and operating expenses, which is 3.12% less than the actuarial assumption of 3.50%. The chart below shows the annual returns for the past ten years.

Year	Market Return	Assumed Rate of Return	Market Return over Assumption
7/1/2012 to 6/30/2013	0.25%	3.50%	(3.25)%
7/1/2013 to 6/30/2014	0.14	3.50	(3.36)
7/1/2014 to 6/30/2015	0.13	3.50	(3.37)
7/1/2015 to 6/30/2016	0.38	3.50	(3.12)

Asset gains or losses result when the return on the actuarial value of assets differs from the assumed actuarial investment return.

The Plan earned \$169,134 less than anticipated by the 3.50% assumption in the year ended June 30, 2015, and \$91,932 less than anticipated by the 3.50% assumption in the year ended June 30, 2016.

Amortization of the UAAL

The statutory contribution required in MCA 19-3-2117 is not sufficient to amortize the unfunded actuarial accrued liability.



Section I: Summary of Results

Funding and Benefits Policy

The Montana Public Employees' Retirement Board 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) Funding Requirement

a) The Funding and Benefits Policy states:

1. The Entry Age Normal Cost Method shall be applied to the projected benefits in determining the Normal Cost and Actuarial Accrued Liability.
2. The unfunded actuarial accrued liability should be amortized over a reasonable period of time and should not exceed 30 years on a rolling basis. Generally, the funding period should be constant or decreasing.

b) Analysis: The liabilities of the Plan are determined using the Entry Age Normal Cost Method and are compared to the market value of assets. The contributions provided for in statute are not sufficient to fully amortize the unfunded actuarial accrued liability. In order to amortize the unfunded actuarial accrued liability within a 30-year period, contributions must be increased by 0.01% of compensation.

2) Funding Objectives

a) The Funding and Benefits Policy states: "The primary objectives are to: 1) ensure that the systems are financially sound and pay all benefits promised using assets accumulated from required employer and member contributions and investment income; and 2) achieve a well-funded status with a range of safety to absorb market volatility without creating a UAL."

b) Analysis: The contributions provided for in statute are not sufficient to fully amortize the unfunded actuarial accrued liability. Absent of significant investment returns or other considerable actuarial gains, the Plan is in danger of not ensuring the Plan will remain financially sound and is risking the ability to pay all benefits promised in the future. In addition, the Plan will not achieve a well-funded status with a range of safety to absorb market volatility without creating an additional UAAL.

3) Benefit Enhancements

a) The Funding and Benefits Policy states: "Proposals must provide funding from sources sufficient to cover future costs. Unfunded liabilities created by the proposal must be amortized over a period of time appropriate to the retirement system, but not more than 30 years."

b) Analysis: Without the supplemental funding, the Board's Funding and Benefits policy does not currently support enhanced benefits.



Section I: Summary of Results

Sensitivity to Future Experience

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing the ultimate cost. The following illustrations provide simple analyses on how the costs are sensitive to changes in the assumed rate of return.

Investment Return – The investment return generally has the largest impact on the funding of the Plan.

Impact of Assuming 1.00% Lower Investment Return	
	<u>Funded Ratio</u>
Current Assumption 3.50%	86.83%
Lower Assumption 2.50%	<u>80.76%</u>
Change	(6.07)
	<u>Amortization Period Increase / (Decrease)</u>
Current Assumption 3.50%	Does not amortize
Lower Assumption 2.50%	<u>Does not amortize</u>
Increase	N/A
Impact of Assuming 1.00% Higher Investment Return	
	<u>Funded Ratio</u>
Current Assumption 3.50%	86.83%
Higher Assumption 4.50%	<u>93.64%</u>
Change	6.81%
	<u>Amortization Period Increase / (Decrease)</u>
Current Assumption 3.50%	Does not amortize
Higher Assumption 4.50%	<u>5 years</u>
Increase	N/A



Section I: Summary of Results

The future funding status of the Plan will be determined by the Plan's experience. The Plan's actual asset returns and retirement rates, as well as member longevity, salary increases, withdrawal rates, disability rates and future legislation will all impact the funding status of the Plan. The entry age normal cost method will help to provide a more orderly funding of the Plan's liabilities, but will not change the actual experience. The amortization period of the UAAL is not likely to decrease by the expected 1.0 year with each passing actuarial valuation. Instead, the amortization period is expected to decrease more or less than 1.0 years each year, reflecting gains and losses due to experience different than the actuarial assumptions.

Initial Valuation

This is the first actuarial valuation report prepared by Cavanaugh Macdonald Consulting (CMC). As part of our transition work, we replicated the June 30, 2015, actuarial valuation. Results were well within acceptable limits.

Assumption Changes

There have been no assumption changes since the previous valuation.

Benefit Changes

There have been no benefit changes since the previous valuation.

Contribution Changes

There have been no contribution changes since the previous valuation.

Method Changes

There have been no method changes since the previous valuation.



Section I: Summary of Results

Impact of Changes

The following table summarizes how experience has changed the UAAL since the June 30, 2015 Actuarial Valuation. Further detail can be found in Table 9.

Changes in the Unfunded Actuarial Accrued Liability (UAAL)

June 30, 2015 Valuation UAAL	\$ 453,945
Normal Cost	340,859
Contributions	(368,019)
Interest	<u>21,433</u>
Expected June 30, 2016 UAAL	\$ 448,218
Experience Gain on Actuarial Liabilities	\$ (67,298)
Experience Loss on Actuarial Assets	<u>91,932</u>
Total (Gain) / Loss	<u>\$ 24,634</u>
June 30, 2016 Valuation UAAL	\$ 472,852

Summary

- * The Plan's investment return of for the year ended June 30, 2016 is less than the actuarial assumption of 3.50%. This represents an asset loss of \$91,932 due to investment return being less than anticipated. As of June 30, 2016, the market value of assets was \$3,118,397.
- * Contributions are not sufficient to amortize the unfunded actuarial accrued liability. This was the situation last year as well.
- * The funding of the Plan will be impacted by future experience which will sometimes be more favorable than the actuarial assumptions and sometimes less favorable. In particular, investment returns larger and smaller than the 3.50% assumption are expected to have significant impacts on the Plan's funding progress. In the long term, the favorable experience is needed to offset the less favorable experience.



