

**Pennsylvania Municipal
Retirement System**

**Actuarial Valuation
as of January 1, 2013**

Produced by **Cheiron**

May 2014

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May 1, 2014

Pennsylvania Municipal Retirement Board of the
Pennsylvania Municipal Retirement System
c/o James B. Allen, Secretary
P.O. Box 1165
Harrisburg, PA 17108-1165

Dear Members of the Board:

At your request, we have conducted the annual actuarial valuation of the Pennsylvania Municipal Retirement System (the System) as of January 1, 2013. The results of the valuation are contained in this report. The purpose of the valuation is discussed in the Foreword.

This report is prepared to present the annual actuarial valuation of the Pennsylvania Municipal Retirement System. It is for the use of the Pennsylvania Municipal Retirement Board and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. Any other user of this report is not an intended user and is considered a third party. This report contains analyses which combine asset and liability performance and projections. This is an Agent Multiple Employer retirement system (as defined under GASB 67/68) for participating municipalities and counties. Assets and liabilities are separately accounted for and reported to the Public Employee Retirement Commission of the Commonwealth of Pennsylvania. This report reflects aggregate valuation results for the System. The report provides statistics on employer contribution levels for the traditional defined benefit portion of the municipal plans participating in the system as of the valuation date, the updated methods and assumptions effective January 1, 2013, as well as required disclosures under the Governmental Accounting Standards Board Statement #25 for the entire System.

Your attention is called to the Foreword and Board Summary in which we refer to the general approach employed in the preparation of this report, a big picture view of the System, historical trends developed by Cheiron, and future stress testing of the System. Note the trend data developed prior to January 1, 2007 was developed by the prior actuary. We also comment on the sources and reliability of both the data and the actuarial assumptions on which our findings are based. Those comments are the basis for our certification that this report is complete to the best of our knowledge and belief. We rely on future System experience conforming to the underlying assumptions. To the extent that actual System experience deviates from the underlying assumptions, the results would vary accordingly.

In preparing our report, we relied without audit, on information (some oral and some written) supplied by the System. This information includes, but is not limited to, the plan provisions, employee data, and financial information.

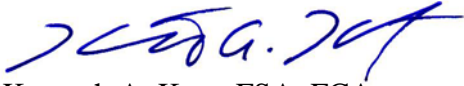
To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report.



Mr. James B. Allen
Pennsylvania Municipal Retirement Board of the
Pennsylvania Municipal Retirement System
May 1, 2014

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.

Sincerely,
Cheiron



Kenneth A. Kent, FSA, FCA
Principal Consulting Actuary



Karen Zangara, FSA
Principal Consulting Actuary

cc: Anthony J. Bucci, Jr.
Kristine Cline

PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM JANUARY 1, 2013 ACTUARIAL VALUATION REPORT

FOREWORD

Cheiron has performed the actuarial valuation of the Pennsylvania Municipal Retirement System (System) as of January 1, 2013. The purpose of this report is to:

- 1) **Measure and disclose**, as of the valuation date, the financial condition of the System;
- 2) **Indicate trends** in the financial progress of the System;
- 3) **Determine the average contribution rate** to be paid by the System's individual municipalities; and
- 4) **Provide specific information** and documentation required by the Governmental Accounting Standards Board (GASB).

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

Section I presents a summary containing our findings and disclosing important trends experienced by the System in recent years.

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

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

Section IV shows the distribution of the municipalities' contribution rates by component.

Section V includes the required disclosures under GASB Statement #25.

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

As this System is a multiple employer plan in which each of the participating municipalities are entitled to define and submit to the Board amendments to their benefit provisions for their respective employees, the actual plan provisions are not included in this report. We based our results on the plan provisions defined and submitted to the State under the 2013 Act 205 filings and 2012 Act 293 filings in preparing this valuation. The System is bound by Act 205 to complete a biennial valuation for each employer, but we have developed liabilities for 2013 for all plans in the System, which includes the four county plans, to provide an overall measure of the funded status of the System.

The account balances under the cash balance plans are guaranteed and the assumed return rate and account balances are typically converted to annuities at retirement. We have not included them in our actuarial determination of liabilities relative to the reserves held by PMRS for the *traditional* defined benefit plans. The account balances in these plans are equal to both the liabilities and statement of reserves for these plans as maintained by PMRS.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
JANUARY 1, 2013 ACTUARIAL VALUATION REPORT
FOREWORD**

In preparing our report, we relied without audit, on information (some oral and some written) supplied by the office of the System's staff. This information includes, but is not limited to, the plan provisions, employee data, and financial information. This report incorporates all data and updates sent to Cheiron by March 31, 2014 effective on January 1, 2013. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice #23. The actuarial assumptions reflect our understanding of the likely future experience of the System, and the assumptions as a whole represent our best estimate for the future experience of the System and underlying return guarantees made by PMRS to the participating employers. The results of this report are dependent upon future experience conforming to these assumptions. To the extent that future experience deviates from the actuarial assumptions, or there are any changes in plan provisions or applicable laws, the true cost of the System can be anticipated to vary from our results.

This actuarial report was prepared exclusively for the Pennsylvania Municipal Retirement System for the purpose of meeting the obligations of Act 205, the auditors in the development of their statements, and for Board consideration of the status of the System. This valuation report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

Finally, in preparing this report, we have conformed to generally 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. To the extent the laws of the Commonwealth of Pennsylvania and/or the administrative practices of the System differ from Actuarial Standards of Practice, we have identified such deviations within the assumption section of this report.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
JANUARY 1, 2013 ACTUARIAL VALUATION REPORT**

**SECTION I
BOARD SUMMARY**

General Comments

The primary purpose of the actuarial valuation and this report is to disclose the following as of the valuation date:

- The overall financial condition of the Pennsylvania Municipal Retirement System,
- Biennial valuation of the non-county plans participating in the System,
- Past trends and expected future trends in the System's financial condition, and
- Information required by the Governmental Accounting Standards Board (GASB).

In this Section, we present a summary of the principal valuation results. This includes the basis upon which the January 1, 2013 valuation was completed and an examination of the current financial condition of the System. In addition, we present a review of the key historical trends followed by the System's projected financial outlook.

The municipal plans are valued every other year. Throughout our report, our discussion will address changes from January 1, 2011, the last time the municipal plans were valued, to January 1, 2013 when discussing the funded status of the aggregation of these plans. In other parts of our discussion, we address the overall status of the System. In this case, we compare results from the 2012 plan year to 2013 to identify the changes in the overall System funded status.

A. Valuation Basis

The January 1, 2013 valuation results are based on the actuarial assumptions approved by the Board with the January 1, 2013 valuation. The Board approved a change in the actuarially assumed rate of return from 6.0% to 5.5% on November 28, 2012 effective January 1, 2013. Any municipal plan changes effective between January 2, 2011 and January 1, 2013 have been valued with this valuation. All results presented prior to January 1, 2007 are based on the valuation reports prepared by the prior actuary.

Below we identify key results of this valuation:

- *Unfunded Actuarial Liability (UAL)*: The UAL is the excess of the System's Actuarial Liability (AL) over the Actuarial Value of Assets (AVA). Because the System is made up of many plans, some with UAL and others with surplus (when the municipality's AVA is greater than the AL), the aggregate change of each of these values combined provides the net funded level of the System. In aggregate, the System is in a net deficit this year primarily due to the change in the assumed rate of return which results in a higher overall AL. As a result the surplus last year has decreased from \$65.6 million as of January 1, 2012 to a deficit of \$16.9 million as of January 1, 2013.
- On a snap shot basis comparing the Market Value of Assets (MVA) to AL provides information of the progress of the System's funding status. As of January 1, 2013 the AL exceeded the MVA resulting in an unfunded liability of \$241.6 million. This number has

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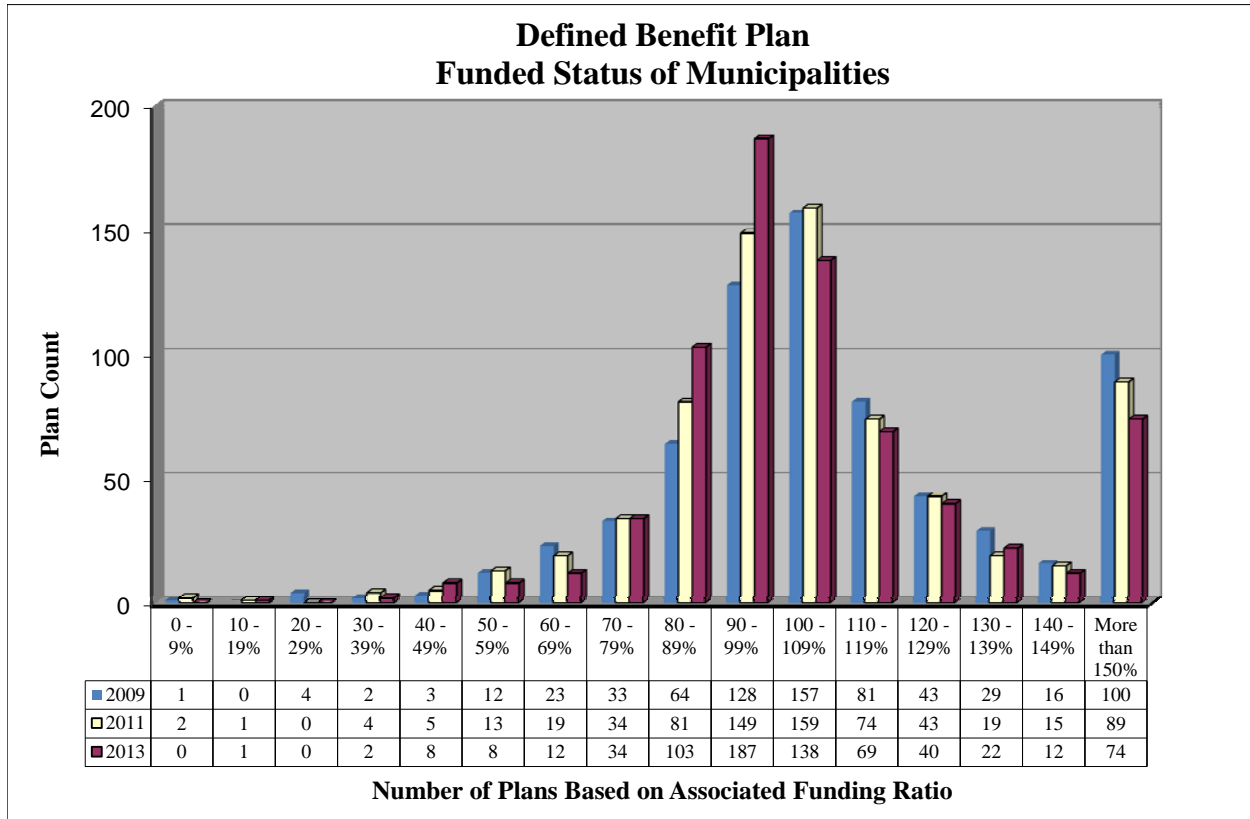
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- experienced a slight increase compared to the same measurement of AL to MVA as of January 1, 2012 of \$237.0 million or a net \$4.6 million dollar decrease in the funded level over the one year period on a market value basis due to the change in the actuarial assumptions from 6.0% to 5.5% and partially offset by favorable asset return above the 6.0% assumed rate for the year ending December 31, 2012 at 13.12%.
- *Funding Ratio:* This is the ratio of the System's assets to Actuarial Liability. Based on the AVA, the funding ratio decreased from 103.8% as of January 1, 2012 to 99.1% as of January 1, 2013. However, the ratio of MVA to AL actually increased from 86.3% to 87.3% reflecting actual growth of assets being greater than the actual growth of liabilities for the year ending December 31, 2012.
- *Assumption Change:* The assumptions for the defined benefit plans were based upon the Board's approval to change the actuarial rate of return from 6.0% to 5.5% effective January 1, 2013. The net impact of the adopted assumptions was a \$104.6 million increase in the aggregate Actuarial Liability and a \$5.3 million increase in the aggregate normal cost for all participating municipalities.

