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, 2015

Produced by Cheiron

October 2015

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October 1, 2015

Public Employees' Retirement Board
100 North Park, Suite 200
Helena, Montana 59620

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Long-Term Disability Plan (Plan) for Defined Contribution Retirement Plan (DCRP) members under the Public Employees' Retirement System as of June 30, 2015. This Plan is defined under Montana Code Annotated (MCA) 19-3-2141. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

This report contains information on the Plan's assets, as well as analyses which combine asset and liability performance. The report also discloses employer contribution levels and required disclosures under the Governmental Accounting Standards Board Statement No. 43. The purpose of this report is to present the actuarial valuation of the Plan. This report is for the use of the Public Employees' Retirement Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. The results of this report are only applicable for Fiscal Year ending 2015 and rely on future Plan experience conforming to the underlying assumptions. To the extent that actual Plan experience deviates from the underlying assumptions, the results would vary accordingly.

We hereby certify that, to the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys, and our firm does not provide any legal services or advice.

This actuarial report was prepared exclusively for the Public Employees' Retirement System for the purpose described herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

Sincerely,
Cheiron

Stephen T. McElhaney, FSA, FCA
Principal Consulting Actuary

Margaret Tempkin, FSA
Principal Consulting Actuary

FOREWORD

Cheiron has performed the Actuarial Valuation of the Long-Term Disability Plan (Plan) for Defined Contribution Retirement Plan (DCRP) members under the Public Employees' Retirement System as of June 30, 2015. This Plan is defined under Montana Code Annotated (MCA) 19-3-2141. The purpose of this report is to:

1) **Measure and disclose**, as of the valuation date, the financial condition of the Plan;

2) **Determine the sufficiency of the statutory contribution rate** paid by the employers for Fiscal Year 2015 to meet the requirements of an Annual Required Contribution (ARC) under GASB 43; and

3) **Provide specific information** and documentation required by the Governmental Accounting Standards Board (GASB).

An actuarial valuation establishes and analyzes plan assets and liabilities on a consistent basis, and traces the progress of both from one year to the next. It includes measurement of the plan's investment performance as well as an analysis of actuarial liability gains and losses.

Section I presents a summary containing our findings.

Section II contains details on asset measures, together with pertinent performance measurements.

Section III shows similar information on Plan liabilities, measured for actuarial, accounting, and government reporting purposes.

Section IV develops the employer contribution rate determined using actuarial techniques.

Section V includes the required disclosures under GASB Statement No. 43.

The appendices to this report contain a summary of the Plan's membership at the valuation date, a summary of the major provisions of the Plan, and the actuarial methods and assumptions used in the valuation.

In preparing our report, we relied on information (some oral and some written) supplied by the staff of the Public Employee Retirement Administration. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

For purposes of this valuation, given insufficient DCRP Plan member experience, we have used actuarial assumptions that are based on those used for the PERS Defined Benefit Retirement Plan (DBRP) members, except for the assumed investment return. Since the assets are invested entirely in short term fixed income securities, we have assumed a rate of return of 3.50%, which is 0.50% in excess of the assumed rate of inflation.

FOREWORD

Future results may differ significantly from the current results presented in this valuation report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and changes in plan provisions or applicable law.

SECTION I
BOARD SUMMARY

General Comments

This is the second valuation of the Long-Term Disability Plan (Plan) for Defined Contribution Retirement Plan (DCRP) members under the Public Employees' Retirement System performed by Cheiron. This Plan is defined under Montana Code Annotated (MCA) 19-3-2141.

During the period from July 1, 2013 to June 30, 2015, the Plan's assets gained 0.14% on an annualized market value basis. This return was below the assumed rate of return of 3.50%, resulting in an investment loss of about $169,000. Because this is only the second valuation for this Plan, the actuarial value of assets is set equal to the market value of assets.

The System experienced an actuarial gain on system liabilities resulting from salary increases different than assumed and members retiring, terminating, becoming disabled, and dying at rates different from the actuarial assumptions. The gain released about $289,000 from the expected actuarial liability. Experience gains and losses are normal in the course of the Plan's experience. The Plan will experience actuarial gains and losses over time because we cannot predict exactly how people will behave. When a plan experiences alternating gains and losses that are small compared to the total actuarial liability, then the system's actuarial assumptions are reasonable.

As of the June 30, 2015 Actuarial Valuation, the Plan's unfunded actuarial liability was $0.45 million and the funded ratio was 86.0%. At the June 30, 2013 actuarial valuation, the Plan's unfunded liability was $0.53 million, and the funded ratio was 80.5%.

Montana Code Annotated (MCA) 19-2-407 requires an analysis of how market performance is affecting the actuarial funding of the Plan. It is our understanding of the Code to report certain key results on a market value of assets basis. The market and actuarial value of assets are set equal for this valuation.

SECTION I
BOARD SUMMARY

Table I-1
Montana PERS DCRP Long Term Disability Plan
Summary of Principal Plan Results

Valuation as of:	June 30, 2013	June 30, 2015	% Change
Participant Counts – DCRP Only			
Active Members	2,087	2,284	9.4%
Disabled Members	4	6	50.0%
Retirees and Beneficiaries	0	0	N/A
Terminated Vested Members	0	0	N/A
Terminated Non-Vested Members	0	0	N/A
Total	2,091	2,290	9.5%
Annual Salaries of Active Members	$ 90,450,420	$ 106,518,524	17.8%
Average Annual Salary	$ 43,340	$ 46,637	7.6%
Annual Retirement Allowances for Disabled Members	$ 29,460	$ 43,296	47.0%
Assets and Liabilities			
Actuarial Liability (AL)	$ 2,715,033	$ 3,235,065	19.2%
Actuarial Value of Assets (AVA)	2,184,488	2,781,120	27.3%
Unfunded AL (AVA-AL)	$ 530,545	$ 453,945	(14.4%)
Funded Ratio (AVA/AL)	80.5%	86.0%	
Ratio of Actuarial Value to Market Value	100.0%	100.0%	
Contributions as a Percentage of Payroll			
Statutory Funding Rate	0.30%	0.30%	
Normal Cost Rate	0.33%	0.32%	
Available for Amortization of UAL	(0.03%)	(0.02%)	
Period to Amortize	Does not amortize	Does not amortize	
Projected 30-year Level Funding Rate	0.35%	0.33%	
Projected Shortfall (Surplus)	0.05%	0.03%	

SECTION II
ASSETS

Plan assets play a key role in the financial operation of the Plan and in the decisions the Trustees may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely have an impact upon benefit levels, contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on the Plan assets including:

- **Disclosure** of Plan assets at June 30, 2013 and June 30, 2015;
- Statement of the **changes** in market values during the period; and
- An assessment of **investment performance.**

Disclosure

The market value of assets represents "snap-shot" or "cash-out" values which provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace.

