

**EDUCATIONAL RETIREMENT BOARD OF NEW MEXICO**  
ANNUAL ACTUARIAL VALUATION  
AS OF JUNE 30, 2013



November 1, 2013

Board of Trustees  
Educational Retirement Board of New Mexico  
P.O. Box 26129  
Santa Fe, NM 87502-0129

Dear Members of the Board:

**Subject: Actuarial Valuation Report as of June 30, 2013**

The results of the June 30, 2013 annual actuarial valuation are presented in this report. We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Educational Retirement Board of New Mexico (ERB) as of June 30, 2013.

This report was prepared at the request of the Board and is intended for the Board's use and those designated or approved by the Board. This report may be provided to parties other than the ERB only in its entirety and only with the permission of the Board.

To the best of our knowledge, this report is based on benefit provisions in effect as of June 30, 2013, audited financial information prepared as of that date, member data gathered as of that date, and actuarial assumptions and methods previously adopted by the Board.

**Actuarial Valuation**

The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rate, to describe the current financial condition of ERB, to analyze changes in ERB's condition, and to provide various summaries of the membership data.

This report no longer provides information related to Governmental Accounting Standards Board (GASB) Statement No. 25. All of the information required by GASB is now provided in a stand-alone report entitled "GASB 67 Reporting and Disclosure Information", dated October 1, 2013 for the plan year ending June 30, 2013.

The valuation report provides a "snapshot" of ERB's estimated financial condition as of the valuation date. The valuation does not predict ERB's future financial condition or its ability to pay benefits in the future and it also does not provide any guarantee of future financial soundness of ERB. Over time, ERB's total cost will depend on a number of factors, including the amount of benefits the plan pays, the number of members receiving benefits, the period of time over which benefits are paid, plan expenses, and the amount earned on any assets invested toward the payment of benefits. These amounts and other variables are uncertain and unknowable at the valuation date.

To prepare the valuation report, actuarial assumptions, including those adopted with the June 30, 2012 experience study, are used in a forward looking financial and demographic model to

present a single scenario from a wide range of possibilities; the results based on that single scenario are included in the valuation. The future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material because these results are sensitive to the assumptions made, and, in some cases, to the interaction between the assumptions.

Different assumptions or scenarios within the range of possibilities may also be reasonable and results based on those assumptions would be different. As a result of the uncertainty inherent in a forward looking projection over a long period of time, no one projection is uniquely "correct" and many alternative projections of the future could also be regarded as reasonable. Two different actuaries could, quite reasonably, arrive at different results based on the same data and different views of the future.

Valuations are prepared annually, as of June 30<sup>th</sup> of each year, the last day of ERB's plan and fiscal years.

### **Financing Objectives**

In accordance with HB 628 (2011 Regular Session) and SB 115 (2013 Regular Session), employer and member contributions are scheduled as follows.

For employees with annual salary more than \$20,000/less than \$20,000 per year:

<i>Fiscal Year End</i>	<i>Employer Contribution Rate</i>	<i>Member Contribution Rate</i>
<b>2013</b>	10.90%/12.40%	9.40%/7.90%
<b>2014</b>	13.15%/13.15%	10.10%/7.90%
<b>2015 and thereafter</b>	13.90%/13.90%	10.70%/7.90%

In addition to the above, certain higher education employers make a contribution equal to 3.00% of the total pay for their employees who elected to join the Alternative Retirement Program rather than ERB.

These rates are intended to be sufficient to pay ERB's normal cost and to amortize ERB's unfunded actuarial accrued liability (UAAL) in payments which are level as a percentage of payroll. Except for short-term fluctuations, the amortization period should not extend beyond June 30, 2042 (30 years from June 30, 2012) in accordance with the funding policy is set by the Board of Trustees. (The amortization period, also referred to as the funding period, is the number of years expected to be required to completely amortize the UAAL, assuming that ERB's experience exactly follows all of the actuarial assumptions.)

### **Progress Towards Realization of the Financing Objectives**

The funded condition of the plan, as measured by the funded ratio, declined from 2012 to 2013. The decline was due to the continued loss on the actuarial value of assets (a loss of \$207 million) which offset a net gain on the liabilities of \$107 million.

Again, the funded ratio (the ratio of the actuarial value of assets to the actuarial accrued liability) decreased from last year. The funded ratio as of June 30, 2012 was 60.7%. It is now 60.1% as of June 30, 2013. Five years ago this ratio stood at 71.5%, and ten years ago the ratio was 81.1%. If the ratio were calculated using the market value rather than the actuarial value of assets, it would be 62.3% as of June 30, 2013, up from 59.9% as of June 30, 2012. During the last fiscal year, the UAAL increased from \$6.2 billion to \$6.5 billion.

The plan's funding period as of the valuation date is 95.1 years. This is a theoretical calculation of the period that will be required to amortize the UAAL, assuming that the current year's amortization payment increases at the payroll growth rate (3.50% per annum) in the future. The 95.1 year period compares with an infinite funding period calculated as of the prior actuarial valuation date.

This calculation of the funding period is a "snapshot" as of the valuation date and ignores a number of factors: (i) the scheduled future increases in the member and employer contribution rates, (ii) the known deferred asset gains and losses that are reflected in the actuarial value of assets and that will be recognized over the next four years, and (iii) the expected future growth in the active membership (0.50% per annum).

### **Recent Events**

In FYE 2009, the financial markets experienced major losses. The equity markets dropped dramatically through early March 2009 before beginning to recover. Many pension trusts lost 30% to 40% of assets through early March 2009 but then rebounded off of these lows. For instance, the market value of the ERB trust was \$7.1 billion as of June 30, 2009 and is \$10.2 billion as of June 30, 2013. All of the investment losses from FYE 2009 have now been recognized with the completion of this actuarial valuation.

The annual return from 2012 to 2013 on the market value of assets was approximately 10.8% and the annual return from that same period on the actuarial value of assets was 5.6%. The return on the actuarial value of assets of less than the assumed return of 7.75% reflects the five-year "smoothing" of gains and losses at work in the asset valuation method; for instance, in 2012 not all the losses were recognized at one time in the actuarial value of assets and likewise, for this valuation, not all of the 2013 gains have been recognized in the actuarial value of assets. The net result of the losses from 2009 and 2012 and the gains from 2010, 2011, and 2013 that are recognized in this valuation is an overall loss on the actuarial value of assets measured from last year to this year (a return of 5.6% versus the assumed return of 7.75%).

## **Benefit Provisions**

SB 115 was signed into law on March 29, 2013 and modified the following benefit provisions:

- All members with annual salary of more than \$20,000 will contribute 10.10% during the fiscal year ending June 30, 2014 and 10.70%, thereafter,
- Members hired after June 30, 2013 will have a minimum unreduced retirement age of 55 and their COLA will be deferred until age 67, and
- COLAs for most retirees are reduced until ERB attains a 100% funded status.

## **Assumptions and Methods**

Actuarial assumptions and methods are set by the Board of Trustees, based upon recommendations made by the plan's actuary. The Board adopted new assumptions on April 26, 2013 in conjunction with the six-year experience study period ending June 30, 2012. At that time, the Board adopted a number of assumption changes, including a decrease in the wage inflation from 4.75% to 4.25%, a decrease in the payroll growth from 3.75% to 3.50%, and changes to the mortality, retirement, and termination rates.

We believe the recommended assumptions and methods are internally consistent, are reasonably based on the actual experience of ERB, and comply with Actuarial Standards of Practice.

The results of the actuarial valuation are dependent on the actuarial assumptions used. Actual results can and almost certainly will differ, as actual experience deviates from the assumptions. Even seemingly minor changes in the assumptions can materially change the liabilities, calculated contribution rates and funding periods.

## **Member and Financial Data**

Member data for retired, active, and inactive participants was supplied as of June 30, 2013 by the ERB staff. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information as of June 30, 2013 was also supplied by the ERB staff.

We provided some of the information used in the Comprehensive Annual Financial Report. Specifically, we provided information used in preparing the schedules of Active Member Valuation Data, Retirants and Beneficiaries, Analysis of Financial Experience, and the Solvency Test that are found in the Actuarial Section; and we provided the Schedule of Changes in the Employers' Net Pension Liability and Related Ratios as well as the Schedule of Employer Contributions in the Financial Section.

### **Certification**

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of New Mexico state law and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.


The undersigned are independent actuaries and consultants. Both are Enrolled Actuaries and are Members of the American Academy of Actuaries, and meet all of the Qualification Standards of the American Academy of Actuaries. Both of the undersigned are experienced in performing valuations for large public retirement systems.

We would like to thank the ERB staff for their assistance in the preparation of our report.