The following chart shows a distribution of the funded status of the plans covered by the System in 2011 and 2013. From this comparison, the distribution of funded status of the individual plans has decreased as compared to 2011 primarily due to an increase in the liabilities from the reduction in the assumption change. This can be seen by illustrating the funded status as of 2013 before and after the assumption change. We are comparing these results to the 2011 results because the traditional defined benefit non-county plans were last explicitly valued in 2011.

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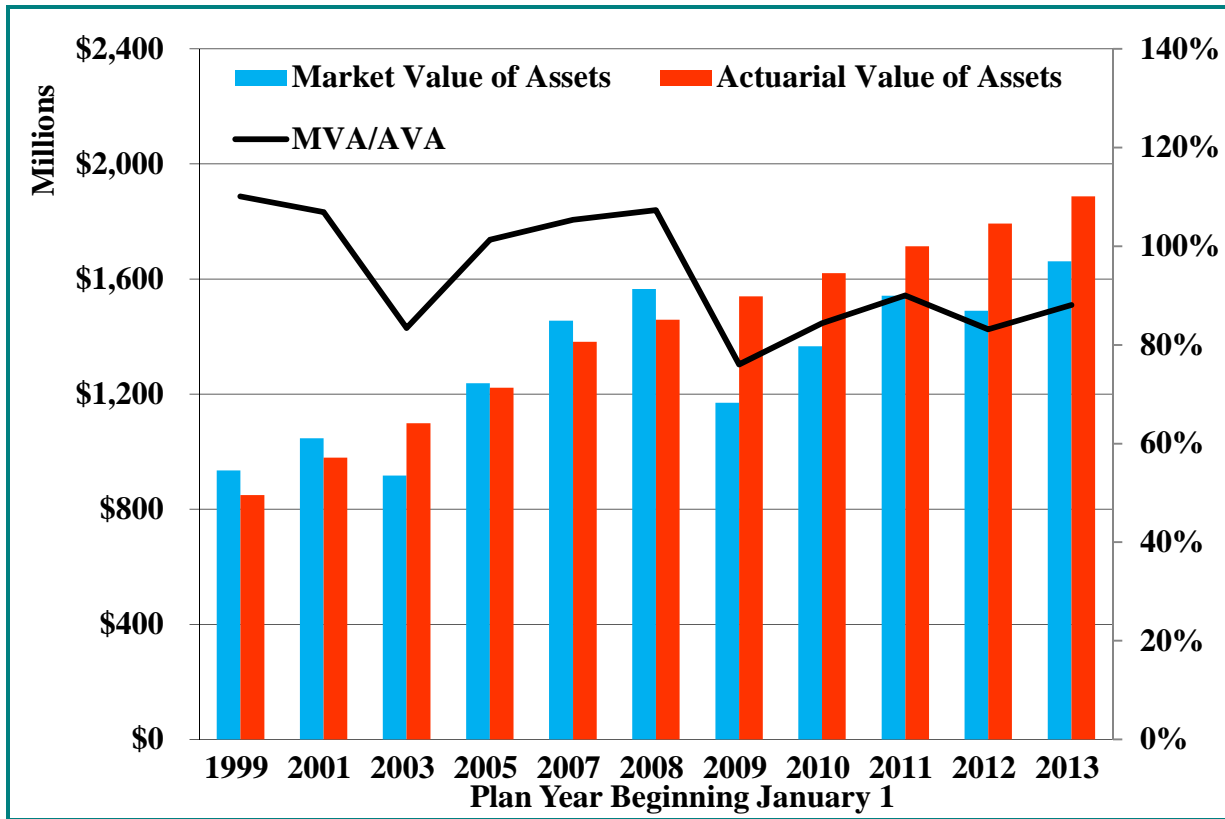
**SECTION I
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Along with the participating employer funded status progression is the relationship between the AVA and MVA. The AVA is defined as the reserves being held for all benefits of the participating employers and changes each year by the actual cash flows and the guaranteed return rate for the year. When compared to the actual or Market Value of Assets, any shortfall must be generated from future investment earnings in excess of the assumption. As a response to the recession and slow recovery, the guaranteed rate reduction from 6.0% to 5.5% was in part intended to help get the plan back to the pre-recession levels. The following table shows the historic relationship between the AVA and the MVA to demonstrate the progress being made in achieving this objective and reducing the underlying risk of the System.

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SECTION I
BOARD SUMMARY



**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION I
BOARD SUMMARY**

B. Current Financial Condition

On the following pages, we summarize the key results of the January 1, 2013 valuation and compare them to the January 1, 2012 valuation results.

1. System Membership:

As shown in Table I-1 below, total membership in the Retirement System increased by 1.2% from 2012 to 2013. The aggregate covered payroll of the System increased by 2.2% this year, while the average salary per active member increased by 5.2%.

Table I-1			
Membership Total			
	January 1, 2013	January 1, 2012	% Change
Traditional Defined Benefit Actives	7,599	7,836	-3.0%
Cash Balance Benefit Actives	1,131	1,158	-2.3%
Terminated Vesteds	1,149	973	18.1%
Participants Receiving Benefit Payments	4,160	3,899	6.7%
Beneficiaries	520	495	5.1%
Total System Members	14,559	14,361	1.4%
Annual Salaries*	\$420,787,345	\$411,893,822	2.2%
Average Salary per Active Member	48,200	45,797	5.2%

* Annualized salary for Defined Benefit plan participants and actual salary for Cash balance participants.

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Table I-2 summarizes demographic make-up of the System's traditional defined benefit and cash balance plans.

Category	Valuation as of		Percent Change
	January 1, 2013	January 1, 2012	
Table I-2 Demographic Make-up of the System			
Number of plans:			
Traditional Defined Benefit Plans	714	709	0.71%
Cash Balance Plans	251	240	4.58%
Active Employees in Traditional Defined Benefit Plans:			
Count	7,599	7,836	-3.02%
Average Age	48.2	48.1	0.15%
Average Service	13.1	12.9	1.24%
Total Payroll*	\$ 376,296,674	\$ 366,882,467	2.57%
Average Pay	\$ 49,519	\$ 46,820	5.76%
Active Employees in Cash Balance Plans:			
Count	1,131	1,158	-2.33%
Average Age	50.3	48.4	4.03%
Average Service	12.3	12.8	-4.22%
Total Payroll*	\$ 44,490,671	\$ 41,143,383	8.14%
Average Pay*	\$ 39,337	\$ 35,530	10.72%
Total Active PMRS Participants	8,730	8,994	
Inactive Participants in Traditional Defined Benefit Plans:			
Deferred Pension	800	723	10.65%
Return of Contributions	51	21	142.86%
Deferred Vested Participants in Cash Balance Plans	298	229	30.13%
Pensioners:			
Count	4,160	3,899	6.69%
Average Age	69.6	69.5	0.10%
Average Monthly Benefit	\$ 1,202	\$ 1,167	3.05%
Number of New Awards	391	438	-10.73%
Average New Monthly Benefit	\$ 1,370	\$ 1,367	0.22%
Number Receiving Legislated COLA	175	247	-29.15%
Survivor Beneficiaries:			
Count	520	495	5.05%
Average Age	73.2	73.3	-0.04%
Average Monthly Benefit	\$ 806	\$ 812	-0.76%
Total Inactive PMRS Participants	5,829	5,367	8.61%

* Actual salaries paid during the prior Plan year.

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2. System Assets and Liabilities:

Table I-3 presents a comparison between the January 1, 2012 and January 1, 2013 System assets, liabilities, UAL, and funding ratios for traditional defined benefit non-county, traditional defined benefit county, and cash balance plans. While this valuation was prepared to support the non-county plans, we were provided county participant data and estimated their liabilities for comparative purposes. The total funding ratio decreased from 103.8% as of January 1, 2012 to 99.1% as of January 1, 2013. However, using the market asset value as a measure of funded status there was improvement year over year from 86.3% to 87.3%.

The “Baseline” results as of January 1, 2013 on Table I-3 are based upon the 6.0% investment return assumption. The “Final” results are also provided, based upon the 5.5% investment return assumption.

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Table I-3 Total Plan Assets and Liabilities (\$ thousands)				
	Final January 1, 2013	Baseline January 1, 2013	January 1, 2012	% Change to Baseline
Traditional Defined Benefit (Non-county) Plans:				
Actives	\$ 982,801	\$ 915,680	\$ 981,147	-6.7%
Terminated Vesteds	70,734	65,393	49,284	32.7%
In Pay Status	673,113	645,287	533,317	21.0%
Total Actuarial Liability	\$ 1,726,648	\$ 1,626,360	\$ 1,563,748	4.0%
Actuarial Value of Assets ¹	1,722,290	1,694,464	1,556,444	8.9%
Unfunded/(Surplus) of Actuarial Liability	\$ 4,358	\$ (68,104)	\$ 7,304	-1032.4%
Traditional Defined Benefit (County) Plans:				
Actives	\$ 48,840	\$ 46,764	\$ 50,964	-8.2%
Terminated Vesteds	8,440	8,179	8,501	-3.8%
In Pay Status	34,691	33,252	30,927	7.5%
Total Actuarial Liability ²	\$ 91,971	\$ 88,195	\$ 90,392	-2.4%
Actuarial Value of Assets ¹	94,898	93,460	90,812	2.9%
Unfunded/(Surplus) of Actuarial Liability	\$ (2,927)	\$ (5,265)	\$ (420)	1153.6%
Cash Balance Plans:				
Actives	\$ 59,243	\$ 59,243	\$ 55,845	6.1%
Terminated Vesteds	11,441	11,441	8,935	28.0%
In Pay Status	14,269	13,686	8,297	65.0%
Total Actuarial Liability	\$ 84,953	\$ 84,370	\$ 73,077	15.5%
Actuarial Value of Assets ¹	84,953	84,370	73,077	15.5%
Unfunded/(Surplus) of Actuarial Liability	\$ 0	\$ 0	\$ 0	0.0%
Total of All Plans				
Actives	\$ 1,090,884	\$ 1,021,687	\$ 1,087,956	-6.1%
Terminated Vesteds	90,615	85,013	66,720	27.4%
In Pay Status	722,073	692,225	572,541	20.9%
Total Actuarial Liability	\$ 1,903,572	\$ 1,798,925	\$ 1,727,217	4.2%
Market Value of Assets	\$ 1,661,926	\$ 1,661,926	\$ 1,490,169	11.5%
Actuarial Value of Assets (summation of above) ¹	\$ 1,902,141	\$ 1,872,294	\$ 1,720,333	8.8%
Expenses in Excess of Assessment	3,126	3,126	2,842	10.0%
Actuarial Value of Asset Adjustment ³	(18,563)	11,284	69,634	-83.8%
Final Actuarial Value of Assets ⁴	\$ 1,886,704	\$ 1,886,704	\$ 1,792,809	5.2%
Unfunded/(Surplus) using Actuarial Value	\$ 16,868	\$ (87,779)	\$ (65,592)	33.8%
Funding Ratio on Actuarial Asset Value	99.1%	104.9%	103.8%	1.0%
Unfunded/(Surplus) using Market Asset Value	\$ 241,646	\$ 136,999	\$ 237,048	-42.2%
Funding Ratio on Market Asset Value	87.3%	92.4%	86.3%	7.1%

¹ The assets shown above are attributable to the traditional defined benefit, cash balance, non-county and county plans as of January 1, 2013 based upon updated data and information provided.