The actuarial values, which are set equal to the market value for this valuation, are used for evaluating the Plan's ongoing liability to meet its obligations.

The Montana Public Employees' Retirement Board has established a DCRP Long-Term Disability Trust Fund from which disability benefit costs must be paid. The DCRP Trust Fund is entirely separate and distinct from the defined benefit plan trust fund.

Currently, assets in the DCRP Trust Fund are invested in the State of Montana Short Term Investment Pool (STIP). This program's objectives are preservation of capital, maintaining high liquidity and obtaining current income reflective of money market yields.

SECTION II
ASSETS

Table II-1 Changes in Market Values from June 30, 2013 to June 30, 2014				
Value of Assets – June 30, 2013			**$**	**2,184,488**
Additions				
Member Contributions	$	0		
Employer Contributions		311,307		
Investment Return		3,282		
Other		0		
Total Additions	**$**	**314,589**		
Deductions				
Benefit Payments	$	29,461		
Administrative Expenses		0		
Total Deductions	**$**	**29,461**		
Value of Assets – June 30, 2014			**$**	**2,469,616**

Table II-2 Changes in Market Values from June 30, 2014 to June 30, 2015				
Value of Assets – June 30, 2014			**$**	**2,469,616**
Additions				
Member Contributions	$	0		
Employer Contributions		343,426		
Investment Return		3,444		
Other		0		
Total Additions	**$**	**346,870**		
Deductions				
Benefit Payments	$	33,816		
Administrative Expenses		1,550		
Total Deductions	**$**	**35,366**		
Value of Assets – June 30, 2015			**$**	**2,781,120**

Investment Performance

The market value of assets (MVA) returned 0.14% on an annualized basis during the period from June 30, 2013 to June 30, 2015, which is less than the assumed 3.50% return.

SECTION III
LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at June 30, 2013 and June 30, 2015;
- Statement of **changes** in these liabilities during the period;
- Details on the source of actuarial gains and losses between this valuation and the last; and
- Development of actuarial unfunded liability on a market value basis as required under MCA 19-2-407.

Disclosure

Two types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them.

- **Present Value of Benefits:** Used for analyzing the financial outlook of the Plan, this represents the amount of money needed today to fully pay off all future benefits and expenses of the Plan for the current participants, assuming participants continue to accrue benefits and all of the assumptions are met.

- **Actuarial Liability:** Used for funding calculations and GASB disclosures, this liability is calculated taking the Present Value of Benefits and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. This method is referred to as the **Entry Age Normal** (EAN) funding method.

The following table discloses each of these liabilities for the current valuation and the prior valuation. With respect to each disclosure, a subtraction of the appropriate value of Plan assets yields, for each respective type, a **net surplus** or an **unfunded liability**.

SECTION III
LIABILITIES

Table III-1 Liabilities/Net (Surplus)/Unfunded		June 30, 2013		June 30, 2015
Present Value of Benefits				
Active Participant Benefits	$	6,892,296	$	7,933,388
Disabled Member Benefits		294,361		404,891
Present Value of Benefits (PVB)	**$**	**7,186,657**	**$**	**8,338,279**
Market Value of Assets (MVA)	$	2,184,488	$	2,781,120
Future Member Contributions		0		0
Future Employer Contributions		3,596,459		4,168,763
Funding Shortfall/(Surplus)		1,405,710		1,388,396
Total Resources	**$**	**7,186,657**	**$**	**8,338,279**
Actuarial Liability				
Present Value of Benefits (PVB)	$	7,186,657	$	8,338,279
Present Value of Future Normal Costs (PVFNC)		4,471,624		5,103,214
Actuarial Liability (AL=PVB–PVFNC)		**2,715,033**		**3,235,065**
Actuarial Value of Assets (AVA)		2,184,488		2,781,120
Net (Surplus)/Unfunded (AL – AVA)	**$**	**530,545**	**$**	**453,945**

SECTION III
LIABILITIES

Changes in Liabilities

Each of the Liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- System amendments changing benefits
- Passage of time which adds interest to the prior liability
- Benefits paid to disabled members since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and also due to changes in the System's assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure System assets

In each valuation, we report on those elements of change which are of particular significance, potentially affecting the long-term financial outlook of the System. Below, we present key changes in liabilities since the last valuation. On the next page, we provide more detail on the sources of the actuarial (gain)/loss as measured on the basis of actuarial liability.

Table III-2
Changes in Liabilities

	Present Value of Benefits	Actuarial Liability
Liabilities June 30, 2013	$ 7,186,657	$ 2,715,033
Liabilities June 30, 2015	$ 8,338,279	$ 3,235,065
Liability Increase (Decrease)	$ 1,151,622	$ 520,032
Change Due to:		
Actuarial (Gain)/Loss	NC*	$ (288,887)
Plan Changes	$ 0	0
Benefits Accumulated and Other Sources	1,151,622	808,919

* NC = not calculated.

SECTION III
LIABILITIES

Table III-3 Summary of Actuarial Gains and Losses as of June 30, 2015		
Actuarial Liabilities as of June 30, 2013	$	2,715,033
Normal Cost		646,839
Actual Benefit Payments		(63,277)
Interest		225,357
Expected Actuarial Liability as of June 30, 2015	$	3,523,952
Actuarial Liability as of June 30, 2015	$	3,235,065
Liability (Gain)/Loss	$	(288,887)
Sources of Liability (Gain)/Loss		
Salary (Gain)/Loss	$	1,016
New Participant (Gain)/Loss		163,043
Active Retirements (Gain)/Loss		(35,805)
Active Terminations (Gain)/Loss		(113,801)
Active Deaths (Gain)/Loss		7,212
Active Disability (Gain)/Loss		(223,348)
Inactive Mortality (Gain)/Loss		1,534
Other (Gain)/Loss		(88,738)
Actuarial Liability as of June 30, 2015	$	3,235,065
Liability (Gain)/Loss due to plan changes	$	0
Actuarial Value of Assets as of June 30, 2013	$	2,184,488
Net Cash Flow		589,906
Expected Earnings		175,860
Expected Actuarial Value of Assets as of June 30, 2015	$	2,950,254
Actuarial Value of Assets as of June 30, 2015	$	2,781,120
Investment (Gain)/Loss	$	169,134
Total Liability (Gain)/Loss		(288,887)
Total Actuarial (Gain)/Loss	$	(119,753)

SECTION III
LIABILITIES

Montana Code Annotated (MCA) 19-2-407 requires an analysis of how market performance is affecting the actuarial funding of the Plan. Table III-4 shows the actuarial liabilities as of the current valuation date. The unfunded actuarial liability is the difference between the actuarial liability and the market value of assets. The funded ratio is the ratio of the market value of assets to the actuarial liability.