Respectfully submitted,  
**Gabriel, Roeder, Smith & Company**



R. Ryan Falls, FSA, FCA, MAAA, EA  
Senior Consultant



Mark R. Randall, FCA, EA, MAAA  
Executive Vice President

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## **SECTION I**

### **EXECUTIVE SUMMARY**

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Executive Summary

Valuation as of:	06/30/2013	06/30/2012
Contribution Rates for Fiscal Year Ending:	06/30/2014	06/30/2013
<b>Membership</b> <ul style="list-style-type: none"> <li>• Number of <ul style="list-style-type: none"> <li>- Active members</li> <li>- Retirees and beneficiaries</li> <li>- Inactive, vested</li> <li>- Inactive, nonvested</li> <li>- Total</li> </ul> </li> <li>• Payroll</li> </ul>	<p style="text-align: right;">61,177</p> <p style="text-align: right;">40,310</p> <p style="text-align: right;">8,615</p> <p style="text-align: right;"><u>25,482</u></p> <p style="text-align: right;">135,584</p> <p style="text-align: right;">\$ 2.5 billion</p>	<p style="text-align: right;">60,855</p> <p style="text-align: right;">37,336</p> <p style="text-align: right;">9,648</p> <p style="text-align: right;"><u>24,384</u></p> <p style="text-align: right;">132,223</p> <p style="text-align: right;">\$ 2.5 billion</p>
<b>Statutory contribution rates</b> <ul style="list-style-type: none"> <li>• Employer</li> <li>• Member</li> </ul>	<p style="text-align: right;">13.15%</p> <p style="text-align: right;">10.10%</p>	<p style="text-align: right;">10.90%</p> <p style="text-align: right;">9.40%</p>
<b>Assets</b> <ul style="list-style-type: none"> <li>• Market value</li> <li>• Actuarial value</li> <li>• Return on market value</li> <li>• Return on actuarial value</li> <li>• Employer contributions</li> <li>• External cash flow %</li> <li>• Ratio of actuarial to market value</li> </ul>	<p style="text-align: right;">\$ 10.2 billion</p> <p style="text-align: right;">\$ 9.8 billion</p> <p style="text-align: right;">10.8%</p> <p style="text-align: right;">5.6%</p> <p style="text-align: right;">\$ 299.7 million</p> <p style="text-align: right;">-3.1%</p> <p style="text-align: right;">96.4%</p>	<p style="text-align: right;">\$ 9.5 billion</p> <p style="text-align: right;">\$ 9.6 billion</p> <p style="text-align: right;">1.6%</p> <p style="text-align: right;">2.2%</p> <p style="text-align: right;">\$ 253.8 million</p> <p style="text-align: right;">-2.8%</p> <p style="text-align: right;">101.2%</p>
<b>Actuarial Information</b> <ul style="list-style-type: none"> <li>• Normal cost %</li> <li>• Unfunded actuarial accrued liability (UAAL)</li> <li>• Funded ratio</li> <li>• Funding period</li> <li>• Funding Policy Contribution</li> </ul>	<p style="text-align: right;">13.16%</p> <p style="text-align: right;">\$ 6.5 billion</p> <p style="text-align: right;">60.1%</p> <p style="text-align: right;">95.1 years</p> <p style="text-align: right;">17.47%</p>	<p style="text-align: right;">13.79%</p> <p style="text-align: right;">\$ 6.2 billion</p> <p style="text-align: right;">60.7%</p> <p style="text-align: right;">Infinite</p> <p style="text-align: right;">17.59%</p>
<b>Gains/(losses)</b> <ul style="list-style-type: none"> <li>• Asset experience</li> <li>• Liability experience</li> <li>• COLA experience</li> <li>• Benefit changes</li> <li>• Assumption/method changes</li> <li>• Total</li> </ul>	<p style="text-align: right;">\$ (207.4) million</p> <p style="text-align: right;">107.0 million</p> <p style="text-align: right;">20.8 million</p> <p style="text-align: right;">(14.1) million</p> <p style="text-align: right;"><u>81.5 million</u></p> <p style="text-align: right;">\$ (12.2) million</p>	<p style="text-align: right;">\$ (524.0) million</p> <p style="text-align: right;">200.1 million</p> <p style="text-align: right;">0.0 million</p> <p style="text-align: right;">0.0 million</p> <p style="text-align: right;"><u>0.0 million</u></p> <p style="text-align: right;">\$ (323.9) million</p>

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## **SECTION II**

### **DISCUSSION**

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## **Introduction**

The results of the June 30, 2013 actuarial valuation of the Educational Retirement Board of New Mexico (ERB) are presented in this report. Table 1 of our report summarizes the key actuarial results. Table 2 analyzes changes in the unfunded actuarial accrued liability. Tables 3 and 4 show more detailed actuarial information. Tables 5a and 5b develop the Funding Policy Contribution and compare to the actual contributions received. Tables 6a, 6b, 13, 14 and 15 show statistical information about the membership, and Tables 7 through 9b, and Table 11 show information about plan assets. Tables 10a and 10b show the calculation of the actuarial gains and losses. Table 12 shows the solvency test, used by some funds in their annual report. Finally, Appendix 1 is a summary of the benefit and contribution provisions of ERB, Appendix 2 is a summary of the actuarial methods and assumptions, and Appendix 3 is a glossary of terms.

## **Actuarial Information**

The determination of the unfunded actuarial accrued liability (UAAL) and the funding period involves the following steps:

- The actuarial present value of future benefits is determined for the present members, including retired members, beneficiaries, inactive members and active members. This amounts to \$18.6 billion, as shown in Table 3 of our report.
- The entry age normal actuarial cost method is used to allocate the actuarial present value of future benefits between the portion due for the current year (the normal cost), prior years (the actuarial accrued liability), and future years (the future normal costs). The actuarial accrued liability is \$16.4 billion, as shown on line 5d in Table 1 of our report.
- Under the entry age normal actuarial cost method, the current and future normal costs are determined as a level percentage of payroll. Table 4 shows an analysis of the normal cost rate. The amount needed to fund the current and future normal costs is 13.16% of payroll inclusive of member contributions. This is the total (member plus employer) contribution rate needed to pay for the average member.
- Part of the normal cost is paid by the employee contributions of 10.10%, leaving 3.06% to be funded by the employers (i.e., the current year's employer normal cost is 3.06% of payroll). This is shown on line 2 in Table 1. The balance of the employer contribution is used as payment on the UAAL. The employer contribution is expected to increase in future years and this will affect the amount of funding available to amortize the UAAL.
- The unfunded actuarial accrued liability (UAAL) is determined by subtracting the actuarial value of assets from the actuarial accrued liability. (The actuarial value of assets is a smoothed market value, as discussed in more detail below.) The UAAL is \$6.5 billion as shown on line 7 in Table 1.

- Since the statutory employer contribution rate is 13.15% and the employer normal cost rate is 3.06%, the difference of 10.09% is used to amortize the UAAL. (*Next year the employer contribution rate is scheduled to be 13.90%.*) The 3.00% employer contribution made on behalf of ARP members is also used to amortize the UAAL.
- Finally, the funding period is calculated by determining how long it will take to reduce the UAAL to zero, assuming that the current year's amortization contribution increases at the 3.50% payroll growth period each year. This period is currently 95.1 years. (Note, however, that this calculation does not reflect the scheduled increases in contribution rates nor the expected decrease in the normal cost rate for members hired after June 30, 2013. Further, it assumes a 7.75% return on the actuarial value of assets, not the market value. Alternate projections show that it will take approximately 32 years to amortize the UAAL reflecting the contribution rate increases scheduled to occur under current law, incorporating the expected decrease in the normal cost rate, assuming a 7.75% return on the market value of assets, and assuming membership growth of 0.50% per year.)

### **Analysis of Changes**

Table 2 shows an analysis of the changes in the UAAL. Since the UAAL is an actuarial present value, with future anticipated benefits discounted using an annual 7.75% interest rate, the UAAL increases each year by the imputed interest rate, less employer contributions made to amortize the UAAL. (Keep in mind that part of the employer contribution is used to pay the normal cost, so only part of each year's contribution is available to amortize the UAAL.)

As shown in Table 2, the UAAL increased by \$482.9 million for imputed interest and decreased by \$192.1 million because of payments made. This means that the UAAL was expected to increase \$290.8 million before recognizing plan experience. The UAAL as of June 30, 2012 was \$6.2 billion, and the expected UAAL as of June 30, 2013, recognizing actual contributions made, is \$6.5 billion.

The plan experienced a liability gain of \$107.0 million the vast majority of which is due to a gain from actual salary increases being less than expected. This gain represents 0.7% of the total actuarial accrued liability.

A cost-of-living adjustment (COLA) was applied as of July 1, 2013 to retirement benefits for retirees eligible to receive a COLA as defined in Section 22-11-31 of the New Mexico Statutes Annotated. A 2.00% adjustment factor was applied to all disabled retirees who had been retired for at least three years, i.e., members who began receiving a disability retirement benefit in calendar year 2009 or earlier. Since the plan's funded ratio as of June 30, 2012 is 90% or less, all non-disability retirements with 25 or more years of service credit at retirement and whose monthly annuity is less than the median monthly benefit of all non-disability retirees from the prior year (i.e., \$1,504.20 as of June 30, 2012) will receive an annual adjustment of 1.80%. All remaining non-disability retirements will receive an annual adjustment of 1.60%. Note that the adjustment is only applied to members who retired in calendar year 2012 or earlier; members who retired in 2013 are ineligible.

The plan experienced an actuarial loss on investments of \$207.4 million. The investment loss resulted from the fact that the return on the actuarial value of assets, 5.6%, was less than the 7.75% assumed investment return. This loss was the result of recognizing 20% of the losses from FYE 2009 and FYE 2012, with 20% of the gains from FYE 2010, FYE 2011 and FYE 2013. The market rate of return in FYE 2013 was 10.8%.

There were both benefit changes (approval of SB 115) and new assumption changes adopted since the last actuarial valuation. The adoption of SB 115 resulted in a net \$6.7 million decrease in UAAL while the adoption of new assumptions resulted in a \$81.5 million decrease in UAAL.