² The Actuarial Value of Asset Adjustment reflects an adjustment to the retiree reserve account to reflect the actual retiree liability as of January 1, 2013 and to the municipal reserve account for changes in the annual contributions and late payments.

³ The Final Actuarial Value of Assets reflect the December 31, 2012 asset value based upon Member, Municipal, Retiree and Disability reserve accounts, as approved by the Board and provided by PMRS.

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Table I-4 presents a summary of the January 1, 2013 traditional defined benefit plans that are in a surplus or underfunded position.

Table I-4		
Funded Status of Municipalities		
	January 1, 2013	January 1, 2011
A. Municipal Plans in a surplus position		
1. Number of plans with a surplus	355	397
2. Actuarial Value of Assets in plans with a	\$707,387,743	\$808,658,601
3. Actuarial Liability in plans with a surplus	<u>592,489,200</u>	<u>683,650,091</u>
4. Amount of surplus (2. – 3.)	\$114,898,543	\$125,008,510
B. Municipal Plans in an underfunded position		
1. Number of underfunded plans	355	305
2. Actuarial Value of Assets in underfunded plans	\$1,014,902,374	\$744,221,262
3. Actuarial Liability in underfunded plans	<u>1,134,159,207</u>	<u>834,805,427</u>
4. Amount of (unfunded) liability (2. – 3.)	(\$119,256,833)	(\$90,584,165)

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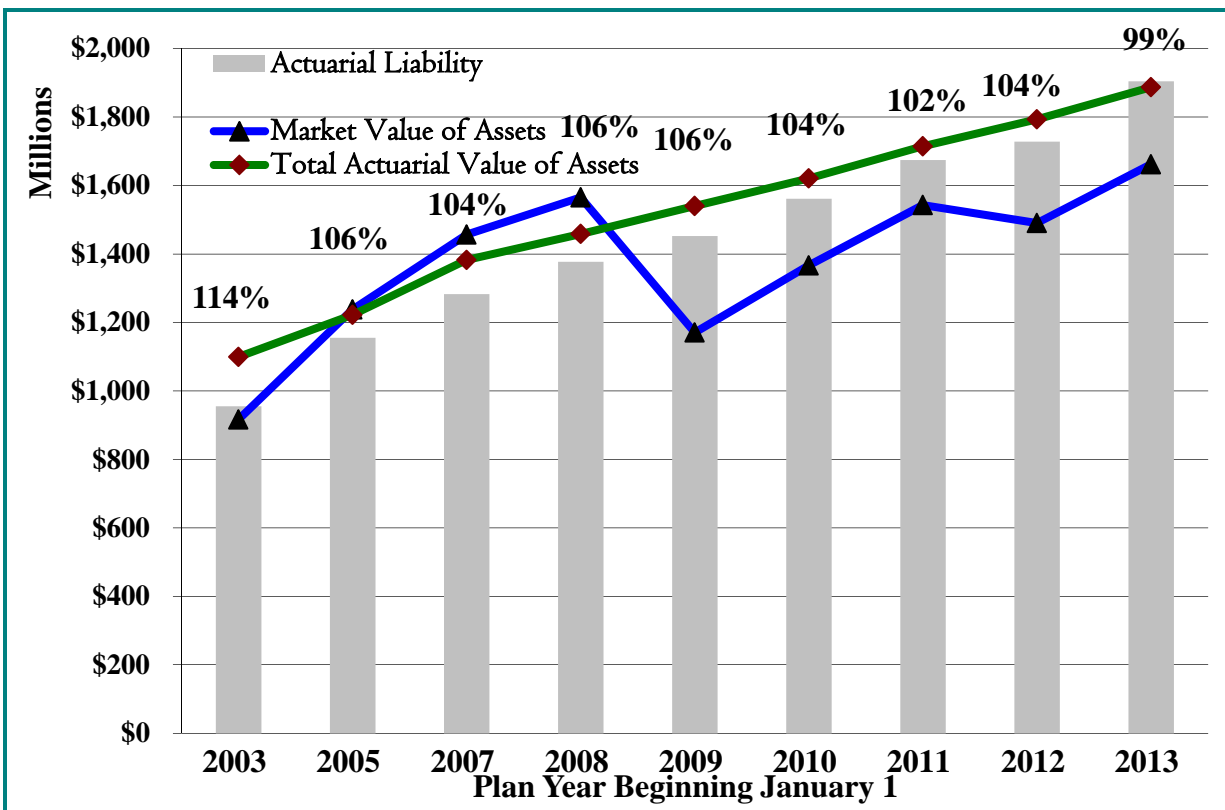
**SECTION I
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C. Historical Trends

Even though the attention given to the valuation reflects the most recently computed Actuarial Liability and funding ratio, it is important to remember that each valuation is merely a snapshot of the long-term progress of the System. It is equally important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

In the chart below, we present the historical trends for the total System (traditional defined benefit, cash balance, county and non-county) Market and Actuarial Value of Assets compared to the total System (traditional defined benefit, cash balance, county and non-county) Actuarial Liabilities. Additionally, we have included the funding ratio on an actuarial asset valuation basis to show the progress of the Retirement System since 2003.

Pennsylvania Municipal Retirement System Assets and Liabilities – 2003 to 2013

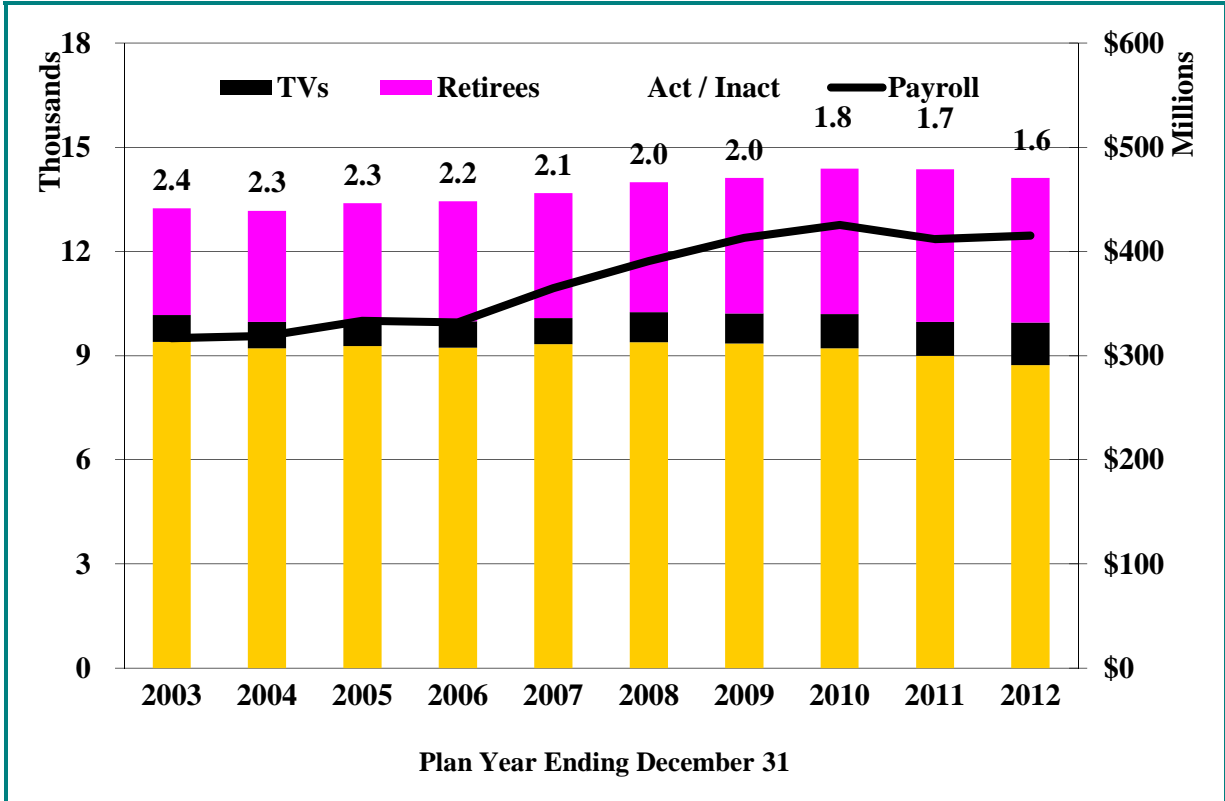


This graph demonstrates that the System's funding ratio (Actuarial Value of Assets divided by the Actuarial Liability) up to this year has remained relatively stable over the period and for the first time declined to below the 100% threshold for funding purposes. However, the 2013 Market Value of Assets while less than the Actuarial Liability and less than the AVA since the recession, is demonstrating a gradual recovery on a market value basis, with the funded ratio increasing to 87.3%.

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Pennsylvania Municipal Retirement System Participant Counts – end of year 2003 to 2012



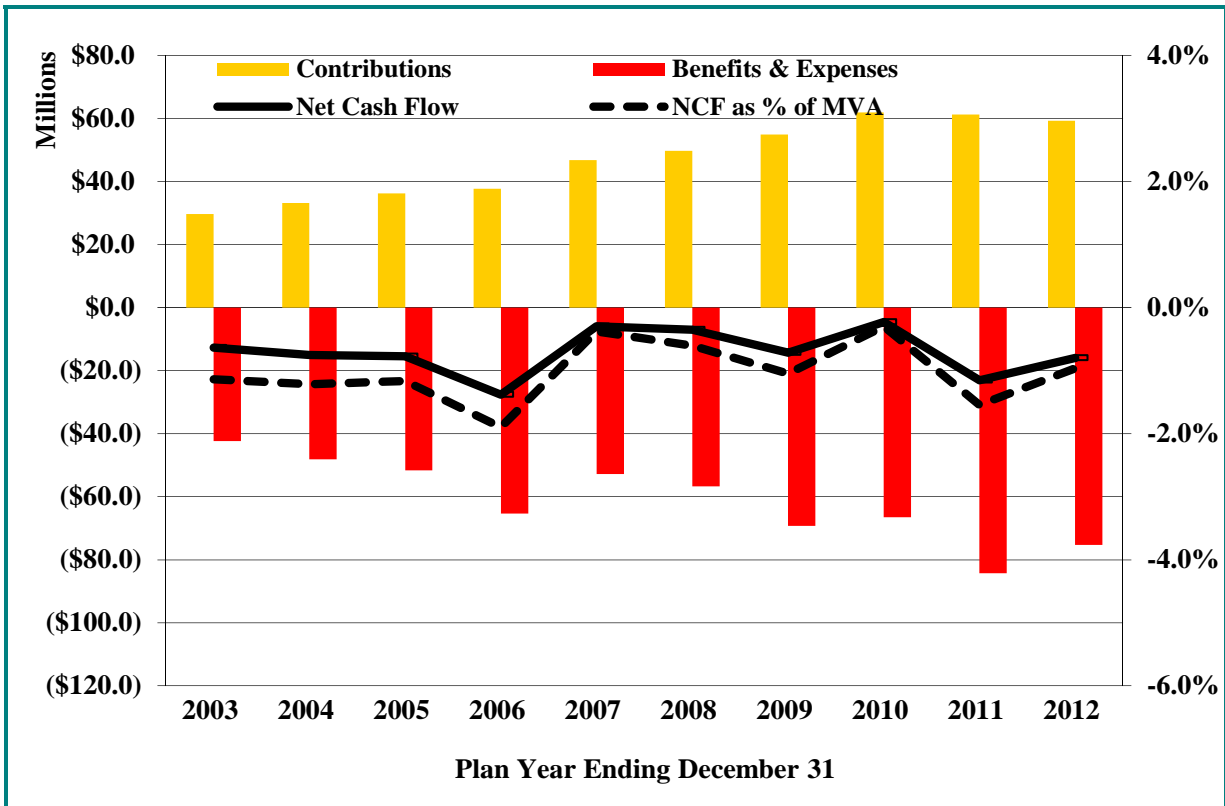
The chart above shows a comparison of the demographic makeup of the System over the last ten years. The number above the bars represents the ratio of active to inactive employees, which is decreasing at a gradual pace. A retirement system has a life cycle of its own, reaching maturity when as many or more of the covered participants are non-active (retirees and terminated vested participants (TVs)). When this occurs, the ratio moves closer to and sometimes below 1.0. For the System, the fact that this ratio is still relatively high indicates that contribution income is likely to continue to offset most of the benefit payments plus expenses resulting in relatively small negative cash flows at about 1.0% of assets.

