

**PUBLIC EMPLOYEES'  
RETIREMENT SYSTEM  
of the  
STATE OF MONTANA**

**ACTUARIAL VALUATION  
as of June 30, 2005**

Prepared by

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October 4, 2005

Retirement Board  
Public Employees' Retirement System  
State of Montana

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Montana Public Employees' Retirement System as of June 30, 2005. Details about the actuarial valuation are contained in the following report.

I certify that the information included in this report is complete and accurate to the best of my knowledge and belief. All calculations have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the applicable Standards of Practice adopted by the American Academy of Actuaries.

Milliman has been engaged by MPERA as an independent actuary. The undersigned is a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, and an Enrolled Actuary, and is experienced in performing actuarial valuations for large public employee retirement systems.

Actuarial computations presented in this report are for purposes of analyzing the sufficiency of future contributions. Actuarial computations under GASB Statement No. 25 are for purposes of fulfilling financial accounting requirements. The computations in this report have been made on a basis consistent with our understanding of the Retirement Board's funding policies and GASB Statement No. 25. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, different determinations may be needed for other purposes.

Any distribution of this report must be in its entirety, including this cover letter, unless prior written consent is obtained from Milliman.

Respectfully submitted,

Mark O. Johnson, F.S.A., M.A.A.A., E.A.  
Principal and Consulting Actuary

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**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**SECTION 1**  
**SCOPE OF THE REPORT**

This report presents the results of our actuarial valuation of the System as of June 30, 2005.

In reading the Actuarial Certification in Section 2, please pay particular attention to the guidelines employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings depend. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in Section 3 of the report and the underlying calculations are summarized in more detail in Section 4.

All of the calculations of the valuation were carried out using certain assumptions as to the future experience of the System in matters affecting the actuarial cost. Appendix A summarizes the most important of these assumptions and describes the actuarial methods used to calculate costs.

Appendix B outlines the benefit provisions of the System.

The membership data which were supplied to us are summarized in Appendix C.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**SECTION 2**  
**ACTUARIAL CERTIFICATION**

To the best of our knowledge and belief, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the Public Employees' Retirement System as of June 30, 2005.

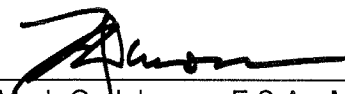
In preparing the valuation, we relied upon the financial information, membership data, and benefit provisions furnished by the System. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

The Retirement Board has sole authority to determine the actuarial assumptions and methods used for the valuation of the System. The Board adopted all of the actuarial methods and assumptions used in the 2005 valuation.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the System and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the System. Nevertheless, the emerging costs of the System will vary from those presented in this report to the extent that actual experience differs from that projected by the assumptions.

The actuarial valuation was prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the applicable Standards of Practice adopted by the Actuarial Standards Board of the American Academy of Actuaries. In addition, the assumptions and methods used meet the parameters set for disclosures by Governmental Accounting Standards Board Statement No. 25.

The undersigned is an independent actuary, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, an Enrolled Actuary, and experienced in performing valuations for large public employee retirement systems.



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Mark O. Johnson, F.S.A., M.A.A.A., E.A.  
Principal and Consulting Actuary

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**SECTION 3**  
**SUMMARY OF FINDINGS AND ANALYSIS OF THE FUNDING LEVEL**

The costs of a retirement system are not determined by the actuary. The ultimate costs of a system are determined by adding all of the benefits and expenses that are paid, and subtracting all investment earnings. These costs cannot be determined exactly until the last member or beneficiary has received the final benefit payment due.

The purpose of an actuarial valuation is to provide a timely best estimate of the ultimate costs in order to allocate them to the appropriate generation of members and taxpayers. The ideal goal is for contributions to remain essentially a constant percentage of covered payroll as long as the assumptions and methods reflect the emerging experience of the system and its members with reasonable accuracy.

**Membership Data**

We have developed the following comparisons between the membership in this and the prior actuarial valuations:

	<u>June 30, 2005</u>	<u>June 30, 2004</u>
Number of Members		
Retirees and Beneficiaries	15,220	14,834
Vested Terminated	2,418	2,362
Non-vested Terminated*	8,153	9,132
Active	<u>28,213</u>	<u>28,201</u>
Total Membership	54,004	54,529

\* Includes 70 members with a zero account balance in 2004 and 2 members with a zero account balance in 2005.

More detailed membership statistics are shown in Appendix C.

**Determination of Normal Cost**

The **Normal Cost** represents the cost assigned to a member for a given year such that it would meet the continuing costs of that particular benefit, if contributed each year starting with the date of membership. The Entry Age Actuarial Cost Method is designed to produce a Normal Cost that remains a level percentage of salaries, so it is best expressed as a rate.

The following chart shows the Normal Cost from the 2004 valuation compared to the Normal Cost in this valuation. **Table 1** provides more details on the Normal Cost.

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	2005 Actuarial Valuation	2004 Actuarial Valuation
<b>Normal Cost Rate</b>		
Service Retirement	9.08%	9.03%
Disability Retirement	.32	0.32
Death	.53	0.53
Withdrawal	2.19	2.20
<b>Total Normal Cost Rate</b>	<b>12.12%</b>	<b>12.08%</b>

The Normal Cost Rate is expected to remain fairly stable as long as the benefits are not amended, experience emerges as assumed, the demographic characteristics of the membership remain reasonably consistent, and the actuarial assumptions are not changed.

**Determination of the Actuarial Liability**

The next step in the actuarial valuation process is to project all future benefit payments from the System for current members and retirees. The level of benefits currently being paid is known, but assumptions are needed to estimate how long they will be paid, and the amount and timing of the payment of future benefits for active and inactive members who are not currently receiving payments.

The summation of the discounted values of all of the projected benefit payments for all current members, at the assumed rate of return, is called the **Actuarial Present Value of Projected Benefits**. Details are shown in **Table 2** and summarized below.

(\$000)	2005 Actuarial Valuation	2004 Actuarial Valuation
<b>Actuarial Present Value of Projected Benefits</b>		
Retired Members	\$ 1,634,266	\$ 1,522,256
Inactive Members	122,408	117,889
Active Members	2,772,310	2,672,565
<b>Total PVPB</b>	<b>\$ 4,528,984</b>	<b>\$ 4,312,710</b>

The **Actuarial Present Value of Future Normal Costs** is the value of all remaining Normal Costs expected to be received over the future working lifetime of current active members. The Actuarial Present Value of Future Normal Costs is subtracted from the Actuarial Present Value of Projected Benefits to arrive at the **Actuarial Liability**, the assets that would exist if the current Normal Cost Rate had been paid for all members since entry into the System, and if all actuarial assumptions had been realized. The following is a summary from **Table 2**.

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(\$000)	2005 Actuarial Valuation	2004 Actuarial Valuation
<b>Actuarial Present Value of:</b>		
Projected Benefits	\$ 4,528,984	\$ 4,312,710
Future Normal Costs	808,986	798,625
<b>Actuarial Liability</b>	<b>\$ 3,719,998</b>	<b>\$ 3,514,085</b>

**Development of Actuarial Value of Assets**

The next step in the valuation process is to calculate the **Actuarial Value of Assets** that will be used to determine the funding status of the System. The market value of assets was reported to us as of June 30, 2005. Details from the System's financial statements are contained in **Table 3** and **Table 4**.