Section II: Assets

Assets

In many respects, an actuarial valuation can be regarded as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2016. On that date, the assets available for the payment of benefits are appraised. These assets are compared with the actuarial liabilities. The actuarial process thus leads to a method of determining what contributions by members and their employers are needed to strike a balance.

The asset valuation method being used is the market value of assets. Table 1 lists the assets held and their market value for the past two years. Table 2 summarizes the fund's activity during the past two years. Table 3 summarizes historical asset returns for the last 4 years including the amount recognized by the actuarial asset valuation method which was greater or lesser than the actuarial investment return assumption. Table 4 summarizes the historical asset returns since 2012 on market value and actuarial value basis and graphically compares them to the assumed rate of return. Table 5 summarizes the historical asset values on a market value basis, to the extent it was available. Additional data can be included in this table for future reports, if provided by the Plan.

**Section II: Assets**

Table 1:
Statement of Fiduciary Net Assets
Fiscal Year Ended June 30,

	<u>2016</u>	<u>2015</u>
ASSETS		
Cash and Short Term Investments	\$ 278,519	\$ 2,745,038
Securities Lending Collateral	\$ 1,116	\$ 6,386
Receivables:		
Interest Receivable	\$ 455	\$ 445
Accounts Receivable	1,450	2,050
Due from Other Funds	3,453	9,870
Due from Primary Government	-	-
Notes Receivable	-	-
Total Receivables	<u>\$ 5,358</u>	<u>\$ 12,365</u>
Investments, at fair value:		
Investment Pools	2,834,520	23,717
Other Investments	-	-
Total Investments	<u>\$ 2,834,520</u>	<u>\$ 23,717</u>
Capital Assets		
Property and Equipment, at cost, net of Accumulated Depreciation	\$ -	\$ -
Equipment	-	-
Total Capital Assets	<u>\$ -</u>	<u>\$ -</u>
TOTAL ASSETS	<u>\$ 3,119,513</u>	<u>\$ 2,787,506</u>
LIABILITIES		
Securities Lending Liability	\$ 1,116	\$ 6,386
Accounts Payable	-	-
Unearned Revenue	-	-
Due to Other Funds	-	-
Compensated Absences	-	-
OPEB Implicit Rate Subsidy LT	-	-
TOTAL LIABILITIES	<u>\$ 1,116</u>	<u>\$ 6,386</u>
NET ASSETS HELD IN TRUST FOR PENSION BENEFITS	<u>\$ 3,118,397</u>	<u>\$ 2,781,120</u>

**Section II: Assets**

**Table 2:
Statement of Changes in Fiduciary Net Assets
Fiscal Year Ended June 30,**

	<u>2016</u>	<u>2015</u>
ADDITIONS		
Contributions:		
Employer	\$ 368,019	\$ 343,426
Plan Member	-	-
Other	-	-
Total Contributions	<u>\$ 368,019</u>	<u>\$ 343,426</u>
Misc Income	\$ -	\$ -
Investment Income:		
Net Appreciation/(Depreciation) in Fair Value of Investments	\$ 55	\$ -
Investment Earnings	10,982	3,434
Security Lending Income	50	11
Investment Income/(Loss)	<u>\$ 11,087</u>	<u>\$ 3,445</u>
Investment Expense	-	-
Security Lending Expense	(20)	(1)
Net Investment Income/(Loss)	<u>\$ 11,067</u>	<u>\$ 3,444</u>
Total Additions	<u>\$ 379,086</u>	<u>\$ 346,870</u>
DEDUCTIONS		
Benefit Payments	\$ 41,809	\$ 33,816
Refunds/Distributions	-	-
Refunds to Other Plans	-	-
Transfers to DCRP	-	-
Transfers to MUS-RP	-	-
OPEB Expense	-	-
Administrative Expense	-	1,550
Total Deductions	<u>\$ 41,809</u>	<u>\$ 35,366</u>
NET INCREASE (DECREASE) IN PLAN NET ASSETS	<u>\$ 337,277</u>	<u>\$ 311,504</u>
NET ASSETS HELD IN TRUST FOR PENSION BENEFITS BEGINNING OF YEAR	\$ 2,781,120	\$ 2,469,616
ADJUSTMENT	-	\$ -
END OF YEAR	<u>\$ 3,118,397</u>	<u>\$ 2,781,120</u>



