

TEACHER RETIREMENT SYSTEM OF TEXAS

ACTUARIAL VALUATION REPORT

FOR THE YEAR ENDING AUGUST 31, 2015

November 11, 2015

Board of Trustees
Teacher Retirement System of Texas
1000 Red River Street
Austin, TX 78701-2698

Subject: Actuary's Certification of the Actuarial Valuation as of August 31, 2015

We certify that the information included herein and contained in the 2015 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Teacher Retirement System of Texas (TRS) as of August 31, 2015. There have been no adjustments for events which occurred after this date.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the Texas statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board. The undersigned are independent actuaries. Mr. White and Mr. Newton are Enrolled Actuaries, members of the American Academy of Actuaries and are qualified to give a Statement of Opinion. All are experienced in performing valuations for large public retirement systems.

Actuarial Valuations

The primary purpose of the valuation report is to determine the adequacy of the statutory contribution rates through measuring the resulting funding period, to describe the current financial condition of the System, and to analyze changes in the System's condition. In addition, the report provides various summaries of the data. This report may not be appropriate for other purposes. The information required by the System in connection with Governmental Accounting Standards Board Statement No. 67 (GASB No. 67) will be provided under separate cover

Valuations are prepared annually, as of August 31 of each year, the last day of the System's plan and fiscal year.

Financing Objective of the Plan

The employee, employer, and State contribution rates are established by Law that, over time, are intended to remain level as a percent of payroll and provide assets to cover benefits when due. The actuarially employer determined contribution rates determined in this actuarial valuation are intended to provide for the normal cost plus the level percentage of payroll required to amortize the unfunded actuarial accrued liability over a period not in excess of 30 years.

Progress Toward Realization of Financing Objective

The actuarial accrued liability, the unfunded actuarial accrued liability (UAAL), and the calculation of the resulting funding period illustrate the progress toward the realization of financing objectives. Based on this actuarial valuation as of August 31, 2015, the System's under-funded status has increased to \$33.0 billion from \$31.6 billion as of August 31, 2014. The System's UAAL was expected to increase from the prior year, partially due to future increases in contribution rates not being effective for this fiscal year. For example, if the fiscal year 2017 contribution rates would have been effective during fiscal year 2015, the UAAL increase in this valuation would have been \$0.4 billion less. In addition, the UAAL increased due to a change in the actuarial assumptions and due to a loss on the actuarial value of assets. These losses were partially offset by a gain due to demographic experience.

This valuation shows a normal cost for benefits equal to 9.91% of pay plus an addition to the normal cost of 0.12% of pay to cover the annual cost of administrative expenses. The State set its contribution rate to 6.80% for fiscal year 2015 and is assumed to remain at that level. In addition, covered employers whose employees are not participating in Social Security began contributing 1.50% of salary (capped at the minimum salary schedule) in fiscal year 2015. Combined these contributions were approximately 7.70% of total payroll. The member contribution rate increased beginning in fiscal year 2015 to 6.7% of pay and will continue to increase to 7.20% of pay in fiscal year 2016 and 7.70% of pay in fiscal year 2017. Thereafter, once the contribution rates have all ramped up the System is expected to receive a total contribution rate of approximately 15.40% of pay.

Hence, beginning in FY2017, there is expected to be 5.37% ($15.40\% - 9.91\% - 0.12\%$) of pay available to amortize the UAAL. If payroll grows as expected, the contributions provided by this portion of the contribution rate are sufficient to amortize the current unfunded actuarial accrued liabilities of the System over a period of 33.3 years based on the smoothed asset value as the valuation date. Therefore, the financing objectives of the System are not currently being met.

The actuarial valuation report as of August 31, 2015 reveals that the funded ratio (the ratio of actuarial assets to actuarial accrued liability) is 80.2%. The funded status is one of many metrics used to show trends and develop future expectations about the health of the System. The funded status measure itself is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations or assessing the need for or the amount of future contributions since it does not reflect normal cost contributions, the timing of amortization payments, or future experience other than expected

Because of the unfavorable investment performance in FY2015, the System is now deferring net investment losses of \$4.9 billion and the funded status using the market value of assets is 77.2%. If there are no significant investment gains or other actuarial gains over the next several years, the funded status of the System would be expected to decrease towards this number. This \$4.9 billion in

net deferred losses compares to the last valuation when the System was deferring \$4.4 billion in net deferred gains and had a 83.0% funded ratio based on the market value of assets.

The System's UAAL increased by \$0.4 billion more than expected during the year. The market value of assets earned a -0.3% return on a dollar-weighted basis for the plan year ending August 31, 2015, which resulted in a loss on the actuarial value of assets of \$1.2 billion. Therefore, the liabilities actually increased \$0.8 billion less than expected. The liabilities increased due to the change in actuarial assumptions by \$0.7 billion. However, this was offset by a \$1.5 billion gain due to the liability experience of the System when compared to the actuarial assumptions.

Based on the actuarial (smoothed) value of assets, the number of years needed to amortize the UAAL will decrease annually if all assumptions are met. Please note, this annual decrease in the funding period will only occur if the currently scheduled contribution levels remain in place over the funding period. Any decrease in the contribution rates will result in higher funding periods. It should be noted that with the \$4.9 billion in deferred investment losses still to be recognized in the actuarial value of assets, future losses in the actuarial value of assets are anticipated which could result in an increase in the funding period in future valuations until the losses are fully recognized.

In addition, due to the current funding policy which utilizes level percentage of payroll amortization, the amortization payments will not be sufficient to cover all of the interest charges on the UAAL until the funding period reaches approximately 20 years. Table 11a provides a 10 year projection of various valuation results, including the UAAL, and that projection shows the UAAL is expected to increase to \$37.0 billion in 2025. Extending the projection further would show the UAAL starts to decrease in 2028 and is fully amortized 19 years after that.

Please note these expectations are based on the current benefit provisions and assumptions. Any additional benefit enhancements (ad hoc COLAs) granted without additional funding would increase the ultimate UAAL and extend the period before the funding status begins to improve. Thus, we continue to advise against any future benefit enhancements without additional sources of funding.

Plan Provisions

The plan provisions used in the actuarial valuation are described in Table 21 of the valuation report. There have been no changes to the benefit and contribution provisions of the System since the prior valuation. However, there were significant changes during the 2013 legislative session. As a reminder, a summary of these changes are shown below:

- Normal retirement eligibility was changed to age 65 with 5 years of service or Rule of 80 with a minimum age of 62 for all members not vested as of August 31, 2015 (it was Rule of 80 with a minimum age of 60)
- The 5% early retirement penalty for members who have met the rule of 80 begins from age 62 for employees who are not vested as of August 31, 2015 (it was age 60)

- An ad hoc COLA, equal to the lesser of 3% or \$100 per month, was granted effective September 1, 2013 for members in payment status on August 31, 2004
- Increases in the member contribution rate as follows: 6.70% in fiscal year 2015, 7.20% in fiscal year 2016 and 7.70% in fiscal year 2017

There was also a significant change to the provisions of TRS Care during the 2013 legislative session. While this change did not impact the benefits paid out of the pension system, it did impact the assumptions we use for when members will retire. This is more fully discussed in the assumptions section.

Disclosure of Pension Information

Effective for the fiscal year ending August 31, 1996, the Board of Trustees adopted compliance with the reporting requirements specified by the Governmental Accounting Standards Board (GASB). Beginning with fiscal year 2014, the System began complying with the new disclosure requirements of Governmental Accounting Standards Board (GASB) Statement No. 67. The disclosure information for GASB No. 67 will be provided in a separate report and is not contained herein.

This report should not be relied on for any purpose other than the purpose described above. Determinations of the financial results associated with the benefits described in this report in a manner other than the intended purpose may produce significantly different results.

Actuarial Methods and Assumptions

The actuarial methods and assumptions have been selected by the Board of Trustees of the Teacher Retirement System of Texas based upon our analysis and recommendations. These assumptions and methods are detailed in Table 22 of the valuation report. The Board of Trustees has sole authority to determine the actuarial assumptions used for the plan. The actuarial methods and assumptions are primarily based on a study of actual experience for the four year period ending August 31, 2014 and adopted on September 24, 2015. Please see pages 69-70 of Table 22 for a description of the changes in the actuarial assumptions from the prior year.

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. Section D provides illustrative results based on future investment experience deviating from the assumptions. Based on the scope of this engagement, we have not performed analysis on the potential range of future measurements based on other factors. The actuarial calculations are intended to provide information for rational decision making.

In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and are internally consistent and reasonably related to the experience of the System and to reasonable expectations.

Data

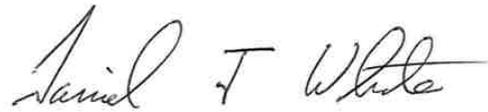
In preparing the August 31, 2015 actuarial valuation, we have relied upon member and asset data provided by the Teacher Retirement System of Texas. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and for consistency with prior years' data.

The schedules shown in the actuarial section and the trend data schedules in the financial section of the TRS financial report include selected actuarial information prepared by TRS staff. Six year historical information included in these schedules was based upon our work. For further information please see the full actuarial valuation report.

Respectfully submitted,
Gabriel, Roeder, Smith & Company



Lewis Ward
Consultant



Daniel J. White, FSA, EA, MAAA
Senior Consultant



Joseph P. Newton, FSA, EA, MAAA
Senior Consultant

J:\3013\2015\VAL\2015 TRS Val Report.DOC

TABLE OF CONTENTS

Transmittal Letter

<u>Section</u>	<u>Page</u>
A Executive Summary	2
B Introduction.....	6
C Funded Status of the System.....	8
D Sensitivity to Investment Performance	12
E GASB Disclosure.....	14
F Change in Assets During the Year.....	16
G Actuarial Gains (Losses) and the Funding Period	18
H Summary and Closing Comments	20
I Actuarial Tables	22

SECTION A
EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The System had an unfavorable year on its investments. The System was expecting a gain on the actuarial value of assets but instead incurred a \$1.2 billion loss. In addition, the System is now deferring \$4.9 billion in net deferred losses, compared to \$4.4 billion in net deferred gains in the prior valuation.

While the System's investment experience was short of its actuarial assumption, the liabilities of the System grew at a slower rate than expected due to demographic experience. Overall the System's UAAL is larger than expected. The actuarial valuation of the Teacher Retirement System of Texas (TRS) as of August 31, 2015, indicates that the System's unfunded actuarial accrued liability (UAAL) has increased from \$31.6 billion in 2014 to \$33.0 billion in 2015.

However, even with these increases in the UAAL the System would still have had a decrease in its funding period if not for the changes in the actuarial assumptions. In particular, the change in the payroll growth rate assumption from 3.50% to 2.50% caused most of the change in the funding period due to the new assumptions.

The net impact of the experience and new actuarial assumptions is a funding period of 33.3 years as of August 31, 2015.

Due to the change in position from deferred investment gains to deferred investment losses, the outlook of the System has slightly worsened when compare to last year. Without offsetting future actuarial gains, the funding period is expected to increase in the short term as the deferred investment losses are recognized, and then begin to decrease in the future.

While benefit enhancements cannot be considered while the System's funding period exceeds 31 years, we will continue to recommend caution with regards to any unfunded benefit enhancements (including ad hoc COLAs) even when the funding period declines to below 31 years in the future. As noted earlier, the nominal dollar amount of the UAAL is still expected to increase for the next decade. The key results of this valuation as of August 31, 2015, may be summarized as follows.

EXECUTIVE SUMMARY

Item	2015	2014
Membership		
• Number of		
- Active members	828,945	857,342
- Service retirees	355,384	341,302
- Disabled retirees	9,495	9,413
- Beneficiaries	12,859	12,467
- Inactive, vested	91,268	82,123
- Inactive, nonvested	<u>161,292</u>	<u>111,960</u>
- Total	1,459,243	1,414,607
• Projected Payroll for Contributions	\$ 39.620 billion	\$ 38.522 billion
Statutory contribution rates		
• Combined State/Employers *	7.700%	7.760%
• Member **	7.700%	7.700%
Actuarial Information		
• Normal cost %	9.91%	10.43%
• Unfunded actuarial accrued liability (UAAL)	\$ 32.968 billion	\$ 31.638 billion
• UAAL as % of pay	83.2%	82.1%
• Funded ratio	80.2%	80.2%
• Funding period (years)	33.3	29.8
• Actuarially Determined Employer Contribution (ADEC) (30 Year Amortization based on the Actuarial Value of Assets) ***	7.92%	8.25%

* The State contribution rate for FY2015 was set at 6.80% of pay. Beginning in fiscal year 2015, covered employers whose employees are not participating in Social Security began contributing 1.50% of the minimum salary schedule. Combined it is expected that these contributions will be approximately 7.70% of total payroll.

** The member contribution rate increased in fiscal year 2015 to 6.70% of pay and will continue to increase each year until the rate reaches 7.70% of pay in fiscal year 2017 (7.20% of pay in fiscal year 2016).

*** Aggregate contribution rate for State and local employers.

EXECUTIVE SUMMARY

Item	2015	2014
Assets		
• Market value	\$ 128.539 billion	\$ 132.779 billion
• Actuarial value	\$ 133.485 billion	\$ 128.398 billion
• Estimated yield on market value	-0.3%	16.8%
• Estimated yield on actuarial value	7.0%	8.9%
• Ratio of actuarial to market value	103.8%	96.7%
• Employee contributions, including service purchases	\$ 2,626.1 million	\$ 2,501.2 million
• State contributions	1,612.7 million	1,550.3 million
• Employer contributions	1,378.0 million	984.6 million
• Benefit, refund, and expense payments	9,746.6 million	9,333.8 million
• Net external cash flow	(4,129.8) million	(4,297.7) million
Gains/(losses)		
• Asset experience	\$ (1,236.6) million	\$ 1,095.4 million
• Assumption changes/Legislative changes	(682.1) million	(2,282.4) million
• Liability experience	<u>1,501.1 million</u>	<u>(357.7) million</u>
• Total	\$ (417.6) million	\$ (1,544.7) million
Actuarial Information based on Market Value of Assets		
• Unfunded actuarial accrued liability (UAAL)	\$ 37.914 billion	\$ 27.256 billion
• UAAL as % of pay	95.7%	70.8%
• Funded ratio	77.2%	83.0%
• Funding period (years)	56.4	22.8
• Actuarially Determined Employer Contribution (ADEC)	8.76%	7.06%

Item	UAAL (\$ Millions)	Funding Period
(1)	(2)	(3)
1. 2014 Valuation	\$31,638	30
2. Restated 2014 Valuation with Legislative changes (if applicable)	31,638	30
3. Expected 2015 UAAL using actual contributions*	32,550	29
4. 2015 UAAL using expected assets and actual liabilities	31,049	26
5. 2015 UAAL using actual assets and liabilities, expected payroll	32,286	28
6. 2015 UAAL using actual payroll	32,286	28
7. 2015 UAAL change to assumptions	32,968	33

* The funding period for this entry uses the expected UAAL and expected payroll.
The expected payroll is the prior year's valuation payroll, rolled forward at the 3.5% payroll growth rate.
3.5% was the payroll growth rate in the previous valuation. Prospectively the assumption will be 2.50%

SECTION B
INTRODUCTION

INTRODUCTION

The valuation of the Teacher Retirement System of Texas (TRS) as of August 31, 2015, reflects the following ultimate contribution rates: (a) a member contribution rate of 7.70%, and (b) a State/Employer combined contribution rate of approximately 7.70%. For purposes of determining the funding period, it was assumed that these ultimate contribution rates (both member and State/employer) would remain in place indefinitely after the scheduled ramp up over the next few fiscal years.

In preparing this valuation, Gabriel, Roeder, Smith & Company (GRS) has relied on employee data and asset information provided by the staff of the Teacher Retirement System. While not verifying the data at their source, GRS has performed such tests for consistency and reasonableness as has been deemed necessary to be satisfied with the appropriateness of using the data supplied.

