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# **Tyler Firemen's Relief and Retirement Fund**

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## **Actuarial Valuation as of December 31, 2013**

**October 17, 2014**



**Rudd and Wisdom, Inc.**  
CONSULTING ACTUARIES

# Rudd and Wisdom, Inc.

## CONSULTING ACTUARIES

Mitchell L. Bilbe, F.S.A.  
Evan L. Dial, F.S.A.  
Philip S. Dial, F.S.A.  
Philip J. Ellis, A.S.A.  
Charles V. Faerber, F.S.A., A.C.A.S.  
Mark R. Fenlaw, F.S.A.  
Carl L. Frammolino, F.S.A.

Christopher S. Johnson, F.S.A.  
Oliver B. Kiel, A.S.A.  
Robert M. May, F.S.A.  
J. Christopher McCaul, F.S.A.  
Edward A. Mire, F.S.A.

Rebecca B. Morris, A.S.A.  
Michael J. Muth, F.S.A.  
Khiem Ngo, F.S.A.  
Coralie A. Taylor, F.S.A.  
Ronald W. Tobleman, F.S.A.  
Kenneth Torng, A.S.A.  
David G. Wilkes, F.S.A.

October 17, 2014

Board of Trustees  
Tyler Firemen's Relief  
and Retirement Fund  
1718 West Houston  
Tyler, Texas 75702

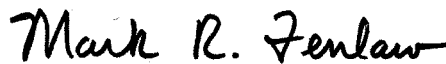
Members of the Board of Trustees:

At the request of the Board of Trustees of the Tyler Firemen's Relief and Retirement Fund, we have prepared this report of the results of the actuarial valuation of the fund as of December 31, 2013. This valuation was prepared to determine whether the fund has an adequate contribution arrangement.

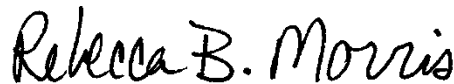
The necessary information for the city's compliance with Governmental Accounting Standards Board (GASB) Statement No. 27 for the fiscal year ending September 30, 2014 is included as Exhibit 13. This is the last year GASB 27 will be in effect. As a result of the new accounting standard replacing GASB 27 next year, a different report will be required in the fall of 2015 for the actuarial information for the city's compliance with the new GASB 68 for the fiscal year ending September 30, 2015. The new accounting standard replacing GASB 25 for the fund goes into effect this year. A different report is required for the fund's disclosure for compliance with GASB 67 for the year ending December 31, 2014, and it will be provided in the summer of 2015.

We certify that we are members of the American Academy of Actuaries who meet Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report.

Sincerely,



Mark R. Fenlaw, F.S.A.



Rebecca B. Morris, A.S.A.

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## Section I

### Valuation Summary

An actuarial valuation of the assets and liabilities of the Tyler Firemen's Relief and Retirement Fund as of December 31, 2013 has been completed. The valuation was based on the Present Plan (plan effective July 1, 2011) and the provisions of the Texas Local Fire Fighters' Retirement Act (TLFFRA) which were in effect on December 31, 2013. Section II shows the summary of key results of the actuarial valuation as of December 31, 2013 and discusses the significant changes since the prior valuation that we prepared as of December 31, 2011.

This valuation reflects an actuarially assumed total contribution rate of 33.0%, comprised of 13.5% by the firefighters and 19.5% by the city. The total contribution rate of 33.0% exceeds the normal cost rate of 20.64%, leaving 12.36% available to amortize the unfunded actuarial accrued liability (UAAL) of \$20,275,644. Assuming that the total payroll increases at the rate of 3.75% per year in the future, the contributions in excess of the normal cost **will amortize the UAAL in 22.9 years.**

In order for a retirement plan to have an adequate contribution arrangement, contributions must be made that are sufficient to pay the plan's normal cost and to amortize the plan's UAAL over a reasonable period of time. Based on the Texas Pension Review Board guidelines for an actuarially adequate contribution arrangement, our professional judgment, and the actuarial assumptions and methods used in making this valuation, we consider periods of 15 years to 25 years to be preferable and 40 years to be the maximum acceptable period. Since the total contributions are sufficient to pay the fund's normal cost and to amortize the fund's UAAL within the maximum acceptable period, we are of the opinion that the fund, based on present levels of benefits and contributions, **has an adequate contribution arrangement. Section III presents considerations for future benefit improvements.**

### Projected Actuarial Valuation Results

In addition to completing this actuarial valuation, we estimated the amortization periods as of December 31, 2015 and as of December 31, 2017 by making projections from the December 31, 2013 actuarial valuation. These projections examine the effect on the amortization period in the next two actuarial valuations of the actuarial investment gains and losses that the fund experienced in the four years prior to the valuation date (loss in 2011 and gains in 2010, 2012, and 2013) that have been only partially recognized as of December 31, 2013. As shown in Exhibit 6, a smoothing method is used to determine the actuarial value of assets (AVA) for this valuation. This method phases in over a five-year period any investment gains or losses (net actual investment return greater or less than the actuarially assumed investment return) that the fund has had. The AVA used in this current valuation is deferring recognition of various portions of the gains and losses in

2010-2013 that the fund experienced. The AVA used in this valuation is \$56,547,675. The market value of assets (MVA) is \$61,495,625. The \$4,947,950 difference between the MVA and the AVA is the net of the deferred gains and losses over the past four years that will be recognized in the next two actuarial valuations.

The theory behind the AVA method is to allow time for investment gains and losses to partially offset each other and thereby dampen the volatility associated with the progression of the MVA over time. In practice, the timing and amounts of investment gains and losses can result in irregular effects on the AVA in a given year. However, as intended, the pattern of the AVA is smoother over time than the pattern of the market value of assets, as seen in Exhibit 7.

For the purpose of projecting the amortization period through 2017 we used six scenarios of various assumed annual rates of investment return, net of investment-related expenses, over the 2014-2017 projection period. The projected amortization periods will not be the same as the actual amortization periods from completed future actuarial valuations but are the result of projected future actuarial valuation results based on the completed December 31, 2013 actuarial valuation. These projections show the expected effects over the next four years after the valuation date (1) of the recognition of the portions of the investment gains and losses over the past four years that are deferred as of December 31, 2013, and (2) of investment returns over the next four years different from the 7.75% assumption used in this valuation.

	Scenario					
	1	2	3	4	5	6
Assumed Investment Return for Calendar Year						
2014	7.75%	10.00%	10.00%	0.00%	4.00%	0.00%
2015	7.75	7.75	10.00	7.75	4.00	4.00
2016	7.75	7.75	7.75	7.75	4.00	4.00
2017	7.75	7.75	7.75	7.75	4.00	4.00
2018 and later	7.75	7.75	7.75	7.75	7.75	7.75
Amortization Period in Years as of December 31:						
2013 (actual)	22.9	22.9	22.9	22.9	22.9	22.9
2015 (projected)	16.6	15.7	15.3	19.7	18.7	20.4
2017 (projected)	11.2	9.8	8.7	16.7	17.8	21.2

The projected future December 31, 2015 valuation in Scenario 1 reveals that instead of decreasing by the expected two years from 22.9 years to 20.9 years, the amortization period is projected to decrease to 16.6 years due primarily to the significant deferred gains that will be recognized as of December 31, 2015. The primary conclusion from Scenario 1 is that unless there are some significant investment losses in 2014 and 2015 from returns less than 7.75%, the net deferred gains as of December 31, 2013 will

accelerate the reduction in the amortization period in the next two valuations. This is not surprising when you consider that if the AVA were set equal to the MVA, recognizing all of the gains in this December 31, 2013 actuarial valuation, the amortization period would have been 15.2 years instead of 22.9 years.

One of the characteristics of a fairly mature plan like yours is that the amortization period is relatively sensitive to investment gains and losses. For example, Scenario 4 is the same as Scenario 1 except for a projected rate of return of 0% for calendar year 2014. The one adverse year, similar to the actual return in 2011 of -0.95%, without any investment gains or losses in the next three years, results in a projected amortization period of 16.7 years as of December 31, 2017, which is 5.5 years greater than the projected amortization period of 11.2 years in Scenario 1.

We do not know what the investment experience will be for each of the next four calendar years. However, these scenarios show the sensitivity of the UAAL amortization period in the next two biennial actuarial valuations, even with a modest gain with a 10% rate of return in 2014 or with a significant loss with a 0% rate of return in 2014. Variations in experience from the underlying assumptions, other than investment return, will cause the actual amortization periods to be different from the periods shown above. In addition, the future investment experience in each of the next four years could be better or worse than the assumed rates shown. These scenarios present a range of plausible scenarios for the next two valuations assuming no changes in benefits.