As a result of all the above experience, the UAAL increased from \$6.2 billion to \$6.5 billion.

### **Funding Policy**

The Board of Trustees has established a funding policy where the UAAL will be fully funded by June 30, 2042 (30 years from June 30, 2012). This funding policy does not directly impact the level of funding on an annual basis since the members, the employers and the State all contribute a fixed percentage of payroll. However, the funding policy contribution amount provides the Board of Trustees with a valuable benchmark which can be used to determine whether the total contribution being received by ERB is sufficient to meet the long-term goal of eliminating the UAAL by June 30, 2042.

Table 5a of our report calculates the Funding Policy Contribution and Table 5b tracks how closely the contributions received during the past fiscal year compared to the Funding Policy Contribution.

### **Benefit Provisions**

Appendix 1 of our report summarizes the provisions of ERB. This valuation reflects benefits promised to members by statute. There are no ancillary benefits - retirement type benefits not required by statutes but which might be deemed an ERB liability if continued beyond the availability of funding by the current funding source.

SB 115 was signed into law on March 29, 2013 and modified the following benefit provisions:

- All members with annual salary of more than \$20,000 will contribute 10.10% during the fiscal year ending June 30, 2014 and 10.70%, thereafter,
- Members hired after June 30, 2013 will have a minimum unreduced retirement age of 55 and their COLA will be deferred until age 67, and
- COLAs for most retirees are reduced until ERB attains a 100% funded status.

Increased member contributions result in greater projected Withdrawal (Refund) Benefits for certain members in the future. As a result, the increased member contribution requirements under SB 115 resulted in a \$14.1 million increase in the UAAL as of June 30, 2013. It is important to note that the UAAL generally increases when the member contributions to a retirement system are increased. Most importantly, this relatively small increase in UAAL is far out-weighted by the increase in contributions that ERB will receive in the future (the present value of the additional contributions is approximately \$494 million for the current active members).

ERB also granted a reduced COLA on July 1, 2013 since the funded status was less than 100% which resulted in an actuarial gain of \$20.8 million. As a result, the adoption of SB 115 resulted in a net \$6.7 million decrease in UAAL as of June 30, 2013.

### **Actuarial Assumptions and Methods**

In determining costs and liabilities, actuaries use assumptions about the future, such as rates of salary increase, probabilities of retirement, termination, death and disability, and an investment return assumption. The Board of Trustees adopts the assumptions used in the valuation, taking into account the actuary's recommendations. The Board adopted new assumptions on April 26, 2013 in conjunction with the six-year experience study period ending June 30, 2012. At that time, the Board adopted a number of assumption changes, including a decrease in the wage inflation from 4.75% to 4.25%, a decrease in the payroll growth from 3.75% to 3.50%, and changes to the mortality, retirement, and termination rates.

We believe the recommended assumptions are internally consistent and are reasonably based on the actual experience of ERB. Appendix 2 of our report summarizes the current actuarial assumptions being utilized in the preparation of the actuarial valuations.

In addition to the actuarial assumptions, the actuary also makes use of an actuarial funding method to allocate costs to particular years. In common with most public sector retirement plans, ERB uses the entry age normal actuarial cost method. This method produces a relatively level pattern of funding over time, and thereby provides equity between various generations of taxpayers. We continue to believe this method is appropriate for ERB.

### **Assets**

ERB assets are held in trust. The ERB staff has provided the asset information as of June 30, 2013 used in this valuation.

Table 7 of our report shows a reconciliation of the assets from the beginning of the prior year to the valuation date.

Table 8 shows the development of the actuarial value of assets (AVA). The AVA is a "smoothed" market value. A smoothed value is used in order to dampen some of the year-to-year fluctuations that would occur if the market value were used instead. The method used phases in differences between the actual and expected market returns over five years. The expected return is determined

using the 7.75% assumption and the plan's market value, adjusted for contributions received and benefits and refunds paid. Both the actual and expected returns are computed net of investment and administrative expenses.

Note that the actuarial value is currently 96.4% of the market value. The dollar amount of the difference between the actuarial value and market value is the value of the deferred gains, and totals \$363.2 million dollars. Over any short time period, a disparity between actuarial value and market value may appear, but over the long term, we would expect the actuarial value and the market value to continue to track each other fairly closely.

Table 9a shows that the investment return rate for FYE 2013 on market value was 10.8%, while it was 5.6% on the actuarial value of assets. Table 9b shows historical return rates since the current actuarial asset method was adopted.

Finally, Table 11 shows a history of cash flows to the trust, and the net cash flow measured as a percentage of the assets. The net cash flow is slightly negative, 3.1% of market value.

### **Member Data**

Membership data was provided in electronic files by the ERB staff. Data for active members includes gender, birthdate, service, salary paid in the prior year, and accumulated contributions. Data for inactive, nonretired members was similar, but includes the member's accrued benefit as well. For retired members, data includes status (service retiree, disabled retiree or beneficiary), gender, birthdate, pension amount, form of payment, beneficiary gender and birthdate if applicable, and date of retirement.

While not verifying the correctness of the data at the source, we performed various tests to ensure the internal consistency of the data and its overall reasonableness.

Table 6a summarizes the data for all members. Table 6b is a history of key statistical information about active members, and Table 13 is a history of statistical information about retirees. Table 14 is an age/service distribution of active members and their average pay. Table 15 is a reconciliation that tracks changes in the plan population from last year to this year.

The number of active members increased 0.5% since last year, from 60,855 to 61,177.

Total payroll increased 0.9% since last year. For all comparative purposes, payroll is the amount supplied by the ERB staff (i.e., the 2012-2013 member pay). However, this figure is increased by one year's expected pay increase to determine the member's rate of pay as of July 1, 2013. Pay is assumed to change only at the beginning of a school/fiscal year.

Average pay increased 0.3% since last year. Average pay for members active in both this valuation and the last year's valuation increased 1.9%. The difference between these two figures is due to the effect of retirements and terminations, and their replacement by new members who generally earn less.



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**SECTION III**

SUPPORTING EXHIBITS

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**Actuarial Information**

	June 30, 2013	June 30, 2012
	(1)	(2)
1. Payroll		
a. Supplied by System (annualized)	\$ 2,516,874,274	\$ 2,495,275,534
b. Adjusted for one-year's pay increase	2,661,456,872	2,649,331,144
2. Normal cost rate (payable monthly)		
a. Total normal cost rate	13.16%	13.79%
b. Less: member contribution rate	(10.10%)	(9.40%)
c. Employer normal cost rate	3.06%	4.39%
3. Employer normal cost (Item 2c * Item 1b)	\$ 81,440,580	\$ 116,305,637
4. Actuarial accrued liability for active members		
a. Actuarial present value of future benefits	\$ 8,834,309,174	\$ 9,029,857,760
b. Less: actuarial present value of future normal costs	(2,265,061,327)	(2,420,181,490)
c. Actuarial accrued liability	\$ 6,569,247,847	\$ 6,609,676,270
5. Total actuarial accrued liability for:		
a. Retirees and beneficiaries	\$ 9,285,395,005	\$ 8,338,284,890
b. Inactive members	507,636,351	889,011,370
c. Active members (Item 4c)	6,569,247,847	6,609,676,270
d. Total	\$ 16,362,279,203	\$ 15,836,972,530
6. Actuarial value of assets	\$ 9,828,547,715	\$ 9,606,304,017
7. Unfunded actuarial accrued liability (UAAL) (Item 5d - Item 6)	\$ 6,533,731,488	\$ 6,230,668,513
8. Amortization payment for next fiscal year		
a. Employer contribution rate	13.15%	10.90%
b. Less: Employer normal cost rate (Item 2c)	(3.06%)	(4.39%)
c. Amortization rate	10.09%	6.51%
d. Amortization contribution ( Item 8c * Item 1b)	\$ 268,540,998	\$ 172,471,457
e. Expected ARP contribution	4,848,936	5,137,269
f. Total	\$ 273,389,934	\$ 177,608,726
9. Funding period based on current 13.15% employer contribution requirement, with payments increasing at assumed payroll growth rate	95.1 years	Infinite

**Analysis of Change in Unfunded Actuarial Accrued Liability (UAAL)**

Basis (1)	Year Ending	
	June 30, 2013 (2)	June 30, 2012 (3)
1. UAAL at prior valuation	\$ 6,230.7	\$ 5,650.8
2. Increases/(decreases) due to:		
a. Interest on UAAL	482.9	437.9
b. Amortization payments <sup>1</sup>	(192.1)	(181.9)
c. Liability experience	(107.0)	(200.1)
d. Asset experience	207.4	524.0
e. Actual COLA More/(Less) than Expected	(20.8)	0.0
f. Changes in actuarial assumptions and methods	(81.5)	0.0
g. Benefit changes	14.1	0.0
h. Total	\$ 303.0	\$ 579.9
3. Current UAAL (1+2h)	\$ 6,533.7	\$ 6,230.7

Note : Dollar amounts in millions

<sup>1</sup> Actual contributions reduced by normal cost, and adjusted for timing.