Section A contains an executive summary of the most significant valuation results. The basic results of the valuation are covered in Section C. Section D discusses the sensitivity of the funded status to future investment performance. Section E discusses the changes in the necessary disclosure items required by the Governmental Accounting Standards Board (GASB). Section F provides analysis and discussion of changes in assets. Section G produces a determination of actuarial gains and losses for the year and an analysis of the change in the funding period since the prior year's valuation. Section H summarizes the findings of the valuation, and Section I provides the tables supporting the report.

There have been no changes in the benefit provisions of TRS since the prior valuation.

New actuarial assumptions were adopted by the Board of Trustees on September 24, 2015 and are effective with this valuation as of August 31, 2015. The major assumptions changes were the adoption of the use of generational mortality for the purpose of predicting future mortality improvement and the reduction in the inflation rate from 3.00% to 2.50%. The inflation change impacted the salary increase assumptions and the payroll growth rate. For a more detailed description of the changes in the actuarial assumptions please see pages 69-70 of Table 22.

SECTION C

FUNDED STATUS OF THE SYSTEM

FUNDED STATUS OF THE SYSTEM

Table 3 in Section I details the normal cost of the Retirement System by its various components. This normal cost is developed based on the valuation method known as the entry-age-normal actuarial cost method. The normal cost to pay for the benefits earned under the Retirement System is 9.91% of pay, this amount being inclusive of the amount contributed by the employees. The normal cost rate reflects the ultimate member contribution rate of 7.70% that begins in fiscal year 2017. In addition, beginning with this valuation we are adding a new piece to the normal cost to cover annual administrative expenses. It is estimated that administrative expense will be approximately 0.12% of payroll. Thus, the total normal cost is 10.03% of pay and the net employer normal cost is 2.33% of pay based on the member contribution rate of 7.70%.

The State's contribution rate was 6.8% for fiscal year 2015. Beginning in fiscal year 2015, covered employers whose employees are not participating in Social Security began contributing 1.50% of the salary (capped at the minimum salary schedule). Combined with the State contribution, it is expected that these aggregate non-member contributions will be approximately 7.70% of total payroll. Since the total State\employer contribution rate is 7.70%, this allows 5.37% of pay contributed by the State\employers to be available to amortize any unfunded actuarial accrued liabilities beginning in FY2017.

As stated above, the funding period for the System is determined under the entry-age-normal actuarial cost method based on a level percentage of pay. The key points of this method are as follows:

1. The "normal cost" for the System is deemed to be equal to the average cost of benefits for members entering the System under the most recent benefit package.
2. The "actuarial accrued liability" for benefits payable in the future to present active members is calculated as the present value of benefits payable in the future to present active members less the present value of future normal costs.
3. Funding of the unfunded actuarial accrued liability (UAAL) is a function of the rate of future growth in total covered payroll and the contributions established in state statute.

Table 5 develops the funding period under the above approach not only for the current valuation, but also for the valuation as of August 31, 2014. As shown in Item A3 of Table 5, the normal cost for the System consists of the entire 7.70% of pay contributed by the members plus 2.33% of pay from the State/employers. As developed in Item A4, the 7.70% of pay contributed by the State/employers is 5.37% of pay more than the State's\employers' share of the normal cost. From an actuarial perspective, the contribution rate in excess of the System's normal cost should be sufficient to amortize the UAAL over a reasonable period of time. The ultimate contribution rate in excess of the System's normal cost (5.37%) is sufficient to amortize the System's UAAL over a period of 33.3 years (assuming all actuarial assumptions are exactly met).

Table 2 provides an overall summary of key actuarial data for the 2015 valuation, with comparative data for 2014. This information is summarized from the other tables, which supply more detail. Its value is in providing in one convenient place key comparative valuation results.

Table 7 offers a comparative view of the unfunded actuarial accrued liability (UAAL). It compares the UAAL with three items: the covered payroll for the year, the total actuarial value of assets at the end of the year, and the total actuarial liabilities (or, equivalently, the total present value of future benefits) as of the valuation date.

The UAAL as shown in Item B4 of Table 5 is \$33.0 billion for 2015, an increase from \$31.6 billion in 2014. As indicated in the table, the UAAL equals the difference between the total actuarial accrued liability (Item B2d) and current actuarial assets (Item B3). The excess contributions above the normal cost will be used to help reduce the UAAL. As a result of the unfavorable investment experience from fiscal year 2015, the System is now deferring \$4.9 billion in net investment losses (the difference between the market value of assets and the actuarial value of assets).

In determining the number of years that will be required to amortize the UAAL, an assumption is made concerning future growth of the payroll of the System. Our current assumption is 2.50% per year. There is no provision for membership growth in the payroll growth assumption.

As shown in Item B6 of Table 5 and using the assumed rate of increase in covered payroll of 2.50%, the period to fund the UAAL is 33.3 years. The funding periods using alternate payroll growth assumptions are also shown. An analysis of the change in the UAAL and the funding period since the 2014 valuation is provided in Section G.

The actuarial value of assets is developed in Table 4. It should be remembered that the intent of the actuarial asset valuation method is to smooth out year-to-year fluctuations in market rates of return. The current asset method determines the expected actuarial value of assets and then recognizes at least 20% of the difference between that expected actuarial value of assets and the actual market value of assets. As shown in Item 8 of Table 4, if the current year's difference between expected and actual investment income is of the opposite sign from the remaining deferred excesses/shortfalls, then this year's difference is directly offset against any prior year bases of the opposite sign (starting with the oldest base and working forward). For example, in this year's calculation, the negative investment performance from this fiscal year first offset deferred gains from prior years and then the remainder was set as a new base to be recognized over the next five years.

Any remaining bases are then recognized over the remaining number of years. This is intended to ensure the smoothed value of assets will converge towards the market value in a reasonable and finite amount of time.

The actuarial value of assets is \$133.5 billion as shown in Item 9 of Table 4.

Under the asset smoothing methodology, as may be seen by looking at the difference between Items 6 and 11 of Table 4, the AVA methodology is deferring net investment losses. The actuarial asset

yield for 2015 is 7.0%, which is less than the assumed rate of 8.0%. The market return for fiscal year 2015 was -0.3%.

As noted above, the System has a funding period of 33.3 years. The System has an unfunded liability of \$33.0 billion, and \$4.9 billion in net deferred investment losses. Without offsetting actuarial gains, the funding period is expected to increase over the next several years.

SECTION D

SENSITIVITY TO INVESTMENT PERFORMANCE

Table 11b provides several additional risk metrics that can help relate the size of the investment risk to the System, the Sponsor, and the membership. As shown on Table 11b, the assets are currently 3.4 times as large as the covered payroll (source of funding). Based on this ratio, a 10% decrease in the asset levels that was never recovered by future gains would increase the 30-year contribution requirement by 2.3% of payroll (from the current 7.92% employer ADEC to 10.22%) and decrease the funded ratio by 8% (from 80.2% to 72.2%). Table 11b also shows how these metrics have changed over time. As a System matures and/or achieves higher funded ratios, these risk metrics will actually show proportionately higher investment risk.

The following exhibit projects the actuarial status of the System as of August 31, 2015 based on varying actual investment returns over the next few years. All other assumptions are assumed to be met, including the continuation of the new statutory member and employer contribution rates.

	Based on an 4.0% Actual Investment Return on Market		Based on an 8.0% Actual Investment Return on Market		Based on an 12.0% Actual Investment Return on Market	
	Funded Ratio Measured By:					
August 31,	Actuarial Value of Assets	Market Value of Assets	Actuarial Value of Assets	Market Value of Assets	Actuarial Value of Assets	Market Value of Assets
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2015	80.2%	77.2%	80.2%	77.2%	80.2%	77.2%
2016	79.0%	74.3%	79.6%	77.2%	80.3%	80.1%
2017	77.6%	71.9%	79.3%	77.7%	81.4%	83.7%
2018	75.5%	69.4%	79.0%	78.0%	83.1%	87.4%
2019	72.8%	66.8%	78.7%	78.4%	85.6%	91.4%
2020	70.1%	64.3%	78.9%	78.8%	88.8%	95.7%

The future liability is calculated by rolling forward the liabilities as of August 31, 2015, taking into account interest and benefit payments for the year, including mortality incidence and anticipated cost of living increases (none in this case). The 8.0% scenario above coincides with the actuarial investment return assumption of 8.0%. The 4.0% and 12.0% scenarios were selected because there is statistically a high probability of the return for a five year period being within +/- 4% of the expected return.

The scenarios above are for illustration purposes only and are in no way to be used as expected investment performance. There are no other deviations from the expected taken into consideration besides the asset performance. Careful consideration of this projected funded status should be taken into account before any benefit enhancement is adopted. Note that under the 8% return scenario, the funded ratio based on actuarial assets and market assets will have converged by FY2020 and are both expected to trend upward.

SECTION E
GASB DISCLOSURE

GASB DISCLOSURE

The Governmental Accounting Standards Board (GASB) has issued Statement No. 67 which provides the manner in which the actuarial condition of a public sector retirement plan is to be disclosed and which replaces GASB No. 25 for fiscal years ending after June 30, 2014.

We will provide a separate accounting report with the required disclosures under this new standard.

SECTION F

CHANGE IN ASSETS DURING THE YEAR

CHANGE IN ASSETS DURING THE YEAR

This section provides an analysis of the change in the Plan Net Assets during the year and an estimate of the yield on mean assets of the total System. Table 8a shows a rearrangement of some of the tables included in the annual financial statements of the System. Table 8b shows the estimated yield on a market value basis and on the actuarial asset valuation method.

To determine estimated yield on "mean assets", the traditional insurance company formula for yield rates is used. The estimated yield is derived by dividing the appropriate income by the corresponding mean assets. This is a "dollar weighted" rate of return, and will differ slightly from the "time weighted" return shown in the System's CAFR.

As indicated by Item A4 of Table 8b, the estimated yield on mean market value is -0.3%, following a 16.8% return in 2014. The actuarial asset yield (Item B4) is 7.0%, compared to 8.9% in 2014, and compared to the 8% assumption rate. This difference in the estimated yield on market value and actuarial value illustrates the smoothing effect of the asset valuation method.

As mentioned in Section C, the investment results on an actuarial value basis are unfavorable for the 2014/2015 plan year. On an actuarial value basis the System is below its 8% assumption rate by 1.0%. As a result, the System had an actuarial investment loss of \$1.2 billion. It should also be noted that the asset valuation method is still deferring \$4.9 billion in unrecognized net losses into future years. Absent future positive investment experience, these deferred losses will be recognized over future actuarial valuations.

SECTION G

ACTUARIAL GAINS (LOSSES) AND THE FUNDING PERIOD

ACTUARIAL GAINS (LOSSES) AND THE FUNDING PERIOD

Section C has noted that the unfunded actuarial accrued liability (UAAL) has increased from \$31.6 billion in 2014 to \$33.0 billion in 2015. As such, the System's funding period has changed from 29.8 in 2014 to 33.3 years in 2015. The purpose of this section is to determine the source of the gains and losses and the impact of those gains and losses on the funding period.

An important factor was the fact that the scheduled higher contribution rates are still being phased into and thus the System did not receive an actuarially appropriate contribution during the year. This shortfall increased the UAAL by approximately \$0.4 billion.

Section F has discussed the change in assets for the year. Table 4 takes the information contained in Table 8 and develops the actuarial assets for this valuation, based on the investment return assumption of 8%. Table 8b develops the estimated yield for the year based on two measures of asset values.

As shown in Table 4, the expected value of actuarial assets as of August 31, 2015 is \$134.7 billion (expected if the fund would have earned 8% on the actuarial value), and the actual value of actuarial assets as of the valuation date is \$133.5 billion. Thus the asset loss for the year is the difference between the actual value and the expected value, or \$1.2 billion (as shown in Item 12). Item 13 indicates that this loss represents 0.9% of this year's actuarial assets. This asset loss for the year is a direct reflection of the estimated yield for the year based on the value of actuarial assets, namely 7.0% (as shown in Item B4 of Table 8b).

Table 9 develops the total actuarial gain (loss) for the year and separates it between the asset gain (loss) and the liability gain (loss). The items in Table 9 that are used to develop the expected UAAL as of August 31, 2015 are derived from Table 5 and Table 8. The total actuarial loss for the year is seen to be \$0.4 billion.

The \$1.2 billion asset loss for the year was more than offset by liability experience for the year which produced an actuarial gain of \$1.5 billion. However, the actuarial assumptions adopted by the Board added \$0.7 billion to the liabilities as shown in Item B4 of Table 9, which resulted in the overall actuarial loss of \$0.4 billion described above.

Table 10 traces the changes in the UAAL and the funding period from the valuation as of August 31, 2014, to August 31, 2015. Item 4 of Table 10 shows the funding status if there had been no actuarial gains or losses in the areas of assets, liabilities, and reflecting the actual contributions for the 2014/2015 plan year. The UAAL would have increased during the year to \$32.6 billion. Item 5 of Table 10 illustrates that the liability experience gain decreased the UAAL to \$31.0 billion and that the prior years' investment experience, as shown in Items 6 and 7, increased the UAAL to \$32.3 billion. Item 8 shows the impact on the funding period of the covered compensation growing at a faster rate than the prior year's assumed rate of 3.5%. Finally, Item 9 shows the impact of the new assumptions which increased the UAAL to \$33.0 billion and the funding period to 33.3 years.

SECTION H

SUMMARY AND CLOSING COMMENTS

SUMMARY AND CLOSING COMMENTS

The results of the actuarial valuation of the Teacher Retirement System as of August 31, 2015 are mixed. While there was a liability experience gain during the year, there was an actuarial loss on actuarial value of assets as well as an increase in the UAAL due to the change in actuarial assumptions. Overall, the UAAL increased from last year by \$1.3 billion and the funding period increased by 3.5 years.

The System's funded status is 80.2% on actuarial basis, and the funded status using the market value of assets is 77.2%. If there are no significant investment gains or other actuarial gains over the next several years, the funded status of the System would be expected to gradually decrease in the short-term and then begin increasing once the current deferred investment losses are fully recognized.

It is important to understand that while the negotiation process by the Legislature included an ad hoc COLA paid to retirees in September of 2013, the legislation also included substantial increases in contribution rates. This should be the model used in any future year that a COLA is considered. In past negotiations, there were times that COLAs and retroactive benefit enhancements were granted without additional funding sources and that eventually deteriorated the financial health of the System.

Thus, we continue to urge caution in granting future unfunded additional liabilities without additional funding. As of now, based on the current benefit levels, the dollar amount of the unfunded actuarial accrued liability is expected to increase for more than a decade before it is projected to begin decreasing. Adding additional unfunded liabilities will only increase the amount further and place more risk on future generations.