The primary conclusion from the scenarios is that while the fund has a cushion in the AVA that will accelerate the amortization of the UAAL, the board should be cautious in considering benefit improvements in the future due to the sensitivity of the amortization period to investment losses. Our strategy for injecting caution in future benefit improvements is mentioned in Section III.

### **Participant and Asset Data**

We have relied on and based our valuation on the active firefighter data, pensioner data, and asset data provided on behalf of the board of trustees by Marjorie Vallejo, who provides administrative services for the board of trustees. We have not audited the data provided but have reviewed it for reasonableness and consistency relative to the data provided for the December 31, 2011 actuarial valuation. Exhibit 1 is a distribution of the active firefighters by age and service. The salaries used for projecting future contributions and benefits in the valuation were based on the actual pay for the 2013 calendar year, adjusted to fully reflect the 4% pay increase effective in October 2013 for most pay classifications. The total of these salaries is our assumed annualized covered payroll for the plan year beginning January 1, 2014 and is used in the valuation to determine the UAAL amortization period. The averages of the assumed salaries for the 2014 plan year are shown in Exhibit 1.

Exhibit 2 contains summary information on the pensioners. The monthly benefit payments are generally based on the amounts paid December 31, 2013. Exhibit 2A is a reconciliation of firefighters and pensioners from December 31, 2011 to December 31, 2013. Exhibit 3 shows a breakdown of the dollar amount of the monthly benefits for retirees and surviving spouses. Exhibit 4 shows a historical comparison of the actuarial accrued liability and the actuarial value of assets.

The summary of assets contained in Exhibit 5 is based on the December 31, 2013 market value of assets contained in the information received from the board. This exhibit also shows a comparison with the market values and actuarial values of assets as of December 31, 2011 and December 31, 2013. Exhibit 5A contains the statement of changes in assets for 2012 and 2013. Exhibit 6 shows the development of the actuarial value of assets. Exhibit 7 shows a historical comparison between the market value and actuarial value of assets. A comparison of the market value asset allocation by asset class as of December 31, 2011 and December 31, 2013 is shown in Exhibit 8.

### **Assumptions**

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. As a result of our review, we have selected actuarial assumptions we consider to be reasonable and appropriate for the fund for the long-term future. Their selection complies with the applicable actuarial standards of practice. Significant actuarial assumptions used in the valuation are:

1. 7.75% annual investment return (interest rate) net of investment-related expenses;
2. 3.75% annual general compensation increase plus an average of 1.81% per year for promotion, step, and longevity increases over a 30-year career;
3. Retirement rates which result in an average expected age at retirement of 57.0;
4. RP-2000 Combined Healthy Mortality Tables projected to 2024; and
5. City contribution rate averaging 19.50% over the UAAL amortization period.

The following actuarial assumption changes have been made, and the new assumptions are compared to those used in the December 31, 2011 valuation:

1. The investment return assumption was changed from 7.75% net of all expenses to 7.75% net of investment-related expenses only. An accompanying change in assumptions was to reflect general administrative expenses assumed to be paid by the fund by increasing the normal cost percent as a percent of payroll by 0.35%. This assumption that general administrative expenses will be 0.35% of payroll is based on a review of the historical relationship over the years 2008-2013. In the past we have used an investment return assumption that was net of all expenses,

including general administrative expenses. This revised recognition of expenses is consistent with the new GASB 68, which will first be in effect for the city's fiscal year ending September 30, 2015.

2. The assumed mortality rates used in this valuation are somewhat lower and were changed to adjust for expected mortality improvement to 2024. The prior valuation used the same published mortality table but with rates adjusted for expected mortality improvement to 2014. This change is explained in more detail in a separate letter to the board dated August 15, 2014.
3. We changed the general compensation increase from 4% per year to 3.75%, making it the same as the underlying price inflation assumption. As a result, we also changed the aggregate payroll increase assumption from 4% per year to 3.75%. Because of the somewhat slower growth anticipated in our economy for the long-term future, we think it is likely that general compensation increases will tend to keep track with price inflation in future years instead of slightly exceeding inflation as in the past.
4. We reviewed the retirement experience of the fund for the last six years and made changes to the assumed rates of retirement to better fit the actual recent experience. We think the new retirement rates will result in a more reasonable assumption for the future than our previous assumed retirement rates. The change resulted in an increase in the average expected retirement age from 55.7 to 57.0.
5. The assumed average city contribution rate was changed from 18.5% to 19.5% in recognition of (a) the city's policy of contributing the same rate of payroll contributed for the city's other employees under the Texas Municipal Retirement System (TMRS), (b) considerations about the expectation for contribution rates to TMRS to be in excess of 21% for the foreseeable future, (c) the long-term effect of TMRS using a closed amortization period (currently 22 years), and (d) the actual city contribution rate in calendar year 2014 (21.31%) and the budgeted rate for calendar year 2015 (21.30%).

The effects of these changes in assumptions on the UAAL amortization period are identified in Section II. A summary of all the assumptions and methods used in the valuation is shown in Exhibits 9 and 10. In our opinion, the assumptions used, both in the aggregate and individually, are reasonably related to the experience of the fund and to reasonable expectations. The assumptions represent a reasonable estimate of anticipated experience of the fund over the long-term future.



## Supporting Exhibits

Exhibit 11 contains definitions of terms used in this actuarial valuation report. Exhibit 12 summarizes the plan provisions of the Present Plan. The disclosures in accordance with GASB Statement No. 27 are enclosed as Exhibit 13. The GASB 27 disclosures will be needed for the city's financial statements for its fiscal year ending September 30, 2014.

## Actuarially Determined Contributions by the City

The new GASB 68 is all about accounting for pensions and does away with the concept of annually required contributions, referred to as the ARC. The GASB made a point of separating their new accounting standard for public employee defined benefit plans from the actual funding of those plans. In other words, the city's GASB 68 pension expense will be very different from its actual contributions. That is why separate reports will be needed each year beginning in 2015 to provide the required GASB 68 actuarial information.

As a result of GASB getting out of the business of providing a funding standard, the Texas Pension Review Board (PRB) is recommending in their report to the Texas Legislature due at the end of 2014 that actuarial valuation reports for fixed contribution rate plans should disclose contribution levels required for a variety of appropriate amortization periods. Since the preferred range for the UAAL amortization period is 15 to 25 years in the PRB's guidelines for an actuarially adequate contribution arrangement, we have shown the city contribution rate that would have been required beginning January 1, 2014 for amortization periods of 15, 20, and 25 years based on this December 31, 2013 actuarial valuation.

UAAL Amortization Period	Actuarially Determined Contribution Rate by the City	Firefighter Contribution Rate	Total Contribution Rate
15 Years	23.66%	13.50%	37.16%
20 Years	20.62%	13.50%	34.12%
25 Years	18.83%	13.50%	32.33%

### Variability in Future Actuarial Measurement

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- Plan experience differing from that anticipated by the current economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements;
- Changes in economic or demographic assumptions; and
- Changes in plan provisions.

Analysis of the potential range of such future measurements resulting from the possible sources of measurement variability is typically outside the scope of an actuarial valuation for funding purposes. However, we provided projected amortization periods for the next two biennial actuarial valuations under six scenarios. Additional or other sensitivity analysis could be performed in a subsequent report if desired by the board of trustees.

Respectfully submitted,  
RUDD AND WISDOM, INC.

*Mark R. Fenlaw*

Mark R. Fenlaw  
Fellow, Society of Actuaries  
Member, American Academy of Actuaries

*Rebecca B. Morris*

Rebecca B. Morris  
Associate, Society of Actuaries  
Member, American Academy of Actuaries

**Section II  
Key Results of the Actuarial Valuation**

	December 31, 2011 <sup>1</sup>	December 31, 2013
1. Actuarial present value of future benefits		
a. Those now receiving benefits or former firefighters entitled to receive benefits	\$ 27,302,578	\$ 31,747,272
b. Firefighters	66,407,077	69,050,373
c. Total	\$ 93,709,655	\$ 100,797,645
2. Actuarial present value of future normal cost contributions	\$ 23,237,377	\$ 23,974,326
3. Actuarial accrued liability (Item 1c – Item 2)	\$ 70,472,278	\$ 76,823,319
4. Actuarial value of assets	\$ 49,221,368	\$ 56,547,675
5. Unfunded actuarial accrued liability (UAAL) (Item 3 - Item 4)	\$ 21,250,910	\$ 20,275,644
6. Contributions (percent of pay)		
a. Firefighters	13.50%	13.50%
b. City of Tyler (assumed average)	18.50%	19.50%
c. Total	32.00%	33.00%
7. Normal cost (percent of payroll) <sup>2</sup>	21.34%	20.64%
8. Percent of payroll available to amortize the UAAL (Item 6c - Item 7)	10.66%	12.36%
9. Annualized covered payroll	\$ 10,300,425	\$ 10,937,907
10. Present annual amount available to amortize the UAAL (Item 8 x Item 9)	\$ 1,098,025	\$ 1,351,925
11. Years to amortize the UAAL	34.0 years	22.9 years
12. GASB 27 funded ratio (Item 4 ÷ Item 3) <sup>3</sup>	69.8%	73.6%

<sup>1</sup> All items are from the December 31, 2011 actuarial valuation and reflect the Present Plan.