Table III-4
Actuarial Liabilities on Market Value Basis (MCA 19-2-407)

		June 30, 2013	June 30, 2015
1.	Actuarial Liabilities		
	Disabled Member Benefits	$ 294,361	$ 404,891
	Active Member Benefits	2,420,672	2,830,174
	Total Actuarial Liability	**$ 2,715,033**	**$ 3,235,065**
2.	Market Value of Assets	$ 2,184,488	$ 2,781,120
3.	**Unfunded Actuarial Liability**	**$ 530,545**	**$ 453,945**
4.	Funded Ratio	80.5%	86.0%

SECTION IV
CONTRIBUTIONS

In the process of evaluating the financial condition of any post-retirement benefit plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the funding method employed is the **Entry Age Normal (EAN) Actuarial Cost Method**. Under this method, there are two components to the total contribution: the **normal cost rate** and the **unfunded actuarial liability rate** (UAL rate). The normal cost rate is determined by taking the value, as of entry age into the plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost rate. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate. The difference between the EAN actuarial liability and the actuarial value of assets is the unfunded actuarial liability.

For purposes of determining the adequacy of the statutory funding rate, the UAL rate is calculated by subtracting the normal cost rate from the statutory rate. A calculation is then made to determine the period over which the UAL rate will amortize the unfunded actuarial liability. A second UAL rate is calculated based upon a 30-year amortization of the UAL, which is the maximum amortization period permitted under GASB Statement No. 43, and which is in accordance with Board funding policy. However, this rate should not necessarily be construed as a recommended contribution level and this policy will not fully amortize the unfunded actuarial liability. All UAL payments are determined as a level percentage of pay, assuming that total pay increases by a rate of 4.00%.

SECTION IV
CONTRIBUTIONS

The tables below present the contribution rates for the Plan for this valuation.

Table IV-1
Statutory Basis

	June 30, 2013	June 30, 2015
Statutory Funding Rates		
Members	0.00%	0.00%
Employers*	0.30%	0.30%
Total	0.30%	0.30%
Normal Cost Rate	0.33%	0.32%
Funding Rate Available for Amortization	(0.03%)	(0.02%)
Unfunded Actuarial Liability (Surplus)	$ 530,545	$ 453,945
Years to Amortize**	Does not amortize	Does not amortize

* As defined under Montana Code Annotated (MCA) 19-3-2117

** On a market value basis, the Years to Amortize the Unfunded Actuarial Liability does not amortize at both June 30, 2013 and at June 30, 2015.

SECTION IV
CONTRIBUTIONS

Table IV-2
Calculated Actuarial Contribution Basis

	June 30, 2013	June 30, 2015
Normal Cost Rate	0.33%	0.32%
Amortization Payment (30-years)	0.02%	0.01%
Total Calculated Contribution Rate	0.35%	0.33%
Less Statutory Rate	0.30%	0.30%
Shortfall (Surplus) in Statutory Rate	0.05%	0.03%

Table IV-3
Calculated Actuarial Contribution on Market Value (MCA 19-2-407)

	June 30, 2013	June 30, 2015
Normal Cost Rate	0.33%	0.32%
Amortization Payment (30-years)	0.02%	0.01%
Total Calculated Contribution Rate	0.35%	0.33%
Less Statutory Rate	0.30%	0.30%
Shortfall (Surplus) in Statutory Rate	0.05%	0.03%

SECTION V
ACCOUNTING STATEMENT INFORMATION

Statement No. 43 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of other post-retirement benefit information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The GASB-43 actuarial liability is the same as the actuarial liability amount calculated for funding purposes.

The actuarial liability (GASB-43) is determined assuming that the Plan is on-going and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities are discounted at the assumed valuation interest rate of 3.50% per annum. GASB Statement No. 43 requires the actuarial liability be compared with the actuarial value of assets for funding purposes. The relevant amounts as of June 30, 2015 are exhibited in Table V-1 and compared to the values at June 30, 2013.

Tables V-2 through V-4 are exhibits to be used with the CAFR report. Table V-2 is the Note to Required Supplementary Information, Table V-3 is the Schedule of Funding Progress, and V-4 is the Solvency Test which shows the portion of Accrued Liability covered by Assets.

Table V-1
Accounting Statement Information

GASB No. 43 Basis	June 30, 2013	June 30, 2015
1. Actuarial Liabilities for disabled members currently receiving benefits	$ 294,361	$ 404,891
2. Actuarial Liabilities for current employees	2,420,672	2,830,174
3. Total Actuarial Liability (1 + 2)	$ 2,715,033	$ 3,235,065
4. Net Actuarial Assets available for benefits	2,184,488	2,781,120
5. Unfunded Actuarial Liability (3 – 4)	$ 530,545	$ 453,945

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-2
Note To Required Supplementary Information

The information presented in the required supplementary schedules was determined as part of the actuarial valuation at the date indicated. Additional information as of the latest actuarial valuation follows.

Valuation date	June 30, 2015
Actuarial cost method	Entry Age
Amortization method	Open
Remaining amortization period for Annual Required Contribution	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 at	3.00%

The actuarial assumptions other than the investment rate of return have been recommended based on the most recent review of the Public Employees' Retirement System's (DBRP) experience (completed in 2010) and adopted by the Retirement Board. The retirement and disability assumptions have been modified slightly to align better with the benefit provisions of this plan.[1] The investment rate of return was selected as an estimate of the long term rate of return for short term fixed income securities.

The rate of employer contributions to the Plan is composed of the normal cost and amortization of the unfunded actuarial liability. The normal cost is a level percent of payroll cost which will pay for projected benefits at retirement for each participant. The actuarial liability is that portion of the present value of projected benefits that will not be paid by future normal costs. The difference between this liability and the funds accumulated as of the same date is the unfunded actuarial liability.

[*] Further detail is available in Appendix B.