SECTION I
ACTUARIAL TABLES

ACTUARIAL TABLES

Table Number	Table of Contents	Page
1	Actuarial Present Value of Future Benefits	23
2	Summary of Cost Items	24
3	Normal Cost by Component	25
4	Development of Actuarial Value of Assets	26
5	Years to Fund the Unfunded Actuarial Accrued Liability	27
6	Growth of Covered Payroll and Active Members	28
7	Relative Size of Unfunded Actuarial Accrued Liability	29
8a	Change in Plan Net Assets	31
8b	Estimation of Yields	32
9	Actuarial Gain or Loss for the Year	33
10	Analysis of Change in Funding Period	34
11a	Near Term Outlook	35
11b	History of Risk Metrics	36
12	History of Cash Flow	37
13	History of Contribution Rates	38
14	Schedule of Funding Progress	39
15	Statistical Information	40
16	Statement of Plan Net Assets	42
17	Distribution of Active Participants by Age and Service	43
18	Distribution of Life Annuities by Age	44
19	Distribution of Disabled Annuities by Age	45
20	Retirees, Beneficiaries, and Disabled Participants Added to and Removed from Rolls	46
21	Summary of the Benefit Provisions of the Retirement System	47
22	Actuarial Assumptions and Methods	61
23	Definition of Actuarial Terms	72

ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS

	August 31,	
	2015	2014
	(1)	(2)
A. Present Value of Benefits Presently Being Paid:		
1. Service retirement benefits	\$ 80,335,545,136	\$ 76,357,134,130
2. Disability retirement benefits	1,113,095,219	1,014,408,651
3. Death benefits	851,515,997	839,061,459
4. Present survivor benefits	243,282,654	241,128,389
5. Total present value of benefits presently being paid	<u>\$ 82,543,439,006</u>	<u>\$ 78,451,732,629</u>
B. Present Value of Benefits Payable In the Future To Present Active Members:		
1. Service retirement benefits	\$ 98,467,131,191	\$ 100,367,139,589
2. Disability retirement benefits	1,203,603,679	1,492,083,391
3. Termination benefits	7,863,244,733	8,638,663,636
4. Death and survivor benefits	1,758,578,113	1,983,416,721
5. Total active member liabilities	<u>\$ 109,292,557,716</u>	<u>\$ 112,481,303,337</u>
C. Present Value of Benefits Payable In the Future To Present Inactive Members:		
1. Inactive vested participants	\$ 4,084,868,043	\$ 3,284,986,647
2. Refunds of contributions to inactive nonvested members	400,439,304	371,647,155
3. Future survivor benefits payable on behalf of present annuitants	1,341,025,218	1,302,923,361
4. Total inactive liabilities	<u>\$ 5,826,332,565</u>	<u>\$ 4,959,557,163</u>
D. Total Actuarial Present Value of Future Benefits:	<u>\$ 197,662,329,287</u>	<u>\$ 195,892,593,129</u>

SUMMARY OF COST ITEMS

	Valuation as of August 31, 2015		Valuation as of August 31, 2014	
	Cost Item	Cost as % of Pay	Cost Item	Cost as % of Pay
	(1)	(2)	(3)	(4)
1. Participants				
a. Active contributing members				
1. Not in DROP	828,851		820,016	
2. In DROP	94		122	
b. Active subtotal	828,945		820,138	
c. Inactive members w/deferred benefits	91,268		82,123	
d. Retired members and beneficiaries	377,738		363,182	
e. Subtotal, members	1,297,951		1,265,443	
f. Inactive nonvested members due refunds	161,292		149,164	
g. Total membership	1,459,243		1,414,607	
2. Average for Active Members				
a. Average age	44.6		44.5	
b. Average years of service	10.3		9.9	
c. Average pay	\$ 44,787		\$ 45,717	
3. Present Value of Future Pay	\$ 328,790,637,605		\$ 343,787,078,648	
4. Normal Cost Rate				
a. Gross normal cost	9.91%		10.43%	
b. Less employee contribution rate*	(7.70%)		(7.70%)	
c. Administrative Expenses	0.12%		0.00%	
d. State normal cost	2.33%		2.73%	
5. Present Value of Future Benefits				
a. Retired members - in pay or deferred	\$ 82,543,439,006		\$ 78,451,732,629	
b. Retired members - future survivor benefits	1,341,025,218		1,302,923,361	
c. Vested inactive members	4,084,868,043		3,284,986,647	
d. Active members	109,292,557,716		112,481,303,337	
e. Inactive nonvested members	400,439,304		371,647,155	
f. Total	\$ 197,662,329,287	498.9%	\$ 195,892,593,129	508.5%
6. Present Value of Future Normal Costs (employee plus employer)	\$ 31,209,404,783	78.8%	\$ 35,856,992,303	93.1%
7. Actuarial Accrued Liability	\$ 166,452,924,504	420.1%	\$ 160,035,600,826	415.4%
8. Actuarial Value of Assets	\$ 133,485,187,642	336.9%	\$ 128,397,777,855	333.3%
9. Unfunded Actuarial Accrued Liability	\$ 32,967,736,862	83.2%	\$ 31,637,822,971	82.1%
10. Projected Payroll for Contributions	\$ 39,620,491,179		\$ 38,522,207,389	
11. Employer Contribution Rate **	7.700%		7.760%	
12. Funding Period	33.3 years		29.8 years	
13. Estimated Yield on Actuarial Assets	7.0%		8.9%	
14. Funded Ratio - Smoothed Basis	80.2%		80.2%	
15. Actuarially Determined Employer Contribution (ADEC)***	7.92%		8.25%	

* The member contribution rate will began increasing in fiscal year 2015 to 6.70% of pay and will continue to increase each year until the rate reaches 7.70% of pay in fiscal year 2017 (7.20% of pay in fiscal year 2016).

** The State contribution rate for FY2014 was set at 6.80% of pay. Beginning in fiscal year 2015, covered employers whose employees are not participating in Social Security began contributing 1.50% of pay. Combined it is expected that these contributions will be approximately 7.76% of total payroll.

*** Aggregate contribution rate for State and local employers.

ANALYSIS OF NORMAL COST BY COMPONENT

Benefit Component (1)	8/31/2015 Cost as % of Pay (2)	8/31/2014 Cost as % of Pay (3)
1. Normal Cost		
a. Retirement Benefits	6.96%	7.10%
b. Disability Benefits	0.24%	0.18%
c. Death Benefits (including survivor benefits)	0.26%	0.37%
d. Termination benefits	<u>2.45%</u>	<u>2.78%</u>
e. Total	9.91%	10.43%
2. Employee Contribution Rate*	(7.70%)	(7.70%)
3. Administrative Expenses	<u>0.12%</u>	<u>0.00%</u>
4. State Normal Cost (Item 1e - Item 2+ Item 3)	2.33%	2.73%

* Employee contribution rate will increase to 7.20% in fiscal year 2016 and 7.70% in fiscal year 2017.

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS

	Year Ending August 31, 2015
1. Actuarial value of assets at beginning of year	\$ 128,397,777,855
2. Net new investments	
a. Contributions	\$ 5,616,774,652
b. Benefits and refunds paid	(9,412,728,579)
c. Administrative Expenses (will be effective for FY2016)	0
d. Subtotal	<u>(3,795,953,927)</u>
3. Assumed investment return rate for fiscal year	8.00%
4. Assumed investment return rate for fiscal year (Item 1 + Item 2 / 2) x Item 3	\$ 10,119,984,071
5. Expected Actuarial Value at end of year (1+ 2 + 4)	\$ 134,721,808,000
6. Market value of assets at end of year	\$ 128,538,706,212
7. Excess/(Shortfall) (6 - 5)	\$ (6,183,101,788)
8. Development of amounts to be recognized as of August 31, 2015:	

Fiscal Year End	Remaining Deferrals of Excess (Shortfall) of Investment Income (1)	Offsetting of Gains/(Losses) (2)	Net Deferrals Remaining (3) = (1) + (2)	Years Remaining (4)	Recognized for this valuation (5) = (3) / (4)	Remaining after this valuation (6) = (3) - (5)
2011	\$ 0	\$ 0	\$ 0	1	\$ 0	\$ 0
2012	0	0	0	2	0	0
2013	0	0	0	3	0	0
2014	4,381,465,230	(4,381,465,230)	0	4	0	0
2015	<u>(10,564,567,018)</u>	<u>4,381,465,230</u>	<u>(6,183,101,788)</u>	5	<u>(1,236,620,358)</u>	<u>(4,946,481,430)</u>
Total	\$ (6,183,101,788)	\$ 0	\$ (6,183,101,788)		\$ (1,236,620,358)	\$ (4,946,481,430)

9. Actuarial value of plan net assets, end of year	\$ 133,485,187,642
10. Asset gain (loss) for year (Item 9 - Item 5)	\$ (1,236,620,358)
11. Asset gain (loss) as % of actual actuarial assets	(0.93%)
12. Ratio of actuarial value to market value	103.8%

Notes: Remaining deferrals in Column (1) for prior years are from last year's report column (6). The number in the current year is the difference between the remaining deferrals for prior years and the total Excess/(Shortfall) return shown in Item 7. Column 2 is a direct offset of the current year's excess/(shortfall) return against prior years' excess/(shortfall) of the opposite type.

DEVELOPMENT OF YEARS TO FUND THE UNFUNDED
ACTUARIAL ACCRUED LIABILITY

	As of August 31, 2015 (1)	As of August 31, 2014 (2)
A. Basic Data		
1. Projected Payroll for Contributions	\$ 39,620,491,179	\$ 38,522,207,389
2. Present value of future pay	\$ 328,790,637,605	\$ 343,787,078,648
3. Normal cost rate of benefits		
a. Total normal cost rate	9.91%	10.43%
b. Less employee contribution rate*	(7.70%)	(7.70%)
c. Administrative Expenses	0.12%	0.00%
d. State normal cost rate	2.33%	2.73%
4. State contribution rate for funding unfunded actuarial accrued liability		
a. Total State/employer contribution rate**	7.700%	7.760%
b. Less State normal cost rate	(2.330%)	(2.730%)
c. State contribution rate available	5.370%	5.030%
5. Actuarial accrued liability for present active members		
a. Present value of benefits payable in the future to present members	\$ 109,292,557,716	\$ 112,481,303,337
b. Less present value of future normal costs	(31,209,404,783)	(35,856,992,303)
c. Actuarial accrued liability	\$ 78,083,152,933	\$ 76,624,311,034
B. Development of Funding Period		
1. Normal cost		
a. Employee normal cost (Item A3b x Item A1)	\$ 3,050,777,821	\$ 2,966,209,969
b. State normal cost (Item A3c x Item A1)	923,157,444	1,051,656,262
c. Total normal cost	\$ 3,973,935,265	\$ 4,017,866,231
2. Total actuarial accrued liability		
a. Present value of benefits presently being paid	\$ 82,543,439,006	\$ 78,451,732,629
b. Actuarial accrued liability for present active members (Item A5c)	78,083,152,933	76,624,311,034
c. Present value of benefits for inactive members	\$ 5,826,332,565	\$ 4,959,557,163
d. Total	\$ 166,452,924,504	\$ 160,035,600,826
3. Current actuarial assets	133,485,187,642	128,397,777,855
4. Unfunded actuarial accrued liability (UAAL) (Item B2d - Item B3)	\$ 32,967,736,862	\$ 31,637,822,971
5. Amount of State contribution available to fund unfunded actuarial accrued liability (Item A4c x Item A1)	\$ 2,127,620,376	\$ 1,937,667,032
6. Years to fund unfunded actuarial accrued liability	33.3 years	29.8 years
	<u>Rate of Increase in Covered Payroll</u>	
	0.00%	Never
	2.00%	40.2
	2.50%	33.3
	3.00%	29.2
	4.00%	24.3
7. Actuarially Determined Employer Contribution Rate (ADEC) (Normal cost + 30-year amortization of UAAL)***	7.92%	8.25%

* The member contribution rate will begin increasing in fiscal year 2015 to 6.70% of pay and will continue to increase each year until the rate reaches 7.70% of pay in fiscal year 2017 (7.20% of pay in fiscal year 2016).

** The State contribution rate for FY2014 was set at 6.80% of pay. Beginning in fiscal year 2015, covered employers whose employees are not participating in Social Security will begin contributing 1.50% of pay. Combined it is expected that these contributions will be approximately 7.76% of total payroll.

*** Aggregate contribution rate from State and local employers.

GROWTH OF COVERED PAYROLL AND ACTIVE MEMBERS

Year Ending August 31, (1)	Total Annualized Salaries		Active Members			Average Salary		
	Amount in \$ Millions (2)	Percent Increase (3)	Number (4)	Percent Increase (5)	Compound Increase Between Year Indicated and 08-31-2015 (6)	Average Salary (7)	Percent Increase (8)	Compound Increase Between Year Indicated and 08-31-2015 (9)
1996	15,983	7.4%	652,197	4.2%	1.3%	24,506	3.0%	3.2%
1997	17,044	6.6%	678,749	4.1%	1.1%	25,112	2.5%	3.3%
1998	18,325	7.5%	705,447	3.9%	1.0%	25,977	3.4%	3.3%
1999	19,529	6.6%	736,058	4.3%	0.7%	26,533	2.1%	3.3%
2000	21,920	12.2%	766,906	4.2%	0.5%	28,583	7.7%	3.0%
2001	23,365	6.6%	797,339	4.0%	0.3%	29,303	2.5%	3.1%
2002	24,818	6.2%	745,923	(6.4%)	0.8%	33,272	13.5%	2.3%
2003	25,756	3.8%	754,715	1.2%	0.8%	34,127	2.6%	2.3%
2004	25,485	(1.1%)	729,411	(3.4%)	1.2%	34,939	2.4%	2.3%
2005	25,957	1.9%	715,495	(1.9%)	1.5%	36,278	3.8%	2.1%
2006	28,397	9.4%	761,658	6.5%	0.9%	37,284	2.8%	2.1%
2007	31,114	9.6%	777,789	2.1%	0.8%	40,003	7.3%	1.4%
2008	33,238	6.8%	801,455	3.0%	0.5%	41,472	3.7%	1.1%
2009	35,097	5.6%	817,537	2.0%	0.2%	42,930	3.5%	0.7%
2010	36,629	4.4%	834,060	2.0%	(0.1%)	43,916	2.3%	0.4%
2011	36,797	0.5%	828,919	(0.6%)	(0.0%)	44,392	1.1%	0.2%
2012	36,310	(1.3%)	815,155	(1.7%)	0.6%	44,543	0.3%	0.2%
2013	37,104	2.2%	831,302	2.0%	(0.1%)	44,634	0.2%	0.2%
2014	39,195	5.6%	857,342	3.1%	(3.3%)	45,717	2.4%	(2.0%)
2015	37,122	(5.3%)	828,851	(3.3%)	--	44,787	(2.0%)	--

Note: Beginning August 31, 2002, the definition of active member was changed.
Beginning August 31, 2005, the method of determining new entrant errors was changed.
Beginning August 31, 2015, the definition of active member was changed.