Because the underlying calculations in the actuarial valuation are long-term in nature, it is advantageous to smooth out short-term fluctuations in the market value of assets. The asset smoothing method projects an Expected Value of Assets using the assumed rate of investment return, then recognizes the difference between the Expected Value and the Market Value over a four-year period. The calculation of the Actuarial Value of Assets is shown in **Table 5** and summarized below.

(\$000)	Gain or (Loss)	Reserve Factor	Smoothing Reserve	Value of Assets
<b>Market Value on June 30, 2005</b>				\$ 3,242,429
2002-03	\$ (38,134)	25%	\$ (9,533)	
2003-04	143,930	50%	71,965	
2004-05	1,317	75%	987	
Smoothing Reserve			\$ 63,419	(63,419)
<b>Actuarial Value of Assets (Market Value less Smoothing Reserve)</b>				<b>\$ 3,179,010</b>

Due to the asset smoothing method, there is \$63 million of net investment gains that have not yet been recognized (the difference between the Actuarial and Market Value of Assets). The current positive balance of the Smoothing Reserve will gradually be reflected in the Actuarial Value of Assets.

The Actuarial Value of Assets is less than the Market Value of Assets by less than 2%. **Table 6** shows a brief history of the difference between the Actuarial and Market Values of Assets. The table also shows an estimated rate of return for the last four years on both bases.



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**Unfunded Actuarial Liability**

The **Unfunded Actuarial Liability** is the excess of the Actuarial Liability over the Actuarial Value of Assets, which represents a liability that must be funded over time. Contributions in excess of the Normal Cost are used to amortize the Unfunded Actuarial Liability. An **Actuarial Surplus** exists if the Actuarial Value of Assets exceeds the Actuarial Liability. The calculation of the Unfunded Actuarial Liability or Actuarial Surplus is shown in **Table 7** and summarized below.

(\$000)	2005 Actuarial Valuation	2004 Actuarial Valuation
Actuarial Liability	\$ 3,719,998	\$ 3,514,085
Actuarial Value of Assets	3,179,010	3,047,287
<b>Unfunded Actuarial Liability</b>	<b>\$ 540,988</b>	<b>\$ 466,798</b>
<b>Funded Ratio</b>	<b>85%</b>	<b>87%</b>

The **Funded Ratio** is equal to the Actuarial Value of Assets divided by the Actuarial Liability. A Funded Ratio of 100% means the Actuarial Value of Assets equals the Actuarial Liability, and the System could be financed by contributions equal to the Normal Cost, if all future experience emerges as assumed.

**Actuarial Gains and Losses**

Comparing the Unfunded Actuarial Liability as of two valuation dates does not provide enough information to determine if there were actuarial gains or losses. The correct comparison is between the Unfunded Actuarial Liability on the valuation date and the Expected Unfunded Actuarial Liability projected from the prior valuation date using the actuarial assumptions in effect for the one-year period.

**Table 8** shows the Actuarial Liability as of June 30, 2004, and the elements to project that figure forward to June 30, 2005: the Normal Cost, less benefits paid, plus a charge for interest at the assumed rate of 8% per year.

The same table shows the Actuarial Value of Assets as of June 30, 2004, and the elements to project that figure forward to June 30, 2005: the net cash flow (contributions less benefits), plus a credit for interest at the assumed rate of 8%.

The following is a summary of the actuarial gains or losses during the one-year period.

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	(\$000)
<b>Unfunded Actuarial Liability</b>	
Actual as of June 30, 2004	\$ 466,798
Expected as of June 30, 2005	\$ 478,790
Actual as of June 30, 2005	<u>540,988</u>
<b>Actuarial (Gain) or Loss</b>	<b>\$ 62,198</b>
 <b>(Gain) or Loss by Source</b>	
Investment Loss	\$ 80,870
Liability Gain	<u>(18,672)</u>
Net from All Sources	<b>\$ 62,198</b>

**Plan Choice Rate**

The Plan Choice Rate shown in Table 9-B is calculated for illustrative purposes only. The Plan Choice Rate is updated in even numbered years' actuarial valuations.

The Plan Choice Rate will not be adjusted, if necessary, until the results of the June 30, 2006 Actuarial Valuations have been published. The information shown below is an interim picture of the Plan Choice Rate.

The current employer contribution rate for members of the Defined Contribution Retirement Plan (DCRP) and the Optional Retirement Plan (ORP) who would have been in PERS is determined as follows:

(Percent of Salary)	DCRP	ORP
Member Account in DCRP or ORP	4.19%	4.49%
Long-term Disability Plan (DCRP only)	0.30	0.00
Education Fund	0.04	0.04
Plan Choice Rate to DBRP (PCR)	<u>2.37</u>	<u>2.37</u>
<b>Total Contribution Rate</b>	<b>6.90%</b>	<b>6.90%</b>

The Plan Choice Rate (PCR) is the percent of the employer contribution allocated to the Defined Benefit Retirement Plan for members who choose the Defined Contribution Retirement Plan or the Optional Retirement Plan. The PCR is required by statute and actuarially determined to maintain the financial stability of the Defined Benefit Retirement Plan (DBRP).

The Legislature did not want the cost of the DBRP to increase due to the elections of members to join the alternative programs. The enabling legislation appropriately established the PCR to provide a mechanism to prevent the costs of the DBRP from increasing solely due to the transfer of members to the other plans.

Without the PCR, there are two reasons the DBRP costs could potentially increase; one is the financing of the Unfunded Actuarial Liability (UAL) at the time of the transfers, and the other is the potential for an increase in the Normal Cost Rate.

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1. If there is an Unfunded Actuarial Liability in the DBRP at the time of the transfers, the simple fact that there will be fewer members in the DBRP to spread the amortization of the UAL will increase the rate of DBRP pay necessary to amortize the UAL. The PCR provides that the amortization of the DBRP UAL at the time of the transfer will be financed over the sum of payroll of the DBRP and DCRP members. This method ensures a continuation of the amortization schedule that was in place just prior to the transfers.

The legislation provided a starting point for this element of the PCR equal to 2.37% of the payroll of DCRP members and the ORP members who would have been in the DBRP.

2. Compared to the members who remain in the DBRP, if the transferring DCRP and ORP members are, on average, either younger at the time of hire, or have a shorter career, the DBRP Normal Cost Rate could increase. The DBRP membership will become, on average, more expensive because the average length of service at retirement will be longer or the career over which the benefit can be financed will be shorter. The dollar amount of the increase in the DBRP Normal Cost will be financed as a percentage of DCRP and ORP payroll. In other words, the DCRP and ORP members will be funding any increase in the Normal Cost of the DBRP due to their election not to participate in the DBRP.

The legislature did not provide a starting point for this element of the PCR because it depends on the demographics of those who elect the alternative programs.

**Unfunded Actuarial Liability:** Table 9-A shows the development of the Unfunded Actuarial Liability of the DBRP that is allocated to the members of the alternative programs. The Unfunded Actuarial Liability as of June 30, 2004 was brought forward to June 30, 2005.

(\$000)	
<b>Unfunded Actuarial Liability</b>	
<b>PCR-UAL as of June 30, 2004</b>	<b>\$ 13,477</b>
<b>Adjustments as of June 30, 2005</b>	
Assumed Earnings at 8%	1,078
PCR Contributions with 8% Earnings	(1,221)
Recognition of Prior Investment Losses	5,020
<b>PCR-UAL as of June 30, 2005</b>	<b>\$ 18,354</b>

**Normal Cost Rate:** The statute calls for the members of the alternative programs who could have been in the DBRP to finance the increase in the Normal Cost Rate associated with their transfer. **Table 9-B** shows that the Normal Cost Rate for the DBRP would have been 12.11% had the alternative program options not existed. The Normal Cost Rate in this valuation for the DBRP members is 12.12% of salaries. Since the DBRP payroll is about 17 times larger than the payroll of the members who transferred out, the increase of 0.01% of DBRP salaries is financed by a charge of 0.17% of the alternative program payroll.