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This next graph tracks the cash flow since 2003. An important risk element of a retirement system is the implication of cash flow and resources for paying benefits. If the level of benefit payments exceeds expected contributions, then additional cash from existing assets are needed to make the benefit payments. This is referred to as negative cash flow, which is typical among mature public retirement systems. On the right-hand side, we show the net cash flow as a percent of assets. As the graph below illustrates, the net negative cash flow currently falls at about 1.0% of total assets. This implies that along with proceeds from contributions, an additional amount of cash generated from asset investments must be identified to pay benefits. Another way to consider this is that for the total value of assets to grow, the fund needed a minimum return of approximately 1.0% before it can be anticipated to grow above the current value.

Pennsylvania Municipal Retirement System Cash Flows – 2003 through 2012



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D. Projected Financial Trends

Our analysis of the Pennsylvania Municipal Retirement System’s projected financial trends is an important part of this valuation. In this section, we present our assessment of the implications of the January 1, 2013 valuation results on the future outlook in terms of benefit security (assets over liabilities) and the System’s expected funding progression.

In the charts that follow, we project the Retirement System’s resources and obligations. We assume the Act 205 contributions are made each year. The projections are provided on two different bases:

- 1) Assuming 5.50% returns each and every year, and
- 2) Assuming returns shown in the table below. These are rates of return which vary each year but over the projection period equal on average the assumed 5.50% return. We do this because the System’s return will never be level from year to year.

Table I-5										
Projected Returns Equal to the Valuation Rate										
Fiscal Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Return	12.00%	15.00%	-10.00%	14.00%	11.00%	8.00%	-2.00%	4.00%	14.00%	-10.00%
Fiscal Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Return	6.00%	-10.50%	4.00%	7.50%	6.50%	14.00%	10.00%	7.00%	8.75%	6.90%

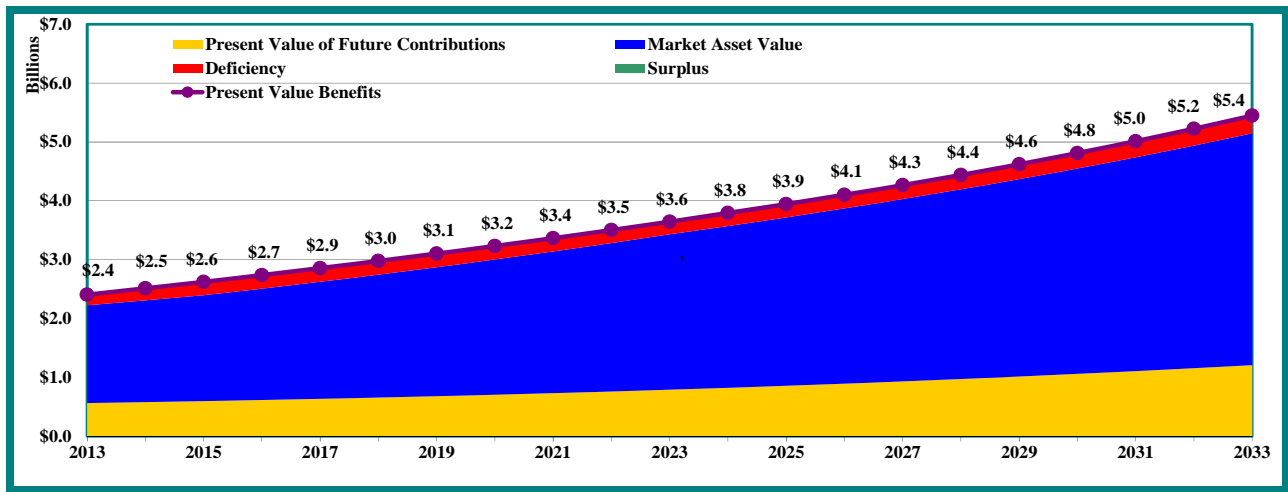
This first chart shows how the total projected obligations of the system assuming the current active population remains constant (shown by the purple line). That means when an active participant is expected to change status, they are assumed to be replaced. The area under the curve represents the *Present Value of Benefits*. This amount takes into account the value of all benefits earned up to this point of time – actuarial liability – plus benefits assumed to be earned into the future. This then represents the total PMRS obligation over time.

To meet this obligation, we have resources which include the MVA (in blue) and the present value of future contributions (in gold). To the extent these two sources are insufficient to meet the obligations today or in the future, the result will be a deficit (in red). If the resources are more than enough, the result will be a surplus (green).

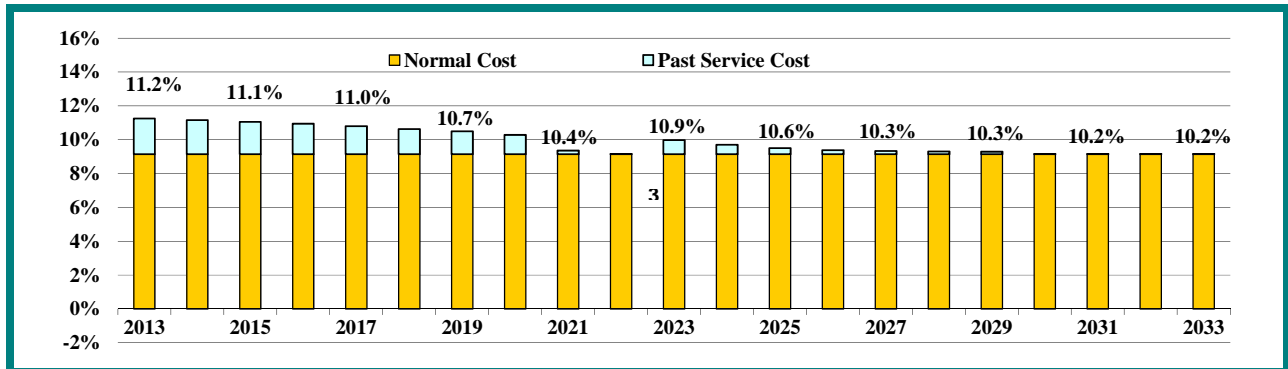
To the extent you have a deficit, under the PMRS system the only additional resource to meet the obligation is through additional investment earnings above the 5.50% crediting rate. The current deficit is equal to approximately \$179 million after reflecting the expected contributions in terms of a present value. This is a reflection of the risk of the system and defines the level of investment risk of the past as well the future risk and can only be decreased through positive investment performance in excess of the current 5.50% investment return guaranteed.

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**SECTION I
BOARD SUMMARY**



This next graph shows the projected aggregate average employer cost as a percent of pay. The values above the bars represent the net employer contribution rates as a percent of covered pay. The increase in cost in 2023 reflects the fact that those municipalities with surplus are projected exhaust the surplus which is spread over ten years, after which costs increase reflecting the balance of the funds with amortization charges that go out beyond ten years. Prior to 2023, amortization bases are expiring, causing a decrease in the cost as a percent of pay. The green bars that show up above or below the yellow bars reflect additional amortization of costs (or surplus) that increases (or offsets) the normal cost of benefits. Unfunded liabilities for applicable municipalities have been amortized based on actual reported amounts due.

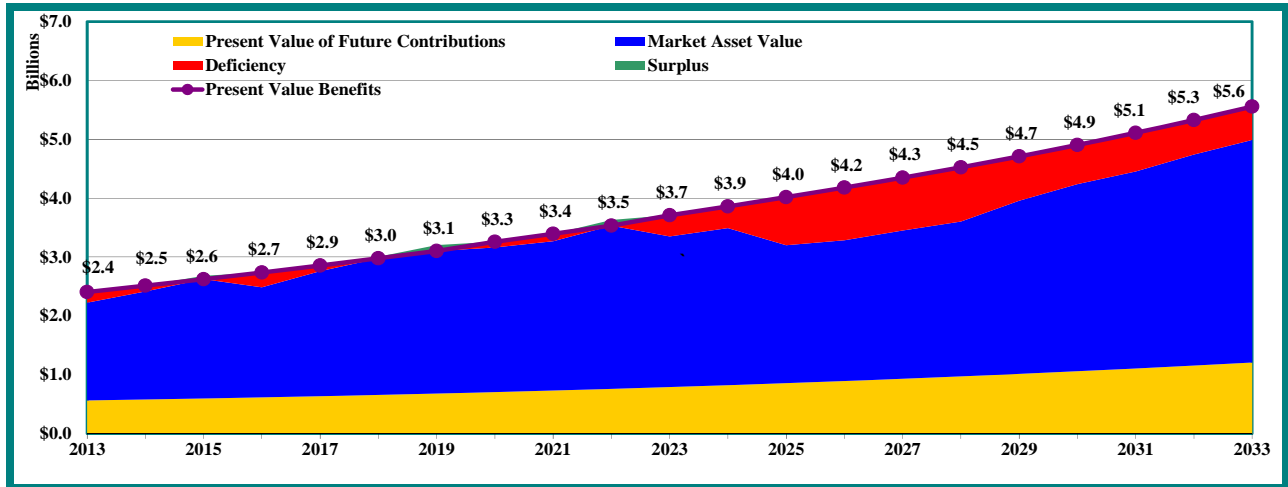


The System's return on assets each year will not exactly equal 5.50% each year but is expected, over the long run, to have a high likelihood of at least achieving this rate of return based on the Systems investment consultant. Using hypothetical future return rates in Table I - 5 above, which yield an average 5.50% rate of return over the projection period, the projected funded status will show higher and lower levels of funding when considering the MVA.