RELATIVE SIZE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

Year Ending August 31,	Unfunded Actuarial Accrued Liability in \$ Millions	Relative to Projected Payroll		Relative to Actuarial Value of Assets		Relative to Total Actuarial Liabilities (Present Value of Future Benefits)	
		Projected Payroll In \$ Millions	Percent of Projected Payroll	Assets in \$ Millions	Percent of Assets	Actuarial Liabilities in \$ Millions	Percent of Actuarial Liabilities
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1969	\$ 1,312	\$ 1,299	101.0%	\$ 1,364	96.2%	\$ 3,960	33.1%
1970	1,444	1,528	94.5%	1,534	94.1%	4,384	32.9%
1971	1,632	1,758	92.8%	1,726	94.6%	5,100	32.0%
1972	1,720	1,904	90.5%	1,937	88.8%	5,551	31.0%
1973	1,633	2,079	78.5%	2,171	75.2%	5,733	28.5%
1974	1,739	2,246	77.4%	2,394	72.6%	6,207	28.0%
1975	1,998	2,583	77.4%	2,764	72.3%	7,143	28.0%
1976	2,445	2,875	85.0%	3,103	78.8%	8,067	30.3%
1977	2,879	3,246	88.7%	3,531	81.5%	9,626	29.9%
1978	2,422	3,636	66.6%	4,016	60.3%	9,858	24.6%
1979	3,322	3,928	84.6%	4,529	73.3%	12,336	26.9%
1980	2,785	4,378	63.6%	5,342	52.1%	12,181	22.9%
1981	3,300	4,970	66.4%	6,386	51.7%	13,890	23.8%
1982	3,864	5,616	68.8%	7,373	52.4%	16,135	23.9%
1983	4,549	6,378	71.3%	8,586	53.0%	20,277	22.4%
1984	4,849	6,652	72.9%	9,851	49.2%	22,456	21.6%
1985	6,474	7,547	85.8%	12,096	53.5%	29,618	21.9%
1986	5,365	8,237	65.1%	14,939	35.9%	32,273	16.6%
1987	4,096	8,646	47.4%	18,055	22.7%	34,801	11.8%
1988	3,890	9,166	42.4%	20,096	19.4%	37,332	10.4%
1989	3,489	9,764	35.7%	23,302	15.0%	41,084	8.5%
1990	3,343	10,446	32.0%	26,111	12.8%	45,685	7.3%
1991	3,429	11,181	30.7%	28,860	11.9%	49,515	6.9%
1992	3,441	11,959	28.8%	31,201	11.0%	53,123	6.5%

RELATIVE SIZE OF UNFUNDED ACTUARIAL ACCRUED LIABILITY

Year Ending August 31,	Unfunded Actuarial Accrued Liability in \$ Millions	Relative to Projected Payroll		Relative to Actuarial Value of Assets		Relative to Total Actuarial Liabilities (Present Value of Future Benefits)	
		Projected Payroll In \$ Millions	Percent of Projected Payroll	Assets in \$ Millions	Percent of Assets	Actuarial Liabilities in \$ Millions	Percent of Actuarial Liabilities
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1993	\$ 3,440	\$ 13,391	25.7%	\$ 35,179	9.8%	\$ 59,210	5.8%
1994	825	14,167	5.8%	38,843	2.1%	58,351	1.4%
1995	1,956	14,888	13.1%	43,442	4.5%	65,259	3.0%
1996	1,813	15,983	11.3%	47,487	3.8%	68,948	2.6%
1997	146	17,044	0.9%	53,760	0.3%	74,677	0.2%
1998	(2,463)	18,325	(13.4%)	60,357	(4.1%)	79,603	(3.1%)
1999	(2,190)	19,529	(11.2%)	69,435	(3.2%)	91,563	(2.4%)
2000	(5,446)	21,920	(24.8%)	79,328	(6.9%)	100,414	(5.4%)
2001	(2,135)	23,365	(9.1%)	86,352	(2.5%)	113,663	(1.9%)
2002	3,287	24,818	13.2%	86,035	3.8%	118,100	2.8%
2003	5,230	25,756	20.3%	89,033	5.9%	123,677	4.2%
2004	7,953	25,485	31.2%	88,784	9.0%	121,267	6.6%
2005	13,196	25,957	50.8%	89,299	14.8%	124,556	10.6%
2006	13,694	28,397	48.2%	94,218	14.5%	131,906	10.4%
2007	12,545	31,114	40.3%	103,419	12.1%	142,190	8.8%
2008	11,523	33,238	34.7%	110,233	10.5%	150,999	7.6%
2009	21,646	35,097	61.7%	106,384	20.3%	158,899	13.6%
2010	22,899	36,629	62.5%	111,293	20.6%	166,445	13.8%
2011	24,062	36,797	65.4%	115,253	20.9%	173,204	13.9%
2012	26,101	36,310	73.6%	118,326	22.1%	177,901	14.7%
2013	28,936	37,104	79.3%	121,730	23.8%	184,332	15.7%
2014	31,638	38,522	82.1%	128,398	24.6%	195,893	16.2%
2015	32,968	39,620	83.2%	133,485	24.7%	197,662	16.7%

CHANGE IN PLAN NET ASSETS

	Year Ending August 31, 2015 (1)	Year Ending August 31, 2014 (2)
I. <u>Revenue for the Year</u>		
A. Contribution and fees		
1. Member contributions	\$ 2,576,024,311	\$ 2,357,686,000
2. State contributions - State of Texas	1,610,471,996	1,548,064,142
3. State contributions - 415 Excess Plan	2,216,586	2,273,832
4. State contributions - Employers	1,377,972,653	984,552,391
5. State contributions - Legislative Appropriations	-	-
6. Purchase of Service Credit-Refundable	23,508,475	67,386,116
7. Purchase of Service Credit-Non-Refundable	26,580,631	76,147,975
8. Total	\$ 5,616,774,652	\$ 5,036,110,456
B. Income		
1. Interest	\$ 623,717,202	\$ 1,864,096,050
2. Dividends	6,248,497,146	1,254,816,385
3. Net appreciation in fair value of investments	(7,107,642,634)	16,443,655,756
4. Income from Securities Lending	120,970,871	122,114,760
5. Investment expenses	(298,301,685)	(250,252,917)
6. Total	(412,759,100)	19,434,430,034
C. Other Adjustments	\$ 3,733,133	\$ 4,143,449
D. Total Revenue	\$ 5,207,748,685	\$ 24,474,683,939
II. <u>Expenditures for the Year</u>		
A. Refund of Contributions	\$ 475,400,534	\$ 490,764,166
B. Benefit Payments		
1. Service retirements	\$ 8,215,765,876	\$ 7,795,690,586
2. DROP payments	9,643,121	14,974,505
3. Partial Lump Sum Option payments	288,923,266	322,033,388
4. 415 Excess Plan payments	2,216,586	2,273,832
5. Disability retirements	169,318,064	164,299,506
6. Death and survivor benefits	251,461,132	251,644,540
7. Total benefits	\$ 8,937,328,045	\$ 8,550,916,357
C. Expenses		
1. Gross expenses		
a. Administrative expenses	\$ 35,556,979	\$ 41,904,190
2. Miscellaneous reimbursements	-	-
3. Total expenses	35,556,979	41,904,190
D. Total Expenditures	\$ 9,448,285,558	\$ 9,083,584,713
III. <u>Net Increase in Plan Net Assets (Item I.D. - Item II.D.)</u>	\$ (4,240,536,873)	\$ 15,391,099,226

ESTIMATION OF YIELDS

Item	Year Ending August 31, 2015	Year Ending August 31, 2014
(1)	(2)	(3)
A. Market value yield		
1. Beginning of year net market assets	\$ 132,779,243,085	\$ 117,388,143,859
2. Investment income (net of all expenses)	(444,582,946)	19,396,669,293
3. End of year market assets	128,538,706,212	132,779,243,085
4. Estimated market value yield	-0.3%	16.8%
B. Actuarial value yield		
1. Beginning of year actuarial assets	\$ 128,397,777,855	\$ 121,729,818,906
2. Investment income	8,883,363,714	10,673,529,016
3. End of year actuarial assets	133,485,187,642	128,397,777,855
4. Estimated actuarial value yield	7.0%	8.9%

GAIN OR LOSS FOR THE YEAR

Item (1)	Year Ending August 31, 2015 (2)	Year Ending August 31, 2014 (3)
A. CALCULATION OF TOTAL GAIN OR LOSS		
1. Unfunded actuarial accrued liability (UAAL),		
a. Previous year, before Assumption changes	\$ 31,637,822,971	\$ 28,936,275,228
b. Previous year, after Assumption changes	31,637,822,971	28,936,275,228
2. Normal cost for the year	4,060,228,444	3,922,591,472
3. Contributions for the year	(5,616,774,652)	(5,036,110,456)
4. Interest at 8%		
a. On UAAL	\$ 2,531,025,838	\$ 2,314,902,018
b. On normal cost	162,409,138	156,903,659
c. On contributions	(224,670,986)	(201,444,418)
d. Total	\$ 2,468,763,990	\$ 2,270,361,259
5. Expected UAAL (Sum of Items A1 through A4)	32,550,040,753	30,093,117,503
6. Actual UAAL	32,967,736,862	31,637,822,971
7. Gain (loss) for the year (Item A5 - Item A6)	\$ (417,696,109)	\$ (1,544,705,468)
B. SOURCE OF GAINS AND LOSSES		
1. Asset gain (loss) for the year (Table 4)	\$ (1,236,620,358)	\$ 1,095,366,307
2. Asset gain (loss) as a % of actuarial assets	(0.93%)	0.85%
3. Total actuarial accrued liability gain (loss) for year (Item A7 - Item B1)	818,924,249	(2,640,071,775)
4. Analysis of actuarial accrued liability gain/(loss)		
a. Assumption/Legislative changes	(682,140,204)	(2,282,415,121)
b. Liability experience	1,501,064,453	(357,656,654)
c. Total	\$ 818,924,249	\$ (2,640,071,775)
5. Experience liability gain (loss) as % of total actuarial accrued liability (Item B4b as % of total actuarial accrued liability)	0.90%	(0.22%)

ANALYSIS OF CHANGE IN FUNDING PERIOD

Basis	UAAL (\$ Millions)	Normal Cost Rate	Total Contribution Rate	Funding Period	Change in Funding Period
(1)	(2)	(3)	(4)	(5)	(6)
1. 2014 Valuation	31,638	10.43%	15.46%	29.8	-
2. Restated 2014 Valuation with Legislative changes (if applicable)	31,638	10.43%	15.46%	29.8	-
3. Expected 2015 UAAL using ultimate contribution levels	32,154	10.43%	15.40%	28.1	(1.7)
4. Expected 2015 UAAL using actual contributions	32,550	10.43%	15.40%	28.8	0.7
5. 2015 UAAL using expected assets and actual liabilities	31,049	10.43%	15.40%	26.4	(2.5)
6. 2015 UAAL recognizing past deferred asset gains/(losses)	29,954	10.43%	15.40%	24.7	(1.6)
7. 2015 UAAL using actual assets and liabilities, expected payroll	32,286	10.43%	15.40%	28.4	3.7
8. 2015 UAAL using actual payroll	32,286	10.43%	15.40%	28.2	(0.2)
9. 2015 UAAL change to assumptions	32,968	10.03%	15.40%	33.3	5.1

3. The funding period for this entry uses the expected UAAL and expected payroll. The expected payroll is the prior year's valuation payroll, rolled forward at the 3.5% payroll growth rate.
4. This entry uses actual contributions based on actual payroll during FY2015
5. This entry uses expected assets and payroll growth, while incorporating the actual liabilities as of August 31, 2015
6. This entry recognizes deferred investment gains/(losses) as of August 31, 2014 from prior valuations.
7. This entry includes the current year investment results.
8. This entry incorporates known assets, liabilities, and payroll growth. The overall payroll growth does not affect the liabilities of the plan, but instead affects the calculation of the ARC because the payroll is the denominator in the calculation of the amortization payment. Higher than expected payroll growth leads to a decrease in the required amortization payment as a percentage of payroll
9. This entry shows the impact of any assumption changes

NEAR TERM OUTLOOK

Valuation as of August 31,	Unfunded Actuarial Accrued Liability (UAAL, in Millions)	Funded Ratio	Funding Period	Actuarial Value of Assets (AVA, in Millions)	For Fiscal year Ending August 31,	Projected Payroll for Contributions (in Millions)	Employer Contributions (in Millions)	Employee Contributions (in Millions)	Benefit Payments and Refunds for Following FY	External Cash Flow
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2015	\$ 32,967	80.2%	33.3	\$ 133,485	2016	\$ 39,620	\$ 3,051	\$ 2,853	\$ 11,642	\$ (5,738)
2016	33,775	80.3%	32.2	138,038	2017	40,744	3,137	3,137	10,094	(3,820)
2017	34,287	80.9%	31.1	144,964	2018	41,886	3,225	3,225	10,663	(4,213)
2018	34,773	81.4%	30.0	152,029	2019	43,059	3,316	3,316	11,239	(4,608)
2019	35,230	81.9%	29.0	159,241	2020	44,263	3,408	3,408	11,824	(5,008)
2020	35,652	82.4%	27.8	166,607	2021	45,509	3,504	3,504	12,406	(5,397)
2021	36,033	82.9%	26.8	174,150	2022	46,793	3,603	3,603	12,986	(5,780)
2022	36,367	83.3%	25.6	181,891	2023	48,114	3,705	3,705	13,575	(6,166)
2023	36,650	83.8%	24.6	189,843	2024	49,467	3,809	3,809	14,180	(6,562)
2024	36,877	84.3%	23.5	198,012	2025	50,852	3,916	3,916	14,806	(6,974)
2025	37,041	84.8%	22.4	206,397	2026	52,271	4,025	4,025	15,165	(7,115)

Assumes statutory member and State contribution rates
Assumes 8.00% investment return on actuarial value of assets each year
Assumes all other assumptions exactly met

HISTORY OF RISK METRICS

Valuation As of August 31,	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Annual Projected Payroll	AVA as % of Projected Payroll (2) / (4)	AAL as % of Projected Payroll (3) / (4)	Change in ADEC if Assets Decrease 10%	Funded Ratio	Change in Funded Ratio if Assets Decrease 10%
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)
2015	\$ 133,485	\$ 166,453	\$ 39,620	337%	420%	2.3%	80.2%	8.0%
2014	128,398	160,036	39,195	328%	408%	2.0%	80.2%	8.0%
2013	121,730	150,666	37,104	328%	406%	2.0%	80.8%	8.1%
2012	118,326	144,427	36,310	326%	398%	2.0%	81.9%	8.2%
2011	115,253	139,315	36,797	313%	379%	1.9%	82.7%	8.3%
2010	111,293	134,191	36,629	304%	366%	1.8%	82.9%	8.3%
2009	106,384	128,029	35,097	303%	365%	1.8%	83.1%	8.3%
2008	110,233	121,757	33,238	332%	366%	2.0%	90.5%	9.1%
2007	103,419	115,964	31,114	332%	373%	2.0%	89.2%	8.9%
2006	94,218	107,911	28,397	332%	380%	2.0%	87.3%	8.7%
2005	89,299	102,495	25,957	344%	395%	2.1%	87.1%	8.7%
2004	88,784	96,737	25,485	348%	380%	2.1%	91.8%	9.2%
2003	89,033	94,263	25,756	346%	366%	2.1%	94.5%	9.4%
2002	86,035	89,322	24,818	347%	360%	2.1%	96.3%	9.6%
2001	86,352	84,217	23,365	370%	360%	2.2%	102.5%	10.3%
2000	79,328	73,882	21,920	362%	337%	2.2%	107.4%	10.7%
1999	69,435	67,245	19,529	356%	344%	2.1%	103.3%	10.3%
1998	60,357	57,893	18,325	329%	316%	2.0%	104.3%	10.4%
1997	53,760	53,906	17,044	315%	316%	1.9%	99.7%	10.0%
1996	47,487	49,300	15,983	297%	308%	1.8%	96.3%	9.6%