SECTION V
ACCOUNTING STATEMENT INFORMATION

Table V-3
Schedule Of Funding Progress
(expressed in thousands)

Valuation Date June 30,	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Funded Ratio	Unfunded AAL (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll
2015	$ 2,781	$ 3,235	86 %	$ 454	$ 113,750	0 %
2013	2,184	2,715	80 %	531	90,128	1 %

Table V-4
Solvency Test
Aggregate Accrued Liabilities for
(expressed in thousands)

Valuation Date June 30,	Active Member Contributions (1)	Disabled Members (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets (1)	(2)	(3)
2015	$ 0	$ 405	$ 2,830	$ 2,781	100 %	100 %	84 %
2013	0	294	2,421	2,184	100 %	100 %	78 %

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Reconciliation of Participant Counts

	Active	Disabled	Retirees and Beneficiaries	Terminated Vested Members	Terminated Non-Vested Members	Total
Participant counts used for valuation	2,284	6	0	0	0	2,290
Disabled members having attained normal retirement age						
Other Adjustments						
Participant counts shown in Annual Financial Report	2,284	6	0	0	0	2,290

This chart is presented for informational purposes only. The counts shown in the valuation line were used for preparation of the liabilities disclosed within this report. The counts disclosed for the Annual Financial Report and the Board Summary (page 2) match the CAFR reports at the request of the Board. The differences between the counts, if any, have no material effect upon the liability calculation.

The salaries used in the tables and charts which follow are different than the salaries used for the Board Summary on page 2. For this Appendix A, the valuation projected salaries to be paid for the following fiscal year, whereas for the Board Summary, salaries are applicable in the year ending on the valuation date.

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

The following table shows a reconciliation of the participants used in the previous valuation to this valuation.

Status Reconciliation	Active	Disabled	Survivor	Total
Members on July 1, 2013	2,087	4	0	2,091
New Hires	620	0	0	620
Became Disabled	(2)	2	0	0
In Pay Deaths	0	0	0	0
Survivors	0	0	0	0
Terminated	(421)	0	0	(421)
Members on July 1, 2015	2,284	6	0	2,290

The salaries used in the tables and charts which follow are different than the salaries used for the Board Summary on page 2. For this Appendix A, the valuation projected salaries to be paid for the following fiscal year, whereas for the Board Summary, salaries are applicable in the year ending on the valuation date.

The benefits for disableds used for the tables and charts which follow are different than the benefits used for the Board Summary on page 2. For this Appendix A, the valuation projected benefits are to be paid for the following fiscal year (including Guaranteed Annual Benefit Adjustment (GABA) where applicable), whereas for the Board Summary, annual benefits are as of the valuation date.

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

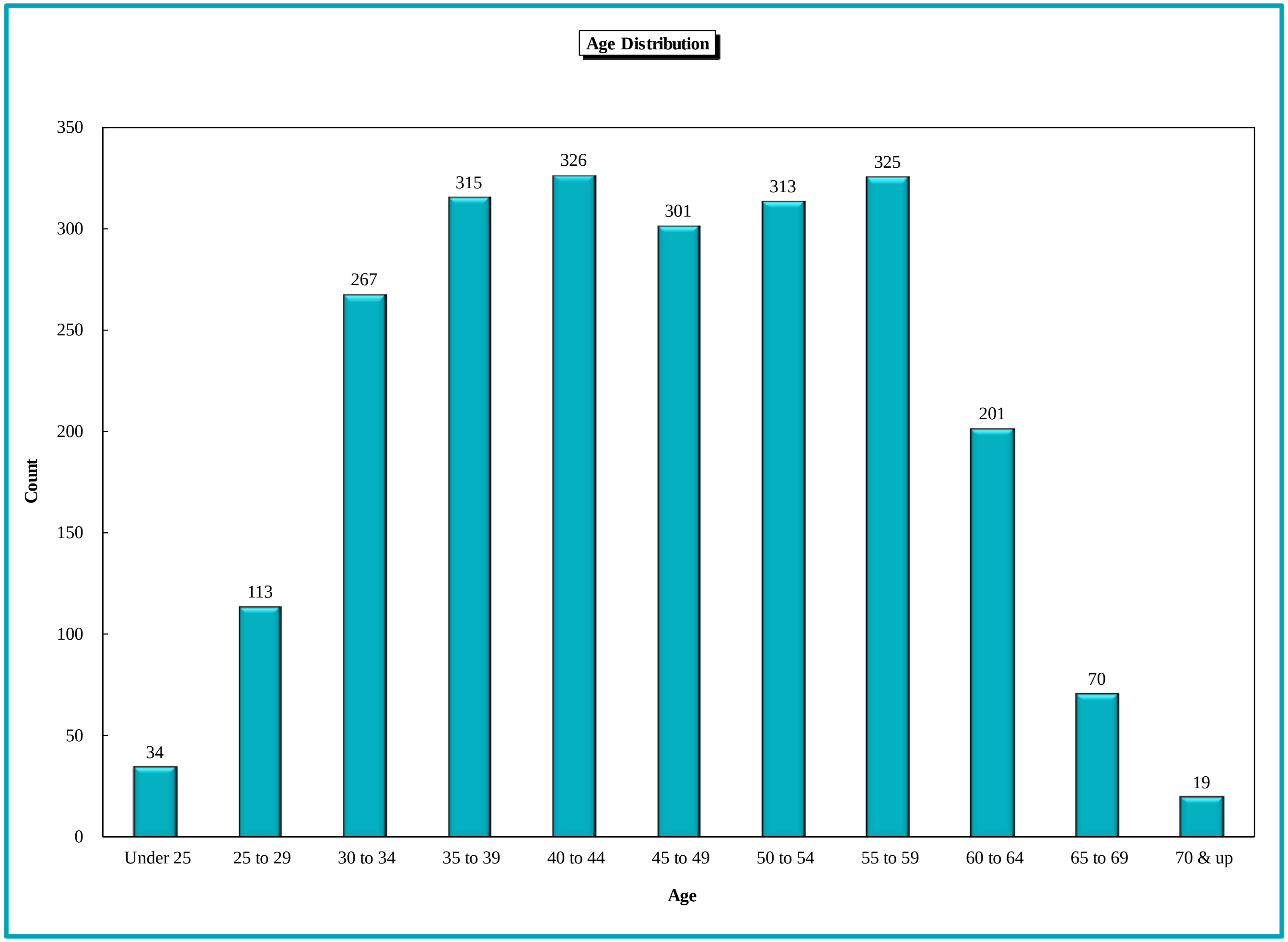
Montana Public Employees' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

COUNTS BY AGE/SERVICE

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	14	19	1	0	0	0	0	0	0	0	34
25 to 29	17	86	10	0	0	0	0	0	0	0	113
30 to 34	24	159	75	8	1	0	0	0	0	0	267
35 to 39	37	117	115	44	2	0	0	0	0	0	315
40 to 44	20	116	107	60	20	3	0	0	0	0	326
45 to 49	16	83	107	52	34	8	1	0	0	0	301
50 to 54	14	86	104	65	27	15	2	0	0	0	313
55 to 59	17	111	95	69	22	9	2	0	0	0	325
60 to 64	12	65	59	45	14	6	0	0	0	0	201
65 to 69	2	32	22	10	2	1	1	0	0	0	70
70 & up	0	9	8	0	2	0	0	0	0	0	19
Total	173	883	703	353	124	42	6	0	0	0	2,284