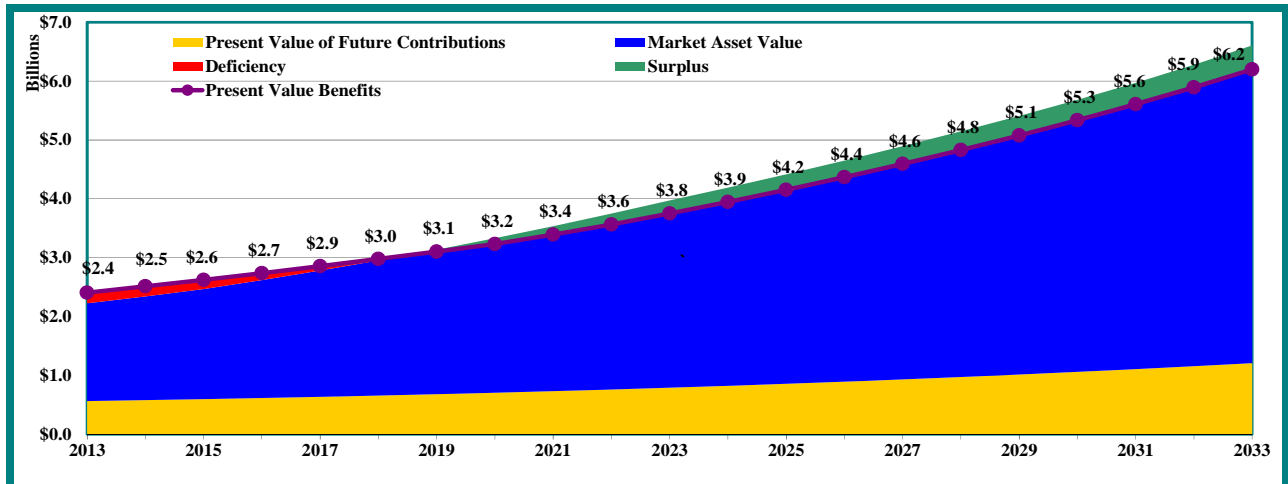
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**SECTION I
BOARD SUMMARY**

The following chart displays potential long term returns that result in an overall 5.50% return.



If the System’s return on assets each year yields 7.5% annually over the projection period, the projected funded status will show the fund in a surplus beginning in 2020 and increasing throughout the projection period.



**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION II
ASSETS**

The System’s assets play a key role in the financial operation and in the decisions the Board may make with respect to future deployments. The level of assets, the allocation among investment classes, and the methodology used to measure assets will likely impact upon benefit levels, Municipal and County contributions, and the ultimate security of participants’ benefits.

In this section, we present detailed information on total (municipal & county) System assets including:

- **Disclosure** of System assets at December 31, 2012 and December 31, 2011;
- Statement of the **changes** in market values during the year;
- Development of the **Actuarial Value of Assets**; and
- Allocation of **excess interest**.

Disclosure

The Market Value of Assets represents a “snap-shot” or “cash-out” value, which provides 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. As a result, market values are usually not suitable for long-range planning.

The Actuarial Value of Assets determines the funded ratio of the system.

Table II-1 summarizes assets at market value by asset class.

Table II-1				
Statement of Assets at Market Value December 31 (\$ Thousands)				
	2012		2011	
Assets				
Equity Investments	\$	1,040,179	\$	925,583
Accounts Receivable		3,537		4,162
Fixed Income Investments		379,859		331,853
Real Estate Investments		243,406		232,406
Fixed Assets		183		160
Accounts Payable		(1,853)		(1,754)
Investment Purchases Payable		(3,385)		(2,241)
Total Market Value of Assets	\$	1,661,926	\$	1,490,169

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**SECTION II
ASSETS**

Table II-2 summarizes the transaction of the assets during the year leading up to the valuation.

Table II-2		
Changes in Market Value in (\$ Thousands)		
Market Value of Assets – January 1, 2012		\$ 1,490,169
<u>Additions</u>		
Contributions:		
Plan Members	\$ 20,982	
Municipal Employers	37,974	
Assessments	298	
Total Contributions		\$ 59,254
Investment Income:		
Net Appreciation In Fair Value Of Investments	\$ 173,112	
Short-Term And Other Investments	122	
Common And Preferred Stock	9,845	
Real Estate Equity	7,420	
International Equities	3,913	
Miscellaneous Income	0	
Less Investment Expenses	(6,657)	
Net Investment Income		\$ 187,755
Total Additions		\$ 247,009
<u>Deductions</u>		
Annuity Benefits	\$ (63,390)	
Terminations	(8,438)	
Administrative Expenses	(3,424)	
Total Deductions		\$ (75,252)
Market Value of Assets – January 1, 2013		\$ 1,661,926

From the above table, it is important to recognize that benefit payouts plus expenses of \$75.3 million exceeds contribution income of \$59.3 million for a net negative cash flow of \$16.0 million which is best met through cash income from investments. The negative cash flow between contributions and benefit payments has been reduced compared to the negative \$23.0 million as of January 1, 2012 due primarily to a decrease in terminations.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION II
ASSETS**

Actuarial Value of Assets

The Actuarial Value of Assets is developed by the actuary based upon the individual municipal account balances maintained by PMRS. This asset valuation method also takes into account the calculation of *excess interest*, which is derived from income in excess of the long-term investment return assumption. The steps in the determination of the actuarial asset value as of December 31, 2012 are shown below. The difference between the Market Value of Assets and the Actuarial Value of Assets is considered the surplus. However, the Market Value of Assets is less than the reserves by \$224.8 million as of December 31, 2012. This represents 13.5% of the market value and, based on the funding structure of the System, is currently anticipated to be made up by future investment returns in excess of the long-term 5.50% investment assumption.

Table II-3	
Development of Actuarial Value of Assets (\$ Thousands)	
1. Prior Year Actuarial Value:	\$ 1,792,809
2. Total Audited Reserve Accounts:	\$ 1,883,578
3. Expected Administrative Expenses:	<u>3,126</u>
4. Preliminary Actuarial Value (2+3):	\$ 1,886,704
5. Current Year Market Value of Assets:	1,661,926
6. Prior Year Market Value of Assets:	1,490,169
7. New Surplus {Minimum of [(5-4)&(5-4)-(6-1)]}: <i>(Note: (5-4) is 1,886,704 and (6-1) is 1,490,169)</i>	(224,778)
8. Percentage of New Surplus Credited as Excess Interest: ^a	0.000%
9. Excess Interest (Maximum of 0 and (7x8)) available:	\$ 0
10. Excess Interest awarded	\$ 0
11. Current Year Actuarial Value of Assets (4+10):	\$ 1,886,704

^a See Table II-4b

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION II
ASSETS**

Excess Interest Allocation

Each year, municipalities may be eligible to receive a supplemental allocation of investment monies beyond the regular 5.50% interest rate. This “excess interest” award is derived as a portion of “new surplus” created during the year. “Surplus” refers to the excess of Market Value over the Actuarial Value of Assets. Once the preliminary Actuarial Asset Value has been determined, a formula is used to determine the new surplus. Depending on the relative size of surplus to market value “margin,” between 10% and 90% of new surplus will be designated as “excess interest.”

For the year ended December 31, 2012, there was no surplus because the Market Value of Assets is less than the Actuarial Value of Assets. The calculation in Table II-4a details the calculation leads to no excess interest for this year.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION II
ASSETS**

**Table II-4a
Determination of Excess Interest (\$ Thousands)**

1. Assets		
a. Market value	\$	1,661,926
b. Preliminary Actuarial Value		<u>1,886,704</u>
c. Available Surplus (1a. - 1b.)	\$	(224,778)
2. Reserves		
a. Members	\$	418,164
b. Municipal		767,943
c. Disability		519
d. Retired		696,826
e. DROP Participant Reserve Account		<u>126</u>
f. Total (2a. + 2b. + 2c. + 2d. + 2e.)	\$	1,883,578
3. Last year's surplus	\$	0
4. New surplus (1c. - 3.)	\$	(224,778)
5. Excess percent of New Surplus (see Table II-4b)		0.000%
6. Excess Interest Awarded	\$	0
7. Percent of reserve {6. / (2f. - 2c.)}		0.00%
8. Trial Surplus (1c. - 6.)	\$	(224,778)
9. Trial margin percent {8. / 1a.}		0.00%

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION II
ASSETS**

Table II-4b Determination of Excess Percent of New Surplus (\$ Thousands)	
1. Market Value of Assets	\$ 1,661,926
2. Available Surplus	\$ 0
3. Margin (2. / 1.)	0.00%
4. New Surplus	\$ 0
5. New Margin (4. / 1.)	0.00%
6. Excess Percent (10% + 8*3.) / (100% + 8*5.)	0.00%

Because there is a net deficit, there is no excess interest to award to participating municipalities.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION III
LIABILITIES**

Disclosure

The Actuarial Liabilities are used for funding calculations and GASB disclosures. This liability is calculated taking the present value of benefits less the present value of future normal costs under the **Entry Age Normal** funding method.

The following table presents the defined benefit Municipal Plan liabilities for the 2013 valuation and the prior year results.

Table III-1		
Obligation Deficit/(Surplus) Analysis of All PMRS Plans		
	January 1, 2013	January 1, 2012
<u>Present Value of All Benefits - Total Obligation</u>		
Active Participant Benefits	\$ 1,592,032,950	\$ 1,503,369,479
Retiree and Inactive Benefits	<u>812,688,102</u>	<u>639,260,852</u>
Present Value of Benefits (PVB)	\$ 2,404,721,052	\$ 2,142,630,331
Present Value of Future Contributions	(563,527,123)	(446,995,212)
Municipal Market Value of Assets (MVA)	<u>(1,661,926,239)</u>	<u>(1,490,169,104)</u>
Net (Surplus)/Deficit of Resources to Obligation (PVB + PVFNC + MVA)	\$ 179,267,689	\$ 205,466,015
<u>Actuarial Liability</u>		
Present Value of Benefits (PVB)	\$ 2,404,721,052	\$ 2,142,630,331
Present Value of Future Normal Cost Contributions (PVFNC)	<u>(501,148,991)</u>	<u>(415,413,062)</u>
Actuarial Liability (AL = PVB + PVFNC)	\$ 1,903,572,061	\$ 1,727,217,269
Municipal Actuarial Value of Assets (AVA)	<u>(1,886,703,664)</u>	<u>(1,792,809,433)</u>
Net Unfunded/(Surplus) (AL + AVA)	\$16,868,397	\$ (65,592,164)

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION IV
CONTRIBUTIONS**

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what contributions are needed based upon the funding policy established for 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 each of the plans covered by the System, the funding cost method as stipulated by law to be applied in the determination of the liability is the **Entry Age Actuarial Cost Method**. Based upon this cost method, the statutory methods for funding any unfunded liability, there are three components that are used to determine the total contribution: the **normal cost**, the amortization of **initial unfunded actuarial liability**, and any amortizations of **increases/decreases in the unfunded actuarial liability / or adjustment for surplus** expressed as a percent of payroll.

For plans with a surplus, the contribution rate is the normal cost offset by 10% of the surplus again expressed as a percent of payroll. This report provides an analysis of the aggregate assets and liabilities but not the aggregation of the Minimum Municipal Obligations required for each participating municipality covered by 2013 Act 205 forms as the combination of underfunded and surplus plans would not necessarily be informative in reviewing the overall funded status of the System.