**Actuarial Present Value of Future Benefits**

	June 30, 2013 <u>(1)</u>	June 30, 2012 <u>(2)</u>
1. Active members		
a. Service retirement benefits	\$ 8,094,301,763	\$ 8,127,672,598
b. Refunds and deferred termination benefits	561,924,896	721,795,120
c. Survivor benefits	79,763,813	83,460,253
d. Disability retirement benefits	98,318,702	96,929,789
e. Total	<u>\$ 8,834,309,174</u>	<u>\$ 9,029,857,760</u>
2. Retired members		
a. Service retirement	\$ 8,829,122,071	\$ 7,908,613,236
b. Disability retirement	81,930,423	75,673,134
c. Beneficiaries	374,342,511	353,998,520
d. Total	<u>\$ 9,285,395,005</u>	<u>\$ 8,338,284,890</u>
3. Inactive members		
a. Vested terminations	\$ 403,770,204	\$ 792,429,496
b. Nonvested terminations	103,866,147	96,581,874
c. Total	<u>\$ 507,636,351</u>	<u>\$ 889,011,370</u>
4. Total actuarial present value of future benefits	<u>\$ 18,627,340,530</u>	<u>\$ 18,257,154,020</u>

**Analysis of Normal Cost**

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
	(1)	(2)
1. Gross normal cost rate (payable monthly)		
a. Service retirement benefits	9.28%	9.70%
b. Refunds and deferred termination benefits	3.58%	3.77%
c. Disability retirement benefits	0.18%	0.19%
d. Survivor benefits	0.12%	0.13%
e. Total	<u>13.16%</u>	<u>13.79%</u>
2. Less: member contribution rate	<u>(10.10%)</u>	<u>(9.40%)</u>
3. Employer normal cost rate	3.06%	4.39%

**Calculation of Funding Policy Contribution  
(For Following Fiscal Year)**

	<u>June 30, 2013</u>	<u>June 30, 2012</u>
	(1)	(2)
1. Funding period (years)	29	30
2. Amortization contribution percentage		
a. Amortization payment	\$ 388,334,633	\$ 354,862,518
b. Less: expected payment for ARP members	<u>4,848,936</u>	<u>5,137,269</u>
c. Net (a-b)	\$ 383,485,697	\$ 349,725,249
d. Expected payroll	2,661,456,872	2,649,331,144
e. Amortization contribution percentage (c/d)	14.41%	13.20%
3. Funding Policy Contribution for Employers		
a. Employer normal cost rate	3.06%	4.39%
b. Amortization percentage	<u>14.41%</u>	<u>13.20%</u>
c. Total	17.47%	17.59%
d. Statutory rate	13.15%	10.90%
e. Funding Policy Contribution ( greater of (c,d) )	17.47%	17.59%

*The calculation of the Funding Policy Contribution complies with the requirements of Governmental Accounting Standards Board Statement No. 27 and can be used in the development of the employer's financial statements.*

**Actual Contributions as Percentage of  
Funding Policy Contribution for Year Ending June 30, 2013**

1. Actual contributions		
a. On behalf of ERB members	\$	294,972,568
b. On behalf of ARP members		<u>4,684,962</u>
c. Total	\$	299,657,530
2. Statutory employer contribution rate		10.90%
3. Imputed fiscal year payroll for ERB members (Item 1a / Item 2)	\$	2,706,170,349
4. Funding Policy Contribution for Employers		
a. Employer's funding policy contribution for ERB members as percent of payroll		17.59%
b. Employer's funding policy contribution for ERB members (Item 4a * Item 3)	\$	476,015,364
c. Funding policy contribution (Item 4b + Item 1b)	\$	480,700,326
5. Percentage of Funding Policy Contribution for Prior Year (Item 1c / Item 4c)		62.3%

**Membership Data**

	June 30, 2013 (1)	June 30, 2012 (2)
1. Active members		
<u>Tier 1</u>		
a. Number	47,259	51,255
b. Total payroll supplied by System (annualized)	\$ 2,076,786,766	\$ 2,192,479,208
c. Average salary	\$ 43,945	\$ 42,776
d. Average age	49.2	48.6
e. Average service	12.4	11.7
<u>Tier 2</u>		
a. Number	13,918	9,600
b. Total payroll supplied by System (annualized)	\$ 440,087,508	\$ 302,796,326
c. Average salary	\$ 31,620	\$ 31,541
d. Average age	39.4	38.9
e. Average service	1.5	1.1
2. Vested inactive members (excluding pending refunds)		
a. Number	8,615	9,648
b. Total annual deferred benefits	\$ 61,681,408	\$ 93,351,929
c. Average annual deferred benefit	\$ 7,160	\$ 9,676
3. Nonvested inactive members and vested pending refunds		
a. Number	25,482	24,384
b. Employee assessments with interest due	\$ 103,866,147	\$ 96,581,874
c. Average refund due	\$ 4,076	\$ 3,961
4. Service retirees		
a. Number	36,614	33,741
b. Total annual benefits	\$ 804,407,328	\$ 720,860,730
c. Average annual benefit	\$ 21,970	\$ 21,365
5. Disabled retirees		
a. Number	814	786
b. Total annual benefits	\$ 8,150,908	\$ 7,683,718
c. Average annual benefit	\$ 10,013	\$ 9,776
6. Beneficiaries		
a. Number	2,882	2,809
b. Total annual benefits	\$ 42,071,195	\$ 39,596,127
c. Average annual benefit	\$ 14,598	\$ 14,096

Note: Retirement benefits include impact of July 1 cost-of-living increases.



Historical Summary of Active Member Data

Year Ending June 30,	Active Members		Covered Payroll		Average Salary		Average Age	Average Service
	Number	Percent Increase	Amount in \$ Millions	Percent Increase	\$ Amount	Percent Increase		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1982	42,015	---	\$622	---	\$14,810	---	40.9	10.7
1984	40,385	-3.9%	670	7.7%	16,600	12.1%	42.0	9.9
1986	45,311	12.2%	786	17.3%	17,353	4.5%	41.7	9.7
1988	45,492	0.4%	863	9.8%	18,968	9.3%	43.9	10.1
1990	48,858	7.4%	1,033	19.7%	21,146	11.5%	42.6	8.5
1992	51,161	4.7%	1,150	11.3%	22,486	6.3%	43.0	8.9
1993	52,296	2.2%	1,191	3.6%	22,774	1.3%	43.2	8.9
1994	53,744	2.8%	1,259	5.7%	23,420	2.8%	43.3	9.0
1995	54,840	2.0%	1,356	7.7%	24,735	5.6%	43.2	9.0
1996	55,782	1.7%	1,414	4.3%	25,341	2.4%	43.7	9.1
1997	56,685	1.6%	1,449	2.5%	25,556	0.8%	43.9	9.1
1998	58,097	2.5%	1,543	6.5%	26,555	3.9%	44.0	9.0
1999	58,615	0.9%	1,637	6.1%	27,936	5.2%	44.3	9.2
2000	60,090	2.5%	1,796	9.7%	29,884	7.0%	44.5	9.1
2001	60,155	0.1%	1,820	1.3%	30,248	1.2%	44.9	9.2
2002	61,091	1.6%	1,979	8.7%	32,387	7.1%	45.2	9.3
2003	62,614	2.5%	2,032	2.7%	32,460	0.2%	45.3	9.3
2004	62,901	0.5%	2,142	5.4%	34,061	4.9%	45.6	9.4
2005	63,362	0.7%	2,209	3.1%	34,865	2.4%	45.6	9.3
2006	61,829	-2.4%	2,219	0.5%	35,896	3.0%	45.7	9.2
2007	62,687	1.4%	2,341	5.5%	37,347	4.0%	45.9	9.3
2008	63,698	1.6%	2,492	6.4%	39,118	4.7%	46.1	9.4
2009	63,819	0.2%	2,586	3.8%	40,517	3.6%	46.3	9.6
2010	63,295	-0.8%	2,576	-0.4%	40,695	0.4%	46.5	9.7
2011	61,673	-2.6%	2,524	-2.0%	40,923	0.6%	46.8	10.0
2012	60,855	-1.3%	2,495	-1.1%	41,004	0.2%	47.0	10.0
2013	61,177	0.5%	2,517	0.9%	41,141	0.3%	47.0	9.9

**Reconciliation of Plan Net Assets**

	Year Ending	
	June 30, 2013 (1)	June 30, 2012 (2)
1. Value of assets at beginning of year		
a. Value reported in prior valuation	\$ 9,488,961,169	\$ 9,588,562,941
b. Prior period adjustments	0	0
c. Revised value	\$ 9,488,961,169	\$ 9,588,562,941
2. Revenue for the year		
a. Contributions		
i. Member contributions (including redeposits and service purchases)	\$ 250,529,546	\$ 291,766,525
ii. Employer contributions	294,972,568	248,893,693
iii. Employer contributions for ARP members	4,684,962	4,951,584
iv. Total	\$ 550,187,076	\$ 545,611,802
b. Income		
i. Interest, dividends, and other income	\$ 195,093,760	\$ 173,438,306
ii. Investment expenses	(15,421,101)	(10,964,924)
iii. Net	\$ 179,672,659	\$ 162,473,382
c. Net realized and unrealized gains	\$ 837,193,133	\$ (565,488)
d. Total revenue	\$ 1,567,052,868	\$ 707,519,696
3. Expenditures for the year		
a. Refunds	\$ 41,664,216	\$ 40,580,979
b. Benefit payments	811,665,051	754,554,951
c. Administrative and miscellaneous expenses	10,985,967	11,985,538
d. Total expenditures	\$ 864,315,234	\$ 807,121,468
4. Increase in net assets (Item 2 - Item 3)	\$ 702,737,634	\$ (99,601,772)
5. Value of assets at end of year (Item 1 + Item 4)	\$ 10,191,698,803	\$ 9,488,961,169