HISTORY OF CASH FLOW

Year Ending August 31, (1)	Contributions for the Year ¹ (2)	Expenditures During the Year					External Cash Flow for the Year ² (8)	Market Value of Assets (9)	External Cash Flow as Percent of Market Value (10)
		Benefit Payments (3)	Refund of Contributions (4)	Transfer to Employees Retirement System (5)	Expenses ³ (6)	Total (7)			
1991	\$ 1,600,092,649	\$ (1,185,833,198)	\$ (133,870,775)	\$ -	\$ (21,115,074)	\$ (1,340,819,047)	\$ 259,273,602	\$ 29,695,711,781	0.9%
1992	1,663,664,046	(1,361,265,788)	(130,032,827)	-	(22,150,155)	(1,513,448,770)	150,215,276	32,766,914,759	0.5%
1993	1,792,999,133	(1,446,714,384)	(122,114,590)	-	(25,779,705)	(1,594,608,679)	198,390,454	37,981,853,461	0.5%
1994	1,887,530,125	(1,604,046,513)	(133,227,183)	-	(25,975,865)	(1,763,249,561)	124,280,564	39,277,226,893	0.3%
1995	1,980,678,842	(1,731,747,042)	(146,099,978)	-	(25,896,749)	(1,903,743,769)	76,935,073	45,965,182,547	0.2%
1996	1,927,100,219	(2,105,423,164)	(162,257,383)	-	(25,457,726)	(2,293,138,273)	(366,038,054)	50,101,367,986	(0.7%)
1997	2,052,261,338	(2,217,173,754)	(166,125,695)	-	(24,468,347)	(2,407,767,796)	(355,506,458)	62,160,927,516	(0.6%)
1998	2,197,477,431	(2,503,386,682)	(183,430,398)	-	(26,803,767)	(2,713,620,847)	(516,143,416)	66,456,822,943	(0.8%)
1999	2,334,197,510	(2,639,947,187)	(206,354,473)	-	(29,146,859)	(2,875,448,519)	(541,251,009)	79,910,553,792	(0.7%)
2000	2,569,218,427	(3,360,116,181)	(214,999,991)	-	(31,133,307)	(3,606,249,479)	(1,037,031,052)	89,987,158,209	(1.2%)
2001	2,712,395,592	(3,667,711,511)	(214,434,792)	-	(32,641,273)	(3,914,787,576)	(1,202,391,984)	79,428,239,521	(1.5%)
2002	2,920,429,953	(4,366,038,505)	(186,421,065)	-	(37,518,541)	(4,589,978,111)	(1,669,548,158)	71,695,802,361	(2.3%)
2003	3,094,280,741	(4,753,849,401)	(186,082,670)	-	(38,030,992)	(4,977,963,063)	(1,883,682,322)	77,633,002,461	(2.4%)
2004	3,156,205,813	(5,486,849,698)	(220,396,709)	-	(41,092,036)	(5,748,338,443)	(2,592,132,630)	84,202,981,707	(3.1%)
2005	3,208,090,642	(5,387,605,428)	(243,382,014)	-	(42,488,318)	(5,673,475,760)	(2,465,385,118)	93,707,816,093	(2.6%)
2006	3,454,514,897	(5,582,306,639)	(265,487,479)	-	(45,543,800)	(5,893,337,918)	(2,438,823,021)	100,238,963,187	(2.4%)
2007	3,703,755,952	(5,807,036,778)	(277,932,219)	-	(48,444,678)	(6,133,413,675)	(2,429,657,723)	112,128,799,849	(2.2%)
2008	4,142,958,389	(6,454,687,449)	(275,482,331)	-	(55,452,812)	(6,785,622,592)	(2,642,664,203)	104,910,497,545	(2.5%)
2009	4,352,908,188	(6,343,563,704)	(266,695,076)	-	(97,300,965)	(6,707,559,745)	(2,354,651,557)	88,652,971,682	(2.7%)
2010	4,587,520,751	(6,669,304,862)	(265,186,589)	-	(141,911,262)	(7,076,402,713)	(2,488,881,962)	95,688,405,009	(2.6%)
2011	4,704,016,139	(7,175,255,376)	(399,040,901)	-	(275,521,878)	(7,849,818,155)	(3,145,802,016)	107,420,786,893	(2.9%)
2012	4,391,331,052	(7,726,105,535)	(452,217,315)	-	(249,825,059)	(8,428,147,909)	(4,036,816,857)	111,449,887,034	(3.6%)
2013	4,682,290,371	(8,077,729,314)	(466,805,558)	-	(282,545,932)	(8,827,080,804)	(4,144,790,433)	117,388,143,859	(3.5%)
2014	5,036,110,456	(8,550,916,357)	(490,764,166)	-	(292,157,107)	(9,333,837,630)	(4,297,727,174)	132,779,243,085	(3.2%)
2015	5,616,774,652	(8,937,328,045)	(475,400,534)	-	(333,858,664)	(9,746,587,243)	(4,129,812,591)	128,538,706,212	(3.2%)

¹ Column (2) includes employee and employer contributions, as well as any service purchase or account reinstatement receipts during the year

² Column (8) = Column (2) - Column (7)

³ Column (6) includes both administrative and investment expenses

HISTORY OF CONTRIBUTION RATES

Fiscal Year (1)	Actuarially Determined Employer Contribution Rate (2)	Aggregate Employer Contribution Rate (3)	Percentage Contributed (4)	Member Contribution Rate (5)	Total Contribution Rate (3) + (5) (6)
1977/78		7.500%		6.650%	14.150%
1978/79		7.500%		6.650%	14.150%
1979/80		8.500%		6.650%	15.150%
1980/81		8.500%		6.650%	15.150%
1981/82		8.500%		6.650%	15.150%
1982/83		8.500%		6.650%	15.150%
1983/84		7.100%		6.000%	13.100%
1984/85		7.100%		6.000%	13.100%
1985/86		8.000%		6.400%	14.400%
1986/87		8.000%		6.400%	14.400%
1987/88		7.200%		6.400%	13.600%
1988/89		7.200%		6.400%	13.600%
1989/90		7.650%		6.400%	14.050%
1990/91		7.650%		6.400%	14.050%
1991/92		7.310%		6.400%	13.710%
1992/93		7.310%		6.400%	13.710%
1993/94		7.310%		6.400%	13.710%
1994/95		7.310%		6.400%	13.710%
1995/96		6.000%		6.400%	12.400%
1996/97	6.00%	6.000%	100%	6.400%	12.400%
1997/98	6.00%	6.000%	100%	6.400%	12.400%
1998/99	4.12%	6.000%	146%	6.400%	12.400%
1999/00	4.92%	6.000%	122%	6.400%	12.400%
2000/01	4.12%	6.000%	146%	6.400%	12.400%
2001/02	5.70%	6.000%	105%	6.400%	12.400%
2002/03	7.15%	6.000%	84%	6.400%	12.400%
2003/04	7.39%	6.000%	81%	6.400%	12.400%
2004/05	7.31%	6.000%	82%	6.400%	12.400%
2005/06	7.19%	6.000%	83%	6.400%	12.400%
2006/07	7.02%	6.000%	85%	6.400%	12.400%
2007/08	6.47%	6.580%	102%	6.400%	12.980%
2008/09	6.10%	6.580%	108%	6.400%	12.980%
2009/10	7.72%	6.644%	86%	6.400%	13.044%
2010/11	7.77%	6.644%	86%	6.400%	13.044%
2011/12	8.13%	6.000%	74%	6.400%	12.400%
2012/13	8.62%	6.400%	74%	6.400%	12.800%
2013/14	8.67%	6.800%	78%	6.400%	13.200%
2014/15	8.25%	7.700%	93%	6.700%	14.400%
2015/16	7.92%	7.700%	97%	7.200%	14.900%

Note: Aggregate employer contribution rate and total contribution rate for fiscal year 2015/2016 is estimated

SCHEDULE OF FUNDING PROGRESS

Valuation As of August 31, (1)	Actuarial Value of Assets (2)	Actuarial Accrued Liability (AAL) (3)	Unfunded AAL (UAAL) (3) - (2) (4)	Funding Ratio Assets as % of AAL (2) / (3) (5)	Projected Payroll (6)	UAAL as a % of Projected Payroll (4) / (6) (7)
2015	\$ 133,485	\$ 166,453	\$ 32,968	80.2%	\$ 39,620	83.2%
2014	128,398	160,036	31,638	80.2%	38,522	82.1%
2013	121,730	150,666	28,936	80.8%	37,104	78.0%
2012	118,326	144,427	26,101	81.9%	36,310	71.9%
2011	115,253	139,315	24,062	82.7%	36,797	65.4%
2010	111,293	134,191	22,899	82.9%	36,629	62.5%
2009	106,384	128,029	21,646	83.1%	35,097	61.7%
2008	110,233	121,757	11,523	90.5%	33,238	34.7%
2007	103,419	115,964	12,545	89.2%	31,114	40.3%
2006	94,218	107,911	13,694	87.3%	28,397	48.2%
2005	89,299	102,495	13,196	87.1%	25,957	50.8%
2004	88,784	96,737	7,953	91.8%	25,485	31.2%
2003	89,033	94,263	5,230	94.5%	25,756	20.3%
2002	86,035	89,322	3,287	96.3%	24,818	13.2%
2001	86,352	84,217	(2,135)	102.5%	23,365	(9.1%)
2000	79,328	73,882	(5,446)	107.4%	21,920	(24.8%)
1999	69,435	67,245	(2,190)	103.3%	19,529	(11.2%)
1998	60,357	57,893	(2,463)	104.3%	18,325	(13.4%)
1997	53,760	53,906	146	99.7%	17,044	0.9%
1996	47,487	49,300	1,813	96.3%	15,983	11.3%
1995	43,442	45,398	1,956	95.7%	14,888	13.1%
1994	38,843	39,668	825	97.9%	14,167	5.8%
1993	35,179	38,619	3,440	91.1%	13,391	25.7%
1992	31,201	34,643	3,441	90.1%	11,959	28.8%
1991	28,860	32,289	3,429	89.4%	11,181	30.7%

STATISTICAL INFORMATION

	August 31,		
	2015	2014	2013
	(1)	(2)	(3)
A. Number			
1. Active Members			
a. Total active members	828,851	857,342	831,302
b. Average age	44.6	44.5	44.4
c. Average service	10.3	9.9	10.0
2. Inactive Vested Members			
a. Male members	18,613	18,128	16,837
b. Female members	72,655	63,995	60,687
c. Total inactive vested members	91,268	82,123	77,524
3. Inactive Nonvested Members	161,292	111,960	112,586
B. Annualized Salaries			
1. Active members			
a. Total active members	\$ 37,121,560,597	\$ 39,195,084,110	\$ 37,104,056,289
b. Average annual salary	44,787	45,717	44,634
C. Accumulated Members Contributions			
1. Total Active Members	30,257,739,873	30,037,789,687	28,405,248,977
2. Inactive Vested Members			
a. Male members	\$ 612,399,314	\$ 693,051,568	\$ 614,920,914
b. Female members	2,390,472,904	2,055,071,435	1,882,207,305
c. Total inactive vested members	\$ 3,002,872,218	\$ 2,748,123,003	\$ 2,497,128,219
3. Inactive Nonvested Members	\$ 400,439,304	\$ 371,647,155	\$ 368,715,419
D. Active Members in DROP (included in above totals)			
1. Number	94	122	158
2. DROP Balance	\$ 9,090,375	\$ 11,884,433	\$ 15,613,675

STATISTICAL INFORMATION

	August 31,		
	2015	2014	2013
	(1)	(2)	(3)
E. Persons Receiving Benefits			
1. Number			
a. Life annuities*	353,459	339,556	325,342
b. Annuities certain	1,925	1,746	1,730
c. Disability annuities - less than 10 years of service	219	240	229
d. Disability annuities - 10 or more years of service	9,276	9,173	9,020
e. Incomplete data records	0	0	0
f. Survivor annuities			
1) Currently in pay	11,957	11,529	11,011
2) Deferred	902	938	896
3) Total	12,859	12,467	11,907
g. Total persons receiving benefits	377,738	363,182	348,228
2. Annual Annuities			
a. Life annuities **	\$ 8,534,558,536	\$ 8,128,042,004	\$ 7,734,901,119
b. Annuities certain **	24,834,549	22,655,673	21,874,538
c. Disability annuities - less than 10 years of service	394,200	432,000	412,200
d. Disability annuities - 10 or more years of service	136,493,481	133,984,126	130,641,726
e. Survivor annuities			
1) Currently in pay	35,971,176	34,644,926	33,091,960
2) Deferred	2,697,800	2,721,700	2,597,300
3) Total	38,668,976	37,366,626	35,689,260
f. Total persons receiving benefits	\$ 8,734,949,742	\$ 8,322,480,429	\$ 7,923,518,843
g. Average monthly annuities			
1) Life annuities **	\$ 2,012	\$ 1,995	\$ 1,981
2) Annuities certain **	1,075	1,081	1,054
3) Disability annuities - 10 or more years of service	1,226	1,217	1,207
h. DROP Lump Sum payments during year	\$ 9,643,121	\$ 14,974,505	\$ 17,223,523
i. Partial Lump Sum Option payments during year	\$ 288,923,266	\$ 322,033,388	\$ 410,323,790

* Includes 1,502 disabled annuitants who are receiving a retirement benefit as of August 31, 2014

** Annual and average life annuity amounts represent values after Partial Lump Sum Option Elections.

STATEMENT OF PLAN NET ASSETS

	August 31, 2015	August 31, 2014
	(1)	(2)
A. ASSETS		
1. Current Assets		
a. Cash and short term investments		
1) Cash on hand and State Treasury	\$ 1,369,036,151	\$ 1,236,857,997
2) Short term investments	3,373,618,577	3,932,116,117
b. Accounts Receivable		
1) Member contributions	27,510,368	43,700,908
2) School districts	204,844,527	193,809,457
3) Employees Retirement System	1,711,632	1,540,855
4) State	128,204,905	109,118,444
5) Sale of investments	1,364,937,789	949,152,042
6) Interest and dividends	214,892,040	217,521,931
7) Other	281,662	265,806
c. Prepaid assets	66,819	0
d. Total current assets	<u>6,685,104,470</u>	<u>6,684,083,557</u>
2. Long Term Investments		
a. Fixed income	\$ 21,563,259,009	\$ 23,475,157,395
b. Alternative assets	48,251,848,136	44,439,452,144
c. Equities	47,167,558,671	52,316,260,451
d. Pooled investments	6,686,145,072	7,432,120,860
e. Invested securities lending collateral	19,372,421,460	22,876,578,455
f. Total long term investments	<u>\$ 143,041,232,348</u>	<u>\$ 150,539,569,305</u>
3. Other Assets		
a. Non-depreciable assets	\$ 28,106,500	\$ 11,684,248
b. Building and equipment after depreciation	25,618,506	26,370,131
c. Deferred assets	0	0
d. Total other assets	<u>\$ 53,725,006</u>	<u>\$ 38,054,379</u>
4. Total Assets	<u>\$ 149,780,061,824</u>	<u>\$ 157,261,707,241</u>
B. LIABILITIES		
1. Current Liabilities		
a. Accounts payable	\$ 33,427,181	\$ 52,115,729
b. Benefits payable	760,271,035	747,290,981
c. Due to Employees Retirement System	7,065,544	6,845,375
d. Due to State's General Revenue Fund	0	0
e. Investments purchased payable	1,053,105,752	799,099,305
f. Securities lending collateral	19,379,483,580	22,869,875,747
g. Total current liabilities	<u>\$ 21,233,353,092</u>	<u>\$ 24,475,227,137</u>
2. Deferred Credits	8,002,520	7,237,019
3. Total Liabilities and Deferred credits	<u>21,241,355,612</u>	<u>24,482,464,156</u>
C. NET ASSETS HELD IN TRUST	<u>\$ 128,538,706,212</u>	<u>\$ 132,779,243,085</u>
D. ASSET ALLOCATION FOR CASH & LONG TERM INVESTMENTS		
1. Cash	3.2%	3.3%
2. Fixed Income	14.6%	15.1%
3. Alternative Assets	32.7%	28.5%
4. Equities	31.9%	33.6%
5. Pooled investments	4.5%	4.8%
6. Invested securities lending collateral	<u>13.1%</u>	<u>14.7%</u>
7. Total	100.0%	100.0%

**DISTRIBUTION OF ACTIVE MEMBERS BY AGE AND BY YEARS OF SERVICE
AS OF 08/31/2015**

	Years of Credited Service												Total
	0	1	2	3	4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	
Attained Age	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	6 \$7,526	11,571 \$26,648	4,608 \$30,607	1,170 \$24,392	284 \$24,452	156 \$25,002							17,795 \$27,469
25-29	6 \$6,977	20,662 \$31,895	19,286 \$39,851	14,723 \$42,474	8,095 \$44,354	12,979 \$44,387	138 \$34,317						75,889 \$39,437
30-34	4 \$18,594	14,525 \$30,806	12,505 \$38,198	10,216 \$41,241	7,126 \$43,918	45,618 \$48,181	10,201 \$50,061	161 \$39,539					100,356 \$43,589
35-39	3 \$16,190	11,560 \$29,994	9,685 \$37,106	7,880 \$40,067	5,077 \$42,110	31,465 \$46,568	33,136 \$53,692	7,751 \$54,992	98 \$47,144				106,655 \$46,045
40-44	1 \$14,535	9,922 \$29,087	8,360 \$35,832	6,916 \$38,465	4,429 \$39,757	27,140 \$44,280	24,406 \$51,285	25,670 \$57,913	5,573 \$59,935	93 \$51,490			112,510 \$47,188
45-49	4 \$18,350	8,237 \$27,927	6,950 \$34,203	5,722 \$36,371	3,993 \$38,706	24,886 \$41,376	22,324 \$47,386	19,345 \$53,041	19,076 \$62,072	4,895 \$62,159	115 \$46,625		115,547 \$47,061
50-54	2 \$33,750	6,505 \$26,762	5,604 \$33,469	4,635 \$34,346	3,157 \$35,813	20,527 \$39,181	20,245 \$44,068	18,178 \$47,301	14,267 \$55,254	13,896 \$63,770	4,124 \$64,690	80 \$54,949	111,220 \$46,178
55-59	4 \$7,129	4,781 \$25,826	4,183 \$32,910	3,513 \$33,199	2,470 \$36,556	15,199 \$38,569	16,263 \$43,213	17,148 \$45,683	14,045 \$50,709	8,560 \$58,511	7,295 \$68,553	2,037 \$68,568	95,498 \$46,004
60-64		2,664 \$25,251	2,410 \$31,540	2,132 \$33,076	1,491 \$33,599	9,825 \$38,044	10,911 \$43,423	11,330 \$45,342	8,577 \$49,461	5,751 \$55,070	3,060 \$62,257	3,113 \$73,423	61,264 \$45,462
65 +		1,621 \$19,090	1,499 \$24,684	1,436 \$24,291	990 \$27,601	6,026 \$32,604	5,989 \$40,177	4,712 \$42,345	3,704 \$46,754	2,850 \$51,642	1,631 \$55,603	1,659 \$69,563	32,117 \$40,266
Total	30 \$11,625	92,048 \$25,721	75,090 \$34,374	58,343 \$38,012	37,112 \$40,343	193,821 \$43,501	143,613 \$48,139	104,295 \$50,834	65,340 \$55,412	36,045 \$59,924	16,225 \$64,926	6,889 \$70,843	828,851 \$44,787