<sup>2</sup> In the December 31, 2011 valuation, the 7.75% investment return assumption was net of all expenses, including general administrative expenses. In the December 31, 2013 valuation, the 7.75% investment return assumption is net of investment-related expenses only; general administrative expenses are reflected as 0.35% of aggregate payroll included in the normal cost percent.

<sup>3</sup> The funded ratio is not appropriate for assessing either the need for or the amount of future contributions or the adequacy of the assumed contribution rates. Using the market value of assets instead of the actuarial value of assets for Item 12 would have resulted in funded ratios of 65.1% as of December 31, 2011 and 80.0% as of December 31, 2013.

## Change in Amortization Period

The amortization period, based on the Present Plan provisions, was determined in the actuarial valuation as of December 31, 2011 to be 34.0 years. Since two years have passed since that valuation date, a 32.0-year amortization period would be expected if all actuarial assumptions had been exactly met, no changes had occurred (other than those expected) in the firefighter and pensioner data, and no changes in assumptions or methods had been made. The amortization period is now 22.9 years based on the same plan provisions. The actual experience occurring between December 31, 2011 and December 31, 2013 differed from the expected experience, and in combination with the changes in assumptions, the resulting amortization period was 22.9 years, which is 9.1 years less than the expected 32.0-year period for the following reasons:

1. The average annual rate of investment return, net of all expenses, on the market value of assets during the two plan years 2012 and 2013 was 16.35%. However, the actuarial value of assets (AVA) used in the valuation and the determination of the amortization period is based on an adjusted market value. The average annual rate of return on the AVA, net of all expenses, for plan years 2012 and 2013 was 7.73%, almost the same as the assumed rate of return for those years of 7.75%. This resulted in a slight **increase** in the amortization period of 0.1 of a year.
2. The aggregate payroll increased at an average rate of 3.0% per year instead of the assumed 4.0% per year rate, which caused the amortization period to **increase** by 1.1 years.
3. The gain from city contributions above the assumed long-term average of 18.5% in 2012 (19.85%) and 2013 (20.74%) **decreased** the amortization period by 1.1 years.
4. The net result of all experience other than the investment experience, the aggregate payroll experience, and the city contribution rate experience had the combined effect of **decreasing** the amortization period by 2.1 years. This was primarily the result of lower-than-expected pay increases and fewer-than-expected retirements in the last two years.
5. The change in the actuarial assumptions for the recognition of the general administrative expenses had the effect of **increasing** the amortization period by 1.9 years.
6. The result of the change in the mortality assumption had the effect of **increasing** the amortization period by 2.8 years.
7. The change in the general compensation increase and aggregate payroll increase assumptions from 4% to 3.75% had the effect of **decreasing** the amortization period by 1.6 years.

8. The change in the retirement rates assumption had the effect of **decreasing** the amortization period by 5.1 years.
9. The change in the assumed average city contribution rate from 18.5% to 19.5% had the effect of **decreasing** the amortization period by 5.1 years.

### Section III Benefit Improvements

The results of this actuarial valuation as of December 31, 2013 reveal that the fund, based on the Present Plan of benefits, has an adequate contribution arrangement. As disclosed in both Sections I and II, the amortization period of the UAAL is 22.9 years. In order for benefit improvements to be made to the plan, they must be made in accordance with Section 7 of TLFFRA, as amended in May 2013. Sections 7(a), 7(b) and 7(c) are shown below.

- “(a) The board of trustees of a retirement system may change the benefits or eligibility requirements for benefits payable from the retirement system, may provide for reinstatement by a member of service credit previously forfeited, and may adopt or change other requirements for the payment of benefits, except as otherwise prohibited by this Act.
- (b) Before a board of trustees chooses to adopt or change a benefit or requirement for payment of benefits under this section, the proposed addition or change must be approved by:
  - (1) an eligible actuary selected by the board; and
  - (2) a majority of the participating members of the retirement system voting on the addition or change by secret ballot at an election held for that purpose at which at least 50 percent of all participating members of the retirement system vote.
- (c) To be eligible to approve an addition or change under this section, an actuary must be either a fellow of the Society of Actuaries or a member of the American Academy of Actuaries.”

At the board's August 20, 2014 meeting, we presented some recommended changes in assumptions. One of the changes discussed was the assumed average city contribution rate. For purposes of the valuation of the fund, an assumed rate is used because of the city's historical policy to use the same TMRS contribution rate for the contribution rate for this fund. At this meeting we briefly discussed an idea for planning for the next several years. The idea was to coordinate periodic benefit improvements with a gradual lowering of the benefit improvement cap on the UAAL amortization period to a long-term goal such as 15 years, even though we have been using 25 years as the cap for the last 10 years. We recommended this approach primarily for the following reasons:

1. The expected significant decrease in the city's contribution rate to its TMRS plan in 23 years,
2. The Texas Pension Review Board (PRB) guidelines for an actuarially adequate contribution arrangement, and
3. The increasing scrutiny of public employee pension plans.

One approach for implementing this strategy for injecting caution in future benefit improvements would be to wait until the amortization period is below 22 years and then to approve benefit improvements that would increase the amortization period up to as much as 22 years. In subsequent years, we would progressively lower the benefit improvement cap to 20 years, then 18 years, etc., coordinating periodic benefit improvements with the gradual lowering, until getting to a long-term goal such as 15 years. With this approach we would not approve any benefit improvements based on the December 31, 2013 actuarial valuation since the amortization period is above 22 years.

This approach would both strengthen the actuarial condition of the fund and better prepare for the possibility of adverse experience to the fund in the future. The stronger actuarial condition of the fund would be demonstrated by the progressively lower UAAL amortization period until getting to the lower end of the preferred range in the PRB guidelines (15 to 25 years). The kinds of future adverse experience that the fund would be better prepared to withstand would be primarily adverse investment experience but also an eventual lowering of the city's contribution rate.

Reviewing the history of the city's contribution rate to the fund for the last 20 years, it was set at 11.5% year after year before October 1, 2004 as a part of the annual budget process. In contrast, the city's actuarially determined TMRS contribution rate was significantly less than the 11.5% being contributed to the fund for many years. Then the present TMRS plan was adopted in 1999, significantly increasing both benefits and the city's TMRS contribution rate, which increased to just under 11.5% for two years. Then the city's TMRS rate began increasing some each year, surpassing 11.5% in 2002. The city agreed beginning October 1, 2004 to contribute the same rate to your fund as to TMRS.

The rate was 15.12% in 2008, when TMRS offered an eight-year phase-in that begin in 2009 to avoid a significant increase all at once. The ultimate rate in 2016 is now expected to be between 21% and 22%. So it has been very beneficial for the fund since 2004 for the city's contribution rate to the fund to be the same as for the city's TMRS plan. The significant increases in the city's contribution rate to the fund have largely offset the significant investment losses from the 2000-2002 bear market and the even worse 2008 recession.

In spite of this beneficial increase in the city's contribution rate to your fund, we do not believe that the city's linking of their contribution rate to your fund to their rate to their TMRS plan makes good sense for the long-term future for three reasons. First, the firefighters do not participate in Social Security for their employment with the city while all the other city employees do participate in Social Security. That difference alone would suggest that the city's contribution to your fund should exceed their contribution to the TMRS plan by 6.2%, the current employer contribution for the OASDI part of Social Security. The second reason for a higher city contribution is that firefighters have much lower turnover than other city employees. So a higher percent of newly hired firefighters will ultimately qualify for a retirement benefit than will newly hired other city

employees. As a result, the cost of firefighter retirement benefits is higher than the cost of comparable retirement benefits for other city employees. The third reason is that because of the physical demands of the job, firefighters tend to retire at earlier ages than other city employees. This also increases the cost of firefighter retirement benefits compared to the cost for other city employees because of a longer period for benefits to be paid.

At some point in the near future, it would be appropriate for the city and the board to discuss a distinct funding policy for your fund. In fact, the number one recommendation in the upcoming report from the PRB to the Legislature is "the PRB recommends that the retirement system sponsor and the system should establish an adequate funding policy." Ideally there should be a formal written policy such as a city council resolution. It is expected that the TMRS rate will drop dramatically from over 20% to under 10% beginning in 2037. As it gets closer to that time, if the contribution rate to your fund is still tied to the TMRS rate, then this would result in an inadequate funding policy for your fund.