**Estimation of Yields**

	Year Ending	
	June 30, 2013 (1)	June 30, 2012 (2)
A. Market value yield		
1. Beginning of year market assets	\$ 9,488,961,169	\$ 9,588,562,941
2. Investment income (including realized and unrealized gains and losses)	\$ 1,005,879,825	\$ 149,922,356
3. End of year market assets	\$ 10,191,698,803	\$ 9,488,961,169
4. Estimated dollar weighted market value yield	10.8%	1.6%
B. Actuarial value yield		
1. Beginning of year actuarial assets	\$ 9,606,304,017	\$ 9,642,229,673
2. Actuarial return	\$ 525,385,889	\$ 213,598,472
3. End of year actuarial assets	\$ 9,828,547,715	\$ 9,606,304,017
4. Estimated actuarial value yield	5.6%	2.2%

**History of Investment Return Rates**

Plan Year Ending June 30 of	Market	Actuarial
(1)	(2)	(3)
1995	18.5%	11.5%
1996	12.2%	12.0%
1997	20.3%	13.4%
1998	19.6%	15.0%
1999	11.3%	16.4%
2000	13.1%	15.1%
2001	-11.1%	9.5%
2002	-8.8%	3.3%
2003	2.7%	0.1%
2004	15.3%	0.8%
2005	9.6%	1.1%
2006	12.0%	6.4%
2007	16.7%	11.6%
2008	-6.0%	9.3%
2009	-17.7%	2.2%
2010	17.7%	2.0%
2011	19.0%	4.2%
2012	1.6%	2.2%
2013	10.8%	5.6%
Average Returns		
Last 5 years	5.3%	3.2%
Last 10 years	7.3%	4.5%
Last 15 years	5.1%	5.9%

**Investment Experience Gain or Loss**

Item (1)	Year Ending	
	June 30, 2013 (2)	June 30, 2012 (3)
1. Actuarial assets, beginning of year	\$ 9,606,304,017	\$ 9,642,229,673
2. Total contributions during year	\$ 550,187,076	\$ 545,611,802
3. Benefits and refunds paid	\$ (853,329,267)	\$ (795,135,930)
4. Assumed net investment income		
a. Beginning of year assets	\$ 744,488,561	\$ 747,272,800
b. Contributions	21,319,749	21,142,457
c. Benefits and refunds paid	<u>(33,066,509)</u>	<u>(30,811,517)</u>
d. Total	\$ 732,741,801	\$ 737,603,740
5. Expected actuarial assets, end of year (Sum of items 1 through 4)	\$ 10,035,903,627	\$ 10,130,309,285
6. Actual actuarial assets, end of year	\$ 9,828,547,715	\$ 9,606,304,017
7. Asset gain (loss) for year (Item 6 - Item 5)	\$ (207,355,912)	\$ (524,005,268)

**Total Experience Gain or Loss**

Item (1)	Year Ending	
	June 30, 2013 (2)	June 30, 2012 (3)
A. Calculation of total actuarial gain or loss		
1. Unfunded actuarial accrued liability (UAAL), previous year	\$ 6,230,668,513	\$ 5,650,842,751
2. Normal cost for the previous year	\$ 365,342,765	\$ 370,419,442
3. Less: contributions for the year	\$ (550,187,076)	\$ (545,611,802)
4. Interest at 7.75 %		
a. On UAAL	\$ 482,876,810	\$ 437,940,313
b. On normal cost	14,157,032	14,353,753
c. On contributions	(21,319,749)	(21,142,457)
d. Total	\$ 475,714,093	\$ 431,151,609
5. Expected UAAL (Sum of Items 1 - 4)	\$ 6,521,538,295	\$ 5,906,802,000
6. Actual UAAL	\$ 6,533,731,488	\$ 6,230,668,513
7. Total gain (loss) for the year (Item 5 - Item 6)	\$ (12,193,193)	\$ (323,866,513)
B. Source of gains and losses		
8. Asset gain (loss) for the year	\$ (207,355,912)	\$ (524,005,268)
9. Liability experience gain (loss) for the year	\$ 107,014,795	\$ 200,138,755
10. Actual COLA (More) Less than Expected	\$ 20,795,266	\$ 0
11. Assumption change	\$ 81,499,605	\$ 0
12. Benefit change	\$ (14,146,947)	\$ 0
13. Total	\$ (12,193,193)	\$ (323,866,513)

**History of Cash Flow**

Year Ending June 30,	Contributions <sup>1</sup>	Expenditures				External Cash Flow for the Year <sup>2</sup>	Market Value of Assets	External Cash Flow as Percent of Market Value
		Benefit Payments	Refunds	Administrative Expenses	Total			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2001	315.2	(340.6)	(36.6)	(3.5)	(380.7)	(65.5)	6,667.0	-1.0%
2002	328.6	(367.5)	(28.5)	(5.8)	(401.8)	(73.2)	6,011.2	-1.2%
2003	337.9	(396.1)	(28.3)	(4.3)	(428.7)	(90.8)	6,083.4	-1.5%
2004	355.6	(422.4)	(26.4)	(2.6)	(451.4)	(95.8)	6,911.5	-1.4%
2005	371.0	(455.0)	(27.2)	(5.3)	(487.5)	(116.5)	7,451.1	-1.6%
2006	408.5	(494.1)	(28.3)	(5.2)	(527.6)	(119.1)	8,219.3	-1.4%
2007	449.5	(540.1)	(27.5)	(5.6)	(573.2)	(123.7)	9,455.8	-1.3%
2008	496.2	(578.8)	(29.5)	(6.1)	(614.4)	(118.2)	8,770.0	-1.3%
2009	538.8	(617.7)	(29.7)	(8.7)	(656.1)	(117.3)	7,113.7	-1.6%
2010	566.8	(656.2)	(28.8)	(11.5)	(696.5)	(129.7)	8,232.5	-1.6%
2011	559.0	(701.8)	(35.1)	(11.4)	(748.3)	(189.3)	9,588.6	-2.0%
2012	545.6	(754.6)	(40.6)	(12.0)	(807.2)	(261.6)	9,489.0	-2.8%
2013	550.2	(811.7)	(41.7)	(11.0)	(864.4)	(314.2)	10,191.7	-3.1%

Amounts in \$ millions

<sup>1</sup> Column (2) includes employee and employer contributions, as well as employer contributions for ARP members.

<sup>2</sup> Column (7) = Column (2) + Column (6).



Solvency Test

	<u>June 30, 2013</u> (1)	<u>June 30, 2012</u> (2)
1. Actuarial accrued liability (AAL)		
a. Active member contributions	\$ 2,381,795,094	\$ 2,304,519,473
b. Retirees and beneficiaries	9,285,395,005	8,338,284,890
c. Active and inactive members (employer financed)	<u>4,695,089,104</u>	<u>5,194,168,167</u>
d. Total	\$ 16,362,279,203	\$ 15,836,972,530
2. Actuarial value of assets	\$ 9,828,547,715	\$ 9,606,304,017
3. Cumulative portion of AAL covered		
a. Active member contributions	100%	100%
b. Retirees and beneficiaries	80%	88%
c. Active and inactive members (employer financed)	0%	0%

**Historical Retired Participants' Data**

Year Ending June 30, (1)	Number (2)	Average Monthly Benefit (3)
1984	8,462	\$430
1986	10,004	512
1988	11,375	663
1990	12,741	767
1992	14,107	846
1993	15,001	890
1994	15,814	966
1995	16,593	976
1996	17,381	1,011
1997	18,317	1,055
1998	19,244	1,104
1999	20,109	1,139
2000	21,186	1,228
2001	22,191	1,274
2002	23,052	1,315
2003	24,085	1,376
2004	24,947	1,420
2005	26,100	1,466
2006	28,539	1,472
2007	29,969	1,523
2008	31,192	1,566
2009	32,496	1,607
2010	33,747	1,628
2011	35,457	1,669
2012	37,336	1,714
2013	40,310	1,767

Note: Retirement benefits include impact of July 1 cost-of-living increases.