DISTRIBUTION OF LIFE ANNUITIES BY AGE

Age	Number	Annual Annuities	Monthly Average Annuity
(1)	(2)	(3)	(4)
Up to 35	452	\$ 6,267,193	\$ 1,155
35-40	327	5,040,692	1,285
40-44	481	7,006,158	1,214
45-49	692	10,060,039	1,211
50-54	5,372	180,060,395	2,793
55-59	26,126	860,882,513	2,746
60-64	62,975	1,797,997,429	2,379
65-69	87,232	2,120,801,399	2,026
70-74	66,486	1,435,905,253	1,800
75-79	45,216	912,156,017	1,681
80-84	31,290	648,310,011	1,727
85-89	17,922	369,904,333	1,720
90-94	6,890	140,306,611	1,697
95-99	1,722	34,373,733	1,663
100 & up	276	5,486,760	1,657
TOTAL	353,459	\$ 8,534,558,536	\$ 2,012

DISTRIBUTION OF DISABLED ANNUITIES BY AGE

<u>Age</u>	<u>Number</u>	<u>Annual Annuities</u>	<u>Monthly Average Annuity</u>
(1)	(2)	(3)	(4)
Up to 35	1	\$ 10,226	\$ 852
35-40	25	296,051	987
40-44	132	1,687,130	1,065
45-49	373	6,048,096	1,351
50-54	966	16,172,600	1,395
55-59	1,562	24,026,259	1,282
60-64	1,842	25,965,138	1,175
65-69	1,547	19,952,133	1,075
70-74	1,003	13,066,174	1,086
75-79	700	10,385,455	1,236
80-84	638	10,893,877	1,423
85-89	361	6,057,567	1,398
90-94	99	1,586,319	1,335
95 -99	25	326,781	1,089
100 & up	2	19,675	0
TOTAL	9,276	\$ 136,493,481	\$ 1,226

RETIREES, BENEFICIARIES, AND DISABLED PARTICIPANTS ADDED TO AND REMOVED FROM ROLLS

Valuation August 31,	Added to Rolls		Removed from Rolls		Rolls-End of Year		% Increase in Annual Allowances	Average Annual Allowances
	Number	Annual Allowances	Number	Annual Allowances	Number	Annual Allowances		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2001					188,882	\$ 3,703,642,072		\$ 19,608
2002	19,678	\$ 426,133,328	7,119	\$ 100,259,400	201,441	4,029,516,000	8.8%	20,003
2003	23,061	477,035,602	7,025	125,196,802	217,477	4,381,354,800	8.7%	20,146
2004	30,288	640,407,566	7,138	108,483,938	240,627	4,913,278,428	12.1%	20,419
2005	15,153	292,452,315	7,271	127,291,874	248,509	5,078,438,869	3.4%	20,436
2006	15,810	324,292,542	7,175	120,623,840	257,144	5,282,107,571	4.0%	20,541
2007	15,861	336,348,640	7,698	131,295,705	265,307	5,487,160,506	3.9%	20,682
2008	17,727	391,920,863	7,806	135,160,090	275,228	5,743,921,279	4.7%	20,870
2009	17,326	392,452,923	7,940	136,537,511	284,614	5,999,836,691	4.5%	21,081
2010	20,076	473,512,423	8,199	142,187,645	296,491	6,331,161,469	5.5%	21,354
2011	24,688	620,038,676	8,499	147,985,004	312,680	6,803,215,141	7.5%	21,758
2012	27,915	697,134,389	8,848	155,597,838	331,747	7,344,751,692	8.0%	22,140
2013	25,825	743,998,946	9,344	165,231,795	348,228	7,923,518,843	7.9%	22,754
2014	24,429	573,876,713	9,475	174,915,127	363,182	8,322,480,429	5.0%	22,915
2015	25,134	604,436,264	10,578	191,966,951	377,738	8,734,949,742	5.0%	23,124

SUMMARY OF THE BENEFIT PROVISIONS OF THE RETIREMENT SYSTEM AS OF AUGUST 31, 2015

The Teacher Retirement System of Texas makes retirement, disability, and death and survivor benefits to all employees of the public school system of Texas. The major provisions of the System may be summarized as follows:

A. RETIREMENT BENEFITS

1. Grandfather Criteria:

To be grandfathered, you must have met at least one of the following requirements as a member on or before August 31, 2005: (i) at least 50 years old, or (ii) age and years of service credit equal at least 70, or (iii) have at least 25 years of service credit.

2. Normal Retirement Date:

(a) end of month following age 65 and 5 years of creditable service,

(b) (i) For members hired before August 31, 2007: end of month following attainment of “Rule of 80”

(ii) For members hired on or after August 31, 2007 and who are vested as of August 31, 2015: end of month following attainment of “Rule of 80” with minimum age of 60.

(iii) For members who are not vested as of August 31, 2015: end of month following attainment of “Rule of 80” with minimum age of 62.

2. Standard Annuity:

The product of 2.3% of the member's average compensation multiplied by years of creditable service. The average compensation is calculated as the average of the highest five annual salaries (based on creditable compensation). Members who as of August 31, 2005, were either age 50, had 25 years of service, or whose age plus service totaled 70 have their standard annuity calculated using the average of their highest three annual salaries.

3. Normal Retirement Benefits:

Greater of standard annuity, or \$150 per month.

4. Early Retirement:

- (a) after age 55 with 5 or more years of creditable service, or
- (b) after 30 years of creditable service, regardless of age.
- (c) For members hired after August 31, 2007, end of month following attainment of “Rule of 80”.

5. Early Retirement Benefits:

- (a) If a member was hired prior to September 1, 2007, has more than 30 years of service but does not meet the Rule of 80, and has maintained continuous membership until retirement, the early retirement benefit is equal to the normal retirement benefit earned to the date of retirement, reduced by 2% for each point the member is less than age 50.
- (b) If a member is grandfathered the early retirement benefit is equal to the normal retirement benefit earned to the date of retirement, reduced according to the following table:

Years of Service	AGE AT DATE OF RETIREMENT					
	55	56	57	58	59	60
20	90%	92%	94%	96%	98%	100%
21	92%	94%	96%	98%	100%	100%
22	94%	96%	98%	100%	100%	100%
23	96%	98%	100%	100%	100%	100%
24	98%	100%	100%	100%	100%	100%
25	100%	100%	100%	100%	100%	100%
26	100%	100%	100%	100%	100%	100%
27	100%	100%	100%	100%	100%	100%
28	100%	100%	100%	100%	100%	100%
29	100%	100%	100%	100%	100%	100%
30 or more	100%	100%	100%	100%	100%	100%

- (c) If the member was hired after August 31, 2007 and is vested as of August 31, 2015 and the member has met the “Rule of 80” or has 30 years of service the benefit is reduced 5% per year from age 60.
- (d) If the member is not vested as of August 31, 2015 and the member has met the “Rule of 80” or has 30 years of service the benefit is reduced 5% per year from age 62.

- (e) If the member does not meet any of the conditions (a) – (d) above, the early retirement benefit is equal to the normal retirement benefit earned to the date of retirement, reduced according to the following table:

AGE AT DATE OF RETIREMENT										
55	56	57	58	59	60	61	62	63	64	65
47%	51%	55%	59%	63%	67%	73%	80%	87%	93%	100%

6. Normal Form of Benefit:

Straight life annuity payable monthly with benefits commencing at end of month following retirement with the last payment payable on behalf of the annuitant in the month of death.

7. Optional Forms:

Option 1 - joint and 100% survivor, benefit reverts to normal form following the death of the joint annuitant.

Option 2 - joint and 50% contingent survivor, benefit reverts to normal form following the death of the joint annuitant.

Option 3 - 5 years certain and life.

Option 4 - 10 years certain and life.

Option 5 - Joint and 75% contingent survivor, benefit reverts to normal form following the death of the joint annuitant.

8. Deferred Retirement Option Plan (DROP):

- (a). Eligibility:

- 1) Must be an active contributing member.
- 2) Must be eligible for a standard service retirement annuity that is not reduced for retirement at an early age.
- 3) Must have at least 25 years of creditable service.
- 4) Must have entered the DROP program before January 1, 2006.

(b). Program Summary:

- 1) Participation begins the 1st of the month following the member's application and TRS approval of the application. Participation may begin in any month.
- 2) Participation may range from a minimum of one year to a maximum of five years, in 12-month increments. The member elects the period of participation at the outset.
- 3) The amount of the member's standard annuity is established as of the date of participation in the DROP. This amount is also used in determining the monthly deposit to the DROP account. A member will not accumulate further retirement annuity benefits during DROP participation, i.e., no further credit will be achieved from years of service or compensation changes.
- 4) Any special service credit that a member wishes to purchase must be paid in full prior to DROP participation.
- 5) A separate DROP account will be established for each participating member. Each month, an amount equal to 60 percent of the calculated standard annuity will be deposited into the account. At retirement, the account plus interest at the rate of five percent per annum will be distributed.
- 6) Member and employer contributions continue during DROP participation. Contributions are not deposited into the member's DROP account and will not be refunded.
- 7) Three events terminate participation - death, retirement or expiration of the participation period.
- 8) Upon retirement, participating members will receive their retirement annuity plus the balance in their DROP account including interest. DROP balances may be paid by TRS in a lump sum or on a time payout selected by the member.

10. Partial Lump-Sum Option Program:

Members, eligible for unreduced retirement and either (1) grandfathered or (2) meeting the Rule of 90, and not participating in the DROP program, may select a partial lump-sum distribution not to exceed an amount equal to 36 months of a standard service retirement annuity. When this option is selected, the member's annuity will be actuarially reduced to reflect that distribution and will be computed so that no actuarial loss results to TRS.

The percentage shown in the following table will be applied to reduce the standard annuity when the partial lump-sum option is elected.

Age	Percentage of Standard Annuity		
	12 Months	24 Months	36 Months
45	91.66	83.32	74.98
46	91.62	83.23	74.85
47	91.57	83.13	74.70
48	91.51	83.03	74.54
49	91.46	82.92	74.37
50	91.40	82.79	74.19
51	91.33	82.66	73.99
52	91.26	82.52	73.78
53	91.18	82.37	73.55
54	91.10	82.20	73.31
55	91.01	82.03	73.04
56	90.92	81.84	72.75
57	90.81	81.63	72.44
58	90.70	81.41	72.11
59	90.58	81.17	71.75
60	90.46	80.91	71.37
61	90.32	80.64	70.95
62	90.24	80.48	70.71
63	90.01	80.03	70.04
64	89.85	79.69	69.54
65	89.67	79.34	69.01
66	89.48	78.96	68.44
67	89.28	78.56	67.84
68	89.06	78.13	67.19
69	88.84	77.67	66.51
70	88.59	77.18	65.77
71	88.32	76.65	64.97
72	88.03	76.07	64.10
73	87.72	75.43	63.15
74	87.37	74.74	62.12
75	87.00	74.00	61.00
76	86.59	73.19	59.78
77	86.15	72.31	58.46
78	85.68	71.35	57.03
79	85.16	70.31	55.47
80	84.59	69.18	53.78
81	83.98	67.96	51.94
82	83.32	66.64	49.96
83	82.61	65.21	47.82
84	81.83	63.67	45.50
85	81.00	62.00	42.99
86	80.09	60.18	40.27
87	79.09	58.19	37.28
88	78.00	56.00	34.00
89	76.81	53.62	30.43
90	75.52	51.04	26.56
91	74.13	48.26	22.39

10. Minimum Annuity Payments:

Total annuity payments shall in no case be less than the member's accumulated contributions at retirement. Upon the death of a retiree, the excess, if any, of accumulated contributions over total annuity payments received prior to death will be paid to the beneficiary.

B. DISABILITY BENEFITS

1. Less than 10 years of creditable service: \$150.00 per month for the shorter of:

- (a) disability, or
- (b) number of months of creditable service as of date of disability retirement.

2. At least 10 years of creditable service: the greater of accrued retirement income or \$6.50 per month per year of creditable service, payable for duration of disability; disability presumed continuous if it continues past age 60. The minimum disability payment made on behalf of a member will be no less than \$150.00 per month.

C. DEATH BENEFITS

1. Eligibility: applicable if death occurs:

- (a) in service,
- (b) while absent from service for good cause,
- (c) while not in service but eligible to retire,
- (d) while not in service but would be eligible to retire without additional service before April 15 of the sixth school year after last creditable year of service, or
- (e) while receiving a disability benefit, but only eligible for 2f, below.

2. Benefit: any one of the following, at the option of the beneficiary:

- (a) a lump sum (not to exceed \$80,000) equal to two times the rate of pay for the last year of service,
- (b) a lump sum (not to exceed \$80,000) equal to two times annual pay for the year preceding last year of service,
- (c) 60 monthly payments of accrued standard annuity,
- (d) a life annuity payable under Option 1 as if the member had retired on the last day of the month preceding death,

- (e) a refund of accumulated contributions, or
- (f) the survivor benefits, if eligible.

Note: Items (c) and (d) available only if member has at least 5 years of creditable service.

- 3. Benefit if Absent from Service Without Good Cause: return of accumulated contributions.

D. SURVIVOR BENEFITS

- 1. Benefits: (a) or (b) at the election of the beneficiary:

- (a) lump sum payment of \$10,000, or
- (b) lump sum payment of \$2,500 plus one of the following, if the designated beneficiary is eligible:
 - (i) if a spouse or dependent parent, \$250 per month commencing at age 65,
 - (ii) if a spouse with children under age 18, \$350 per month until youngest child reaches 18, then \$250 per month commencing at spouse's age 65, or
 - (iii) if dependent children, \$350 per month as long as at least two dependent children under 18, reducing to \$250 per month when there is only one child under 18.

If benefits are payable under (i) or (ii) above and eligible spouse or dependent dies, payments will revert in accordance with (iii) above.

- 2. Eligibility:

- (a) all employees eligible for a death benefit other than refund of accumulated contributions,
- (b) any retired member, in addition to any benefit provided by his or her option of payment, or
- (c) any disabled participant, in lieu of other death benefits (Item C2).

E. VESTING OF BENEFITS

1. Vesting: a member is fully vested after 5 years of creditable service.
2. Benefits upon Vesting: a fully vested member is entitled to the following:
 - (a) upon becoming inactive, not required to withdraw accumulated contributions within seven years,
 - (b) may apply at age 65 for normal retirement benefit equal to accrued standard annuity, or
 - (c) may apply for any other retirement benefits for which he or she is eligible upon satisfying age requirement (if applicable) if he or she satisfied the corresponding service requirement at time of last termination; benefit is based on his or her full accrued standard annuity.