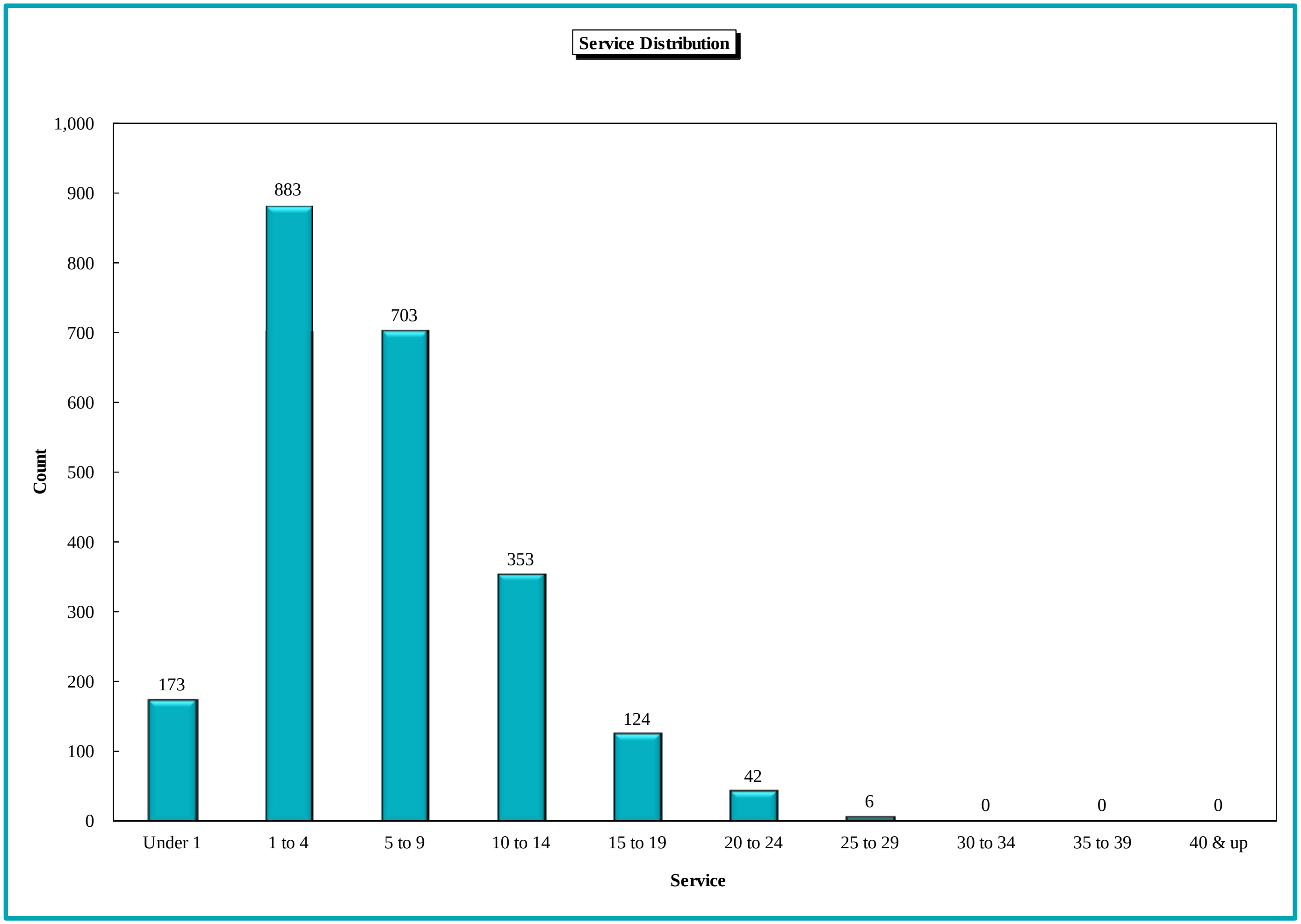
APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Active Members by Service as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Active Members by Age and Service as of June 30, 2015