Section II: Assets

**Table 3:
Historical Investment Returns***

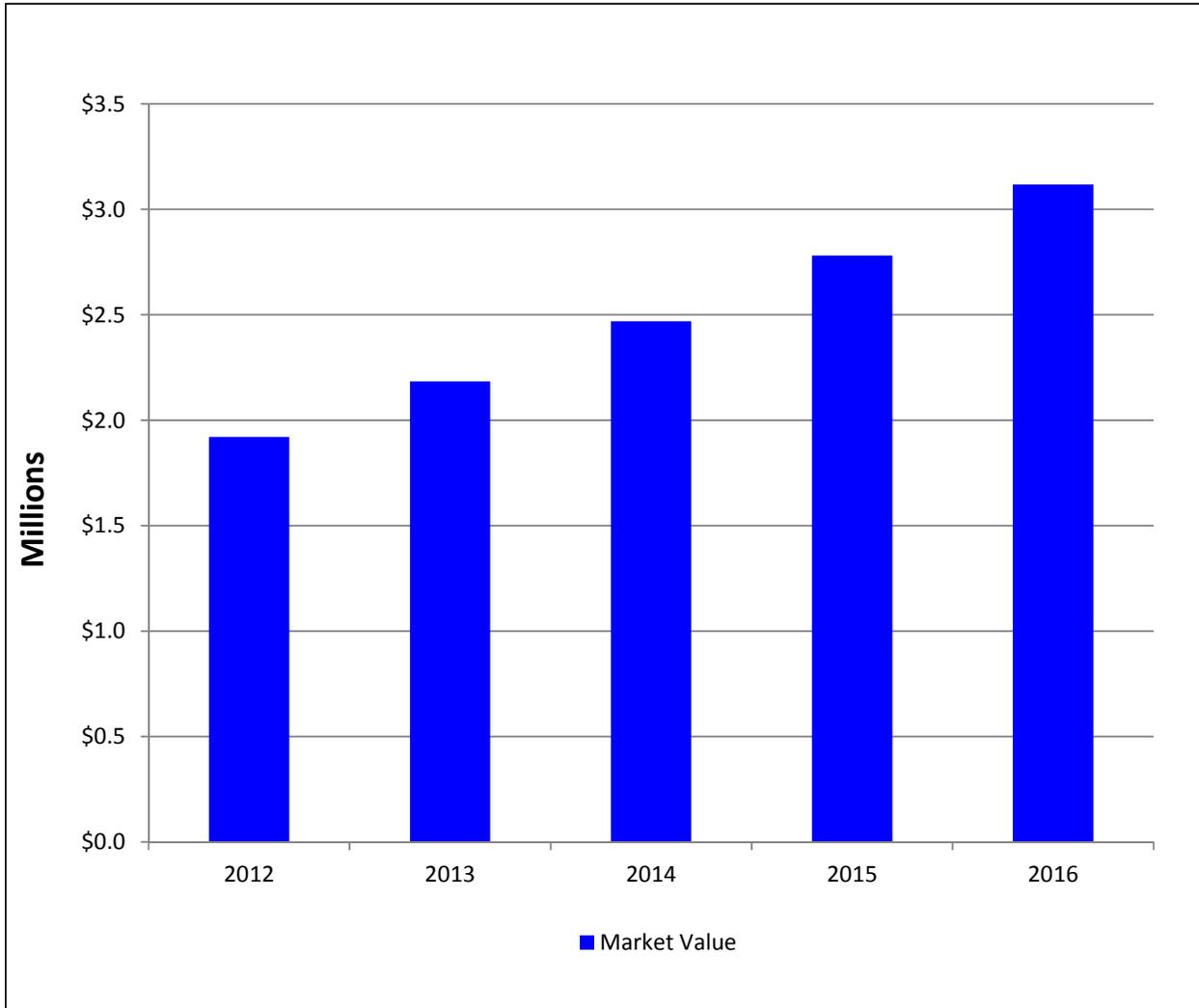
Fiscal Year Ending	Market Returns	Assumed Rate of Return	Market Return Over Assumption
June 30, 2013	0.25%	3.50%	(3.25)%
June 30, 2014	0.14%	3.50%	(3.36)%
June 30, 2015	0.13%	3.50%	(3.37)%
June 30, 2016	0.38%	3.50%	(3.12)%
4 Year Average	0.22%		(3.28)%

* Returns reflect all investment returns, including investment income and realized and unrealized investment gains and losses, and are net of investment expenses and administrative expenses paid by the Plan.



Section II: Assets

**Table 4:
Market Value of Assets**





Section III: Actuarial Present Value of Future Benefits

Actuarial Present Value of Future Benefits

In the previous section, an actuarial valuation was related to an inventory process, and an analysis was given of the inventory of assets of the Plan as of the valuation date. In this section, the discussion will focus on the commitments of the Plan, which will be referred to as its actuarial liabilities.

Table 5 contains an analysis of the actuarial present value of all future benefits for contributing members, for retirees, and for beneficiaries. The analysis is given by type of benefit.

The actuarial liabilities summarized in Table 5 include the actuarial present value of all future benefits expected to be paid with respect to each member covered as of the valuation date. For an active member, this value includes a measure of both benefits already earned and future benefits to be earned. Thus, for all members, active and retired, the value extends over benefits earnable and payable to age 65 for disabilities occurring prior to age 60, and for five years for disabilities occurring after age 60.

The actuarial valuation does not recognize liabilities for employees who become members and participate in the Plan after the valuation date.



Section III: Actuarial Present Value of Future Benefits

**Table 5:
Actuarial Present Value of Future Benefits for Active Members,
Retirees, and Beneficiaries**

	<u>June 30, 2016</u> Total	<u>June 30, 2015</u> Total
A. Active Members Liability Due to the Probability of		
Retirement	\$ -	\$ -
Disability	\$ 8,969,616	\$ 7,933,388
In-Service Death	\$ -	\$ -
Termination	\$ -	\$ -
Total	\$ 8,969,616	\$ 7,933,388
B. Inactive Members and Annuitants		
Service Retirement	\$ -	\$ -
Disability Retirement	\$ 400,785	\$ 404,891
Beneficiaries	\$ -	\$ -
Vested Terminated Members	\$ -	\$ -
Refund of Member Contributions	\$ -	\$ -
Total	\$ 400,785	\$ 404,891
C. Grand Total	\$ 9,370,401	\$ 8,338,279



Section IV: Employer Contributions

Employer Contributions

In the previous two sections, attention has been focused on the assets and the present value of all future benefits of the Plan. A comparison of Tables 2 and 5 indicates that there is a shortfall in current assets to meet the present value of all future benefits for current members and beneficiaries.

In an active system, there will always be a difference between the assets and the present value of all future benefits. An actuarial valuation sets a schedule of future contributions that will deal with this funding in an orderly fashion.