F. MEMBER CONTRIBUTIONS

6.70% of compensation per year for fiscal year 2015, 7.20% for fiscal year 2016, and 7.70% for years on and after 2017.

G. STATE CONTRIBUTIONS

State will contribute 6.80% of member compensation for FY2015, and each year thereafter. Beginning in fiscal year 2015, covered employers whose employees are not participating in Social Security will begin contributing 1.50% of pay (capped at the minimum salary schedule). Combined it is expected that these contributions will be approximately 7.70% of total payroll.

H. LEGISLATIVE CHANGES MADE BY THE 1991 STATE LEGISLATURE

1. The minimum retirement benefit increased from \$75 to \$100 per month.
2. The disability death benefit changed to the same as a service retirement death benefit.
3. An ad hoc cost of living increase was approved for members who retired prior to May 1, 1989. The increase does not apply to a survivor benefit or to a disability benefit for a member who had less than 10 years of service at the time of retirement or death. The amount of the increase is five-tenths of one percent of each full six-month period between the latest effective date of retirement (or date of death) and August 1, 1991. The increase begins August 1991.

I. LEGISLATIVE CHANGES MADE BY THE 1993 STATE LEGISLATURE

1. Increase in survivor benefit by \$50 per month.
2. Retroactive minimum benefit of \$6.50 per year of service for members retired as of November 1, 1991.
3. An ad hoc cost of living increase approximating a 25% CPI catch-up. The actual percentage increase varies by year of retirement and has a minimum increase of 5%. The increase begins with the January, 1994 annuity check and covers all benefit recipients who began receiving benefits before August 31, 1991, except that it does not apply to survivor benefits or to a disability benefit for a member who had less than 10 years of service at the time of retirement or death.
4. ERS/TRS transfer provisions.
 - (a) Service credit transfers allowed if the participant is a member of both ERS and TRS and has at least three years of service credit in the System from which the member is retiring.
 - (b) A member may reinstate or purchase service credit in the other System prior to making the transfer if that member has at least three years of service credit in the current System.
 - (c) TRS and ERS will jointly set rules for the assumptions used in computing asset transfer amounts. The transfer of funds between ERS and TRS takes place at the time of actual retirement.

J. LEGISLATIVE CHANGES MADE BY THE 1995 STATE LEGISLATURE

1. Unreduced benefits at retirement were expanded to include participants age 50 or older with 30 or more years of service.
2. Annuitants' benefits increased in an amount equal to the greater of:
 - (a) A recalculation of benefits based on
 - (i) January 1, 1995 law with all intervening ad hoc increases, plus
 - (ii) A CPI catch-up increase.
 - (b) A recalculation of benefits for retirees who retired before September 1, 1993, based on a 2% multiplier and a minimum annual salary of a classroom teacher

or full-time librarian as described by the Education Code. This annual salary is currently \$17,000 based on current Education Code.

3. Treat all Option 1 and Option 2 benefits as including the pop-up feature.
4. The annuity payment in the month of death is payable on behalf of the annuitant.
5. The disability benefit payable when a member has less than ten years of service increased from \$50 per month to \$150 per month for both current and future disabled members. The minimum disability payment made on behalf of a member with ten or more years of service shall be no less than \$150 per month.
6. The benefit increase reserve account in TRS was eliminated, resulting in the liability for all annuity benefits being included within the retired reserve account.
7. The maximum two-times-pay death benefit payable on behalf of a member would increase from \$60,000 to \$80,000.

K. LEGISLATIVE CHANGES MADE BY THE 1997 STATE LEGISLATURE

1. Driver's education pay is added to plan compensation for the determination of a member's best 3-year average compensation.
2. Disabled participants are allowed to select a Joint and Survivor annuity option after commencement of disability benefits, if they become married after date of disability.
3. Retirees are allowed to change the designated beneficiary for pension benefits payable after their death under certain conditions.
4. Adoption of "Rule of 80" criteria for unreduced standard retirement annuity (i.e., sum of member's age & credited service is greater than or equal to 80).
5. Elimination of \$6.50 per month per year of service minimum standard retirement annuity benefit.
6. Addition of \$50.00 to the minimum survivor benefit.
7. Creation of a Deferred Retirement Option Program (DROP), described in Item A8 above.
8. A CPI catch-up ad hoc cost-of-living increase for retired members.

L. LEGISLATIVE CHANGES MADE BY THE 1999 STATE LEGISLATURE

1. Increased multiplier from 2.0% to 2.2% effective September 1, 1999, and an equivalent 10% increase for all retirees.
2. A CPI catch-up ad hoc cost-of-living increase for retired members.
3. Established a partial lump-sum option at time of retirement.
4. DROP participant enrolled on or before August 31, 1999, have a one-year window from September 1, 1999 to revoke DROP participation.
5. For members entering DROP on or after September 1, 1999, the monthly DROP deposit will be reduced from 79% to 60% of the standard annuity.
9. Provides a lump-sum death benefit of \$160,000 for an active member employed by a school district who dies due to a physical assault during the performance of their regular duties.
10. Allows a return to teaching after being retired at least 12 months without a reduction in the retirement benefit under certain circumstances.

M. LEGISLATIVE CHANGES MADE BY THE 2001 STATE LEGISLATURE

1. Increased multiplier from 2.2% to 2.3% effective September 1, 2001, and an equivalent 4.5% increase for all retirees.
2. A 6% ad hoc increase for retired members.
3. Increase in survivor benefits of \$50 per month.
4. Allows a return to work as a bus driver with no reduction in the monthly benefit if retired with an unreduced benefit.
5. Permits purchase of up to 3 years of “air time” if the member has at least 7 years of actual membership service. Purchase price is the full actuarial cost of the purchased service.

N. LEGISLATIVE CHANGES MADE BY THE 2003 STATE LEGISLATURE

1. For employees hired on or after September 1, 2003, a 90-day waiting period is required for participation in TRS. Members may have the option to purchase this service. This provision is set to expire on September 1, 2005.
2. Limits the collection of overpayments to the three years prior to the overpayment discovery, except in cases of fraud or knowledge by the participant that the payments were incorrect.
3. Repealed the requirement that in order to reinstate service withdrawn after August 31, 2003, for the purposes of ERS/TRS transfer, the member must belong to the system from which the service is purchased.
4. Retirees who are employed by a third-party entity are considered to be employees of the school for return to work purposes unless the retiree does not perform duties or provide services in behalf of the school
5. Retirees may work as a substitute and on a half-time basis during a single calendar month as long as the total days worked do not exceed the number of days for one-half time employment for that month.

O. LEGISLATIVE CHANGES MADE BY THE 2005 STATE LEGISLATURE

1. Final average salary at retirement will be determined by the highest five years (instead of three years) of salary, subsidized early retirement will be eliminated, and partial lump sum option eligibility will require a combined age plus years of creditable service that equals at least 90 (“Rule of 90”).
2. Future members (those who establish TRS membership on or after September 1, 2007) will have the following eligibility requirements to qualify for an unreduced annuity at retirement: (i) age 65 with 5 years of service, or (ii) age 60 with at least 5 years of service and meets the Rule of 80 (combined age and years of service equal at least 80).
3. Employers will be required to pay a monthly surcharge to the pension fund for each retiree working in a TRS-covered position and reported to TRS.
4. The Deferred Retirement Option Plan (DROP) is being discontinued for new participation effective December 31, 2005.

P. LEGISLATIVE CHANGES MADE BY THE 2007 STATE LEGISLATURE

1. The State contribution rate was increased to 6.58% for fiscal year 2008. In addition, the new law requires the State contribution rate to be at least equal to the member contribution rate.
2. The Legislature authorized TRS to make a one-time payment (13th check) in January 2008, if the August 31, 2007 actuarial valuation showed that the funding period would be less than 31 years with the payment. The payment is equal to the lesser of the member's December monthly payment or \$2,400. To be eligible a retiree must have retired on or before December 31, 2006.

Q. LEGISLATIVE CHANGES MADE BY THE 2009 STATE LEGISLATURE

1. The Legislature included funding for a one-time supplemental payment of \$500 million for current retirees. This appropriation was contingent upon a ruling by the Attorney General's office that such a payment is permissible under State law. The Attorney General determined this payment was not permissible, and therefore the additional appropriation will be contributed to the Trust as additional contributions, increasing the State contribution rate to an effective 6.644% for the biennium.

R. LEGISLATIVE CHANGES MADE BY THE 2013 STATE LEGISLATURE

1. The normal retirement eligibility for members who are not vested as of August 31, 2015 to the "Rule of 80" with minimum age 62 (was minimum age of 60).
2. For members who are not vested as of August 31, 2015, their early retirement benefit will be reduced from age 62 (was 60) if they meet the Rule of 80" but are not eligible for normal retirement.
3. The Legislature granted an ad hoc COLA for members in payment status since August 31, 2004. The payment is equal to the lesser of \$100 or 3% of their monthly payment.
4. The member contribution rate will increase to 6.70% in fiscal year 2015, 7.20% in fiscal year 2016, and 7.70% for fiscal years on and after 2017.
5. The State's contribution rate increased to 6.80% in fiscal year 2014.
6. Covered employers whose employees are not participating in Social Security **whose positions are subject to the state statutory minimum salary schedule** will begin contributing 1.50% of pay in fiscal year 2015.

ACTUARIAL ASSUMPTIONS AND METHODS (Adopted September 24, 2015)

The following assumptions were developed and recommended based on an experience study performed in 2015. All of the assumptions are based on a combination of anticipated future experience and market observations. We believe all of the assumptions are reasonable and appropriate for this measurement. Please see our report dated September 9, 2015 for more discussion about the selection of these assumptions.

ACTUARIAL ASSUMPTIONS

1. Investment Return Rate 8.00% per annum, compounded annually, composed of an assumed 2.50% inflation rate and a 5.50% real rate of return, net of investment expenses

2. Mortality, Withdrawal, Disability Retirement, and Service Retirement Rates:

Rates and scales developed in the actuarial investigation as August 31, 2014, with values at specimen ages shown in the tables below:

- a. Active Mortality: RP-2014 Employee Mortality Tables for male and female multiplied by 90%, with full generational projection using Scale BB. Below are the samples rates for 2014 and 2044.

Age	2014 Mortality Rates		Age	2044 Mortality Rates	
	Male	Female		Male	Female
20	0.000365	0.000146	20	0.000334	0.000133
30	0.000407	0.000196	30	0.000372	0.000179
40	0.000565	0.000356	40	0.000516	0.000326
50	0.001517	0.000992	50	0.001387	0.000906
60	0.004219	0.002198	60	0.003417	0.001626
70	0.012469	0.005678	70	0.007923	0.003953
80	0.034930	0.016542	80	0.022196	0.011516
90	0.123749	0.092945	90	0.088804	0.066698

b. Rates of Termination (net of applying rehire assumption)

Years of Service	Probability of Decrement Due to Withdrawal	
	Male	Female
1	0.149027	0.143098
2	0.119756	0.117329
3	0.096637	0.097896
4	0.072275	0.076765
5	0.062453	0.068443
6	0.055556	0.060368
7	0.047176	0.049631
8	0.041464	0.043108
9	0.036978	0.038477
10	0.033777	0.035264

The following table is used for all years after the first ten years of employment.

Probability of Decrement Due to Withdrawal Based on Years from Normal Retirement					
Years from NR	Male	Female	Years from NR	Male	Female
1	0.012140	0.009500	17	0.024208	0.027793
2	0.014373	0.012353	18	0.024547	0.028402
3	0.015865	0.014405	19	0.024873	0.028990
4	0.017017	0.016064	20	0.025185	0.029559
5	0.017968	0.017481	21	0.025487	0.030110
6	0.018783	0.018731	22	0.025777	0.030646
7	0.019502	0.019858	23	0.026058	0.031166
8	0.020147	0.020888	24	0.026329	0.031673
9	0.020733	0.021842	25	0.026592	0.032166
10	0.021273	0.022731	26	0.026848	0.032648
11	0.021772	0.023567	27	0.027096	0.033118
12	0.022239	0.024357	28	0.027337	0.033578
13	0.022676	0.025107	29	0.027571	0.034027
14	0.023090	0.025822	30	0.027800	0.034467
15	0.023481	0.026506	31	0.028023	0.034898
16	0.023853	0.027162	32	0.028241	0.035320

c. Rates of Disability Retirement

Age	Probability of Decrement Due to Disability			
	For Service ≥ 10		For Service < 10	
	Male	Female	Male	Female
20	0.000184	0.000276	0.000037	0.000055
30	0.000184	0.000276	0.000037	0.000055
40	0.000430	0.000469	0.000086	0.000094
50	0.001993	0.001817	0.000399	0.000363
60	0.003505	0.002754	0.000701	0.000551

d. Rates of Retirement

Age	Normal Retirement		Age	Early Retirement	
	Male	Female		Male	Female
50	0.1300	0.3000	45	0.0100	0.0100
51	0.1300	0.1200	46	0.0100	0.0100
52	0.1300	0.1300	47	0.0100	0.0200
53	0.1300	0.1400	48	0.0200	0.0300
54	0.1400	0.1500	49	0.0300	0.0400
55	0.1500	0.1600	50	0.0100	0.0100
56	0.1600	0.1700	51	0.0100	0.0100
57	0.1700	0.1800	52	0.0100	0.0100
58	0.1800	0.1900	53	0.0100	0.0100
59	0.1800	0.2000	54	0.0100	0.0100
60	0.2200	0.2100	55	0.0100	0.0100
61	0.2000	0.2200	56	0.0100	0.0100
62	0.2400	0.2300	57	0.0100	0.0100
63	0.2000	0.2300	58	0.0100	0.0100
64	0.2000	0.2300	59	0.0100	0.0200
65	0.2200	0.2300	60	0.0200	0.0200
66	0.2200	0.2300	61	0.0200	0.0200
67	0.2200	0.2300	62	0.0500	0.0400
68	0.2200	0.2300	63	0.0500	0.0500
69	0.2200	0.2300	64	0.0600	0.0600
70	0.2200	0.2300	65	0.0500	0.0500
71	0.2200	0.2300			
72	0.2200	0.2300			
73	0.2200	0.2300			
74	0.2200	0.2300			
75	1.0000	1.0000			

For members hired after August 31, 2007 and who are vested as of August 31, 2014, the retirement rates for members once they reach unreduced retirement eligibility at age 60 are

increased 10% for each year the member is beyond the Rule of 80 (i.e. if the member reached the Rule of 80 at age 58 then the probability of retirement at age 60 is 120% of the rate shown above).

For members hired after August 31, 2007 and who are not vested as of August 31, 2014, or, for members hired after August 31, 2014, the retirement rates for members once they reach unreduced retirement eligibility at age 62 are increased 10% for each year the member is beyond the Rule of 80 (i.e. if the member reached the Rule of 80 at age 58 then the probability of retirement at age 62 is 140% of the rate shown above).

The rates of retirement for normal retirement benefits for members who are not TRS-Care grandfathered as of August 31, 2014 are 85% of the rates described above prior to age 62 and an increased rate at age 62 by adding 5%.