**Exhibit 2  
Summary of Pensioner Data**

Type of Benefit	Pensioner Data Used in December 31, 2013 Valuation	
	Number of Recipients	Total Monthly Benefit Payments
Service Retirement <sup>1</sup>	70	\$228,223
Disability Retirement	3	3,288
Vested Terminated (Deferred) <sup>2</sup>	1	4,970
Surviving Spouse	18	31,487
Surviving Child	<u>0</u>	<u>0</u>
<b>Total</b>	92	\$267,968

Type of Benefit	Comparison of Pensioner Count by Type as of The Prior and Current Actuarial Valuations			
	December 31, 2011	New	Ceased	December 31, 2013
Service Retirement <sup>1</sup>	63	+8	-1	70
Disability Retirement	4	0	-1	3
Vested Terminated (Deferred) <sup>2</sup>	0	+1	0	1
Surviving Spouse	19	0	-1	18
Surviving Child	<u>1</u>	<u>0</u>	<u>-1</u>	<u>0</u>
<b>Total</b>	87	+9	-4	92

<sup>1</sup> Includes one alternate payee entitled to receive benefits according to the terms of a Qualified Domestic Relations Order as of December 31, 2011 and two alternate payees as of December 31, 2013.

<sup>2</sup> Monthly benefit payments are deferred to begin at terminated firefighter's future retirement date.

**Exhibit 2A**  
**Firefighter and Pensioner Reconciliation**

	Firefighters	Current Payment Status	Vested Terminated Firefighters	Total
1. As of December 31, 2011	154	87	0	241
2. Change of status				
a. retirement	(7)	7	0	0
b. disability	0	0	0	0
c. death	0	(3)	0	(3)
d. survivor payment begins	0	0	0	0
e. withdrawal	(2)	0	0	(2)
f. vested termination	(1)	0	1	0
g. completion of payment	0	(1)	0	(1)
h. QDRO alternate payee	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>
i. net changes	(10)	4	1	(5)
3. New firefighters	<u>11</u>	<u>0</u>	<u>0</u>	<u>11</u>
4. As of December 31, 2013	155	91 <sup>1</sup>	1	247

<sup>1</sup> Includes two alternate payees entitled to receive benefits according to the terms of a Qualified Domestic Relations Order.

**Exhibit 3**

**Breakdown of Monthly Benefit Payment Amounts as of December 31, 2013**

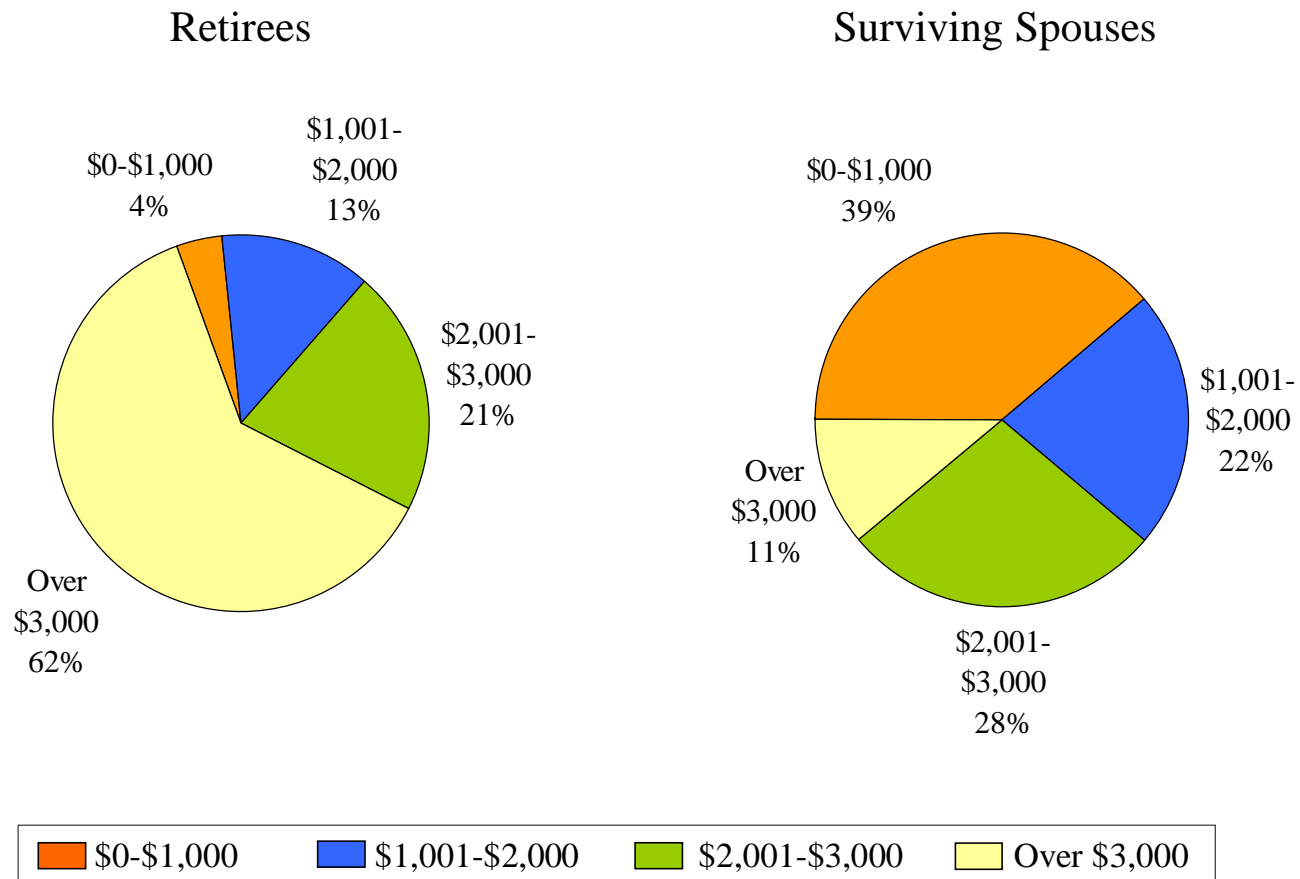
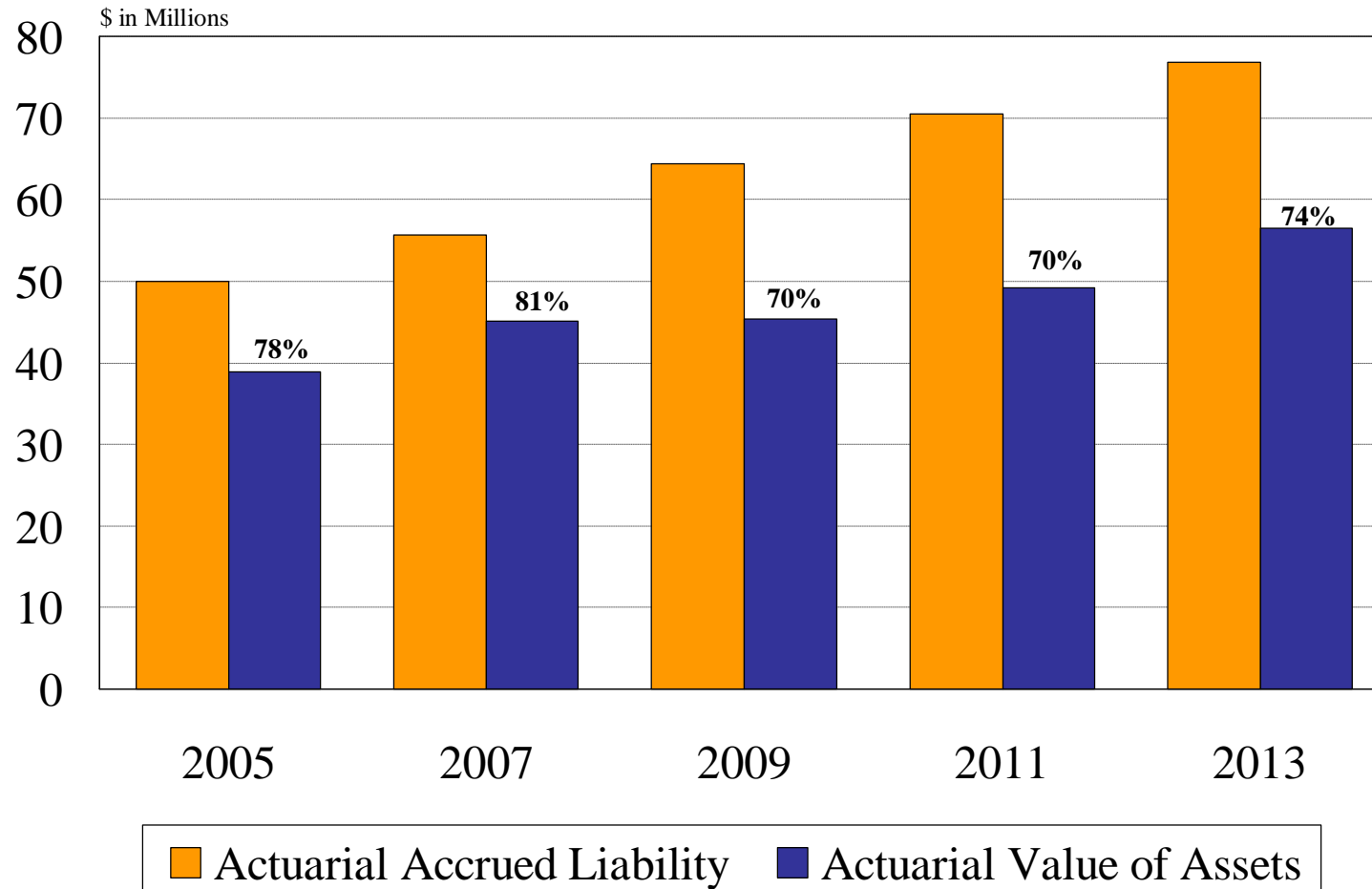