The method used to determine the incidence of the contributions in various years is called the actuarial cost method. For this valuation, the entry age actuarial cost method has been used. A description of the entry age actuarial cost method is provided in Appendix A. Under this method, or essentially any actuarial cost method, the contributions required to meet the difference between current assets and the present value of all future benefits are allocated each year between three elements:

- A normal cost amount, which ideally is relatively stable as a percentage of salary over the years;
- A load for administrative expenses; and
- An amount which is used to amortize the UAAL.

The two items described above, normal cost and UAAL, are the keys to understanding the actuarial cost method. Let us first discuss the normal cost.

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

The assumed investment rate of return is 3.50%, net of investment and operating expenses.

We have determined the normal cost rates separately by type of benefit under the Plan. These are summarized in Table 6. In Table 6 we also provide a summary of the member and employer statutory contributions.

The term "fully funded" is often applied to a system where contributions for everyone at the normal cost rate will fully pay for the benefits of existing as well as new employees. Often, systems are not fully funded, either because of benefit improvements in the past that have not been completely paid for or actuarial deficiencies that have occurred because experience has not been as anticipated. Under these circumstances, a UAAL exists.

Table 7 shows how the UAAL was derived for the Plan. Lines A and B show, respectively, the total present value of future benefits and the portion of the future liability that is expected to be



Section IV: Employer Contributions

paid from future normal cost contributions, both employer and employee. The future normal cost contributions are the portion of the present value of future benefits that are attributed to future years of service that have not been earned yet by the active membership. Line C shows the actuarial accrued liability. Line D shows the amount of assets available for benefits. Line E shows the UAAL.

The UAAL at any date after establishment of a system is affected by any actuarial gains or losses arising when the actual experience of the system varies from the experience anticipated by the actuarial assumptions used in the valuations. To the extent actual experience as it develops differs from the assumptions used, so also will the actual emerging costs differ from the estimated costs. The impact of these differences in actual experience from the assumptions is included in Section 1, the Summary of Results.



Section IV: Employer Contributions

**Table 6:
Normal Cost Contribution Rates
As Percentages of Salary**

	<u>June 30, 2016</u> <u>Total</u>	<u>June 30, 2015</u> <u>Total</u>
Service retirement	0.00%	0.00%
Disability retirement	0.30%	0.32%
Survivors' benefits	0.00%	0.00%
Vested retirement	<u>0.00%</u>	<u>0.00%</u>
Total Normal Rate	<u>0.30%</u>	<u>0.32%</u>
Employee Normal Rate	0.00%	0.00%
Employer Normal Rate	0.30%	0.32%
Administrative Expense Load	0.00%	0.00%
Rate Available to Amortize the Unfunded Accrued Actuarial Liability	<u>0.00%</u>	<u>(0.02%)</u>
Statutory Rate	0.30%	0.30%



Section IV: Employer Contributions

**Table 7:
Unfunded Actuarial Accrued Liability**

	June 30, 2016	June 30, 2015
A. Actuarial present value of all future benefits for present members and retirees and their survivors (Table 5)	\$ 9,370,401	\$ 8,338,279
B. Less actuarial present value of total future normal costs for present members	<u>\$ 5,779,152</u>	<u>\$ 5,103,214</u>
C. Actuarial accrued liability	\$ 3,591,249	\$ 3,235,065
D. Less assets available for benefits	<u>\$ 3,118,397</u>	<u>\$ 2,781,120</u>
E. Unfunded actuarial accrued liability	\$ 472,852	\$ 453,945



Section V: Cash Flows

Cash Flows

The fundamental equation for funding a retirement system is that benefits and administrative expenses must be provided for by contributions (past and future) and investment income. When a retirement system matures, benefits and administrative expenses often exceed contributions. In this case we say the system has a “negative cash flow.” Mature systems are characterized by negative cash flows and large pools of assets. This is natural. Actuarial funding is designed to accumulate large pools of assets which will in turn provide investment income and finance negative cash flows when systems mature. If the fund is looked at as a whole, investment income is usually larger than the difference between contributions and benefit payments. The retirement system’s investment strategy should maximize potential returns at a prudent level of risk while providing for needed cash flows.

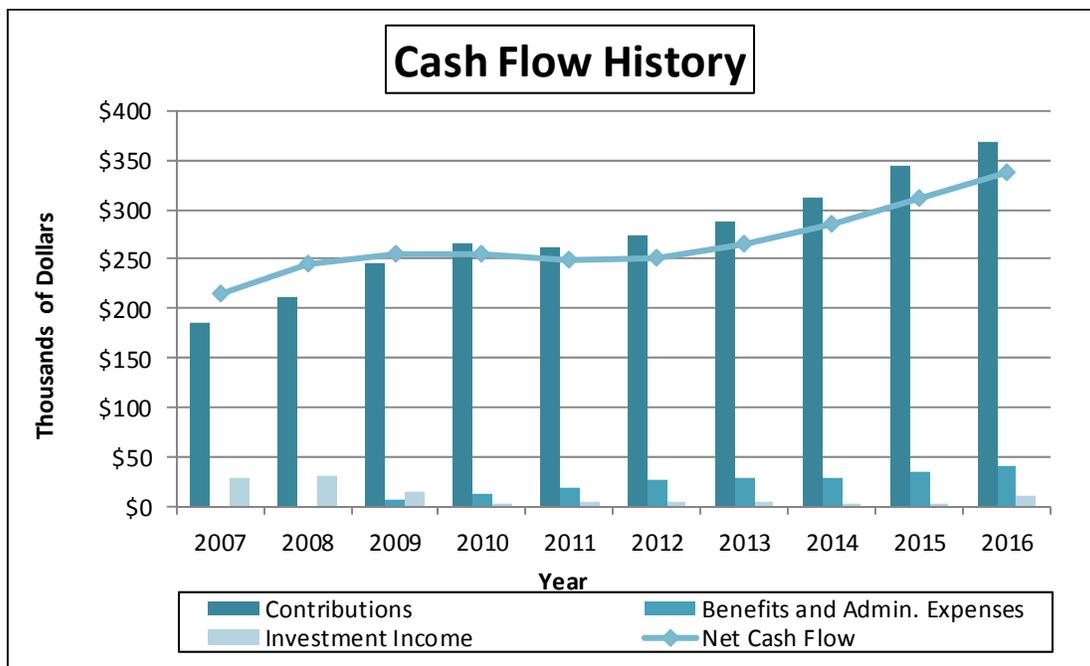
Table 8 shows the Plan had a positive cash flow for the year ended June 30, 2016. The Plan’s total cash flow including benefits payments, administrative expenses and investment earnings was \$337.3 thousand. Of the \$337.3 thousand, \$11.1 thousand was due to investment returns.