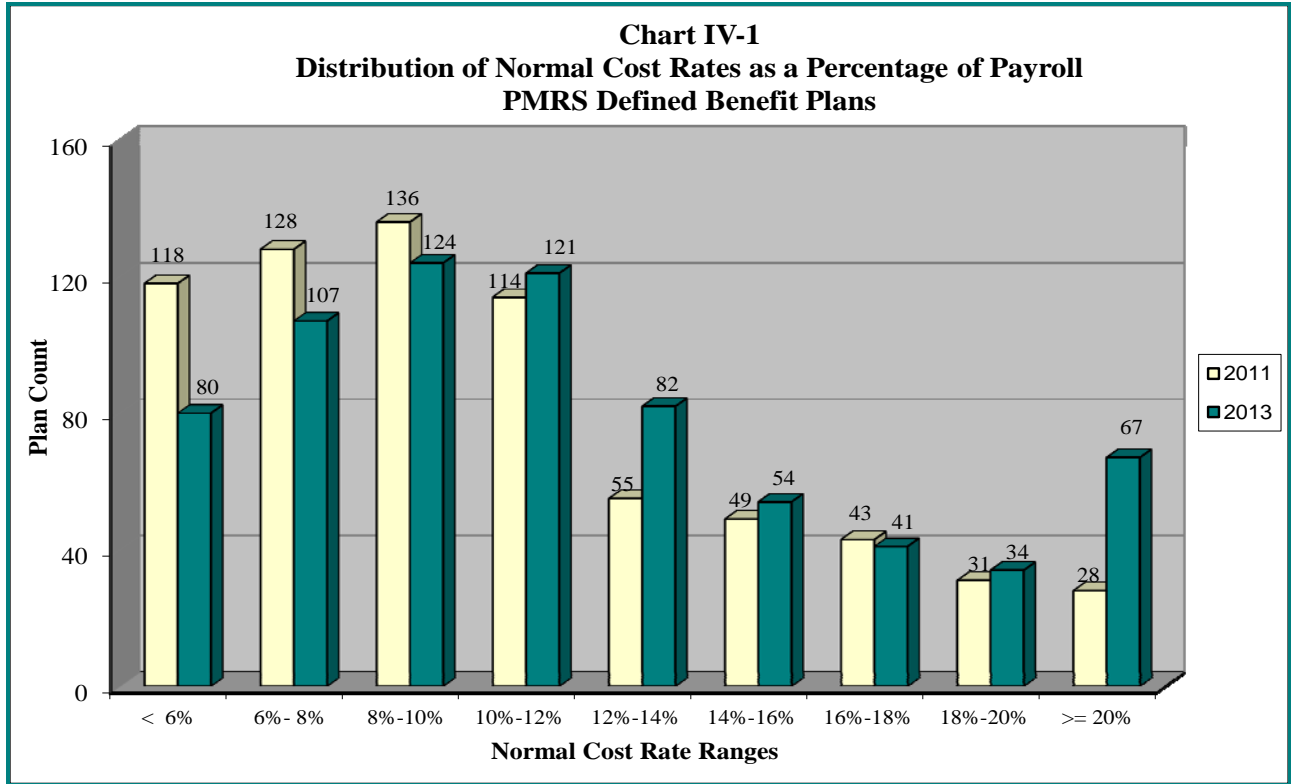
Below, we describe the cost components and provide graphically the distribution of costs among the participating municipalities.

The normal cost rate (i.e., normal cost as a percent of payroll) is determined in the following steps. First, for a typical new entrant an individual normal cost rate is determined by taking the value, as of entry age into the plan, of that member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate. If a plan provides for a Separate Member Annuity through required member contributions, this amount is then added to the total normal cost rate to determine the final total normal cost rate.

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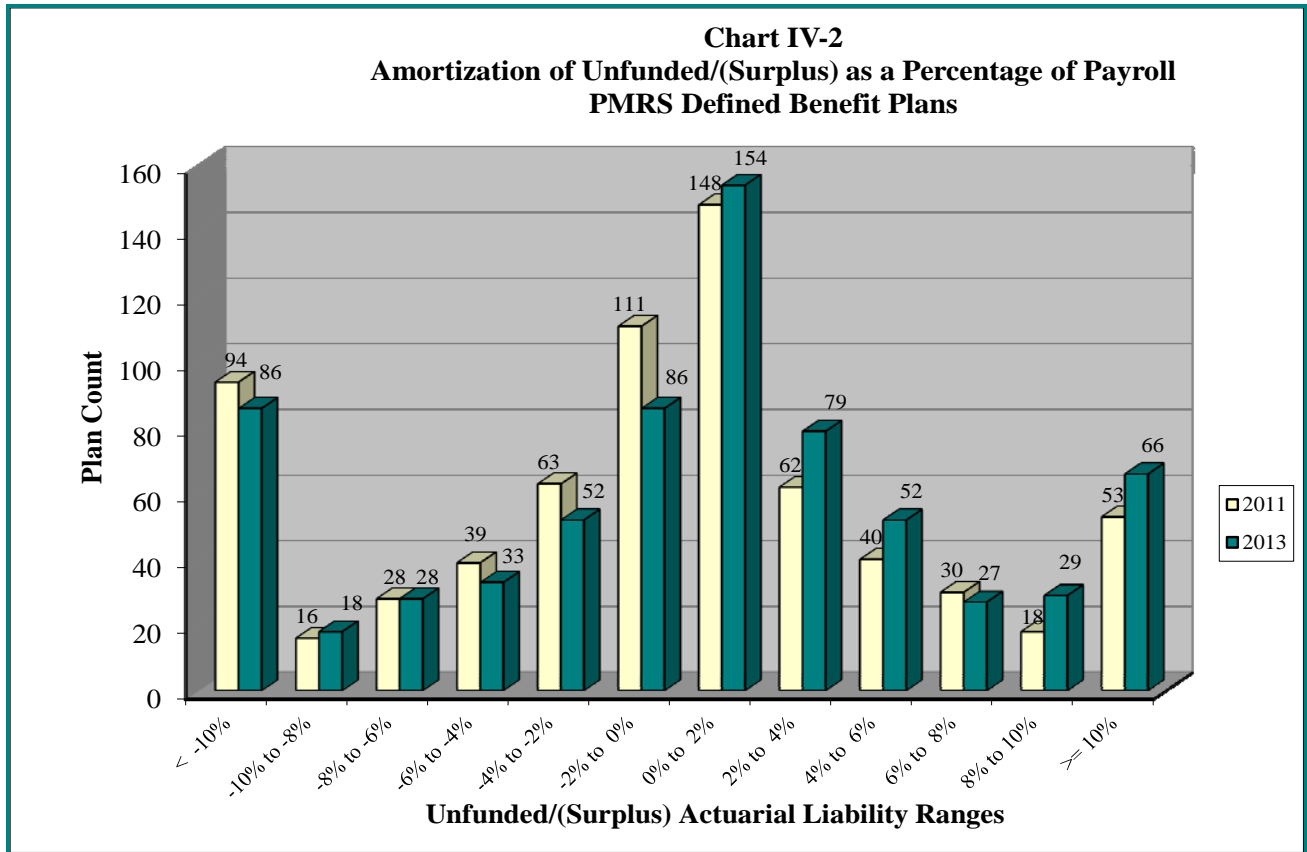
The chart below is a summary of the normal cost rates determined for the traditional defined benefit plans, including plans that have no normal cost because there are no active participants, as of January 1, 2011 and January 1, 2013 for trend comparison. The overall shift higher in normal cost rates from 2011 to 2013 is a function of the decrease in the interest rate from 6.00% to 5.50%.



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**SECTION IV
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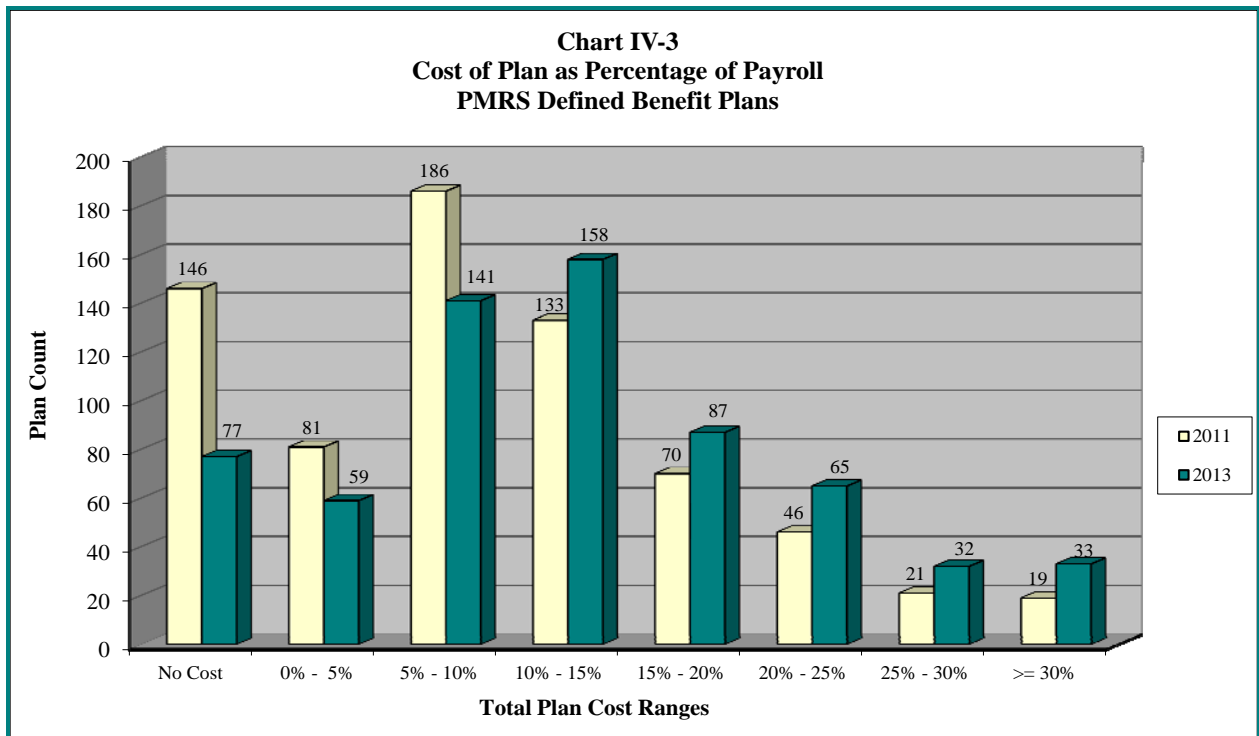
Chart IV-2 below is a summary of the unfunded/(surplus) actuarial liability amortization costs defined as a percent of covered payroll of each plan’s active members, determined for the traditional defined benefit plans as of January 1, 2011 and January 1, 2013 for trend comparison. The observable shift again is a function of the change in interest rates.



**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION IV
CONTRIBUTIONS**

Chart IV-3 below is a summary of the total costs as a percentage of covered payroll, representing the sum of the normal cost and amortization of unfunded/(surplus) determined for the defined benefit plans as of January 1, 2011 and January 1, 2013 for trend comparison. For 2013, there are 57 plans that have no payroll because there are no active participants. These plans are all listed in the “No Cost” category along with the plans that are fully funded. Five of these plans are currently underfunded and are required to amortize the cost of the unfunded actuarial liability through continued contributions.



**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Statement No. 25 of the Governmental Accounting Standards Board (GASB) establishes standards for disclosure of pension information by public employee retirement systems (PERS) and governmental employers in notes to financial statements and supplementary information.

The GASB-25 actuarial liability is the same as the actuarial liability amount calculated for funding purposes.

The actuarial liability (GASB-25) is determined assuming that the System 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 5.50% per annum.

GASB Statement No. 25 requires the Actuarial Liability be compared with the Actuarial Value of Assets for funding purposes. The relevant amounts as of January 1, 2013 are exhibited in Table V-1.