Exhibit 4

Historical Comparison of Actuarial Accrued Liability and Actuarial Value of Assets  
(Present Plan Valuations as of December 31)



**Exhibit 5**  
**Summary of Asset Data**

Asset Type	Market Value as of December 31, 2013	Allocation As a Percent of Grand Total
<b>Equities</b>		
Domestic Large Cap	\$18,154,000	29.52%
Domestic Mid Cap	6,698,000	10.89
Domestic Small Cap	5,685,000	9.25
International Developed	4,396,000	7.15
International Developing	<u>2,867,000</u>	<u>4.66</u>
Total	37,800,000	61.47
<b>Alternatives</b>		
Real Estate	2,873,000	4.67
Commodities	<u>2,296,000</u>	<u>3.74</u>
Total	5,169,000	8.41
<b>Fixed Income</b>		
Total Return	9,319,000	15.16
Domestic Core	2,499,000	4.06
Domestic High Yield	2,407,000	3.91
Global	<u>2,744,000</u>	<u>4.46</u>
Total	16,969,000	27.59
Cash Equivalents	<u>1,557,625</u>	<u>2.53</u>
<b>Grand Total</b>	<b>\$61,495,625</b>	<b>100.00%</b>

Comparison of Asset Values as of the Prior and Current Actuarial Valuation Dates		
	<u>December 31, 2011</u>	<u>December 31, 2013</u>
Market Value	\$ 45,892,932	\$ 61,495,625
Actuarial Value	\$ 49,221,368	\$ 56,547,675

**Exhibit 5A**

**Statement of Changes in Audited Assets  
for the Years Ended December 31, 2013 and 2012**

	<u>12/31/2013</u>	<u>12/31/2012</u>
<b>Additions</b>		
1. Contributions		
a. Employer	\$2,218,688	\$2,056,837
b. Employees	<u>1,442,898</u>	<u>1,397,206</u>
c. Total	\$3,661,586	\$3,454,043
2. Investment Income		
a. Interest and dividends	\$ 942,358	\$1,062,523
b. Net appreciation in fair value	<u>8,460,733</u>	<u>6,004,840</u>
c. Total	\$9,403,091	\$7,067,363
3. Other Additions	<u>0</u>	<u>0</u>
<b>Total Additions</b>	<b>\$13,064,677</b>	<b>\$10,521,406</b>
<b>Deductions</b>		
4. Benefit Payments		
a. Monthly benefits	N/A	N/A
b. DROP lump sums	N/A	N/A
c. Refund of contributions	N/A	N/A
d. Total	\$3,951,160	\$3,700,263
5. Expenses		
a. Investment-related	\$ 141,462	\$ 130,087
b. General administrative	<u>23,319</u>	<u>37,099</u>
c. Total	\$ 164,781	\$ 167,186
<b>Total Deductions</b>	<b>\$4,115,941</b>	<b>\$3,867,449</b>
<b>Net Increase in Assets</b>	<b>\$8,948,736</b>	<b>\$6,653,957</b>
Market Value of Assets (Plan Net Position)		
Beginning of Year	\$52,546,889	\$45,892,932
End of Year	\$61,495,625	\$52,546,889
Rate of Return		
Net of All Expenses	17.63%	15.08%
Net of Investment-Related Expenses	17.68%	15.16%
Gross	17.97%	15.47%
Investment-Related Expenses (Direct Only)	0.29%	0.31%

**Exhibit 6**

**Development of Actuarial Value of Assets**

Calculation of Actuarial Investment Gain/(Loss) Based on Market Value for Plan Years Ending December 31				
	2013	2012	2011	2010
1. Market Value of Assets as of Beginning of Year	\$52,546,889	\$45,892,932	\$45,932,105	\$41,260,136
2. Firefighter Contributions	1,442,898	1,397,206	1,369,523	1,327,137
3. City Contributions	2,218,688	2,056,837	1,915,143	1,670,345
4. Benefit Payments and Contribution Refunds	(3,951,160)	(3,700,263)	(2,884,679)	(3,505,551)
5. Expected Investment Return <sup>1</sup>	<u>4,061,372</u>	<u>3,547,339</u>	<u>3,574,948</u>	<u>3,178,340</u>
6. Expected Market Value of Assets as of End of Year	56,318,687	49,194,051	49,907,040	43,930,407
7. Actual Market Value of Assets as of End of Year	<u>61,495,625</u>	<u>52,546,889</u>	<u>45,892,932</u>	<u>45,932,105</u>
8. Actuarial Investment Gain/(Loss)	5,176,938	3,352,838	(4,014,108)	2,001,698
9. Market Value Rate of Return Net of Expenses	17.63%	15.08%	(0.95)%	12.63%
10. Rate of Actuarial Investment Gain/(Loss)	9.88%	7.33%	(8.70)%	4.88%

<sup>1</sup> Assuming uniform distribution of contributions and payments during the plan year; actuarially assumed investment return is 7.75% per year.

Deferred Actuarial Investment Gains/Losses to be Recognized in Future Years			
Plan Year	Investment Gain/(Loss)	Deferral Percentage	Deferred Gain/(Loss) as of 12/31/2013
2013	\$5,176,938	80%	\$ 4,141,550
2012	3,352,838	60%	2,011,703
2011	(4,014,108)	40%	(1,605,643)
2010	2,001,698	20%	400,340
Total			<u>\$ 4,947,950</u>

Actuarial Value of Assets as of December 31, 2013	
11. Market Value of Assets as of December 31, 2013	\$ 61,495,625
12. Deferred Gain/(Loss) to be Recognized in Future	<u>4,947,950</u>
13. Preliminary Value (Item 12 – Item 13)	\$ 56,547,675
14. Corridor for Actuarial Value of Assets	
a. 90% of Market Value as of December 31, 2013 (minimum)	\$ 55,346,063
b. 110% of Market Value as of December 31, 2013 (maximum)	\$ 67,645,188
15. Actuarial Value as of December 31, 2013	\$ 56,547,675
16. Write Up/(Down) of Assets (Item 15 – Item 11)	\$ (4,947,950)



Exhibit 7

Historical Comparison of Market and Actuarial Value of Assets  
(Valuation as of December 31)