3. Rates of Salary Increase

Inflation rate of 2.50%, plus productivity component of 1.00%, plus step-rate/promotional component as shown:

<u>Years of Service</u>	<u>Merit, Promotion, Longevity</u>		<u>General</u>		<u>Total</u>
1	6.00	%	3.50	%	9.50
2	2.50		3.50		6.00
3	1.90		3.50		5.40
4	1.70		3.50		5.20
5	1.50		3.50		5.00
6	1.40		3.50		4.90
7	1.20		3.50		4.70
8	1.00		3.50		4.50
9	1.00		3.50		4.50
10	1.00		3.50		4.50
11	1.00		3.50		4.50
12	1.00		3.50		4.50
13	0.80		3.50		4.30
14	0.70		3.50		4.20
15	0.60		3.50		4.10
16	0.50		3.50		4.00
17	0.50		3.50		4.00
18	0.40		3.50		3.90
19	0.30		3.50		3.80
20	0.30		3.50		3.80
21	0.20		3.50		3.70
22	0.20		3.50		3.70
23	0.10		3.50		3.60
24	0.10		3.50		3.60
25 & up	0.00		3.50		3.50

4. Post-retirement Mortality: The 2015 TRS of Texas Healthy Pensioner Mortality Tables, with full generational projection using scale BB, used for service retirement annuitants, beneficiaries and survivors. These tables are developed based on the experience in the actuarial investigation as of August 31, 2014. Below are sample rates for 2014 and projected rates for 2044.

Age	2014 Mortality Rates		Age	2044 Mortality Rates	
	Male	Female		Male	Female
40	0.001938	0.001585	40	0.001771	0.001448
50	0.004247	0.002791	50	0.003881	0.002550
60	0.005584	0.003882	60	0.004523	0.002872
70	0.015547	0.009613	70	0.009879	0.006692
80	0.053691	0.035591	80	0.034118	0.024777
90	0.162983	0.133727	90	0.116958	0.095964
100	0.407509	0.284047	100	0.372385	0.259564
110	0.500000	0.467915	110	0.500000	0.467915

For disabled retirees, a three-year set forward of the above tables are used, with a minimum mortality rates of 0.0200 for female and 0.0400 for male.

Age	2014 Mortality Rates		Age	2044 Mortality Rates	
	Male	Female		Male	Female
40	0.040000	0.020000	40	0.040000	0.020000
50	0.040000	0.020000	50	0.040000	0.020000
60	0.040000	0.020000	60	0.040000	0.020000
70	0.040000	0.020000	70	0.040000	0.020000
80	0.076501	0.054133	80	0.048613	0.037685
90	0.218673	0.181404	90	0.156922	0.130177
100	0.500000	0.340356	100	0.456904	0.311020
110	1.000000	0.500000	110	1.000000	0.500000

HANDLING OF ACTIVE DATA WITH MISSING INFORMATION:

As of the close of each fiscal year there is a large number of records for whom no statistical data has been received. The only information TRS has is social security number and initial contributions. Any of these records that were in the prior year's data are treated as non-vested terminated members. The remaining records are treated as new entrants. These records are added to the count of active members, but have no liability.

There are other records provided by TRS that have missing gender and/or missing date of births. These records are handled as follows:

1. 80% of records with missing gender are assumed to be female. The overall male/female ratio of the active membership is used to set this assumption.
2. Records with missing dates of birth are assigned a date of birth that produces an entry age equal to the average entry age for the overall active population, based on the member's actual service.

ASSUMPTION FOR DROP PARTICIPATION

Current active members are not eligible to participate in DROP, therefore no new DROP members are assumed.

BENEFIT ELECTION OF VESTED TERMINATING MEMBERS:

In determining the liabilities developed for future terminating vested members, it is assumed that the member elects either a refund or a deferred vested benefit, whichever is more valuable. The deferred benefit is assumed to commence at the earliest age the member is eligible for unreduced retirement.

ELECTION RATES FOR ACTIVE MEMBER DEATH BENEFITS:

It is assumed that the beneficiary will elect the death benefit option with the greatest value.

DECREMENT TIMING:

Retirement is assumed to occur at the end of the year. Termination from service is assumed to occur at the beginning of the year. All decrements are assumed to occur mid-year.

BENEFIT ELECTION OPTIONS:

It is assumed that future healthy retirees will select the normal form of payment. For disabled members, 80% are assumed to select the normal form of payment and 20% to select the 100% joint and survivor option.

MARRIAGE ASSUMPTION:

While not implicitly used in the valuation, 100% of active members are assumed to be married when setting other benefit election and eligibility assumptions.

SPOUSAL AGE DIFFERENCE:

Husbands are assumed to be three years older than their wives.

CLASSIFICATION OF WHO ARE ACTIVE MEMBERS:

Members who contributed during the just-completed plan year but did not retire before August 31st are considered active.

AVERAGE SURVIVOR BENEFIT LIABILITY:

One of the options on the death of an active member, a disabled member, or a retired member is a survivor benefit. To determine the liability for this benefit the following average values are used.

	Males	Females
1. Active member	\$62,200	\$59,000
2. Disabled member	\$13,000	\$11,000
3. Retired member	\$12,000	\$12,000

ACTUARIAL VALUE OF ASSETS:

- A. The actuarial value of assets is equal to the market value of assets less a five-year phase in of the excess (shortfall) between expected investment return and actual income. The actual calculation is based on the difference between actual market value and the expected actuarial value of assets each year, and recognizes the cumulative excess return (or shortfall) over at a minimum rate of 20% per year. Each year a base is set up to reflect this difference. If the current year's base is of opposite sign to the deferred bases then it is offset dollar for dollar against the deferred bases. Any remaining bases are then recognized over the remaining period for the base (5 less the number of years between the bases year and the valuation year). This is intended to ensure the smoothed value of assets will converge towards the market value in a reasonable amount of time.
- B. Expected earnings are determined using the assumed investment return rate and the beginning of year actuarial value of assets (adjusted for receipts and disbursements during the year). Beginning in fiscal year 2016, the returns are computed net of investment expenses.

PAYROLL GROWTH FOR FUNDING OF UNFUNDED ACTUARIAL ACCRUED LIABILITY:

Total payroll is expected to grow at 2.50% per year. That is made up of an inflation rate of 2.50% plus a 0.50% real wage growth for a total general wage increase assumption of 3.00%. This value is used to increase the wages for each annual cohort of new entrants in an open group projection based on the current demographics and the current assumptions. Because of the larger than normal number of members either eligible to retire or expected to retire in the next 5-10 years, the projection anticipates that without population growth, the growth in overall payroll will be damped to below the general wage increase assumption.

ACTUARIAL COST METHOD:

The funding period required to amortize the unfunded actuarial accrued liability (UAAL) is determined using the Entry Age Actuarial Cost Method. This 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 assigned to future years.

The normal cost is determined using the "ultimate entry age normal" method. Under this cost method, a calculation is made to determine the average uniform and constant percentage rate of employer contribution which, if applied to the compensation of each participant during the entire period of his/her anticipated covered service, would be required to meet the cost of all benefits payable on his behalf based on the benefits provisions for new employees hired on or after August 31, 2015.

The actuarial accrued liability (AAL) for each member is the difference between their present value of future benefits (PVFB), based on the tier of benefits that apply to the member, and their present value of future normal costs determined using the normal cost rate described above. For inactive and retired members their AAL is equal to their PVFB.

The unfunded actuarial accrued liability (UAAL) is the excess of the actuarial accrued liability over the actuarial value of assets.

Since the State statutes governing the System establish the current employee and State contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL on a level percentage of payroll basis, taking into account the payroll growth assumption and the normal cost expressed as a percent of pay.

Because of this amortization procedure, any change in the unfunded actuarial accrued liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period. The statutory goal is that the State contribution rate be sufficient to keep the funding period below 31 years.

PROJECTED PAYROLL FOR CONTRIBUTIONS:

The aggregate projected payroll for the fiscal year following the valuation date is calculated by increasing the actual payroll paid during the previous fiscal year by the payroll growth rate and multiplying by the ratio of current active members to the average number of active members during the previous fiscal year.

USE OF CELLED DATA:

For valuation purposes, every record in the census is valued individually.

For legislative purposes, the active valuation data is celled by benefit tier, gender, years of service, month and year of birth. The individual cell is valued using the sum of the salary and account balances of the members in the cell. Every year we test this approach against using the individual records and the results are consistently less than 0.02% different in total present value of benefits.

FUNDING OF UNFUNDED ACTUARIAL ACCRUED LIABILITY:

Funded by the excess of future State\employer contributions required by Law over the amount of such contributions required to fund the normal cost of benefits. Under the actuarial funding method and the benefit provisions for new hires, the ultimate normal cost for benefits provided by the System is 9.92% of payroll (7.70% by members plus 2.22% by the State). An additional 0.12% of payroll is used to pay for the administrative expenses of the System, leaving 5.36% of payroll less than the ultimate total contribution rate required by Law. It is intended that the excess amount of 5.36% of payroll will be used to amortize any unfunded actuarial accrued liabilities of the System, assuming that total payroll increases by 2.50% per year.

As of the valuation as of August 31, 2015, these excess contributions of 5.36% of pay are sufficient to amortize the UAAL, but not under the prescribed 30 year funding period.

CHANGES SINCE THE PRIOR VALUATION:

The following are changes to the actuarial assumptions and data process new in this valuation based on the experience study for the 5 year period ending August 31, 2014.:

Economic Assumptions

1. The inflation assumption was decreased from 3.00% to 2.50%.
2. The ultimate merit assumption for long-service employees was decreased from 1.25 to 1.00%. This means we will assume members with more than 25 years of service will receive increases equal to 3.50% per year. This is a net decrease of 0.75% per year compared to the current assumption set. This recommendation reflects a reduction in inflation as well as a reduction in the spread between inflation and salary increases experienced in the overall economy.
3. In accordance with the observed experience, there were small adjustments in the service-based

promotional/longevity component of the salary scale.

4. The payroll growth assumption was lowered from 3.50% to 2.50%. This decrease is based on the sum of the 0.50% decrease in inflation, 0.25% from the salary scale plus another 0.25% to reflect the expected drag on overall payroll growth due to the retirements of the baby boomer generation over the next decade. As these members retire they will be replaced by new members with much lower salaries. The payroll growth assumption has no impact on the liabilities. This assumption is used to project amortization payments that will be received by the System to amortize the UAAL and thus has a direct impact on the calculated funding period.

Mortality Assumptions

5. The post-retirement mortality tables for non-disabled retirees were updated to reflect recent TRS member experience. Mortality rates will be assumed to continue to improve in the future using a fully generational approach and Scale BB.
6. The post-retirement mortality tables for disabled retirees we updated to reflect recent TRS member experience. Mortality rates will be assumed to continue to improve in the future using a fully generational approach and Scale BB.
7. The pre-retirement mortality tables for active employees were updated to use 90% of the recently published RP-2014 mortality table for active employees. Mortality rates will be assumed to continue to improve in the future using a fully generational approach and Scale BB.

Other Demographic Assumptions

8. We modified who is counted as an active member in the valuation. Previously, members who contributed during the most recent fiscal year, but have not applied for a retirement, are considered to be active on the valuation date. We did not propose any change for this group. However, we also assumed 10% of any members who have contributed (been active) in the past 5 years to be an active member. This was an implicit rehire assumption because Teachers have historically had high incidence of terminating employment for a time and then returning to the workforce at a later date. We modified this methodology to add a more explicit valuation of the rehire incidence in the termination liabilities, and therefore are not counting this additional 10% as active employees. This will be a much cleaner approach to not only the valuation process (as the 10% required two sets of valuation runs for these members) but also in reporting demographic information because each member will be classified into one category (active, inactive, or in payment). This change will not have a material impact on the liabilities or cost calculations, but will make for a more efficient process.
9. There were adjustments to the termination patterns for members consistent with experience and future expectations. The termination patterns have been adjusted to reflect the rehire assumption. We also changed the timing of the termination decrement from the middle of the year to the

beginning of the year to mimic the actual pattern in the data.

10. Small adjustments were made to the retirement patterns for members consistent with experience and future expectations.
11. Small adjustments to the disability patterns were made for members consistent with experience and future expectations. Two separate patterns were created based on whether the member has 10 years of service or more.
12. For members that become disabled in the future, we will assume 20% of them will choose a 100% joint and survivor annuity option.

Actuarial Methods and Policies

13. We changed from using celled data in the valuation process to using individual data records. This will make for a cleaner and simpler valuation process and allow for better reporting of some items, such as actuarial gains and losses by source. However, the use of individual data will extend the computer run time dramatically. Thus, we will continue to use celled data in legislative analyses and adjust for any difference between the two data sets.

DEFINITION OF ACTUARIAL TERMS

H.B. 2206 as passed by the 1979 Legislature requires that any actuarial study of a public retirement system include "a complete definition of each actuarial term used in the study". In our report we have attempted to avoid the use of a multitude of complex actuarial terminology, but we realize that different users of our reports may have differing opinions as to what constitutes an "actuarial term". Accordingly, in keeping with the intent and the spirit of the law, we offer the following definitions of several terms contained in this report which might be considered actuarial in nature. Any qualified user of our report who believes that additional terms should be included is invited to communicate such terms either directly to us or through the Teacher Retirement System of Texas.

1. *Actuarial Accrued Liability* - for benefits payable in the future to present members, it will equal the present value of benefits payable in the future to them less the present value of future normal costs.
2. *Actuarial Assumptions* - assumptions as to future experience under the System. Current actuarial assumptions are detailed in Table 21 of the current annual valuation report. Assumptions include future fund earning rates, rates of future salary increases, and rates of death (both before and after retirement), disability, retirement, and withdrawal. Effective August 31, 1985, select and ultimate assumptions were adopted for retirement and withdrawal rates and the salary scale.
3. *Actuarial Gain or Actuarial Loss* - a measure of the difference between actual experience and assumed experience of the System. 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 liabilities emerge which may be the same as forecasted, or they may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the System'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.
4. *Actuarial Liabilities* - the actuarially determined present value of future benefits to be provided by the System. There are separate actuarially determined present values for retired members and non-retired members (either active or inactive). When applied to active members, it takes into account benefits which will be earned through future service and future salary increases.
5. *Actuarial Value of Present Assets* - the value of present System assets for valuation purposes. Prior to August 31, 1985, this value was the same as the book value of assets. Beginning August 31, 1985, through August 31, 1993, this value was calculated under the "market over book adjusted asset valuation method." Beginning August 31, 1993, this value is calculated

- under a five-year phase in of the excess (shortfall) between expected and actual income return on the market value of assets.
6. *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.
 7. *Decrements* - those types of activities by members of the System which cause them no longer to be members, i.e., death, retirement, disability, and withdrawal. It is a general term referring to any or all of these membership terminating events.
 8. *Defined Benefits* - in a retirement plan, benefits which are defined by a specific formula applied to specific member compensation and/or specific years of service. The amount of the benefit is not a function of contributions or actual earnings on those contributions.
 9. *Defined Contributions* - in a retirement plan, periodic contributions to the plan which are defined as a specific percent of compensation.
 10. *Experience Study* - a periodic review and analysis of the actual experience of the System 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.
 11. *Funding Period* - the number of years in the future that will be required to fund (i.e., pay off or eliminate) the unfunded actuarial accrued liability, based on the actuarial assumptions and assuming no future actuarial gains or losses.
 12. *Future Benefits* - benefits specified in the law which will become payable at some time in the future when the member satisfies the requirement to receive such benefits.
 13. *Future Contributions* - contributions to be made by the member or the State in the future, as required by the law.
 14. *Normal Cost* - the actuarial cost to fund the benefits provided by the System were the funding to begin at date of hire. It is expressed as a percent of pay and is equal to the present value at hire of all possible benefits of the System divided by the present value of anticipated future compensation to be received by the new member. In the aggregate, it must be less than the total future contribution to the System if the unfunded actuarial accrued liability is to be amortized. Otherwise there must be a funding surplus sufficient in size to offset any contribution rate shortfall.

15. *Present Value* - the actuarially determined lump sum value as of the valuation date of a series of payments to be made in the future, where the lump sum value is equal to the sum of the discounted value of each future payment. The discounted value of each payment is the product of (a) the amount of the payment, (b) the probability that the payment will be made (based on the current actuarial assumptions as to future experience), and (c) the time value of money (based on the current assumed interest rate).

16. *Unfunded Actuarial Accrued Liability* - that portion of the actuarial accrued liability (including the present value of benefits presently being paid to retired members) that exceeds the value of current actuarial assets. A funding surplus exists if the actuarial accrued liability is less than the actuarial assets.