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**Amortization Test:** The current PCR, less the PCR-NCR, will be available to amortize the remaining PCR-UAL. The initial amortization period was set at 12.75 years as of June 30, 1998. The amortization period will decline by one year each biennium, but the PCR will not change unless the amortization period is more than 10 years different than the scheduled amortization period.

	Amortization of PCR-UAL		
	Baseline	Acceptable Range	
1998 Valuation	12.75	2.75	22.75
2000 Valuation	11.75	1.75	21.75
2002 Valuation	10.75	0.75	20.75
2004 Valuation	9.75	n/a *	19.75
2006 Valuation	8.75	n/a *	18.75

\* Assumes immediate amortization of PCR UAL.  
 Lower end only applies after 2002 if the PCR UAL is fully amortized.

**Calculation of the PCR:** For the interim display, we used the acceptable range for the 2004 Valuation. The PCR, after being reduced for the PCR Normal Cost Rate, must be sufficient to amortize the PCR Unfunded Actuarial Liability over 19.75 years. If not, the PCR is increased such that the amortization period is reduced to 19.75 years.

The following table shows that the 2.20% of payroll available will amortize the PCR-UAL over a period of 24.40 years. This is outside the statutory corridor, so the PCR would have to be increased.

PCR – UAL as of June 30, 2005 (\$000)	\$ 18,354
PCR Available for Amortization	
Current PCR Amortization Rate	2.37%
Less, PCR – Normal Cost Rate	0.17%
PCR Available for Amortization	2.20%
Years to Amortize PCR – UAL from June 30, 2005	24.40 Years
Maximum Years to Amortize PCR – UAL	19.75 Years

**Current PCR is Not Sufficient**

**Determination of Revised PCR**

PCR – Normal Cost Rate	0.17%
PCR – UAL Amortization Rate over 19.75 Years from June 30, 2005 (rounded to nearest 0.10%)	2.50%
<b>Revised PCR</b>	<b>2.67%</b>

The rate necessary to amortize the PCR-UAL over 19.75 years is 2.53% of the payroll of the transferred members. This rounds to 2.50% and is added to the PCR Normal Cost Rate of 0.17% to arrive at the illustrated new PCR of 2.67% of payroll. This process will be repeated in the 2006 Valuation to determine the statutorily required Plan Choice Rate.

The estimated PCR as of June 30, 2006 is 2.77%.

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**Calculation of Contribution Rate**

The statutory funding rate is tested in the valuation to determine if it is sufficient to cover the Normal Cost Rate plus an amortization payment for the Unfunded Actuarial Liability, if any, over no more than 30 years. The calculations are shown in **TABLE 10** and summarized below.

	2005 Actuarial Valuation	2004 Actuarial Valuation
Statutory Funding Rate	13.80%	13.80%
Transfer to Education Fund	(0.04)	(0.04)
Normal Cost Rate	(12.12)	(12.08)
<b>Available for Amortization</b>	<b>1.64%</b>	<b>1.68%</b>
Unfunded Actuarial Liability of DBRP	\$ 540,988	\$ 466,798
Less, Funded by PCR	(18,354)	(13,477)
<b>Net UAL for DBRP Funding</b>	<b>\$ 522,634</b>	<b>\$ 453,321</b>
<b>Years to Amortize</b>	<b>Does Not Amortize</b>	<b>Does Not Amortize</b>

Based on the current Actuarial Value of Assets and all future experience emerging as assumed, the Unfunded Actuarial Liability will not be amortized over the next 30 years. As a point of interest, we have calculated the additional revenue needed to amortize the Unfunded Actuarial Liability over 30 years.

Normal Cost Rate	12.12%
30-Year Amortization Payment	3.22
<b>30-Year Contribution Rate</b>	<b>15.34%</b>
Current Statutory Rate for DBRP	13.80%
Less, Educational Fund	(0.04)
<b>Available to Fund the DBRP</b>	<b>13.76%</b>
<b>Estimated Shortfall</b>	<b>1.58%</b>

Based on the assumptions contained in this report, a funding rate of 15.34% of payroll would be sufficient to fund the current and projected benefits from the System. The 0.04% for the Educational Fund would be in addition to this rate.

**Disclosure Information - GASB No. 25**

The disclosure of the Schedule of Funding Progress and the Solvency Test calculated in accordance with Statement No. 25 of the Governmental Accounting Standards Board are shown in **Tables 11 and 12**.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**SECTION 4**  
**ACTUARIAL VALUATION RESULTS**

The following tables document the findings of the actuarial valuation.

TABLE 1	NORMAL COSTS
TABLE 2	SUMMARY OF ACTUARIAL REQUIREMENTS
TABLE 3	STATEMENT OF SYSTEM ASSETS
TABLE 4	STATEMENT OF CHANGES IN SYSTEM ASSETS
TABLE 5	ACTUARIAL VALUE OF ASSETS
TABLE 6	HISTORY OF ACTUARIAL VALUE OF ASSETS
TABLE 7	FUNDED STATUS
TABLE 8	ACTUARIAL GAINS AND LOSSES
TABLE 9	Plan Choice Rate
	A UNFUNDED ACTUARIAL LIABILITY – JUNE 30, 2005
	B PLAN CHOICE RATE
TABLE 10	CALCULATION OF CONTRIBUTION RATE
TABLE 11	SCHEDULE OF FUNDING PROGRESS
TABLE 12	SOLVENCY TEST

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**TABLE 1  
NORMAL COSTS**

	2005 Actuarial Valuation	2004 Actuarial Valuation
<b>Normal Cost Rate</b>		
Service Retirement	9.08%	9.03%
Disability Retirement	.32	0.32
Death	.53	0.53
Withdrawal	2.19	2.20
<b>Total Normal Cost Rate</b>	<b>12.12%</b>	<b>12.08%</b>
<b>Annual Normal Cost (\$000)</b>	\$ 105,819	\$ 102,731
<b>Present Value of Future Normal Costs (\$000)</b>	<b>\$ 808,986</b>	<b>\$ 798,625</b>

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**TABLE 2**  
**SUMMARY OF ACTUARIAL REQUIREMENTS**

(\$000)	2005 Actuarial Valuation	2004 Actuarial Valuation
	<hr/>	<hr/>
<b>Retired Members</b>		
Service Retirement	\$ 1,440,992	\$ 1,338,329
Disability Retirement	62,246	60,699
Beneficiaries	<u>131,028</u>	<u>123,228</u>
Retired Member Total	1,634,266	1,522,256
 <b>Inactive Members</b>	 122,408	 117,889
 <b>Active Members</b>		
Service Retirement	2,434,325	2,335,525
Disability Retirement	59,138	59,117
Pre-retirement Death	118,869	115,248
Withdrawal	<u>159,978</u>	<u>162,675</u>
Active Member Total	2,772,310	2,672,565
 <b>Present Value of Future Projected Benefits</b>	 <b>\$ 4,528,984</b>	 <b>\$ 4,312,710</b>
 Present Value of Future Normal Costs	 <u>808,986</u>	 <u>798,625</u>
 <b>Actuarial Liability</b>	 <b>\$ 3,719,998</b>	 <b>\$ 3,514,085</b>



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**TABLE 3**  
**STATEMENT OF SYSTEM ASSETS**