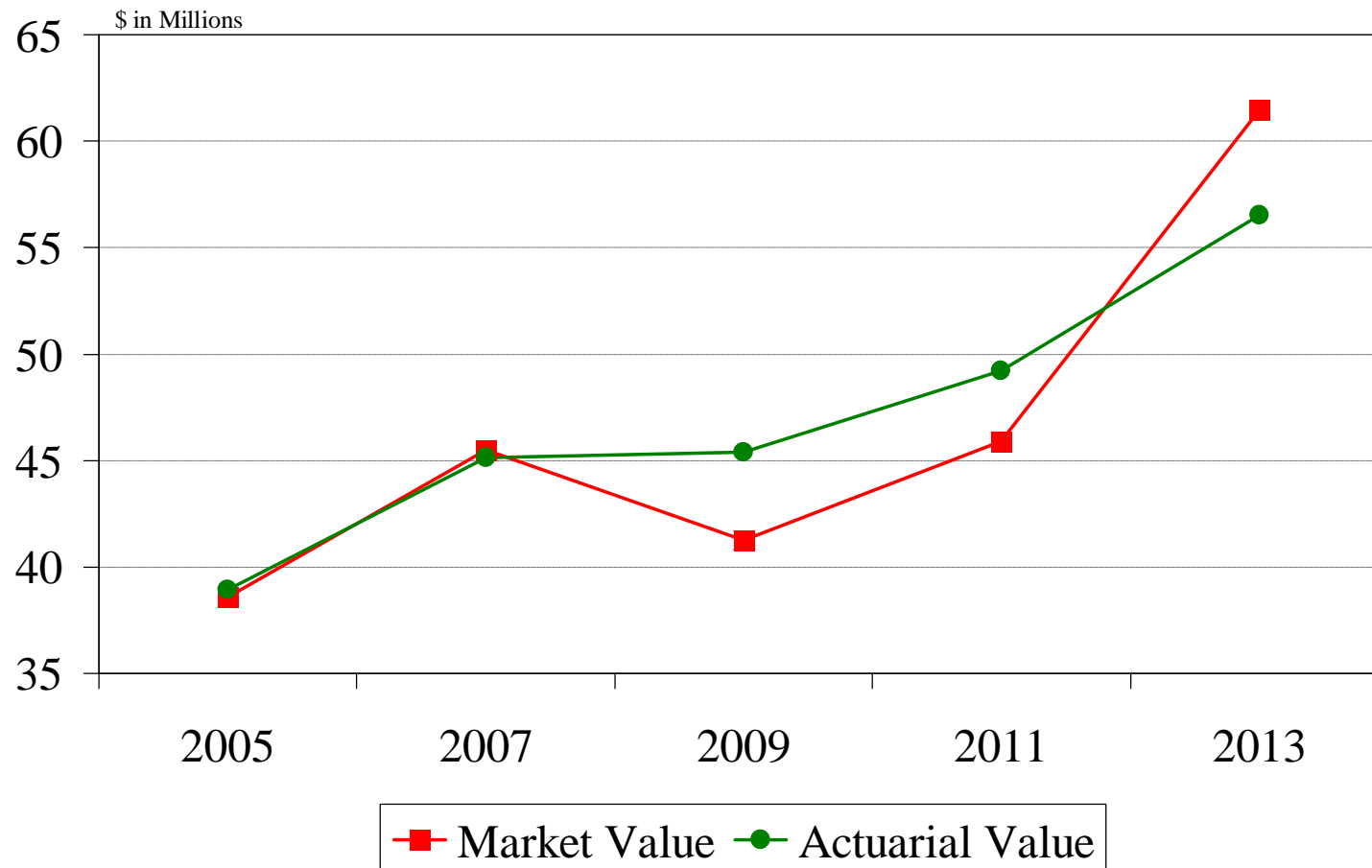
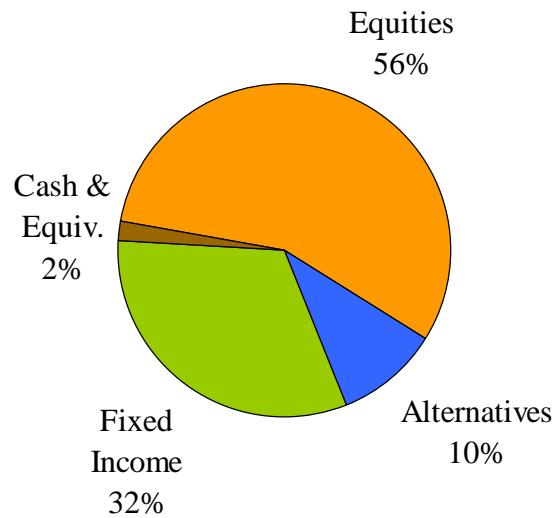


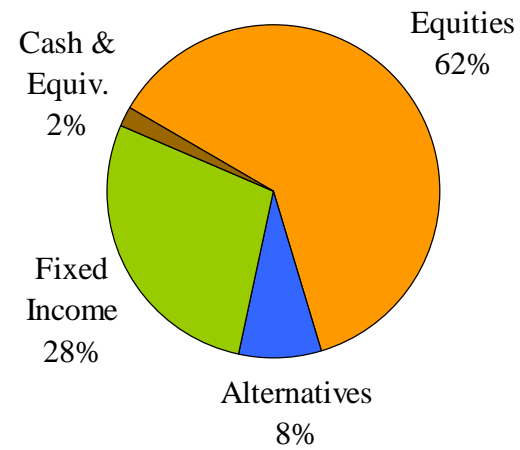
Exhibit 8

Comparison of Market Value Asset Allocation as of the Prior and Current Actuarial Valuation Dates

December 31, 2011



December 31, 2013



## Exhibit 9

### Actuarial Methods and Assumptions

#### A. Actuarial Methods

##### 1. Actuarial Cost Method

The Entry Age Actuarial Cost Method is an actuarial cost method in which the actuarial present value of projected benefits of each active firefighter included in the valuation is allocated as a level percentage of compensation between age at hire and assumed termination. Each active firefighter's normal cost is the current annual contribution in a series of annual contributions which, if made throughout the firefighter's total period of employment, would fund his expected benefits. Each firefighter's normal cost is calculated to be a constant percentage of his expected compensation in each year of employment. The normal cost for the fund is the sum of the normal costs for each active firefighter for the year following the valuation date. The normal cost as a percent of payroll reflects that contributions are made biweekly.

The fund's actuarial accrued liability is the excess of the actuarial present value of projected benefits over the actuarial present value of all future remaining normal cost contributions. The unfunded actuarial accrued liability (UAAL) is the amount by which the actuarial accrued liability exceeds the actuarial value of assets. The UAAL is recalculated each time a valuation is performed. Experience gains and losses, which represent deviations of the UAAL from its expected value based on the prior valuation, are determined at each valuation and are amortized as part of the newly calculated UAAL.

##### 2. Amortization Method

The UAAL is assumed to be amortized with level percentage of payroll contributions (total assumed contribution rate less normal cost contribution rate) based on assumed payroll growth of 3.75% per year. The actuarial determination of the amortization period reflects that contributions are made biweekly.

##### 3. Actuarial Value of Assets Method

All assets are valued at market value with an adjustment made to uniformly spread actuarial gains or losses (as measured by actual market value investment return vs. expected market value investment return) over a five-year period. The total adjustment amount shall be limited as necessary such that the actuarial value of assets shall not be less than 90% of market value nor greater than 110% of market value. See Exhibit 6.

## B. Actuarial Assumptions

As a part of each actuarial valuation, we review the actuarial assumptions used in the prior actuarial valuation. The investment return assumption is reviewed using the building block approach that includes several asset allocations, assumed real rates of return for each asset class, an assumed rate of investment-related expenses, and an assumed rate of inflation, with all assumptions for the long-term future. Our economic assumptions are influenced both by long-term historical experience and by future expectations of investment consultants and economists, but we select the economic assumptions and discuss them with the board before completing the actuarial valuation.

We review the termination and retirement experience since the prior valuation and periodically look back more than two years. We also periodically review the average salaries by years of service to get insights into the promotion, step, and longevity compensation patterns for the purpose of reviewing our compensation increase assumption. For the mortality assumptions, we use an appropriate published mortality table with projections for improvement beyond the valuation date. We are guided in our review and selection of assumptions by the relevant actuarial standards of practice. As a result of our review, we have selected actuarial assumptions we consider to be reasonable and appropriate for the fund for the long-term future.

### 1. Investment Return

7.75% per year net of investment-related expenses.

### 2. Inflation

3.75% per year included in compensation increases and investment return assumptions.

### 3. Mortality Rates

RP-2000 Combined Healthy Mortality Table projected to 2024 for males and for females (sex distinct) for all three types of mortality: pre-retirement, post-retirement, and post-disability.

### 4. Compensation Increases

General increases of 3.75% per year in addition promotion, step, and longevity increases that average 1.81% per year over a 30-year career. See Exhibit 10.

5. Retirement Rates

Age	Rate per Year for Firefighters Eligible to Retire
50	15%
51-53	5
54-55	10
56-59	25
60-64	50
65	100

The average expected retirement age for firefighters under age 50 based on these rates is 57.0.

6. RETRO DROP Election

- a. Percent of firefighters eligible electing RETRO DROP: 100% of service retirements eligible to elect at least a 12-month lump sum.
- b. Months assumed for lump sum: Maximum they are eligible for, up to 60 months.

7. Withdrawal Rates

See Exhibit 10.

8. Disability Rates

See Exhibit 10.

9. Reduction in Benefit after 2½ Years of Disability Retirement

45% weighted average reduction in benefit.