As long as the Plan had a positive cash flow, there was no need to plan where the funds would come from to pay benefits since benefits could be paid by incoming contributions. A negative cash flow, as defined above, requires planning what funds will be used to pay the difference between benefits and contributions. We are providing these projections to aid in developing the investment strategy for the Plan’s assets.



Section V: Cash Flows

**Table 8:
Cash Flow History
(Dollar amounts in thousands)**



Historical Cash Flows				
Year Ended June 30	Contributions	Benefits & Administrative Expenses	Investment Income	Net Cash Flow
2007	\$ 185.0	\$ -	\$ 30.0	\$ 215.0
2008	212.0	-	32.0	244.0
2009	245.0	7.0	16.0	254.0
2010	265.0	14.0	4.0	255.0
2011	262.0	19.0	5.0	248.0
2012	273.0	27.0	5.0	251.0
2013	288.4	29.5	5.1	264.0
2014	311.3	29.5	3.3	285.1
2015	343.4	35.4	3.4	311.4
2016	368.0	41.8	11.1	337.3



Section VI: Actuarial Gains of Losses

Actuarial Gains or Losses

An analysis of actuarial gains or losses is performed in conjunction with all regularly scheduled valuations.

The results of our analysis of the financial experience of the Plan in the three most recent regular actuarial valuations are presented in Table 9. 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.



Section VI: Actuarial Gains of Losses

**Table 9:
Analysis of Actuarial (Gains) or Losses***

	UAAL (Gain)/Loss	
	June 30, 2016	June 30, 2015
Investment Income		
Investment income was (greater) less than expected based on actuarial value of assets.	\$ 91,932	\$ 169,134
Pay Increases		
Pay increases were (less) greater than expected.	\$ 57,240	\$ 1,016
Age & Service Retirements		
Members retired at (older) younger ages or with (less) greater final average pay than expected	\$ (401)	\$ (35,805)
Disability Retirements		
Disability claims were (less) greater than expected	\$ (120,568)	\$ (223,348)
Death-in-Service Benefits		
Survivor claims were (less) greater than expected	\$ 3,975	\$ 7,212
Withdrawal From Employment		
(More) less reserves were released by withdrawals than expected	\$ (426)	\$ (113,801)
Death After Retirement		
Retirees (died younger) lived longer than expected	\$ (70,855)	\$ 1,534
Data Adjustments and Benefit Payment Timing		
Service purchases, data corrections, etc.	\$ 82,710	\$ 163,043
Other		
Miscellaneous (gains) and losses	\$ (18,973)	\$ (88,738)
Total (Gain) or Loss During Period From Financial Experience	\$ 24,634	\$ (119,753)
Non-Recurring Items.		
Changes in actuarial assumptions and methods	\$ -	\$ -
Changes in benefits caused a (gain) loss	\$ -	\$ -
Composite (Gain) Loss During Period	\$ 24,634	\$ (119,753)

* Effects related to gains are shown in parentheses. Numerical results are expressed as a (decrease) increase in the Unfunded Actuarial Accrued Liability (UAAL). Gains decrease the UAAL and losses increase the UAAL.



Appendix A: Actuarial Methods

The actuarial assumptions (other than the administrative expense rate) were adopted by the Board based upon the results of an actuarial experience study covering the period July 1, 2003 through June 30, 2009. The administrative expense rate is based upon actual recurring administrative expenses during the period July 1, 2008 through June 30, 2013.

Valuation of Assets

Market value of assets

Investment Earnings

The annual rate of investment earnings of the assets of the Plan is assumed to be 3.50% per year net of investment expenses, compounded annually.

Postretirement Benefit Increases

None

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table B-2. In addition to increases in salary due to merit and longevity, this scale includes an assumed 4.0% annual rate of increase in the general wage level of the membership.

Service Retirement

Table B-3 shows the annual assumed rates of retirement for actives members meeting the service retirement eligibilities.

Disablement

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

Mortality

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

There is sufficient margin in the current mortality tables for possible future improvement in mortality rates and that margin will be reviewed again when the next experience investigation is conducted.

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 B-6.

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.