Tables V-2 through V-7 are exhibits to be used with the System's CAFR report:

- Table V-2 is the Note to Required Supplementary Information;
- Table V-3 is the Solvency Test, which shows the portion of Actuarial Liability covered by Assets;
- Table V-4 is the Funded Status of Actuarial Liabilities;
- Table V-5 is the Schedule of Retirees and Beneficiaries;
- Table V-6 is the Schedule of Total Membership; and
- Table V-7 is the Schedule of Total Membership Funded Status of Actuarial Liabilities.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

Table V-1		
Accounting Statement Information		
	January 1, 2013	January 1, 2012
A. GASB No. 25 Basis¹		
1. Actuarial Liabilities for retirees and beneficiaries currently receiving benefits and terminated not yet receiving benefits	\$ 812,688,102	\$ 639,260,852
2. Actuarial Liabilities for current employees	<u>1,090,883,959</u>	<u>1,087,956,417</u>
3. Total Actuarial Liability (1. + 2.)	\$ 1,903,572,061	\$ 1,727,217,269
4. Net Final Actuarial Assets available for benefits	<u>1,886,703,664</u>	<u>1,792,809,433</u>
5. Unfunded/(Surplus) Actuarial Liability (3. - 4.)	\$ 16,868,397	\$ (65,592,164)

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**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	January 1, 2013
Actuarial cost method	Entry age
Amortization method	Level dollar for Plan Bases and average for Aggregate Gain/Loss, 10% of surplus is credited against aggregate cost where applicable
Actuarial assumptions:	
Investment rate of return*	5.50%
Projected salary increases*	3.0%-8.3%
*Includes inflation at	3.0%
Cost-of-living adjustments	ad hoc

The actuarial assumptions used have been recommended by the actuary and adopted by the System's Board based on the most recent review of the System's experience completed in 2010.

The rate of employer contributions to the System is composed of the normal cost, amortization of the unfunded Actuarial Liability and an allowance for administrative expenses. The normal cost is a level percent of payroll cost which, along with member contributions, will pay for projected benefits at retirement for the average plan participant. The Actuarial Liability is that portion of the present value of projected benefits that will not be paid by future employer normal costs or member contributions. The difference between this liability and the funds accumulated as of the same date is the unfunded Actuarial Liability. The allowance for administrative expenses is based upon the System's actual administrative expenses.

**PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM
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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

**Table V-3
SOLVENCY TEST
Aggregate Accrued Liabilities for**

Valuation Date January 1,	Active Member Contributions (1)*	Retirees & Beneficiaries (2)	Active Member Employer Financed Contributions (3)	Actuarial Value of Reported Assets	Portion of Accrued Liabilities Covered by Reported Assets		
					(1)	(2)	(3)
2013	\$418,163,830	\$812,688,102	\$672,720,129	\$1,886,703,664	100%	100%	97%
2012	407,199,633	639,260,852	680,756,784	1,792,809,433	100%	100%	110%
2011	395,048,320	655,645,661	623,210,164	1,713,751,974	100%	100%	106%
2010	348,126,106	589,362,501	622,868,929	1,620,150,779	100%	100%	110%
2009	333,142,928	538,733,517	579,760,819	1,540,152,742	100%	100%	115%
2008	321,567,969	461,965,617	593,667,414	1,458,148,442	100%	100%	114%

* This includes the sum of the active member employee contribution balances, the member separate annuity account balances, the municipal for separate annuity account balances, and the excess interest allocations.

**Table V-4
Funded Status of Actuarial Liabilities
GASB Statement No. 25 Disclosure**

Valuation Date January 1,	Actuarial Value of Assets (A)	Actuarial Liability (AL) Entry Age (B)	Unfunded AL (Surplus) (B-A)	Funded Ratio (A/B)
2013	\$1,886,703,664	\$1,903,572,061	\$16,868,397	99.1%
2012	1,792,809,433	1,727,217,269	(65,592,164)	103.8%
2011	1,713,751,974	1,673,904,145	(39,847,829)	102.4%
2010	1,620,150,779	1,560,357,536	(59,793,243)	103.8%
2009	1,540,152,742	1,451,637,264	(88,515,478)	106.1%
2008	1,458,148,442	1,377,201,000	(80,947,442)	105.9%

The actuarial assumptions as of January 1, 2013 are shown in the assumptions and methods section. The above information was derived from the following membership data, as provided by the System, regarding:

Valuation Date	Valuation of Defined Benefit Liabilities		Cash Balance Plans
	Explicit Valuation	Roll-Forward	
January 1, 2013	710	4	251
January 1, 2012	4	705	240
January 1, 2011	702	5	229
January 1, 2010	5	691	202
January 1, 2009	691	5	203
January 1, 2008	4	688	183

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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

The table below is a schedule of the changes to the retiree and beneficiary rolls over the last six years.

Valuation Date	Average			Average			Annual Annuities	Percentage Increase in Annuities	Average Annual Annuities	Percent Increase in Average Annuities
	Added	Annual Annuities Added	Annual Benefit Increase	Deleted from roll	Annual Annuities Removed	Number on roll				
January 1, to roll										
2013	391	\$16,440	\$443	105	\$8,288	4,680	\$65,046,544	9.5%	\$13,899	2.8%
2012	438	16,404	885	228	14,252	4,394	59,411,245	7.5%	13,521	2.4%
2011	396	18,624	432	121	8,981	4,184	55,257,189	13.0%	13,207	5.6%
2010	296	16,030	623	137	9,458	3,909	48,897,954	7.7%	12,509	3.3%
2009	271	13,883	790	119	11,494	3,750	45,414,210	5.9%	12,110	1.6%
2008	236	12,780	362	97	8,921	3,598	42,895,559	7.6%	11,922	3.4%

The table below is a summary of the total membership over the last six years.

Valuation Date	Active Members:		Deferred Pensions	Inactive Members	Total
	Defined Benefit	Cash Balance			
January 1,					
2013	7,599	1,131	4,160	520	14,559
2012	7,836	1,158	3,899	495	14,361
2011	8,091	1,119	3,707	477	14,381
2010	8,357	994	3,449	460	14,117
2009	8,411	978	3,289	461	13,986
2008	8,383	950	3,173	425	13,682

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**SECTION V
ACCOUNTING STATEMENT INFORMATION**

The table below is a summary of the total membership over the last four years.

Table V-7 Schedule of Total Membership Funded Status of Actuarial Liabilities				
	2013	As of January 1^a		2010
		2012	2011	
a. Retirees currently receiving benefits	4,160	3,899	3,707	3,449
b. Beneficiaries currently receiving benefits	520	495	477	460
c. Terminated vested employees entitled to future benefits from Defined Benefit Plans	800	723	711	647
d. Terminated non-vested employees entitled to contribution refunds from Defined Benefit Plan:	51	21	42	23
e. Active employees in defined benefit plans	7,599	7,836	8,091	8,357
i. Aggregate Salary ^b	\$376,296,674	\$366,882,467	\$383,802,844	\$377,960,930
ii. Vested ^c	4,885	4,964	4,992	5,025
iii. Non-vested	2,715	2,872	3,099	3,333
f. Participants in cash balance plans	1,429	1,387	1,353	1,181
i. Aggregate Salary	\$44,490,671	\$41,143,383	\$41,683,065	\$35,104,086
ii. Active	1,131	1,158	1,119	994
iii. Inactive	298	229	234	187

a Includes defined benefit non-county plans, defined benefit county plans, and cash balance plans

b Actual salary for preceding valuation date

c Count of vested participants estimated based on service as of the valuation date

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**APPENDIX A
MEMBERSHIP INFORMATION**

**Distribution of All Active Members
by Age and Service as of January 1, 2013**

COUNTS BY AGE/SERVICE

Age	Service										Total
	1 year or less	1 to 2	2 to 3	3 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 & up	
Under 20	7	0	0	0	0	0	0	0	0	0	7
20 to 24	83	37	19	23	6	0	0	0	0	0	168
25 to 29	93	66	74	106	111	4	0	0	0	0	454
30 to 34	73	52	56	99	246	96	1	0	0	0	623
35 to 39	69	40	46	108	230	198	52	1	0	0	744
40 to 44	68	56	52	112	246	280	166	89	5	0	1,074
45 to 49	66	55	53	95	293	269	204	203	79	11	1,328
50 to 54	67	48	52	91	265	262	211	238	163	163	1,560
55 to 59	40	47	48	86	250	252	212	193	142	272	1,542
60 to 64	17	21	22	47	137	128	111	141	92	160	876
65 & up	10	6	6	17	58	74	48	59	27	49	354
Total	593	428	428	784	1,842	1,563	1,005	924	508	655	8,730

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**Distribution of Active Defined Benefit Members
by Age and Service as of January 1, 2013**

COUNTS BY AGE/SERVICE

Age	Service										Total
	1 year or less	1 to 2	2 to 3	3 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 & up	
Under 20	6	0	0	0	0	0	0	0	0	0	6
20 to 24	77	30	17	21	6	0	0	0	0	0	151
25 to 29	89	59	64	98	96	3	0	0	0	0	409
30 to 34	57	48	54	91	222	91	1	0	0	0	564
35 to 39	57	34	43	93	202	180	46	1	0	0	656
40 to 44	54	45	45	100	217	248	151	84	3	0	947
45 to 49	50	45	50	76	259	232	182	187	69	8	1,158
50 to 54	58	34	41	80	233	225	175	217	149	153	1,365
55 to 59	30	38	40	67	218	212	173	172	133	244	1,327
60 to 64	13	16	14	37	118	107	90	126	78	137	736
65 & up	7	4	5	17	50	62	35	41	22	37	280
Total	498	353	373	680	1,621	1,360	853	828	454	579	7,599

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**Distribution of Active Cash Balance Members
by Age and Service as of January 1, 2013**

COUNTS BY AGE/SERVICE

Age	Service										Total
	1 year or less	1 to 2	2 to 3	3 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 30	30 & up	
Under 20	1	0	0	0	0	0	0	0	0	0	1
20 to 24	6	7	2	2	0	0	0	0	0	0	17
25 to 29	4	7	10	8	15	1	0	0	0	0	45
30 to 34	16	4	2	8	24	5	0	0	0	0	59
35 to 39	12	6	3	15	28	18	6	0	0	0	88
40 to 44	14	11	7	12	29	32	15	5	2	0	127
45 to 49	16	10	3	19	34	37	22	16	10	3	170
50 to 54	9	14	11	11	32	37	36	21	14	10	195
55 to 59	10	9	8	19	32	40	39	21	9	28	215
60 to 64	4	5	8	10	19	21	21	15	14	23	140
65 & up	3	2	1	0	8	12	13	18	5	12	74
Total	95	75	55	104	221	203	152	96	54	76	1,131

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**Inactive Benefit Payment Distribution
as of January 1, 2013**

COUNTS BY BENEFIT/AGE: RECEIVING PAYMENTS

Age	Monthly Benefit	Count
x < 30	\$2,789	4
30 <= x < 35	\$6,370	11
35 <= x < 40	\$8,571	15
40 <= x < 45	\$10,080	24
45 <= x < 50	\$31,799	49
50 <= x < 55	\$183,407	126
55 <= x < 60	\$643,004	393
60 <= x < 65	\$1,247,406	828
65 <= x < 70	\$1,318,231	1,058
70 <= x < 75	\$836,421	780
75 <= x < 80	\$548,473	608
80 <= x < 85	\$329,540	406
85 <= x	\$254,454	378
<Total>	\$5,420,545	4,680

COUNTS BY BENEFIT/AGE: DEFERRED PAYMENTS

Age	Monthly Benefit	Count
x < 30	\$1,999	7
30 <= x < 35	\$7,908	20
35 <= x < 40	\$21,447	40
40 <= x < 45	\$67,179	95
45 <= x < 50	\$126,549	149
50 <= x < 55	\$166,458	202
55 <= x < 60	\$189,753	225
60 <= x < 65	\$31,359	51
65 <= x < 70	\$3,934	7
70 <= x < 75	\$1,355	3
75 <= x < 80	\$0	0
80 <= x < 85	\$0	0
85 <= x	\$256	1
<Total>	\$618,197	800

Deferred payments listed above are attributable to defined benefit plans only. Deferred payments to the 234 cash balance participants will be determined upon retirement.