10. Percent Married

90% of the firefighters are assumed to be married at retirement, disability, or death while employed and have a spouse three years younger. The 10% assumed to be single at retirement are assumed to elect the life only option.

11. Payment Form for Retirement Benefits Due to Service Retirement, Disability Retirement, or Vested Termination

- Joint and 100% to surviving spouse for the 90% assumed to be married of those with 20 or more years of service as of January 1, 2005
- Joint and 2/3 to surviving spouse for the rest of the 90% assumed to be married
- Life annuity for the 10% assumed to be single

To the extent optional forms of payment are elected and the amounts are determined under an actuarial basis which differs from the basis used in the valuation, actuarial gains or losses will occur. These gains or losses are expected to be very small and will be recognized through the valuation process for those retiring since the prior valuation who made an optional election.

12. Surviving Child's Death Benefit

None are assumed as a result of future deaths.

13. Firefighters' Contribution Rate

13.50% of covered pay.

14. City's Assumed Contribution Rate

19.50% of covered payroll.

15. Covered Payroll for First Year Following Valuation Date

Actual (or annualized) pay for 2013 with adjustment of 3% for each firefighter to fully reflect the 4% pay increase effective in October 2013 for most pay classifications.

16. General Administrative Expenses

The expenses paid by fund assets for other than investment-related expenses are assumed to be 0.35% of payroll. The normal cost rate as a percent of payroll is assumed to be 0.35% of payroll higher to reflect these expenses.

**Exhibit 10  
Disability, Mortality, and Withdrawal Rates per 1,000 Active Members  
Compensation Increases by Years of Service**

Attained Age	Disability and Mortality Rates			Withdrawal Rates		Compensation Increases	
	Disability <sup>1</sup>	Mortality <sup>2</sup>		Years of Service	Rate	Years of Service	Increase Percent
		On-Duty	Off-Duty				
20	0.14	0.104	0.114	0	30	1	9.98%
21	0.15	0.109	0.122	1	27	2	9.98
22	0.16	0.113	0.130	2	24	3	9.98
23	0.17	0.120	0.140	3	21	4	9.98
24	0.18	0.125	0.150	4	18	5	9.98
25	0.19	0.133	0.162	5	16	6	6.34
26	0.21	0.144	0.183	6	14	7	6.34
27	0.23	0.146	0.193	7	12	8	6.34
28	0.25	0.146	0.202	8	11	9	6.34
29	0.28	0.145	0.220	9	10	10	6.34
30	0.31	0.151	0.243	10	8	11	6.34
31	0.35	0.164	0.278	11	7	12	6.34
32	0.40	0.177	0.321	12	6	13	6.34
33	0.45	0.190	0.369	13	5	14	6.34
34	0.49	0.205	0.417	14	5	15	6.34
35	0.52	0.216	0.469	15	5	16	3.75
36	0.54	0.225	0.521	16	5	17	3.75
37	0.57	0.226	0.576	17	4	18	3.75
38	0.62	0.223	0.611	18	4	19	3.75
39	0.73	0.216	0.647	19	4	20	3.75
40	0.92	0.201	0.689	20 & Over	0	21	3.75
41	1.14	0.193	0.726			22	3.75
42	1.32	0.184	0.771			23	3.75
43	1.48	0.179	0.817			24	3.75
44	1.73	0.173	0.873			25	3.75
45	2.09	0.163	0.939			26	3.75
46	2.55	0.161	0.991			27	3.75
47	2.98	0.154	1.052			28	3.75
48	3.34	0.145	1.118			29	3.75
49	3.62	0.142	1.180			30	3.75
50	3.79	0.135	1.248			31	3.75
51	3.92	0.140	1.405			32	3.75
52	4.04	0.138	1.504			33	3.75
53	4.24	0.140	1.656			34	3.75
54	4.56	0.143	1.825			35	3.75
55	0.00	0.154	2.133			36	3.75
56	0.00	0.174	2.542			37	3.75
57	0.00	0.191	2.919			38	3.75
58	0.00	0.211	3.369			39	3.75
59	0.00	0.223	3.814			40	3.75
60		0.240	4.341				
61		0.265	5.076				
62		0.285	5.808				
63		0.313	6.825				
64		0.330	7.712				

<sup>1</sup> Applicable when not eligible for service retirement. The on-duty rates and the off-duty rates are half of the rates shown.

<sup>2</sup> Illustrated for males. The relative splits between on-duty and off-duty rates for female mortality rates are the same as for male mortality rates.

## **Exhibit 11**

### **Definitions**

1. Actuarial Accrued Liability      That portion, as determined by the particular actuarial cost method used, of the Actuarial Present Value of future pension plan benefits as of the Valuation Date that is not provided for by the Actuarial Present Value of future Normal Costs.
  
2. Actuarial Assumptions          Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, termination, disablement and retirement; changes in compensation; rates of investment earnings and asset appreciation; and other relevant items.
  
3. Actuarially Equivalent          Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
  
4. Actuarial Gain (Loss)          A measure of the difference between actual experience and that expected based on the Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with the particular actuarial cost method used.
  
5. Actuarial Present Value          The value of an amount or series of amounts payable or receivable at various times, determined as of a given date (the Valuation Date) by the application of the Actuarial Assumptions.
  
6. Actuarial Valuation              The determination, as of a Valuation Date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets and related Actuarial Present Values for a pension plan.
  
7. Actuarial Value of Assets        The value of cash, investments and other property belonging to a pension plan, as determined by a method and used by the actuary for the purpose of an Actuarial Valuation.



8. Entry Age Actuarial Cost Method  
An actuarial cost method under which the Actuarial Present Value of the Projected Benefits of each individual included in the Actuarial Valuation is allocated as a level percentage of earnings between entry age and assumed termination. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability. Under this method, Actuarial Gains (Losses), as they occur, reduce (increase) the Unfunded Actuarial Accrued Liability.
9. Plan Year  
A 12-month period beginning January 1 and ending December 31.
10. Normal Cost  
That portion of the Actuarial Present Value of pension plan benefits that is allocated to a valuation year by the actuarial cost method.
11. Projected Benefits  
Those pension plan benefit amounts that are expected to be paid at various future times according to the Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future qualified service.
12. Overfunded Actuarial Accrued Liability  
The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability.
13. Unfunded Actuarial Accrued Liability  
The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.
14. Valuation Date  
The date upon which the Normal Cost, Actuarial Accrued Liability and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the end of a Plan Year.
15. Years to Amortize the Unfunded Actuarial Accrued Liability  
The period is determined in each Actuarial Valuation as the number of years, beginning with the Valuation Date, to amortize the Unfunded Actuarial Accrued Liability with a level percent of payroll that is the difference between the expected total contribution rate and the Normal Cost contribution rate.

**Exhibit 12  
Summary of Present Plan**

1. Normal Service or Duty-Related Disability Retirement Monthly Benefit	
(a) Percent of highest 60-Month average salary	71.50%
(b) Additional service benefit for each year of service in excess of 20 years	\$113.00
2. Off-Duty Disability and Surviving Spouse Benefit as a Percentage of Duty-Related Disability and Surviving Spouse Benefit	10%/Year of Service (10% Min., 100% Max.)
3. Minimum Age and Service Retirement Eligibility	Age 50 and 25 Years or Age 55 and 20 Years
4. 3-Year RETRO DROP Eligibility	
(a) Earliest RETRO DROP benefit calculation date	Age 52.5 and 25 Years or Age 55 and 20 Years
(b) Earliest employment termination date with maximum lump sum accumulation period	Age 55.5 and 28 Years or Age 58 and 23 Years
(c) Maximum length of RETRO DROP lump sum accumulation period	36 Months
5. 5-Year RETRO DROP Eligibility	
(a) Earliest RETRO DROP benefit calculation date	Age 54 and 26 Years or Age 57 and 22 Years
(b) Earliest employment termination date with maximum lump sum accumulation period	Age 59 and 31 Years or Age 62 and 27 Years
(c) Maximum length of RETRO DROP lump sum accumulation period	60 Months
6. Actuarially Equivalent Early Retirement Eligibility	20 Years
7. Vested Terminated Benefit Eligibility (Benefit Deferred to Normal Retirement Age)	20 Years
8. Surviving Children's Monthly Benefit as a Percent of Highest 60-Month Average Salary for a Firefighter with 20 or More Years of Service as of January 1, 2005	
(a) When the spouse is receiving a benefit, for each child	9.53%
(b) When the spouse is not receiving a benefit or there is no spouse	71.50%