Table B-1

Summary of Valuation Assumptions

I. Economic assumptions	
A. General wage increases	4.00%
B. Investment return	3.50%
C. Price inflation assumption	3.00%
D. Growth in membership	0.00%
E. Administrative expenses as a percentage of payroll	0.00%
II. Demographic assumptions	
A. Individual salary increase due to promotion and longevity	Table B-2
B. Retirement	Table B-3
C. Disablement	Table B-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 Mortality Table projected to 2015 using Scale AA.	Table B-5
E. Mortality among disabled members For Males and Females: RP 2000 Combined Mortality Table.	Table B-5
F. Other terminations of employment	Table B-6



Table B-2

Future Salaries

Years of Service	Individual Merit & Longevity	General Wage Increase	Total Salary Increase
1	6.00%	4.00%	10.00%
2	4.90	4.00	8.90
3	3.90	4.00	7.90
4	3.10	4.00	7.10
5	2.40	4.00	6.80
6	1.80	4.00	5.80
7	1.40	4.00	5.40
8	1.00	4.00	5.00
9	0.70	4.00	4.70
10	0.50	4.00	4.50
11	0.30	4.00	4.30
12	0.30	4.00	4.30
13	0.30	4.00	4.30
14	0.30	4.00	4.30
15	0.30	4.00	4.30
16	0.10	4.00	4.10
17	0.10	4.00	4.10
18	0.10	4.00	4.10
19	0.10	4.00	4.10
20	0.10	4.00	4.10
21	0.00	4.00	4.00
22 & Up	0.00	4.00	4.00



Appendix B: Actuarial Assumptions

Table B-3
Retirement
Annual Rates

<u>Age</u>	<u>All Members</u>
50	3.0%
51	3.0
52	3.0
53	3.0
54	3.0
55	3.0
56	4.0
57	5.0
58	5.0
59	6.0
60	8.0
61	15.0
62	25.0
63	15.0
64	15.0
65	30.0
66	30.0
67	25.0
68	25.0
69	25.0
70 & Over	100.0

Members hired before July 1, 2001 are assumed to retire at the assumed rates once reaching the earlier of age 50 with five years of service or age 65 regardless of service.

Members hired on or after July 1, 2001 are assumed to retire at the assumed rates once reaching the earlier of age 55 with five years of service or age 70 regardless of service.

These rates are the same as the retirement rates used in the PERS-DB actuarial valuation for members not eligible for unreduced retirement benefits.



Appendix B: Actuarial Assumptions

Table B-4
Disablement
Annual Rates

Age	All Members
22	.00%
27	.01
32	.01
37	.04
42	.10
47	.13
52	.25
57	.36
62	.36
67	.36
70	.00

All disabilities are assumed to be permanent and without recovery.



Appendix B: Actuarial Assumptions

Table B-5
Mortality
Annual Rates

Age	Contributing Members, Service Retired Members and Beneficiaries		Disabled Members	
	Men	Women	Men	Women
25	0.0323%	0.0168%	0.0376%	0.0207%
30	0.0412	0.0227	0.0444	0.0264
35	0.0717	0.0402	0.0773	0.0475
40	0.0957	0.0563	0.1079	0.0706
45	0.1239	0.0882	0.1508	0.1124
50	0.1628	0.1296	0.2138	0.1676
55	0.2718	0.2409	0.3624	0.2717
60	0.5297	0.4689	0.6747	0.5055
65	1.0309	0.9003	1.2737	0.9706
70	1.7702	1.5529	2.2206	1.6742
75	3.0622	2.4916	3.7834	2.8106
80	5.5360	4.1291	6.4368	4.5879
85	9.9680	7.0761	11.0757	7.7446
90	17.2706	12.5879	18.3408	13.1682
95	25.9578	18.8755	26.7491	19.4509



Appendix B: Actuarial Assumptions

Table B-6

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

Years of Service	<u>All Members</u>
0	25.0%
1	20.0
2	15.0
3	10.0
4	10.0
5	5.0
6	5.0
7	5.0
8	5.0
9	5.0
10	5.0
11	5.0
12	5.0
13	5.0
14	5.0
15 or more	2.0

No termination rates are assumed after age 50 with five years of service for either males or females.

Family Composition

Female spouses are assumed to be three years younger than males. 100% of non-retired employees are assumed married for both male and female employees. Actual marital characteristics are used for pensioners.

Vested Benefits for Termination Members

None



Appendix C: Summary of Benefit Provisions

Type of Plan	<ul style="list-style-type: none">• Multiple-employer cost sharing OPEB
Membership eligibility	<ul style="list-style-type: none">• Employees of the State and local governments that have contracted for PERS coverage.• Certain employees of the university system and school districts, not covered by a separate retirement system governed by Title 19 of Montana Code Annotated.• Employees must be a member of the defined contribution retirement plan.
Member contributions	<ul style="list-style-type: none">• None.
Employer contributions	<ul style="list-style-type: none">• 0.30% of each eligible member's compensation
Compensation period used in benefit calculation	<ul style="list-style-type: none">• HAC = Highest Average Compensation• Hired prior to July 1, 2011: HAC is average of the highest 36 consecutive months (or shorter period of total service) of compensation paid by member.• Hired on or after July 1, 2011: HAC is average of the highest 60 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
Disability eligibility and benefit	<ul style="list-style-type: none">• 5 years membership service <p>For members hired on or before June 30, 2011, or hired on or before February 24, 1991 and so elected:</p> <ul style="list-style-type: none">• Less than 25 years of membership service: 1.785% of HAC multiplied by service credit, or• At least 25 years of membership service: 2% of HAC multiplied by service credit; and• Benefit is payable to the later of age 65 or for five years. <p>For members hired on or after July 1, 2011:</p> <ul style="list-style-type: none">• Between 5 and 10 years of membership service: 1.5% of HAC x years of service credit; or• Between 10 and 30 years of membership service: 1.785% of HAC x years of service credit; or• 30 years of membership service or more: 2% of HAC x years of service credit; and• Benefit is payable to age 65 for disabilities occurring prior to age 65, or no more than five years for disabilities occurring after age 65. <p>Members cannot receive distributions from their individual defined</p>



Appendix C: Summary of Benefit Provisions

	<p>contribution account while receiving payments from the PERS-DCRP Disability OPEB. Participants may choose to receive a distribution from their individual account instead of applying for and receiving a disability benefit.</p>
Survivor's benefit	<ul style="list-style-type: none">• Disability benefits cease after death of a member, and their beneficiary is entitled to death benefits only as provided from the member's vested defined contribution account balance.
Form of payment	<ul style="list-style-type: none">• Normal form of payment is a life annuity• No other forms of payment are available
Post retirement benefit increases	<ul style="list-style-type: none">• None.
Changes since last valuation	<ul style="list-style-type: none">• None.