(\$000)	2005	2004
<b>Current Assets</b>		
Cash	\$ 59,302	\$ 103,039
Accounts Receivable	926	1,432
Interest Receivable	7,466	10,400
Other Receivable	585	676
Total Current Assets	68,279	115,547
<b>Investments, at Fair value</b>		
Mortgages and Commercial Loans	50,658	66,755
Investment Pools	3,115,493	2,839,515
Other Investments	8,526	8,409
Total Investments	3,174,677	2,914,679
Securities Lending Collateral	140,880	141,311
Other Assets:	320	537
<b>Total Assets</b>	<b>\$ 3,384,156</b>	<b>\$ 3,172,074</b>
<b>Liabilities</b>		
Accounts Payable	\$ 422	\$ 351
Securities Lending Liability	140,880	141,311
Compensated Absences	253	237
Other	172	265
<b>Total Liabilities</b>	<b>\$ 141,727</b>	<b>\$ 142,164</b>
<b>Net System Assets</b>	<b>\$ 3,242,429</b>	<b>\$ 3,029,910</b>

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**TABLE 4**  
**STATEMENT OF CHANGES IN SYSTEM ASSETS**

(\$000)	2005
<b>Contributions</b>	
Employer	\$ 59,979
Plan Member	66,921
Other	649
Total Contributions	127,549
<b>Investments Income</b>	
Net Appreciation/(Depreciation) In fair value of investments	151,818
Investment Earnings	97,690
Total Investment Income	249,508
Less Investment Expense	(4,778)
Net Investment Income	244,730
Securities Lending Income	3,224
Less Securities Lending Expense	(2,998)
Net Securities Lending Income	226
Total Net Investment Income after SLI	244,956
<b>Total Additions</b>	<b>\$ 372,505</b>
<b>Benefits and Expenses</b>	
Benefit Payments	\$ 142,789
Refunds to Members	13,236
Refunds to Other Plans	442
Transfers to DCRP	914
Transfers to ORP	159
Administrative Expense	2,444
<b>Total Deductions</b>	<b>159,984</b>
<b>Accounting Adjustments</b>	<b>(2)</b>
<b>Net Increase in System Assets</b>	<b>\$ 212,519</b>
<b>Net System Assets</b>	
Beginning of the Year	\$ 3,029,910
End of the Year	\$ 3,242,429

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**TABLE 5  
ACTUARIAL VALUE OF ASSETS**

(\$000)

Fiscal Year	Cash Flow	Expected Value	Gain or (Loss)	Market Value
2001-02				\$ 2,564,498
2002-03	\$ (34,326)	\$ 2,733,958	\$ (38,134)	2,695,824
2003-04	(24,529)	2,885,980	143,930	3,029,910
2004-05	(29,990)	3,241,112	1,317	3,242,429

Fiscal Year	Gain or (Loss)	Reserve Factor	Smoothing Reserve
2002-03	\$ (38,134)	25%	\$ (9,533)
2003-04	143,930	50%	71,965
2004-05	1,317	75%	987
			\$ 63,419

Fair Market Value on June 30, 2005	\$ 3,242,429
Less, Asset Smoothing Reserve	(63,419)
<b>Actuarial Value of Assets on June 30, 2005</b>	<b>\$ 3,179,010</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 6  
HISTORY OF ACTUARIAL VALUE OF ASSETS**

(\$000) June 30	Market Value		Actuarial Value <sup>(1)</sup>		Ratio of Actuarial to Market
	(\$000)	<i>Estimated Return</i> <sup>(2)</sup>	(\$000)	<i>Estimated Return</i> <sup>(2)</sup>	
2000	\$ 2,935,779		\$ 2,843,347		97%
2001	2,777,338	(5.1)%	3,043,751	7.3%	110%
2002	2,564,498	(7.3)%	3,076,781	1.4%	120%
2003	2,695,824	6.5%	3,033,210	(0.3)%	113%
2004	3,029,910	13.4%	3,047,287	1.3%	101%
2005	3,242,429	8.0%	3,179,010	5.3%	98%

Note:

<sup>(1)</sup> Asset Method adopted for 2000 valuation with retroactive calculation to June 30, 1997

<sup>(2)</sup> Estimated returns are net of all investment and administrative expenses paid by the System and assuming uniform cash flow throughout the year

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 7  
FUNDED STATUS**

(\$000)	<u>2005 Actuarial Valuation</u>	<u>2004 Actuarial Valuation</u>
<b>Actuarial Value of Assets</b>		
Actuarial Liability	\$ 3,719,998	\$ 3,514,085
Actuarial Value of Assets	<u>3,179,010</u>	<u>3,047,287</u>
Unfunded Actuarial Liability	\$ 540,988	\$ 466,798
<b>Funded Ratio (AVA)</b>	<b>85%</b>	<b>87%</b>
 <b>Market Value of Assets</b>		
Actuarial Liability	\$ 3,719,998	\$ 3,514,085
Market Value of Assets	<u>3,242,429</u>	<u>3,029,910</u>
Unfunded Actuarial Liability	\$ 477,569	\$ 484,175
<b>Funded Ratio (MVA)</b>	<b>87%</b>	<b>86%</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 8  
ACTUARIAL GAINS AND LOSSES**

(\$000)	<u>Expected</u>	<u>Actual</u>	<u>(Gain) or Loss</u>
<b>2004 Actuarial Liability</b>	\$ 3,514,085		
Normal Costs	102,731		
Benefits Paid	(157,098)		
Expected Earnings at 8%	<u>278,952</u>		
<b>Actuarial Liability at June 30, 2005</b>	\$ 3,738,670	\$ 3,719,998	\$ (18,672)
<b>2004 Actuarial Value of Assets</b>	\$ 3,047,287		
Net Cash Flow	(29,990)		
Expected Earnings at 8%	<u>242,583</u>		
<b>Actuarial Value of Assets</b>	\$ 3,259,880	3,179,010	80,870
<b>Unfunded Actuarial Liability as of June 30, 2005</b>	<b>\$ 478,790</b>	<b>\$ 540,988</b>	<b>\$ 62,198</b>
<b>Summary Actuarial (Gain) or Loss by Source</b>			
Investment (Gain) or Loss			\$ 80,870
Liability (Gain) or Loss			<u>(18,672)</u>
<b>Total Actuarial (Gain) or Loss</b>			<b>\$ 62,198</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 9-A  
PLAN CHOICE RATE UNFUNDED ACTUARIAL LIABILITY – JUNE 30, 2005**

(\$000)

**PCR – UAL Calculations for 2004-05**

PCR – UAL as of June 30, 2004			\$ 13,477
Assumed Interest at 8% per year			1,078
Less, PCR Contributions to DBRP during 2004-05, reduced by normal cost			(1,172)
Less, Interest at 8% on PCR Contributions to DBRP during 2004-05			(49)
Recognition of Prior Investment (Gain) or Loss			
2000-01 Balance	\$ 0		0
2001-02 Balance	\$ 4,607	100%	4,607
2002-03 Balance	\$ 827	50%	<u>413</u>
 <b>PCR - Unfunded Actuarial Liability at June 30, 2005</b>			 <b>\$ 18,354</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 9-B  
PLAN CHOICE RATE\***

(\$000)

**PCR - Normal Cost Rate**

Normal Cost Rate			
DBRP Members Only			12.12%
Including DCRP and ORP Members			<u>12.11%</u>
Difference	(A)		0.01%
Payroll as of June 30, 2005 (\$000)			
DBRP Members Only	(B)	\$	878,503
DCRP and ORP Members	(C)	\$	51,030
PCR – Normal Cost Rate	(A) x (B) ÷ (C)		0.17%

**PCR – UAL Amortization**

PCR – UAL as of June 30, 2005 (Table 9-A)		\$	18,354
PCR Available for Amortization			
Current PCR Amortization Rate			2.37%
Less, PCR – Normal Cost Rate			<u>0.17%</u>
PCR Available for Amortization			2.20%
Years to Amortize PCR – UAL from June 30, 2005			24.40 Years
Maximum Years to Amortize PCR – UAL from June 30, 2005			19.75 Years

**Current PCR is Not Sufficient**

**Determination of Revised PCR**

PCR – Normal Cost Rate		0.17%
PCR – UAL Amortization Rate over 19.75 Years from June 30, 2005 (rounded to nearest 0.10%)		<u>2.50%</u>
<b>Illustrative Revised PCR</b>		<b>2.67%</b>

\*For illustrative purposes only. The Plan Choice Rate is updated in even numbered years' actuarial valuations.