**Distribution of Active Members by Age and by Years of Service  
 As of June 30, 2013**

Attained Age	Years of Credited Service												Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35 & Over	
	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.	Count & Avg. Comp.
Under 25	395 \$17,432	517 \$23,598	150 \$22,349	48 \$18,612	29 \$20,328	13 \$20,413	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	1,152 \$20,995
25-29	565 \$24,501	1,006 \$28,857	714 \$29,571	455 \$31,662	378 \$34,314	631 \$32,491	8 \$21,846	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0	3,757 \$29,822
30-34	429 \$27,063	799 \$30,966	648 \$32,332	467 \$34,114	426 \$35,296	2,163 \$39,951	412 \$41,709	4 \$33,236	0 \$0	0 \$0	0 \$0	0 \$0	5,348 \$35,902
35-39	675 \$27,098	1,132 \$32,101	679 \$33,480	529 \$35,134	387 \$38,175	2,067 \$40,017	1,673 \$47,339	273 \$46,490	3 \$42,943	0 \$0	0 \$0	0 \$0	7,418 \$38,481
40-44	350 \$29,860	632 \$33,032	474 \$32,776	445 \$36,452	470 \$37,877	2,196 \$39,468	1,786 \$45,852	1,316 \$51,582	207 \$47,267	4 \$35,404	0 \$0	0 \$0	7,880 \$41,530
45-49	306 \$28,699	514 \$32,623	397 \$32,105	362 \$43,241	335 \$37,338	2,029 \$37,778	1,747 \$42,363	1,394 \$48,375	998 \$52,019	166 \$53,264	4 \$36,485	0 \$0	8,252 \$41,863
50-54	259 \$34,024	506 \$34,828	397 \$31,101	324 \$46,121	334 \$39,195	2,039 \$36,978	1,898 \$41,091	1,713 \$46,533	1,246 \$51,850	637 \$56,351	78 \$53,585	1 \$28,557	9,432 \$42,899
55-59	213 \$32,805	368 \$34,983	339 \$36,459	307 \$49,079	294 \$42,329	1,704 \$38,607	1,808 \$41,381	1,637 \$45,434	1,324 \$54,876	619 \$57,877	300 \$63,138	69 \$53,515	8,982 \$45,182
60-64	120 \$33,135	274 \$33,588	179 \$35,337	187 \$48,863	228 \$42,422	1,261 \$41,138	1,200 \$44,212	919 \$47,497	829 \$52,823	454 \$65,780	207 \$71,890	120 \$67,078	5,978 \$47,420
65 & Over	79 \$38,046	141 \$28,378	111 \$35,254	103 \$39,231	114 \$42,356	1,075 \$38,895	472 \$44,441	291 \$47,494	219 \$52,957	164 \$69,119	96 \$79,970	113 \$84,434	2,978 \$45,853
Total	3,391 \$27,321	5,889 \$31,186	4,088 \$32,137	3,227 \$38,698	2,995 \$37,969	15,178 \$38,746	11,004 \$43,556	7,547 \$47,661	4,826 \$52,730	2,044 \$59,640	685 \$66,898	303 \$70,335	61,177 \$41,141

**Reconciliation of Members by Status for Year Ending June 30, 2013**

	Active Members	Inactive, Nonretired Members		Annuitants			Grand Total
		Vested	Nonvested	Service Retirees	Disabled Retirees	Beneficiaries	
Number at beginning of year	60,855	9,648	24,384	33,741	786	2,809	132,223
Refund paid (non-death)	(872)	(409)	(1,343)				(2,624)
Refund due	(3,312)		3,312				0
Vested terminations	(1,493)	1,493					0
Retirements (nondisabled)	(1,984)	(1,537)	(44)	3,565			0
Disabled retirements	(28)	(19)			47		0
New Alternate Payee				31			31
Death before retirement - refund	(22)	(57)	(13)				(92)
Death before retirement - annuity	(12)					12	0
Death of annuitant - survivor benefit due				(197)	(3)	200	0
Death of annuitant - no further benefits due				(518)	(16)	(139)	(673)
New hires	6,719						6,719
Reemployments	1,326	(504)	(814)	(8)			0
Adjustments and corrections							0
Number at end of year	61,177	8,615	25,482	36,614	814	2,882	135,584

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## **APPENDIX I**

### SUMMARY OF PLAN PROVISIONS

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**Summary of Plan Provisions**

1. Effective Date: July 1, 1957.
2. Plan Year/Fiscal Year: Twelve-month period ending June 30th.
3. Administration: The Educational Retirement Board of New Mexico (ERB) is responsible for administration of the plan and investment of plan assets.
4. Type of Plan: ERB is a qualified, defined benefit, governmental retirement plan. For government accounting purposes, it is a cost-sharing multiple-employer PERS.
5. Eligibility: All teachers, nurses, and administrators employed by public schools in New Mexico, including public colleges and universities, participate in ERB. These are the “regular members”, and their participation is a condition of employment. However, see the section on the Alternative Retirement Plan below for an exception. Generally, other employees of these schools are also required to participate, although such employees employed continuously since June 30, 1971 may exempt themselves from membership. Employees of state schools and certain state agencies also participate.
6. Member Contributions: Members must contribute a percentage of their salary to ERB. “Salary” for this purpose includes substantially all earnings. The member contribution rate is set by statute, and has been changed from time to time. The following schedule shows recent and future member contribution rates. Employee contributions are “picked up” by the local employer for federal income tax treatment.

<u>Fiscal Year Ended</u>	<u>Member Contribution Rate</u>
FYE 2005 and earlier	7.600%
FYE 2006	7.675%
FYE 2007	7.750%
FYE 2008	7.825%
FYE 2009	7.900%
FYE 2010*	9.400%
FYE 2011*	9.400%
FYE 2012*	11.150%
FYE 2013*	9.400%
FYE 2014*	10.100%
FYE 2015 and later*	10.700%

\* For members whose annual salary is greater than \$20,000. Members with annual salary of \$20,000 or less will continue to contribute 7.90%.

7. Employer Contributions: The school district or other local administrative unit which employs a member contributes a percentage of the member’s salary to ERB. “Salary” for this purpose includes substantially all earnings. The employer contribution rate is set by statute, and has been changed from time to time. The following schedule shows recent and future employer contribution rates. In addition, state universities, colleges and junior colleges contribute 3% of the earnings of non-members who are participating in the Alternative Retirement Plan.

<u>Fiscal Year Ended</u>	<u>Employer Contribution Rate</u>
FYE 2005 and earlier	8.65%
FYE 2006	9.40%
FYE 2007	10.15%
FYE 2008	10.90%
FYE 2009	11.65%
FYE 2010*	10.90%
FYE 2011*	10.90%
FYE 2012*	9.15%
FYE 2013*	10.90%
FYE 2014	13.15%
FYE 2015 and later	13.90%

\* For members whose annual salary is greater than \$20,000. For members with annual salary of \$20,000 or less, the employer will contribute 12.40% in FYE2010 through FYE2013.

8. Service: Employees receive credit for each calendar quarter in which they are contributing members. Credit is also granted for service prior to ERB’s effective date, and certain military service. Credit may also be purchased for some out-of-state service under certain circumstances.
9. Tier: Members who join ERB by June 30, 2010 are in Tier 1, members who join between July 1, 2010 and June 30, 2013 are in Tier 2, and members who join later are in Tier 3. If a member terminates, takes a refund, later rejoins ERB, and does not pay back the refund to ERB to restore the prior service, that member will be in the tier applicable to their reemployment date.
10. Final Average Compensation (FAC): The average of the member’s earnings for the last five consecutive years, or such other five consecutive year period that gives the largest average. Monthly benefits are based on one-twelfth of this amount.

11 Normal Retirement

a. Eligibility:

- Tier 1 members may retire upon Normal Retirement on the earliest of (i) the date he/she attains age 65 with credit for 5 years of service, or (ii) the date the member completes 25 years of service, or (iii) the date that the sum of the member’s age and service is at least 75, provided the member is at least age 60.

- Tier 2 and Tier 3 members may retire upon Normal Retirement on the earliest of (i) the date he/she attains age 67 with credit for 5 years of service, or (ii) the date the member completes 30 years of service, or (iii) the date that the sum of the member’s age and service is at least 80, provided the member is at least age 65.
- b. Monthly Benefit: 2.35% of FAC (monthly) times years of service. Tier 3 members who retire with 30 years of service and prior to attaining age 55 shall have their benefits reduced to an amount equal to the actuarial equivalent of the benefit the member would receive if the member had retired at age 55.
- c. Payment Form: Benefits are paid as a monthly life annuity, with a guarantee that if the sum of payments made does not exceed the member’s accumulated contributions with interest, determined as of the date of retirement, the balance will be paid in a lump-sum to the member’s beneficiary. Optional forms of payment are available; see below.

12. Early Retirement

- a. Eligibility: Tier 1 members may take early retirement once the sum of his/her age and service equals or exceeds 75, while Tier 2 and Tier 3 members may take early retirement once the sum of his/her age and service equals or exceeds 80.
- b. Monthly Benefit: 2.35% of FAC (monthly) times years of service, multiplied by the early retirement factor below.
- c. Early Retirement Factors:

Tier 1		Tier 2 and Tier 3	
Age at Retirement	Factor	Age at Retirement	Factor
60 or later	1.000	65 or later	1.000
59	.976	64	.976
58	.952	63	.952
57	.928	62	.928
56	.904	61	.904
55	.880	60	.880
54	.808	59	.808
53	.736	58	.736
52	.664	57	.664
51	.592	56	.592
50	.520	55	.520
49	.448	54	.448
48	.376	53	.376
47	.304	52	.304
46	.232	51	.232
45	.160	50	.160



The reduction for Tier 1 members is from age 60 and the reduction for Tier 2 and Tier 3 members is from age 65. The reduction is 2.4% per year for the first five years the retirement precedes age 60 (Tier 1) or age 65 (Tier 2 and Tier 3), and 7.2% for any additional years before the indicated age.

- d. Payment Form: Same as for Normal Retirement above.

### 13. Disability Retirement

- a. Eligibility: A member is eligible provided (i) he/she has credit for at least 10 years of service, and (ii) the disability is approved by the Board of Trustees.
- b. Monthly Benefit: 2% of FAC (monthly) times years of service, but not less than the smaller of (i) one-third of FAC, or (ii) 2% of FAC times years of service projected to age 60.
- c. Payment Form: The disability benefit commences immediately upon the member's retirement. Disability benefits are payable as a monthly life annuity, with a guarantee that if the payments made do not exceed the sum of the member's accumulated contributions with interest as of the date of retirement, the balance will be paid in a lump-sum to the member's beneficiary. If the disabled member survives to age 60, the regular optional forms of payment are available.