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Pensions in Payment on January 1, 2013 by Type and Amount						
Monthly Amount	Total	Pension Type				
		Normal	Involuntary early	Voluntary early	Service disability	Non-service disability
Total	4,680	3,885	241	441	35	78
Under \$100	232	199	23	8	1	1
\$ 100 - \$199	291	235	40	15	1	0
200 - 299	285	218	42	24	1	0
300 - 399	302	246	24	29	0	3
400 - 499	270	221	17	30	2	0
500 - 599	296	244	17	27	1	7
600 - 699	235	193	11	25	1	5
700 - 799	242	185	13	35	0	9
800 - 899	220	171	8	27	1	13
900 - 999	206	157	11	25	3	10
1,000 - 1,199	395	318	12	46	7	12
1,200 - 1,399	301	243	7	40	4	7
1,400 - 1,599	244	203	6	25	7	3
1,600 - 1,799	187	165	3	17	2	0
1,800 - 1,999	173	150	4	16	0	3
2,000 - 2,199	144	126	1	15	1	1
2,200 - 2,399	109	101	0	8	0	0
2,400 - 2,599	95	86	0	7	1	1
2,600 - 2,799	83	72	2	6	1	2
2,800 - 2,999	62	60	0	1	0	1
3,000 - 3,499	131	123	0	7	1	0
3,500 - 3,999	93	88	0	5	0	0
4,000 and over	84	81	0	3	0	0

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Pensions Awarded in Prior Ten Years, by Type and Monthly Amount										
Year Ended December 31:	Total		Normal		Involuntary early		Voluntary early		Disability	
	Number	Average Monthly Amount	Number	Average Monthly Amount	Number	Average Monthly Amount	Number	Average Monthly Amount	Number*	Average Monthly Amount
2003	214	1,199	171	1,226	26	1,206	8	609	9 (4)	1,199
2004	247	1,126	189	1,185	35	994	13	653	10 (1)	1,100
2005	264	1,270	217	1,290	23	1,257	11	639	13 (4)	1,493
2006	252	1,069	192	1,082	19	572	32	1,196	9 (2)	1,373
2007	236	1,065	227	1,056	6	1,259	-	-	3 (0)	1,350
2008	271	1,157	223	1,150	7	843	36	1,259	5 (3)	1,162
2009	296	1,336	249	1,412	17	339	26	1,300	4 (0)	1,067
2010	396	1,552	341	1,632	13	364	37	1,250	5 (0)	1,407
2011	438	1,367	352	1,496	37	459	40	1,180	9 (3)	888
2012	391	1,370	341	1,421	20	520	22	1,614	7 (2)	709

* Numbers of service-related disability pensions are shown in parentheses.

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Actuarial Assumptions:

The current PMRS actuarial assumptions used in this valuation are as follows.

A. Healthy Life Mortality:

Rates of Pre-Retirement Mortality

Males: RP 2000 with 1 year set back

Females: RP 2000 with 5 year set back

Rates of Post-Retirement Mortality

Males and females: RP 2000 Sex-Distinct Mortality Table

The current mortality assumptions, while not reflecting projections for improvements as recommended under Actuarial Standard of Practice No. 35 are subject to experience review every four years at which time the Board receives recommendations of changes to reflect changes in experience over those expected from the tables applied over the five year period preceding the experience analysis. Such experience review is required by State statute.

In addition the retired life reserves measure by PMRS is annually reviewed against the actuarial liability for retirees to ensure they are within a reasonable level of difference which has been proven to remain consistent year by year as a reflection of the effectiveness of the reserves and the underlying actuarial assumption for mortality.

B. Disabled Life Mortality Rates:

Males and females: RP 2000 with 10 year set forward

C. Termination Rates Before Retirement

Termination Rates for Municipal Participants		
Service	Number of Active Members in Plan	
	<25	25+
< 1	20.0%	20.0%
1	20.0%	20.0%
2	12.0%	15.0%
3	10.0%	12.0%
4	8.0%	7.0%
5	6.0%	7.0%
6	4.0%	6.0%
7	3.0%	5.0%
8	3.0%	5.0%
9	2.5%	5.0%
10+	2.5%	3.0%

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Termination Rates for Uniformed Participants		
Service	Number of Active Members in Plan	
	<25	25+
< 1	14%	13%
1	14%	10%
2	12%	7%
3	10%	7%
4	6%	6%
5	4%	5%
6	3%	4%
7	2%	3%
8	2%	3%
9	1%	3%
10+	1%	3%

D. Disability Incidence Rates:

Municipal - 40% of 1964 OASDI (Social Security) Experience for Males. Sample rates are:

Age	Valuation Rate (%)
25	0.034%
35	0.059
45	0.144
55	0.404
65	0.928

Uniformed plans – 60% of 1964 OASDI (Social Security) Experience for Males. Sample rates are:

Age	Valuation Rate (%)
25	0.051%
35	0.088
45	0.216
55	0.605
65	1.393

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Type of Disability:

- (a) 15% of disablements are assumed to be service related for municipal plans, and
- (b) 50% of disablements are assumed to be service related for uniform plans.

E. Workers Compensation: Service-related disability benefits payable from municipal plans are offset by 25% of final average salary.

F. Salary Scale:

Salary Scale	
Total Rate (%)*	
Age	(including inflation)
25	8.30%
30	6.40%
35	5.60%
40	5.00%
45	4.20%
50	4.10%
55	3.90%
60	3.70%
65	3.00%

*Add 2% for each of the first three years of service.

G. Rates of Retirement:

(a) Municipal Members:

Age	Municipal Rate of Retirement¹
Under 46	5%
46 – 54	15
55 – 59	10
60 – 61	10
62	30
63 – 64	20
65	35
66 – 74	15
75	100

¹ Rates indicated are adjusted by adding 5% (and 10% for ages 60-62 under current rate assumptions) for the year in which the member is first eligible for normal retirement.

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(b) Uniformed Members:

Retirement Rates for Uniform Participants	
Age	Rates for all Plans
<49	0%
50	20%
51	10%
52	10%
53	10%
54	10%
55	20%
56	25%
57	25%
58	30%
59	30%
60	40%
61	50%
62	50%
63	60%
64	70%
65	80%
66+	100%

H. Marital Status and Spouse's Age (if applicable):

85% of active members and are assumed to be married for retirees with the 50% J&S form of payment. Male spouses are assumed to be three years older than female spouses.

I. Social Security Projections (if applicable):

- (a) The Social Security Taxable Wage Base will increase by 3.5% compounded annually;
- (b) The Consumer Price Index will increase 3.0% compounded annually; and
- (c) The Average Total Wages of All Workers will increase by 3.5% compounded annually.

J. Post-Retirement Cost of Living Increases (if applicable): 3.0% per year, subject to plan limitations.

K. Investment Return Assumption:

5.50% compounded annually, net of expenses.

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L. Administrative Expenses:

The expense assumption is based upon the expected expenses for the current year.

Changes in Actuarial Assumptions:

There were no changes in the actuarial assumptions from last year to this year.

Actuarial Methods:

Contribution requirements are individually determined for each participating municipality, on an actuarial basis as described below, at least biennially. The frequency of the actuarial valuation is determined by applicable Commonwealth statute (Act 205 of 1984 and Act 293 of 1972). The following actuarial methods were adopted effective January 1, 1985, unless indicated otherwise.

Actuarial Value of Assets:

Sum of all audited reserve accounts as of the valuation date, including Member, Municipal, Retired, and Disability Reserves, and a one-year administration expense reserve, plus the portion of any additional investment income to be distributed as “excess interest.” The actuarial value can never be less than 90 percent of fair market value.

Each year, municipalities receive an excess interest allocation derived as a portion of new surplus created during the prior year. “Surplus” refers to the excess of fair market value over the Actuarial Value of Assets. Once the preliminary actuarial asset value has been determined, a formula is used to allocate the new surplus. Generally, depending on the relative size of surplus to fair market value, between 10 percent and 90 percent of the new surplus will become excess interest.

Based on the unique legislative structure of PMRS, because assets are set equal to reserves under the System, they do not necessarily relate directly or indirectly with the current Market Value of Assets as required under Actuarial Standard of Practice Statement No. 44 which states under Section 3.3:

“...the actuary should select an asset valuation method that is designed to produce actuarial values of assets that bear a reasonable relationship to the corresponding market values. The qualities of such an asset valuation method include the following:

- a. The asset valuation method is likely to produce actuarial values of assets that are sometimes greater than and sometimes less than the corresponding market values.*
- b. The asset valuation method is likely to produce actuarial values of assets that, in the actuary’s professional judgment, satisfy both of the following:*
 - 1. The asset values fall within a reasonable range around the corresponding market values. For example, there might be a corridor centered at market value, outside*

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- of which the Actuarial Value of Assets may not fall, in order to assure that the difference from market value is not greater than the actuary deems reasonable.*
2. *Any differences between the Actuarial Value of Assets and the market value are recognized within a reasonable period of time. For example, the actuary might use a method where the Actuarial Value of Assets converges toward market value at a pace that the actuary deems reasonable, if the investment return assumption is realized in future periods.*

In lieu of satisfying both (1) and (2) above, an asset valuation method could satisfy section 3.3(b) if, in the actuary's professional judgment, the asset valuation method either (i) produces values within a sufficiently narrow range around market value or (ii) recognizes differences from market value in a sufficiently short period."

On this basis, the administrative rules adopted by the PMRS Board, which are not subject to comply with Actuarial Standards of Practice (ASOP), when defining the Actuarial Value of Assets, does not necessarily meet the requirement of ASOP 44 Selection and Use of Asset Valuation Methods for Pension Valuation.

Actuarial Cost Method:

Entry Age Normal Actuarial Cost Method.

Entry age is defined as attained age less credited service. The normal cost rate is derived as a level percent of future compensation of current employees, on an individual basis. This rate is applied to the projected payroll and projected employee contributions are deducted. Actuarial gains (or losses), including the effect of contributions greater or lesser than the previously determined actuarial level, are reflected by decreases (or increases) in the unfunded actuarial liability. Under Act 205 of 1984, the unfunded actuarial liability is amortized as a level dollar amount over the lesser of:

- (a) (i) 30 years, with respect to the initial liability as of 1/1/85 (or first valuation);
(ii) 20 years, with respect to actuarial gains and losses;
(iii) 15 years, with respect to changes due to actuarial assumptions;
(iv) 20 years, with respect to changes due to plan provisions (if state mandated);
(v) 10 years, with respect to changes in benefits for currently active members and 1 year for retired members (if local benefit changes); or
- (b) The average assumed working lifetime of active employees as of the date the liability was established. If there are no active employees, the unfunded liability is amortized one year after the liability was established.

With the two exceptions which follow, the funding method is applied individually with respect to each municipality:

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- 1) Retired and disabled members are paid monthly benefits from the System's Retired Reserve account, which at the time of retirement receives a transfer from the municipal and member accounts in an amount actuarially determined to be sufficient to pay all future benefits for the member (and, if applicable, a surviving beneficiary). Thus, post-retirement experience is pooled with the System. (However, this procedure does not apply to the legislated ad-hoc adjustments effective January 1, 1989.)

- 2) A disabled member's pension is met in part from the amount that can be provided by the value of that portion of the member's accrued benefit attributable to municipal contributions, with the balance of the pension being provided by the appropriate transfer from the Disability Reserve Account. The amount of annual transfer from the accumulated municipal contributions to the Disability Reserve Account is determined on the one year term cost basis, i.e., the expected cost of disabilities in the coming year.

Changes in Actuarial Assumptions:

The investment return assumption was changed from 6.0% from the prior year to 5.5% for the current year.