**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**TABLE 10  
CALCULATION OF CONTRIBUTION RATE**

	2005 Actuarial Valuation	2004 Actuarial Valuation
<b>Statutory Funding Rate</b>		
Members	6.90%	6.90%
Employers	6.80%	6.80%
State	<u>.10%</u>	<u>0.10%</u>
Total	13.80%	13.80%
<b>Transfer to Education Fund</b>	<u>(.04)%</u>	<u>(0.04)%</u>
<b>Net Contribution to DBRP</b>	13.76%	13.76%
<b>Normal Cost Rate</b>	12.12%	12.08%
<b>Funding Rate Available for Amortization</b>	1.64%	1.68%
 <b>(\$000)</b>		
<b>Unfunded Actuarial Liability</b>		
DBRP (Table 7)	\$ 540,988	\$ 466,798
Less, PCR-UAL Funded by DCRP & ORP (Table 9-B)	<u>(18,354)</u>	<u>(13,477)</u>
Funded by DBRP	\$ 522,634	\$ 453,321
Years to Amortize	Does Not Amortize	Does Not Amortize
 <b>Calculated Contribution Rate</b>		
Normal Cost Rate	12.12%	12.08%
Amortization Payment		
Available	1.64%	1.68%
Additional Contribution for 30-year Amortization	<u>1.58%</u>	<u>1.19%</u>
Total Amortization	3.22%	2.87%
<b>Total Calculated Rate</b>	<b>15.34%</b>	<b>14.95%</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**DISCLOSURE INFORMATION - GASB No. 25**

**TABLE 11**

**SCHEDULE OF FUNDING PROGRESS  
(DOLLARS IN THOUSANDS)**

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Funded Ratio	Unfunded AAL (UAAL)	Covered Payroll	UAAL as a Percentage of Covered Payroll
June 30, 1994	\$1,366,864	\$1,625,720	84%	\$258,856	\$572,973	45%
June 30, 1996	1,629,707	1,826,207	89	196,500	608,592	32
June 30, 1998	2,113,314	2,298,702	92	185,388	660,579	28
June 30, 2000	2,843,347	2,273,407	125	(569,940)	725,692	(79)
June 30, 2002	3,076,781	3,077,764	100	983	808,747	0
June 30, 2004	3,047,287	3,514,085	87	466,798	832,847	56
June 30, 2005	3,179,010	3,719,998	85	540,988	847,431	64

**TABLE 12**

**SOLVENCY TEST  
(DOLLARS IN THOUSANDS)**

Actuarial Valuation Date	(1) Active Member Accounts	(2) Inactive Actuarial Liability	(3) Employer Financed Active Liability	Actuarial Value of Assets	Coverage Ratios		
					(1)	(2)	(3)
June 30, 1994	\$255,261	\$743,551	\$626,908	\$1,366,864	100%	100%	59%
June 30, 1996	307,369	768,950	749,888	1,629,706	100	100	74
June 30, 1998	360,422	949,365	988,915	2,113,314	100	100	81
June 30, 2000	572,536 <sup>(1)</sup>	1,049,012	651,859	2,843,347	100	100	187
June 30, 2002	645,403	1,366,634	1,065,727	3,076,781	100	100	100
June 30, 2004	684,607	1,640,145	1,189,333	3,047,287	100	100	61
June 30, 2005	701,851	1,756,674	1,261,473	3,179,010	100	100	57

Note:

<sup>(1)</sup> Prior to 2000, "active member accounts" included Regular Contributions without interest for active and inactive members. Beginning in 2000, "active member accounts" includes Regular and Additional Contributions with interest, and excludes all accounts of inactive members.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Appendix A**

**Actuarial Methods and Assumptions**

This section of the report describes the actuarial methods and assumptions used in this valuation. These methods and assumptions have been chosen by the Retirement Board based on our recommendations. The Retirement Board has the sole authority to select the methods and assumptions used in this actuarial valuation. The recommendations were formed on the basis of recent experience of the System and on current expectations as to future economic conditions.

The assumptions are intended to estimate the future experience of the System and the members of the System in areas which affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of the System's benefits.

In our opinion, the current actuarial methods and assumptions are reasonable and appropriate for this System. The assumptions were developed in accordance with generally recognized and accepted actuarial principles and practices that are consistent with applicable Standards of Practice adopted by the American Academy of Actuaries.

**Records and Data**

The data used in the valuation consist of financial information and records of age, service, account balances, benefits in pay status and income of contributing members, former contributing members and their survivors. All of the data were supplied by the System and are accepted for valuation purposes without audit.

**Actuarial Cost Method**

A fundamental principle in financing the liabilities of a retirement program is that the cost of its benefits should be related to when they are earned, rather than when they are paid. There are a number of methods in use for making a determination.

The funding method used in this valuation is the Entry Age Cost Method. Under this method the actuarial present value of projected benefits for each individual member included in the 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 Liability.

The excess of the Actuarial Liability over the Actuarial Value of Assets is called the Unfunded Actuarial Liability. If the Actuarial Value of Assets exceeds the Actuarial Liability, the difference is called the Actuarial Surplus.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Asset Valuation Method**

Asset values were supplied by the System and were accepted without audit by us. The Actuarial Value of Assets is the market value, adjusted by a four-year recognition of gains and losses.

**Investment Return**

The future investment earnings of the assets of the plan are assumed to accrue at a net annual rate of 8.00%, net of all administrative and investment-related expenses.

**Interest on Member Contributions**

Interest on member contributions is assumed to accrue at a net annual rate of 5.00%.

**Future Salaries**

Estimates of future salaries are based on two types of assumptions. Rates of increase in the general wage level of the membership are directly related to inflation, while individual salary changes due to promotion and longevity, referred to as the merit scale, occur even in the absence of inflation. The assumed increase in future salaries due to general wage growth is 4.25% per year. The merit scale, assumed in addition to general wage growth, is shown in Table A-2.

**Service Retirement**

The assumed rates of retirement used in this valuation are shown in Table A-3.

All vested terminated members are assumed to retire when first eligible for an unreduced benefit.

**Disablement**

The assumed rates of disablement are illustrated in Table A-4 at specified ages. We also assume that all disabilities are permanent, and no disabled member will recover and return to work.