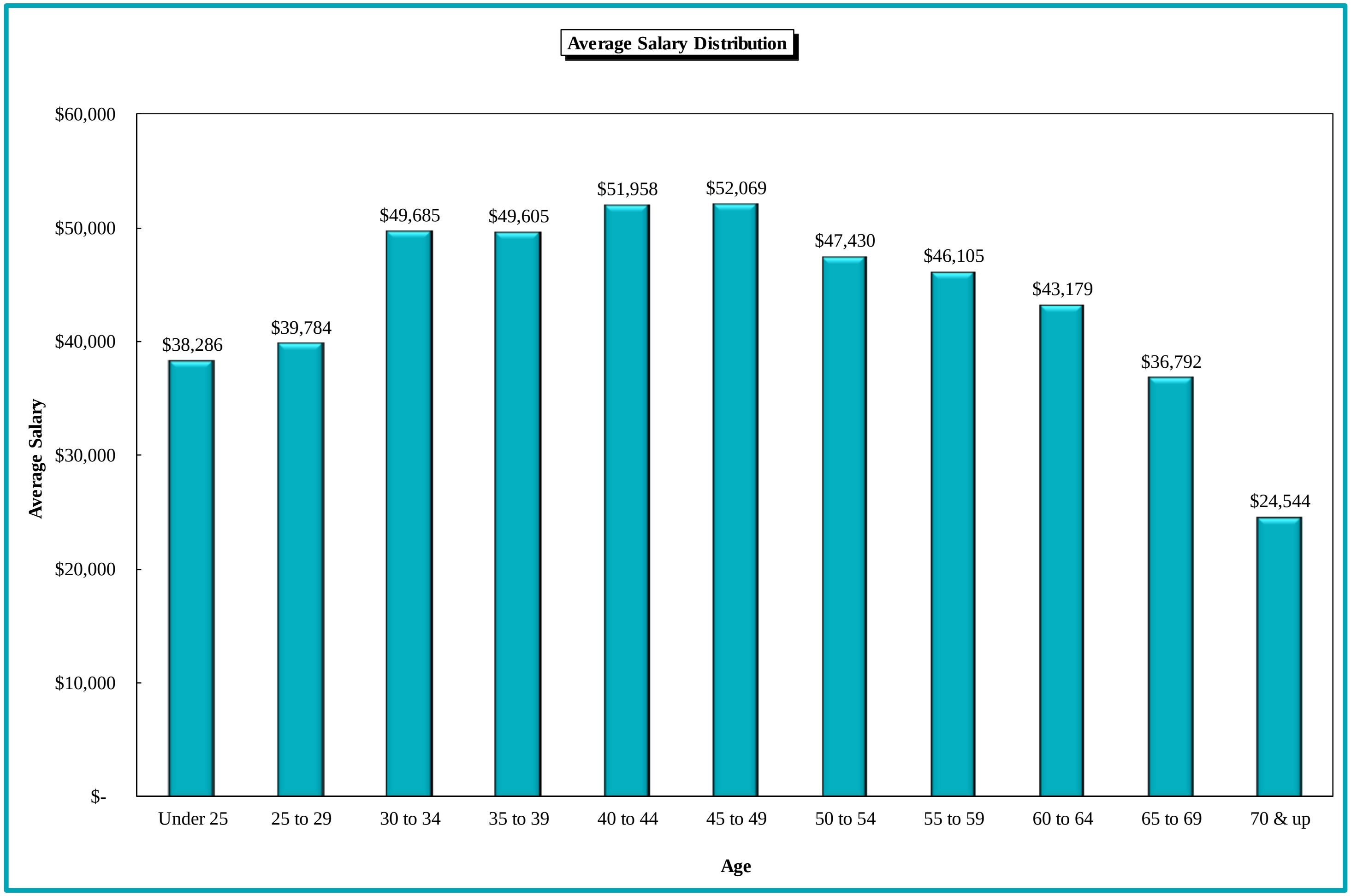
AVERAGE SALARY BY AGE/SERVICE

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 25	$ 37,295	$ 38,979	$ 38,988	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 38,286
25 to 29	$ 38,590	$ 40,048	$ 39,539	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 39,784
30 to 34	$ 44,764	$ 49,469	$ 50,730	$ 59,305	$ 46,774	$ -	$ -	$ -	$ -	$ -	$ 49,685
35 to 39	$ 37,462	$ 45,237	$ 53,788	$ 60,267	$ 54,642	$ -	$ -	$ -	$ -	$ -	$ 49,605
40 to 44	$ 34,565	$ 44,184	$ 55,317	$ 61,682	$ 67,235	$ 52,338	$ -	$ -	$ -	$ -	$ 51,958
45 to 49	$ 39,748	$ 43,265	$ 53,622	$ 59,380	$ 61,754	$ 59,680	$ 43,360	$ -	$ -	$ -	$ 52,069
50 to 54	$ 30,020	$ 39,061	$ 50,110	$ 51,813	$ 56,475	$ 57,774	$ 47,669	$ -	$ -	$ -	$ 47,430
55 to 59	$ 39,962	$ 38,926	$ 45,194	$ 54,032	$ 58,970	$ 62,163	$ 52,810	$ -	$ -	$ -	$ 46,105
60 to 64	$ 33,530	$ 38,157	$ 48,374	$ 46,981	$ 41,710	$ 40,718	$ -	$ -	$ -	$ -	$ 43,179
65 to 69	$ 69,463	$ 26,190	$ 41,237	$ 56,930	$ 18,938	$ 50,299	$ 33,773	$ -	$ -	$ -	$ 36,792
70 & up	$ -	$ 25,261	$ 25,593	$ -	$ 17,118	$ -	$ -	$ -	$ -	$ -	$ 24,544
Total	$ 38,189	$ 42,225	$ 50,572	$ 55,791	$ 57,085	$ 56,075	$ 46,348	$ -	$ -	$ -	$ 47,658

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

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Active Members by Age as of June 30, 2015



APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Active Members by Service as of June 30, 2015

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

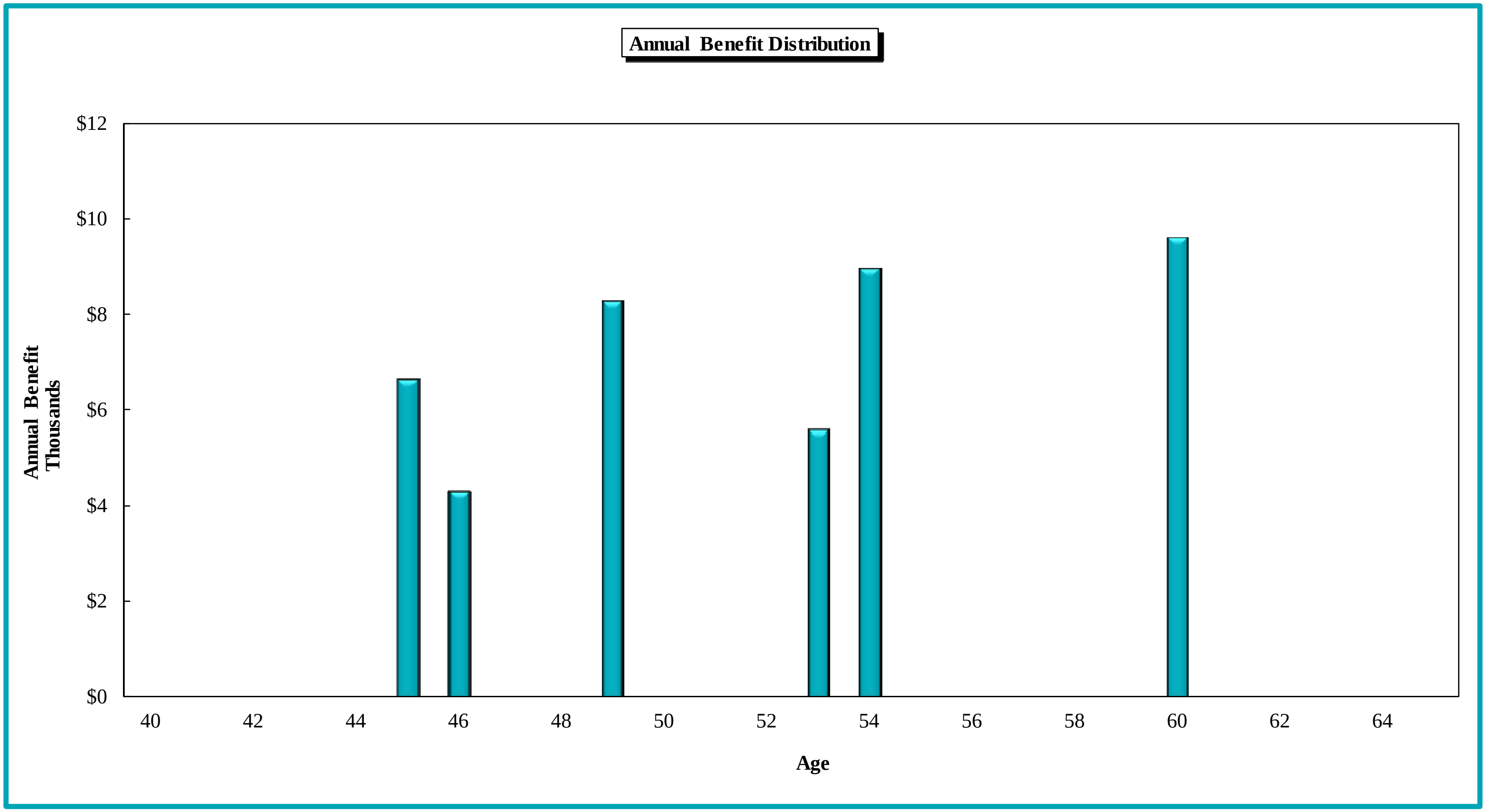
Montana Public Employees' Retirement System Distribution of Disabled Members as of June 30, 2015