### 14. Vested Termination Benefit

- a. Eligibility: A member with at least five (5) years of service who does not withdraw his/her contributions from the fund is eligible for a vested termination benefit.
- b. Monthly Benefit: 2.35% of FAC (monthly) times years of service. Both FAC and Service are determined at the time the member leaves active employment.
- c. Payment Form: Benefits commence when the participant attains his/her normal retirement age. Alternatively, benefits may commence at the early retirement age, applying the same reduction factors as are used for regular early retirement. The form of payment is the same as for Normal Retirement above.
- d. Death Benefit: Upon the death of an inactive vested member who has not retired, the beneficiary may elect to receive an annuity as described under the Death in Service benefit below, with payments deferred until the member would have been eligible for retirement if the member was not eligible at the time of death. Alternatively, the beneficiary may receive a refund of the member's contributions, plus interest based upon a rate set by the Board of Trustees.

15. Withdrawal (Refund) Benefit

- a. Eligibility: All members leaving covered employment with less than five (5) years of service for a reason other than the member's death. Alternatively, members eligible for other benefits may withdraw their contributions in lieu of the regular benefits due.
- b. Benefit: The member who elects to withdraw receives a lump-sum payment of his/her employee contributions, plus interest computed at a rate set by the Board of Trustees.

16. Death in Service

Benefit: Upon the death of an active member, the beneficiary may receive a refund of the member's contributions, plus interest based upon a rate set by the Board of Trustees. If the member has five (5) or more years of service, the beneficiary may elect to receive an annuity determined as though the member had retired, elected option B below, and then died, in lieu of the refund. If the member is not eligible for early or normal retirement, this benefit may still be elected, with payments deferred until the member would have been eligible for retirement.

17. Optional Forms of Payment: There are optional forms of payment available on an actuarially equivalent basis, as follows:

- a. Option B - A Joint and 100% Survivor annuity with a "pop-up" feature. The regular life annuity amount is reduced to provide a Joint and 100% Survivor benefit, i.e., a benefit payable as long as either the member or his joint annuitant shall live. However, if the joint annuitant predeceases the member, then the member's benefit amount reverts back to the regular life annuity amount. The "pop-up" feature is subsidized by ERB.
- b. Option C - A Joint and 50% Survivor annuity with a "pop-up" feature. The regular life annuity amount is reduced to provide a Joint and 50% Survivor benefit, i.e., a benefit payable as long as both the member and the joint annuitant are alive, reducing to 50% of this amount upon the member's death, if the joint annuitant is still living. If the joint annuitant predeceases the member, the benefit reverts to the regular life annuity amount. The "pop-up" feature is subsidized by ERB.

18. Cost-of-Living Increase: All retired members and beneficiaries receiving benefits receive an automatic adjustment in their benefit commencing on July 1 following the later of: (i) the year a member retires, or (ii) the year in which a member attains age 65 (Tier 1 and Tier 2) or age 67 (Tier 3).

If the plan's funded ratio for the next preceding fiscal year is 100%, or greater, Section 22-11-31(C)(1) of the New Mexico Statutes Annotated defines the adjustment factor as  $\frac{1}{2}$  of the percentage increase of the consumer price index between the next preceding calendar year and the preceding calendar year. The adjustment factor cannot exceed four percent, nor be less than two percent. However, if the percentage increase of the consumer price index is less than two percent, the adjustment factor will be equal to the percentage increase of the consumer price index.

If the plan's funded ratio for the next preceding fiscal year is greater than 90%, but less than 100%, Section 22-11-31(C)(2) indicates that the adjustment factor for all non-disability retirements will be 95% of the adjustment factor defined in Section 22-11-31(C)(1) if the member had 25 or more years of service credit at retirement and whose annuity is less than or equal to the median adjusted annuity for the fiscal year next preceding the adjustment date. For all other retirees eligible for an adjustment, the adjustment factor will be 90% of the adjustment factor defined in Section 22-11-31(C)(1).

If the plan's funded ratio for the next preceding fiscal year is 90%, or less, Section 22-11-31(C)(3) indicates that the adjustment factor for all non-disability retirements will be 90% of the adjustment factor defined in Section 22-11-31(C)(1) if the member had 25 or more years of service credit at retirement and whose annuity is less than or equal to the median adjusted annuity for the fiscal year next preceding the adjustment date. For all other retirees eligible for an adjustment, the adjustment factor will be 80% of the adjustment factor defined in Section 22-11-31(C)(1).

Finally, annuities shall not be decreased in the event that there is a decrease in the consumer price index between the next preceding calendar year and the preceding calendar year.

19. Alternative Retirement Plan (ARP): Beginning July 1, 1991, new faculty members employed by higher education may elect participation in the ARP rather than in ERB. If this election is not made, the employee remains a member of ERB permanently. No benefits are paid to ARP members from ERB. Also as discussed in the section on Employer Contributions above, the employer of an ARP member makes a contribution of 3.00% of the member's salary to ERB.

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## **APPENDIX II**

### SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

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**Summary of Actuarial Methods and Assumptions**  
*Adopted by the Board of Trustees on April 26, 2013*

I. Valuation Date

The valuation date is June 30th of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The contribution rate is set by statute for both employees and for the employers. The funding period is determined, as described below, using the Individual Entry Age Normal actuarial cost method.

The Individual Entry Age Normal actuarial cost method assigns the plan's total unfunded liabilities (the actuarial present value of future benefits less the actuarial value of assets) to various periods. The unfunded actuarial accrued liability is assigned to years prior to the valuation, and the normal cost is assigned to the year following the valuation. The remaining costs are the normal costs for future years. Then each year's contribution is composed of (i) that year's normal cost, plus (ii) a payment used to reduce the unfunded actuarial accrued liability.

The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the rate of contribution which, if applied to the compensation of each individual member during the entire period of anticipated covered service, would be required to meet the cost of all benefits payable on his behalf. The salary-weighted average of these rates is the normal cost rate. This calculation reflects the plan provisions that apply to each individual member. The employer normal cost rate is equal to (i) the normal cost rate, minus (ii) the member contribution rate.

The actuarial accrued liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of assets.

The balance of the employers' contributions--the remainder after paying their share of the normal cost--is used to reduce the unfunded actuarial accrued liability. The funding period is the length of time required for the unfunded actuarial accrued liability to be completely amortized, assuming that the portion used to reduce the unfunded remains level as a percentage of total payroll, which is assumed to grow 3.50% per year. The 3.00% contribution made by employers to ERB on behalf of employees who elected to participate in the Alternative Retirement Plan is also used to amortize the unfunded actuarial accrued liability.

It is assumed that contributions are made monthly and at the end of the month.

III. Actuarial Value of Assets

The actuarial value of assets is based on the market value of assets with a five-year phase-in of actual investment return in excess of (less than) expected investment income. Expected investment income is determined using the assumed investment return rate and the market value of assets (adjusted for receipts and disbursements during the year). Returns are measured net of all investment and administrative expenses.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.75%, compounded annually, net of expenses. This is made up of a 3.00% inflation rate and a 4.75% real rate of return.
2. Salary increase rate: Inflation rate of 3.00% plus productivity increase rate of 1.25% plus step-rate/promotional as shown:

<u>Years of Service</u>	<u>Annual Step-Rate/Promotional Component Rates of Increase</u>	<u>Total Annual Rate of Increase</u>
0	8.75%	13.00%
1	3.00%	7.25%
2	2.00%	6.25%
3	1.50%	5.75%
4	1.25%	5.50%
5	1.00%	5.25%
6	0.75%	5.00%
7	0.50%	4.75%
8	0.50%	4.75%
9	0.50%	4.75%
10 or more	0.00%	4.25%

3. Cost-of-living increases: 2% per year, compounded annually. Note that increases are deferred until July 1 following the year a member retires, or the year in which a member attains the age of 65, whichever is later or, for disabled retirees, until July 1 of the third year following retirement.
4. Payroll growth: 3.50% per year (with no allowance for membership growth)
5. Contribution accumulation: Member contributions are assumed to have grown at 5.50% per year, with 4.00% interest, compounded annually, applicable to the account balances in the past as well as the future.

B. Demographic Assumptions

1. Mortality after termination or retirement -

- a. Healthy males – 90% of RP-2000 Combined Mortality Table with White Collar Adjustment for males, projected to 2014
- b. Healthy females – 90% of RP-2000 Combined Mortality Table with White Collar Adjustment for females, set back one year, projected to 2014
- c. Disabled males – 1981 Disability Table
- d. Disabled females – 90% of 1981 Disability Table
- e. To account for future mortality improvement, the tables selected for nondisabled annuitants were chosen so that the assumed mortality rates are smaller than the rates observed in the most recent experience study, covering experience for FYE 2007 to FYE 2012. The ratio of the actual number of deaths occurring during this period to the expected number based on the selected assumptions was:
  - i. 111% for nondisabled male annuitants
  - ii. 107% for nondisabled female annuitants

No mortality improvement assumption was made for disabled retirees or active members.