**Mortality**

The probabilities of mortality are based on the following published tables:

Healthy Retirees, Beneficiaries and Non-Retired Members

Males	1994 Male Uninsured Pensioner Table (-1)
Females	1994 Female Uninsured Pensioner Table (-1)

Disabled Retirees

Males	IRS Revenue Ruling 96-7 Male Table (-3)
Females	IRS Revenue Ruling 96-7 Female Table (+1)

These rates are illustrated in Table A-5.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Other Terminations of Employment**

The assumed rates of termination, other than for retirement, death, or disability, are shown in Table A-6.

**Benefits for Terminating Members**

The probability of a terminating member electing a refund of the member account balance is shown in Table A-7.

**Probability of Marriage**

100% of all non-retired members are assumed to be married. Male spouses are assumed to be three years older than female spouses.

**Changes in Actuarial Assumptions Made for this Valuation**

The following method and assumptions were revised since the last valuation:

**Actuarial Methods**

- ◆ None

**Economic Assumptions**

- ◆ None

**Demographic Assumptions**

- ◆ None

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Table A-1**

**Summary of Valuation Assumptions**  
**(June 30, 2005)**

I. Economic assumptions	
A. General wage increases	4.25%
B. Investment return	8.00%
C. Interest on member accounts	5.00%
II. Demographic assumptions	
A. Individual salary increase due to promotion and longevity	Table A-2
B. Retirement	Table A-3
C. Disablement	Table A-4
D. Mortality among contributing members, service retired members, and beneficiaries	Table A-5
1994 Uninsured Pensioner Mortality Table, with ages set back 1 year for males and ages set back 1 year for females	
E. Mortality among disabled members	Table A-5
Based on the IRS Social Security Disabled Mortality Tables published in Revenue Ruling 96-7 for pre-1995 disabilities with ages set back 3 years for males and set forward 1 year for females.	
F. Other terminations of employment	Table A-6
G. Probability of retaining membership in the System upon vested termination	Table A-7

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Table A-2**

**Merit Salary Increases**

<u>Service</u>	<u>Annual Increase</u>
1	6.00%
2	4.90
3	3.90
4	3.10
5	2.40
6	1.80
7	1.40
8	1.00
9	0.70
10	0.50
11-15	0.30
16-20	0.10
21 & over	0.00

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Table A-3**

**Retirement  
Annual Rates**

Age	< 30 Yrs	w/ 30 Yrs	Age	< 30 Yrs	w/ 30 Yrs
Under 50	-	10%	61	15%	15%
			62	25	25
50 - 54	3%	10	63	15	15
			64	15	15
55	3	15	65	30	30
56	4	15	66	30	30
57	5	15	67	25	25
58	5	15	68	25	25
59	6	15	69	25	25
60	8	15	70 & over	100	100



**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Table A-4**

**Disablement  
Annual Rates**

<u>Age</u>	<u>Male</u>	<u>Female</u>
22	-	-
27	0.01%	0.01%
32	0.01	0.01
37	0.06	0.03
42	0.09	0.15
47	0.17	0.15
52	0.36	0.30
57	0.62	0.36
62	0.00	0.00

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Table A-5**

**Mortality**  
**Annual Rates**

Age	Healthy Members		Disabled Retirees	
	Male	Female	Male	Female
50	0.250%	0.141%	2.085%	1.697%
55	0.428	0.224	2.587	1.976
60	0.762	0.415	3.194	2.344
65	1.391	0.819	3.933	2.828
70	2.336	1.367	4.900	3.492
75	3.661	2.192	6.468	4.710
80	6.007	3.802	8.522	6.346
85	9.636	6.557	10.971	9.015
90	14.995	11.247	14.405	13.322
95	23.194	18.352	19.372	20.176

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**Table A-6**

**Other Terminations of Employment  
Annual Rates**

Service	Male Members			Female Members		
	Age <30	30-39	Age>40	Age <30	30-39	Age>40
0	30%	22%	15%	30%	22%	18%
1	25	15	12	25	16	13
2	16	12	10	16	14	10
3	14	10	8	14	11	9
4	10	8	6	10	8	8
5-9	6	6	5 *	5	5	5 *
10-14	3	3	3 *	4	4	3 *
15 & over	-	2	2 *	-	2	2 *

\* No other terminations of employment are assumed after attainment of age 55 with 5 years of service.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Table A-7**

**Probability of Electing a Refund  
of Member Contributions Upon Termination**

<u>Age at Termination</u>	<u>Non-Vested</u>	<u>Vested</u>
Under 35	100%	50%
35 - 39	100	40
40 - 44	100	40
45 - 49	100	35
50 & over	100	30

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Appendix B**

**Provisions of Governing Law**

All of the calculations contained in this report are based on our understanding of the benefit and eligibility provisions of the system. The provisions used in this valuation are summarized below for reference purposes.

<b>Normal Retirement</b>	Eligibility:	Age 65 regardless of membership service, or Age 60 and 5 years of membership service, or 30 years of membership service regardless of age.
	Benefit:	Years of service credit, multiplied by highest average compensation (highest 36 consecutive months), multiplied by $1/56^{\text{th}}$ if membership service at retirement is less than 25 years, or multiplied by $1/50^{\text{th}}$ if membership service at retirement is at least 25 years.
	Normal Form:	Monthly benefit for the life of the member, with a death benefit equal to the remaining balance of the member's contribution account.
<b>Early Retirement</b>	Eligibility:	Age 50 and 5 years of membership service, or 25 years of membership service regardless of age.
	Benefit:	Actuarial equivalent of the accrued benefit based on retirement at age 60 or 30 years of membership service.
<b>Disability Retirement</b>	Eligibility:	5 years of membership service
	Benefit:	If hired on or before February 24, 1991, the greater of (a) and (b) below: (a) Years of service credit, multiplied by highest average compensation, multiplied by 90% of $1/56^{\text{th}}$ ( $1/50^{\text{th}}$ if 25 or more years of membership service), or (b) Highest average compensation multiplied by 25%.
		If hired after February 24, 1991: (a) Years of service credit, multiplied by highest average compensation, multiplied by $1/56^{\text{th}}$ ( $1/50^{\text{th}}$ if 25 or more years of membership service).

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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<b>Death before Retirement</b>	Eligibility:	Prior to 5 years of membership service
	Benefit:	The sum of (a) and (b) below: (a) Return of member contributions with interest, (b) Lump sum payment of one month's salary multiplied by years of service credit, up to a maximum of six months' salary.
	Eligibility:	5 years of membership service
	Benefit:	Either the sum of (a) and (b), or (c) below: (a) Return of member contributions with interest, and (b) Lump sum payment of one month's salary multiplied by years of service credit, up to a maximum of six months' salary, or (c) Actuarial equivalent of the accrued benefit at the time of death of the member.
<b>Termination Benefit</b>	Eligibility:	Prior to 5 years of membership service
	Benefit:	Return of member contributions with interest.
	Eligibility:	5 years of membership service
	Benefit:	Either (a) or (b) below: (a) Return of member contributions with interest, or (b) Actuarial equivalent of the accrued benefit based on a retirement age of 60.
<b>Benefit Adjustments</b>	Eligibility:	Retired members and beneficiaries.
	Benefit:	An annual adjustment (GABA) of 3.0% commencing January 1 <sup>st</sup> , one year after retirement.
<b>Contributions</b>	Members:	6.90% of members' compensation
	Employers:	6.90% of members' compensation (offset by 0.10% of members' compensation paid by the State for local government and school district employers).

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
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**Appendix C**

**Valuation Data**

This valuation is based upon the membership of the System as of June 30, 2005. Membership data were supplied by the System and accepted for valuation purposes without audit. However, tests were performed to ensure that the data are sufficiently accurate for valuation purposes.