Age	Count	Annual Benefit	Age	Count	Annual Benefit
<25	0	$0	73	0	$0
25	0	$0	74	0	$0
26	0	$0	75	0	$0
27	0	$0	76	0	$0
28	0	$0	77	0	$0
29	0	$0	78	0	$0
30	0	$0	79	0	$0
31	0	$0	80	0	$0
32	0	$0	81	0	$0
33	0	$0	82	0	$0
34	0	$0	83	0	$0
35	0	$0	84	0	$0
36	0	$0	85	0	$0
37	0	$0	86	0	$0
38	0	$0	87	0	$0
39	0	$0	88	0	$0
40	0	$0	89	0	$0
41	0	$0	90	0	$0
42	0	$0	91	0	$0
43	0	$0	92	0	$0
44	0	$0	93	0	$0
45	1	$6,632	94	0	$0
46	1	$4,278	95	0	$0
47	0	$0	96	0	$0
48	0	$0	97	0	$0
49	1	$8,260	98	0	$0
50	0	$0	99	0	$0
51	0	$0	100	0	$0
52	0	$0	101	0	$0
53	1	$5,576	102	0	$0
54	1	$8,948	103	0	$0
55	0	$0	104	0	$0
56	0	$0	105	0	$0
57	0	$0	106	0	$0
58	0	$0	107	0	$0
59	0	$0	108	0	$0
60	1	$9,604	109	0	$0
61	0	$0	110	0	$0
62	0	$0	111	0	$0
63	0	$0	112	0	$0
64	0	$0	113	0	$0
65	0	$0	114	0	$0
66	0	$0	115	0	$0
67	0	$0	116	0	$0
68	0	$0	117	0	$0
69	0	$0	118	0	$0
70	0	$0	119	0	$0
71	0	$0	120	0	$0
72	0	$0			
			Totals	6	$43,296

The chart above reflects the counts and benefits used for valuation purposes as a result of data processing.

APPENDIX A
MEMBERSHIP INFORMATION – DCRP LONG-TERM DISABILITY ONLY

Montana Public Employees' Retirement System Distribution of Disabled Members as of June 30, 2015



APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

A. Long-Term Assumptions Used to Determine Plan Costs and Liabilities

Except for the investment rate of return and an exception to the retirement and disability assumptions, the same actuarial assumptions have been used for this group as for the PERS Defined Benefit Retirement Plan (DBRP), given insufficient DCRP Plan member experience.

1. Demographic Assumptions

a. Beneficiaries and Non-Retired Members

Male and Female RP-2000 Combined Employee and Annuitant Mortality Tables. To reflect mortality improvements since the date of the table and to project future mortality improvements, the tables are projected to 2015 using scale AA.

Sample Rates of Healthy Mortality		
Age	**Male**	**Female**
50	0.163%	0.130%
55	0.272%	0.241%
60	0.530%	0.469%
65	1.031%	0.900%
70	1.770%	1.553%
75	3.062%	2.492%
80	5.536%	4.129%
85	9.968%	7.076%
90	17.271%	12.588%

b. Disabled Inactive Mortality

Male and Female RP-2000 Combined Employee and Annuitant Mortality Tables with no projections. No future mortality improvement is assumed.

Sample Rates of Disabled Inactive Mortality		
Age	**Male**	**Female**
50	0.214%	0.168%
55	0.362%	0.272%
60	0.675%	0.506%
65	1.274%	0.971%
70	2.221%	1.674%
75	3.783%	2.811%
80	6.437%	4.588%
85	11.076%	7.745%
90	18.341%	13.168%

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

c. Rates of Active Disability

Sample Rates of Active Disability	
Age	**Rate**
20	0.00%
25	0.01%
30	0.01%
35	0.04%
40	0.10%
45	0.13%
50	0.25%
55	0.36%
60	0.36%
65	0.36%
69	0.36%
70	0.00%

These rates are the same as are used for the actuarial valuation of the PERS-DB plan, except that the rates have been extended from age 60 to age 70.

All disabilities are assumed to be permanent and without recovery, and are approved by the Board in accordance with Montana Code Annotated (MCA) 19-3-2141.

Members cannot receive distributions from their individual defined contribution account while receiving payments from the DCRP Long-Term Disability Trust Fund. Participants may choose to receive a distribution from their individual account instead of applying for and receiving a disability benefit. This valuation assumes all eligible participants elect to receive a disability benefit for the maximum period permitted.

d. Termination of Employment

Service	Rate
0	25%
1	20%
2	15%
3	10%
4	10%
5-9	5%
10-14	5%
15 & over	2%

No terminations are assumed after age 50 with five years of service for either male or female.

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

e. Retirement

Age	Annual Retirement Rates
<50	0.00%
50 – 54	3.00
55	3.00
56	4.00
57	5.00
58	5.00
59	6.00
60	8.00
61	15.00
62	25.00
63	15.00
64	15.00
65	30.00
66	30.00
67	25.00
68	25.00
69	25.00
70 & Over	100.00

Members hired on or before June 30, 2011 are assumed to retire at the above 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, 2011 are assumed to retire at the above 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 AND METHODS

f. Merit/Seniority Salary Increase (in addition to across-the-board increase)

Service based table plus an annual inflation rate of 4.00% (rates shown below exclude amount for inflation).

Service	Annual Increase
1	6.0%
2	4.9
3	3.9
4	3.1
5	2.4
6	1.8
7	1.4
8	1.0
9	0.7
10	0.5
11-15	0.3
16-20	0.1
21 & over	0.0

2. Economic Assumptions

a. Rate of Investment Return: 3.50% (net of expenses)

b. Rate of Wage Inflation: 4.00%
(3.00% inflation plus 1.00% real wage growth)

c. Rate of Increase in Total Payroll (for Amortization): 4.00%

3. Changes since Last Valuation

None.