9. Surviving Children's Monthly Benefit as a Percent of Highest 60-Month Average Salary for a Firefighter with Less Than 20 Years of Service as of January 1, 2005
- |  |        |
|--|--------|
| (a) When the spouse is receiving a benefit, for each child           | 9.53%  |
| (b) When the spouse is not receiving a benefit or there is no spouse | 47.67% |
10. Contributions as a Percent of Payroll by:
- |                                       |        |
|---------------------------------------|--------|
| (a) Firefighters                      | 13.50% |
| (b) Assumed average for City of Tyler | 19.50% |
11. The normal form of annuity payment at service retirement is a Joint and 100% Spouse Annuity for those firefighters with 20 or more years of service as of January 1, 2005. For all others, the normal form is a Joint and  $66\frac{2}{3}\%$  Spouse Annuity. The benefit is payable to the surviving spouse as long as the spouse is alive, except that for those normal or early retirements or vested terminations (entitled to a deferred benefit) occurring before November 1, 1995, the spouse's benefit will cease upon remarriage.
12. In lieu of the normal Joint and 100% Spouse Annuity for those firefighters with 20 or more years of service as of January 1, 2005, optional forms of a Joint and  $66\frac{2}{3}\%$  Spouse Annuity for a 4% benefit increase or a Straight Life Annuity for a 13% benefit increase are also available. In lieu of the normal Joint and  $66\frac{2}{3}\%$  to Surviving Spouse for those firefighters with less than 20 years of service as of January 1, 2005, optional forms of a Joint and 100% Spouse Annuity for a 4% benefit reduction or a Straight Life Annuity for a 9% benefit increase are also available.
13. A member eligible for normal service retirement can elect at retirement the Partial Lump Sum Option (PLSO) which will provide a PLSO lump sum amount and a PLSO monthly benefit. The PLSO lump sum amount is either 12, 24, 36, or 48 months of the normal service retirement benefit, with the number of months elected by the member.
14. Salary used to determine the Highest 60-Month Average Salary includes all elements of pay except for lump sum distributions for unused sick leave or vacation. The average is based on the highest five years out of the last eight years.
15. Refund of firefighters' accumulated contributions without interest will be made to firefighters who terminate employment and either are not eligible for any other benefit from the fund or request a refund from the fund.

**Exhibit 13**

**Disclosures in Accordance with GASB Statement No. 27  
Notes to the Financial Statements for the City of Tyler  
for the Fiscal Year Ending September 30, 2014**

**I. Annual Pension Cost**

For the fiscal year ending September 30, 2014, the City of Tyler's Annual Pension Cost (APC) was equal to the annual required contributions and was \$\_\_\_\_\_ as described below in footnote 2 of Trend Information. Based on the results of the December 31, 2013 actuarial valuation of the Plan Effective July 1, 2011, the board's actuary found that the fund has an adequate contribution arrangement based on the current level of the firefighter and the assumed City of Tyler contribution rates. The funding policy of the fund requires the firefighters to contribute 13.5% of pay and the city to contribute the same percentage of payroll that the city contributes to the Texas Municipal Retirement System for other employees. These contribution rates were reflected in the December 31, 2013 actuarial valuation.

The annual required contributions (ARC) by the city for the fiscal year ending September 30, 2014 were based on the results of the actuarial valuations as of December 31, 2011 and as of December 31, 2013 using the entry age actuarial cost method and were determined in compliance with the GASB Statement No. 27 parameters. The actuarial methods and assumptions used for these two biennial valuations are shown below:

Valuation date	12/31/2011	12/31/2013
Actuarial cost method	Entry age	Entry age
Amortization method	Level percent of payroll, open	Level percent of payroll, open
Amortization period for ARC	27 years	23 years
Asset valuation method	5-year adjusted market value	5-year adjusted market value
Actuarial assumptions		
• Investment return	7.75%	7.75%
• Inflation	3.75%	3.75%
• Projected salary increases		
- general	4.00%	3.75%
- promotion and longevity	0% to 6%	0% to 6%
- total	4.00% to 10.24%	3.75% to 9.98%
• Cost-of-living increases	0.00%	0.00%
• Payroll increases	4.00%	3.75%
ARC as percent of payroll	budgeted rates	budgeted rates

**Exhibit 13 (continued)**

**II. Trend Information**

Fiscal Year Ending	Annual Pension Cost (APC)	Percentage Of APC Contributed	Contribution as a Percentage of Payroll	Net Pension Obligation
09/30/2012	\$ _____ <sup>1</sup>	100%	18.96%/19.85%	\$0
09/30/2013	\$ _____ <sup>1</sup>	100	19.85%/20.74%	0
09/30/2014	\$ _____ <sup>2</sup>	100	20.74%/21.31%	0

<sup>1</sup> The city should disclose the previous fiscal year city contributions made to the fund.

<sup>2</sup> The city should disclose the actual city contributions made to the fund during the fiscal year October 1, 2013 through September 30, 2014 based on 20.74% of payroll for October 1, 2013 through December 31, 2013 and on 21.31% of payroll for the remainder of the fiscal year. The actual city contributions are equal to both the ARC and the APC.

**III. Schedule of Funding Progress**

Actuarial Valuation Date	Actuarial Value of Assets (a)	Entry Age Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a ÷ b)	Annual Covered Payroll <sup>1</sup> (c)	UAAL as a Percentage of Covered Payroll (b - a) ÷ c
12/31/05 <sup>3</sup>	\$38,914,954	\$50,047,120	\$11,132,166	77.8%	\$7,283,688	152.8%
12/31/07 <sup>2,3</sup>	45,113,845	55,606,678	10,492,833	81.1	8,402,637	124.9
12/31/09 <sup>2,3</sup>	45,386,149	64,422,078	19,035,929	70.5	9,851,022	193.2
12/31/11 <sup>2,4</sup>	49,221,368	70,472,278	21,250,910	69.8	10,300,425	206.3
12/31/13 <sup>2,4</sup>	56,547,675	76,823,319	20,275,644	73.6	10,937,907	185.4

<sup>1</sup> The covered payroll is based on estimated annual salaries for the year following the valuation date.

<sup>2</sup> Economic and demographic assumptions were revised.

<sup>3</sup> Reflects plan provisions effective January 1, 2005.

<sup>4</sup> Reflects plan provisions effective July 1, 2011.

**Exhibit 13 (continued)**

**IV. Actuarial Information Needed for Notes to the Financial  
Statement as Required by Paragraph 20 of GASB 27**

**A. Plan Description**

The Board of Trustees of the Tyler Firemen's Relief and Retirement Fund is the administrator of a single-employer defined benefit pension plan. Firefighters in the Tyler Fire Department are covered by the Tyler Firemen's Relief and Retirement Fund.

The Tyler Firemen's Relief and Retirement Fund provides service retirement, death, disability, and withdrawal benefits. These benefits fully vest after 20 years of credited service. Firefighters may retire at age 50 with 25 years of service, or at age 55 with 20 years of service. The plan effective July 1, 2011 provides a monthly normal form of service retirement benefit as (a) a Joint and 66-2/3% Spouse Annuity for those firefighters with less than 20 years of service as of January 1, 2005, or (b) a Joint and 100% Spouse Annuity for those firefighters with 20 or more years of service as of January 1, 2005. The monthly benefit is 71.5% of Highest 60-Month Average Salary plus an additional \$113.00 per year of service in excess of 20 years.

There is no provision for automatic postretirement benefit increases. The fund has the authority to provide, and has periodically in the past provided, ad hoc postretirement benefit increases. The benefit provisions of this plan are authorized by the Texas Local Fire Fighters' Retirement Act (TLFFRA). TLFFRA provides the authority and procedure to amend benefit provisions.

**B. Contributions Required and Contributions Made**

The contribution provisions of this plan are authorized by TLFFRA. TLFFRA provides the authority and procedure to change the amount of contributions determined as a percentage of pay by each firefighter and a percentage of payroll by the city.

While the contribution requirements are not actuarially determined, state law requires that each plan of benefits adopted by the fund must be approved by an eligible actuary. The actuary certifies that the contribution commitment by the firefighters and the city provides an adequate contribution arrangement. Using the entry age actuarial cost method, the plan's normal cost contribution rate is determined as a percentage of payroll. The excess of the total contribution rate over the normal cost contribution rate is used to amortize the plan's unfunded actuarial accrued liability (UAAL). The number of years needed to amortize the plan's UAAL is determined using an open, level percentage of payroll method.

The costs of administering the plan are paid from the fund. The funding policy of the Tyler Firemen's Relief and Retirement Fund requires contributions equal to 13.5% of pay by the firefighters and contributions by the city equal to the same percentage of payroll that the city contributes to the Texas Municipal Retirement System for other employees. The December 31, 2013 actuarial valuation assumes that the city's contributions will average 19.50% of payroll in the future. The city contribution rate for calendar year 2014 is 21.31% and is scheduled to be 21.30% for 2015.