Table C-1 contains summaries of the data for contributing members. Values shown in the tables are the numbers of members and their total and average annual salaries.

Active Members	Annual Salaries in Millions	Average Annual Salary
28,213	\$854.6	\$30,290

Table C-2 presents distributions of the following:

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

Type of Annuitant	Number	Annual Benefits in Thousands	Average Annual Benefits
Service Retirement	12,553	\$ 125,219	\$ 9,975
Disability Retirement	800	5,752	7,189
Survivors of Deceased Members	1,867	14,179	7,593
Total Annuitants	15,220	\$ 145,150	\$ 9,537

Terminated Members	Number
Vested Terminated Members	2,418
Non-Vested Terminated Members	8,153
Total Terminated Members	10,571

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
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**Table C-1**

**Active Members Distribution of  
Members and Salaries  
as of June 30, 2005  
Number of Members – By Age Group – DBRP Members**

Age	Completed Years of Service											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+	
Under 25	328	136	54	34	2	-	-	-	-	-	-	-	-	554
25 to 29	464	295	191	248	119	1	-	-	-	-	-	-	-	1,318
30 to 34	440	249	197	346	430	78	-	-	-	-	-	-	-	1,740
35 to 39	662	250	218	345	616	359	102	1	1	-	-	-	-	2,554
40 to 44	500	306	262	508	794	590	423	149	23	-	-	-	-	3,555
45 to 49	542	365	300	569	1,088	805	613	451	274	24	2	-	-	5,033
50 to 54	454	338	251	536	1,099	897	742	593	550	227	23	4	-	5,714
55 to 59	299	191	204	376	789	741	657	469	408	293	91	21	-	4,539
60 to 64	175	83	102	213	410	356	367	267	204	90	62	26	-	2,355
65 to 69	44	30	32	75	114	100	72	56	36	13	10	9	-	591
70 & over	27	25	21	29	52	34	32	17	14	3	4	2	-	260
<b>Totals</b>	<b>3,935</b>	<b>2,268</b>	<b>1,832</b>	<b>3,279</b>	<b>5,513</b>	<b>3,961</b>	<b>3,008</b>	<b>2,003</b>	<b>1,510</b>	<b>650</b>	<b>192</b>	<b>62</b>	<b>62</b>	<b>28,213</b>



**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-1**

**Active Members Distribution of  
Members and Salaries**

**as of June 30, 2005**

**Annual Salaries in Thousands – By Age Group – DBRP Members**

Age	Completed Years of Service											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+	
Under 25	6,700	2,853	1,142	810	42	-	-	-	-	-	-	-	-	11,547
25 to 29	11,226	7,175	5,408	6,919	3,643	50	-	-	-	-	-	-	-	34,421
30 to 34	10,802	6,014	5,389	10,272	14,360	2,872	-	-	-	-	-	-	-	49,709
35 to 39	15,002	5,849	5,728	9,918	20,124	13,906	3,807	66	26	-	-	-	-	74,426
40 to 44	11,668	6,317	6,188	13,197	24,000	21,907	16,514	6,025	948	-	-	-	-	106,764
45 to 49	12,800	7,944	7,051	14,289	31,735	27,362	23,959	18,514	11,839	1,092	89	-	-	156,674
50 to 54	10,561	7,537	5,805	13,331	31,332	28,892	26,938	24,530	24,411	10,225	1,102	144	184,808	
55 to 59	6,775	3,800	4,982	9,211	21,090	23,158	22,765	17,288	17,332	13,443	4,224	1,018	145,086	
60 to 64	4,263	1,523	2,261	5,195	11,075	10,415	11,521	9,230	7,493	3,704	2,967	1,199	70,846	
65 to 69	806	518	756	1,600	2,382	2,472	2,129	1,708	1,215	589	458	320	14,953	
70 & over	591	253	360	400	873	792	845	475	408	106	146	87	5,336	
<b>Totals</b>	<b>91,194</b>	<b>49,783</b>	<b>45,070</b>	<b>85,142</b>	<b>160,656</b>	<b>131,826</b>	<b>108,478</b>	<b>77,836</b>	<b>63,672</b>	<b>29,159</b>	<b>8,986</b>	<b>2,768</b>	<b>854,570</b>	

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-1**

**Active Members Distribution of  
Members and Salaries  
as of June 30, 2005  
Average Annual Salary – By Age Group – DBRP Members**

Age	Completed Years of Service											Average		
	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+	
Under 25	20,428	20,978	21,150	23,816	21,063	-	-	-	-	-	-	-	-	20,844
25 to 29	24,194	24,321	28,314	27,901	30,616	49,576	-	-	-	-	-	-	-	26,116
30 to 34	24,549	24,152	27,357	29,687	33,395	36,824	-	-	-	-	-	-	-	28,568
35 to 39	22,662	23,395	26,274	28,747	32,669	38,736	37,324	65,922	25,791	-	-	-	-	29,141
40 to 44	23,335	20,643	23,620	25,979	30,226	37,131	39,041	40,436	41,198	-	-	-	-	30,032
45 to 49	23,616	21,764	23,502	25,113	29,168	33,990	39,084	41,050	43,209	45,496	44,576	-	-	31,129
50 to 54	23,262	22,299	23,126	24,872	28,510	32,209	36,305	41,367	44,383	45,043	47,927	35,898	-	32,343
55 to 59	22,661	19,893	24,422	24,498	26,731	31,252	34,649	36,861	42,480	45,882	46,419	48,479	-	31,965
60 to 64	24,360	18,349	22,164	24,391	27,012	29,255	31,393	34,570	36,731	41,151	47,858	46,108	-	30,083
65 to 69	18,326	17,265	23,623	21,338	20,898	24,719	29,567	30,504	33,759	45,280	45,813	35,582	-	25,303
70 & over	21,887	10,118	17,159	13,805	16,796	23,282	26,400	27,943	29,143	35,312	36,566	43,403	-	20,525
Totals	23,175	21,950	24,601	25,966	29,142	33,281	36,063	38,860	42,167	44,859	46,808	44,637	-	30,290

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-1**

**Active Members Distribution of  
Members and Salaries**

**as of June 30, 2005**

**Number of Members – By Age Group – DCRP & ORP Members**

Age	Completed Years of Service													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+		
Under 25	13	8	4	1	1	-	-	-	-	-	-	-	-	27
25 to 29	44	65	34	54	17	-	-	-	-	-	-	-	-	214
30 to 34	27	62	44	55	70	4	-	-	-	-	-	-	-	262
35 to 39	30	50	34	55	74	22	1	-	-	-	-	-	-	266
40 to 44	20	58	23	57	65	41	6	-	-	-	-	-	-	270
45 to 49	25	45	36	49	62	25	9	2	-	-	-	-	-	253
50 to 54	20	34	17	39	49	23	7	2	4	-	-	-	-	195
55 to 59	12	23	17	16	16	9	4	-	1	-	-	-	-	98
60 to 64	4	10	3	9	3	2	1	-	-	-	-	-	-	32
65 to 69	2	1	-	1	1	-	-	-	-	-	-	-	-	5
70 & over	2	1	-	-	-	-	-	-	-	-	-	-	-	3
Totals	199	357	212	336	358	126	28	4	5	-	-	-	-	1,625