See sample rates below:

Age	Deaths per 100 Lives			
	Healthy Males	Healthy Females	Disabled Males	Disabled Females
40	.07	.04	1.76	1.58
45	.10	.07	2.08	1.87
50	.14	.10	2.42	2.18
55	.23	.18	2.83	2.55
60	.40	.35	3.29	2.96
65	.82	.64	3.76	3.38
70	1.40	1.13	4.36	3.92
75	2.48	1.89	5.62	5.05
80	4.65	3.16	8.84	7.95
85	8.54	5.42	12.95	11.65

2. Mortality rates of active members - As shown below for sample ages:

Age	Deaths per 100 Members	
	Males	Females
25	.10	.03
30	.10	.01
35	.08	.03
40	.08	.04
45	.11	.04
50	.15	.08
55	.23	.14
60	.31	.21
65	.46	.28

3. Disability - As shown below for selected ages (rates are only applied to eligible members - members with at least 10 years of service):

Age	Occurrences of Disability per 100 Members	
	Males	Females
25	.00	.00
30	.00	.03
35	.06	.07
40	.13	.12
45	.19	.16
50	.24	.19
55	.26	.20
60	.24	.19
65	.18	.16



4. Retirement - Select and ultimate as shown below for selected ages (rates are only applied to members eligible for retirement):

**Retirement Per 100 Members – Members Hired before July 1, 2010**

Age	Males - Years of Service					
	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	15.00
50	0.00	0.00	0.00	0.00	0.00	18.00
55	0.00	0.00	0.00	0.00	5.00	20.00
60	0.00	0.00	0.00	15.00	20.00	25.00
62	0.00	0.00	30.00	30.00	30.00	30.00
65	0.00	40.00	35.00	30.00	30.00	30.00
70	100.00	100.00	100.00	100.00	100.00	100.00

Age	Females - Years of Service					
	0-4	5-9	10-14	15-19	20-24	25+
45	0.00	0.00	0.00	0.00	0.00	15.00
50	0.00	0.00	0.00	0.00	0.00	18.00
55	0.00	0.00	0.00	0.00	6.00	23.00
60	0.00	0.00	0.00	20.00	15.00	25.00
62	0.00	0.00	40.00	30.00	30.00	35.00
65	0.00	35.00	40.00	40.00	40.00	40.00
70	100.00	100.00	100.00	100.00	100.00	100.00

**Retirement Per 100 Members – Members Hired on or after July 1, 2010 and before July 1, 2013**

Age	Males - Years of Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
50	0.00	0.00	0.00	0.00	0.00	0.00	30.00
55	0.00	0.00	0.00	0.00	0.00	5.00	40.00
60	0.00	0.00	0.00	0.00	20.00	25.00	40.00
62	0.00	0.00	0.00	30.00	30.00	30.00	40.00
67	0.00	25.00	40.00	45.00	45.00	45.00	45.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Age	Females - Years of Service						
	0-4	5-9	10-14	15-19	20-24	25-29	30+
50	0.00	0.00	0.00	0.00	0.00	0.00	30.00
55	0.00	0.00	0.00	0.00	0.00	6.00	43.00
60	0.00	0.00	0.00	0.00	15.00	30.00	45.00
62	0.00	0.00	0.00	30.00	30.00	35.00	45.00
67	0.00	35.00	35.00	35.00	35.00	35.00	35.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00

**Retirement Per 100 Members – Members Hired on or after  
 July 1, 2013**

Males - Years of Service							
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	5.00	45.00
60	0.00	0.00	0.00	0.00	20.00	25.00	40.00
62	0.00	0.00	0.00	30.00	30.00	30.00	40.00
67	0.00	25.00	40.00	45.00	45.00	45.00	45.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Females - Years of Service							
Age	0-4	5-9	10-14	15-19	20-24	25-29	30+
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00	0.00	6.00	48.00
60	0.00	0.00	0.00	0.00	15.00	30.00	45.00
62	0.00	0.00	0.00	30.00	30.00	35.00	45.00
67	0.00	35.00	35.00	35.00	35.00	35.00	35.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00

5. Termination (for causes other than death, disability or retirement) - Select and ultimate as shown below for selected ages:

Completed Service	Terminations per 100 Members	
	Males	Females
0	43.4	31.4
1	28.1	23.8
2	19.6	17.2
3	14.3	13.5
4	11.9	10.6
5	10.0	9.8
6	9.1	8.6
7	7.3	7.2
8	6.1	6.3
9	5.7	5.5
10	5.2	5.0
11	4.2	4.7
12	4.0	4.2
13	3.4	3.6
14	3.4	3.5
15	3.1	3.3
16	2.2	2.3
17	2.3	2.7
18	2.3	2.1
19 and over	0.0	0.0

Rates are not applied after the member is eligible for reduced or unreduced retirement benefits.

C. Other Assumptions

1. Age difference: Males are assumed to be three years older than females. All beneficiaries are assumed to be spouses.
2. Percent electing annuity on death: It is assumed that beneficiaries of deceased members will elect to receive the refund of contributions with interest, unless the member is eligible for early or normal retirement, in which case the beneficiary will elect to receive the survivor annuity.
3. Percent electing deferred termination benefit: All vested active members terminating prior to eligibility for a retirement benefit are assumed to elect the more valuable of (i) an immediate refund, or (ii) a deferred annuity commencing when the member is eligible for an unreduced retirement benefit.
4. Assumed age for commencement of deferred benefits: Members electing to receive a deferred benefit are assumed to commence receipt when eligible for an unreduced benefit (or attained age if later).
5. Administrative expenses: The assumed investment return rate is intended to be the net rate of return after payment of all investment and administrative expenses.
6. Percent married: For valuation purposes 100% of members are assumed to be married.

V. Participant Data

Participant data was supplied in electronic files for (i) active members, (ii) inactive members, who are entitled to either a future deferred benefit or a refund of their employee contributions and the accumulated interest, and (iii) members and beneficiaries receiving benefits.

The data for active and inactive, non-retired members include birth date, gender, years of service, salary, and accumulated employee contributions (without interest). For retired members and beneficiaries, the data included date of birth, gender, beneficiary or joint annuitant date of birth (where applicable), current monthly benefit, date of retirement, and a form of payment code.

Salary supplied for the current year was the total earnings for the year preceding the valuation date. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data.

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**APPENDIX III**  
GLOSSARY

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## Glossary

**Actuarial Accrued Liability (AAL):** That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of Future Plan Benefits which is not provided for by future Normal Costs. It is equal to the Actuarial Present Value of Future Plan Benefits minus the actuarial present value of future Normal Costs.

**Actuarial Assumptions:** Assumptions as to future experience under the Plan. These include assumptions about the occurrence of future events affecting costs or liabilities, such as:

- mortality, withdrawal, disablement, and retirement;
- future increases in salary;
- future rates of investment earnings and future investment and administrative expenses;
- characteristics of members not specified in the data, such as marital status;
- characteristics of future members;
- future elections made by members; and
- other relevant items.

**Actuarial Cost Method or Funding Method:** A procedure for allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability. These items are used to determine the ARC.

**Actuarial Gain or Actuarial 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. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the Plan's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.

**Actuarially Equivalent:** Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.

**Actuarial Present Value (APV):** 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. For purposes of this standard, each such amount or series of amounts is:

- a. adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)

- b. multiplied by the probability of the occurrence of an event (such as survival, death, disability, termination of employment, etc.) on which the payment is conditioned, and
- c. discounted according to an assumed rate (or rates) of return to reflect the time value of money.

***Actuarial Present Value of Future Plan Benefits:*** The Actuarial Present Value of those benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive, nonretired members either entitled to a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would be provide sufficient assets to pay all projected benefits and expenses when due.

***Actuarial Valuation:*** The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB 25, such as the funded ratio and the ARC.

***Actuarial Value of Assets or Valuation Assets:*** The value of the Plan's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly actuaries use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ARC.

***Actuarially Determined:*** Values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.

***Amortization Method:*** A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.

***Amortization Payment:*** That portion of the pension plan contribution or ARC which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

***Annual Required Contribution (ARC):*** The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under GASB 25. The ARC consists of the Employer Normal Cost and the Amortization Payment.

***Closed Amortization Period:*** A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Funding Period and Open Amortization Period.

***Decrements:*** Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or termination.

***Defined Benefit Plan:*** A retirement plan that is not a Defined Contribution Plan. Typically a defined benefit plan is one in which benefits are defined by a formula applied to the member's compensation and/or years of service.

***Defined Contribution Plan:*** A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, and the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.

***Employer Normal Cost:*** The portion of the Normal Cost to be paid by the employers. This is equal to the Normal Cost less expected member contributions.

***Experience Study:*** A periodic review and analysis of the actual experience of the Plan which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.

***Funded Ratio:*** The ratio of the actuarial value of assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the AVA, although GASB 25 reporting requires the use of the AVA.

***Funding Period or Amortization Period:*** The term "Funding Period" is used in two ways. In the first sense, it is the period used in calculating the Amortization Payment as a component of the ARC. This funding period is chosen by the Board of Trustees. In the second sense, it is a calculated item: the number of years in the future that will theoretically be required to amortize (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the statutory employer contribution rate, and assuming no future actuarial gains or losses.

***GASB:*** Governmental Accounting Standards Board.

***GASB 25 and GASB 27:*** Governmental Accounting Standards Board Statements No. 25 and No. 27. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 27 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 25 sets the rules for the systems themselves.



**Normal Cost:** That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits which are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated. Under the entry age normal cost method, the Normal Cost is intended to be the level cost (when expressed as a percentage of pay) needed to fund the benefits of a member from hire until ultimate termination, death, disability or retirement.

**Open Amortization Period:** An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. In other words, if the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never completely disappear, but will become smaller each year, either as a dollar amount or in relation to covered payroll.

**Unfunded Actuarial Accrued Liability:** The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

**Valuation Date or Actuarial Valuation Date:** The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.