Appendix D: Valuation Data

Valuation Data

This valuation is based upon the membership of the Plan as of June 30, 2016. Membership data were supplied by the Plan and accepted for valuation purposes without audit. However, tests were performed to ensure that the data are sufficiently accurate for valuation purposes.

The salaries used in the tables and charts which follow are different than the salaries used for the Summary of Results on page 1. The valuation projected salaries to be paid for the following fiscal year, whereas the Summary of Results, salaries are applicable in the year ending on the valuation date.

<u>Active Members</u>	<u>Number</u>	<u>Valuation Projected Salaries</u>
Full-Time Members	1,978	\$ 109,757,034
Part-Time Members	<u>431</u>	<u>\$ 21,202,902</u>
Total Active Members	2,409	\$ 130,959,936

Table D-1 contains summaries of the data for active members. For full-time members, values shown in the tables are the numbers of members and their total and average annual salaries. For part-time members, only the numbers of members are shown.

Table D-2 presents distributions of the following:

- Members receiving service retirement benefits.
- Members receiving disability retirement benefits.
- Survivors of deceased retired members receiving benefits.
- Survivors of deceased active members.
- Terminated vested members.

Table D-3 is a reconciliation of membership data from June 30, 2015 to June 30, 2016.



Appendix D: Valuation Data

The following is a summary of retired members and beneficiaries currently receiving benefits:

Type of Annuitant	Number	Annual Benefits	Average Annual Benefits
Service Retirement	0	\$ -	\$ -
Survivors and Beneficiaries	0	-	-
Total Retirees and Beneficiaries	0	\$ -	\$ -
Disability Retirement	6	49,269	8,212
Total Annuitants	6	\$ 49,269	\$ 8,212

Terminated Members with Contributions Not Withdrawn	Number
Vested Terminated Members	0
Non-Vested Terminated Members	0
Total Terminated Members	0



Appendix D: Valuation Data

**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2016**

Number of Employees

Age	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40+	Totals
<25	6	12	7	3									28
25 to 29	27	40	30	17	9								123
30 to 34	25	37	49	55	68	15							249
35 to 39	31	39	42	48	92	55	5						312
40 to 44	13	21	25	39	79	67	24	1					269
45 to 49	10	23	25	31	72	60	34	14	1				270
50 to 54	12	12	15	33	84	69	22	16	5	1			269
55 to 59	9	22	17	37	73	61	24	16	3				262
60 to 64	3	6	11	24	43	47	15	5	1				155
65 to 69	1	5	2	6	6	13	2		1				36
70 and up		1		1	3								5
Totals	137	218	223	294	529	387	126	52	11	1	-	-	1,978



Appendix D: Valuation Data

**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2016**

Annual Salaries in Thousands

Age	<u>Completed Years of Service</u>												Totals	
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40+		
<25	279	452	255	149										1,135
25 to 29	1,196	1,448	1,530	790	379									5,343
30 to 34	1,153	1,585	2,613	2,854	3,755	982								12,943
35 to 39	1,729	1,578	2,266	2,521	5,760	3,576	323							17,752
40 to 44	561	854	1,431	2,012	4,617	4,606	1,726	64						15,871
45 to 49	451	948	1,248	1,836	4,554	3,950	2,394	915	92					16,389
50 to 54	541	532	699	1,695	4,808	4,273	1,476	956	253	48				15,280
55 to 59	359	834	802	1,867	4,138	3,781	1,405	1,237	225					14,648
60 to 64	120	262	565	1,214	2,298	2,519	906	247	53					8,183
65 to 69	27	283	141	306	330	759	141		51					2,039
70 and up		25		53	97									174
Totals	6,417	8,801	11,549	15,298	30,734	24,446	8,371	3,419	674	48	-	-	-	109,757

The salary shown in the above chart was used for valuation purposes and assumes pay increases for the year.



Appendix D: Valuation Data

**Table D-1:
Active Members Distribution of
Full-Time Employees and Salaries
as of June 30, 2016**

Average Annual Salary

Age	<u>Completed Years of Service</u>											Totals	
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39		40+
<25	46,551	37,653	36,402	49,747									40,542
25 to 29	44,313	36,191	50,995	46,490	42,075								43,439
30 to 34	46,116	42,846	53,325	51,886	55,227	65,480							51,978
35 to 39	55,772	40,449	53,952	52,515	62,605	65,022	64,644						56,898
40 to 44	43,188	40,669	57,238	51,598	58,438	68,748	71,907	63,507					58,999
45 to 49	45,136	41,231	49,922	59,230	63,250	65,833	70,403	65,386	91,667				60,698
50 to 54	45,058	44,300	46,569	51,373	57,235	61,928	67,101	59,759	50,657	47,606			56,804
55 to 59	39,854	37,921	47,166	50,472	56,680	61,985	58,546	77,313	75,062				55,909
60 to 64	39,911	43,639	51,405	50,578	53,433	53,585	60,402	49,460	52,862				52,795
65 to 69	27,334	56,663	70,354	51,047	54,964	58,405	70,441		51,267				56,634
70 and up		25,164		52,509	32,184								34,845
Totals	46,839	40,371	51,790	52,034	58,098	63,169	66,436	65,757	61,297	47,606			55,489

The salary shown in the above chart was used for valuation purposes and assumes pay increases for the year.