4. Rationale for Demographic and Economic Actuarial Assumptions

For purposes of this valuation, given insufficient DCRP Plan member experience, we have used actuarial assumptions that are based on those used for the PERS Defined Benefit Retirement Plan (DBRP) members, except for the assumed investment return, retirement rates, and disability rates. Since the assets are invested entirely in short term fixed income securities, we have assumed a rate of return of 3.50%, which is 0.50% in excess of the assumed rate of inflation.

APPENDIX B
ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Funding Method

The Entry Age Normal Actuarial Cost method is used to determine costs. Under this funding method, a normal cost is determined as a level percent of pay individually for each active employee.

The actuarial liability is that portion of the present value of projected benefits that will not be paid by future normal costs. The difference between this liability and funds accumulated as of the same date is referred to as the unfunded actuarial liability.

The portion of the actuarial liability in excess of plan assets is amortized to develop an additional cost or savings which is added to each year's employer normal cost. Under this cost method, actuarial gains and losses are directly reflected in the size of the unfunded actuarial liability.

2. Actuarial Value of Assets

For purposes of determining the unfunded actuarial liability, we use an actuarial value of assets. The actuarial value of assets is set to the current market value for this valuation.

3. Amortization Method

The unfunded actuarial liability is amortized as a level percentage of future payroll. The valuation determines the period over which the statutory contributions will fully amortize the unfunded actuarial liability.

4. Changes since Last Valuation

None.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

1. Membership

The Plan is a multiple-employer cost sharing plan that covers employees of the State, local governments that have contracted for PERS coverage and certain employees of the university system and school districts, who are not covered by a separate retirement system governed by Title 19 of Montana Code Annotated. All new PERS members are initially members of the PERS-DBRP and have a 12-month window during which they may choose to transfer to the PERS-DCRP or remain in the PERS-DBRP by filing an irrevocable election. If an election is not filed the member remains in the PERS-DBRP. Members may not be members of both the defined contribution and defined benefit retirement plans. The PERS-DCRP provides disability benefits and the member's account balance to them upon retirement or to their beneficiary upon their death. A separate trust has been established for purposes of providing disability benefits to plan members.

2. Contributions

Employers contribute 0.30% of each member's compensation to the disability plan trust.

3. Service Credit

Service credit is used to determine the amount of the disability 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.

4. Membership Service

Membership service is used to determine eligibility for vesting or retirement. One month of membership service is earned for any month member contributions are made to PERS, regardless of the number of hours worked.

5. Highest Average Compensation

For members hired on or before June 30, 2011: Highest Average Compensation (HAC) is the average of the highest 36 consecutive months (or shorter period of total service) of compensation paid to the member.

For members hired on or after July 1, 2011: Highest Average Compensation is the average of the highest 60 consecutive months (or shorter period of total service) of compensation paid to the member.

Compensation generally means all remuneration paid, excluding certain allowances, benefits and lump sum payments made without termination of employment. Compensation is specifically defined in law for PERS.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

6. Disability Benefit

Eligibility: Five years of membership service.

Benefit: **For members hired on or before June 30, 2011:**

(i) Less than 25 years of membership service: 1/56 of HAC multiplied by service credit, or

(ii) At least 25 years of membership service: 2% of HAC multiplied by service credit.

(iii) Benefit is payable to the later of age 65 and five years.

For members hired on or after July 1, 2011:

(i) If less than 10 years of membership service, 1.5% of HAC multiplied by years of service credit.

(ii) If between 10 and 30 years of membership service, 1/56 of HAC multiplied by years of service credit.

(iii) If 30 years of membership service or more, 2% of HAC multiplied by years of service credit.

(iv) Benefit is payable to age 65 for disabilities occurring prior to age 65, or five years for disabilities occurring after age 65.

Members cannot receive distributions from their individual defined contribution account while receiving payments from the DCRP Long-Term Disability Trust Fund. Participants may choose to receive a distribution from their individual account instead of applying for and receiving a disability benefit.

7. Survivor's Benefit

Disability benefits cease after the death of a member, and their beneficiary is entitled to death benefits only as provided from the member's vested defined contribution account balance.

8. Form of Payment

The normal form of payment is a monthly benefit based on the provisions above.

APPENDIX C
SUMMARY OF PLAN PROVISIONS

9. Post-Retirement Benefit Increases

None.

10. Changes since Last Valuation

Employer Contributions and the Defined Contribution Plan - House Bill 107, effective July 1, 2015:

Rate Changes:

- Effective July 1, 2015: (The first FY2016 pay date payroll), the additional 1.0% contribution is directed to the Plan Choice Rate Unfunded Actuarial Liability (UAL) rather than the Defined Benefit Unfunded Actuarial Liability.
- Effective July 1, 2015: When the PCR UAL is paid off, employer contributions stop going to the Plan Choice Rate UAL and begin to go to the member's account.
- Actuary will provide an amortization schedule to MPERA so the Board will know when the Plan Choice Rate UAL is paid off.
- Once the Plan Choice Rate UAL is paid off, effective the first full pay period in the following month, the 2.37%, .47%, and the 1.0% increase will all go to the Defined Contribution member's account.

APPENDIX D
GLOSSARY

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting other post-employment benefit costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; inflation; rates of investment earnings, and asset appreciation or depreciation; and other relevant items.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of other post-employment plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a Normal Cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

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.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future Normal Costs. It represents the value of the past Normal Costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The Actuarial Present Value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made. As a simple example: assume you owe $100 to a friend one year from now. Also, assume there is a 1% probability of your friend dying over the next year, in which case you won't be obligated to pay him. If the assumed investment return is 10%, the actuarial present value is:

Amount		Probability of Payment		1/(1+Investment Return)		
$100	x	(1 - .01)	x	1/(1+.1)	=	$90

6. Actuarial Valuation

The determination, as of a specified date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for an other post-employment benefit plan.

APPENDIX D
GLOSSARY

7. Actuarial Value of Assets

The value of cash, investments and other property belonging to another post-employment benefit plan as used by the actuary for the purpose of an Actuarial Valuation. The market and actuarial value of assets are set equal for this valuation.

8. Actuarially Equivalent

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

9. Amortization Payment

The portion of the other post-employment benefit plan contribution which is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal 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.

11. Funded Percentage

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities.

12. Inflation (CPI)

The assumed increase in dollar related values in the future due to the general increase in the cost-of-living. The usual measure for inflation is the Consumer Price Index (CPI).

13. Investment Return Assumption

The assumed interest rate used for projecting dollar related values in the future.

14. Mortality Table

A set of percentages which estimate the probability of death at a particular point in time. Typically, the rates are annual and based on age and gender.

APPENDIX D
GLOSSARY

15. Normal Cost

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

16. Projected Benefits

Those other post-employment plan benefit amounts which are expected to be paid in the future under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and increases in future compensation and service credits.

17. Unfunded Actuarial Liability

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