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-1**

**Active Members Distribution of  
Members and Salaries**

**as of June 30, 2005**

**Annual Salaries in Thousands – By Age Group – DCRP & ORP Members**

Age	Completed Years of Service											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+	
Under 25	294	146	74	15	30	-	-	-	-	-	-	-	-	559
25 to 29	1,163	1,916	1,004	1,576	545	-	-	-	-	-	-	-	-	6,204
30 to 34	863	2,015	1,312	1,749	2,716	145	-	-	-	-	-	-	-	8,800
35 to 39	822	1,426	1,035	1,829	2,719	918	25	-	-	-	-	-	-	8,774
40 to 44	528	1,544	659	1,905	2,142	1,438	157	-	-	-	-	-	-	8,373
45 to 49	656	1,355	1,015	1,375	1,960	871	290	115	-	-	-	-	-	7,637
50 to 54	474	909	404	1,080	1,435	613	196	39	130	-	-	-	-	5,280
55 to 59	201	669	531	445	449	251	110	-	47	-	-	-	-	2,703
60 to 64	83	256	103	184	67	36	42	-	-	-	-	-	-	771
65 to 69	60	13	-	8	8	-	-	-	-	-	-	-	-	89
70 & over	41	9	-	-	-	-	-	-	-	-	-	-	-	50
Totals	5,185	10,258	6,137	10,166	12,071	4,272	820	154	177	-	-	-	-	49,240

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-1**

**Active Members Distribution of  
Members and Salaries**

**as of June 30, 2005**

**Average Annual Salary – By Age Group – DCRP & ORP Members**

Age	Completed Years of Service											Average		
	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+	
Under 25	22,643	18,263	18,616	15,358	29,659	-	-	-	-	-	-	-	-	20,738
25 to 29	26,422	29,478	29,529	29,189	32,030	-	-	-	-	-	-	-	-	28,988
30 to 34	31,947	32,498	29,808	31,795	38,805	36,153	-	-	-	-	-	-	-	33,583
35 to 39	27,390	28,525	30,450	33,252	36,745	41,747	24,877	-	-	-	-	-	-	32,987
40 to 44	26,376	26,620	28,661	33,421	32,949	35,065	26,189	-	-	-	-	-	-	31,008
45 to 49	26,233	30,108	28,193	28,065	31,613	34,856	32,215	57,540	-	-	-	-	-	30,187
50 to 54	23,702	26,730	23,751	27,704	29,287	26,666	28,045	19,458	32,396	-	-	-	-	27,078
55 to 59	16,753	29,109	31,252	27,820	28,073	27,934	27,443	-	47,158	-	-	-	-	27,596
60 to 64	20,787	25,588	34,227	20,472	22,359	17,854	42,321	-	-	-	-	-	-	24,096
65 to 69	29,967	12,721	-	8,493	8,452	-	-	-	-	-	-	-	-	17,920
70 & over	20,586	9,313	-	-	-	-	-	-	-	-	-	-	-	16,828
Totals	26,050	28,735	28,949	30,261	33,718	33,909	29,298	38,499	35,348	-	-	-	-	30,303

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Table C-2**

**Distribution of Inactive Lives**

**Members Receiving Service Retirement Benefits as of June 30, 2005**

Age	Number of Persons	Annual Benefit in Thousands	Average Annual Benefits
Under 50	23	442	19,231
50 to 54	321	5,381	16,762
55 to 59	954	14,785	15,497
60 to 64	1,777	22,096	12,435
65 to 69	2,507	26,384	10,524
70 to 74	2,232	20,386	9,133
75 to 79	1,912	15,485	8,099
80 to 84	1,446	10,566	7,307
85 to 89	956	6,781	7,093
90 & over	425	2,913	6,855
<b>Total</b>	<b>12,553</b>	<b>125,219</b>	<b>9,975</b>

**Members Receiving Disability Retirement Benefits as of June 30, 2005**

Age	Number of Persons	Annual Benefit in Thousands	Average Annual Benefits
Under 50	55	426	7,737
50 to 54	104	758	7,289
55 to 59	159	1,241	7,806
60 to 64	148	1,028	6,946
65 to 69	112	680	6,072
70 to 74	83	494	5,954
75 to 79	69	493	7,138
80 to 84	42	316	7,513
85 to 89	19	201	10,591
90 & over	9	115	12,728
<b>Total</b>	<b>800</b>	<b>5,752</b>	<b>7,189</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Table C-2**

**Distribution of Inactive Lives**

**Survivors of Deceased Members Receiving Retirement Benefits as of June 30 2005**

Age	Number of Persons	Annual Benefit in Thousands	Average Annual Benefits
Under 50	121	612	5,054
50 to 54	69	380	5,506
55 to 59	116	965	8,319
60 to 64	120	1,077	8,975
65 to 69	198	1,722	8,695
70 to 74	265	2,330	8,791
75 to 79	292	2,188	7,494
80 to 84	329	2,344	7,124
85 to 89	237	1,632	6,884
90 & over	120	929	7,738
<b>Total</b>	<b>1,867</b>	<b>14,179</b>	<b>7,593</b>

**Terminated Vested Members as of June 30, 2005  
Number of Persons**

Age	Number
Under 25	-
25 to 29	12
30 to 34	50
35 to 39	176
40 to 44	323
45 to 49	560
50 to 54	626
55 to 59	460
60 to 64	167
65 to 69	31
70 & over	13
<b>Total</b>	<b>2,418</b>

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-3  
Active Membership Data History**

Valuation Date (June 30)	Active Members					
	Total Contributing Members	Annual Salaries in Thousands	Average Annual Salary	Average Age	Average Years of Service	Average Hire Age
1998	28,091	\$660,588	\$23,516	44.9	8.8	36.1
2000	29,500	739,831	25,079	45.4	8.8	36.6
2002	29,808	815,130	27,346	46.2	9.1	37.1
2004	28,201	831,564	29,487	47.3	9.8	37.5
2005	28,213	854,570	30,290	47.6	9.9	37.7



**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM  
ACTUARIAL VALUATION AS OF JUNE 30, 2005**

**Table C-4**

**Retired and Inactive Membership Data History**

Valuation Date (June 30)	All Annuitants			Terminated Members	
	Number	Annual Benefits in Thousands	Average Annual Benefit	Number Vested Terminated	Number Non-Vested Terminated
1998	12,924	87,115	6,741	1,653	8,474
2000	13,572	97,147	7,158	1,813	9,966
2002	14,116	115,613	8,190	2,150	10,944
2004	14,834	135,207	9,115	2,362	9,132
2005	15,220	145,150	9,537	2,418	8,153

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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**Appendix D**

**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 this System. Defined terms are capitalized throughout this Appendix.

- 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 Liability.
- Actuarial Gain or 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.
- Actuarial 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 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 Surplus:** The excess, if any, of the Actuarial Value of Assets over the Actuarial Liability.
- Actuarial Valuation:** The determination, as of a Valuation Date, of the Normal Cost, Actuarial Liability, Actuarial Value of Assets, and related Actuarial Present Values for a retirement plan.

**MONTANA PUBLIC EMPLOYEES' RETIREMENT SYSTEM**  
**ACTUARIAL VALUATION AS OF JUNE 30, 2005**

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<b>Actuarial Value of Assets:</b>	The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.
<b>Actuarial Equivalent:</b>	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
<b>Entry Age Cost Method:</b>	An actuarial cost method under which the Actuarial Present Value of 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 Liability.
<b>Normal Cost:</b>	The portion of the Actuarial Present Value of Projected Benefits which is allocated to a valuation year by the Actuarial Cost Method.
<b>Unfunded Actuarial Liability:</b>	The excess, if any, of the Actuarial Liability over the Actuarial Value of Assets.
<b>Valuation Date:</b>	June 30, 2005.