Appendix D: Valuation Data

**Table D-1:
Active Members Distribution of
Part-Time Employees
as of June 30, 2016**

Number of Employees

Age	<u>Completed Years of Service</u>											Totals		
	0	1	2	3 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39		40+	
<25	3	2	1											6
25 to 29	3	4	4	2										13
30 to 34	10	10	4	9	6									39
35 to 39	15	7	10	12	12									56
40 to 44	12	12	5	10	10	3								52
45 to 49	3	12	8	4	13	3	2	1						46
50 to 54	7	4	3	8	14	4	4	1						45
55 to 59	8	13	7	13	26	8	4							79
60 to 64	7	8	7	4	12	7	1	3						49
65 to 69	2	3	8	11	5	2	2							33
70 and up	2	1	1	4	3		1	1						13
Totals	72	76	58	77	101	27	14	6	-	-	-	-	-	431



**Table D-2:
Distribution of Inactive Lives**

Members Receiving Disability Retirement Benefits as of June 30, 2016

<u>Age</u>	<u>Number of Persons</u>	<u>Annual Benefits</u>	<u>Average Annual Benefits</u>
<50	2	\$ 10,909	\$ 5,455
50 to 54	2	13,836	6,918
55 to 59	1	14,920	14,920
60 to 64	1	9,604	9,604
65 to 69	-	-	-
70 to 74	-	-	-
75 to 79	-	-	-
80 to 84	-	-	-
85 to 89	-	-	-
90 and up	-	-	-
Totals	6	\$ 49,269	\$ 8,212



**Table D-3:
Data Reconciliation**

The following table shows a reconciliation of the participants used in the previous valuation to this valuation. This chart reflects the counts used for valuation purposes and for the Annual Financial Report.

	<u>Active Members</u>	<u>Disabled Members</u>
June 30, 2015 Valuation	2,284	6
Terminations	(234)	
Service Retirements		
Disability Retirements	(1)	1
Deaths		
New Entrants	360	
Rehires		
Payment Stopped		(1)
	<hr/>	<hr/>
June 30, 2016 Valuation	2,409	6



Appendix E: Comparative Schedules

Comparative Schedules

This section contains tables that summarize the experience of the Plan shown in present and past valuation reports.

Table E-1 shows a summary of the active members covered as of the various valuation dates.

Table E-2 shows a summary of the retired and inactive members as of the various valuation dates.

Table E-3 summarizes the contribution rates determined by each annual actuarial valuation.



Appendix E: Comparative Schedules

**Table E-1:
Active Membership Data**

<u>Valuation Date (June 30)</u>	<u>Actives</u>	<u>Annual Salaries</u>	<u>Average Annual Salary</u>	<u>Average Age</u>	<u>Average Years of Service</u>	<u>Average Hire Age</u>
2016	2,409	114,883,091	47,689	46.1	6.8	39.3
2015	2,284	106,518,524	46,630			
2013	2,087	90,450,420	43,340			



Appendix E: Comparative Schedules

**Table E-2:
Disabled Membership Data**

<u>Valuation Date (June 30)</u>	<u>Number</u>	<u>Annual Benefits</u>	<u>Average Annual Benefit</u>	<u>Average Current Age</u>
2016	6	49,269	8,212	53.2
2015	6	43,296	7,216	
2013	4	29,460	7,365	



Appendix E: Comparative Schedules

**Table E-3:
Contribution Rates**

Valuation Date (June 30)	Contribution Rates			Normal	UAAL
	Employee	Employer	Total	Cost Rate	Rate*
2016	0.00%	0.30%	0.30%	0.30%	0.00%
2015	0.00	0.30	0.30	0.32	(0.02)
2013	0.00	0.30	0.30	0.33	(0.03)

* The UAAL rate is the amount available to amortize the UAAL. It is equal to the total contribution rate, minus the normal cost rate.



Appendix F: Accounting Statement Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuation as of June 30, 2016. Additional information as of the latest actuarial valuation follows.

Valuation date	June 30, 2016
Actuarial cost method	Entry Age Normal
Amortization method	Open
Remaining amortization period	30 Years
Asset valuation method	Market Value
Actuarial assumptions:	
Investment rate of return*	3.50%
General wage growth*	4.00%
Merit salary increases	0.0% - 6.0%
*Includes inflation	3.00%



Appendix F: Accounting Statement Information

Schedule of Funding Progress (expressed in thousands)							
Valuation Date June 30,	Actuarial Value of Assets	Actuarial Liability (AAL)	Funded Ratio	Unfunded AAL (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll	
2016	\$ 3,118	\$ 3,591	87%	\$ 473	\$114,883	0%	
2015	2,781	3,235	86%	454	113,750	0%	
2013	2,184	2,715	80%	531	90,128	1%	

Solvency Test Aggregate Accrued Liabilities for (expressed in thousands)									
Valuation Date June 30,	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Accrued Liability Covered by Reported Assets				
					(1)	(2)	(3)	(4)	(5)
2016	\$ -	\$ 401	\$ 3,190	\$ 3,118	100%	100%	85%	(4)	(5)
2015	-	405	2,830	2,781	100%	100%	84%	(4)	(5)
2013	-	294	2,421	2,184	100%	100%	78%	(4)	(5)



Appendix G: Glossary

The following definitions are largely excerpts from a list adopted in 1981 by the major actuarial organizations in the United States. In some cases the definitions have been modified for specific applicability to the Public Employees' Retirement System of Montana (PERS) Long-Term disability plan under the Defined Contribution Retirement Plan. Defined terms are capitalized throughout this Appendix.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Actuarial Accrued Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Assumptions

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

Actuarial Cost Method

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

Actuarial Gains and Losses

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

Actuarial Present Value

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

Actuarial Valuation

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

Actuarially Equivalent

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

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.



Appendix G: Glossary

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 of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

Market Value of Assets

The fair value of cash, investments and other property belonging to a pension plan that could be acquired by exchanging them on the open market.

Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Projected Benefits

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.

Unaccrued Benefit

The excess of an individual's Projected Benefits over the Accrued Benefits as of a specified date.

Unfunded Actuarial Accrued Liability

The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets.